Draft
Archaeological Monitoring Plan for the Block M Project, Kakaʻako, Honolulu Ahupuaʻa, Honolulu (Kona) District, Oʻahu TMK: [1] 2-3-002:001 (portion)

Prepared for

Victoria Ward Limited/Howard Hughes Corporation

Prepared by

Jessica Leger, M.A.

and

Matt McDermott, M.A.

Cultural Surveys Hawaiʻi, Inc.

Kailua, Hawaiʻi

(Job Code: KAKAAKO 149)

September 2014

Oʻahu Office
P.O. Box 1114
Kailua, Hawaiʻi 96734
Ph.: (808) 262-9972
Fax: (808) 262-4950

www.culturalsurveys.com

Maui Office
1860 Main Street
Wailuku, Hawaiʻi 96793
Ph: (808) 242-9882
Fax: (808) 244-1994

Management Summary

Reference	Archaeological Monitoring Plan for the Block M Project, Kaka‘ako, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu, TMK: [1] 2-3-002:001 (portion) (Leger and McDermott 2014)
Date	September 2014
Project Number (s)	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KAKAAKO 149
Investigation Permit Number	The fieldwork for the archaeological monitoring will likely be carried out under archaeological permit No. 14-04, issued by the State Historic Preservation Division (SHPD), per Hawai‘i Administrative Rules (HAR) §13-282.
Land Jurisdiction	Private, Victoria Ward, Limited (VWL) / Howard Hughes Corporation (HHC)
Project Funding	VWL
Project Location	The Block M project is a discrete project within the larger Ward Neighborhood Master Plan Project. The project area is located within Ward Village. The project area is bounded to the northeast by Queen Street, to the southeast by Kamake‘e Street, to the southwest by Ward Theaters, and to the northwest by Ward Industrial Center. The project area is depicted on the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle.
Project Description	The proposed Block M project is a discrete project of VWL’s 60.5-acre (24.5-hectare) Ward Neighborhood Master Plan, a long-range development plan of 20-plus years expected to evolve over time to fulfill the needs of the community. It follows guidelines set forth in the Hawai‘i Community Development Authority (HCDA) Mauka Area Plan. The Block M project will consist of the construction of a high-rise residential tower with commercial space located on the ground floor. Ground disturbance associated with project construction will include demolition and removal of existing buildings and structures in Ward Village, borings related to foundation pile installation, and excavation related to the project area’s development, including structural footings, utility installation, roadway and parking area installation, and landscaping.
Project Acreage	Approximately 4.0 acres (1.6 hectares)
Area of Potential Effect (APE) and Survey Area Size	The project’s APE is defined as the entire approximately 4.0-acre project area. The project area’s surrounding built environment is urban (paved streets, low-rise commercial buildings, and high-rise residential buildings).
Historic Preservation Regulatory Context	The proposed project is subject to Hawai‘i State environmental and historic preservation review legislation (Hawai‘i Revised Statutes [HRS] §343, HRS §6E-42, and Hawai‘i Administrative Rules [HAR] §13-284).

	As part of the historic preservation review process, a cultural impact assessment (CIA) (Cruz et al. 2012) and an archaeological literature review and predictive model study (O'Hare et al. 2012) of the entire 60.5-acre Ward Neighborhood Master Plan project area were prepared and submitted to the SHPD on 20 July 2012. An archaeological inventory survey plan (AISP) (Sroat et al. 2014) was prepared to address the Block M component of the Ward Neighborhood Master Plan. The AISP was accepted in a SHPD §6E-42 Historic Preservation Review (10 January 2014, LOG NO.: 2013.6926; DOC NO.: 1401SL10). In 2014 CSH performed an AIS for the Block M project area. A total of 68 test excavations were completed within the project area. An AIS report (Hawkins et al. 2014), detailing the results of the AIS, was submitted to the SHPD concurrently with this AMP. The mitigation recommendation within the AIS report for the Block M project consisted of a monitoring plan. This archaeological monitoring plan is designed to fulfill the state requirements for monitoring plans (HAR §13-279-4). This document was prepared to support the proposed project's historic preservation review under HRS §6E-42 and HAR §13-284.
Historic Properties Potentially Affected	Two historic properties were identified during the Block M AIS: 1. SIHP # 50-80-14-7429, a previously identified subsurface cultural deposit, consisting of two discrete strata, and including 16 features (nine newly identified and seven previously identified); assessed as significant under Hawai‘i historic properties significance criteria "d" and "e", pursuant to HAR §13-284-6; and 2. SIHP # 50-80-14-7686, subsurface historic commercial infrastructure remnants, documented as concrete footings, buried asphalt surfaces, and buried concrete surfaces; assessed as significant under Hawai‘i historic properties significance criterion "d", pursuant to HAR §13-284-6.
Mitigation Recommendation	The recommended mitigation measure for the two historic properties identified within the Block M project area (SIHP #s -7429 and -7686) is archeological monitoring. This document addresses the recommended mitigation measure of archaeological monitoring. For the Block M project area, a program of both on-site archaeological monitoring and on-call monitoring is recommended: 1. On-site monitoring of all project related ground disturbance activities below 24 inches (2 feet) (from the current ground surface) within the zone of natural sand deposits, located

	within the *mauka* (inland) / northeastern diagonal half of the project area; and 2. On-call monitoring with weekly spot-checks within the zone of natural wetland deposits, located within the *makai* (seaward) / southwestern diagonal half of the project area. In addition, on-site monitoring shall include targeted monitoring of specified features associated with SIHP # -7429. The monitoring program will facilitate the identification and proper treatment of any archaeological deposits disturbed by project construction, and will enable collection of additional samples and information related to the identified historic property SIHP # -7429. On-site monitoring will include close examination of the Jaucas sand deposits present in the *mauka* portion of the project area, in order to identify any potential historic properties and/or burials. Any departure from on-site monitoring will only follow written SHPD accord.

Table of Contents

List of Figures

List of Tables

Section 1 Introduction

1.1 Project Background

At the request of Victoria Ward, Limited (VWL) and the Howard Hughes Corporation (HHC), Cultural Surveys Hawai‘i, Inc. (CSH) prepared this archaeological monitoring plan for the Block M Project, Kaka‘ako, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu, TMK: [1] 2-3-002:001 (portion). The 4.0-acre (1.6-hectare) Block M project is located within Ward Village. It is bounded to the northeast by Queen Street, to the southeast by Kamake‘e Street, to the southwest by Ward Theaters, and to the northwest by Ward Industrial Center. The project area is depicted on the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 1), a tax map plat (Figure 2), and a 2013 aerial photograph (Figure 3).

The proposed project is a discrete project of VWL's approximately 60.5-acre (24.5-hectare) Ward Neighborhood Master Plan, described as "a long-range development plan of 20-plus years that would evolve over time to fulfill the needs of the community." The Ward Neighborhood Master Plan follows the guidelines set forth in the Mauka Area Plan of the Hawai‘i Community Development Authority (HCDA).

The Block M project will consist of construction of a high-rise residential tower with commercial space located on the ground floor. This is a private development owned and funded by VWL/HHC. Ground disturbance associated with project construction will include demolition and removal of existing buildings and structures, borings related to foundation pile installation, and excavation related to the project area's development, including structural footings, utility installation, roadway and parking area installation, and landscaping.

1.2 Historic Preservation Regulatory Context

The proposed project is subject to Hawai‘i State environmental and historic preservation review legislation, Hawai‘i Revised Statutes (HRS) §343 and HRS §6E-42, and Hawai‘i Administrative Rules (HAR) §13-284, respectively. As part of the historic preservation review process, a cultural impact assessment (CIA) (Cruz et al. 2012) and an archaeological literature review and predictive model study (O'Hare et al. 2012) of the entire Ward Neighborhood Master Plan project area were prepared and submitted to the SHPD on 20 July 2012. An archaeological inventory survey plan (AISP) (Sroat et al. 2014) addressing the Block M component of the Master Plan was accepted by the SHPD in a letter dated 10 January 2014 (LOG NO.: 2013.6926; DOC NO.: 1401SL10) (Appendix A). The archaeological inventory survey (AIS) for Block M was completed in June 2014. An AIS report (Hawkins et al. 2014) detailing the results of the AIS was submitted to the SHPD concurrently with this archaeological monitoring plan. Mitigation recommendations included within the AIS report for the Block M project consisted of an archaeological monitoring plan.

This archaeological monitoring plan is designed to fulfill the state requirements for monitoring plans (HAR §13-279-4). This document was prepared to support the proposed project's historic preservation review under HRS §6E-42 and HAR §13-284.

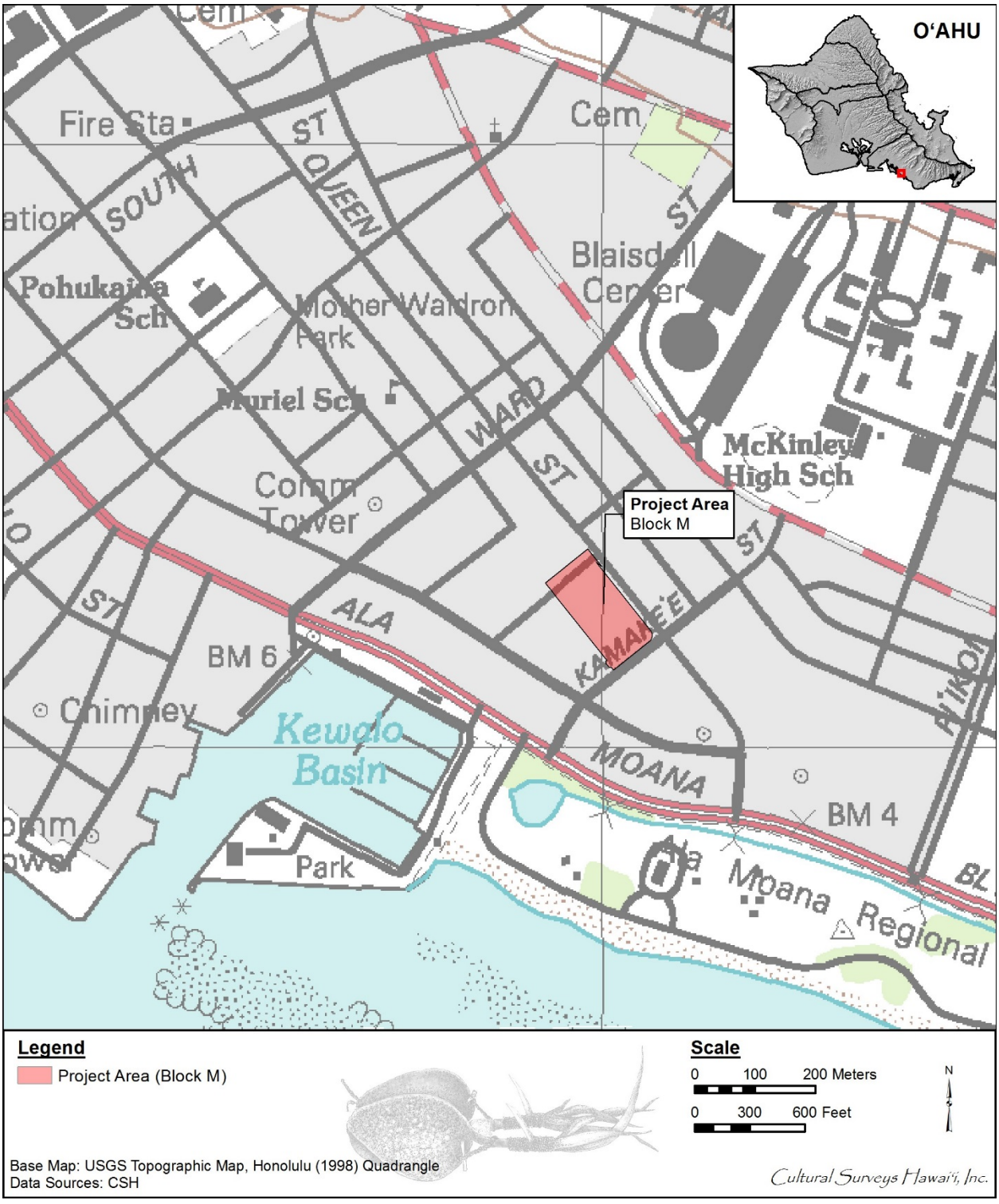


Figure 1. 1998 Honolulu USGS 7.5-minute topographic quadrangle showing the location of the Block M project area, located at the intersection of Queen and Kamake‘e Streets

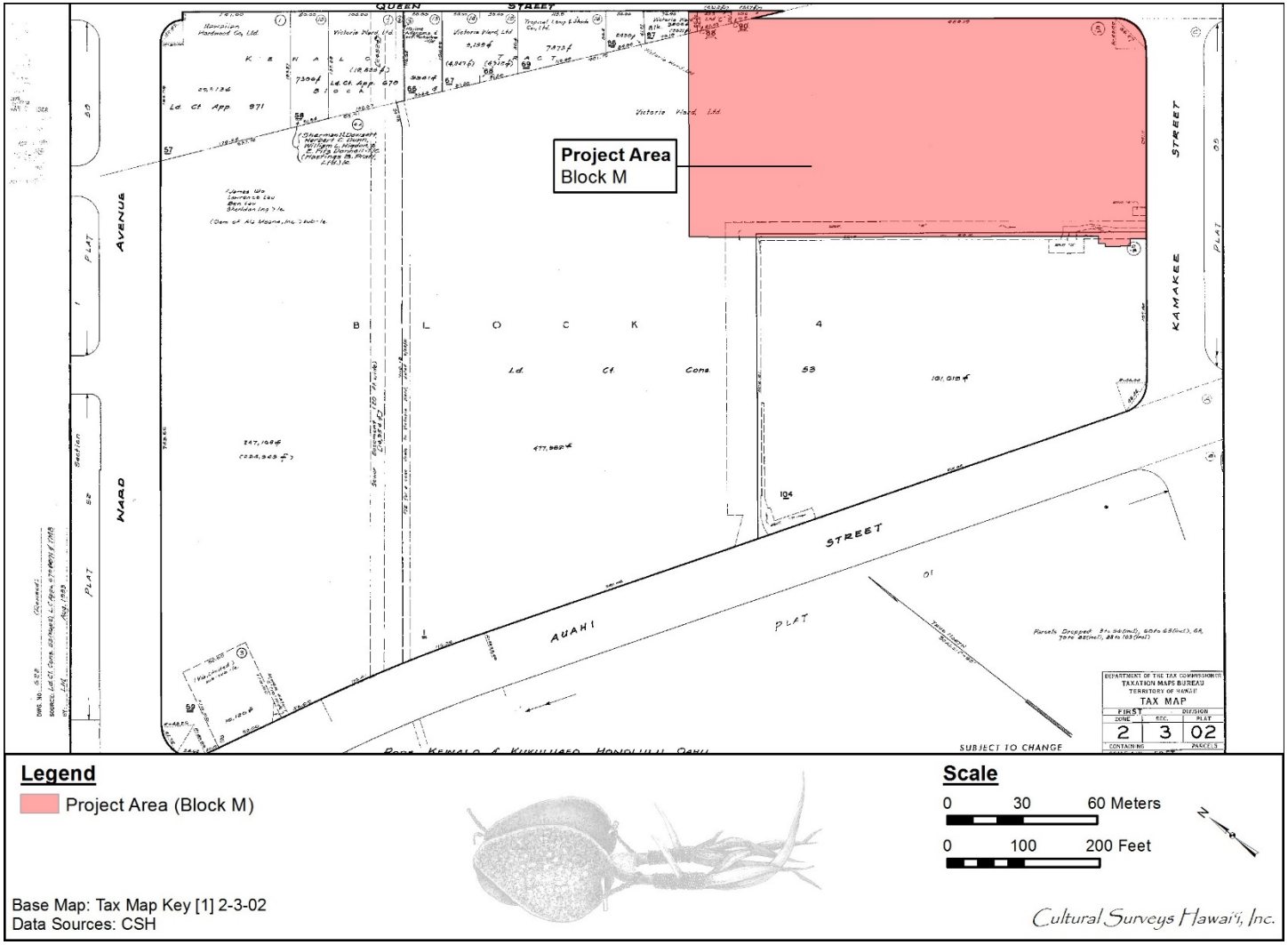


Figure 2. Tax map key (TMK): [1] 2-3-02, showing the location of the Block M project area

Figure 3. Aerial photograph showing the location of the Block M project area (base map: Google Earth 2013)

1.3 Environmental Setting

1.3.1 Natural Environment

The Block M project area is within a portion of O‘ahu called the Honolulu Plain, an area generally less than 4.5 m, or 15 ft, above sea level (Davis 1989:5). The Honolulu Plain is stratified with late-Pleistocene coral reef substrate overlaid with calcareous marine sand or terrigenous sediments, and stream fed alluvial deposits (Armstrong 1983:36). The top soil stratum consists of Fill land (FL), containing areas filled with material dredged from the ocean and hauled from nearby areas (Foote et al. 1972).

The modern Hawaiian shoreline configuration is primarily the result of 1) rising sea level following the end of the Pleistocene (Stearns 1978; Macdonald et al. 1983); 2) the mid- to late Holocene approximately 1.5-2.0 m high stand of the sea (see summary in Dye and Athens 2000:18-19); and 3) pre-Contact and post-Contact human landscape modification.

At the end of the Pleistocene, between approximately 20,000 and 5,000-6,000 years ago, water previously locked in glacial ice returned to the world’s oceans, and the sea level rose over 100 m to approximately its current level. In the vicinity of the Block M project area, rising sea levels flooded the previously dry, earlier Pleistocene reef deposits, which had formed hundreds of thousands of years previously when sea level was comparable to modern levels. When sea levels reached approximately modern levels, the now coastal regions became depositional environments, where for tens of thousands of years previously, during the lower sea levels, they had been erosional environments.

A high stand of the sea for the Hawaiian Islands, approximately 1.5 to 2.0 m above present sea level, has been well documented between 4,500 and 2,000 years ago (Stearns 1978; Athens and Ward 1991; Fletcher and Jones 1996; Grossman and Fletcher 1998; Grossman et al. 1998; Harney et al. 2000). During this high stand, there appears to have been an increase in coral reef production and the production of detrital reef sediments. Littoral environments appear to have been augmented substantially by the deposition of marine sediments. “What this means is that the great shoreline sand berms must have developed around the islands at this time because this was when calcareous sand was being produced and delivered to the shorelines in large quantities” (Dye and Athens 2000:19).

The Honolulu coastline was likely greatly affected by the deposition of marine sediments during this elevated sea level. The subsequent drop in sea level to its present level, ca. 2000 years ago, most likely created a slightly erosional regime that may have removed sediments deposited during the preceding period of deposition (Dye and Athens 2000:19). However, the net gain in sediments would have been substantial. In 1911, it was estimated that about one-third of the Honolulu Plain was a wetland (Nakamura 1979:65, citing a Hawaiian Territory Sanitary Commission report). Pre-Contact Hawaiians used the lagoonal/estuary environment of the Honolulu plain to construct fishponds. Fishpond walls served as sediment anchors for the accumulation of detrital reef sediments. They also likely affected along-shore sedimentary transport, resulting in new littoral deposition and erosion patterns. In the post-Western Contact period, when the fishponds were no longer utilized, they became obvious locations for the deposition of fill. These reclaimed areas provided valuable new land for expanding urban development near the heart of growing urban Honolulu.

Foote et al. (1972) show the study area as being fill (FL), as shown in Figure 4. The authors describe fill land as: “This land type occurs mostly near Pearl Harbor and in Honolulu, adjacent to the ocean. It consists of areas filled with material dredged from the ocean or hauled from nearby areas, garbage, and general material from other sources” (Foote et al. 1972:31).

While fill materials will likely be found throughout the project area, the coastal location of Block M indicates natural Jaucas sand (JaC) may be encountered underneath portions of the Block M study area. Foote et al. (1972) describe Jaucas sand as follows:

> In a representative profile the soil is single grain, pale brown to very pale brown, sandy, and more than 60 inches deep. In many places the surface layer is dark brown as a result of accumulation of organic matter and alluvium. The soil is neutral to moderately alkaline throughout the profile. [Foote et al. 1972:48]

In this area of the Honolulu District, rainfall averages less than 30 inches per year (Armstrong 1983:62). Northeasterly trade winds prevail throughout the year, although their frequency varies from more than 90% during the summer months to 50% in January; the average annual wind velocity is approximately 10 miles per hour (Wilson Okamoto 1998:2-1). Vegetation within the project area is limited to a few ornamental trees and shrubs along the project area margins.

1.3.2 Built Environment

The project area is located within central Honolulu, surrounded by modern urban development including commercial buildings, paved streets, sidewalks, utility infrastructure, and landscaped margins.

Figure 4. Overlay of information from a portion of the *Soil Survey of the State of Hawaii* (Foote et al. 1972), showing Fill lands (FL) within and surrounding the Block M project area (base map: Google Earth 2013)

Section 2 Background Research

The following Background Research section is copied from the SHPD reviewed and approved Block M AISP (Sroat and McDermott 2014). While not required to be included within this document, it is provided here for the benefit of the reader. The only updated section consists of the summary of the recent Block M AIS results (Section 2.3.12).

2.1 Traditional Background Research

2.1.1 Explanation of Place Names

As noted in the introduction, the project area is within the Kaka‘ako Community Development District. However, the boundary of this development district is not the same as the ancient boundary of Kaka‘ako. The development district is comprised of the *‘ili* (land section) of Kaka‘ako and lands once known as Ka‘ākaukukui, Kukuluāe‘o, and Kewalo, and even smaller areas—portions of *‘ili*—called Kawaiaha‘o, Honuakaha, Ka‘ala‘a, ‘Āpua, ‘Auwaiolimu, Pualoalo, Pu‘unui, and Kolowalu. The Block M project area is within the *‘ili* of Kukuluāe‘o (Figure 5).

The land called Kukuluāe‘o was named for the Hawaiian stilt bird (*Himantopus himantopus*), also called *kukuluāe‘o,* which means “to walk on stilts.” The area was described as having contained “marshes, salt ponds, and small fishponds,” an environment well suited for this type of bird (Griffin et al. 1987:36). Kekahuna (1958:4) described it as “the land on the upland side of Ka‘ākaukukui. Salt was formerly made there.”

John Papa ‘Ī‘ī mentions some of these lands while discussing early nineteenth century trails in the Honolulu/Waikīkī area (Figure 6). The fact that the trail traversed this region—characterized by ponds, marshlands and *lo‘i* (irrigated fields)—suggests the trail, especially as it neared the coastline at Kālia, must have run on a sand berm raised above surrounding wetlands and coral flats. On this inland trail (probably close to the current alignment of Queen Street), walking from Waikīkī to Honolulu: “The trail from Kalia led to Kukuluaeo, then along the graves of those who died in the smallpox epidemic of 1853, and into the center of the coconut grove of Honuakaha” (‘Ī‘ī 1959:89).

The smallpox epidemic graves referred to are within the Honuakaha Cemetery, designated State Inventory of Historic Properties (SIHP) # 50-80-14-3712, near the corner of Halekauwila and South Streets, *makai* (seaward) of Kawaiaha‘o Church. Honuakaha was a settlement located generally between Punchbowl and South Streets, on the *makai* side of Queen Street.

2.1.2 Legendary Accounts

The Block M project area is located in an area called Kukuluāe‘o on historic maps. The place name Kaka‘ako is found in various legends and traditions, but Kukuluāe‘o does not appear in any sources referenced in the Hawaiian Island Legends Index or in the index to Fornander’s Collection of Hawaiian Antiquities and Folklore.

However, a heiau (place of worship) called Pu‘ukea may have once been located in Kukuluāe‘o. This heiau is mentioned in a mele (chant) to the chief Huanuikalala‘ila‘i, who was born in Kewalo, the land section north and adjacent to Kukuluāe‘o.

‘O Hua-a-Kamapau ke ‘li‘i	Hua-a-Kamapau the chief

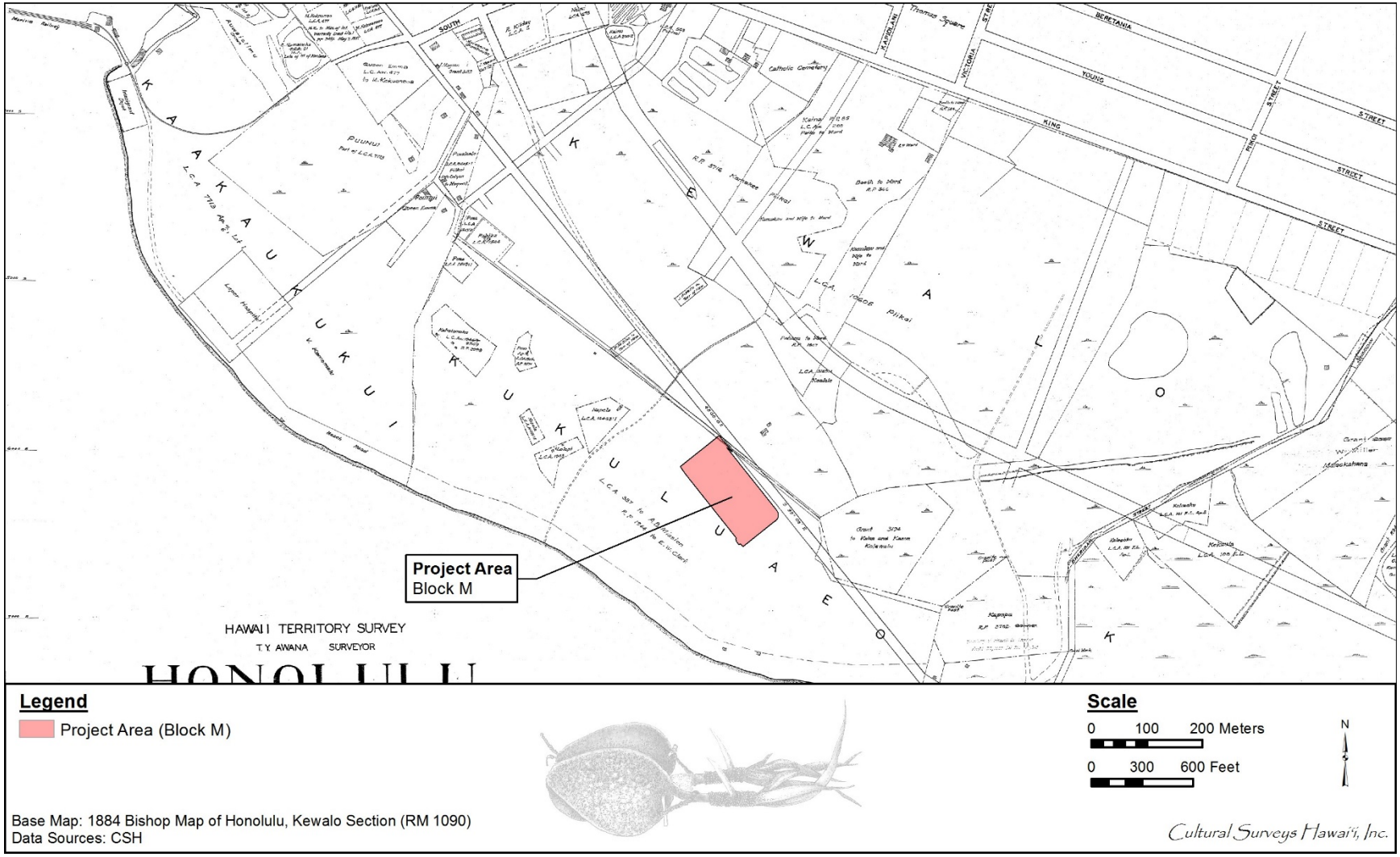


Figure 5. 1884 map of Honolulu, Kewalo Section (portion) by S.E. Bishop, showing place names and Land Commission Award (LCA) locations within and near the project area (Hawai‘i Land Survey Division, Registered Map 1090)

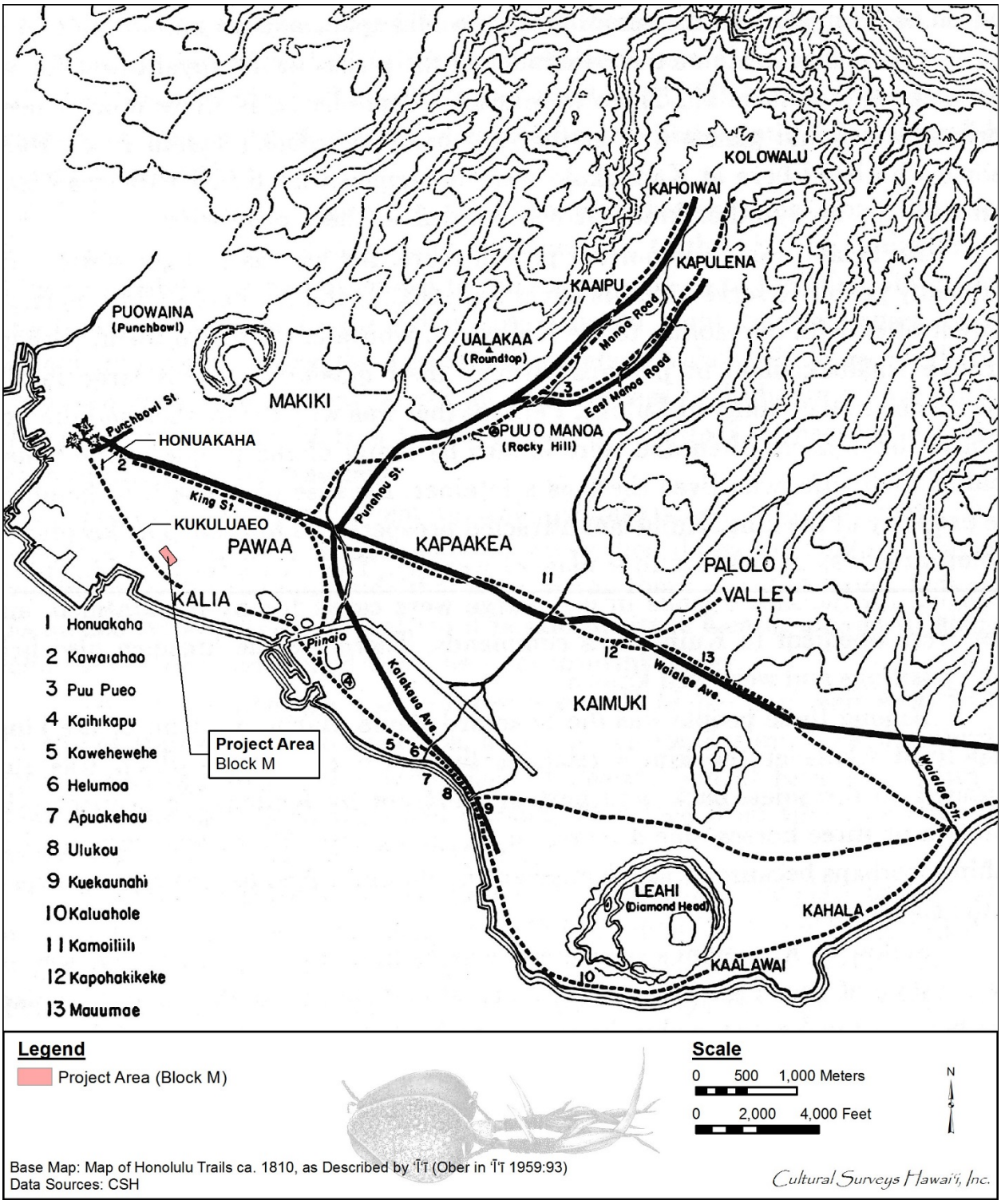


Figure 6. Early nineteenth century (ca. 1810) trails on the southwest coast of O‘ahu (illustration by Gerald Ober from ‘Ī‘ī 1959:93), showing the location of Honuakaha, Kukuluāe‘o, and Kālia

O Honolulu o Waikīkī	Of Honolulu, of Waikīkī
I hanau no la i kahua la i Kewalo,	Was born at Kewalo,
‘O Kālia la kahua	Kālia was the place [the site]
O Makiki la ke ēwe,	At Makiki the placenta,
I Kānelā‘au i Kahehuna ke piko,	At Kānelā‘au at Kahehuna the navel cord,
I Kalo i Pauoa ka ‘a‘a;	At Kalo at Pauoa the caul;
I uka i Kaho‘iwai i	Upland at Kaho‘iwai, at
Kanaloaho‘okau . . .	Kanaloaho‘okau. . .

[Kamakau 1991:24]

The chief Hua was famous for his love of cultivation and his care for the people. His *heiau*, Pu‘ukea, is mentioned in a traditional *wānana* (prophecy) recorded by Kamakau (1991:24-25) as follows:

[*Ka makaua ua kahi o ‘Ewa*]	[The increasing “first rain” of ‘Ewa]
Ua puni ka i‘a o Mokumoa,	Overcomes the fish of Mokumoa,
Ua kau i‘a ka nene;	Washes up fish to the nene plants;
Ua ha‘a kalo ha‘a nu;	Lays low the taro as it patters down;
Ha‘a ka i‘a o kewalo,	Lays low the fish of Kewalo,
Ha‘a na ‘ualu o Pahua,	Lays low the sweet potatoes of Pahua,
Ha‘a ka mahiki i ***Pu‘ukea****,*	Lays low the mahiki grass at **Pu‘ukea**,
Ha‘a ka unuunu i Pele‘ula,	Lays low the growing things at Pele‘ula
Ha‘a Makaaho i ke ala.	Lays low Makaaho [Makāho] in its path
E Kū e, ma ke kaha ka ua, e Kū,	O Kū, the rain goes along the edge [of the island], O Kū
[*I ‘ai ‘na ka i‘a o Maunalua*] . . .	[Eating the fish of Maunalua] . . .

The chant mentions the *mahiki* grass of Pu‘ukea Heiau. The Hawaiian term *mahiki* means “to peel off” (Andrews 2003:369). The word was also used to describe a rite to exorcise an evil spirit, as the skilled *kahuna* (priest) “peeled” the malicious spirit from the afflicted. Used in the ritual was a shrimp called *mahiki* or a native grass called *mahiki*. *Mahiki*, or *‘aki‘aki*, is a tufted rush (*Sporobolos* sp.) found near the seashore. The ethnologist, Mary Kawena Pukui, states that even during her youth, parents put “*ti* leaves, or *hala*, or *‘aki‘aki* grass, in a little sea-salt water and [would] have the child drink it” (Pukui et al. 1972:163) to rid them of badly-behaving spirits. The use of this grass in a ritual may explain its association with a ceremonial *heiau*, or it may simply be that the Kukuluāe‘o coast was a good habitat and thus a favored place for healers to collect this type of grass. The literal meaning of Pu‘ukea is “white hill” (Pukui et al. 1974:199), although it may have alternate meanings. Pu‘ukea is also the name of a small land division within the *‘ili* of Kukuluāe‘o, mentioned in at least two Land Commission Awards, LCA 1502 (not awarded) and 1504. LCA 1504 was located near the junction of Halekauwila Street and Cooke Street.

It is fairly common for a *heiau* to have the same name as the *‘ili* it is located within, so it is possible that Pu‘ukea Heiau was also near the junction of Halekauwila and Cooke streets. The majority of the house sites in the mid-nineteenth century in Kukuluāe‘o were located near Halekauwila Street and Queen Street, *mauka* (inland) of the low-lying coastal swamplands on higher dry ground. It is possible that the *heiau* platform or the area that it was built on was one of the few “high spots” in the flat, low-lying swamp that surrounded it, and thus gained the name *pu‘u kea* (white hill).

From these legendary accounts it can be seen that Kukuluāe‘o was traditionally noted for its fishponds and salt pans, for the marsh lands where *pili* grass and other plants could be collected, for ceremonial sites such as Pu‘ukea Heiau, and for the trails that allowed transport between the more populated areas of Waikīkī and Honolulu. Important chiefs were born in the area and conducted religious rites, and commoners traveled to the area to procure food and other resources; some commoners probably also lived in the area, possibly adjacent to the ponds and trails.

2.2 Historical Background

2.2.1 Early Post-Contact History and Population Centers

Kukuluāe‘o is between two centers of population, Kou and Waikīkī, on the southern shore of pre-Contact O‘ahu. In Waikīkī, a system of irrigated taro *lo‘i* (irrigated terrace) fed by streams descending from Makiki, Mānoa, and Pālolo valleys blanketed the plain, and networks of fish ponds dotted the shoreline. Similarly, Kou—the area of downtown Honolulu surrounding the harbor—possessed shoreward fishponds and irrigated fields watered by ample streams descending from Nu‘uanu and Pauoa Valleys. The pre-Contact population and land use patterns of Kukuluāe‘o may have derived from its relationship to these two densely populated areas; it may have participated in some of the activities associated with them. Thus, the attempt to reconstruct the Kukuluāe‘o region (and the present study area)—as it existed for the Hawaiians during the centuries before Western Contact and the modern urbanization that has reconfigured the landscape—must begin with accounts of Kou and Waikīkī.

Waikīkī is actually the name of a large *ahupua‘a* (traditional land division) encompassing lands stretching from Honolulu to Maunalua Bay. Within that *ahupua‘a*, by the time of the arrival of Europeans during the late eighteenth century, the area today known as Waikīkī had long been a center of population and political power on O‘ahu. According to Martha Beckwith (1940:383), by the end of the fourteenth century, Waikīkī had become “the ruling seat of the chiefs of O‘ahu.” The pre-eminence of Waikīkī continued into the eighteenth century and is confirmed by the decision of Kamehameha, in the midst of unifying control of the islands, to reside there after winning control of O‘ahu by defeating the island’s chief, Kalanikūpule. The nineteenth century Hawaiian historian John Papa ‘Ī‘ī, himself a member of the *ali‘i* (chiefly class), described the king’s Waikīkī residence:

> Kamehameha’s houses were at Puaaliilii, makai [seaward] of the old road, and extended as far as the west side of the sands of Apuakehau. Within it was Helumoa where Kaahumanu ma went to while away the time. The king built a stone house there, enclosed by a fence; . . . [‘Ī‘ī 1959:17]

‘Ī‘ī (1959:17) further noted that the “place had long been a residence of chiefs. It is said that it had been Kekuapoi’s home, through her husband Kahahana, since the time of Kahekili.”

Chiefly residences were only one element of a complex of features sustaining a large population that characterized Waikīkī up through the pre-Contact period. Beginning at least by the fifteenth century, a vast system of irrigated taro fields was constructed, extending across the littoral plain from Waikīkī to lower Mānoa and Pālolo valleys. This field system, an impressive feat of engineering, the design of which is traditionally attributed to the chief Kalamakua, took advantage of streams descending from Makiki, Mānoa, and Pālolo Valleys, which also provided ample fresh water for the Hawaiians living in the *ahupua‘a*. Water was also available from springs in nearby

Mō‘ili‘ili and Punahou. Closer to the Waikīkī shoreline, coconut groves and fishponds dotted the landscape. A continuous zone of population and cultivation, from the shoreline of present day Waikīkī Beach, extended north well into Mānoa Valley. The western and eastern bounds of this zone are less clear, and there are no specific references to Waikīkī's abundance reaching into the Kewalo region.

A basic description of Honolulu and Kou, up to Western Contact, is given by E.S. Craighill and Elizabeth Handy:

> What is now Honolulu was originally that flatland area between the lower ends of Nu‘uanu and Pauoa Valleys and the harbor. [W.D.] Westervelt . . . wrote that ‘Honolulu was probably a name given to a very rich district of farm land near what is now . . . the junction of Liliha and School Streets, because its chief was Honolulu, one of the high chiefs at the time of Kakuhihewa’. . . . It is probable that the chief referred to by Westervelt took his name from the harbor and adjoining land. The original name of the land where the town grew when the harbor became a haven for foreign ships was Kou. . . . The number of *heiau* in this area indicates that it was a place of first importance before the era of foreign contact. [Handy and Handy 1972:479]

Rev. Hiram Bingham, arriving in Honolulu in 1820, described a still predominantly Native Hawaiian environment—still a "village"—on the brink of western-induced transformations:

> We can anchor in the roadstead abreast of Honolulu village, on the south side of the island, about 17 miles from the eastern extremity. . . . Passing through the irregular village of some thousands of inhabitants, whose grass thatched habitations were mostly small and mean, while some were more spacious, we walked about a mile northwardly to the opening of the valley of Pauoa, then turning southeasterly, ascending to the top of Punchbowl Hill, an extinguished crater, whose base bounds the northeast part of the village or town. . . . Below us, on the south and west, spread the plain of Honolulu, having its fishponds and salt making pools along the seashore, the village and fort between us and the harbor, and the valley stretching a few miles north into the interior, which presented its scattered habitations and numerous beds of kalo (arum esculentum) in its various stages of growth, with its large green leaves, beautifully embossed on the silvery water, in which it flourishes. [Bingham 1847:92-93]

The Kukuluāe‘o region would have been in Bingham's view as he stood atop "Punchbowl Hill" looking toward Waikīkī to the south; it would have comprised part of the area he describes as the 'plain of Honolulu' with its "fishponds and salt making pools along the seashore."

Another visitor to Honolulu in the 1820s, Captain Jacobus Boelen, hints at the possible pre-Contact character of Honolulu and its environs, including the Kukuluāe‘o area:

> It would be difficult to say much about Honoruru. On its southern side is the harbor or the basin of that name (which as a result of variations in pronunciation [*sic*] is also written as Honolulu, and on some maps, Honoonoono). The landlocked side in the northwest consists mostly of tarro fields. More to the north there are some sugar plantations and a sugar mill, worked by a team of mules. From the north toward the

> east, where the beach forms the bight of Whytetee, the soil around the village is less fertile, or at least not greatly cultivated. [Boelen 1988:62]

Boelen's description implies that the Kukuluāeʻo region and the present study area are within a "not greatly cultivated" region of Honolulu perhaps extending from Pūowaina (Punchbowl Crater) at the north through Kakaʻako to the Kālia portion of Waikīkī in the east.

An early, somewhat generalized depiction of the pre-Contact Native Hawaiian shaping of Waikīkī, Honolulu, and the Kukuluāeʻo region is given on an 1817 map by Otto von Kotzebue (1821), commander of the Russian ship *Rurick*, who had visited Oʻahu the previous year. The map (Figure 7) shows taro *loʻi* (the rectangles, representing irrigated fields) massed around the streams descending from Nuʻuanu and Mānoa valleys. The depicted areas of population and habitation concentration (illustrated by the trapezoids) probably reflect distortions caused by the post-Contact shift of Hawaiians to the area around Honolulu harbor—the only sheltered landing on Oʻahu and the center of increasing trade with visiting foreign vessels. Kamehameha himself had moved from Waikīkī to Honolulu in 1809.

Kotzebue's map illustrates that the land between Pūowaina (Punchbowl Crater) and the shoreline—which would include the Kukuluāeʻo area—formed a "break" between the heavily populated and cultivated centers of Honolulu and Waikīkī; the area is only characterized by fishponds, salt ponds, trails connecting Honolulu and Waikīkī, and occasional taro *loʻi* and habitation sites.

A clearer picture of Kukuluāeʻo and the present project area develops with accounts of other visitors to and settlers of Honolulu during the first half of the nineteenth century. Gorman D. Gilman, who arrived in Honolulu in 1841, recalled in a memoir the limits of Honolulu during the early 1840s:

> The boundaries of the old town may be said to have been, on the *makai* [seaward] side, the waters of the harbor; on the *mauka* [inland] side, Beretania street; on the Waikīkī side [i.e. the area just beyond Punchbowl Street], the barren and dusty plain, and on the Ewa [west] side, the Nuuanu Stream. [Gilman 1903:97]

Gilman further describes the "barren and dusty plain" beyond (east of) Punchbowl Street:

> The next and last street running parallel [he had been describing the streets running *mauka-makai*, or from the mountains to the shore] was that known as Punchbowl Street. There was on the entire length of this street, from the *makai* side to the slopes of Punchbowl, but one residence, the two-story house of Mr. Henry Diamond, *mauka* of King Street. Beyond the street was the old Kawaiahao church and burying ground. A more forsaken, desolate looking place than the latter can scarcely be imagined. One, to see it in its present attractiveness of fences, trees and shrubbery, can hardly believe its former desolation, when without enclosure, horses and cattle had free access to the whole place. [Gilman 1903:89]

That the environs of the missionary enclave and Kawaiahaʻo Church were indeed "forsaken" and "desolate looking" in the 1820s when the missionaries first settled there is confirmed in the memoirs of the American missionary C.S. Stewart who, arriving on Maui after living at the mission, declared Lahaina to be "like the delights of an Eden" after "four weeks residence on the dreary plain of Honoruru" (Stewart 1970:177). It is likely these descriptions of the Honolulu plain

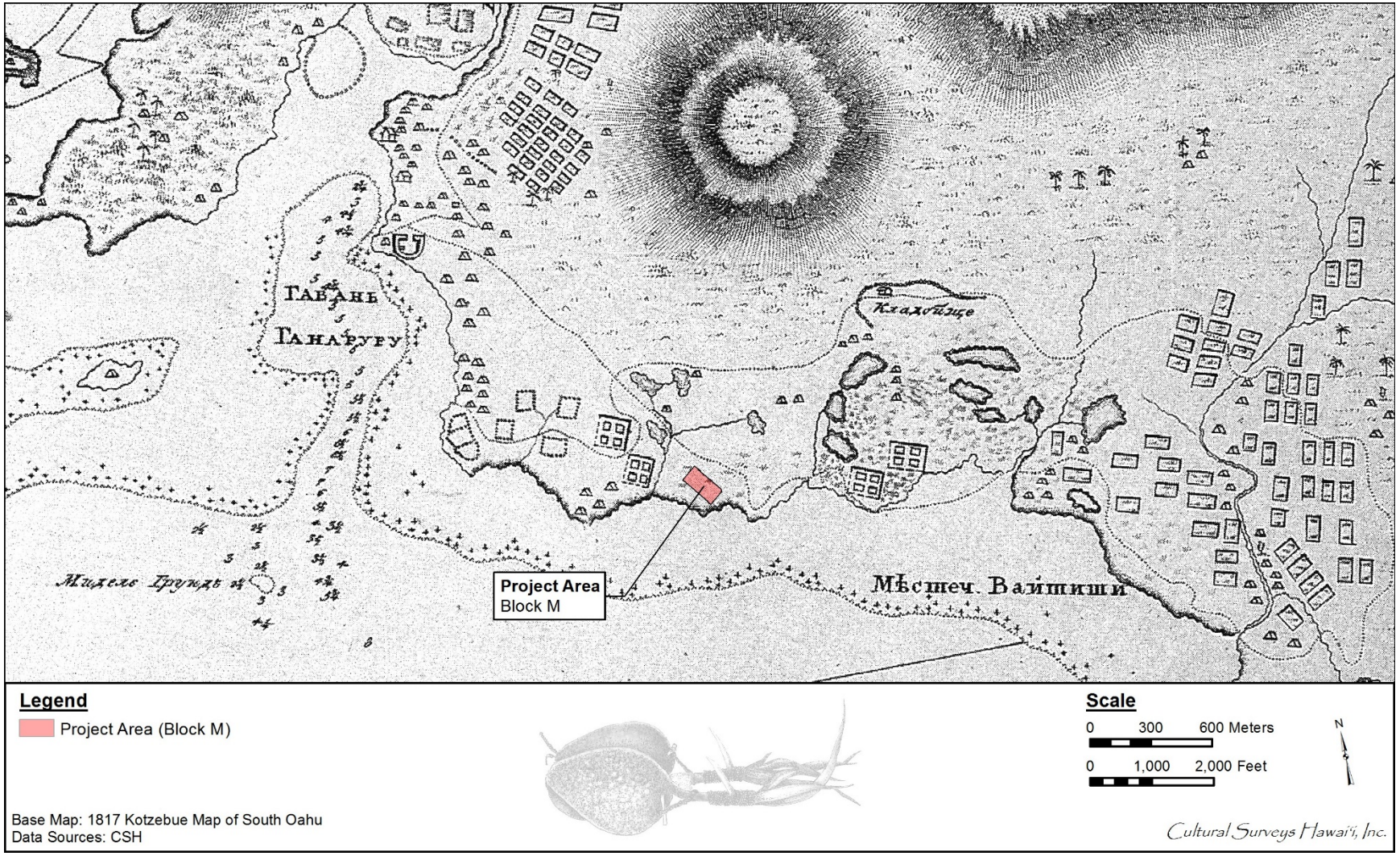


Figure 7. The 1817 map by Otto von Kotzebue of the Russian ship *Rurick*, shows taro *lo‘i*, fishponds and salt pans in Honolulu and Waikīkī; few habitations are depicted along much of the shoreline portions near the project area (map reprinted in Fitzpatrick 1986:48-49)

also include—at least for western sensibilities—the Kukuluāe‘o region. The barrenness of the Kukuluāe‘o area is illustrated in two sketches, one made in 1834 (Figure 8) when Kawaiaha‘o Church was still a long grass-thatched building and one made in 1853 (Figure 9) after the grass hut had been replaced by a large coral stone structure with a steeple. Between Kawaiaha‘o Church and the sea are only a few scattered huts along the shore and aligned along the inland trail (now covered by King Street). The project area would be *makai* and left (east) of the church along the shore. An 1887 photograph (Figure 10 and Figure 11) of the area also shows the marshy nature of the area, with only scattered houses near the ponds or near the shore *makai* of Kawaiaha‘o Church. The missionary families grazed their cows in the lands *makai* of the mission houses, possibly on lands within the project area (*Paradise of the Pacific* 1950:21).

2.2.2 Mid-Nineteenth Century and the Māhele

In 1845, the Board of Commissioners to Quiet Land Titles, also called the Land Commission, was established “for the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any landed property” (Chinen 1958:8). This led to the Māhele, the division of lands between the king of Hawaii, the *ali‘i*, and the common people, which introduced the concept of private property into Hawaiian society. In 1848, Kamehameha III divided the land into four divisions: certain lands to be reserved for himself and the royal house were known as Crown Lands; lands set aside to generate revenue for the government were known as Government Lands; lands claimed by *ali‘i* and their *konohiki* (supervisors) were called Konohiki Lands; and habitation and agricultural plots claimed by the common people were called *kuleana* (Chinen 1958:8-15). The common people presented their claim, several witnesses confirmed that the person lived on or used the land, the parcel was surveyed and the claimant was presented with the award.

The *‘ili* of Kukuluāe‘o (LCA 387) was awarded to the American Board of Commissioners for Foreign Missions (see Appendix B). Initially this land was associated with Punahou School in Makiki and Mānoa Valley, as Chief Boki gave the Punahou lands to Hiram Bingham, pastor of Kawaiaha‘o Church in 1829 (DeLeon 1978:3), as stated in the LCA testimony:

> The boundaries of that part which lies on the sea shore we cannot define so definitely, but presume there will be no difficulty in determining them as it is commonly known as pertaining to Punahou. This part embraces fishing grounds, coral flats & salt beds. [Land Commission Award 387]

In the Māhele, however, this sea land became “detached” from the Mānoa award and was instead given to the pastor of the Kawaiaha‘o Church, as noted in Punahou School history:

> There belonged in former times, as an appurtenance to the land known as Kapunahou, a valuable tract of salt-ponds, on the sea-side to the east-ward of Honolulu harbor, called Kukuluaeo, and including an area of seventy-seven acres. At the time of the settlement of land claims before the Land Commission, application was made for it by the successor of Mr. Bingham in the pastorate of Kawaiahao Church—he believing it to be a glebe land for the support of that church. His claim was resisted by the then Principal of Punahou School, but without

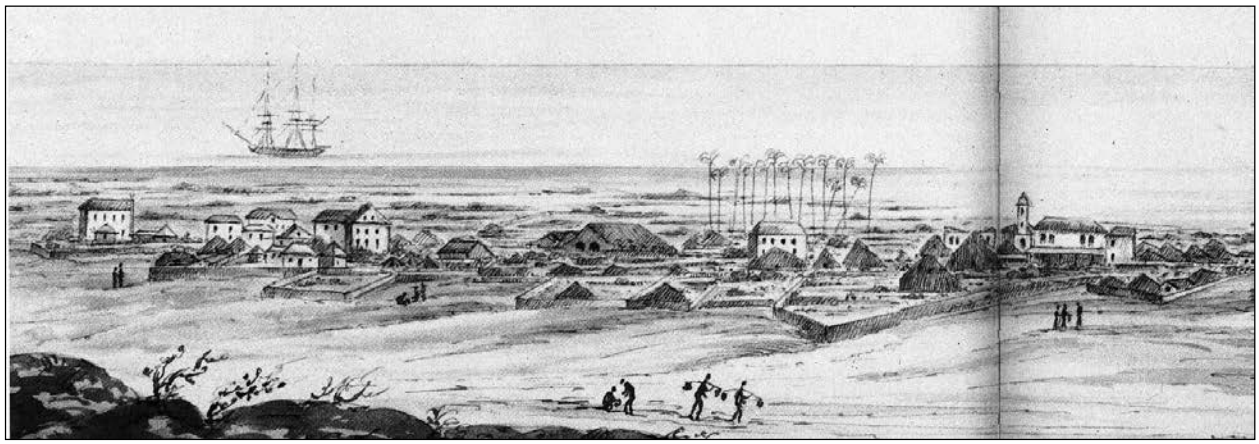


Figure 8. “Town of Honolulu: Island of Woahoo: Sandwich Islands,” portion of 1834 sketch by anonymous illustrator; the project area is west and south (left and back) of Kawaiaha‘o Church, the long thatched structure in the center of the sketch (original sketch at Bernice Pauahi Bishop Museum; reprinted in Grant 2000:64-65)

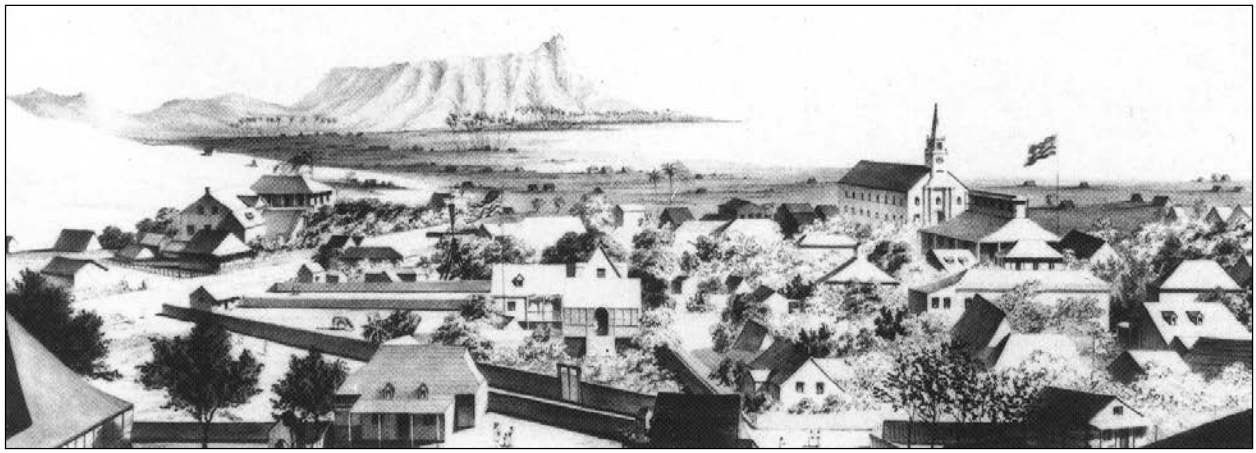


Figure 9. “View of Honolulu from the Catholic Church No. 2,” central panel of sketch by Paul Emmert ca. 1853; the project area is west and south (left and back) of the coral-block Kawaiaha‘o Church (structure with steeple completed in 1842) (original sketch at Hawaiian Historical Society; reprinted in Grant 2000:5)

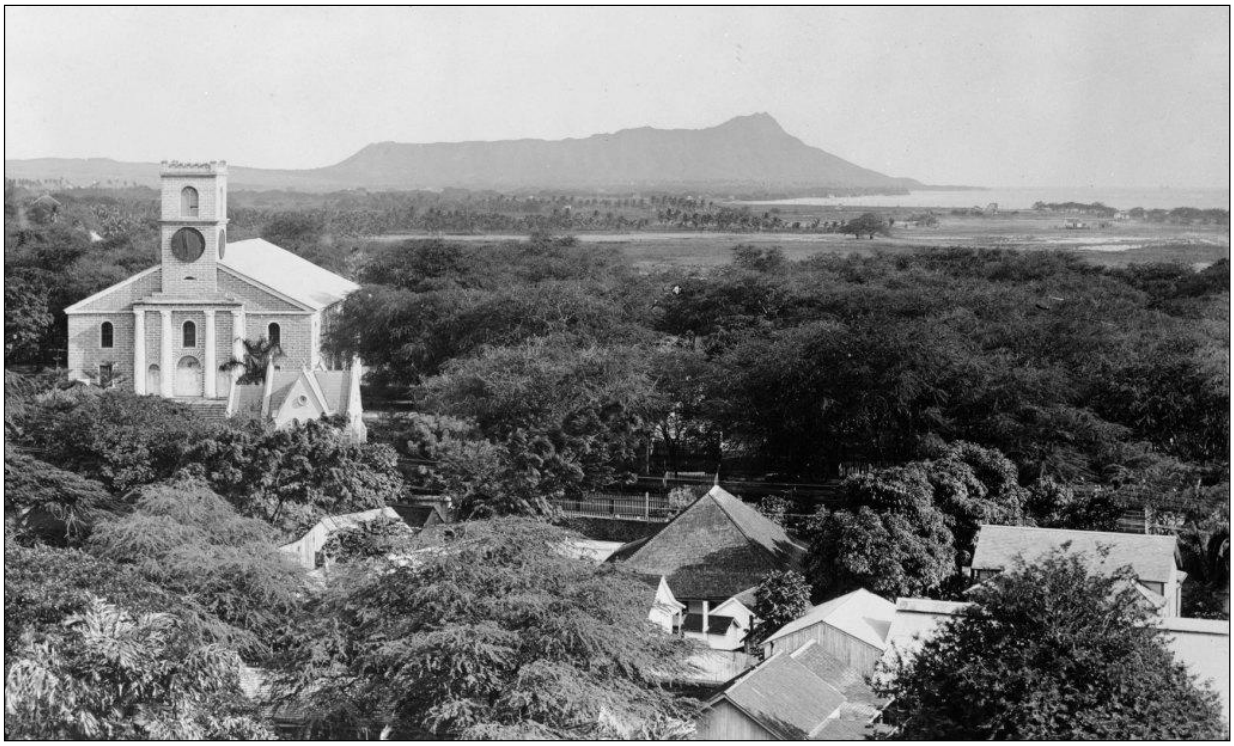


Figure 10. Kawaiaha‘o Church and Honuakaha Village, ca. 1887 photograph; the Ward’s House roof cupola, on the *mauka* end of Old Plantation, can be seen to the left of the church steeple; the project area is within the marshlands in the right upper background (Hawai‘i State Archives, Henry L. Chase Collection; reprinted in Stone 1983:84-85)

Figure 11. Kaka‘ako area, portion of a ca. 1887 photograph (see Figure 10 above), close-up of right upper background area, showing marshlands and scattered huts along the coast

> success, and a Royal Patent was issued, severing it from the Punahou estate, and awarding it to the applicant as his private property. [Punahou School and Oahu College 1866]

Within this larger award were eight *‘āpana* (lots) of five *kuleana* awards to commoners: LCA 1503 (*‘Āpana* 1, 2, and 3), LCA 1504, LCA 1903 (*‘Āpana* 2), LCA 9549, and LCA 10463 (*‘Āpana* 1 and 2). The 1884 map by Sereno Bishop shows the location of these LCA parcels, and other parcels outside the project area. This figure (Figure 12) is color-coded to match the description of lands indicated in the LCA testimonies, blue for fishponds, yellow for salt ponds or salt lands, and orange for house lots. As can be seen, the salt lands are mainly along the coast, the fishponds are usually located *mauka* of Queen Street, and the house lots are clustered around established roads, especially Queen and King Streets.

No LCA *kuleana* lots are within the project area. Two LCA claims are west of the Block M study parcel, LCA 1903 to Lolohi and LCA 10463, *‘Āpana* 1 and *‘Āpana* 2 to Napela (see Appendix B). In Lolohi’s claim, he mentions the parcel contained two salt beds, two *hooliu* (salt water drainage ditch), two *poho kai* (depression where salt is gathered), and one salt *kula* (dry field. The land was given to his father “when Haaliho had returned from Briton. Lolohi’s parents had received it during the lifetime of Kinau . . .” Kīnaʻu was the daughter of Kamehameha I and sister of Kamehameha III. She was the *kuhina nui* (generally analogous to a prime minister) to her brother from 1832 to his death in 1854 (Day 1984:78). Timothy Haʻalilio was the private secretary to Kamehameha III, who made a trip in 1842 to Washington, London, and Paris to get agreement on political independence for the Hawaiian Islands. He died in 1842 on the ship carrying his party back to Hawai‘i (Day 1984:47). Thus Lolohi’s family was given the land sometime between 1842 and 1854 (after Haʻalilio’s death and before Kamehameha III’s death).

LCA 10463 to Napela is for two lots, on which there were two ponds, a ditch, two deposits, a house site, and a salt land section in two pieces. Both *‘āpana* are shown on the 1884 Bishop map north and west of LCA 1903. The testimony indicates the house site was in *‘Āpana* 1, the easternmost parcel. The 1884 Bishop map has a small square at the northern border of the lot, which may represent the location of the house. Like Lolohi, Napela claimed the land was given to him in the time when Kīnaʻu was the *kahuna nui* of Hawai‘i, sometime between 1832 and 1848 (the year of the award).

2.2.3 Nineteenth Land Use in Kukuluāeʻo

2.2.3.1 Salt-Making

In the testimony for LCA 10463, salt lands, ditches, and deposits (probably related to salt) are mentioned. In the testimony for LCA 1903, four separate types of salt features are mentioned—the ponds near the shore that fill with salt water at high tide (*ālia*), the drains (*hoʻoliu*) where salt water is transferred to smaller clay-lined or leaf-lined channels, the natural depressions (or modified depressions) in the rocks along the shore where salt formed naturally (*poho kai*), and the salt *kula*, which was waste land, land that could probably not be used for agriculture as it was impregnated with salt. Lolohi did not live near his salt lands, but Pahiha, claimant of LCA 1504, located just to the north, did have a house near his fish pond and salt bed. The house was probably a simple grass hut, similar to those shown on an 1838 sketch entitled “Honolulu Salt Pans, Near Kakaako” and the one shown on an 1845 sketch of Kawaiahaʻo Church viewed from the “Old Salt

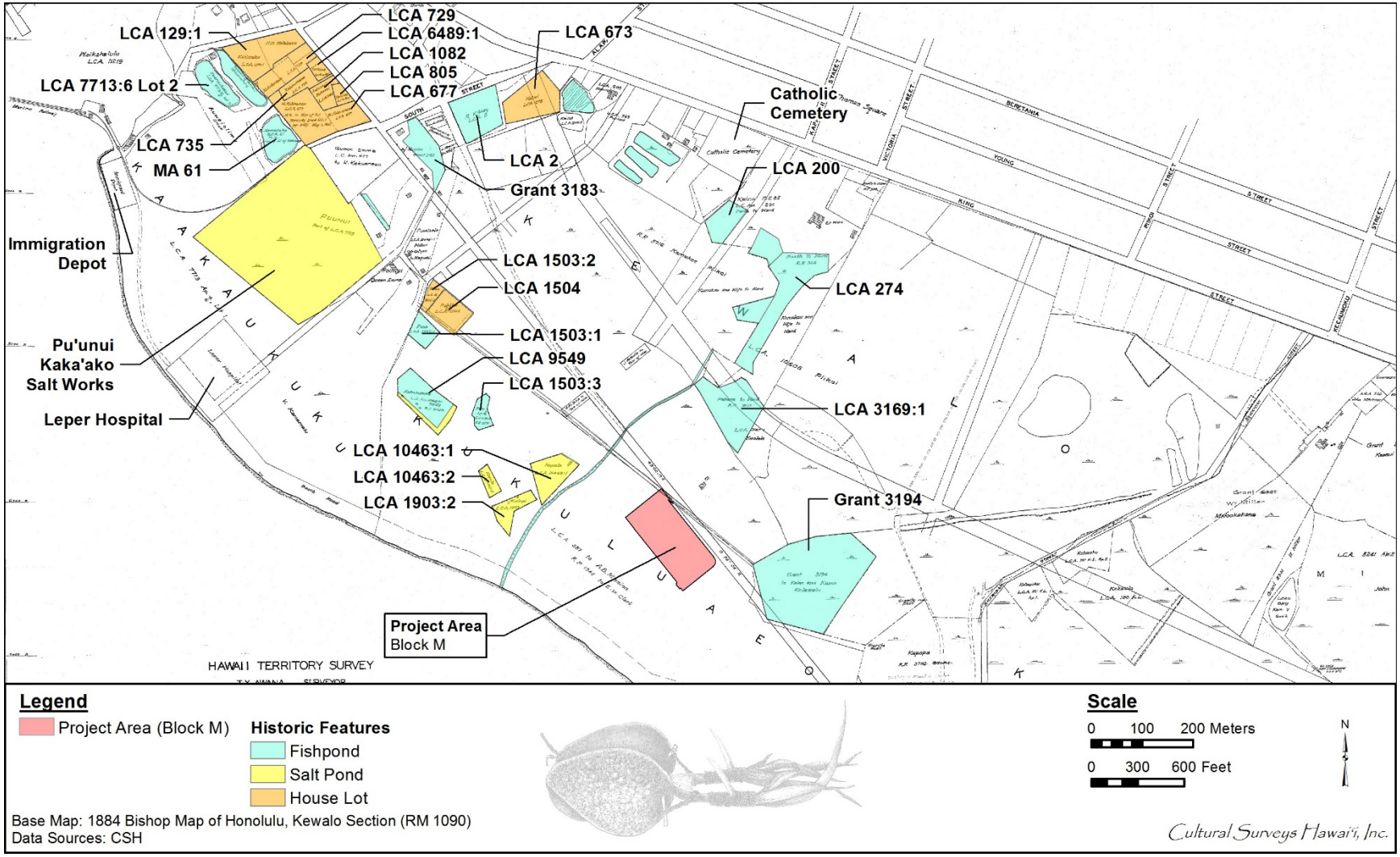


Figure 12. 1884 map of Honolulu, Kewalo Section, portion, by Sereno Bishop (Hawai‘i Land Survey Division, Registered Map. No. 1090), showing the locations of LCA parcels, fishponds, salt lands, and house lots surrounding the project area

Pans" (Figure 13 and Figure 14).

Salt was traditionally made by these methods before Western Contact for local use, but when Westerners began to land at the islands, salt became an important export commodity. In the next years after the discovery of the islands by Captain Cook in 1778, most visitors to the islands were British and American fur-traders, who stopped at Hawai‘i on their way to China. One reason for their visit was to stock up on food and water, but another purpose was to buy or trade for salt, which was used to cure seal and mammal pelts collected from the Northwest Coast.

During Kotzebue's visit in 1816 and 1817, he noted that "Salt and sandalwood were the chief items of export" (Thrum 1905:50).

> The journals of none mention the object of call other than for refreshments, though one, 3 some years later, records the scarcity and high price of salt at the several points touched at, with which to serve them in the curing of furs obtained on the coast. In all probability salt was the first article of export trade of the islands and an object, if not the object, of these pioneer fur-traders' call. [Thrum 1905:45]

In an article on Hawaiian salt works, Thomas Thrum (1924:112-117) discusses the large salt works at Ālia Pa‘akai (Salt Lake in Moanalua) and at Pu‘uloa on the western loch of Pearl Harbor. Kamakau (1961:409) reported "The king and Isaac of Pu‘uloa are getting rich by running the salt water into patches and trading salt with other islands." The salt was sent to Russian settlements in the Pacific Northwest, where it was used to pack salmon and other fish (Thrum 1924:115, 117). Thrum also mentions a salt works in Kaka‘ako.

> Honolulu had another salt-making section in early days, known as the Kakaako salt works, the property of Kamehameha IV, but leased to and conducted by E.O. Hall, and subsequently E.O. Hall & Son, until comparatively recent years. This enterprise was carried on very much after the ancient method of earth saltpans as described by Cook and Ellis. [Thrum 1924:116]

The Kaka‘ako Salt Works shown on historic maps did not extend to the Block M project area (Figure 15). This historic salt works consisted of grids of square salt evaporation pans, generally attended by Chinese workers.

The Chinese were involved in salt production, usually in concert with their management of fishponds. One son of a Chinese resident remembered (for ca. 1900) the Chinese form of salt production from salt pans bordering the sea, fed continually with seawater by the tides.

> Both the natural tides and the Chinese method of peddling a wooden wheel that transported water upward, helped to keep the salt beds damp with about three inches of water. After a few months, the senior Mau would drain off the remaining water and use a wooden rake with deep prongs to break up the salt. When the bed was dry a flat rake was used to flatten and smooth out the salt. Later it was raked into piles, packed in cloth bags and distributed. [Chong 1998:108]

2.2.3.2 The Ward Estate

The *mauka* portion of the Ward Estate (north of Queen Street) is within the *‘ili* of Kewalo, and was part of LCA 272 to Joseph Booth. Joseph Booth was an early English resident of the Hawaiian Islands who operated a saloon and hotel in Honolulu, known at the time of the Māhele

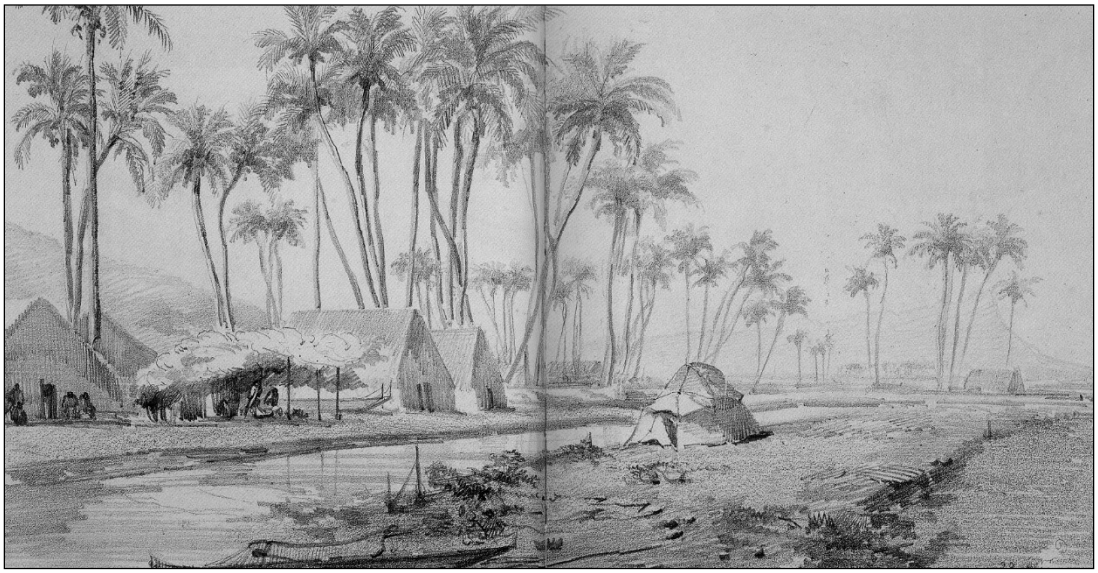


Figure 13. “Honolulu Salt Pan, near Kaka‘ako,” 1838 sketch drawn by a French visitor, Auguste Borget (original sketch at Peabody Essex Museum, Salem, Massachusetts; reprinted in Grant 2000:64-65)

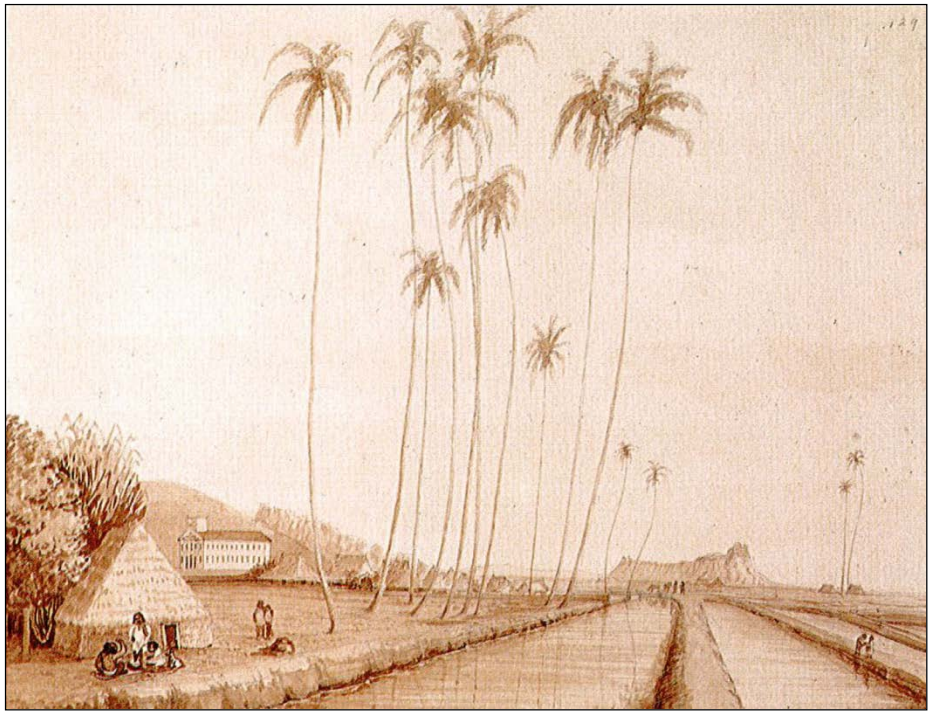


Figure 14. “Native Church [Kawaiaha‘o Church], Oahu, from the Old Salt Pans,” 1845 sketch drawn by John B. Dale, from the U.S. Exploring Expedition led by Lt. Charles Wilkes (J. Welles Henderson Collection, reprinted in Forbes 1992:126); the sketch is probably from the salt pans in Ka‘ākaukukui, west of the project area

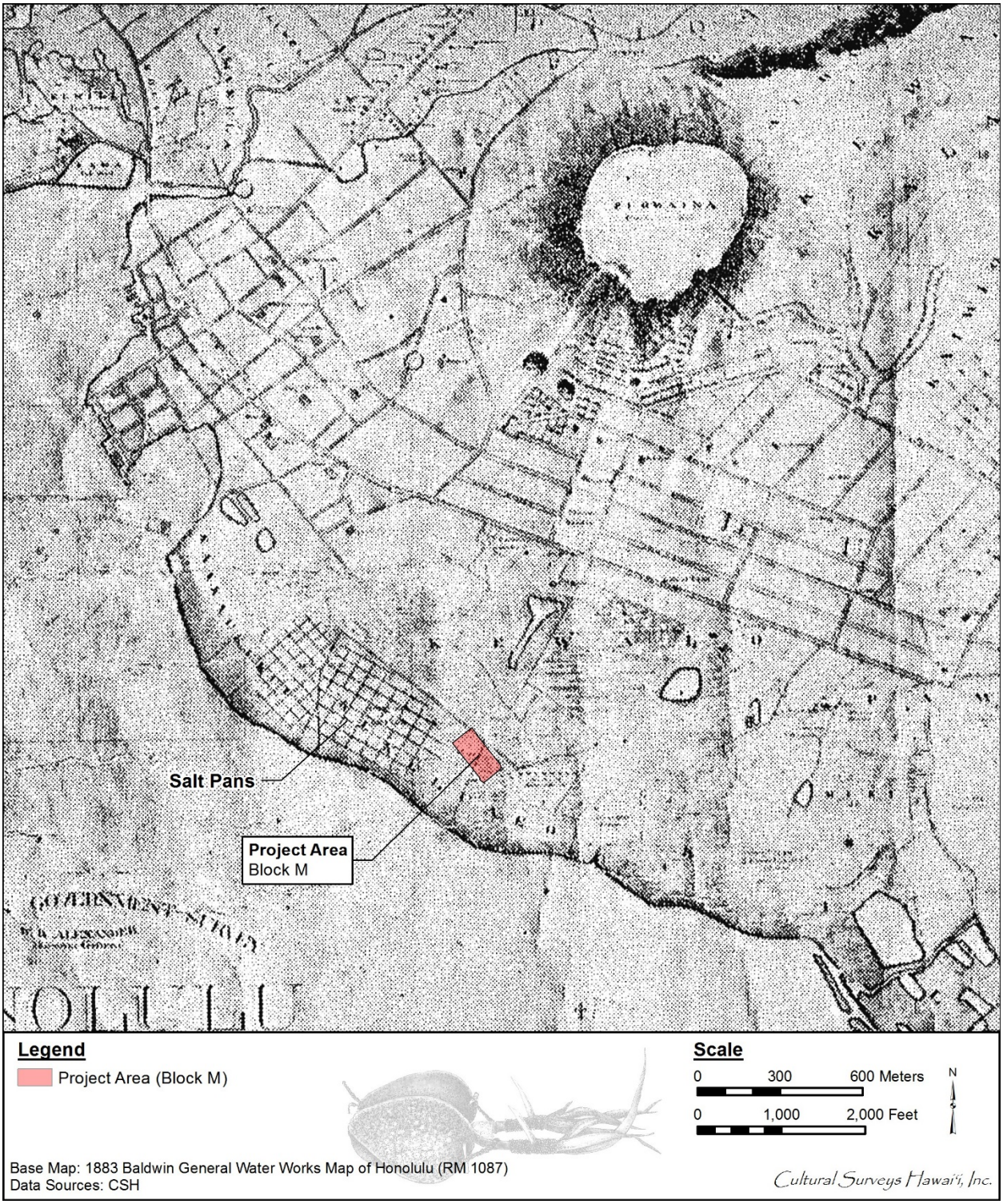


Figure 15. 1883 map of the Honolulu Water Works System by E.D. Baldwin (1883) (Hawai‘i Land Survey Division, Registered Map 1087); the grid symbol outside the project area represents salt pans

as the Eagle Tavern (Greer 1994:54). He was granted lands in downtown Honolulu (where the tavern was located), in Kewalo Uka (Pacific Heights area), in the *‘ili* of Kapuni, and in an area with “Three fish ponds, and a part of the plain near the road leading to Waikiki.” Little information on these three fishponds is given in the LCA testimony, but the Royal Patent No. 306 for these lands, mentions one known as “the large fishpond” or “long fishpond” (*loko ia nui*), which had two huts beside it. This pond would later be modified into the “lagoon” on the Ward estate.

Curtis Perry Ward, a native of Kentucky, came to the Hawaiian Islands in 1853, and soon established a livery and draying business, moving goods from the harbor to Honolulu town and loading goods at the docks for the whaling and shipping industries. In 1865, he married Victoria Robinson, who was descended from the Hawaiian *ali‘i* and early French and British residents (Hustace 2000:21-29). For his new family, Ward purchased at auction the 12-acre estate of Joseph Booth, Royal Patent 306 and additional contiguous lands in the Kō‘ula area in 1870. This constituted the *mauka* portion of the “Old Plantation” from Thomas Square on King Street to the *makai* border at Waimanu Street. A few years later (before 1875), Ward added to his property with the purchase of 77 acres and 3,000 ft of ocean frontage in the *‘ili* of Kukuluāe‘o, *makai* of Queen Street (Hustace 2000:37-38) (Figure 16). The Wards had a permanent easement for the *‘auwai* (ditch) that extended from the long fishpond to the sea through the Kukuluāe‘o section (Figure 17). *Makaloa* grass, used to make mats and hats, grew along this *‘auwai* and was one source of income for the family (Hustace 2000:7-55). The alignment of this ditch is shown on Figure 18; today it is between the alignments of Ward Avenue and Cummins Street.

Workers were hired to clear the fishponds and ditches, plant taro in the fishponds, fence in pastures for the horse, plant 6,000 coconut trees, plant *kiawe* trees for firewood, and restore the *kāhaka* (salt pans) near the shore (Hustace 2000:41). A house in the southern was built at the *mauka* end near King Street, and the fishponds were modified into a long “lagoon”. An article in the *Pacific Commercial Advertiser* reported:

> In taking a drive out on the Kulaokahua continuation of King street, attention is attracted to the premises just beyond the Catholic cemetery, the property of Mr. C. P. Ward. The lot consists of some thirty acres, and is thickly planted with algaroba and, in rows, there are some seven thousand thrifty young cocoanut trees. . . . The algarobas will certainly be valuable as firewood, and the cocoanuts alone will in a few years produce a handsome income. The property is well watered by means of pumps driven by windmills, there being an inexhaustible supply of water a few feet below the surface of the plains. [*Pacific Commercial Advertiser*, 4 September 1875:3]

Income from the 111-acre estate was also generated by leasing the rights to the Kukuluāe‘o fishery, which was part of the Kukuluāe‘o LCA 387 award. After the death of her husband in 1882, Victoria Ward derived much of her income from “eggs, bananas, firewood, *‘awa*, taro leaf, *makaloa* grass, chickens, fish, hay, pigs, salt, white sand, *mānienie* grass, hides, butter, squid, and horses” (Hustace 2000:47) collected from the estate. On this estate, Victoria Ward raised her seven daughters, Mary (Mrs. Ernest Hay Wodehouse), Keakealani (Mrs. Robert Booth), Annie (Mrs. Wade Armstrong), Mele Elizabeth (Mrs. Frank Hustace, Sr.), and three unmarried daughters, Kathleen, Lucy, and Kulumanu Ward.

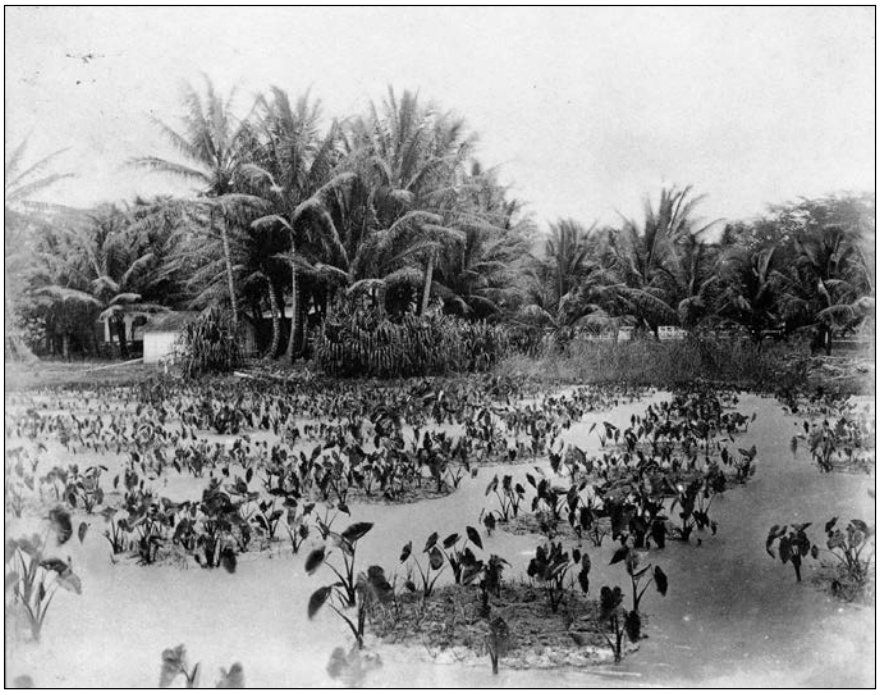


Figure 16. The Kukuluāe‘o portion of the Ward Estate, nineteenth century photograph (reprinted in Hustace 2000:49)

Figure 17. The Old Plantation *‘auwai*, extending from the sea to the *mauka* “lagoon” of the Ward Estate, nineteenth century photograph, view north toward Punchbowl (Hustace 2000:51)

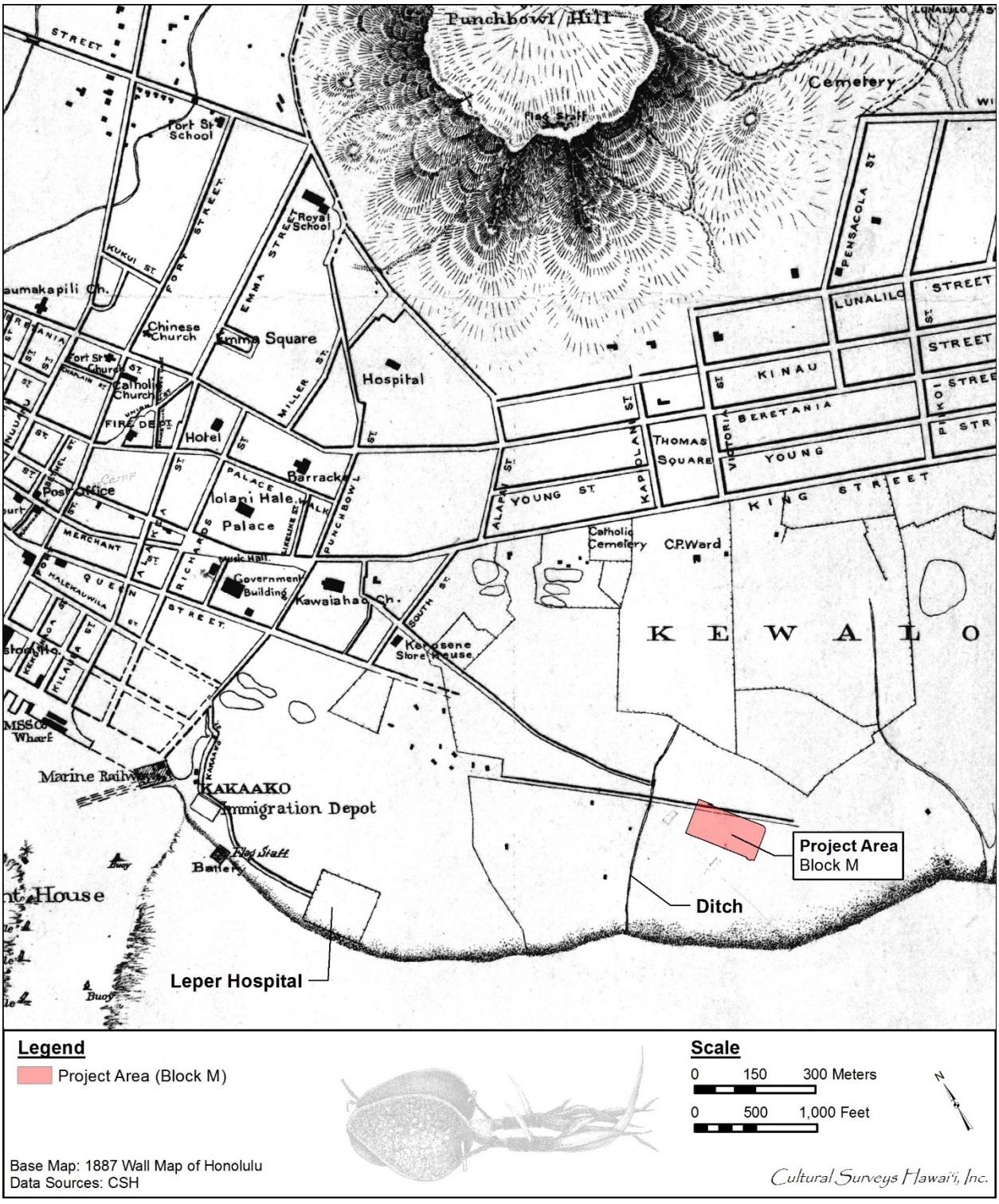


Figure 18. 1887 map of Honolulu (portion), by W.A. Wall (copy at Library of Congress, Geography and Map Division), showing the project area location

By 1901, most of the fishponds and salt pans *makai* of Queen Street were reported as abandoned. In that year, the Hawaii First Legislature Assembly (1901:185) proposed to build a ditch to drain away the "foul and filthy water that overflows that district at the present time."

> The district makai of King St. and the Catholic Cemetery, Ewa of Mrs. Ward's (the Old Plantation), mauka of Clayton St., and Waikiki of the land from King St., leading to the Hoomananaauao Church, consists of six large abandoned fish ponds and a large number of smaller ones, all in filthy condition, fed by springs and flowing into Peck's ditches. Just makai of these ponds, at the end of Clayton street, next to Mr. Ward's, is Peck's place. An artesian well flushing the wash houses flows into two foul ditches, thence to the big pond which is Waikiki of what used to be Cyclomere and next to Mrs. Ward's line [ditch] extending down to Waimanu St.
>
> The rear portion of Mrs. Ward's property down to Waimanu St. used to be fish ponds all connecting to the sea by a ditch which is fed by an artesian well. These ponds, with the exception of three, are abandoned. [Hawaii First Legislature Assembly 1901:185]

W.A. Wall's map shows the Ward property including the ditch (see Figure 18). In 1930, Victoria Ward incorporated Victoria Ward, Limited to manage the estate. In 1957, the City and County of Honolulu purchased the *mauka* portion of the estate to construct the new Blaisdell Civic Center (Hustace 2000:67, 77).

2.2.4 Twentieth Century Land Use

2.2.4.1 Trash Burning and the Kaka'ako and Kewalo Incinerators

In the early years of garbage disposal, all trash was dumped into low-lying ground or landfills, or burned in an open area. To reduce the volume of waste, plans were made to build incinerators, where "putrescible" (mainly animal and fish waste) trash could be burned in incinerators, while non-animal material, called "combustible" waste was still disposed of in the earlier method (Young 2005). Thomas Thrum reported on the first incinerator in the Kaka‘ako area in 1905:

> Early in the year was completed the long projected garbage crematory for the disposal, daily, of the city's refuse by a patent and sanitary process. It is located on the shore of Kakaako, adjoining the sewer pumping station; is two stories in height and built of brick. [Thrum 1906:177]
>
> The dredging of Honolulu harbor and its channel is completed as far as planned for the present, and excavations for the *Alakea* and *Kinau* slips finished, the material therefrom being used to fill in a large area of Kakaako and the flats in the vicinity of the sewer pumping station and garbage crematory. The amount of material removed by the Federal dredging was a million and a half cubic yards. [Thrum 1907:148–149]

For the incinerator, Thrum noted:

> The new station is built on piles on reclaimed land that is being filled in from the coral dredgings that is going on, and is gradually taking on a tropical appearance

> . . . Adjoining its premises on the mauka side is the new building designed for the Planters’s Association for their labor bureau. [Thrum 1907:148–149]

In the early 1920s, trash was burned in the open at the Ala Moana Dump (landfill area *makai* of Ala Moana Boulevard) (Figure 19). The Hawaii Public Works recommended that an incinerator should be built for the burning of “putrescible” waste. The Kewalo Incinerator (Incinerator Number 1) was built in the Italianate-style, at the intersection of Ahui and Olomehana Streets in 1930 by the City and County of Honolulu. The facility was built to dispose of waste from the Ala Moana dump and use the ash to fill the seawall in Ka‘ākaukukui in the late 1940s to create 29 additional acres of land, adjacent to Fort Armstrong (Figure 20). It ceased operations in 1945 when a new incinerator was built on Ohe Street. The second incinerator, built on Ohe Street in 1946–1948 was used for waste burning until 1997 (Mason Architects 2002).

2.2.4.2 Kaka’ako Reclamation

The first efforts to deepen Honolulu Harbor were made in the 1840s. The idea to use this dredged material, composed of sand and crushed coral, to fill in low-lying lands, was quickly adopted. Between 1857 and 1870, the “Esplanade” between Fort and Alakea streets was created on 22 acres of filled-in former reef and tideland. By 1874, Sand (Quarantine) Island, site of the first immigration station, had been created over “reclaimed” land on reefs (Hawaii Department of Transportation, Harbors Division 2007:3).

By the 1880s, filling-in of the mud flats, marshes, salt ponds in the Kaka‘ako and Kewalo area had begun. This filling was pushed by three separate but overlapping improvement justifications. The first directive or justification was for the construction of new roads and raising the grade of older roads so improvements would not be washed away by flooding during heavy rains. A report by the Hawaii Board of Health (1908) noted:

> I beg to call attention to the built-up section of Kewalo, ‘Kaka‘ako,’ where extensive street improvements, filling and grading have been done. This, no doubt, is greatly appreciated and desirable to the property owners of that locality, but from a sanitary point of view is dangerous, inasmuch as no provision has been made to drain the improved section, on which have been erected neat cottages occupied for the greater part by Hawaiian and Portuguese families, now being from one to three feet below the street surface, and which will be entirely flooded during the rainy season. Unless this is remedied this locality will be susceptible to an outbreak [of cholera] such as we experienced in the past. [Hawaii Board of Health 1908:80]

As mentioned in the above section, the justification most frequently cited was public health and sanitation, the desire to clean up rivers and ponds that were reservoirs for diseases such as cholera and that acted as breeding places for rats and mosquitoes. Thus as early as 1902, it is reported that:

> The Board [of Health] has paid a great deal of attention to low-lying stagnant ponds in different parts of the city, and has condemned a number of them. The Superintendent of Public Works has given great assistance to seeing that the ponds condemned by the Board are filled. In September a pond on South Street was condemned as deleterious to the public health. [Hawaii Board of Health 1902:80]

The first areas to be filled were those closest to Honolulu town, then areas moving outwards to Kaka‘ako (Griffin et al. 1987:13). The first fill material may have been set down for the

Figure 19. Open-air burning of trash in the area between Kewalo Basin and Ala Moana Park, 1921 photograph (Hill 1921, reprinted in Scott 1968:578)

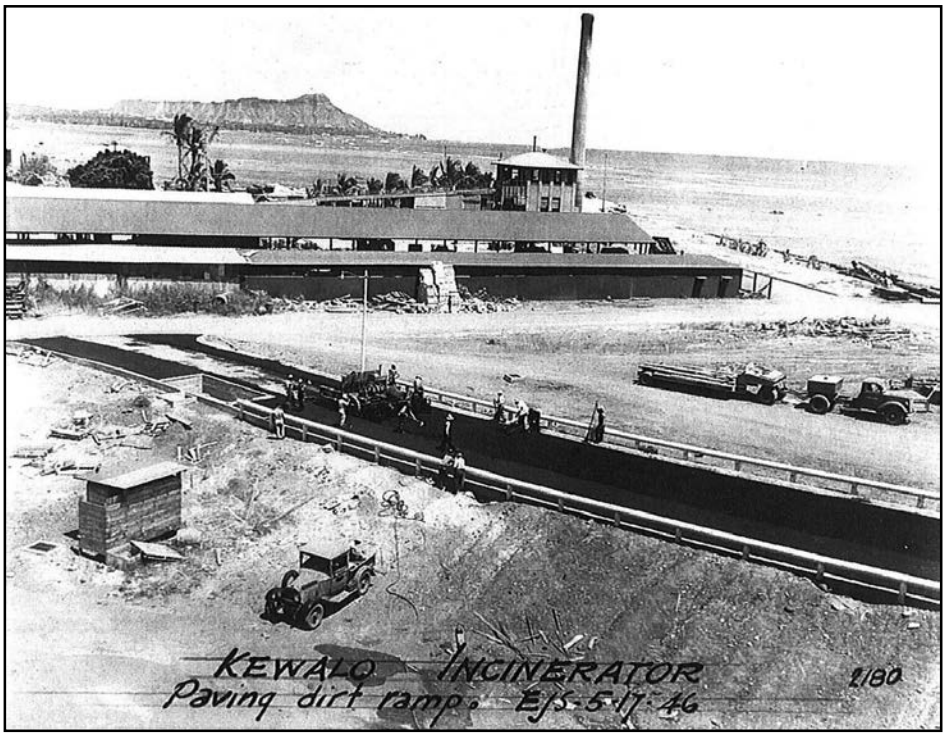


Figure 20. 1946 photograph of the Kewalo Incinerator No. 1, west side of Kewalo Harbor (Mason Architects 2002)

Kaka‘ako Leper Branch Hospital (between Coral and Keawe Streets), which had been built on a salt marsh. Laborers were hired to “haul in wagonloads of rubble and earth to fill up that end of the marsh” (Hanley and Bushnell 1980:113). In 1903, five more lots in Kewalo, on Laniwai, Queen, and Cooke Streets, were condemned and order to be filled (Hawaii Board of Health 1903:6).

A main concern in this area was the Kaka‘ako Ditch, which originated from the large fishponds in the *mauka* portion of the Ward Estate and extended to the sea. A Hawai‘i legislature report of 1901 asked for an appropriation to build a new drainage ditch through the Kewalo district to address problems with older ditches:

> The district makai of King St. and the Catholic Cemetery, Ewa of Mrs. Ward’s (the Old Plantation) . . . consists of six large abandoned fish ponds and a large number of smaller ones, all in filthy condition, fed by springs and flowing into Peck’s ditches. . . . The rear portion of Mrs. Ward’s property down to Waimanu St. used to be fish ponds all connecting to the sea by a ditch which is fed by an artesian well. These ponds, with the exception of three, are abandoned.
>
> When Desky opened Kewalo for settlement he dug a ditch from the pond on Peck’s place along Waimanu St. to Mrs. Ward’s ditch, and drained all the above described property. A law suit ensued, as the foul water drove away the fish, and the connecting ditch was torn out . . . and a dyke wall was built between Mr. Ward’s and Peck’s.
>
> The result was that as the Kakaako ditch, at the point of juncture with Peck’s ditch, was too high, the water in Peck’s ditch rose and backed up . . . and as it must necessarily go somewhere, it overflowed its banks and at present Ward avenue from end to end is a big pond with no footing for pedestrians, and a carriage driven through the other day sank to the body of the same in water and mud. [Hawaii First Legislative Assembly 1901:186]

Although public health and safety were prominently cited, according to Nakamura (1979), the main desire (and third justification) to fill in Honolulu, Kewalo, and then Waikīkī lands was to provide more room for residential subdivisions, industrial areas, and finally tourist resorts. In the early part of the twentieth century, Kaka‘ako was becoming a prime spot for large industrial complexes, such as iron works, lumber yards, and draying companies, which needed large spaces for their stables, feed lots, and wagon sheds. In 1900 (Thrum 1901:172), the Honolulu Iron Works, which produced most of the large equipment for the Hawaiian plantation sugar mills, moved from their old location at Queen and Merchant Streets near downtown Honolulu to the shore at Kaka‘ako, on land that had been filled from dredged material during the deepening of Honolulu Harbor. Other businesses soon followed. Thrum (1902) noted:

> The Union Feed Co. is another concern whose business has outgrown the limits of its old location, corner of Queen and Edinburgh streets. Like the Iron Works Co. they have secured spacious premises at Kakaako, erecting buildings specially adapted to the needs of their extensive business at the corner of Ala Moana (Ocean Road) and South Street. [Thrum 1902:168]

Private enterprises were not the only new occupants of Kaka‘ako. A sewer pumping station, an immigrant station, and a garbage incinerator were also built on “reclaimed land.” The new

immigration station had seven large rooms for dormitories, surrounded by a breezy, open, *lanai*, where immigrant workers would stay while waiting for clearance to go to their new work places on the sugar plantations. Adjacent to the dormitory was a hospital, which was used to check the new immigrants for any “loathsome or dangerous contagious disease” (Hawaii Governor 1905:77). The hospital was also used during epidemics to isolate contagious patients, suffering from diseases such as smallpox, cholera, or plague.

In 1900, a pond surrounded by a bicycle racing track, called the Cyclomere (built in 1897), in the Kewalo area was filled. This was located on the *makai* side of Kapi‘olani Avenue between Cooke Street and Ward Avenue. In 1904, the area around South Street from King to Queen Streets was filled in. The Hawaii Department of Public Works (1904:7) reported “considerable filling [was] required” for the extension of Queen Street, from South Street to Ward Avenue, which would “greatly relieve the district of Kewalo in the wet season.”

2.2.4.3 Kewalo Reclamation Project

Although the Board of Health could condemn a property and the Department of Public Works could then fill in the land, the process was rather arbitrary and piecemeal. In 1910, after an epidemic of bubonic plague, the Board of Health condemned a large section of Kewalo, consisting of 140 land parcels, (including areas once known as Kukuluāe‘o and Ka‘ākaukukui), which had numerous ponds (Hawai‘i Department of Public Works 1914:196).

In 1914, the entire

> . . . locality bounded by King street, Ward avenue, Ala Moana and South street, comprising a total area of about two hundred acres, had been found by the board of health of the Territory to be deleterious to the public health in consequence of being low and below ‘the established grades of the street nearest thereto’ and at times covered or partly covered by water and improperly drained and incapable by reasonable expenditure of effectual drainage, and that said lands were in an insanitary and dangerous condition. [Hawaii Reports 1915:329]

The superintendent then sent a letter to all of the property owners, informing them that they must fill in the lands to the grade of the street level within sixty days. Only a few of the land owners complied, filling their land with a variety of materials. Most of the land owners did not comply with this notice, and in 1912 the bid to fill in the land was given to Lord-Young Engineering Company to fill in the land with “sand, coral and material dredged from the harbor or reef and the depositing of the same upon the land by the hydraulic method” (Hawaii Reports 1915:331). The recalcitrant land owners sued to stop the work, and in the suit, the method of hydraulic filling is described:

> By this [hydraulic] method the material dredged is carried in suspension or by the influence of water which is forced through large pipes and laid upon the lands and intervening streets, and afterwards is distributed and leveled, the water having drained off through ditches provided for the purpose. The work is done in large sections around which bulkheads have been constructed. A section can be filled in about thirty days, the dredger working about fifteen hours per day. And in about two months after a section has been filled the ground will have dried out so as to be fit for use as before. . . . The character of the material varies from very fine sand to coarse bits of coral . . .

> It appears in evidence that though the method employed the finest of the material which is carried upon the land settles when the water which transports it becomes quiet and as the water runs off a sludge or mud remains which forms a strata more or less impervious to water. This strata, however, is covered by the coarser and more porous material. . . . it appears that by mixing in to a depth of a few inches ordinary soil small plants will grow without difficulty. . . . The character of the locality must be considered. It is not adapted to agriculture, but is suited more particularly to such business purposes as it is now partly used for, such as stables, laundries, warehouses, mills, etc., and for cottages with small yards for the accommodation of laborers engaged in connection therewith. Upon the whole, we are of the opinion that the material proposed to be used in the fill-in of the lands of the complainants is not of a character as should be held to be improper for any of the reasons urged. [Hawaii Reports 1914:351]

The first land to be filled in was the portion of the Ward Estate Kukuluāe‘o property west of Ward Avenue, which was completely filled in by June 1913. In July “25,000 cubic yards of sand and ground-up coral were deposited on the Bishop Estate in the vicinity of Ala Moana and Keawe street, the reason for shifting operations to this part of the district being that the Hawaiian Sugar Planter’s Association had erected a reinforced concrete building there and wished to have the lot brought to grade” (Hawaii Department of Public Works 1914:198). By August, the rest of the Ward Kukuluāe‘o lands west of Ward Avenue had been completely filled and by February 1914, all of the land from South Street to Ward Street, and from Ala Moana to Queen Street had been filled.

Legal proceedings in 1914 did manage to shut down operations planned for the area from Ward Street to Waikīkī but the filling in was eventually completed (Thrum 1916:159-160). This land was mainly owned by the Bishop Estate, which leased the land to small farmers growing taro and rice and raising ducks in the ponds. In 1916, the Bishop Estate announced that as soon as their present tenant leases expired, they planned to fill the lands and divide them into residence and business lots (Larrison 1917:148-149). In 1919, a portion of the coastal section of the Bishop Estate lands was secured by the government in order to expand Kewalo Basin (Thrum 1920:148).

2.2.4.4 Kewalo Basin Dredging

Prior to dredging, Kewalo Basin was a natural deep pocket in the reef seaward of Ala Moana Boulevard between Ward Avenue and Kamake‘e Street. It had been used as a canoe landing in pre-Contact times. In 1919, the Hawai‘i Government appropriated $130,000 to improve the small harbor of Kewalo for the aim of “harbor extension in that it will be made to serve the fishing and other small craft, to the relief of Honolulu harbor proper” (Thrum 1920:147). As the area chosen for the harbor area was adjacent to several lumber yards, the basin was initially made to provide docking for lumber schooners, but by the time the wharf was completed in 1926, this import business had faded, so the harbor was used mainly by commercial fishermen. The dredged material from the basin was used to fill a portion of the Bishop Estate on the western edge of Waikīkī and some of the Ward Estate in the coastal area east of Ward Avenue (U. S. Department of Interior 1920:52). The new basin and the coral fill, used to fill inland areas and make new land offshore, can be seen in a 1933 oblique aerial photograph of Kaka‘ako and Waikīkī (Figure 21). In 1941, the basin was dredged and expanded to its current 55 acres. In 1955, dredged material was placed

Figure 21. Honolulu and Waikīkī from Fort Armstrong (lower right) to Diamond Head, 1933 oblique aerial photograph (Hawai‘i State Archives); new lands of coral fill are shown as white patches in inland areas, along Kapi‘olani Boulevard, and offshore for the new Ala Moana Park; Kewalo Basin is at the western (lower) end of the offshore fill area

along the *makai* side to form an 8-acre land section protected by a revetment, now part of the Kewalo Basin Park (Kewalo Basin Harbor 2013).

2.2.4.5 Waikiki Reclamation Project

It was during the 1920s that southeast O’ahu would be transformed when the construction of the Ala Wai Drainage Canal—begun in 1921 and completed eight years later—resulted in the draining and filling in of the remaining ponds and irrigated fields of Honolulu and Waikīkī. The canal was one element of a plan to urbanize Waikīkī and the surrounding districts, first conceived in 1906. Dredging for the Ala Wai Canal began in 1921 and was completed seven years later. The final result was a “canal three miles long, with an average depth of twenty-five feet and a breadth of two hundred fifty feet” (*Honolulu Advertiser*, 17 October 1928:2:16).

The land surface of modern Honolulu and Waikīkī is situated on the result of this decade long dredging and fill project of which the creation of the Ala Wai Canal was part. In Nakamura’s (1979:113) *The Story of Waikīkī and the Reclamation Project*, he writes that this land “reclamation” program, under the subterfuge of “drainage” and “sanitation,” changed the ecology of Waikīkī from a once viable and important agriculture and aquaculture center. Many of the original property owners lost their land or had serious damage to their property as a result of the reclamation activities and/or the costly expense for the mandatory filling in of their properties.

2.2.5 Twentieth Century Commercial and Residential Development

Subsequent maps and aerial photographs from 1897 to 1982 (Figure 22 through Figure 32) show the future development of the Kukuluāeʻo area in a grid of streets extending from Honolulu town towards Waikīkī. Other maps and documents generated during the last decades of the nineteenth century and first decades of the twentieth century reveal the disappearance of the traditional Hawaiian landscape of Kukuluāeʻo, including the conversion of taro *loʻi* to rice fields.

The 1884 Bishop map (see Figure 5) shows the nascent traces of the future development in the grid of roads stretching *mauka* of the project area. Kakaʻako was considered outside the Honolulu town boundary and was used in the mid- to late nineteenth century as a place for cemeteries, burial grounds, and for the quarantine of contagious patients. Then in the beginning of the twentieth century, the area was used as a place for sewage treatment and garbage burning, finally becoming an area for cheap housing, and commercial industries (Griffin et al. 1987:13). Other maps, photographs, and documents generated from the last decades of the nineteenth century up to the present reveal further characteristics of the original character of the Kewalo lands and the disappearance of that landscape.

An 1897 map (Figure 22) by M.D. Monsarrat shows Thomas Square and the Old Plantation, and makes evident the urbanization of the landscape of Honolulu that had taken place near the end of the nineteenth century. The map clearly displays the development occurring *mauka* and ‘Ewa (westward) of the project area, and the “arm” of streets projecting from downtown Honolulu into Kakaʻako and Kewalo. It is on this map that Kamakeʻe Street first appears, running from Queen Street and dead-ending *mauka* of Waimanu Street towards where Kapiʻolani Boulevard would eventually be constructed. A large portion of Kakaʻako, however, remains open and the map reveals that the area adjacent (east) of the Old Plantation and *mauka* of the project area has become “Rice Fields.” The 1897 map shows the Cyclomere, a pond surround by a bicycle racing track in the Kewalo area. This was located on the *makai* side of Kapiʻolani Avenue between Cooke Street and Ward Avenue.

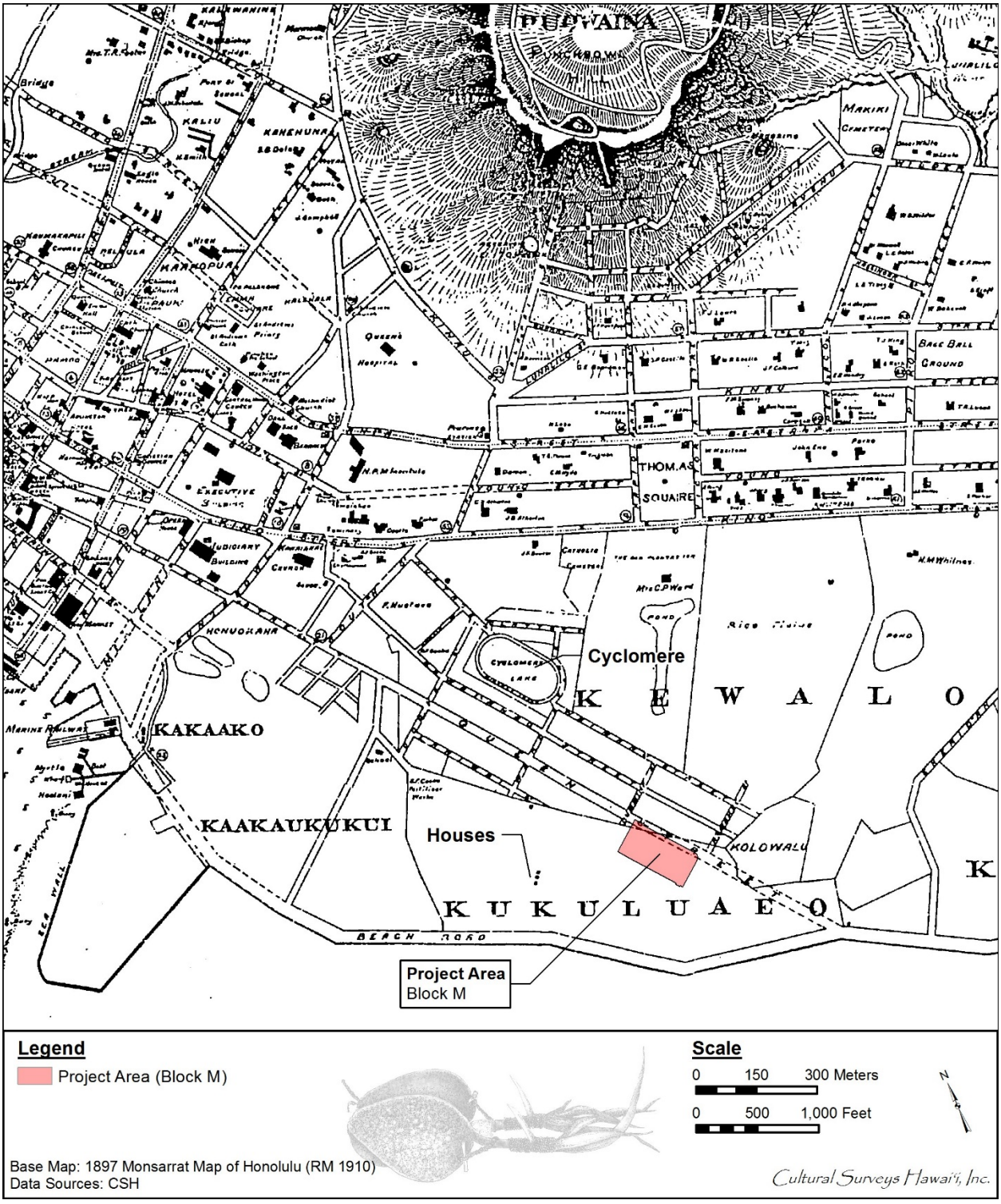


Figure 22. 1897 map of Honolulu by M.D. Monsarrat (1897) (Hawai‘i Land Survey Division, Registered Map 1910), showing the location of the project area; the map also shows the location of the “Cyclomere”

Figure 23. 1903-1909 (published 1917) U.S. Engineer’s map of O‘ahu (portion) depicting Kaka‘ako; many ponds, including Kolowalu and the Ward Estate “Long Lagoon” are still open and unfilled at the eastern terminus of the northwest-southeast aligned Queen Street

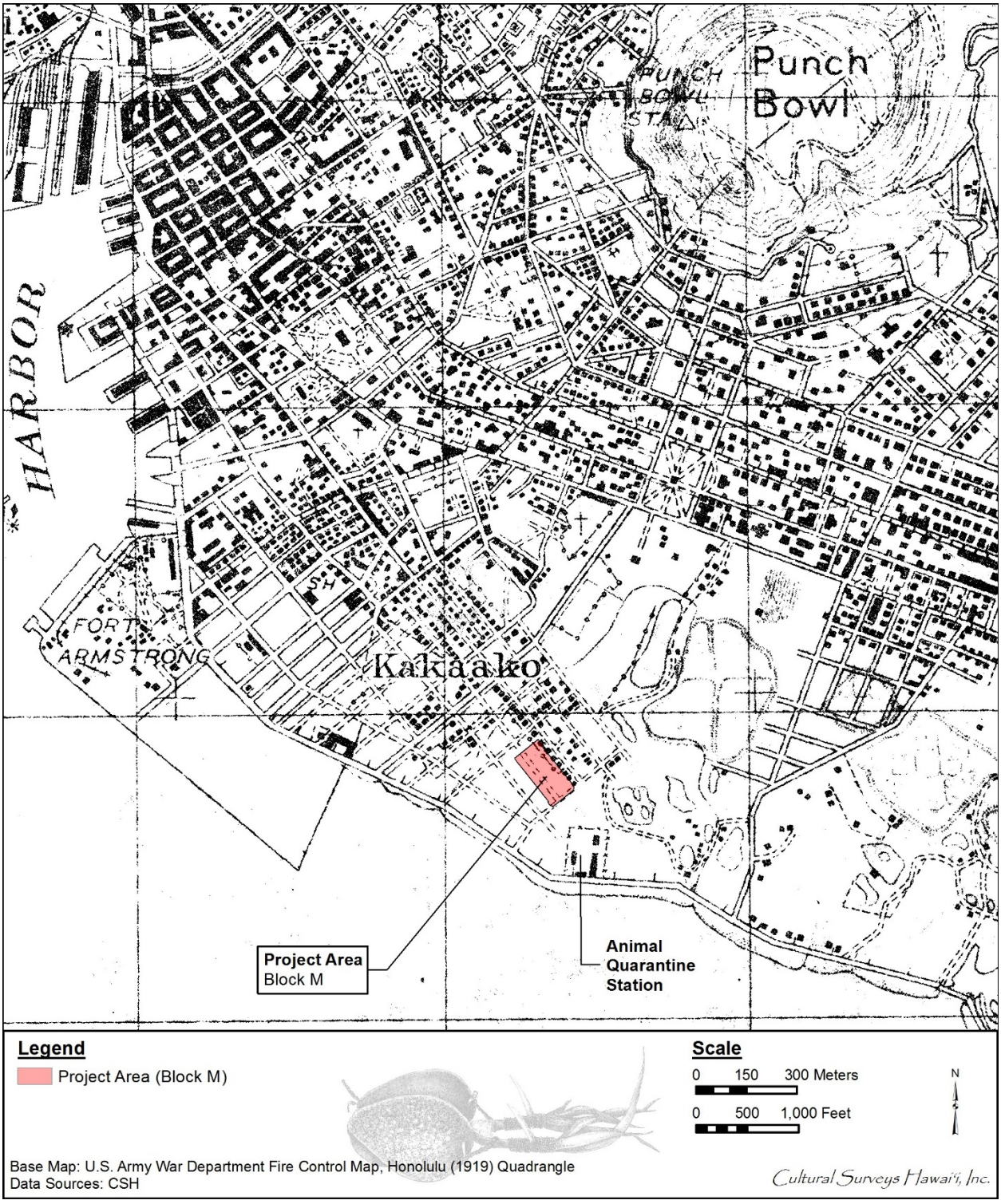


Figure 24. 1919 U.S. Army War Department Fire Control map of O‘ahu, Honolulu Quadrangle, showing the location of the project area within a grid of streets; solid lines denote paved streets, while dotted lines represent unpaved streets or planned streets

Figure 25. 1927 USGS aerial photograph of the Kaka‘ako area, showing a single residence within the northern corner of Block M (USGS; mosaic of photograph sheets from Hawai‘i Coastal Geology Group)

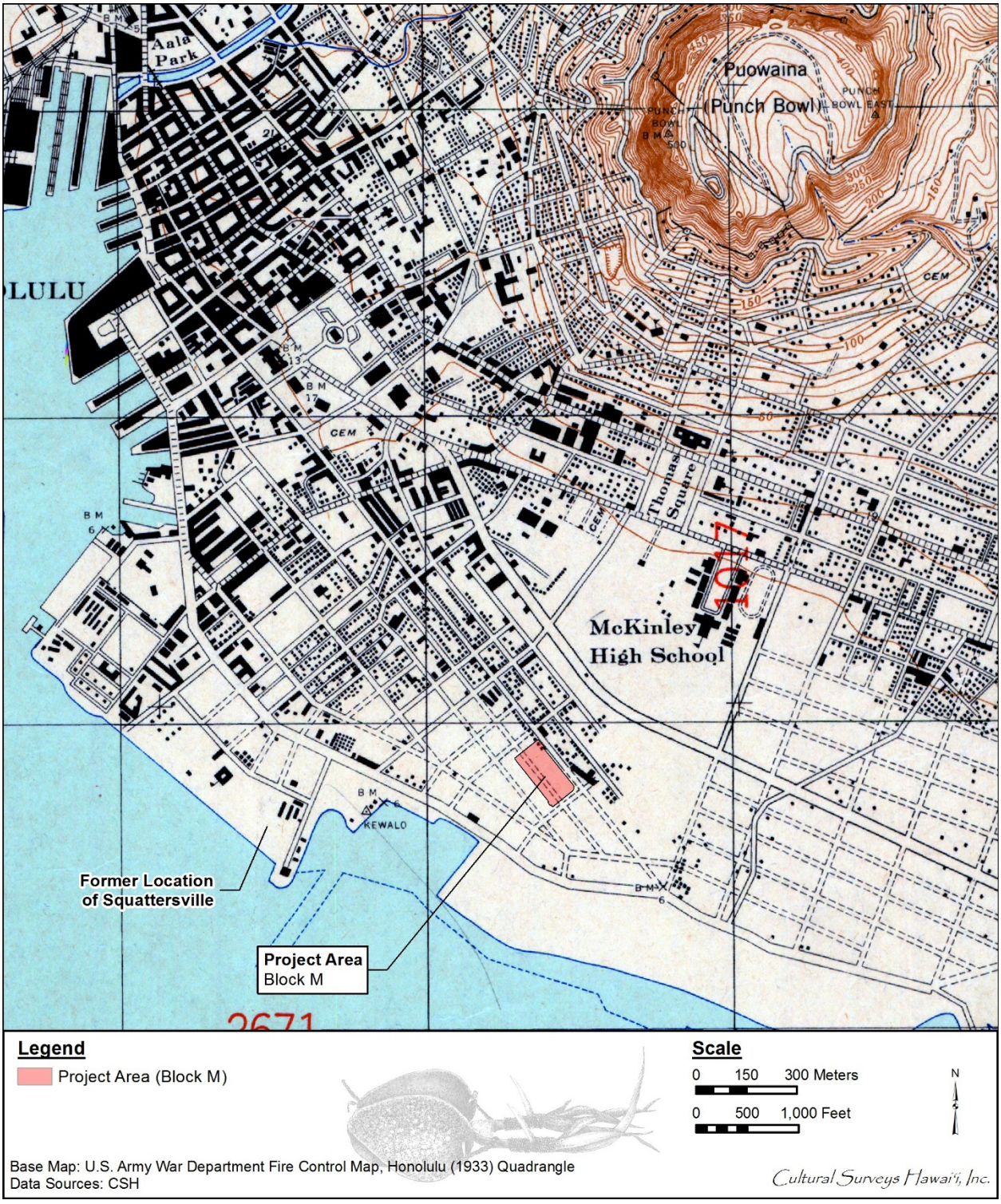


Figure 26. 1927-28 (published 1933) U.S. Army War Department Fire Control map of O‘ahu, Honolulu Quadrangle, showing the project area with grid of streets; note the former location of Squattersville, adjacent to Kewalo Basin and east of Fort Armstrong

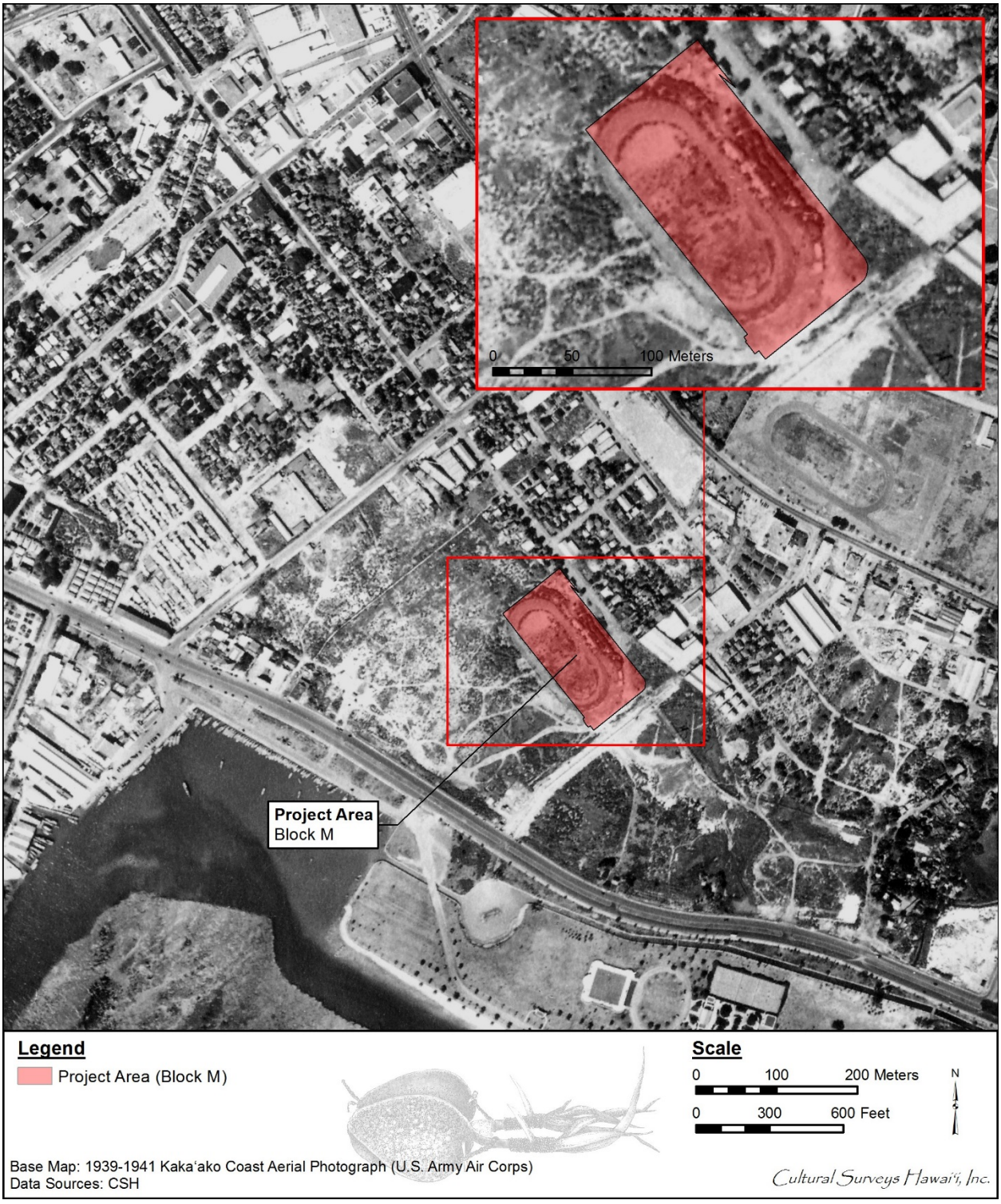


Figure 27. 1939-1941 aerial photograph (U.S. Army Air Corps) of Kaka‘ako; note the completion of Kewalo Harbor to the west and the construction of Ala Moana Park to the east along the shore

Figure 28. 1943 U.S. Army War Department Fire Control map of O‘ahu, Honolulu Quadrangle; note the location of three structures within the Block M project area

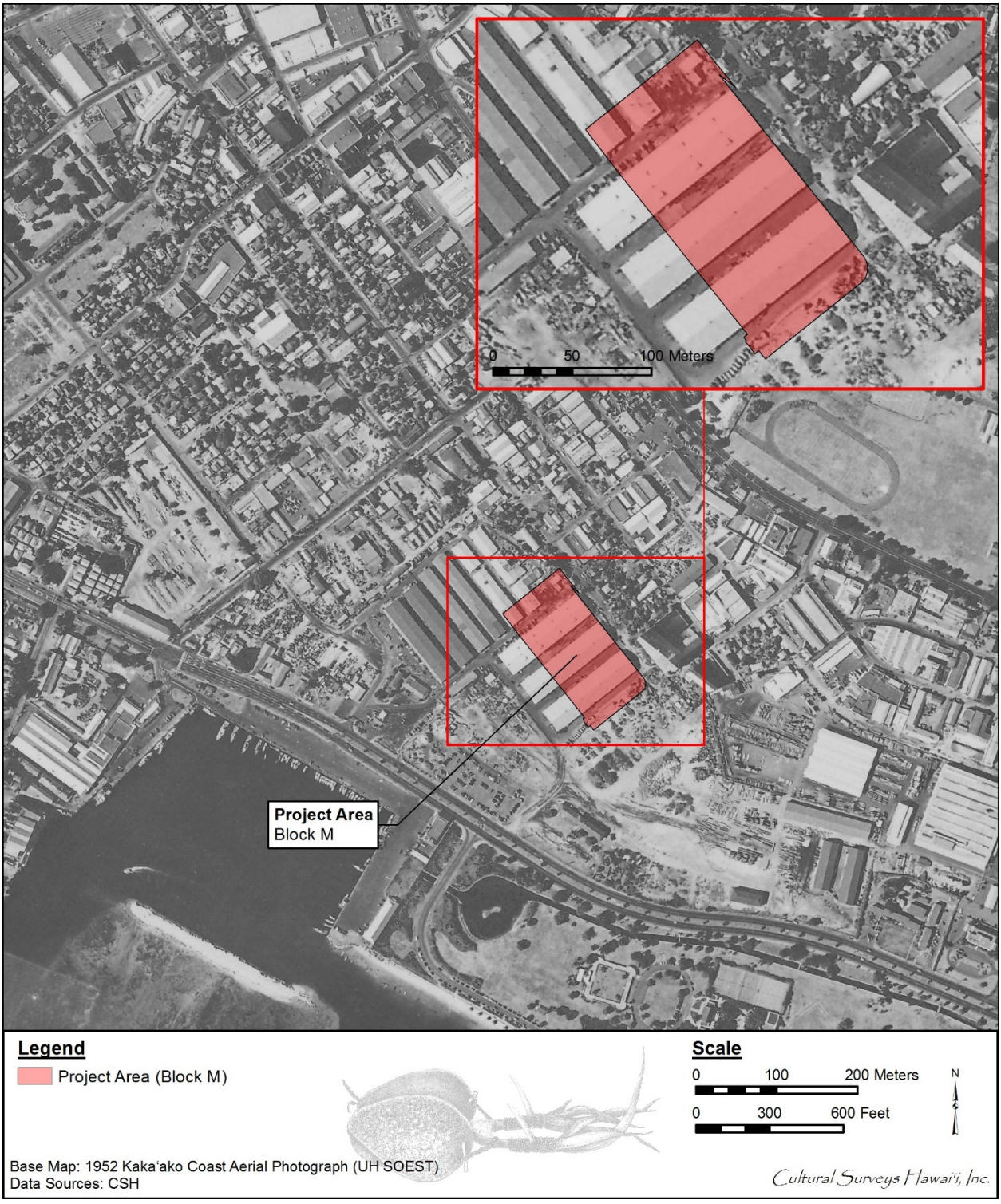


Figure 29. 1952 aerial photograph, showing three large warehouses within the project area (U.S. Army Air Corps, mosaic of sheets from Hawai‘i Coastal Geology Group)

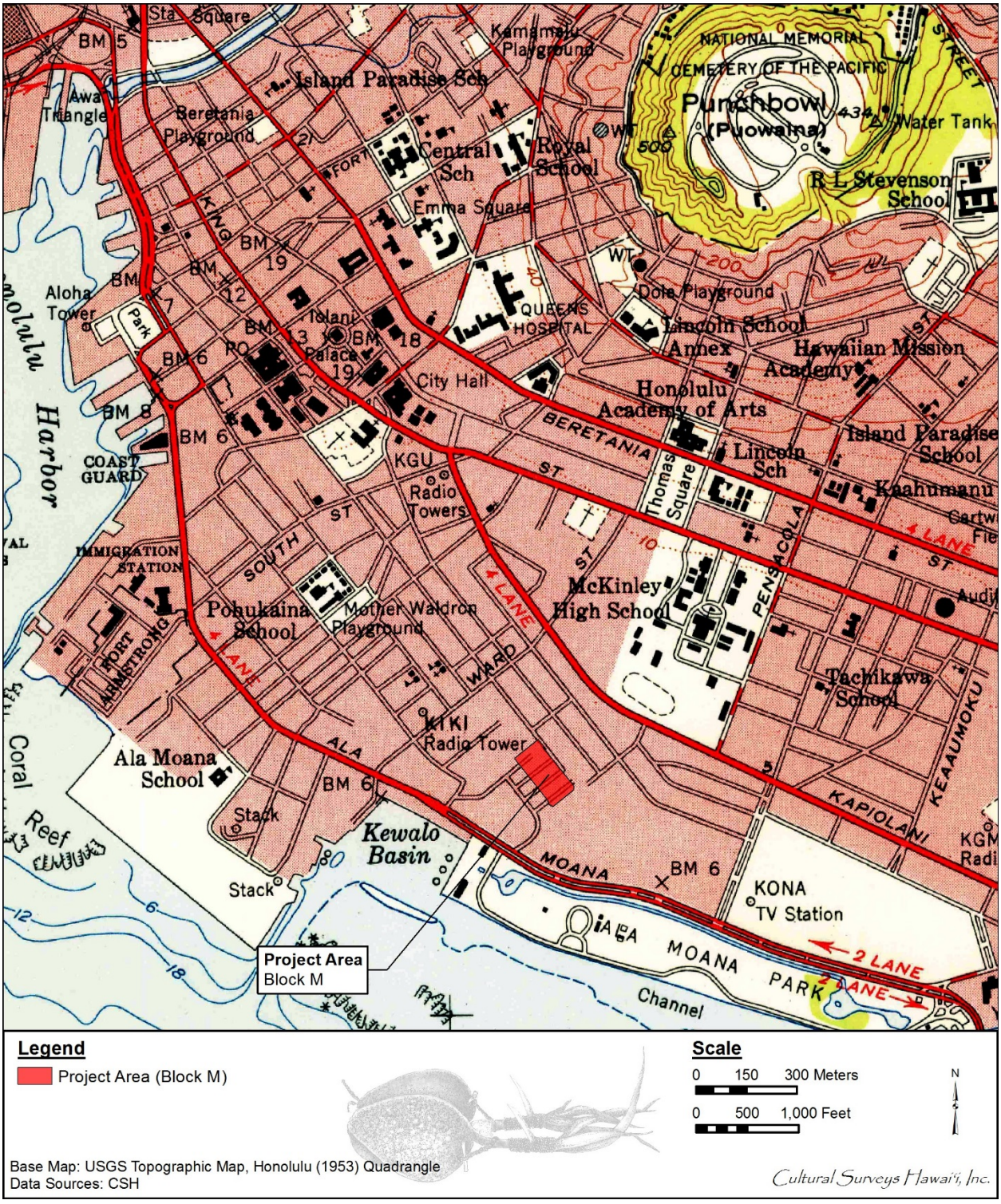


Figure 30. 1953 U.S. Army Mapping Service map of O‘ahu, Honolulu Quadrangle, showing project area within an improved street grid

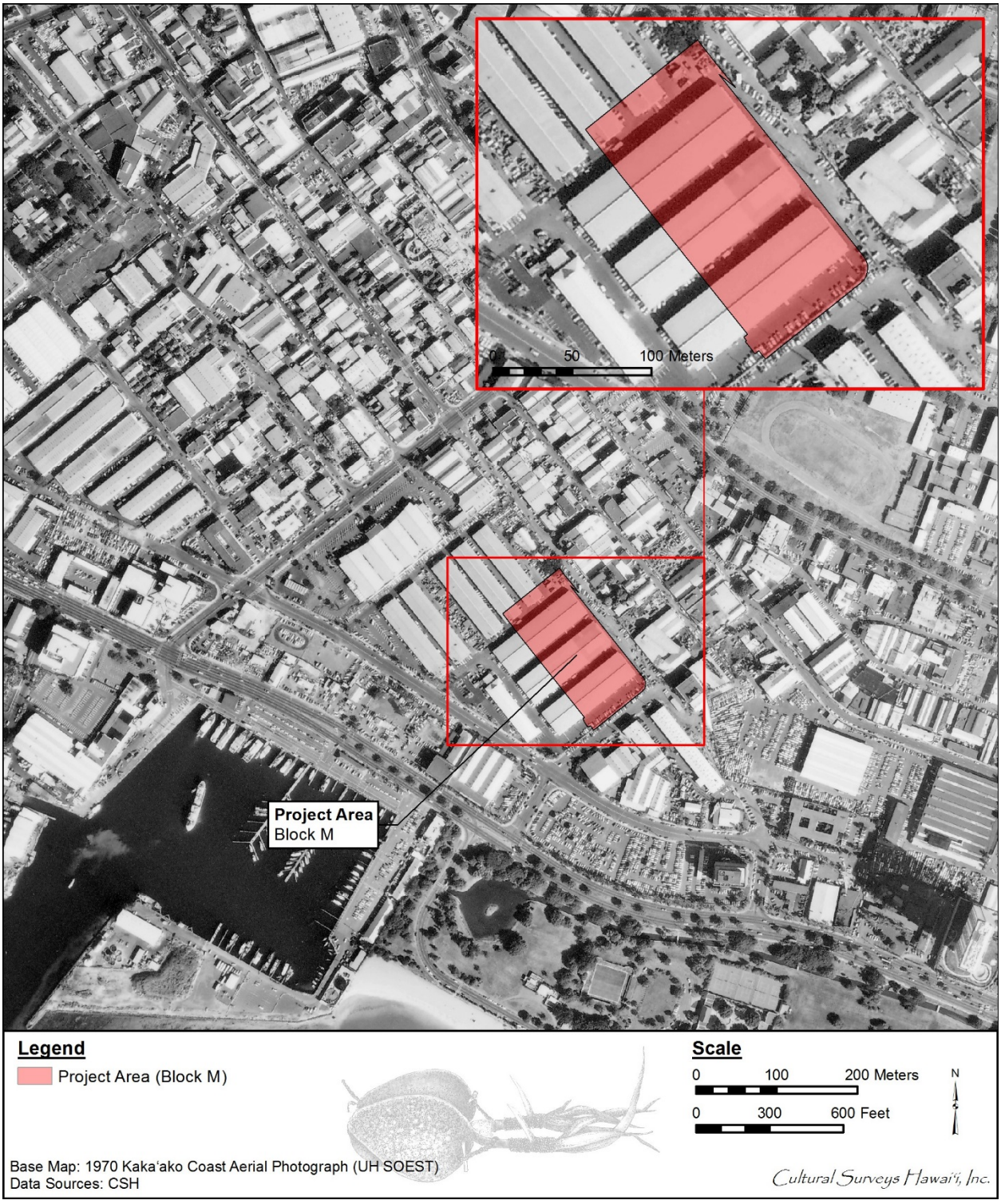


Figure 31. 1970 aerial photograph (R.M. Towill), showing the project area

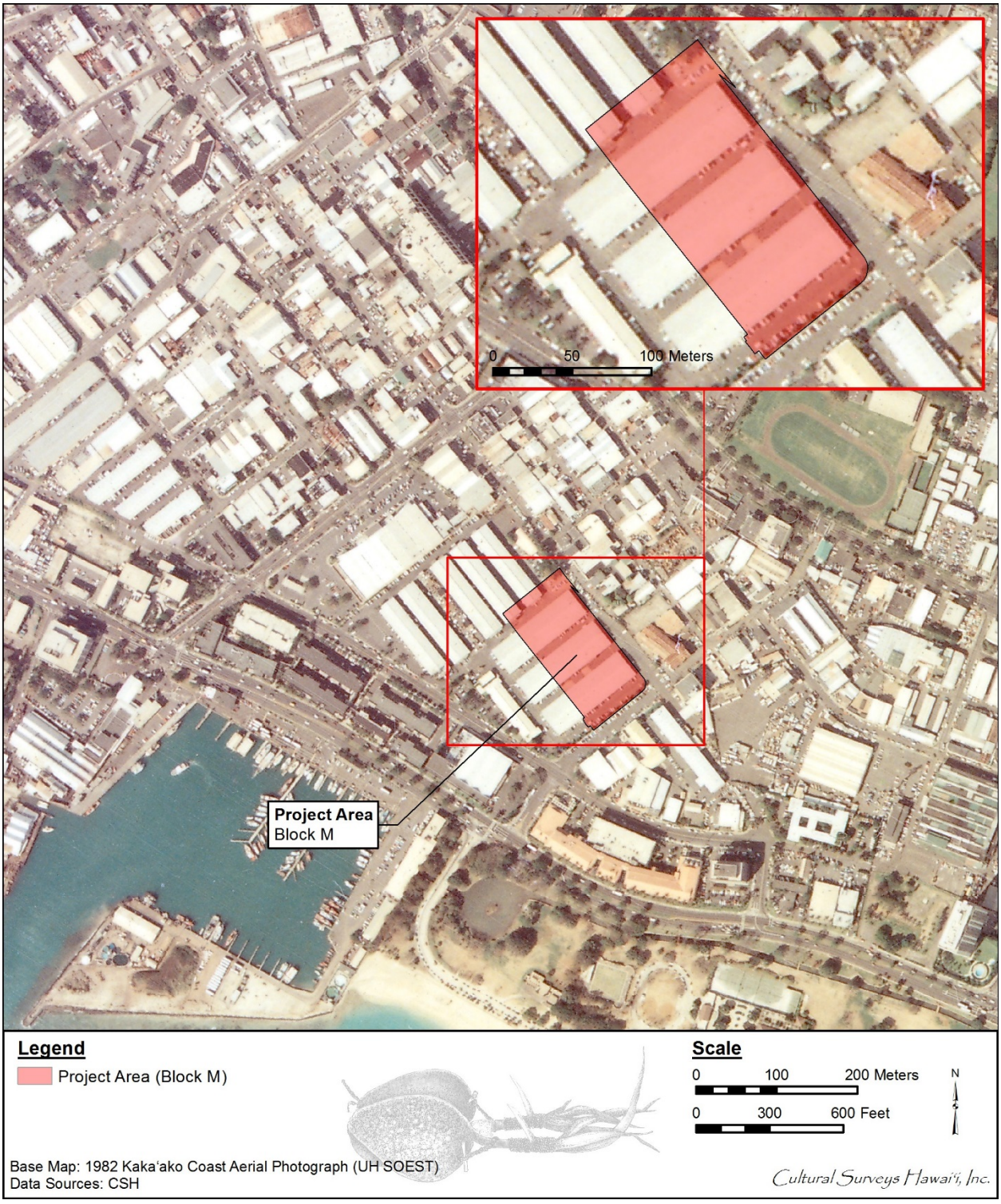


Figure 32. 1982 USGS aerial photograph, depicting large warehouses throughout Kaka‘ako

A 1903-1909 U.S. Engineer’s map (Figure 23) depicts houses clustered around the few paved roads, including along Queen Street within the project area, and a scatter of houses along the Ward Estate ‘*auwai* and along the shore. There is no indication on this map of the deep water channel east of Fort Armstrong that will later be dredged to create Kewalo Basin. Numerous ponds are shown to the east of the project area, especially Kolowalu Pond at the eastern terminus of Queen Street, and the “Long Lagoon” of the Ward Estate, north of the Queen Street terminus.

The 1919 Army War Department Fire Control map (Figure 24) shows residences clustered around Queen Street and Ward Avenue. There are still many ponds east of the project area, in the area northeast later to be part of McKinley High School, and the area east along the coast, which will be developed into Ala Moana Shopping Center and Park. Poor people, mainly Native Hawaiians, inhabited the area. In the 1920s, on the east side of Kewalo Basin they congregated at a camp named “Blue Pond,” named after a large and deep pond near the shore. On the west side of the basin, in the Ka‘ākaukukui area (shortened to ‘Ākaukukui), they lived in shacks and sturdy houses in an area called “Squattersville,” named because they lived without authorization on government land. This camp was generally around Olomehani Street near the shore, protected from the waves by a long sea wall. There were around 700 Hawaiians and part-Hawaiians living in these two camps in the mid-1920s, but by 1926 they were all gone. The government evicted the families and razed the houses (Clark 1977:64).

A 1927 aerial photograph (Figure 25) shows the development of dredging and filling projects in Kaka‘ako. Areas west of Ward Avenue and *makai* of Ala Moana Boulevard are filled and developed, while the areas *mauka* and east have only been recently filled (indicated by bare white coral fill areas) or are still open marsh/rice lands, such as *makai* of the new McKinley High School, the long lagoon of the Ward Estate, and the Kolowalu Pond, shown near the eastern end of the project area. Kewalo Basin is an ill-defined dredged area of deep water east of Fort Armstrong. Block M appears undeveloped with the exception of one or two residences in the northern corner.

A 1933 Army War Department Fire Control map (Figure 26) shows the first buildings of the new McKinley High School campus and also illustrates that the eastern portion of Kaka‘ako is still undeveloped, with dotted lines showing unimproved or proposed streets. However, the land was more inhabited than is evident from this map. The Ward family leased to the Japanese lands for camps, schools, playground, temples and shrines (University of Hawai‘i 1978:847). Kaka‘ako was one of the first residential areas for working class families, housing people working at the laundries, the harbor, the Honolulu Iron Works, the Honolulu Brewery, and truck drivers, seamen, and fishermen. In 1940, Kaka‘ako had over 5,000 residents. Hawaiians, Portuguese, Chinese, and Japanese settled in camps based on their ethnic origins. The residents all came together for social and community functions.

On a 1939-1941 aerial photograph (Figure 27) Ala Moana Park, on new land created with dredged fill, is depicted with a deep-water channel meant to allow boats to sail from Kewalo Basin to the Ala Moana Yacht Harbor. Kewalo Harbor has been completed and ships line the shoreline. The former white coral areas east of Ward Avenue now have some vegetation, but they are still not greatly developed past the stage shown on the 1927 aerial photograph. One exception is the McKinley High School Grounds, which have been completely filled in and leveled, and covered with several new campus buildings. An oval track now occupies the majority of Block M.

On a 1943 Army War Department Fire Control map (Figure 28), this eastern section of Kaka‘ako is an area of open lumber yards and large warehouses, including Block M which now contains three large warehouses. After World War II, Kaka‘ako became increasingly industrialized, and residents moved out to the newer subdivisions away from the central Honolulu area. The 1943 map depicts the docks for Kewalo Basin. The McFarlane Tuna Company (now Hawaiian Tuna Packers) built a shipyard at the basin in 1929 for their fishermen’s “sampan fleet.” A new tuna cannery was built at the basin in 1933 and operated successfully. However, the entire cannery was taken over in 1941 by the military after the attack on Pearl Harbor. The cannery was converted to military use and used to make airplane gas tanks. Land in Kaka‘ako taken by the military was not returned until 1946 (Clark 1977:64; Gessler 1938:182-185).

A 1952 aerial photograph (Figure 29) shows major development in the eastern section of Kaka‘ako. New land has been created on the *makai* side of the former Fort Armstrong, west of Kewalo Basin. The dredged strip along the coast still extends from Kewalo Basin to Ala Moana Yacht Harbor and the western end of the Ala Wai Canal. A 1953 topographic map (Figure 30), less detailed than earlier maps, does indicate many of the improved or proposed roads in the eastern section of Kaka‘ako are now paved and improved.

In 1964, new land along the western boundary of the Ala Wai Yacht Club was created to make a peninsula called “Magic Island,” later renamed ‘Āina Moana State Recreation Area. The construction of this peninsula cut off access for boats between the Kewalo and Ala Moana boat docks, and the function of the channel along Ala Moana Beach Park was changed into a safe swimming area (Clark 1977:60-63). On a 1970 aerial photograph (Figure 31) of the eastern section of Kaka‘ako, the new Ala Moana Shopping Center is completed and the Blaisdell Civic Center has replaced the grounds, house, and lagoon of the Ward Estate. Large warehouses are still located within the Block M project area.

In 1975, it was estimated there were 990 firms operating in Kaka‘ako and approximately 30% of the neighborhood residents also worked in the area (University of Hawai‘i 1978:A-116-117). In the 1970s to 1990s, portions of eastern Kaka‘ako were used for various small businesses that existed in warehouses and parking lots, as shown on a 1982 aerial photograph (Figure 32). Many of these warehouses were roofed, open-sided storage sheds for large lumber yards. Ward Warehouse was built in 1975 (Daysong 1997) and the shopping center can be seen as several adjacent structures on the 1982 aerial photograph.

In summary, the project area was apparently outside the two most intensely populated and cultivated areas—Waikīkī and Honolulu (or Kou) —along this portion of O‘ahu’s southern shore during the pre-Contact period. The area of Kaka‘ako was nonetheless well utilized by Hawaiians for activities appropriate to the specific environment, salt making and farming of fishponds, along with some wetland agriculture. The eastern portion of Kaka‘ako, including the project area, was also among the last areas of urban Honolulu to be built on and developed, with many of the roads in the area not developed until World War II.

2.3 Previous Archaeological Research

2.3.1 Geological Study of Kaka‘ako and Kewalo

For his master’s thesis in Geology and Geophysics, Charles C. Ferrall (1976) synthesized all data from subsurface boring logs excavated in the Honolulu and Waikīkī areas to that time. The data was compiled from 800 borings made by the Hawai‘i Public Works, Board of Water Supply, and other state/city engineering departments.

Most of the coastal plain of Honolulu formed during the Pleistocene, during several sea level fluctuations related to the advance and retreat of glaciers. These fluctuations produced reef deposits at various levels, some above the present sea level. The Kaka‘ako area coral shelf was mainly formed during the Waimanalo High Sea Stand, about 120,000 years ago, which reached a maximum of 25 ft above the present sea level. The Waimanalo Sea Stand was preceded by the Waipio Low and was followed by the Mamala Low. During the Mamala Low when the sea receded as much as 300 ft below present levels, deep alluvial channels dissected the former reefs, including one which Ferrall calls the HIC Channel. This channel was found in borings made within the Honolulu International Center (now called the Blaisdell Center), thus the name of the channel. Due to the scattered locations of the 800 borings, the exact path of this channel as it traverses *makai* to the ocean could not be determined; however, Ferrall postulated that the channel extends through the area in which Land Blocks 1 and 2 of the Ward Neighborhood Master Plan are located (Figure 33). Ferrall (1976:53) cautions “given the sinuous course of this channel in the area where control is available, it could be expected to meander considerably from the direct route to the sea which is shown.” This carved channel contains alluvium with lenses of sand and volcanic cinder overlain by swamp deposits. The sediments overlying the channel are similar to the surrounding areas (i.e. above the general coral shelf).

For bores excavated in the Kaka‘ako area, the coral shelf is found at three different levels, at +5 ft above sea level and at -15 and -30 ft below sea level. The +5, -15, and -30 coral ledges were all formed during the Waimanalo High Sea Stand (Figure 33). Ferrall notes extensive coral “growth occurred during the Waimanalo High Sea Stand, probably as a result of the warmer climate of the interglacial stage” (Ferrall 1976:116). As the sea receded from a previous high of +25, it paused at +5 ft, long enough for the growth of corals that favor a high-energy reef flat environment. This reef developed in about 20 ft of water. The -15 ft ledge probably developed after this during a regression of the sea from the Waimanalo High Stand to the Mamala Low Stand. The -15 coral shelf also developed within a high-energy zone, but was formed in a more shallow water environment, in only a few feet of water. The -30 coral shelf was composed of coral that grows in low-energy lagoonal environments. It may represent the “seaward (forereef) reflection” of one of the +5 or -15 coral ledges rather than a separate time period (Ferrall 1976:125).

Ferrall (1976) remarks on the area with the -5, -15, and -30 coral ledges:

> . . . lagoonal deposits are widespread . . . overlying the -30 and -15 ledges, the alluvial channels, and the lower, seaward edge of the +5 ledge. In general, any area that was not above existing sea level prior to the [Mamala] transgression to the modern sea level became covered with lagoonal deposits. . . . After the sea more or less stabilized at its present level, the lagoon filled up and became a swamp. Swamp

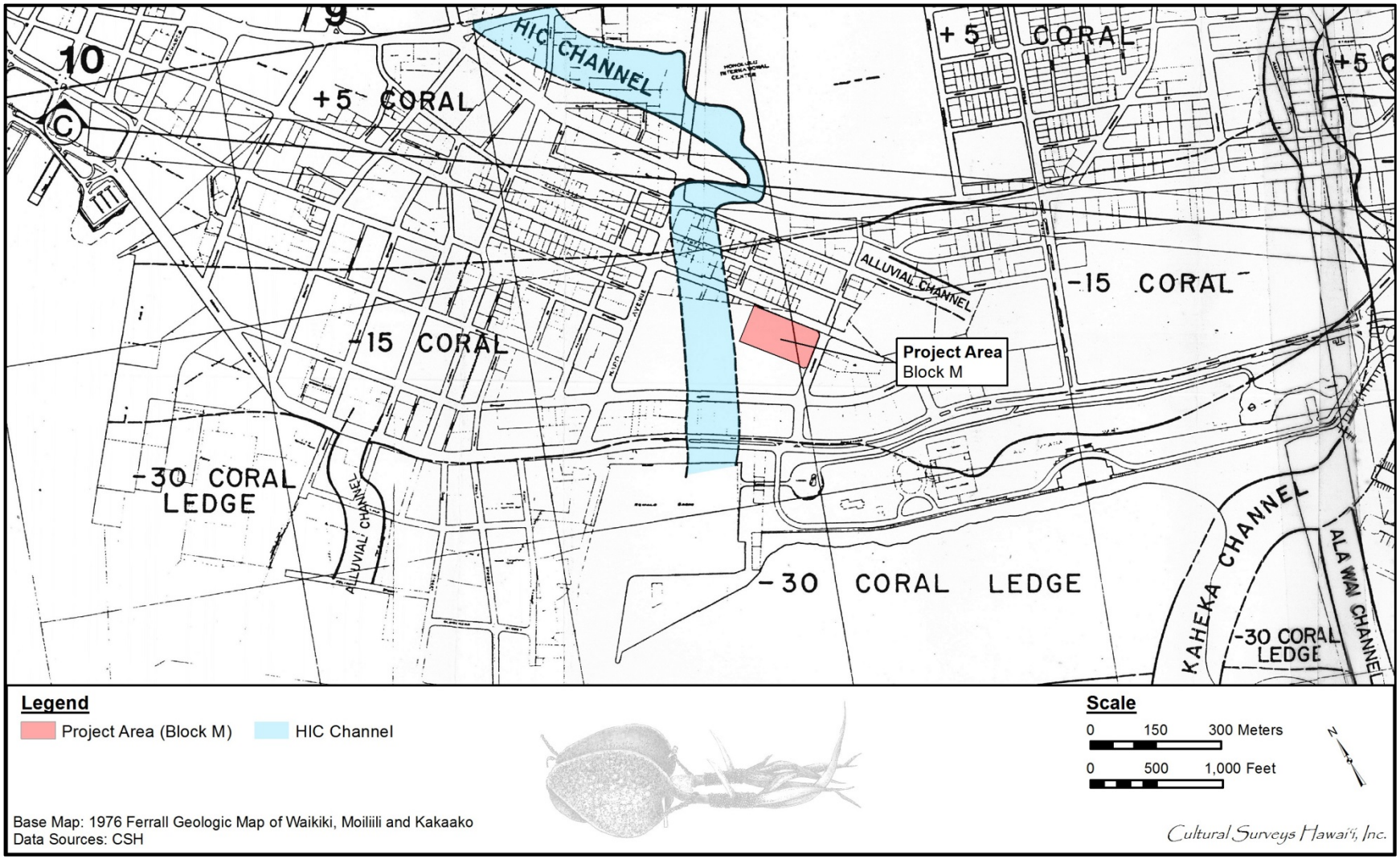


Figure 33. Coral shelf depth (+/- feet above or below sea level) and possible location of the HIC channel just west of the project area (modified figure of outsize map in Ferrall 1976)

> deposits, with peat layers are found from just below existing sea level, on top of the lagoonal deposits, to just above sea level. Even into historical time, much of the area seaward of the +5 ledge was dominated by swamp conditions. [Ferrall 1976:135]

According to Ferrall's work, the current project area is within the -15 foot coral ledge zone, *makai* of the +5 coral ledge and *mauka* of the -30 coral ledge.

2.3.2 Engineers Boring Logs

The engineering firm of Ernest K. Hirata and Associates, Inc. (1992) excavated numerous exploratory borings in the Kaka‘ako area in 1991 and 1992. The focus of the borings was to provide information related to load-bearing attributes and subsurface conditions for major underground utility improvements (e.g., main storm drains, sewer, and water). Although none of the boring holes were placed in the Block M project area, one bore (B9-2204) was located on Kamake‘e Street southwest of Block M. This bore was excavated to a depth of 7.3 m (24 ft) to the coral shelf. Two sand layers were noted below the asphalt and fill layers.

Table 1. Ernest K. Hirata & Associates Boring Log Information

Bore ID (Street)	Depth (m)	Depth (ft)	Classification	Deposit Type
B9-2204	0-0.3	0-1.0	Asphalt and base course	Road
(Kamake‘e)	0.3-1.4	1.0-4.5	Mottled tan silty sand	Sand
	1.2	4.0	Water table	
	1.4-7.3	4.5-24	Light gray silty sand	Sand
	7.3	24	Coral	Coral shelf

2.3.3 Archaeological Background

Most traditional Hawaiian surface structures had been demolished in the Kaka‘ako area by the time of the first scientific archaeological surveys (e.g., Griffin 1987). In his report on the survey of O‘ahu sites conducted in the early 1930s, McAllister (1933:80) says of Honolulu, "Information regarding former sites within the present limits of Honolulu must come entirely from literary sources." He mentions Pākākā Heiau, once the main royal temple in Honolulu. This *heiau* would have been located around the foot (*makai* end) of Fort Street. He does not list Pu‘ukea Heiau (discussed in Section 2.2.4), which Kamakau (1991:24-25) placed in Kukuluāe‘o, but he does note that Peter Corney, a visitor to the island in 1819, saw several *heiau* (*morai*) along the Honolulu shore:

> There are several morais, or churches in the village, and at new moon the priests, chiefs and hikanees (aikane) [counselors] enter them with offerings of hogs, plantains, and cocoanuts, which they set before the wooden images. The place is fenced in, and have pieces of white flags flying on the fences. [Corney 1896:101]

Recent archaeological investigations within the Kaka‘ako area have included several within the vicinity of the Block M project area as well as several test excavations within the eastern boundary of Block M for the Honolulu High-Capacity Transit Corridor Project (City Center) AIS (Hammatt

2013). The most relevant investigations are summarized in Table 2 and the following text. Figure 34 shows the locations of the previous archaeological investigations and recorded profiles. Figure 35 shows the location of documented historic properties and burials.

2.3.4 Ward Village Phase II (Ward Theaters)

In 2000, CSH performed archaeological monitoring for Victoria Ward Ltd. at the site of the Ward Village Phase II (Ward Theaters) construction project in Kaka‘ako (Winieski and Hammatt 2001). This project area is adjacent to the Block M project area and is bounded by Auahi Street to the southwest and Kamake‘e Street to the southeast. The commercial building does not have extensive footing or any subsurface structures (i.e. underground parking, businesses, storage, etc.); instead, the structure is supported by numerous drive piles (see Figure 34). The open cut excavation component of the pile installation involved excavation of typically 4 by 4 m trenches, 130 cm deep, to accommodate pile caps. Open cut trenching was also required for installation of underground utilities. These were typically less than a meter in depth. No pre-Contact materials, historic cultural materials, or human burials were encountered.

Approximately 90% of the pile cap excavations exhibited nearly identical stratigraphic sequences. Beneath what had previously been asphalt parking surfaces or building slabs was a 40 cm thick crushed coral fill layer. Beneath this layer was hydraulic (i.e. pumped dredged material) clay fill, usually light gray. However, in some instances a brownish yellow clay hydraulic fill overlay the gray layer, evidence of different hydraulic fill episodes. Beneath the hydraulic fill layers, decomposing coral shelf occurred.

At the northwest corner of the building’s footprint a few of the pile cap excavations exposed an old A horizon beneath fill materials, shown in a profile and a photograph (Figure 36 and Figure 37). Underlying the silty sand A horizon was light brownish gray sandy clay, which was interpreted as old pond sediments. This old A horizon was also present above a sterile calcareous sand layer in a 50-m long shallow trench dug for telephone cable conduits behind Nordstrom Rack, within or along the western boundary of the current project area. In this trench the old A horizon and sand layer were continuous, apparently not disturbed by previous construction.

At the southeast corner of the project area, near the intersection of Auahi and Kamake‘e Streets, the old A horizon and sand layer were present, however they were discontinuous, having been disturbed by previous construction activities and replaced with backfill. It is near this area that a human burial (SIHP # 50-80-14-6377) was encountered within the sand matrix during the adjacent Kaka‘ako Improvement District 7 Project.

2.3.5 Kaka‘ako Improvement District 7 (ID-7)

The Kaka‘ako Improvement District 7 (ID-7) project constructed improvements to drainage, water, sewer, and utility systems on Kamake‘e Street between Queen Street and Ala Moana Boulevard, and also extended the drain system from Ala Moana Boulevard to Kewalo Basin (Souza et al. 2002). The project also included realignment of the existing Kamake‘e Street between Auahi Street and Ala Moana Boulevard.

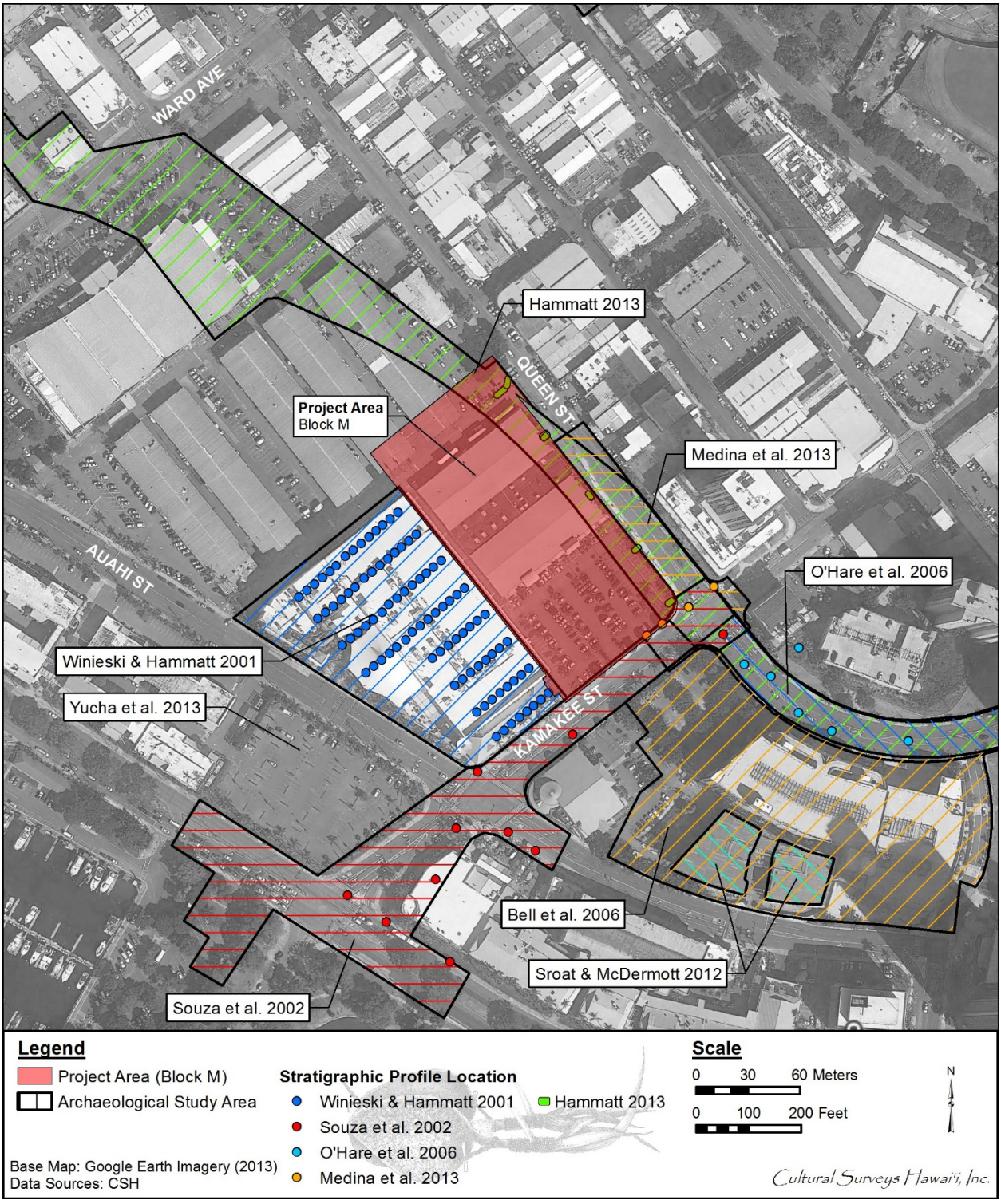


Figure 34. Previous archaeological studies within the immediate vicinity of the Block M project area, showing the location of recorded profiles (base map: Google Earth 2013)

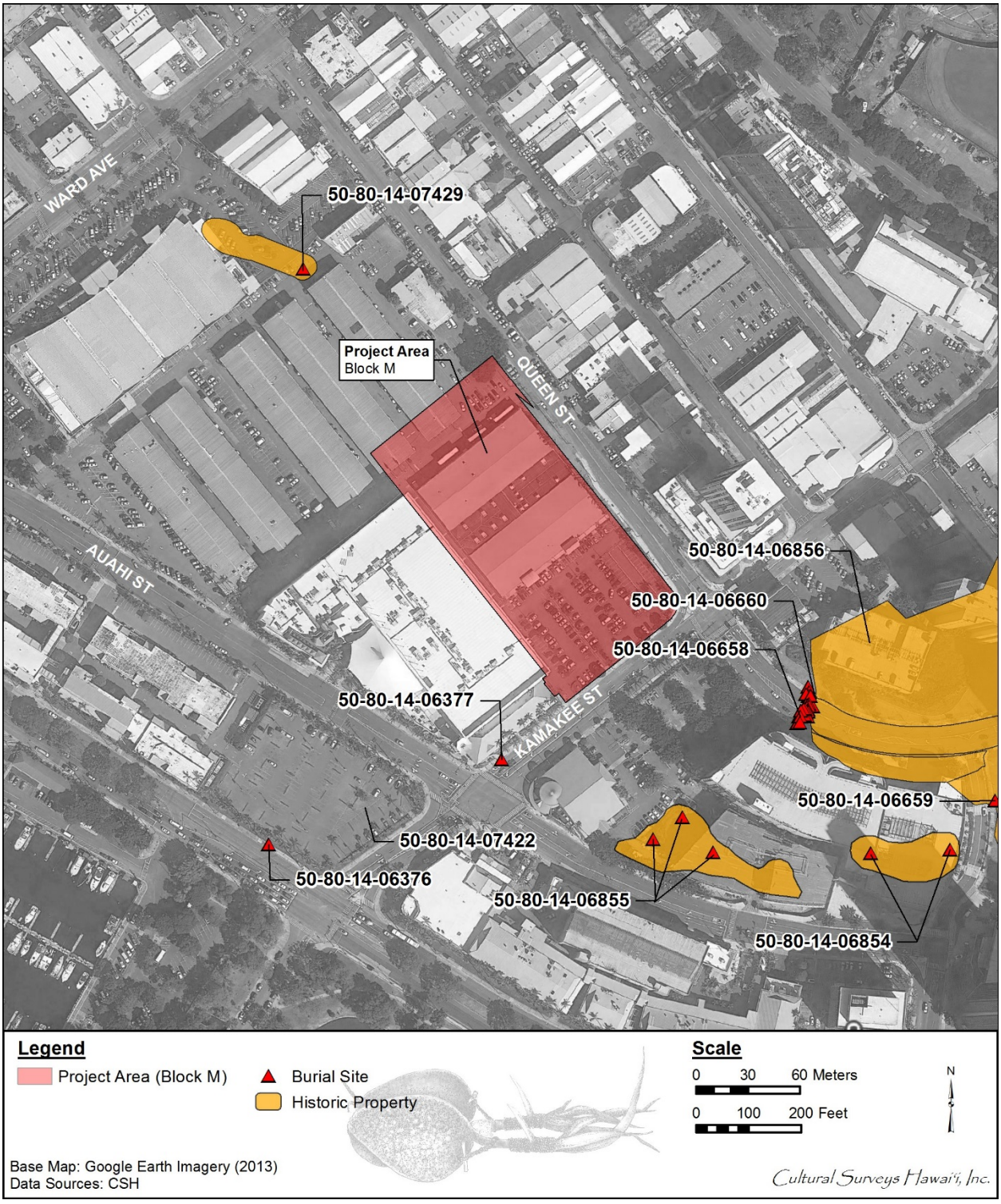


Figure 35. Aerial photograph showing the location of previously identified archaeological sites within the immediate vicinity of the Block M project area, showing the location of subsurface deposits (yellow) and burials (red triangles) (base map: Google Earth 2013)

Table 2. Previous Archaeological Studies within the Vicinity of the Block M Project Area

Reference	Project Name	Type of Study	Results
Winieski and Hammatt 2001	Ward Theaters	Archaeological monitoring	No burials or cultural deposits found; old A horizon found in pile caps in NW and SE corners
Souza et al. 2002	Kaka‘ako ID-7	Archaeological monitoring	Three disturbed pre-Contact burials recorded (SIHP # -6376, -6377, -6378); old A horizon found in seven of ten profiles; SIHP # -6378 location unknown as burial retrieved from large back dirt pile
Bell et al. 2006	Victoria Ward Village Shops	Archaeological inventory survey	86 test trenches identified three historic properties: 1) SIHP # -6854, subsurface cultural layer/activity area remnant with five human burials; 2) SIHP # -6855, activity area remnant comprised of pronounced subsurface traditional Hawaiian cultural layer and six human burials; and 3) SIHP # -6856, Kolowalu Fishpond remnant; three stratigraphic zones identified: 1) natural low-lying salt flats, marsh, or pond sediments, 2) natural Jaucas sand beach deposits, and 3) areas where modern/historic fill episodes have removed former natural land surface, leaving only low-energy lagoonal deposits
O’Hare et al. 2006	Kaka‘ako ID-10	Archaeological monitoring	Documented cemetery of 28 historic burials (SIHP # -6658), two isolated disturbed burials (SIHP # -6659), and historic trash pit (SIHP # -6660)
Sroat and McDermott 2012	Victoria Ward Village Shops	Supplemental archaeological inventory survey	Five test units within or adjacent to SIHP # -6855, substantiated extrapolated boundaries of cultural layer; no additional finds identified
Medina et al. 2013	Queen and Kamake‘e St. Traffic Signal	Archaeological monitoring	No historic properties noted in existing utility trenches; pockets of sand strata still remain below fill layers
Hammatt 2013	Honolulu High-Capacity Transit Corridor (HHCTCP) – City Center (Section 4)	Archaeological inventory survey	No historic properties documented within or adjacent to Block M; within 500 m or less of the project are these historic sites: SIHP # -7429, buried A horizon containing six pits and one isolated human cranial fragment; SIHP # 06377, a burial; SIHP # -06376, a human burial; and SIHP # 06856, an historic fishpond remnant

Reference	Project Name	Type of Study	Results
Yucha et al. 2013	Ward Neighborhood Block C	Archaeological inventory survey	Identified burned trash layer (SIHP # -7422); majority of project area contained sand or peat A horizon and Jaucas sand beneath reclamation fill layers

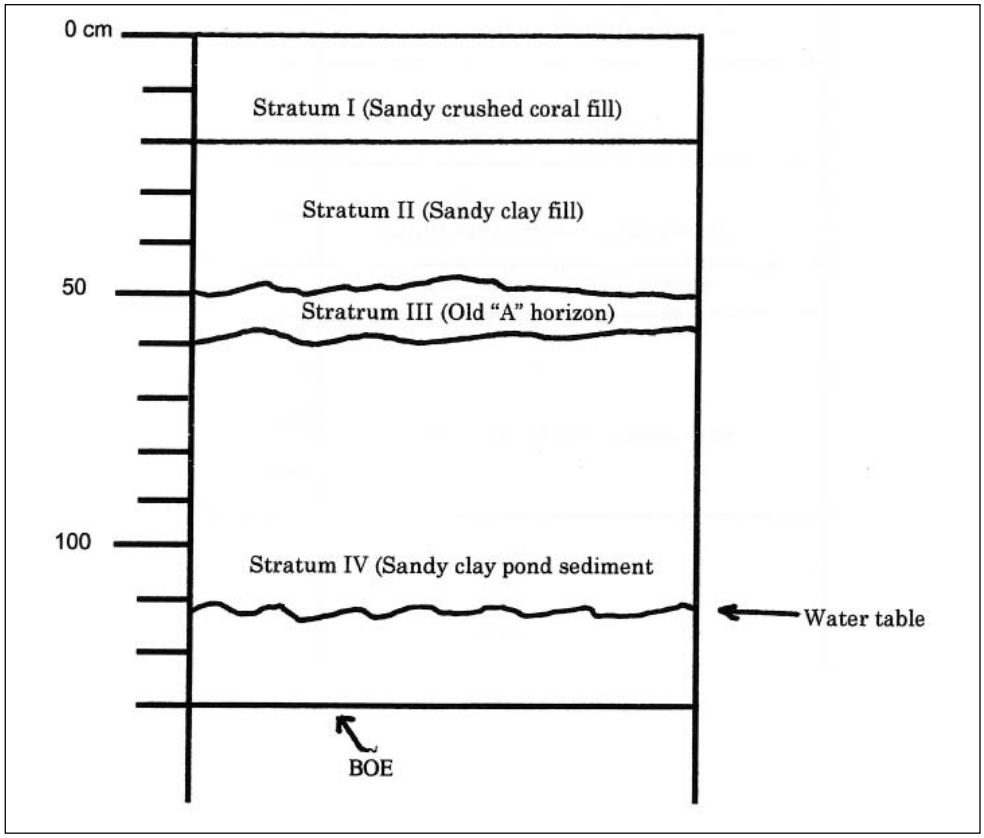


Figure 36. Profile of pile cap excavation in northeast corner of Ward Village Phase II footprint (Ward Theaters) showing old A horizon and pond sediment (Winieski and Hammatt 2001)

Figure 37. Photograph of pile cap trench showing old A horizon (dark stratum) capping sandy clay pond sediments (Winieski and Hammatt 2001)

During excavation activities associated with the Kaka‘ako Improvement District 7 construction project, three human burials were encountered (see Figure 35). Burial 1 (SIHP # -6376), a single cranium, was inadvertently discovered by construction personnel in the base yard back dirt pile. The back dirt pile was derived from a trench on Ala Moana Boulevard and Kamake‘e Street. Burial 2 (SIHP # -6377), an adult individual, was encountered by an archaeologist during backhoe excavations for a box drain on Kamake‘e Street. The burial was within an undisturbed sand deposit. Burial 3 (SIHP # -6378), consisting of a femur and several rib fragments, was recovered in the construction base yard. The original location of the burial could not be determined.

Ten profiles were described and drawn along Kamake‘e Street between Queen Street and Ala Moana Boulevard. Most of the excavations occurred in previously disturbed fill material. As expected, the land comprising Ala Moana Beach Park and the Kewalo Basin consists totally of fill material, since the areas were seaward of the shoreline in the pre-Contact and early historic periods. Natural discontinuous deposits were exposed most frequently along the ‘Ewa (west) and Diamond Head (southeast) sides of Kamake‘e Street extending down to Ala Moana Boulevard. A buried A horizon was observed in seven profiles.

2.3.6 Ward Village Shops Project

In 2006, CSH performed an archaeological inventory survey for the Victoria Ward Village Shops project (Bell et al. 2006). A total of 86 trenches were excavated in the Ward Village Shops Project area. Three historic properties were identified: 1) SIHP # -6854, a subsurface cultural layer/activity area remnant with an immature pig skeleton, remnants of historic privy, remnants of

a culturally enriched A horizon (containing both traditional Hawaiian and historic cultural material), and five human burials; 2) SIHP # -6855, an activity area remnant comprised of a pronounced subsurface traditional Hawaiian cultural layer and six human burials; and 3) SIHP # -6856, an historic fishpond remnant, part of Land Commission Grant 3194, “Kolowalu,” awarded to Kalae and Kaaua (see Figure 35).

The study identified three stratigraphic zones: 1) natural low-lying salt flats, marsh, or pond sediments, 2) natural Jaucas sand deposits; and 3) areas where modern/historic fill episodes have removed the former natural land surface, leaving only low-energy lagoonal deposits (Figure 38). The northwestern portion of the project area, located along Kamake‘e Street across from the Block M project area, contained natural wetland sediments. A representative stratigraphic profile of the area nearest Block M is shown in Figure 39.

In 2012, CSH conducted a supplemental archaeological inventory survey of the Ward Village Shops Phase II project area (Sroat and McDermott 2012). Five test units were excavated within or adjacent to the extrapolated location of SIHP # -6855. The stratigraphy observed in the five test excavations substantiated the previously extrapolated boundaries of SIHP # -6855, including concentrated areas of traditional Hawaiian deposits.

2.3.7 Kaka‘ako Improvement District 10 (ID-10)

Between 2003 and 2004, CSH conducted archaeological monitoring for the Kaka‘ako Community District 10 (ID-10) Queen Street Extension project which extended Queen Street from its former ending point at the intersection with Kamake‘e Street to its new intersection with Pi‘ikoi Street (O’Hare et al. 2006). During monitoring of the construction, 30 human burials were found and disinterred. Twenty-eight of the burials, constituting a discrete cemetery (SIHP # -6658), were located at the lip of Kolowalu Pond (SIHP # -6856) and contained associated grave goods indicating cemetery dates between the 1840s and the 1880s (see Figure 35). All 28 burials were found at the base of a stratum of undisturbed beach sand, which was stratigraphically below several modern fill layers. The two other burials consisted of isolated disturbed burials (SIHP # -6659). In addition, a historic trash pit with historic artifacts including metal, ceramics, glass bottles, and other materials was found adjacent to the north side of the cemetery (SIHP # -6660). Bottle dating analysis indicated a date range of the 1920s to the 1930s.

2.3.8 Queen and Kamake‘e Traffic Signal Project

In 2010, CSH monitored utility relocation for the Queen and Kamake‘e Traffic Signal project (Medina et al. 2013). No historic properties were encountered. In general, stratigraphy within the project area consisted of various fill materials overlying a remnant or truncated sand A horizon, Jaucas sand, and the coral shelf. Four profiles were drawn for excavated utility trenches at the junction of Queen and Kamake‘e Streets, including two (Profiles 1 and 2) along the curb of Kamake‘e Street adjacent to Block M (see Figure 34). Both Profiles 1 and 2 showed extensive previous disturbance to the natural strata; however, portions of the A horizon and Jaucas sand deposits were still present. Figure 40 shows the stratigraphy of Profile 2 which was recorded in Trench D6.

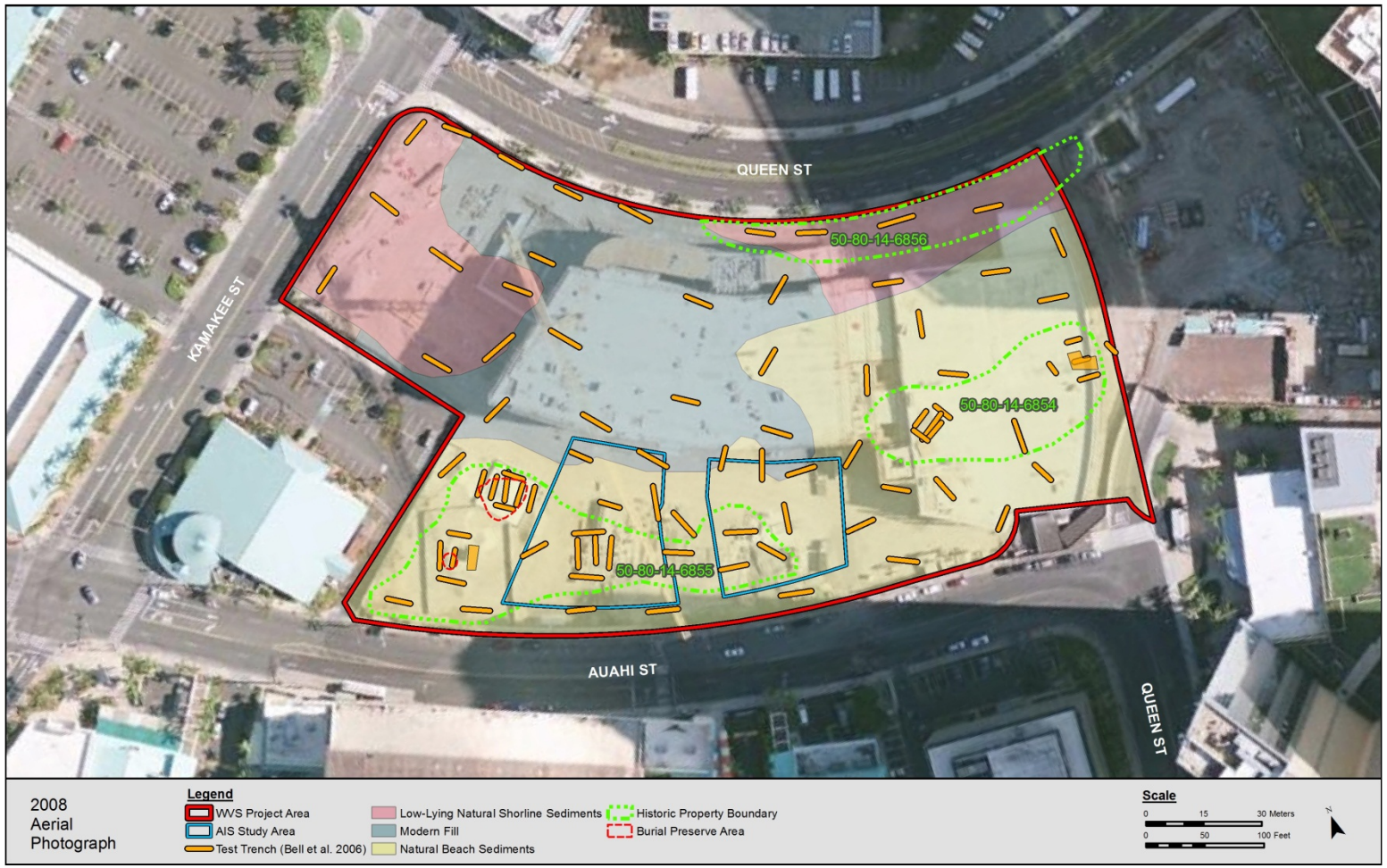


Figure 38. The aerial photograph summarizes the Bell et al. (2006) AIS investigation of the Ward Village Shops project, including the boundaries of subsurface deposit types. Stratigraphic zones were divided into three categories: natural sand (yellow); areas where the natural sediments have been removed and replaced with fill deposits (grey); or low lying wetland—either salt pan, marsh or pond (pink). (Note: the northern corner of the project area, the portion closest to the current Block M project area, contained wetland sediment)

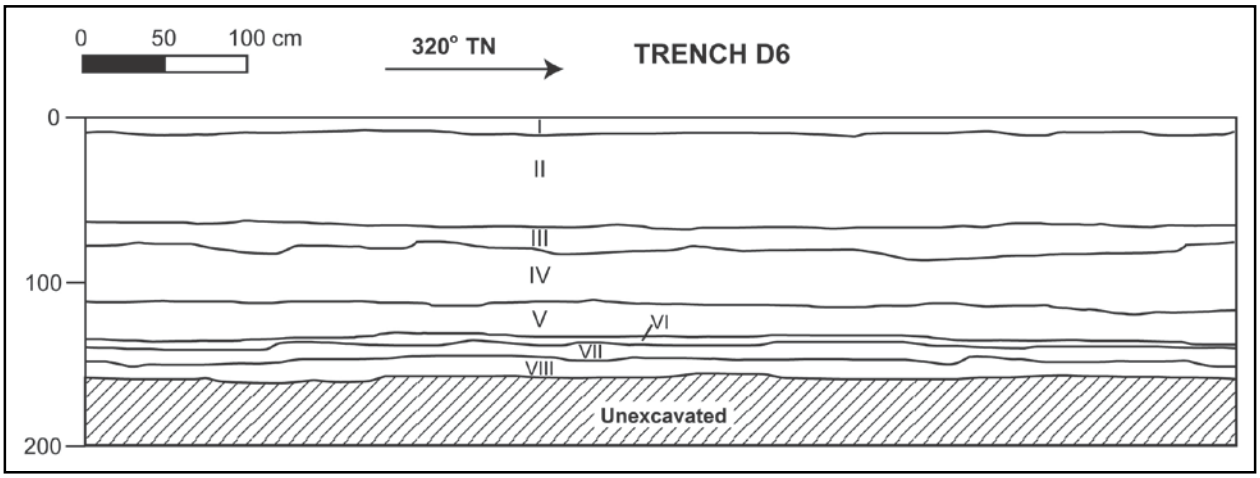


Figure 39. Profile D6 (Bell et al. 2006) showing various fill layers (Strata I-VI) overlying a sandy clay A horizon (Str. VII), clay sand lagoonal sediments (Str. VIII), and the coral shelf

2.3.9 Honolulu High-Capacity Transit Corridor Project (City Center)

Between November 2011 and February 2013, CSH conducted an archaeological inventory survey for the Honolulu High-Capacity Transit Corridor Project (HHCTCP) – City Center, which extended from Kalihi Stream in the west to the Ala Moana Center in the east (Hammatt 2013). Two hundred-fifty test excavations were documented. A total of 19 historic properties were identified along the length of the project corridor. Although no historic properties were identified within the immediate vicinity of Block M, seven test excavations were completed within the Block M project area along the *mauka* boundary (Figure 41). Natural sand was documented within six of the seven trenches, with an upper boundary located between 60–120 cm below surface. Four test excavations also contained an overlying A horizon, with an upper boundary between 39–108 cmbs. The A horizon contained possible traditional Hawaiian cultural material within Test Excavations 175A and 177, consisting of possible marine shell midden, a piece of volcanic glass debitage, and charcoal (see Figure 41). A profile and photograph of Test Excavation 177 are shown in Figure 42 and Figure 43.

2.3.10 Ward Neighborhood Block C Project

Between December 2012 and January 2013, CSH conducted an archaeological inventory survey of the Ward Neighborhood Block C project, located south of the current project area within a parking lot at the intersection of Ala Moana Boulevard and Kamake‘e Street (Yucha et al. 2013). Forty-one test excavations were distributed across the project area. Only one historic property was identified, a burned trash layer located near the corner of Kamake‘e and Auahi Streets (SIHP # 50-80-14-7422). Stratigraphy within the project area was largely consistent. A deposit of hydraulic fill associated with the reclamation infilling of Kaka‘ako during the 1913–1930 period was found within the north, west, and south portions of the project area. Beneath the fill layers, a coarse sand A horizon was documented within 25 test excavations throughout the project area, while a peat A horizon was found within three excavations within the northern portion of the project area. A majority of the project area (35 test excavations) contained Jaucas sand. No cultural material or

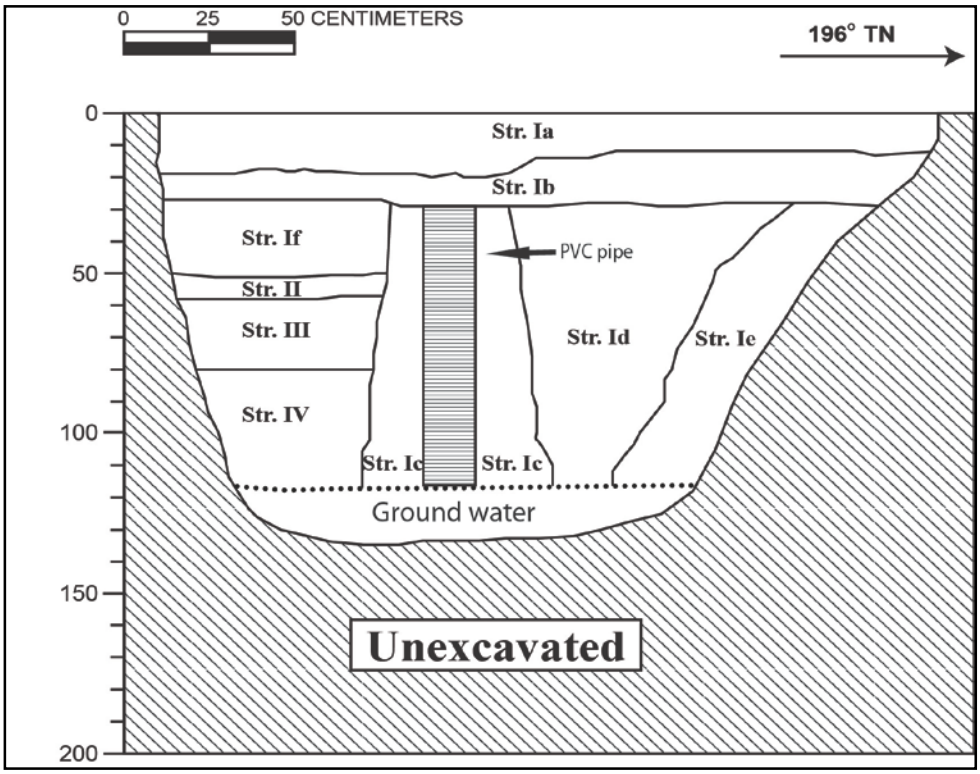


Figure 40. Profile 2 (Yamauchi et al. 2011) located within Kamake‘e Street along the southeastern border of Block M

Stratum Description

Ia Asphalt
Ib Fill; 10YR 6/1, gray; base course gravel
Ic Fill; 5YR 4/3, reddish brown; cindery clay loam
Id Fill; 10YR 4/2, dark grayish brown; silty sand
Ie Fill; 10YR 6/3, pale brown; sandy silt
If Fill; 10YR 7/2, light gray; sandy clay
II Natural; 10YR 5/3, brown; sandy loam; A horizon
III Natural; 10 YR 7/3, very pale brown; fine to medium sand
IV Coral shelf

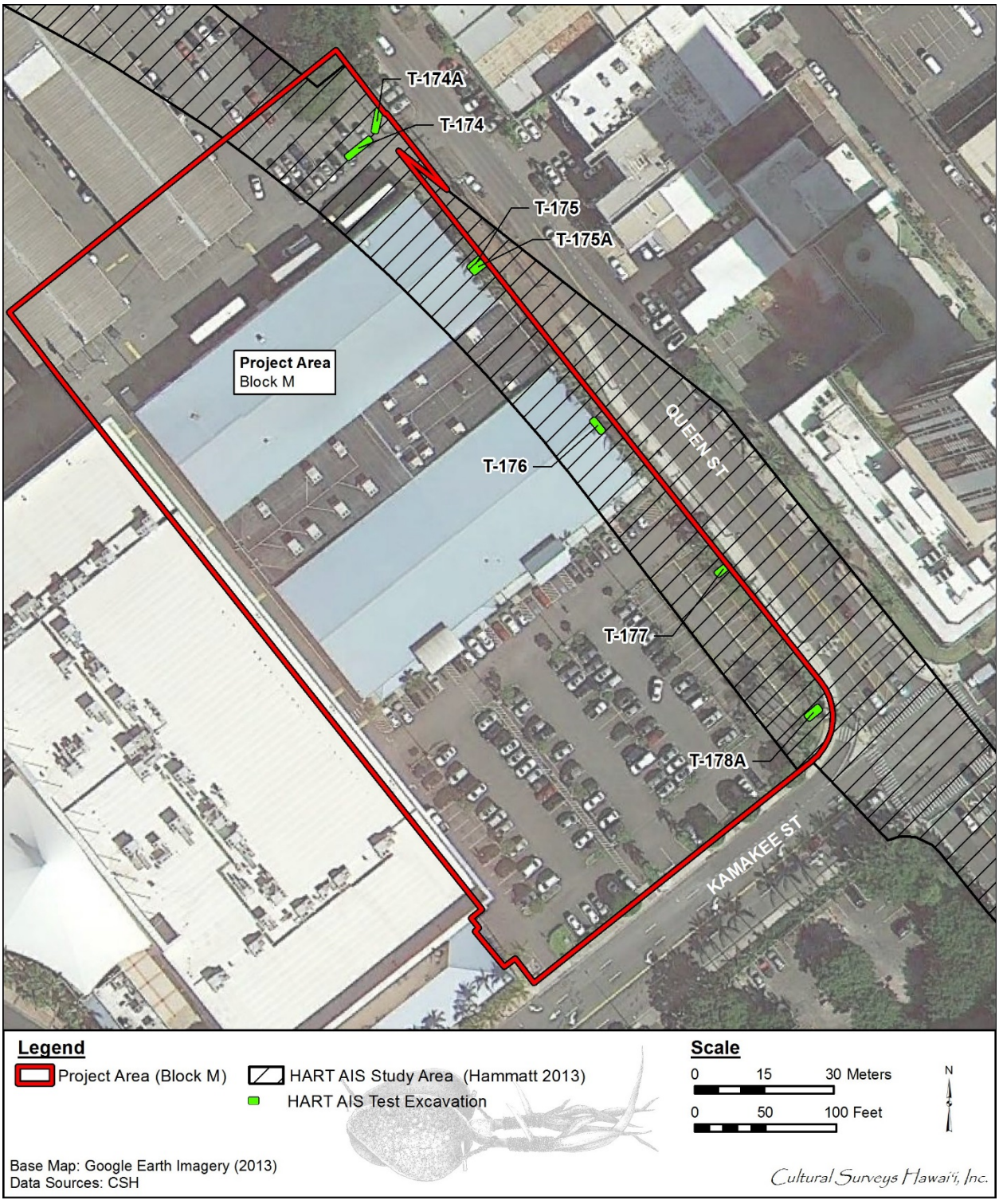


Figure 41. Aerial photograph showing the location of HHCTCP City Center AIS test excavations (Hammatt 2013) within the Block M project area

Figure 42. Profile wall of T-177 (HHCTCP City Center AIS), located within the *mauka* portion of the Block M project area, showing a buried sand A horizon overlying natural Jaucas sand

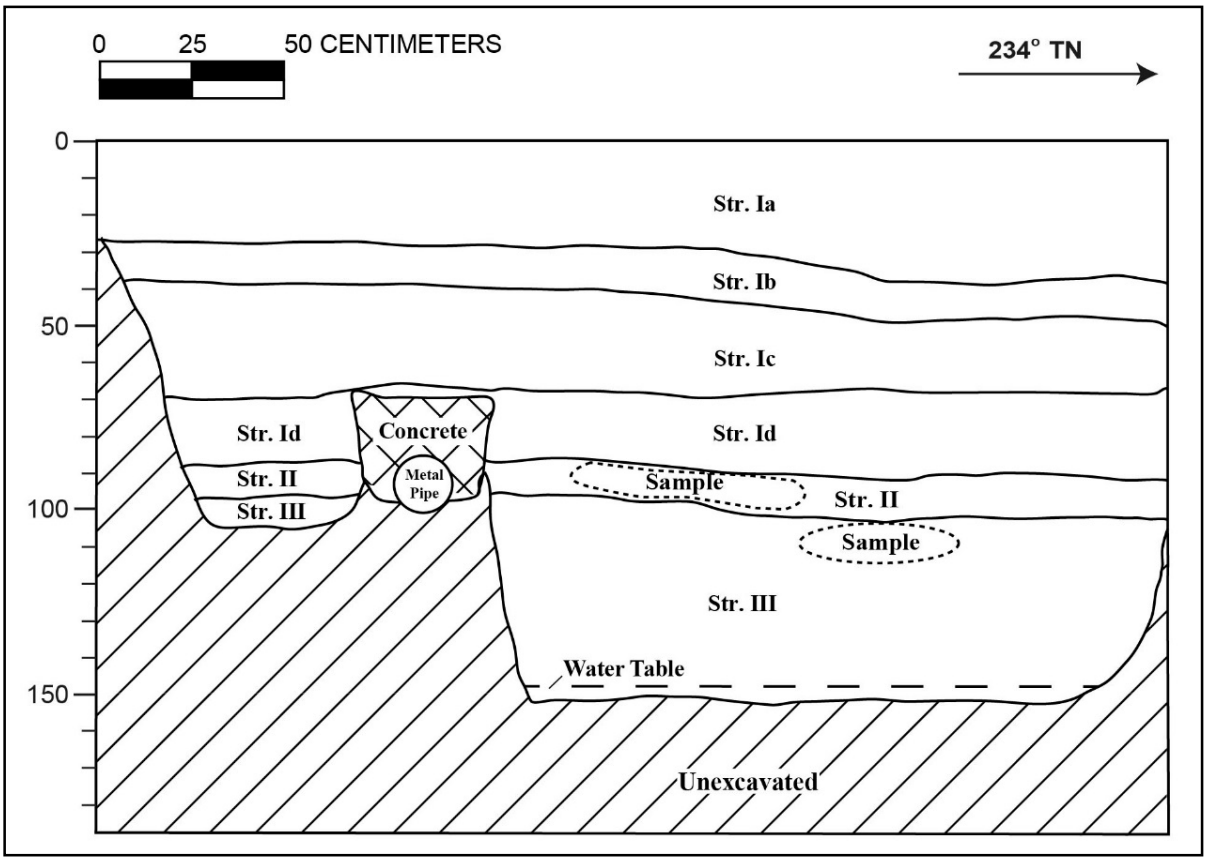


Figure 43. Profile of T-177 (HHCTCP City Center AIS), showing a buried A horizon (Str. II) overlying Jaucas sand (Str. III)

Stratum Description

Ia Fill; 7.5YR 3/2, dark brown; clay loam; topsoil
Ib Fill; 10YR 4/3, brown; gravelly silty loam
Ic Fill; 10YR 3/1, very dark gray; gravelly silty loam
Id Fill; 10YR 6/3, pale brown; silty clay; hydraulic fill
II Natural; 10YR 4/2, dark grayish brown; silty sand; A horizon; containing charcoal, volcanic glass debitage, and possible marine shell midden
III Natural; 10 YR 7/4, very pale brown; medium-grain sand; Jaucas sand

features were observed within the test excavations or within screened and bulk sediment samples.

2.3.11 Summary of Kaka‘ako Stratigraphy

The Kukuluāe‘o area has been heavily modified over the last 150 years due to filling of the area for land reclamation. However, much of the cultural and natural deposits and land forms of the area (low-land marshes, sand deposits, coral reef flats, and fishponds) survived below this fill. There are three major stratigraphic zones in the Kaka‘ako Development District area:

Zone 1

Zone 1 consists of two types of historic fill. The first type was deposited during the various land reclamation projects in Kaka‘ako, when fishponds and other low-lying areas were filled. Using dredged material from Honolulu Harbor and the reef flats fronting the Kaka‘ako area, large amounts of trash and refuse from the town dump, and soil and sand from various locations on the island, the Kaka‘ako area west of Ward Avenue was largely filled over the course of 40 years from 1875 to 1915. The area east of Ward Avenue was filled in the 1920s and 1930s during the Kewalo Basin and Waikīkī Reclamation projects. The second type of fill consists of the layers of material used to bring the various roads in the Kaka‘ako area up to grade and to make them passable during the wetter part of the year. The road fill layers in Kaka‘ako were made up primarily of crushed coral, soil, and crushed basalt gravel.

Zone 2

Zone 2 consists of the natural and cultural strata of the land prior to the historic filling of the area including, fishpond deposits, traditional pre-Contact and early historic Hawaiian cultural layers, human burials, and the buried A horizon of the pre-fill land surface. Most archaeological features encountered include historic refuse pits, building foundations, scattered historic and pre-Contact artifacts, pre-Contact refuse pits and cultural deposits, fishponds, and both historic and pre-Contact burials. Fishpond deposits are often distinguished as layers of gleyed marine sediments containing marine shell and decaying organic matter. Based on archaeological research completed in Kaka‘ako to date, it has become apparent the vast majority of pre-Contact Hawaiian burials in Kaka‘ako are buried in natural sand layers associated with the pre-Contact intertidal shoreline. These sand layers have been extensively disturbed in some areas, but many undisturbed pockets remain.

Zone 3

Zone 3 is the geologic non-cultural and pre-cultural stratigraphy of the Kaka‘ako area including, sterile coralline sand deposits, cinder deposits from the Tantalus/Sugarloaf eruptions, and a coral reef shelf/deposit from the last interglacial period. The Tantalus eruptions are thought to have taken place only 6,000 to 10,000 years ago, making them by far the most recent eruptions of O‘ahu (Farrell 1976). The Tantalus eruptions are relatively unique to O‘ahu in terms of the type of well-sorted cinder produced. The eruption of the cinder predates human occupation in Hawai‘i by thousands of years. The cinder layer provides a very clear demarcation between the underlying sterile geologic stratigraphy and the layers contemporaneous with cultural activity. This cinder is found only on the inland portion of the Kaka‘ako area, northwest of the project area (generally west of Cooke and *mauka* of Halekauwila streets). On the coastal section, the lowest stratum is of sterile sand. Below both is a coral shelf deposited during the last interglacial period, the Waimanalo Stand, at 122,000 +/- 7,000 year before present.

2.3.12 Ward Neighborhood Block M Project

Between 13 January and 1 June 2014, CSH conducted an AIS investigation of the Block M project area (Hawkins et al. 2014). A total of 68 test excavations were completed, within both exterior (asphalt parking lot and roadway) and interior (commercial) space (Figure 44).

Two historic properties were documented within the Block M project area. SIHP # 50-80-14-7429, previously documented by Hammatt (2013), consists of subsurface cultural deposits within two discrete strata (a historic sand and soil fill deposit and the underlying natural loamy sand A horizon) with associated traditional-type and historic features (Figure 45). The overlying historic sand fill deposit contained historic debris, faunal material (including a modified dog bone), shell midden, charcoal, milled wooden posts, and water channel or irrigation features. The in situ buried A horizon contained both traditional Hawaiian and historic cultural deposits consisting of marine midden, charcoal, faunal material, glass and ceramic fragments, a wooden die, and miscellaneous historic debris. Five pit features were associated with the in situ A horizon, including SIHP # -7429 Feature 8, a fire pit, which provided a radiocarbon date of 1398-1449 (94.7% probability). For a full historic property description see Appendix C.

SIHP # 50-80-14-7686 consists of buried, historic commercial infrastructure remnants associated with development during the mid- to late twentieth century (Figure 46). SIHP # -7686 included asphalt layers, concrete surfaces, and concrete footings located immediately below the current commercial building within the Block M project area. For a full historic property description see Appendix C.

The stratigraphic sequence documented within Block M, from the present land surface to the coral shelf, typically included: the modern developed land surface and variable layers of imported fill, overlying historic buried surfaces that once served as commercial infrastructure (SIHP # -7686), additional mixed fill, and crushed coralline sand and hydraulic (dredge) reclamation fill, overlying two buried, culturally enriched deposits (SIHP # -7429), and natural terrestrial deposits and/or wetland deposits that contained an O or A horizon at the upper boundary.

Extensive Kaka‘ako reclamation fill deposits were located within the project area, utilized between 1919-1927 to in-fill low-lying wetland areas and to create a dry, level land surface (Figure 47). The reclamation fill deposits consisted of structureless, crushed coralline sand and hydraulic-dredged marine clays, which were predominantly massive but occasionally single-grained depending on the sand content.

A pre-land reclamation fill deposit was observed below the hydraulic land reclamation fill in 23 test excavations. This fill stratum was composed of locally procured sand and soil and was interpreted to represent pre-reclamation landscape modifications which likely served as the former ground surface for a period of time. When cultural material or evidence of cultural activity was present, this layer was designated as SIHP # -7429; however, the majority of this pre-reclamation fill was culturally sterile. This historic sand fill deposit was typically observed overlying a natural A horizon, which was truncated during previous ground disturbing activities.

The natural environment documented below the historic fill deposits consisted of Jaucas beach sand in the *mauka* portion of the project area, along Queen Street, that transitioned to a marsh-like, wetland environment in the *makai* portion of the project area, near the Ward Theater parking structure (Figure 48). SIHP # -7429 was documented almost exclusively within the Jaucas sand deposits (Figure 49).

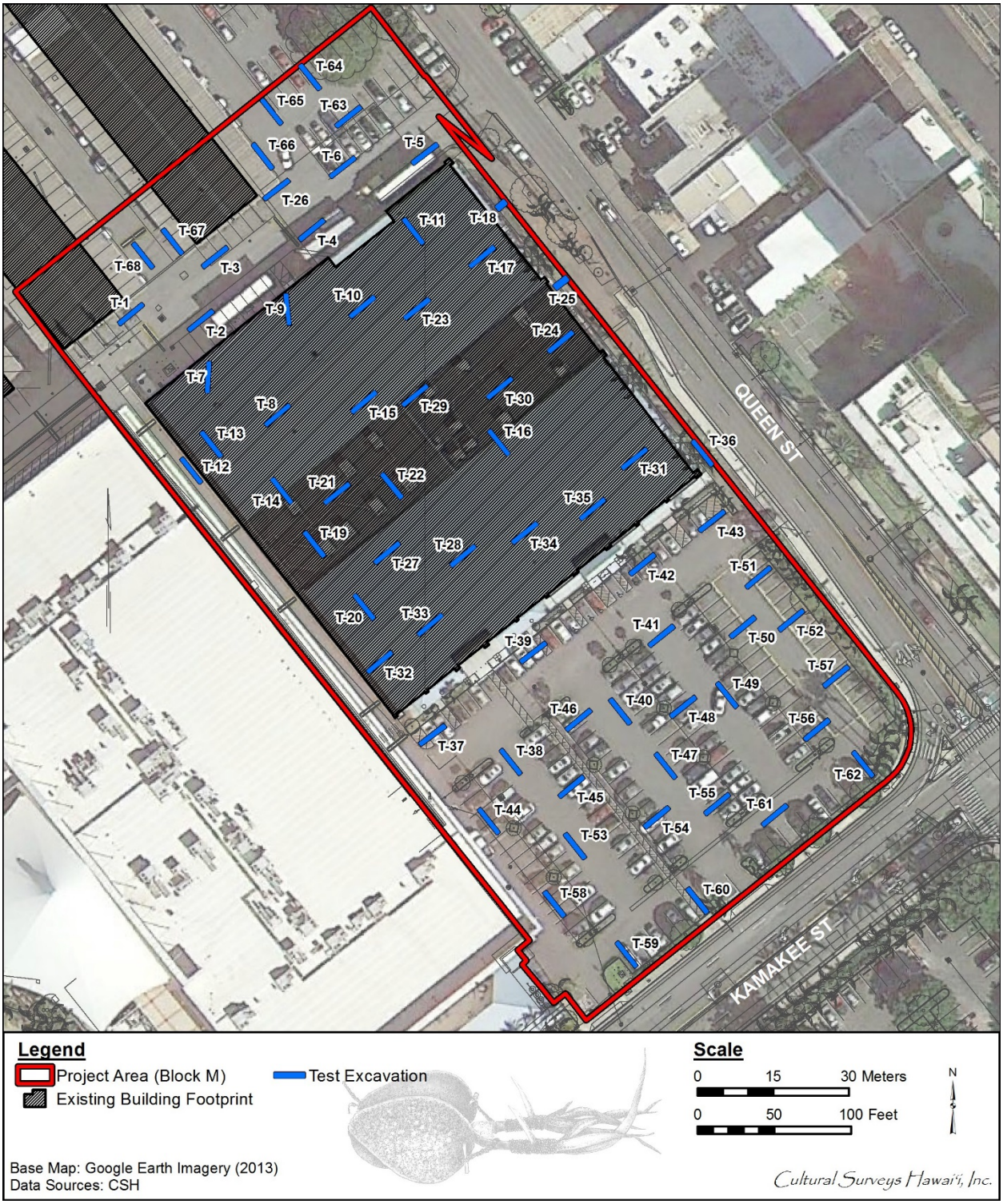


Figure 44. 2013 aerial photograph showing the location of AIS test excavations within the Block M project area (source: Google Earth 2013)

Figure 45. 2013 aerial photograph showing the location of SIHP # -7429 within the Block M project area (source: Google Earth 2013)

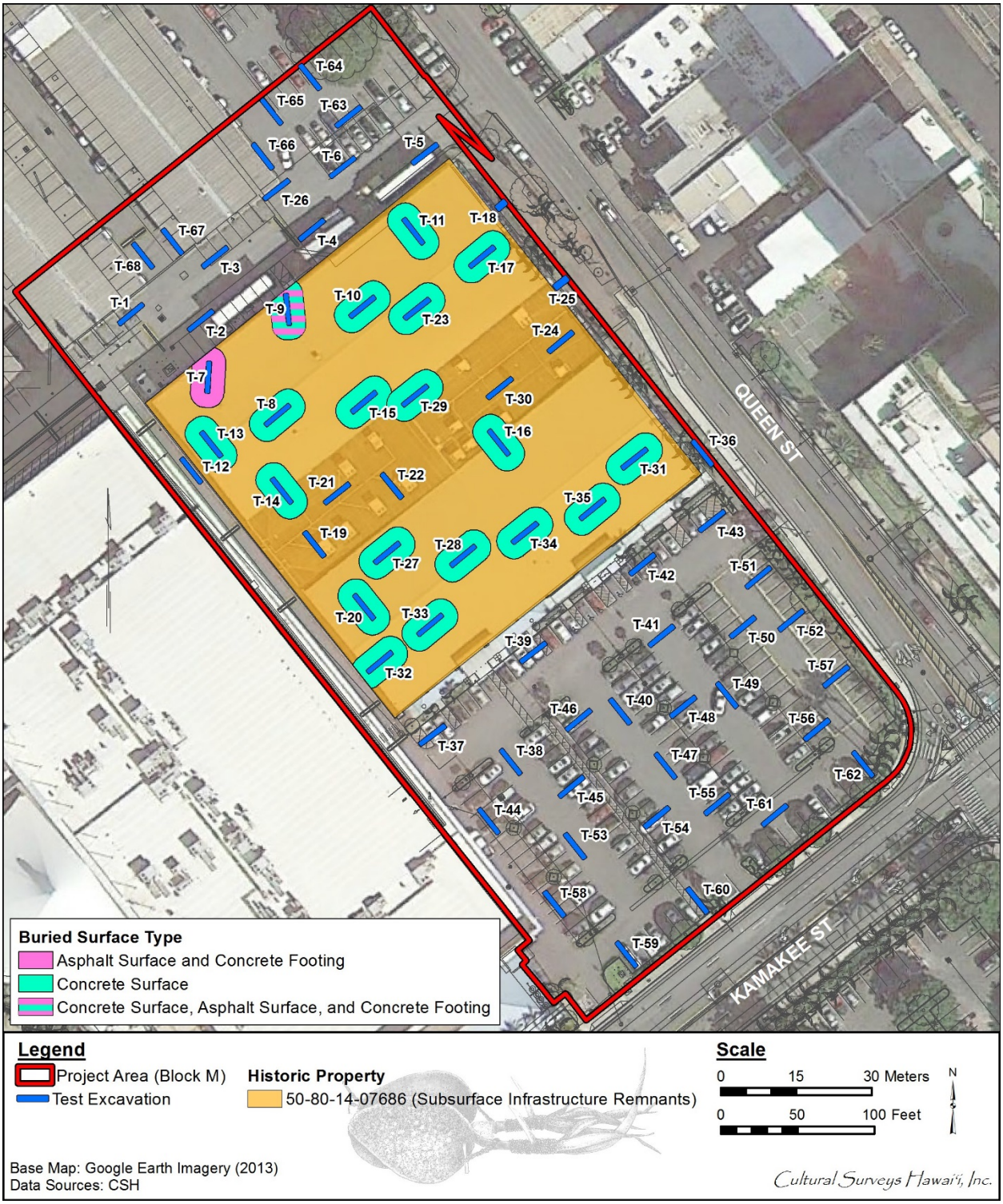


Figure 46. 2013 aerial photograph showing the location of SIHP # -7686 within the Block M project area (source: Google Earth 2013)

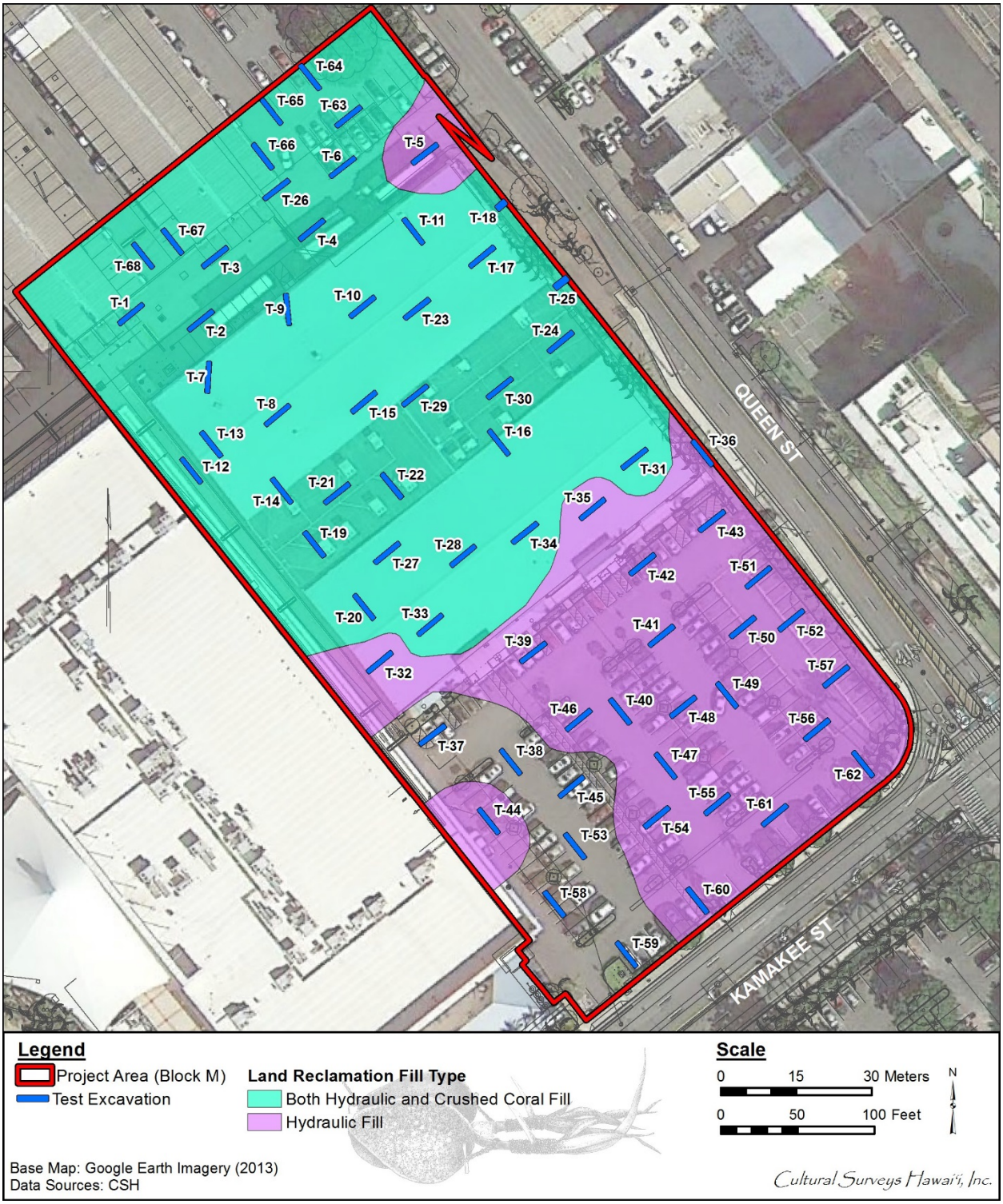


Figure 47. 2013 aerial photograph showing the location of Kaka‘ako reclamation fill deposits within the Block M project area (source: Google Earth 2013)

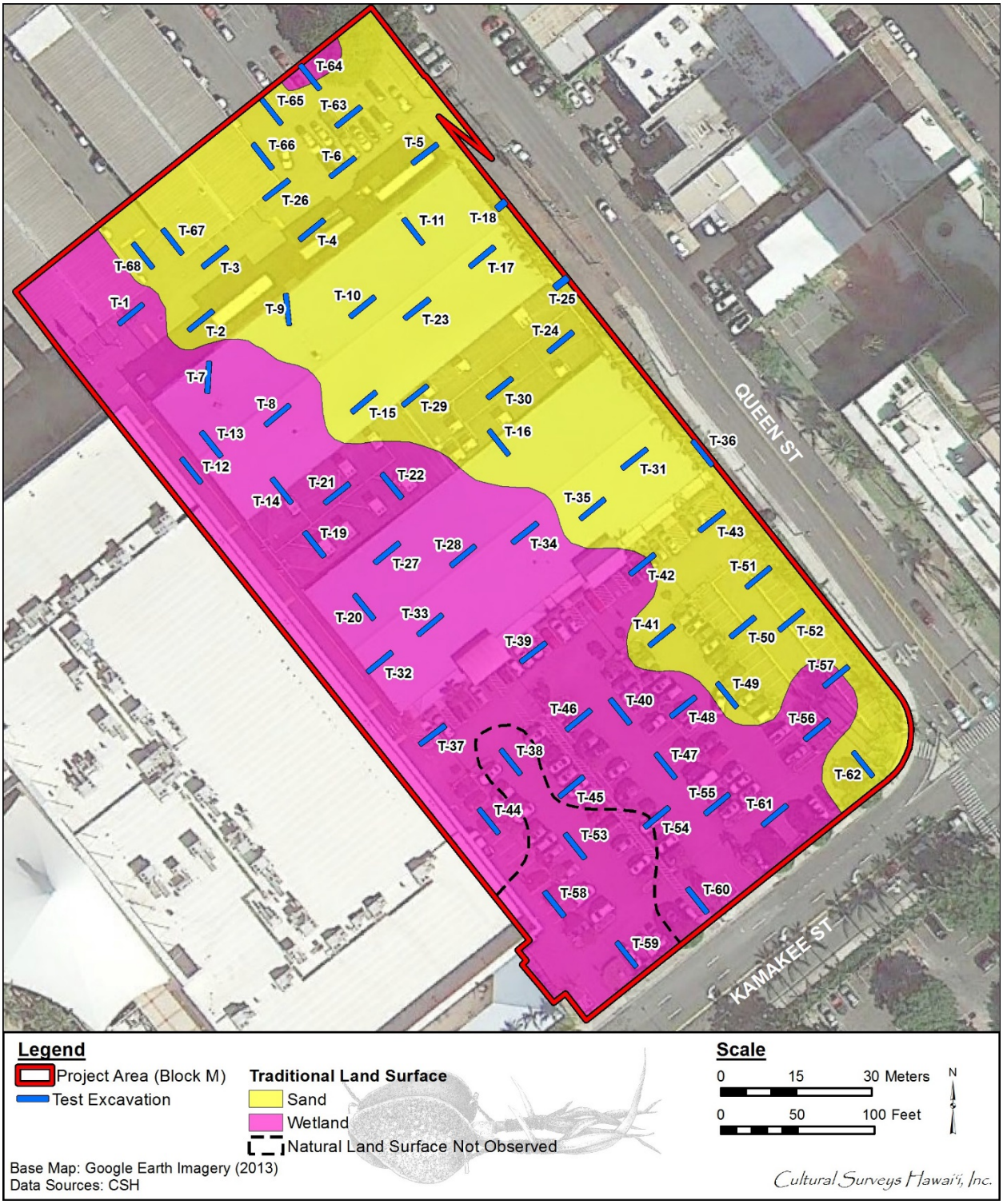


Figure 48. 2013 aerial photograph showing the location of a natural sand/dune deposits (yellow) extending diagonally across the *mauka* portion of the Block M project area and the location of natural, unmodified wetland deposits (pink) along the *makai* portion of the project area (source: Google Earth 2013)

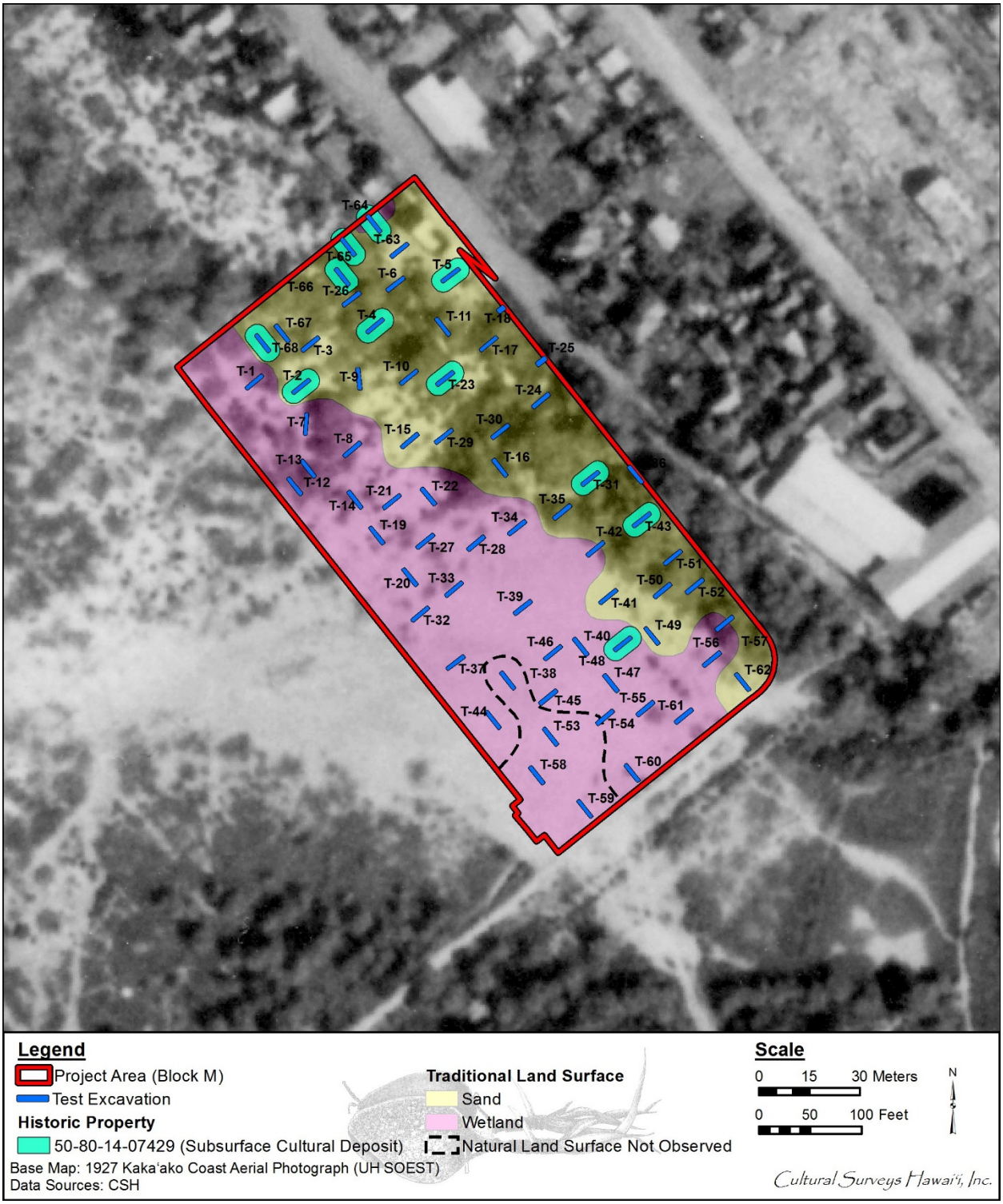


Figure 49. 2013 aerial photograph showing the location of SIHP # -7429 in relation to the natural sand/dune deposits (yellow) extending diagonally across the *mauka* portion of the Block M project area (source: Google Earth 2013)

Section 3 Archaeological Monitoring Provisions

Under Hawai‘i State historic preservation legislation, “Archaeological monitoring may be an identification, mitigation, or post-mitigation contingency measure. Monitoring shall entail the archaeological observation of, and possible intervention with, on-going activities, which may adversely affect historic properties” (HAR §13-279-3).

Hawai‘i State historic preservation legislation governing archaeological monitoring programs requires that each monitoring plan discuss eight specific items (HAR §13-279-4). The monitoring provisions below address these eight requirements in terms of archaeological monitoring for ground disturbance activities associated with project construction within the Block M project area.

1. Anticipated Historic Properties:

   The results of the project’s AIS indicate two historic properties are present within the project area: 1) SIHP # -7429, a previously identified subsurface cultural deposit and human skeletal element; and 2) SIHP # -7686, historic commercial buried surfaces. However, the potential for additional historic properties exists throughout the project area. In particular, the presence of Jaucas sand deposits within the northern and northeastern portions of the project area indicates the potential for as-yet unidentified pre-Contact and/or historic cultural deposits, as well as human burials.

2. Locations of Historic Properties:

   SIHP # -7429, a previously identified subsurface cultural deposit and human skeletal element, was initially identified approximately 200 m northwest of Block M (Hammatt 2013:639-654). It was also identified within Block M deposits, with most of its distribution in the northernmost portion of the project area within the area of Jaucas sand deposits. SIHP # -7686, historic commercial buried surfaces, was identified in the central portion of the Block M project area beneath the current commercial building.

3. Fieldwork:

   Based on the results of the Block M AIS, and in consultation with the SHPD, an archaeological monitoring program was determined to be warranted. While two historic properties were identified within the project area, sufficient data concerning the location, function, morphology, and age of SIHP # -7686 is believed to have been gathered during the project AIS; therefore, the primary focus of this monitoring plan is to mitigate construction impact on SIHP # -7429 and to facilitate the identification and proper treatment of any potential historic properties that might be newly encountered during project construction activities. CSH recommends a two-fold approach to monitoring be implemented, including both on-site monitoring and on-call monitoring, as well as additional on-site targeted monitoring. Within the areas where natural Jaucas sand was encountered during the AIS, a program of on-site monitoring will be implemented for all project subsurface construction activities below 2 ft (60 cm), as measured from the current ground surface. This portion of the project area includes generally the *mauka* portion of the project area, (the northern diagonal half of the Block M project area, including the majority of the current Office Depot building and its northern surroundings and the northeastern half of the parking lot) (Figure 50). This portion of the project area that contains Jaucas sand

also contains SIHP # -7429, subsurface cultural deposits, and the potential for additional cultural finds and/or human burials. Within the areas where natural wetlands were encountered, a program of on-call monitoring with weekly spot checks will be implemented (see Figure 50). This portion of the project area generally includes the *makai* portion of the project area (the southwestern diagonal half of the Block M project area, including the southwestern edge of the current Office Depot building and the majority of the parking lot). This area has been documented as unmodified wetland and is considered an area of low archaeological potential.

Within the northwestern portion of the area of on-site monitoring, consisting of the parking area behind the current Office Depot building and the warehouses within Block M, a program of targeted monitoring will also be implemented (see Figure 50). During subsurface construction activities in this area, careful excavation under the direction of the archaeological monitor will be required. In consultation with the SHPD, targeted monitoring is considered the best method to gain additional information on the water channel or irrigation features (‘*auwai*) associated with SIHP # -7429 encountered and documented in this area during the Block M AIS. Targeted monitoring will include additional data collection of these features (SIHP # -7429 Features 14 and 16) in order to acquire further information about the boundaries, orientation, construction technique, function, and any associated cultural features or material. Data collection will include extensive profiles and plan views (if applicable), photographs of any exposures, and measurement and locational data for the water features.

The monitoring fieldwork will employ current standard archaeological recording techniques. This will include drawing and recording the stratigraphy of excavation profiles where historic properties, cultural features, or artifacts are exposed, as well as representative profiles. These exposures will be photographed, located on project area maps, and sampled if appropriate. Photographs and representative profiles of excavations will be taken even if no historically significant sites are documented. Sampling will include the collection of representative artifacts, the on-site screening of measured volumes of feature fill to determine feature contents, and/or bulk sediment samples.

If non-burial historic properties, not previously identified by the Block M AIS, are encountered during monitoring, work will cease in the area, and SHPD will be consulted regarding appropriate mitigation measures in accordance with HAR §13-280-3.

If human remains are identified, work will cease in the immediate area, SHPD will be notified, and no further work will take place, including no screening of back dirt, no cleaning and/or excavation of the burial area, and no exploratory work of any kind unless specifically requested by the SHPD. All human skeletal remains encountered during construction will be handled in compliance with HRS §6E-7 and 6E-8 and HAR §13-300 and in accordance with SHPD directives.

4. Archaeologist’s Role:

The on-site/on-call archaeologist will have the authority to stop work immediately in the area of any findings so that documentation can proceed and appropriate treatment can be determined. In addition, the archaeologist will have the authority to slow and/or suspend

Figure 50. Aerial photograph of the Block M project area showing the zones of archaeological monitoring (base map: Google Earth 2013)

construction activities in order to ensure the necessary archaeological sampling and recording can take place.

5. Coordination Meeting:

   Before work commences on the project, the archaeologist shall hold a coordination meeting to orient the project field crew to the requirements of the archaeological monitoring program. At this meeting the monitor will emphasize his or her authority to temporarily halt construction and state that all finds (including objects such as bottles) are the property of the landowner and may not be removed from the project area. At this time it will be made clear that the archaeologist must be on-site during all subsurface excavations below 2 ft (60 cm) of the current project area land surface within the northern portion of the project area (per Figure 49).

   It will be emphasized that it is the duty of the general contractor to keep the archaeological firm informed of the schedule and any potential finds uncovered in the course of excavation work.

6. Laboratory Work:

   Laboratory work will be conducted in accordance with HAR §13-279-5(6). Laboratory analysis of non-burial related finds will be tabulated and standard artifact and midden recording will be conducted. Artifacts will be documented as to provenience, measurements, mass, type of material, and presumed function. Photographs of representative artifacts will be taken for inclusion in the archaeological monitoring report. Bone and shell midden materials will be sorted down to species, when possible, and then tabulated by provenience.

   As appropriate, collected charcoal and/or organic sediment potentially containing paleoenviromental data obtained within intact cultural deposits will be sent to Beta Analytic, Inc. for radiocarbon dating and/or PaleoResearch, Inc. or SkyCedar Research for pollen, starch, and/or phytolith analyses. All analyzed samples, provenience information, and results will be presented in table form within the archaeological monitoring report.

7. Report Preparation:

   The report will contain sections on monitoring methods, archaeological results, stratigraphy, and results of laboratory analyses, and it will present a synthesis of these results. The report will address the requirements of a monitoring report (pursuant to HAR §13-279-5). Photographs of excavations will be included in the monitoring report even if no historically significant sites are documented. Should burial treatment be completed as part of the monitoring effort, a summary of this treatment will be included in the monitoring report. Should burials and/or human remains be identified, then CSH will provide all appropriate additional written documentation (e.g., letters, memos, reports) that may be requested by the SHPD.

8. Archiving Materials:

   All burial materials will be addressed in accordance with SHPD directives. Materials not associated with burials will be temporarily stored at CSH’s Waimānalo office until an appropriate curation facility is selected, in consultation with the landowner and the SHPD.

3.1 Research Questions

Research objectives guiding the fieldwork and laboratory analysis in the Block M project area are as follows:

1. SIHP # -7429 consists of two culturally enriched deposits: a historic fill deposit consisting of locally procured sand and soil which contained scattered historic artifacts, milled wooden posts, and water control features; and an underlying natural loamy sand A horizon which contained both traditional-type and historic cultural material as well as fire pit (*imu*) features. The culturally enriched historic fill deposit appeared to represent the first significant historic modification to the natural landscape. What additional evidence can be gathered to further characterize the function of this deposit, the time period of deposition, and its spatial extent? The underlying natural A horizon is linked spatially and geographically with SIHP # -7429 deposits documented within the adjacent Block I project area (CSH AIS report in progress) and the Ross Dress for Less parking lot along Ward Avenue (Hammatt 2013). How do the traditional-type features and cultural material associated with this stratum within the Block M project area interrelate with the SIHP # -7429 cultural deposits within these adjacent project areas?
2. Can the boundaries, orientation, construction technique, and function of the water control features (SIHP # -7429 Features 14 and 16) be further determined?
3. The Block M AIS documented historic trash, believed to be associated with twentieth century residences along Queen Street, within modern fill deposits. Do intact remnants of these residences along Queen Street still exist within the project area?

Section 4 References Cited

Abbott, R. Tucker and S. Peter Dance
1990 *Compendium of Seashells*. American Malacologists, Melbourne, Florida.

Andrews, Lorrin
2003 *A Dictionary of the Hawaiian Language.* Island Heritage Publishing, Waipahu, Hawai‘i.

Armstrong, R. Warwick
1983 *Atlas of Hawaii*. Second edition. University of Hawai‘i Press, Honolulu, Hawai‘i.

Athens, Stephen J. and Jerome V. Ward
1991 *Paleoenvironmental and Archaeological Investigations, Kawainui Marsh Flood Control Project, O‘ahu Island, Hawai‘i.* International Archaeological Research Institute, Inc. Honolulu, Hawai‘i.

Baldwin, E.D.
1883 Honolulu Water Works System. Registered Map 1087. Archived at Hawai‘i Land Survey Division, Department of Accounting and General Services, 1151 Punchbowl Street, Room 210, Honolulu, Hawai‘i.

Barrera, W.M., Jr. and P.V. Kirch
1973 Basaltic-glass artifacts from Hawaii: Their dating and prehistoric uses. *Journal of Polynesian Society* 82: 176-187.

Beckwith, Martha
1940 *Hawaiian Mythology*. Yale University Press, New Haven, Connecticut.

Bell, Matt, Matt McDermott, and Owen O’Leary
2006 *Archaeological Inventory Survey Report for the Victoria Ward Village Shops Project, Waikiki Ahupua‘a, Honolulu (Kona) District, O‘ahu Island, TMK: [1] 2-3-5: 013-017, 022, & 023.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Bingham, Hiram
1847 *A Residence of Twenty-One Years in the Sandwich Islands.* Huntington, Hartford, Connecticut and Convers, New York.

Bishop Museum Archives
1834 Town of Honolulu: Island of Woahoo: Sandwich Islands. Original sketch at Bernice Pauahi Bishop Museum Archives, Honolulu. Reprinted in *Hawai‘i Looking Back. An Illustrated History of the Islands* by Glen Grant. Mutual Publishing, Honolulu, Hawai‘i.

Bishop, S.E.
1884 Map of Honolulu, Kewalo Section. Registered Map 1090. Archived at Hawai‘i Land Survey Division, Department of Accounting and General Services, 1151 Punchbowl Street, Room 210, Honolulu, Hawai‘i.

Boelen, Jacobus
1988 *A Merchant's Perspective: Captain Jacobus Boelen's Narrative of his Visit to Hawai‘i in 1828.* Hawaiian Historical Society, Honolulu, Hawai‘i.

Borget, Auguste

2000 Honolulu Salt Pan, near Kakaako. Original sketch at Peabody Essex Museum, Salem, Massachusetts. Reprinted in *Hawai‘i Looking Back. An Illustrated History of the Islands* by Glen Grant. Mutual Publishing, Honolulu, Hawai‘i.

Brigham, William T.

1974 Stone Implements and Stone Work of the Ancient Hawaiians, *Memoirs of the Bernice Pauahi Bishop Museum*, Vol. I, No. 4. Kraus Reprint Company, Millwood, New York.

Buck, Peter H.

2003 *Arts and Crafts of Hawaii*. Bishop Museum Special Publication 45. Bishop Museum Press, Honolulu, Hawai‘i.

Chinen, Jon J.

1958 *The Great Māhele, Hawaii's Land Division of 1848.* University of Hawai‘i Press, Honolulu, Hawai‘i.

Chong, Douglas Dai Lunn

1998 *Ancestral Reflections: Hawaii’s Early Chinese of Waipahu, an Ethnic Community Experience, 1885-1935.* Waipahu Tsoong Nyee Society, Waipahu, Hawai‘i.

Clark, John R.K.

1977 *The Beaches of O‘ahu.* University of Hawai‘i Press, Honolulu, Hawai‘i.

Corney, Peter

1896 *Voyages in the Northern Pacific. Narrative of Several Trading Voyages From 1813 1818, Between the Northwest Coast of America, the Hawaiian Islands and China, with a Description of the Russian Establishments on the Northwest Coast.* Thos. G. Thrum, Honolulu, Hawai‘i.

Cruz, Brian, Haven Giannasio and Hallett H. Hammatt

2012 *Cultural Impact Assessment for the Ward Neighborhood Master Plan Project, Kaka‘ako Ahupua‘a, Honolulu (Kona) District, Island of O‘ahu, TMK : [1] 2-1-049:063, 080; 2-1-050:001, 061, 062; 2-1-052:011, 012, 016, 017, 020, 022, 024, 027, 028, 031 to 036, 038, 039, 040, 042, 043, 045, 046, 051, 052, 053, 2-1-053:001, 030; 2-1-056:001; 2-3-001:001, 004, 005; 2-3-002:001, 002, 059, 067, 086, 087, 104; 2-3-003:022, 065, 093, 094; 2-3-005:004, 005, 006, 012 to 017, 019, 022*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Dale, John B.

1845 Native Church, Oahu, from the Old Salt Pans. Original sketch from the J. Welles Henderson Collection. Reprinted in *Encounters with Paradise: Views of Hawaii and its People 1778-1941* by David Forbes. Honolulu Academy of Arts, Honolulu, Hawai‘i.

Davis, Bertell D.

1989 *Subsurface Archeological Reconnaissance Survey and Historical Research at Fort DeRussy, Waikiki, Island of O‘ahu, Hawai‘i.* International Archaeological Research Institute, Inc., Honolulu, Hawai‘i.

Day, A. Grove
1984 *History Makers of Hawaii. A Biographical Dictionary.* Mutual Publishing, Honolulu, Hawai‘i.

Daysong, Rick
1997 Kakaako Mall to cost $200 Million. The 915,000 square-foot retain and entertainment center would replace Ward Warehouse. *Honolulu Star-Bulletin* 22 January 22.

DeLeon, David
1978 *A Short History of Manoa Valley from 1800 to Present.* University of Hawai‘i at Mānoa, Hamilton Library, Honolulu, Hawai‘i.

Dye, Tom and J. Stephen Athens
2000 Part A: Introduction. In *Ancient Hawaiian Fishponds of Pearl Harbor: Archaeological Studies on U.S. Navy Lands, Hawai‘i.* J. Stephen Athens, editor. International Archaeological Research Institute, Inc., Honolulu, Hawai‘i.

Eisenberg, Jerome M.
1981 *A Collector’s Guide to Seashells of the World.* Crescent Books, New York.

Elliott, Rex R. and Stephen C. Gould
1988 *Hawaiian Bottles of Long Ago: A Little of Hawaii’s Past*. Hawaiian Service, Honolulu, Hawai‘i.

Emory, Kenneth Pike, William J. Bonk, and Yoshihiko H. Sinoto
1968 *Fishhooks*. Bernice Pauahi Bishop Museum Special Publication Vol. 47. Bishop Museum Press, Honolulu, Hawai‘i.

Ernest K. Hirata & Associates , Inc.
1992 *Soils Investigation Kakaako Community Development District Mauka Area-Phase 4 Infrastructure System Design Project for Engineers Surveyors Hawaii, Inc.* Ernest K. Hirata & Associates, Aiea, Hawai‘i.

Ferrall, Charles C., Jr.
1976 *Subsurface Geology of Waikiki, Moiliili and Kakaako with Engineering Application.* University of Hawai‘i Geology and Geophysics manuscript. University of Hawai‘i at Mānoa, Honolulu, Hawai‘i.

Fike, R.E.
1987 *The Bottle Book: A Comprehensive Guide to Historic, Embossed Medicine Bottles*. Peregrine Smith Books, Salt Land, Idaho.

Fitzpatrick, Gary L.
1985 *The Early Mapping of Hawai‘i.* Editions Limited, Honolulu, Hawai‘i.

Fletcher, Charles H. III, and Anthony T. Jones
1996 Sea-level highstand recorded in Holocene shoreline deposits on O‘ahu, Hawaii. *Journal of Sedimentary Research* 66(3):632-641.

Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens
1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. U.S. Department of Agriculture, Soil Conservation Service, Government Printing Office, Washington, D.C.

Forbes, David
1992 *Encounters with Paradise: Views of Hawaii and its People 1778-1941*. Honolulu Academy of Arts, Honolulu, Hawai‘i.

Fornander, Abraham
1916-1920 Fornander Collection of Hawaiian Antiquities and Folk-Lore. *Memoirs of the Bernice Pauahi Bishop Museum* Vol. IV-VI. Bishop Museum Press, Honolulu, Hawai‘i.

General Growth Properties Inc.
2008 *Ward Neighborhood Master Plan*. A Master Plan Submittal to the Hawaii Community Development Authority. Prepared by General Growth Properties, Inc., Honolulu, Hawai‘i.

Gessler, Clifford
1938 *Hawaii. Isles of Enchantment.* D. Appleton-Century Company, New York and London.

Gilman, Gorman D.
1903 Streets of Honolulu in the Early Forties. In *Hawaiian Almanac and Annual for 1904.* Thos. G. Thrum, Honolulu, Hawai‘i.

Google Earth
2013 Aerial photographs of Hawai‘i. Google Inc., 1600 Amphitheatre Parkway, Mountain View, California 94043. Available online at www.google.com/earth.html.

Gotanda, Masae (editor)
1989 *Hawaiian Legends Index*. Revised edition. 3 Vols. Hawai‘i State Public Library System, Department of Education, State of Hawai‘i, Honolulu, Hawai‘i.

Grant, Glen
2000 *Hawai‘i Looking Back. An Illustrated History of the Islands.* Mutual Publishing, Honolulu, Hawai‘i.

Greer, Richard A.
1994 Grog Shops and Hotels. Bending the Elbow in Old Honolulu. *The Hawaiian Journal of History* 28:35-67.

Griffin, P. Bion, D.T.P. Keene, and Joseph Kennedy
1987 *Kaka‘ako: Prediction of Sub-Surface Archaeological Resources, Kaka‘ako Community Development District, Archaeological Reconnaissance Survey.* University of Hawai‘i at Mānoa, Honolulu, Hawai‘i.

Grossman, E.E., and C.H. Fletcher III
1998 Sea level higher than present 3500 years ago on the northern main Hawaiian Islands. *Geology* 26(4):363-366.

Grossman, E.E., C.H. Fletcher III, and B.M. Richmond

1998 The Holocene sea-level highstand in the equatorial Pacific: analysis of the insular paleosea-level database. *Coral Reefs* 17: 309-327.

Hammatt, Hallett H.

2013 *Archaeological Inventory Survey Report for City Center (Section 4) of the Honolulu High-Capacity Transit Corridor Project, Kalihi, Kapālama, Honolulu, and Waikīkī Ahupua‘a, Honolulu (Kona) District, Island of O‘ahu, TMK [1] 1-2, 1-5, 1-7, 2-1, 2-3 (Various Plats and Parcels), Five Volumes.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Handy, E.S., Craighill and Elizabeth G. Handy

1972 *Native Planters in Old Hawaii: Their Life, Lore, and Environment.* Bishop Museum Bulletin 23. Bishop Museum, Honolulu, Hawai‘i.

Hanley, Sister M.L. and O.A. Bushnell

1980 *A Song of Pilgrimage and Exile: the Life and Spirit of Mother Marianne of Molokai.* Franciscan Herald Press, Chicago, Illinois.

Harney, J.N., E.E. Grossman, B.M. Richmond, and C.H. Fletcher III.

2000 Age and composition of carbonate shoreface sediments, Kailua Bay, Hawaii. *Coral Reefs* 19:141-154.

Hawaii Board of Health

1902 *Report of the President of the Board of Health of the Territory of Hawaii*. Bulletin Publishing Company, Honolulu, Hawai‘i.

Hawaii Department of Public Works

1904 *Annual report of the Superintendent of Public Works to the Governor of the Territory of Hawaii.* Bulletin Publishing Company, Honolulu, Hawai‘i.

1914 Annual report of the Superintendent of Public Works to the Governor of the Territory of Hawaii. Bulletin Publishing Company, Honolulu, Hawai‘i.

Hawai‘i Department of Transportation, Harbors Division

2007 *History of O‘ahu’s Harbors.* Electronic document, http://www.hawaii.gov/dot/harbors/oahu/history.htm (accessed 29 June 29).

Hawaii First Legislative Assembly

1901 *First Legislative Assembly of the Territory of Hawaii, 1901, in Extra Session.* The Grieve Publishing Company, Honolulu, Hawai‘i.

Hawaii Governor

1905 *Report of the Governor of the Territory of Hawaii to the Secretary of the Interior.* Government Printing Office, Washington, D. C.

Hawaii Reports

1914 *Cases Decided in the Supreme Court of the Territory of Hawaii.* Honolulu Star-Bulletin, Honolulu, Hawai‘i.

1915 *Cases Decided in the Supreme Court of the Territory of Hawaii.* Honolulu Star-Bulletin, Honolulu, Hawai‘i.

Hawai‘i State Archives

1933 Aerial photograph of Honolulu to Waikiki. Photograph PP-40-5-009. Hawai‘i State Archives, Honolulu, Hawai‘i.

Hawai‘i TMK Service

Tax Map Key [1] 1-2 and 2-3. Hawai‘i TMK Service, 222 Vineyard Street, Suite 401, Honolulu, Hawai‘i.

Hawkins, Megan T., Ena Sroat and Matt McDermott

2014 *Draft: Archaeological Inventory Survey Report for the Block M Project, Kaka‘ako, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu TMK: [1] 2-3-002:001 (portion).* Cultural Surveys Hawai‘i, Kailua, Hawai‘i.

Hustace, Frank Ward, III

2000 *Victoria Ward and Her Family: Memories of Old Plantation.* Victoria Ward, Ltd., Honolulu, Hawai‘i.

‘Ī‘ī John Papa

1959 *Fragments of Hawaiian History as Recorded by John Papa ‘Ī‘ī.* Bishop Museum Press, Honolulu, Hawai‘i.

Kamakau, Samuel M.

1961 *Ruling Chiefs of Hawaii*. Kamehameha Schools Press, Honolulu, Hawai‘i.

1991 *Tales and Traditions of the People of Old: Nā Mo‘olelo a ka Po‘e Kahiko*. Bishop Museum Press, Honolulu, Hawai‘i.

Kay, E. Allison

1979 *Hawaiian Marine Shells. Section 4*. Bishop Museum Press, Honolulu, Hawai‘i.

Kekahuna, Henry E. P.

1958 *Hawaiian Place Names of O‘ahu*. Box M-445, Item # 81, Hawai‘i State Archives, Honolulu, Hawai‘i.

Kewalo Basin Harbor

2013 Harbor History. Electronic document, https://sites.google.com/site/kewalobasin harbor/home (accessed November 2013).

Kotzebue, Otto von

1817 South O‘ahu [map]. In *The Early Mapping of Hawai‘i,* by Gary L. Fitzpatrick. Editions Limited, Honolulu, Hawai‘i.

1821 *A Voyage of Discovery, into the South Sea and Beering Straits, for the Purpose of Exploring a North-east Passage Undertaken in the Years 1815-1818.* Longman, Hurst, Rees, Orme, and Brown, London.

Kovel, Ralph and Terry

1986 *Kovels' New Dictionary of Marks: Pottery & Porcelain 1850 to the Present*. Crown Publishers, Inc., New York.

Larrison, G.

1916 Honolulu's Future Water Supply. *Hawaiian Almanac and Annual for 1917*. Thomas G. Thrum, Honolulu, Hawai‘i.

Lehner, Lois

1988 *Lehner’s Encyclopdia of U.S. Marks on Pottery, Porcelain & Clay*. Collector Books, Paducah, Kentucky.

Lindsey, Bill

2010 *Historic Glass Bottle Identification & Information Website*. http://www.sha.org/bottle

Lockhart, Bill

2004-2010 *The Dating Game. Bottles and Extras.* Electronic document, www.sha.org/bottles. andmore.htm.

McAllister, J. Gilbert

1933 *Archaeology of Oahu.* Bishop Museum Bulletin 104. Bishop Museum Press, Honolulu, Hawai‘i.

Macdonald, Gordon A., Agatin T. Abbott, and Frank L. Peterson

1983 *Volcanoes in the Sea: The Geology of Hawaii*. University of Hawai‘i Press, Honolulu, Hawai‘i.

Mason Architects, Inc.

2002 *Incinerator Number One (Old Kewalo Incinerator).* HAER No. HI-64. Historic American Buildings Survey (HAER), Pacific Great Bain System Support Office, National Park Service, Oakland, California.

Monsarrat, M.D.

1897 Map of Honolulu, Hawaiian Islands. Registered Map 1910. Archived at Hawai‘i Land Survey Division, Department of Accounting and General Services, 1151 Punchbowl Street, Room 210, Honolulu, Hawai‘i.

Nakamura, Barry

1979 *The Story of Waikiki and the Reclamation Project*. M.A. thesis, University of Hawai‘i, Honolulu.

NOAA (National Oceanic and Atmospheric Administration)

1993 NOAA Kaka‘ako Coast Aerial Photograph. UH MAGIS (University of Hawaii Maps, Aerial Photographs, and Geographic Information Systems), online at http://guides.library.manoa.hawaii.edu/magis.

2000 NOAA Kaka‘ako Coast Aerial Photograph. UH MAGIS (University of Hawaii Maps, Aerial Photographs, and Geographic Information Systems), online at http://guides.library.manoa.hawaii.edu/magis.

Ober, Gerald

1959 Map of early (ca. 1810) trails of Honolulu, based on information from John Papa Ī‘ī. In Fragments of Hawaiian History as Recorded by John Papa ‘Ī‘ī. Bishop Museum Press, Honolulu, Hawai‘i.

O’Hare, Constance R., Anthony Bush, and Hallett H. Hammatt

2006 *Archaeological Monitoring Report Kaka‘ako Community Improvement District 10, Honolulu Ahupua‘a, Kona District, O‘ahu (TMK [1] 2-3-04, 05, 06, & 07).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

O’Hare, Constance R., Douglas F. Borthwick, and Hallett H. Hammatt

2012 *Archaeological Literature Review and Predictive Model Development for the Ward Neighborhood Master Plan Project, Kaka‘ako, Honolulu Ahupua‘a, Honolulu District, O‘ahu Island TMK: [1] 2-1-049:063, 080; 2-1-050:001, 061, 062; 2-1-052:011, 012, 016, 017, 020, 022, 024, 027, 028, 031 to 036, 038, 039, 040, 042, 043, 045, 046, 051, 052, 053, 2-1-053:001, 030; 2-1-056:001; 2-3-001:001, 004, 005; 2-3-002:001, 002, 059, 067, 086, 087, 104; 2-3-003:022, 065, 093, 094; 2-3-005:004, 005, 006, 012 to 017, 019, 022.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Olsen, Stanley J.

1964 *Mammal Remains from Archaeological Sites: Part I Southeastern and Southwestern United States*. Unknown publisher.

Pacific Commercial Advertiser

1875 Article on the Ward Estate. *Pacific Commercial Advertiser*, September 4, 1875.

Paradise of the Pacific

1950 Kakaako, A Growing Business District. *Paradise of the Pacific* November:21.

Pukui, Mary Kawena, E.W. Haertig, and Catherine A. Lee

1972 *Nānā I Ke Kumu (Look to the Source).* Hui Hānai, Honolulu, Hawai‘i.

Pukui, Mary Kawena, Samuel H. Elbert, and Esther T. Mookini

1974 *Place Names of Hawaii.* University of Hawai‘i Press, Honolulu, Hawai‘i.

Punahou School and Oahu College

1866 *Catalogue of the Teachers and Pupils of Punahou School and Oahu College for Twenty-five Years Ending 1866 with an Account of The Quarter Century Celebration Held at Punahou June 15th, 1866.* Printed by Henry M. Whitney, Honolulu, Hawai‘i.

R.M. Towill Company

1970 High-altitude aerial photographic series for O‘ahu, 1970, 5063.2 and 5063.4. Copies available at the Hawai‘i State Archives, Aerial Photographs, File PPA 50-10.002 and 10.004, Kekāuluohi Building, 364 S. King Street, Honolulu, Hawai‘i.

Schmid, Elisabeth

1972 *Atlas of Animal Bones for Prehistorians, Archaeologists and Quaternary Geologists*. Elsevier Publishing Company, Amsterdam, London, New York.

Scott, Edward B.

1968 *The Saga of the Sandwich Islands, Volume 1.* Sierra-Tahoe Publishing Company, Crystal Bay, Lake Tahoe, Nevada.

Shackley, Myra L.
1981 Sediments and Soils. *Environmental Archeology*. George Allem & Lluwin, London.

Sisson, Septimus
1953 *The Anatomy of the Domestic Animals*. W.B. Saunders Company, Pennsylvania.

Souza, Kehaulani E., Mary Perzinski, and Hallett H. Hammatt
2002 *An Archaeological Monitoring Report for the Kaka‘ako Improvement District 7 Project (TMK: 2-1-58, 2-3-01 thru-05).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Sroat, Ena and Matt McDermott
2012 *Supplemental Archaeological Inventory Survey Report for the Ward Village Shops Phase 2 Project, Waikīkī Ahupua‘a, Honolulu (Kona) District, O‘ahu Island TMK: [1] 2-3-005:013-017, 022 & 023*. Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Sroat, Ena M., Constance R. O’Hare, and Matthew McDermott
2014 *Archaeological Inventory Survey Plan for the Block M Project, Kaka‘ako Ahupua‘a, Honolulu (Kona) District, O‘ahu TMK: [1] 2-3-002:001 (portion).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Stearns, H.T.
1978 *Quaternary Shorelines in the Hawaiian Islands*. Bishop Museum Bulletin 237. Bishop Museum Press, Honolulu, Hawai‘i.

Stewart, C.S.
1970 *Journal of a Residence in the Sandwich Islands, During the Years 1823, 1824, and 1825.* University of Hawai‘i Press for the Friends of the Library of Hawai‘i, Honolulu.

Stone, Scott C.S.
1983 *Honolulu, Heart of Hawai‘i.* Continental Heritage Press, Inc., Tulsa, Oklahoma.

Thrum, Thomas
1901 Retrospect for 1900. *Hawaiian Almanac and Annual for 1901*. Thomas G. Thrum, Honolulu.

1902 Retrospect for 1901. *Hawaiian Almanac and Annual for 1902*. Thomas G. Thrum, Honolulu.

1905 The Sandalwood Trade of Early Hawaii, As Told by the Pioneer Traders, Voyagers and Others, compiled by Thos. G. Thrum. *Hawaiian Almanac and Annual for 1905*, Thomas G. Thrum, Honolulu.

1906 Retrospect for 1905. *Hawaiian Almanac and Annual for 1906*. Thomas G. Thrum, Honolulu.

1907 Retrospect for 1906. *Hawaiian Almanac and Annual for 1907.* Thomas G. Thrum, Honolulu.

1916 Retrospect for 1915. *Hawaiian Almanac and Annual for 1916*. Thomas G. Thrum, Honolulu.

1920 Retrospect for 1919. *Hawaiian Almanac and Annual for 1920*. Thomas G. Thrum, Honolulu.

1924 Hawaiian Salt Making. *Hawaiian Almanac and Annual for 1924*. Thomas G. Thrum, Honolulu.

Titcomb, Margaret

1979 *Native Use of Marine Invertebrates in Old Hawaii*. University of Hawai‘i Press, Honolulu, Hawai‘i.

Toulouse, Julian Harrison

1971 *Bottle Makers and their Marks*. Thomas Nelson, Inc., Nashville, Tenneessee and New York.

1970 *Journal of a Residence in the Sandwich Islands, During the Years 1823, 1824, and 1825*. University of Hawai‘i Press for the Friends of the Library of Hawai‘i, Honolulu.

Stone, Scott C.S.

1983 *Honolulu, Heart of Hawai‘i.* Continental Heritage Press, Inc., Tulsa, Oklahoma.

Thrum, Thomas

1901 Retrospect for 1900. *Hawaiian Almanac and Annual for 1901*. Thomas G. Thrum, Honolulu.

1902 Retrospect for 1901. *Hawaiian Almanac and Annual for 1902*. Thomas G. Thrum, Honolulu.

1905 The Sandalwood Trade of Early Hawaii, As Told by the Pioneer Traders, Voyagers and Others, compiled by Thos. G. Thrum. *Hawaiian Almanac and Annual for 1905,* Thomas G. Thrum, Honolulu.

1906 Retrospect for 1905. *Hawaiian Almanac and Annual for 1906*. Thomas G. Thrum, Honolulu.

1907 Retrospect for 1906. *Hawaiian Almanac and Annual for 1907*. Thomas G. Thrum, Honolulu.

1916 Retrospect for 1915. *Hawaiian Almanac and Annual for 1916*. Thomas G. Thrum, Honolulu.

1920 Retrospect for 1919. *Hawaiian Almanac and Annual for 1920*. Thomas G. Thrum, Honolulu.

1924 Hawaiian Salt Making. *Hawaiian Almanac and Annual for 1924*. Thomas G. Thrum, Honolulu.

Titcomb, Margaret

1979 *Native Use of Marine Invertebrates in Old Hawaii*. University of Hawaii Press, Honolulu.

Toulouse, Julian Harrison

1971 *Bottle Makers and their Marks*. Thomas Nelson, Inc., Nashville, Tennessee and New York.

Tweiten, Michael Alan

2014 *Pollen and Charcoal Analysis of Samples from Kaka‘ako Block M, Honolulu (Kona) District, O‘ahu Island*. SkyCedar Research, Port Townsend, Washington.

UH SOEST

1927 Kaka‘ako Coast aerial photograph. University of Hawai‘i at Mānoa School of Ocean and Earth Science and Technology–Coastal Geology Group.

1952 Kaka‘ako Coast aerial photograph. University of Hawai‘i at Mānoa School of Ocean and Earth Science and Technology–Coastal Geology Group.

University of Hawai‘i

1978 *Remembering Kakaako: 1910-1950.* Ethnic Studies Oral History Project, Ethnic Studies Program, University of Hawai‘i at Mānoa, Honolulu.

U.S. Army Air Corps

1939-1941 High-altitude aerial photographic series for O‘ahu, 1939-1941, M [Mission] 56.57 and M. 56.59. Copies available at the Hawai‘i State Archives, Aerial Photographs, File PPA 44 1.001 and 1.006, Kekāuluohi Building, 364 S. King Street, Honolulu, Hawai‘i.

1952 High-altitude aerial photographic series for O‘ahu, 1952. Mosaic of aerial photographs of coastal area from the Hawai‘i Coastal Geology Group online at http://www.soest.hawaii.edu/coasts/erosion/oahu/mosaics.php (accessed 10 June 2011).

U.S. Army Mapping Service

1953 Map of Oahu, Honolulu Quadrangle. Available at USGS Information Services, Box 25286, Denver, Colorado.

U.S. Department of the Interior

1920 *Reports of the Department of the Interior for the Fiscal Year Ended June 30 1920.* Government Printing Office, Washington D. C.

U.S. Engineers

1917 Map of Oahu, from surveys conducted between 1903 and 1909. U.S. Army Corps of Engineers, Washington, D.C.

U.S. Geological Survey

1927-28 Honolulu USGS 7.5-minute topographic quadrangle. Available at USGS Information Services, Box 25286, Denver, Colorado.

1982 USGS Orthophoto, Honolulu Quadrangle (Aerial photograph). Available at USGS Information Services, Box 25286, Denver, Colorado.

1998 Honolulu USGS 7.5-minute topographic quadrangle. Available at USGS Information Services, Box 25286, Denver, Colorado.

U.S. Army War Department

1919 U.S. Army War Department Fire Control map, Honolulu Quadrangle. Available at USGS Information Services, Box 25286, Denver, Colorado.

1933 U.S. Army War Department Fire Control map, Honolulu Quadrangle. Survey conducted 1927-1928. Available at USGS Information Services, Box 25286, Denver, Colorado.

1943 U.S. Army War Department Fire Control map, Honolulu Quadrangle.. Available at USGS Information Services, Box 25286, Denver, Colorado.

Waihona ‘Aina

2000 *The Māhele Database*. Electronic document, http://www.waihona.com (accessed 1 August 2010).

Wall, W.A.

1887 Map of Honolulu and Vicinity, Oahu Island, Kona District. Archived at Hawai‘i Land Survey Division, Department of Accounting and General Services, 1151 Punchbowl Street, Room 210, Honolulu, Hawai‘i.

Whitten, David

2009 *Glass Factory Marks on Bottles*. Electronic document, http://www.myinsulators.om/glass-factories/bottlemarks.html.

Wilson Okamoto & Associates, Inc.

1998 *Final Environmental Impact Statement for the Block J Redevelopment Project Honolulu, O‘ahu, Hawai‘i.* City and County of Honolulu Department of Community Services, Honolulu, Hawai‘i.

Winieski, John P. and Hallett H. Hammatt

2001 *Archaeological Monitoring Report for Ward Village Phase II, (Ward Theaters), Kaka‘ako, Honolulu, O‘ahu, Hawai‘i (TMK 2-3-02:1).* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Medina, Leandra, Jeffry Scott Yamauchi and Hallett H. Hammatt

2013 *Draft: Archaeological Monitoring Report for the Queen and Kamake‘e Traffic Signal Project, Kaka‘ako, Honolulu District, O‘ahu Island, TMK: [2] 2-3-002:001; 2-3-003: 087, 103; and 2-3-004: 080 por.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Young, Robert

2005 *Garbage in Paradise: A History of Honolulu’s Refuse Division*. City and County of Honolulu’s Department of Environmental Services, Division of Refuse Collection and Disposal, Honolulu, Hawai‘i.

Yucha, Trevor M., Josephine M. Yucha, and Matt McDermott

2013 *Draft. Archaeological Inventory Survey Report for the Ward Block C Project Area, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu Island, TMK: [1] 2-3-001:001 and 004.* Cultural Surveys Hawai‘i, Inc., Kailua, Hawai‘i.

Zumwalt, Betty

1980 *Ketchup, Pickles, Sauces: 19th Century Food in Glass.* M. West Publishers, Fulton, California.

Appendix A SHPD Acceptance Letter

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ESTHER KIA'AINA
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

HISTORIC PRESERVATION DIVISION
DEPARTMENT OF LAND AND NATURAL RESOURCES
601 Kamokila Boulevard, Suite 555
Kapolei, HI 96806

January 10, 2014

Ms. Ena Sroat, MA
Cultural Surveys Hawai'i, Inc.
P.O. Box 1114
Kailua, Hawaii 96734

LOG NO: 2013.6926
DOC NO: 1401SL10
Archaeology

Dear Ms. Sroat:

SUBJECT: Chapter 6E-42 Historic Preservation Review –
Draft Archaeological Inventory Survey Plan for the Block M Project
Kaka'ako Ahupua'a, Honolulu (Kona) District, O'ahu
TMK (1) 2-3-002:001 por.

Thank you for the opportunity to review this draft report titled *Draft Archaeological Inventory Survey Plan for the Block M Project, Kaka'ako Ahupua'a, Honolulu (Kona) District, O'ahu TMK (1) 2-3-002:001* (Sroat et al., December 2013). We received this submittal on December 10, 2013. The 3.6-acre Block M project area is owned by Victoria Ward, Limited (VWL) and is part of the VWL's 60.5-acre Ward Neighborhood Master Plan.

The archaeological inventory survey plan (AISP) contains an adequate discussion of the environmental setting and an extensive discussion of the traditional and historical background. The previous investigations and specific research questions concerning temporal and spatial land use changes provide a framework for the AIS of Block M. The field methods involve excavation of about 62 backhoe trenches, the final number and placement of which will be determined in consultation with SHPD based on spatial identification and documentation of possible A horizon deposits, features, and/or Jaucas sands within the project area. The trench excavation methods will involve, where possible, identification and mapping in plan view and hand excavation of cultural layers, midden remains, artifacts, and pit features; and hand excavation of the Jaucas sands. Artifact assemblages present in fill deposits and large historic trash-filled pits will be subjected to field documentation (photographs of representative samples and qualitative and quantitative analysis) with collection of only a representative sample of artifacts for more detailed analysis in the laboratory. Traditional Hawaiian artifacts and faunal shell and bone, and charcoal and other botanics will be collected (or sampled, as appropriate) for analysis in the laboratory. Fire-affected rocks will be documented in the field.

Please revise the following:
(1) Revise Table 2 to insert missing SIHP#s and Fig 36 to include SIHP #6378.
(2) Revise (page 83) to remove any mention of a supplemental AIS.

This plan is accepted pursuant to Hawaii Administrative Rules (HAR) §13-284-5 with the understanding that the above **minor revisions are made** in the final document. Please make this correction and send one hardcopy of the document, clearly marked **FINAL**, along with a copy of this review letter and a text-searchable PDF version on CD to the Kapolei SHPD office, attention SHPD Library.

Aloha,

Susan A. Lebo

Susan A. Lebo, PhD
Oahu Lead Archaeologist

Appendix B Land Commission Awards

F.R. = Foreign Reigster
F.T. = Foreign Testimony
N.R.= Native Register
N.T.= Native Testimony

LCA 387 **Claim to A.B.C.F.M.***

*A.B.C.F. M.=American Board of Commissioners for Foreign Missions

LCA No. 387*O‘ahu, General Claim, Mission Claims

To the Board of Commissioners for quieting Land titles, Gentlemen:

The undersigned as agents of the Mission of the American Board of Commissioners for foreign missions a the Sandwich Islands beg leave to present for your examination, the accompanying documents; being statements of grants made to various individuals of the mission at sundry times & places, for the purpose of affording facilities for the prosecution of the Missionary work in these Islands by the Missionaries of the said A.B.C.F.M. to the end, that if upon examination, they shall be found valid, the said grants may be confirmed in such manner as the laws of the Sandwich Islands may require. The following is a list of claims to be considered, viz.

Kauai - Premises & lands at Waiole, Koloa & Waimea
Oahu - Premises & lands at Honolulu, Ewa, Waialua, Kaneohe, Hauula & Punahou
Molakai - Premises & lands at Kaaluaha & out stations - if any
Maui - Premises & lands at Lahaina, Lahainaluna, Kanipali, Wailuku & Hana
Hawaii - Premises & lands at Kailua, Kealakekua, Kau, Hilo, Kohala & Waimea.

The lands & premises at the above-mentioned stations are in care of the resident missionaries of the A.B.C.F.M. at said stations. We have thought it best to enumerate all the stations though some of the claims have not been received, & some have been already presented to the Board.

Signed, Samuel N. Castle, Edwin O. Hall, agents
Honolulu, March 125h, 1847

The claims herewith sent are for Waialua, Honolulu, Punahou, Kaneohe, Waiole, Koloa, Waimea, Kaui, Hilo, Kealakekua, Kailua, Waimea, Hawaii, Kohala.

I believe Kau, Lahainaluna, Lahaina, Wailuku, Hana & Molakai are already sent in.

S.N.C.
F.R. 31-33v2
[No. 387], Honolulu, Statement of Mission Lands Claims at Honolulu.

Premises occupied by Mr. Dimond, given by Kalaimoku to Reverend William Ellis of F. M. [Foreign Missions] Society, & by him to the Mission of A.B.C.F.M, at these islands. The original grant was much larger then the spot at present enclosed by Mr. Dimond.

2d. All the parcels of land enclosed by the mission in the district known as Kawaihao, which whole distinct was given by Kaahumanu, 1st to Mr. Bingham for the use of the mission & also any enclosed portions of said district, if there be any such, not in actual possession of the natives. The mission buildings & land upon said lands. Also a portion of ground enclosed & upon which stands an adobie school house, at present occupied by Mr. Wilcox.

In addition there is a land in Koolau called Kaluanui, given by Kaahumanu to Mr. Bingham.
S.N. Castle, Edwin O. Hall, agents.

To the Board of Commissioners &c, Gentlemen:

In compliance with your public notice relative to claims of land &c I beg leave to state that I have no lease or written document of the Mission premises now occupied by myself in the Northwest part of Honolulu called Kaumakapili.

This station was commenced by myself soon after the general meeting of the American missionaries held in May 1837.

The land upon which the dwelling house, the station school house & meeting house are erected, was said to belong at that time to Konia, wife of Paki. Several of the chiefs then in authority, viz. Kinau, Kekuanaoa, Kona & Paki, after mature deliberation, informed me that they had set apart the yard in which the dwelling house is built, & the one where the station schoolhouse is erected, for a new missionary station & told me that I might commence operations at pleasure.

In the fall of 1838, the same persons set apart our meeting house yard as a place upon which to erect a house of worship to Almighty God. These 3 several yards are each enclosed with adobie walls, & their boundaries & dimensions are nearly as follows:

1st. Residence of the missionary measures about 46 yards & is bounded by a narrow lane. The mauka side is about 53 yards long, the northwest end is about 46 yards wide & the makai side is 60 yards long.

2d. The schoolhouse yard lies contiguous to the enclosure above described on the Southwest and is an oblong square, bounded on the Southeast side by the narrow lane & is 46 yard long and about 24 yards wide.

3d. The meeting house yard lies a few rods mauka of the mission dwelling house. The makai end is bounded by the public road & measures 48 yards, the northwest side is about 70 yards long & the mauka end is 40 yards wide, the southeast side is 61 yards long

Signed, Lowell Smith
Honolulu, July 14, 1846

F.R. 33-34v2
[No. 387], Punahou [margin note illegible]

The undersigned claim in behalf of the mission of A.B.C.F.M. at the Sandwich Islands all that tract of land known as Punahou lot mauka & makai; to be used for the purposes for which it was granted.

That portion of said land which lies mauka of the Wai'un [?] road is said to be bounded nearly as follows: commencing by Allen's bridge which crosses the street near Allen's house & running inland to near the top of Ualakaa. Thence east into the valley near a certain rocky knowl [sic. knoll] pointed out by natives as the corner, thence toward the sea along a line running a short distance [illegible] east of that part of said land which is enclosed & extending to the road which runs from Honolulu to Waikiki just mauka of Allen's house, thence along said road to place of beginning.

The boundaries of that part which lies on the sea shore we cannot define so definitely, but presume there will be no difficulty in determining them as it is commonly known as pertaining to Punahou. This part embraces fishing grounds, coral flats & salt beds.

The above land was given by Boki to Mr. Bingham; then a number of the above named mission & the grant was afterwards confirmed by Kaahumanu. We have heard several persons mentioned as being acquainted with the facts & circumstances respecting this grant of land among whom are Reverend H. Bingham, Asa Thurston, William Richards, Levi Chamberlain, Governor Kekuanaoa, Laanui, John Ii, &c&c.

Signed, Daniel Dole, W.H. Rice.

I was told that Punahou extended from the road near to Allens, back to the top of Ualakaa, then the northern boundary was said to run from the top of Ualakaa eastward into the valley so far that the eastern line would include much of the rocky hill near the spring in passing down the road near Allens. There, there was a large flat on the sea shore embracing fishponds & salt beds & coral flats.

The above was written by Mr. Bingham from United States

W. Richards

F.R. 34-35v2
[No. 387], Kaneohe, Land connected with the mission station at Kaneohe

About 4 acres are held by the mission enclosed by a fence; it has been occupied about 12 years. The station was taken by permission of the King & the land given by an agent of Liliha, widow of Boki, since deceased.

In addition to the above there is a taro land, known among the natives as an ili aina; not designated by any particular boundaries. This was given for the use of the mission by Liliha - widow of Boki.

(No signature)
Kaneohe, December 8,1846

F.R. 35-36v2
[No. 387], Ewa, April 20, 1847

To the Commissioner, &c, Gentlemen:
I hereby make application for confirmation of title to a piece of land called Kionaole, a small ili in the ahupuaa of Waiawa, Ewa. I hereby enclosed a draft of said land, the measurement of which is as follows: Beginning at Northwest course & running south 74 fathoms, thence east 70 fathoms, thence north 20 fathoms, thence west 26 fathoms, thence north 44 fathoms & thence west 40 fathoms to the place of beginning. Said land comprises about 3 acres more or less.

Also a fish pond situated near the river joining southeast corner on a piece of waste land reckoned as belonging to Manana, an ahupuaa on the opposite side of the river. Said fish pond was dug out for me by my church members in 1838 & measures 27 fathoms by 14 (see draft).

I would also ask for a grant to the Protestant Church at Ewa for the use of their pastor, one of the moo paahao, of which there are two in Waiawa. As they have not been cultivated for more than 3 years & are now overgrown with bulrushes, there is no probability that both will be wanted again for the aupuni. Each moo contains 3 or 4 acres each. The members of the church wish one of them to cultivate, the avails of which are to be devoted to religious purposes.

Also, my house lot within the ili aina of Waiawa called Panaio, & three or four acres of land adjoining the Protestant Chapel for a church yard and burying ground, to be confirmed by title in the same manner as similar grants are confirmed.

For authority respecting the grant of my land marked out i the enclosed draft. I beg to refer you to Governor Kekuanaoa executor of Kinau, who gave me the said land in 1836 or early in 1837.

Signed, A. Bishop

[DIAGRAM]

F.R. 28v2
No. 387, [American Board of Commissioners for Foreign Missions], [Oahu claims, continuation of claims from other islands]

Extract from a letter addressed to Mr. Castle dated February 17th, Waialua and Signed P.J. Gulick.

"P.S. I opened this to say a few words relative to the land connected with our premises. What it seems desirable to retain is a long narrow strip of probably 20 acres; bounded on the East by a road which crosses the river, or brook, Anahula, about 1/4 of a mile east of Mr. Emerson's residence, On the south by the brook Lanahula, On the west by the road which crosses said brook just opposite Mr. Emerson's house & On the north by a crooked stone wall built by Mr. Lock & Mr. Wilcox.

It has also been a stone wall on the east and a doby west, built by our Brethren. It is the better part of the land called Lokoea, but on the west & north it is said to fall considerably within the boundaries of Lokoea. With these data & the papers, I think you can make a more correct statement that I can; unless I get it surveyed. I don't know that I can do any better than I have now done.

Signed P.J. Gulick.

N.R. 229-231v2
No. 387, [Missionary claim]

Unirrigated farm land at Waialua, Oahu. Conveyance of a portion of land for dry farming at Waialua.

Because of my thought of the importance of knowledge and education which will benefit the Kingdom of Hawaii; and because I also think Mr. Loke /Mr. Looke/ has a good school at Waialua and the students are preparing to be educated to end the idleness and deficiencies of this land, therefore I agree and explain that a portion of land at Waialua shall be transferred to said school without payment or tax. the diagram of this land is below, however, the north side is not exactly like the diagram. The ancient boundary will prevail on that side until the time when I understand the correctness of the new move. The steam is not conveyed with the land. It is, however, the boundary on this side. If the supplies of the school are taken on the stream this is not a wrong, however, the fish are protected.

Furthermore, there are given some divisions of water for this land, three days in one week on the

north side of the stream, and on the south side, two days. On those two days the water shall flow to irrigate the crops.

Furthermore, John Ii, the School Superintendent of Oahu, shall administer that land and he is also the perpetual custodian of that land.

It /the land/ is conveyed absolutely to that school; it shall not be arbitrarily taken, nor shall it be disturbed unless the school is at fault or its haole teacher or his successor, perhaps. The land shall be administered so as to benefit the school. The land may not be given over to anyone else. It is given only for the benefit and to supply the needs of the school. Here is the diagram of the land: /see diagram/ [No diagram in this text]

This diagram is not absolutely correct, as it was not surveyed with a transit. The beginning of the measurement is at the corner marked I, at a place close to the wooden road over the water /bridge or causeway?/

This word is recorded at Honolulu on the 14th day of September, 1841.
KEKUANAOA
Witness: Paalua, Limaikaika /Armstrong/

In accordance with Kekuanaoa's thought explained in this paper, giving me the administration of that kula farm land at Waialua, I agree that this land be conveyed to said school, and Locke or his successor, perhaps, the one who teaches at that school, to stimulate intellectual growth here in Hawaii.

Recorded at Honolulu this 14th day of September, 1841.
JOHN II, School Superintendent of Oahu

We two consent to all the words in this document.
KAMEHAMEHA III, KEKAULUOHI

F.T. 260v3
No. 387, American Mission, Part 1, Section 5, Division 1, 22 February, Emerson Waialua

1. Kuakoa, sworn, I know this land at Kawaipuole in Waialua.

It is bounded:
Mauka by Kukipa's land
Waianae by an old adobe fence
Makai by my fence
Waimea by land of mine and a kalo patch of Poli and a river called Anahulu, and a kalo patch of mine.

2. This land is in Olohana, an ili, the land is called Manawai. It is an orange garden

bounded:
Mauka by a stone wall and a dry stream
Waianae by stream of Kawailoa
Makai by konohiki's land
Kolauloa by a pali.

3. This piece is an ili aina of Kawailoa at Paalaa.

It is kalo and kula bounded:
by konohiki's land, Mauka
Waianae by a pali
Makai by konohiki's land
Kolauloa by a stream of Paalaa.

Claimant got the piece No. 1 from Kinau in 1832 and has lived there constantly ever since, and no one has ever disturbed him.

He got No. 2 from Gideon Laanui in Kinau's time, 1838, and has occupied it without disturbance in peace ever since.

He got the piece No. 3 from Kinau in 1835 and has held it ever since in peace.

Olopana, sworn, the preceding testimony is correct and true, which I now of my own knowledge, and that Mr. Emerson has lived there to the present time in peace.

Continued page 302.

No. 2. Mr. Emerson did not think required a survey and states it at less than acre.

F.T. 302v3
No. 387, Sandwich Islands Mission Claim, Part 1. Section 5, Division 1, J.S. Emerson, from P. 260 [p. 260 claim for Waialua Oahu]

Kilioe, sworn (from Kauikawaha's written Report to Claimant and translated by him for the Commissioner), I heard D. Oleloa & Kaukualii ,his wife, say the Kinau wrote to them at Kauai thus "Laanui sought for land for the Missionary located at Waialua & he has found it within your land viz. Hawailoa - Give Your assent that it be given him" To which we Daniela ma gave our assent in writing.

Kamalie, sworn, I heard the same things as Kilioe says - and I heard before, at a time when Hawailoa was our land as hoaainas - my mother's brother named Wana, one of Laanui's family, came to us and said "Your land is given by the foreigner, Mr. Emerson by Kinau - so says

Laanui.

Continued 306 page, Division 2

F.T. 306-307v3
No. 387, Sandwich Islands Mission, Part 1, Section 5, Division 2, P.I. Gulick, from p. 302

Reverend I.S. Emerson, sworn, In about 1837 Kinau granted to me a certain part of the land now coccupied by Mr. Gulick to aid the Church. This grant included the Western end, containing probably 3 to 5 acres. It did not I think to include the spot of Mr. Gulick's house lot. that spot, as I understood Mr. Locke came into an unwritten contract between him & Laanui, by which Mr. L. [Locke] was to pay Laanui a certain sum per annum for the remainder of the land which Mr. Gulick now claims. This land has been in the possession & use of the Mission from about 1838 to this time.

Witness admitted Mr. Metcalf's survey [as] correct.

"E ike auanei na kanaka a pau ma keia palapala ke nana mai lakou.

Owau o M. Kekuanaoa ka makua Kane a kahu waiwai o Victoria Kamamalu. Ua Kuai lilo loa aku au no`u iho a no kuu poe hooilina a hope paha i kekahi mau Eka Umikumamaono a me ka hapa Eka aina e waiho la ma Kawailoa & Waialua Mokupuni Oahu. Aia keia aina maka aoao mauka iho o ka pa ona Gulicka la. Ua komo pu keia me kahi i Ku mua ai kona hale.

Eia ke kumu o ka lilo ana o keia aina no ka loaa ana mai ma kuu lima na Dala maikai $82.50. No laila aole o`u kuleana i koe. ua lilo loa ia Gulika a me kona mau hooilina a hopepaha.

No ka oiaio Kekakau nei au i kou inoa i keia la 23 October, 1850, M. Kekuanaoa
Ike maka, Kahiwalani

F.T. 341-343v3 [Claim 5877 of Keakaku]

F.T. 368v3
Cl. 387, American Mission, Part 1, Section 6, Ewa, May 14, 1856

Artemis Bishop testified that in 1836 this land called "Kianaole" in the district of Ewa was given to witness for the American Board of Missions and that the 2 surveys of T. Metcalf of the same, dated March 2, 1849, correctly desribe the lot which has been occupied & used for the Mission without interruption to the present time.

Note. Governor Kekuanaoa has seen these surveys & approved of them before the Commission.

See page 343

N.T. 592-593v3
No. 387, Honolulu Mission, Part 1, Section 5, Waialua, Emerson

Kuakoa, sworn, I have seen his land at Kawaipuolo in Waialua.

The boundaries are:
Mauka, Huki's lot
Waianae, the old mud wall
Makai, my fence
Waimea, Kuokoa's land, Poli's patch, Anahulu River and one patch for me.

2. Olohana ili land in Kawailoa named Manawai and is an orange grove.

Mauka, a stone wall and dry stream
Waianae, Kawailoa stream
Makai, the konohiki's land
Koolauloa, a precipice.

3. Hawaiiloa's ili land at Paalaa, a taro land and the pasture.
Mauka, the konohiki's land
Waianae, a precipice
Makai, the konohiki's land
Koolauloa, Paalaa's stream.

Section 1 from Kinau in the year 1833 and he has always lived there to the present. No one has objected.

Section 2 is from G. Laanui during Kinau's time in 1838 and life has been comfortable; No one has objected. Section 3 is from Kinau in 1835. No one has objected.

Olopana, sworn, The statements just made by Kuokoa are true, accurate and right and I have known the same way. Emerson has always lived there to the present. No one has objected.

N.T. 677v3
No. 387, Emerson, Part 1, Section 5, October 8, 1850

Kuokua, sworn, I have seen Emerson's land at Kawailoa Paalaa in Waialua. I have known the boundaries, but I have not known who had given him his land except that I had heard only it was given by Kinau and Kamekualii; however, I am not very sure.

F.T. 115-116v3
Cl. 387, part 1, americal Sandwich Island Mission, Oahu, 23 March [1849], section 2 Punahou,

Oahu, [illegible], William H. Rice, agent, present

[Margin note: Mr. Lee's notes]

John Ii, sworn for claimant, I am well acquainted with Punahou and its boundaries. It consists of two parts, one inland and the other a sea land.

It is bounded:
Mauka by the large land called Manoa
Waialae by Mauna Pohaku
Makai by kula land of Allen, Kapeau, myself & others.

I think it extends nearly down to the road leading from Honolulu past Allen's place, Honolulu side by the road leading from the old Allen place to Manoa and by my land.

The makai part of Punahou is bounded:
Mauka by Kewalo and Koula
Waititi side by Kalia
Seaward it extends out to where the surf breaks
Honolulu side by Honoliilii.

This land was given to Mr. Bingham for the Sandwich Island Mission by Governor Boki in 1829. It was given upon the same terms as all their other lands were given to them; and the Grant was confirmed, so far as silence proved it, for in truth she [he?] had no right to set aside this grant.

From that time to this, the Sandwich Island Mission have been the only possessors and konohikis of the land. I was a witness to the gift. The title of the Mission is perfectly clear.

The name of the makai part is Kukulaaeo. There are several tenants on the land of Punahou whose rights should be respected.

Z. Kaauwai, sworn, I know this land. I heard Boki say to Hoapili Kane concerning the gift of this land to Sandwich Island Mission that the had given it to Mr. Bingham.

Boki's wife made some objections to giving it to Mr. Bingham, claiming it has hers as received from her father, Hoapili Kane but Hoapili Kane confirmed the gift and it was adjudged to be right & propert.

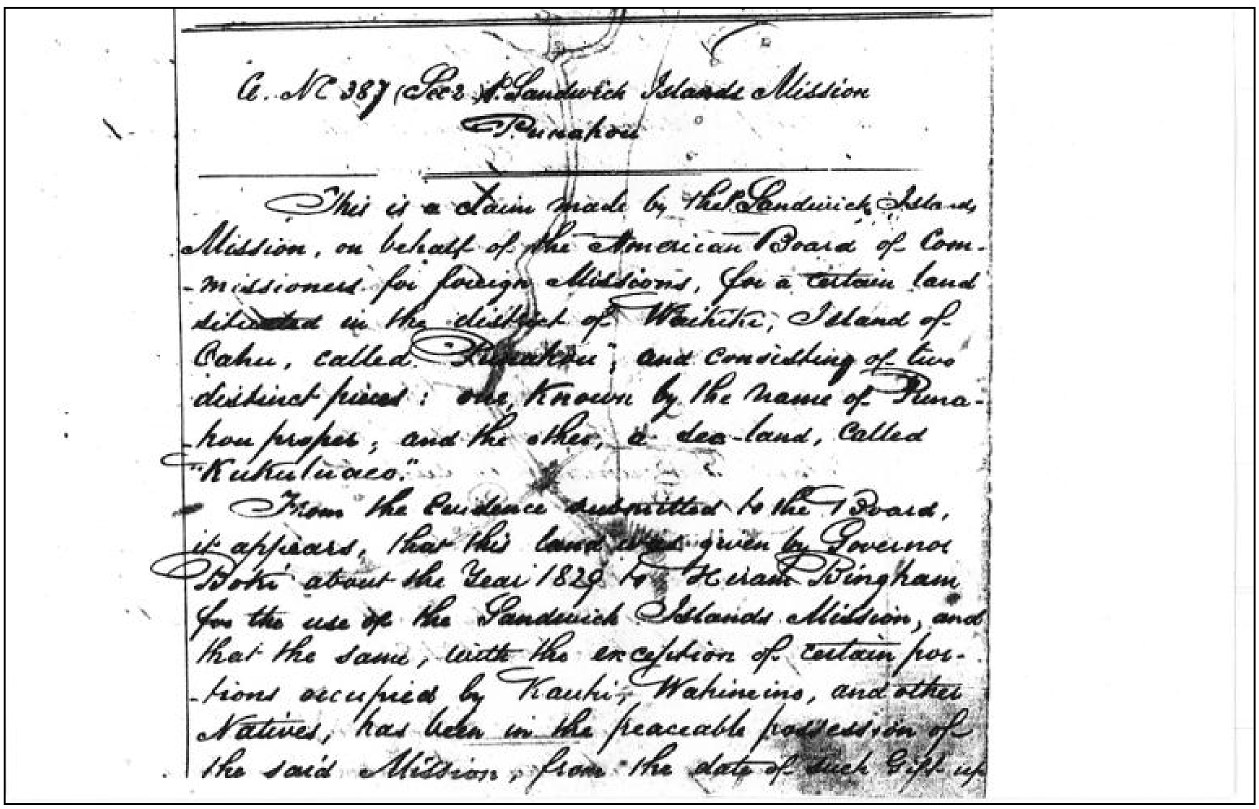
From what I heard at the time of the boundaries, I should think Mr. Metcalf's survey correct.

[Award 387; (Oahu) R.P. 1600; Beretania St. Honolulu Kona; 2 ap.; 5.36 Acs; R.P. 1600; King St. Honolulu Kona; 1 ap.; .41 Ac.; King St. Honolulu Kona; 3 ap.; 6.66 Acs; no R.P.; R.P. 5698; Printers Lane Honolulu Kona; 1 ap.; .36 Ac.; R.P. 1947; Panaio; 3 ap.; 4.13 Acs. (A. Bishop); R.P. 1931, Punahou Manoa Kona; 1 ap.; 224.68 Acs; R.P. 1945; Punahou Manoa Kona; 1 ap.; 77 Acs; R.P. 1941, 1945, 1958 R.P. 1931; Punahou Honolulu; 1 ap.; 36.90 Acs (S.N. Castle and

Amos S. Cooke); R.P. 1932; Kawaiahao Honolulu; 1 ap.; 1.23 Ac. (S.N. Castle); R.P. 1941; Kawaiahao Honolulu; 1 ap.; 1.30 Ac.(Maria P. Chamberlain); R.P. 1941 Punahou Honolulu; 1 ap.; 26.66 Acs (Maria P. Chamberlain); R.P. 1944; Kukuluaeo; 3 ap.; 77 Acs (Ephraim W. Clarke; R.P. 1944; Kawaiahao Honolulu; 2 ap.; 1.64 Ac. (Ephraim W. Clarke); R.P. 1934; Kawaiahao Honolulu; 1 ap.; 1.5 Ac. (Amos S. Cooke); R.P. 1945; Kawaiahao & Punahou Honolulu; 3 ap.; 27.97 Acs (E.M. Rogers); R.P. 1933; Kaumakapili Honolulu; 1 ap.; .53 Ac. ; R.P. 1600; Kaumakapili Honolulu Kona; 1 ap.; .6 Ac.; R.P. 1600; Kaumakapili Honolulu Kona; 1 ap.; .19 Ac.; (Lowell Smith); R.P. 1938; Pukauki Kaneohe Koolaupoko; 1 ap.; 16.1 Acs; R.P. 1958; Waikapoki Kaneohe Koolaupoko; 1 ap.; 5.13 Acs (ABCFM); R.P. 1951; Kawailoa Waialua; 2 ap.; 10.81 acs (John S. Emerson); R.P. 1940; Kawailoa Waialua; 1 ap.; 24.56 acs. (Peter I. Gulick)]

LCA 387 Award Document to A.B.C.F.M.

The boundary of the Kukulāe‘o lands given to the A.B.C.F. M. is on the last page of the award.



A. No 387 (Sec's) S. Sandwich Islands Mission
Punahou

This is a claim made by the Sandwich Island Mission, on behalf of the American Board of Commissioners for foreign Missions, for a certain land situated in the district of Waikiki, Island of Oahu, called Punahou, and consisting of two distinct pieces: one, known by the name of Punahou proper, and the other, a sea-land, called "Kukuluaeo."

From the evidence submitted to the Board, it appears, that this land was given by Governor Boki about the Year 1829 to Hiram Bingham for the use of the Sandwich Islands Mission, and that the same, with the exception of certain portions occupied by Kauhi, Wahineino, and other Natives, has been in the peaceable possession of the said Mission, from the date of such Gift up

600

to the present time.

We consider the Title of the "American Board of Commissioners for Foreign Missions" to "Punahou proper", and to the Sea land "Kukuluaeo", to be the same in its nature as that set forth in the Award of February 1st 1849 of the Lot now occupied by Henry Dimond, and designated as Claim "No 384 - part 1 of Honolulu Claims".

We do therefore Award to the "American Board of Commissioners for Foreign Missions" the aforesaid lands of "Punahou proper" and "Kukuluaeo", with the exception of those portions occupied by Natives :- to have and to hold to them, and to their Successors, during the existence of the "Sandwich Island Mission":- that is to say - so long as the "Sandwich Islands Mission" shall continue to exist, and labor to promote the Christian faith they profess. But if they should cease to exist, or to pursue the object of their profession, these lands will then revert to the Sandwich Islands Government.

The above Award, however, is made upon the express understanding, that if the "American Board of Commissioners for foreign Missions", shall desire to lease, sell, or otherwise dispose of these lands, or any portion thereof, they shall be at liberty to do so, by first obtaining the consent of the Sandwich Island Government, to such lease, sale, or other disposition.

The correct metes and bounds of the above awarded lands, are contained in the following surveys, made by J. Metcalf on the 6th and 9th days of May 1848.

"Notes of Survey of Punahou premises"

"Commencing at Mauka N. corner of enclosed

601

premises by Road leading to Manoa valley - and running S. 40° W. 1 ch. 5 3/12 ft. along wall to slight angle. thence S. 35° W. 15 ch. 26 1/3 ft. along Road to W. corner of enclosed Premises. thence S. 26° W. 16 3/4 ch. along road to makai W. Corner of this land. (9 3/4 ch. on to new Road) thence S. 63° 15' E. 22 ch. 29 ft. along Pauoa to Stake at makai S. corner of this land. thence N. 58° 45' E. 7 ch. 8 1/2 ft. along Keauhou to Rock marked + angle - thence N. 64° 45' E. 26 ch. 47 ft. along Hol.paha to Rock marked + on stoney rise - angle - Thence N. 55° E. 11 ch. 59 5/12 ft. along Pilipili to pile of stones by path - angle. thence N. 15° 30' E. 6 1/4 ch. along Pilipili to Rock on makai side of stone wall by Path N. 1° 15' W. 7 ch. 54 7/12 ft. to E. angle of this lot - thence N. 37° 45' W. 13 ch. 13 3/12 ft. along Mauka side of this land to Waiolo Path - angle. thence N. 37° 15' W. 9 ch. 19 10/12 ft. to stake at intersection of Roads leading up Manoa valley. thence N. 27° W. 20 ch. 13 ft. to point on Puluuala - the mauka N. Corner of this land - then direct down Ualakaa to place of commencement - Including an area of Acres 224 68/100

May 6. 1848. J. Metcalf Sur.

See diagram Page 603.

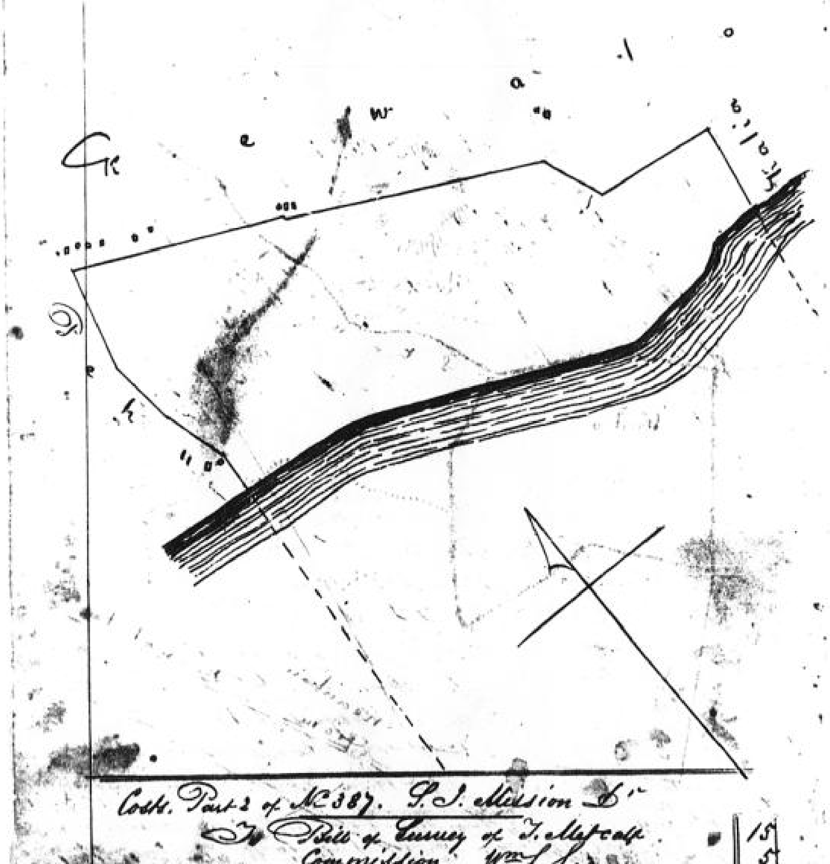
"Notes of Survey of Kukuluaeo" the sea-land belonging to Punahou"

"Commencing at buried stone at Mauka N. corner of this land - joining Kewalo" on mauka and Pehu on N. W. side, and running S. 16° W. 8 ch. 41 ft. along Pehu to angle - thence S. 5° 45' E. 5 ch. 19 10/12 ft. along and to E. corner of large fish Pond, thence S. 12° 15' E. 6 ch. 23 7/12 ft. to E. Corner of Laeoha's house angle - thence S. 5° 45' W. 2 3/4 ch. to, and indefinitely into Sea. Then from point of Commencement and running S. 61° 45' E. 17 ch. 19 10/12 ft. along Kewalo to post in front of Onewa's house - angle. thence S. 60° E. 21 ch. 6 7/12 ft. along Kewalo to angle (about 4 ch. makai of Samuel Jedd's house) thence S. 31 E.

602

5½ Ch. along Kewalo to angle - thence S. 81° E.
9 ch. 59 5/12 ft. along Kewalo to Mauka E. corner
of this Land - thence S. 11° W. 7 ch. 9 3/12 ft.
along land Called Kalia, &c, and Indefinitely
into Sea - Containing an Area of dry land of
Acres 77

May 9 1848. T. Metcalf Sur.



Cert. Part 2 of No 387. S. I. Mission &c
To Bill of Survey of T. Metcalf
Commission Wm L Lee
J. H. Smith
Z. Kaauwai
M. Kamehameha
Ioane Ii

Hale Kawaiula
7 April 1849

15
5
20

LCA 1903 **1903 Claim to Lolohi**

N.R. 293v3

To the Great President of the Land Commissioners,- William L. Lee, and his companions, Greetings to You and your commissioners: As directed by you to the claimants to state their claims I have some claims for salt works at Kukuluaeo:

2 salt beds
15 Hooliu /Literally - cause to leak, therefore, drains./
2 Poho kai /depressions where salt is gathered/
1 salt kuIa

A small farm is at lower Kaliu, close to the kawa /leaping place/ of Puehuehu.
4 lo`i
1 cultivated kula.
These are my claims.

I am, with thanks,
LOLOHI
Honolulu, 15 December, 1847

F.T. 220v3
Cl. 1903, Lolohi

Peka wahine, sworn, I know this place. It is on the salt plains, Honolulu, used for making salt.

Mauka is a stream of salt water
Waititi also several salt ponds, Napula, Kumiao and others own them.
Makai, Government road
Honolulu, Peke, Kaula, Lilea, Bolabola, Poe.

Claimant received this land from his father who died last year and held it a long time back in Kinau's time.

2. Honolulu aina, kalo.

Eseta, sworn, deferred, Witness being claimant's wife.
Paalua, sworn, confirmed the testimony in claim. 1
Resumed p. 223

F.T. 223v3
Cl. 1903, Lolohi, 26 November [1849], from page 220

Puhi, sworn, I know this place called Kaliulalo, Honolulu aina, consisting of 4 kalo patches & kula.
Mauka is Kanakaokai
Waititi, Puhana
Makai, same
Ewa, Keliula land, Kekualoa.

Claimant received this from Kuke - Tahitian in 1844 and has held it in peace ever since.

N.T. 549v3
No. 1903, Lolohi, November 23, 1849

Peke, sworn, I have seen his place at Kukuluaeo in Honolulu.

Salt land, the boundaries are:
Mauka, a salt water ditch
Waikiki, Napela
Makai, government road
Ewa, Kaula, Lilea, Polapola and my land.

Lolohi had acquired this interest from his parents when Haaliho had returned from Briton. Lolohi's parents had received it during the lifetime of Kinau and he has been living peacefully on this interest; no one has objected.

Paulua, sworn, Our testimonies are alike; no one has objected.

The hearing on Lohilohi's taro section will be heard on Monday. See page 550

N.T. 550-551v3
No. 1902!, Lolohi, From pg. 549, November 26, 1849
[should be 1903]

Puhi, sworn, I have seen his land at Kaliu in Honolulu district.

4 taro patches, 1 pasture:
Mauka, Kanakaokai
Waikiki, Paahana
Makai, Paahana also
Ewa, Kaliuluna which is Kekualoa's land.

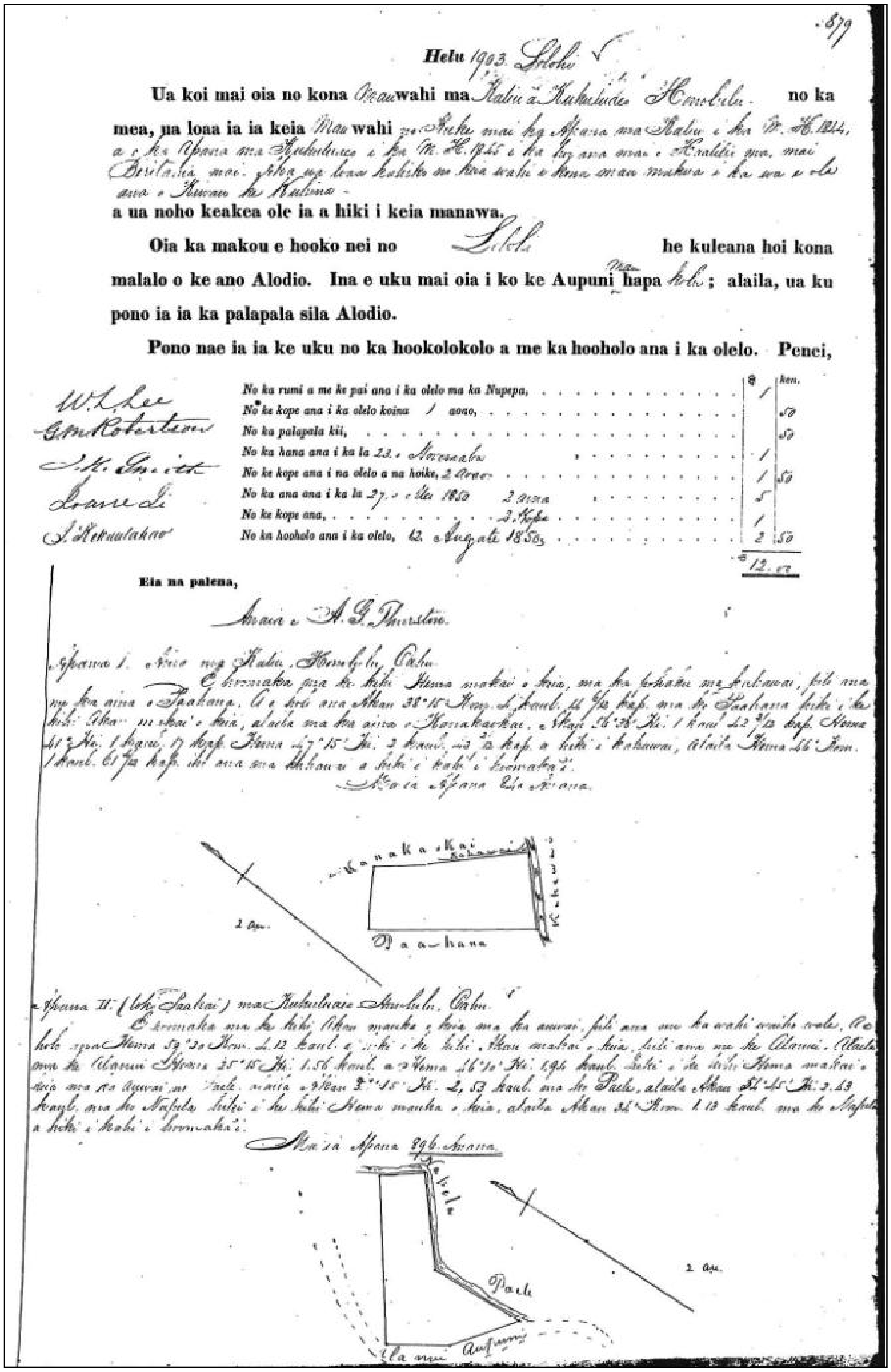
Lolohi's land is from Kuke given in the year 1844 and he has been living comfortably. No one has objected.

Kelalaina, sworn, Our testimonies are alike. No one has objected.

[Award 1903; Land Patent 8174; Kaliu Honolulu Kona; 1 ap.; .69 Ac.; Land Patent 8237; Kukuluaeo Honolulu Kona; 1 ap.; .74 Ac.]

LCA 1903 Award Document to Lolohi*

*Note map of parcel on the page bottom that is near Block C West



879

Helu 1903 Lolohi

Ua koi mai oia no kona [illegible] **wahi ma** [illegible] Honolulu **no ka mea, ua loaa ia ia keia** [illegible] **wahi** [illegible]

a ua noho keakea ole ia a hiki i keia manawa.

Oia ka makou e hooko nei no Lolohi **he kuleana hoi kona malalo o ke ano Alodio. Ina e uku mai oia i ko ke Aupuni hapa** [illegible]**; alaila, ua ku pono ia ia ka palapala sila Alodio.**

Pono nae ia ia ke uku no ka hookolokolo a me ka hooholo ana i ka olelo. Penei,

		$	ken.
W. L. Lee	*No ka rumi a me ke pai ana i ka olelo ma ka Nupepa,*	1	
G. M. Robertson	*No ke kope ana i ka olelo koina* 1 *aoao,*		50
[illegible]	*No ka palapala kii,*		50
Ioane Ii	*No ka hana ana i ka la* 23 *o* Novemaba	1	
[illegible]	*No ke kope ana i na olelo a na hoike,* 2 Aoao	1	50
	No ka ana ana i ka la 27 *o* [illegible] 1850 2 Apana	5	
	No ke kope ana, 2 Kope	1	
	No ka hooholo ana i ka olelo, 12 *o* Augate 1850	2	50
		$12.00	

Eia na palena,

Ana ia e A. G. Thurston.

Apana 1. [illegible] Honolulu, Oahu

[illegible] Paakana [illegible] Akau 38°15' Hik. [illegible] Kanakaakai [illegible]

Maloko o [illegible]

2 Au.

Paakana

Kanakaakai

Apana II. [illegible] Honolulu, Oahu

[illegible] Paele [illegible]

Maloko o Apana 896 Anana

Paele

2 Au.

LCA. 10463 Claim to Napela, Honolulu, February 14, 1848

N.R. 557v4

Greetings to the Land Commilssioners: I hereby state my claim for a salt land at Kukuluaeo on Honolulu, but I do not know its size - that is up to you, the persons who know of the big and the small. I believe I have a right which I hereby state to you.
NAPELA

N.T. 445v10
No. 10463, Napela, 25 December 1854

Mahoe, sworn, I have seen this claim of Napela in Kukuluaeo in Honolulu, Oahu, of 2 ponds, a ditch, 2 deposits (water?), a house site and a salt land section in two pieces.

Section 1 - 2 ponds and ditch, 2 deposits and house site.
Mauka and all around by konohiki land.

Section 2 - Salt land.
Mauka by Kahelelua's land
Waikiki by road
Makai by Kaula's land
Ewa by Kanoniulaole's land.

Napela's land from Kauhi at the time Kinau was yet alive. No one has objected to him nor to his heirs.

(Postponed until P. Naone, the overseer konohiki is available.)

COPY
Greetings to you, Nailiili,
I have seen your correspondence relating to the claim of Pehu in the name of Napela. I have noted that you mentioned two deposits of fry - therefore Kalaka and I have agreed for only the two poinds, one house site and one salt land. If this should meet with your approval, then it shall be certified.
P. Naone, Tax Assessor, 26 December 1854

[Award 10463; R.P.; Kukuluaeo Honolulu; 2 ap.; 1.65 Acs]

Appendix C Historic Property Descriptions

The following historic property descriptions are copied from the Block M AIS report (Hawkins et al. 2013):

Two historic properties were identified within the Block M project area during this AIS. They are summarized in Table 1 and described below. SIHP # 50-80-14-7429 was initially identified during previous archaeological investigations in the area (Hammatt 2013). One newly identified historic property was documented during the Block M AIS, SIHP # 50-80-14-7686.

Table 1. Sites Identified Within the Current Project Area

SIHP # 50-80-14-	Formal Type	Function
7429	Two subsurface cultural deposits	Habitation, agriculture/domestic
7686	Historic buried surfaces	Commercial infrastructure

SIHP # 50-80-14-7429

FORMAL TYPE:	Subsurface cultural deposits, human skeletal element
FUNCTION:	Habitation, agriculture/domestic
NUMBER OF FEATURES:	16 total; nine newly identified and seven previously documented
AGE:	Pre- and post-Contact
TEST EXCAVATIONS:	T-2, 4, 5, 23, 31, 43, 48, 64, 65, and 66 (current project); T-167, 168, 168A, 168B, 169, 170, and 170A (Hammatt 2013)
TAX MAP KEY:	Located between the corner of Ward Avenue and Queen Street and the corner of Queen and Kamake‘e Streets
LAND JURISDICTION:	Victoria Ward Ltd.
PREVIOUS DOCUMENTATION:	Hammatt 2013:639−654

SIHP # -7429 is a previously identified subsurface cultural deposit consisting of two discrete strata, and including 16 features. SIHP # -7429 extends from the corner of Ward Avenue and Queen Street to the corner of Queen and Kamake‘e streets (Figure 1).

SIHP # -7429 was initially identified during a previous AIS (Hammatt 2013:639−654) in the Ross Dress for Less store parking lot, near the intersection of Ward Avenue and Queen Street, approximately 200 m northwest of Block M. A buried loamy sand/silty sand A horizon, developed within Jaucas sand, was documented beneath historic fill deposits, containing both traditional Hawaiian and post-Contact cultural material, vertebrate and invertebrate faunal material, and charcoal. Historic cultural material identified within the culturally enriched A horizon (Stratum II)

Figure 1. Aerial photograph showing the current, extrapolated extent of SIHP # -7429 documented within the Block M project areas (Google Earth 2013)

included bottle glass, metal fragments, nails, glass and clay marbles, a blue glass bead, and earthenware fragments. Vertebrate faunal remains included both historically introduced species—*Bos taurus* (cow) and possibly *Ovis aries* (sheep) or *Felis catus* (cat)—and Polynesian introduced species—*Sus scrofa* (pig), *Canis lupus familiaris* (dog), and *Rattus* sp. (rat), as well as unidentified fish remains. Invertebrate faunal remains identified as marine midden included *Nerita picea* (the most prevalent species identified), *Tellina palatam*, *Turbo sandwicensis*, *Strombus* sp., *Isognomon* sp., *Trochus* sp., *Brachidontes crebristriatus*, *Cypraea caputserpentis*, *Cellana sandwicensis*, crustacean, and echinoidea (sea urchin).

Seven features associated with the culturally enriched A horizon were also identified in four test excavations (T-167, 168B, 170, and 170A), exhibiting both pre- and post-Contact land use (Figure 2 and Table 2). SIHP # -7429 Features 1–7 are detailed in the following section.

Previously Identified Features of SIHP # -7429 (Hammatt 2013)

SIHP # -7429 Feature 1 was an irregularly shaped pit identified within T-167, observed in the northwest end of the excavation, and extending beyond the excavation sidewalls. The feature was recorded at or near the base of Stratum II at 1.40 mbs, measured over 94 cm long and 87 cm wide, and terminated in Stratum III at 1.45mbs. The feature sediment matrix within the pit was silty sand with similar characteristics to Stratum II. An osseous fragment from a medium mammal was collected from during excavation. A 4-gallon bulk sediment sample collected from within the pit was screened and yielded charcoal (0.2 g), *Nerita picea* (1.9 g), possibly burned crustacean (0.7 g), naturally occurring, water-rounded marine shell (non-midden) (0.8 g), and a metal fragment (0.4 g). SIHP # -7429 Feature 1 was interpreted as a pit of indeterminate function.

SIHP # -7429 Feature 2 was an ovoid pit identified within T-167 at or near the base of Stratum II at 1.41 mbs and was intrusive into Stratum III where it terminated at 1.49 mbs. The feature measured 32 cm long and over 15 cm wide, and extended into the south sidewall. The feature sediment matrix was silty sand with similar characteristics to Stratum II. Burned osseous fragments from an unidentified medium mammal were collected during excavation. A 1.5-gallon screened bulk sediment sample was collected from SIHP #-7429 Feature 2. It contained charcoal (0.3 g), naturally occurring, water-rounded marine shell (2.8 g), rusted metal fragments (4.1 g), and fish bone (0.1 g). SIHP #-7429 Feature 2 was interpreted as a possible post mold.

SIHP # -7429 Feature 3 was a roughly rectangular pit identified within T-167 at or near the base of Stratum II at 1.32 mbs and was intrusive into Stratum III, where it terminated at 1.48 mbs. The feature measured over 95 cm long and over 64 cm wide and extended into the south and southeast sidewalls. The feature sediment matrix was silty sand with similar characteristics to Stratum II. Burned osseous fragments from an unidentified medium mammal and *Sus scrofa* (pig) were collected from the upper portion of SIHP #-7429 Feature 3 during excavation. One pig rib fragment exhibited cut marks characteristic of butchering. Two glass insulator fragments also were collected from the upper portion of the pit feature during excavation. The insulator was embossed with a “B” referring to Bushwick/Brookfield Glass Works, which was in operation from 1864-1921 (Whitten 2013). A canine tooth from a *Canis lupus familiaris* with a drilled hole through the end of the root (Acc. # 167-H-1) was discovered near the faunal remains and glass fragments. The drilled tooth is considered a traditional Hawaiian artifact and may have been part of a dog tooth necklace (*lei ‘ilio*) or leg ornament (*kupe‘e niho ‘ilio*). A 12-gallon screened bulk sediment sample

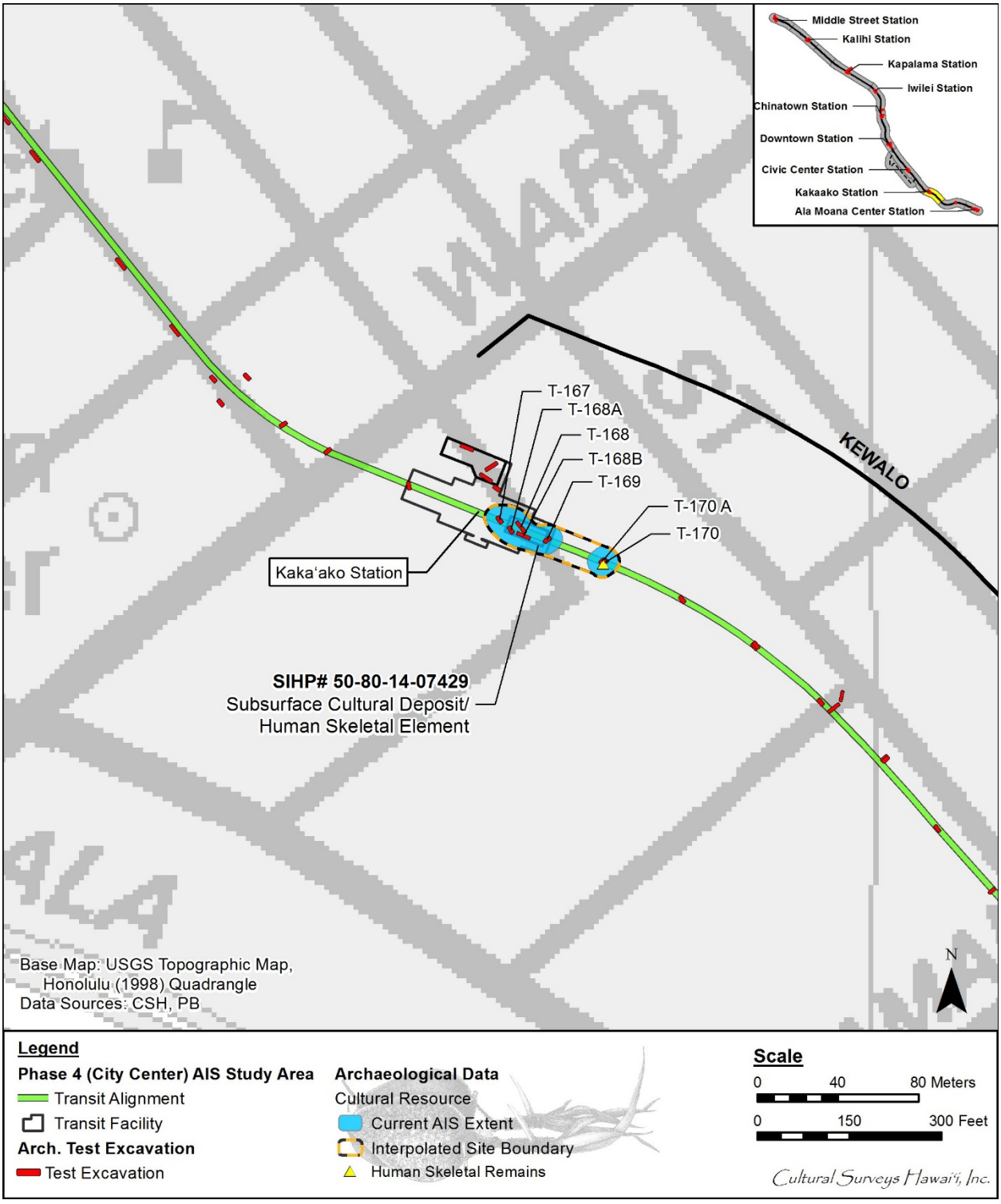


Figure 2. Figure from the Hammatt 2013 AIS investigation, showing the location and boundaries of SIHP # -7429, as defined during this initial identification and documentation (USGS 1998)

Table 2. Archaeological Features of SIHP # -7429 Identified by Hammatt 2013:639−654

Feature	Test Excavation	Depths (cmbs)	Type	Function	Contents
1	T-167	140–145	Pit	Indeterminate	*Nerita picea* shell, burned crustacean, non-cultural shell, a metal fragment, a single fragmentary medium mammal skeletal element
2	T-167	141–149	Pit	Possible posthole	Burned osseous fragments from an unidentified medium mammal, naturally occurring, water-rounded marine shell, rusted metal fragments, and fish bone
3	T-167	140–148	Pit	Indeterminate	Drilled *Canis lupus familiaris* tooth, burned osseous fragments from an unidentified medium mammal and a *Sus scrofa*, also a butchered pig rib, Bushwick/Brookfield Glass Works glass insulator (1864–1921), charcoal (native *‘ōhi‘a lehua* and conifer), shell midden, rusted metal fragments, and an unidentified fish bone
4	T-167	140–166	Pit	Possible post mold	Possible post mold
5	T-168B	150–165	Pit	Indeterminate	Charcoal (native *‘ōhi‘a lehua* and conifer), shell midden, non-cultural shell, rusted metal, *Rattus* sp., and fire-cracked rock
6	T-170	65–71	Isolated human remains	Burial	Isolated human cranial fragment identified as a left temporal portion including the mastoid process and root of the zygomatic arch; gracile mastoid process indicates possible female or young adult; no pit outline
7	T-170A	56–60	Pit	Indeterminate	Shell midden, bottle glass fragments, a fish spine, fire-cracked rock, and faunal remains from a *Canis lupus familiaris*, *Rattus* sp., and unknown medium mammal

collected from within the pit yielded charcoal (0.2 g), rusted metal fragments (4.1g), an unidentified fish bone (0.1 g), unidentified medium mammal bone (0.3 g), and marine shell midden consisting of *Nerita picea* (4.7 g), Isognomidae (1.2 g), *Isognomon* sp. (0.3 g), burned *Conus* sp. (0.9 g), *Strombus* sp. (0.3 g), Mitridae (0.3 g), crustacean (2.2 g), Echinoidea spp. (1.7 g), and *Brachidontes crebristriatus* (1.3 g). The charcoal collected from Feature 3 was submitted for wood taxa analysis that identified cf. Conifer (pine, fir), a historically introduced tree, as well as cf. *Metrosideros polymorpha* (*‘ōhi‘a lehua*), a native tree, and four unidentified species. The contents of Feature 3 indicate post-Contact influence. SIHP #-7429 Feature 3 was interpreted as a pit of indeterminate function.

SIHP # -7429 Feature 4 was a circular pit identified within the central portion of T-167, originating from the base of Stratum II at 1.54 mbs and terminating at 1.66 mbs within Stratum III. This feature measured 31 cm long and 28 cm wide and the sediment matrix was silty sand with characteristics similar to Stratum II. No bulk sample was collected and no artifacts or faunal remains were observed during the excavation of the feature. SIHP # -7429 Feature 4 was interpreted as a possible post mold.

SIHP # -7429 Feature 5 was an ovoid pit identified in the western portion of T-168B, originating from the base of Stratum II at 1.50 mbs and terminating at 1.65 mbs within Stratum III. The feature measured over 60 cm long and 30 cm wide, and extended into the south sidewall. The feature sediment matrix was loamy sand with characteristics similar to Stratum II. SIHP # -7429 Feature 5 contained a noticeable deposit of charcoal flecking. A 4-liter bulk sediment sample and a 3-gallon screened sediment sample collected from SIHP # -7429 yielded charcoal (43.2 g), various shell midden (5.4 g), various non-cultural shell (2.5 g), rusted metal (3.0 g), *Rattus* sp. bone (0.1 g), fire-cracked rock (43.1 g), and possible marine shell midden. The possible marine shell midden included crustacean (1.6 g), *Nerita picea* (1.5 g), *Isognomon* sp. (1.4 g), Echinoidea (0.2 g), *Ctena bella* (0.1 g), *Brachidontes crebristriatus* (0.1 g), and *Strombus* sp. (0.5 g). A sample of charcoal (4.2 g) was submitted for wood taxa analysis and identified as cf. *Metrosideros polymorpha* (*‘ōhi‘a lehua*) and conifer (i.e., pine, fir, or other cone-bearing variety). SIHP # -7429 Feature 5 was interpreted as a pit of indeterminate function.

SIHP # -7429 Feature 6 was a previously disturbed, isolated human cranial fragment identified in T-170 that consisted of a left temporal bone portion, including the mastoid process and the root of the zygomatic arch. The previously disturbed human cranial fragment was discovered in situ within the buried A horizon (Stratum II) near the southern end of the southeast sidewall and at 65 cmbs. A limited investigation was performed by an osteologist to identify the remains. The fracture margins of the fragment were similar in color to the adjacent bone, which indicates the temporal portion was not fractured recently. The mastoid process was notably gracile, suggesting a possible female or young adult individual. An assessment of ancestry was indeterminate due to the lack of supporting traits. SIHP # -7429 Feature 6 is interpreted as a human skeletal fragment. No additional human remains were observed.

SIHP # -7429 Feature 7 was a square-shaped stain identified in T-170A, originating within Stratum II at 0.56 mbs and terminating at 0.60 mbs near the base of Stratum II. The feature measured 0.35 m long and 0.25 m wide. The feature sediment matrix was silty sand with characteristics similar to Stratum II. A 2-liter screened bulk sediment sample yielded various shell midden (13.5 g), bottle glass fragments (0.3 g), a fish spine (0.1 g), and fire-cracked rock (25.8 g). The shell midden was identified as *Strombus* sp. (8.5 g), *Nerita picea* (2.6 g), burned *Natica* sp.

(2.0 g), burned crustacean (0.3 g), and *Isognomon* sp. (0.1 g). Faunal remains from the screened bulk sediment sample were identified as *Canis lupus familiaris*, *Rattus* sp., and an unknown medium mammal, not consistent with human. The presence of historic material indicated post-Contact components of Feature 7. SIHP # -7429 Feature 7 is interpreted as a pit of indeterminate function.

Block M Documentation of SIHP # 50-80-14-7429

The cultural deposits identified in the Block M project area are similar in soil color, texture, and material content to the characteristics of SIHP # -7429 documented by Hammatt (2013). While Block M is located approximately 200 m northeast from the location of SIHP # -7429 as identified by Hammatt (2013), the cultural deposits documented within Block M are in fact contiguous with SIHP # -7429 when viewed in conjunction with the AIS results from the intervening Block I project area (CSH report in progress). Both Block M and Block I documented cultural deposits and associated features similar to SIHP # -7429 and are similarly geographically and spatially located along the *makai* edge of a continuous sand dune deposit abutting the Kaka‘ako coastal wetlands. Based on cultural content, spatial contiguity, and geographical similarity, the cultural deposits of Block M and Block I are considered part of SIHP # -7429.

The Block M AIS documented SIHP # -7429 within 11 test excavations (T-2, 4, 5, 23, 31, 43, 48, and 64–66). Within Block M, two discrete cultural deposits were identified, consisting of a buried sandy loam A horizon overlain by a very thin, culturally enriched, historic sand and soil fill deposit. The overlying historic deposit was not originally identified by Hammatt (2013); however, reinspection of the field documents (i.e., photographs) from the previous AIS indicate this very thin layer was indeed present, represented as a slightly lighter colored loamy sand layer (Component 1) atop the buried A horizon (Component 2). Of the 11 Block M test excavations containing SIHP # -7429, five were exclusively associated with Component 1 (culturally enriched, historic fill), four were exclusively associated with Component 2 (culturally enriched, buried A horizon), and two test excavations were associated with both components of SIHP # -7429 (Table 3). Five test excavations also contained associated features, SIHP # -7429 Features 8–16 (Table 4 and Table 5).

SIHP # -7429 Component 1 consisted of a layer of mixed sand and soil that contained historic debris, faunal material (including a modified dog bone), shell midden, charcoal, milled wooden posts, and irrigation features. Based on its location directly below Kaka‘ako land reclamation fill deposits (crushed coral and hydraulic clay), this layer was deposited prior to the 1919–1927 Kaka‘ako land reclamation efforts. It appeared to be composed of locally procured sand and sediment, including redistributed A horizon material, most likely utilized to modify, or level, the natural topography. This sand fill layer directly overlay, and in most cases, truncated the buried natural A horizon. The soil color and texture varied from dark grayish brown to olive brown and from sandy loam to loamy sand or silty sand. Within stratigraphic descriptions, it was primarily designated as Stratum III. Component 1 of SIHP #-7429 was recorded in seven test excavations (T-5, 31, 48, 64, 65, 66, and 68) and contained four features (SIHP # -7429 Features 12, 13, 14, and 16). This layer was also observed within 16 additional test excavations within Block M; however, due to the absence of any cultural content or features in these locations, it was not considered part of the historic property.

SIHP # -7429 Component 2 consisted of a buried natural A horizon developed within calcareous Jaucus sand that contained both traditional Hawaiian and historic cultural deposits consisting of

Table 3. Test Excavations within Block M Associated with SIHP # -7429

Test Excavation	Stratum	SIHP Component	SIHP Feature #
T-2	IIIa	2	8–11
T-4	IVa	2	-
T-5	IIIa and IIIb	1	-
T-23	IVa	2	-
T-31	III	1	12
T-43	IIIa	2	-
T-48	III	1	13
T-64	III and IV	1 and 2	-
T-65	III	1	-
T-66	II, IV, V	1 and 2	14–15
T-68	IIIa	1	16

Table 4. SIHP # -7429 Culturally Enriched Strata Identified within Block M

Test Excavation	Stratum	Depth (cmbs)	Content
T-4	IVa	63−80	Charcoal flecks, faunal bone (*Canis lupus familiaris*), marine shell midden (*Tellina palatam*), and a glass fragment
T-5	IIIa−IIIb	62−85	Str IIIa: glass and ceramic fragments, and charcoal flecks; Str IIIb: glass fragments, rusted metal, and faunal bone
T-23	IVa	80−114	Charcoal, ceramic fragments, industrial slag, a six-sided wooden die, and faunal material consisting of fish and *Canis lupus familiaris* bone fragments
T-43	IIIa	47−56	Shell midden material, glass fragments, a rusted nail, and charcoal
T-64	III−IV	80−113	Str III: brick and slag; Str IV: modified wedge-shaped polished stone and faunal remains
T-65	III−IVb	64−105	Str III: modified long bone (*Canis lupus familiaris*); Str IVb: termination of milled wood post
T-66	IV	55−115	Embankments associated with SIHP # -7429 Feature 14 (*‘auwai)*

Table 5. SIHP # -7429 Archaeological Features Identified within Block M

Feature	Test Excavation	Depths (cmbs)	Type	Function	Age	Contents
8	T-2	67–95	Fire pit	Food preparation and consumption	*Cal AD 1333-1337 (0.7%); 1398−1449 (94.7%)	Charcoal, fire-altered basalt and coral cobbles, and marine midden: *Echinothrix diadema* sp. (*wana*, or sea urchin) (1.8 g), *Tellina palatam* (19.0 g), and *Turbo sandwicensis* (13.1 g)
9	T-2	65–110	Fire pit	Food preparation and consumption	-	Charcoal, fire-altered basalt and coral cobbles, and marine midden: *Tellina palatam* (1.0 g) and crustacean (0.1 g)
10	T-2	80–96	Pit	Indeterminate	-	Isognomidae
11	T-2	75–90	Pit	Indeterminate	-	None
12	T-31	75–85	Posthole	Possible fence or structural component	-	Decomposing milled wood
13	T-48	80–133	Posthole	Possible fence or structural component	-	Decomposing milled wood
14	T-66	95–138	*‘Auwai* (irrigation channel)	Possible agriculture/ domestic function	-	Dark sandy clay with freshwater snails and a layer of humus at the upper boundary
15	T-66	58–70	Pit	Indeterminate	-	None
16	T-68	50–75	Water channel	Possible agriculture/ domestic function	-	Sandy clay

* Beta -384715

marine midden, charcoal, faunal material, glass and ceramic fragments, a wooden die, and miscellaneous historic debris. The cultural signature within the general A horizon was very light, but notably present. The culturally enriched A horizon (SIHP # -7429) was consistently documented below reclamation fill, locally procured historic fill, or culturally enriched, locally procured, historic fill (SIHP # -7429). The soil color and texture varied from very dark brown to dark gray or dark yellowish brown, and from sandy loam to loamy sand or silty sand. Within stratigraphic descriptions, it was primarily designated as Stratum III or IV. Component 2 of SIHP #-7429 was observed in five test excavations (T-2, 4, 23, 43, 64, and 66) and contained five features (SIHP # -7429 Features 8, 9, 10, 11, and 15). Test Excavations 64, 65, and 66 contained both components of SIHP # -7429. Nine features were associated with SIHP # -7429, originating from both component cultural deposits. SIHP # -7429 Features 9–16 consisted of the following:

SIHP # -7429 Feature 8 was a concentration of charcoal and fire-affected rock and coral identified within T-2, originating within the buried natural A horizon and extending into the underlying Jaucas sand (Figure 3 through Figure 7). The feature extended diagonally through the test excavation and was documented between 67 and 95 cmbs. It measured 86 cm long, 75 cm wide, and 15 cm thick. In addition to fire-altered material, Feature 8 contained marine midden consisting of E*chinothrix diadema* sp. (*wana*, or sea urchin) (1.8 g), *Tellina palatam* (19.0 g), and *Turbo sandwicensis* (13.1 g). A charcoal sample was collected for radiocarbon dating and yielded a date of Cal AD 1405 to 1445 (2σ) (Beta -384715), which establishes the use of this area as early as the fifteenth century. SIHP # -7429 Feature 8 is interpreted as a fire pit for the preparation and consumption of food.

SIHP # -7429 Feature 9 was a concentration of charcoal and fire-affected rock and coral identified in T-2, originating within the buried natural A horizon and extending into the underlying Jaucas sand (see Figure 4 through Figure 6). Feature 9 was documented between 65−110 cmbs and measured 40 cm in diameter and 19 cm thick. In addition to fire-altered material, Feature 9 contained marine midden consisting of *Tellina palatam* (1.0 g) and crustacean (0.1 g). SIHP # -7429 Feature 9 is interpreted as a fire pit for the preparation and consumption of food.

SIHP # -7429 Feature 10 was a circular stained pit identified in T-2, originating within the buried natural A horizon and extending into the underlying Jaucas sand (see Figure 7). Feature 10 was documented between 80–97 cmbs and measured 14 cm long, 10 cm wide, and 17 cm thick. It contained a small amount of marine midden (Isognomidae). SIHP # -7429 Feature 10 is interpreted as a pit of indeterminate function.

SIHP # -7429 Feature 11 was a stained pit identified in T-2, originating within the buried natural A horizon and extending into the underlying Jaucas sand (see Figure 5, Figure 6Figure). Feature 11 was documented between 75−90 cmbs and measured 14 cm wide and 12 cm thick. No cultural material was observed. SIHP # -7429 Feature 11 is interpreted as a pit of indeterminate function.

SIHP # -7429 Feature 12 was a posthole that contained decomposing milled wood, identified in T-31 (Figure 8, Figure 9). Feature 12 originated from Stratum III (historic sand fill) and terminated at the interface of Strata IVb (Jaucas sand) and V (marine sand). The feature was documented between 82−117 cmbs and measured 31 cm long, 20 cm wide, and 12 cm thick. SIHP # -7429 Feature 12 is interpreted as a historic posthole that may have been part of a fence line or some structural component.

Figure 3. Close-up of SIHP # -7429 Feature 8, prior to excavation

Figure 4. Photograph of T-2 (*mauka* portion), showing SIHP # -7429 Features 8 (rear) and 9 (fore)

Figure 5. T-2 northwest wall, showing SIHP # -7429 Features 11, 9, and 8 (from front to back)

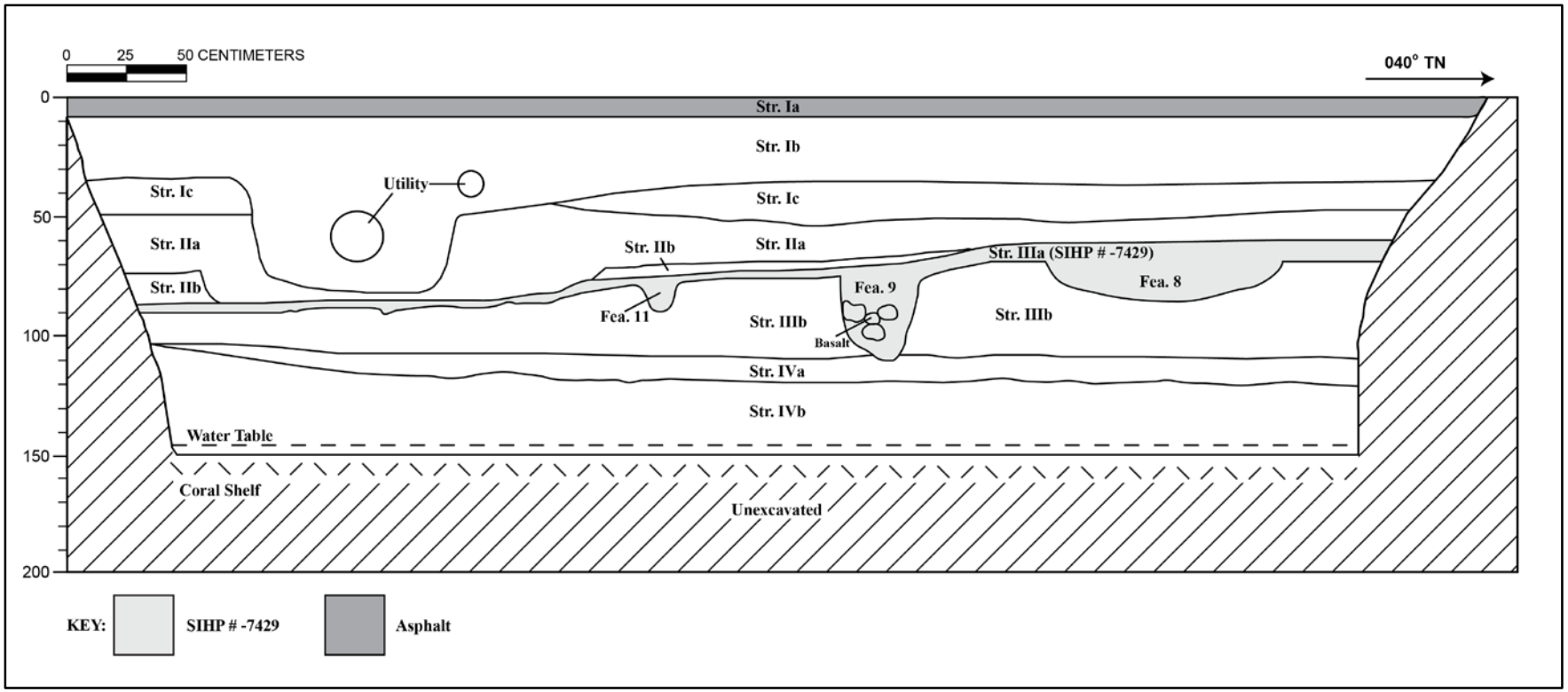


Figure 6. T-2 northwest profile, showing SIHP # -7429 Features 8, 9, and 11

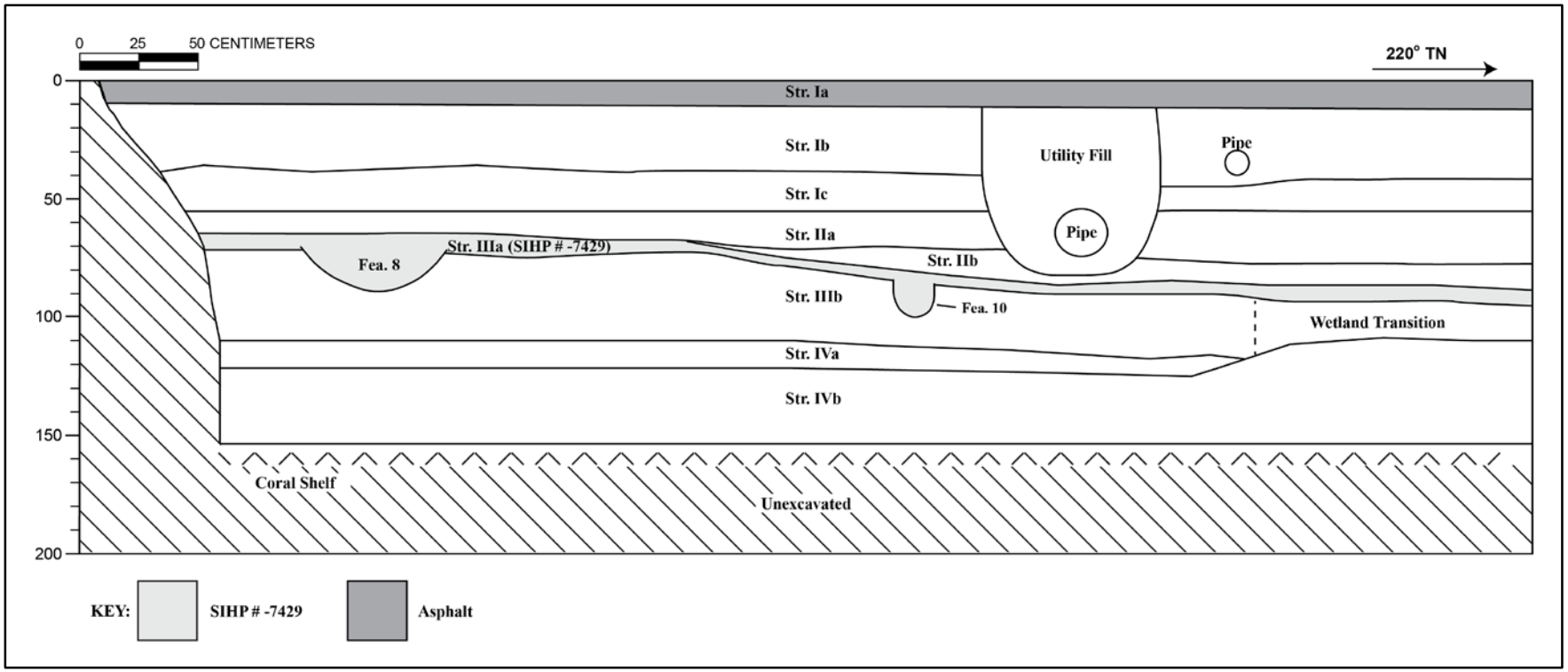


Figure 7. T-2 southeast profile, showing SIHP # -7429 Features 8 and 10

Figure 8. Photograph of T-31 southeast wall, showing SIHP # -7429 Feature 12, a posthole containing a historic milled wood post, originating from Stratum III (SIHP # -7429)

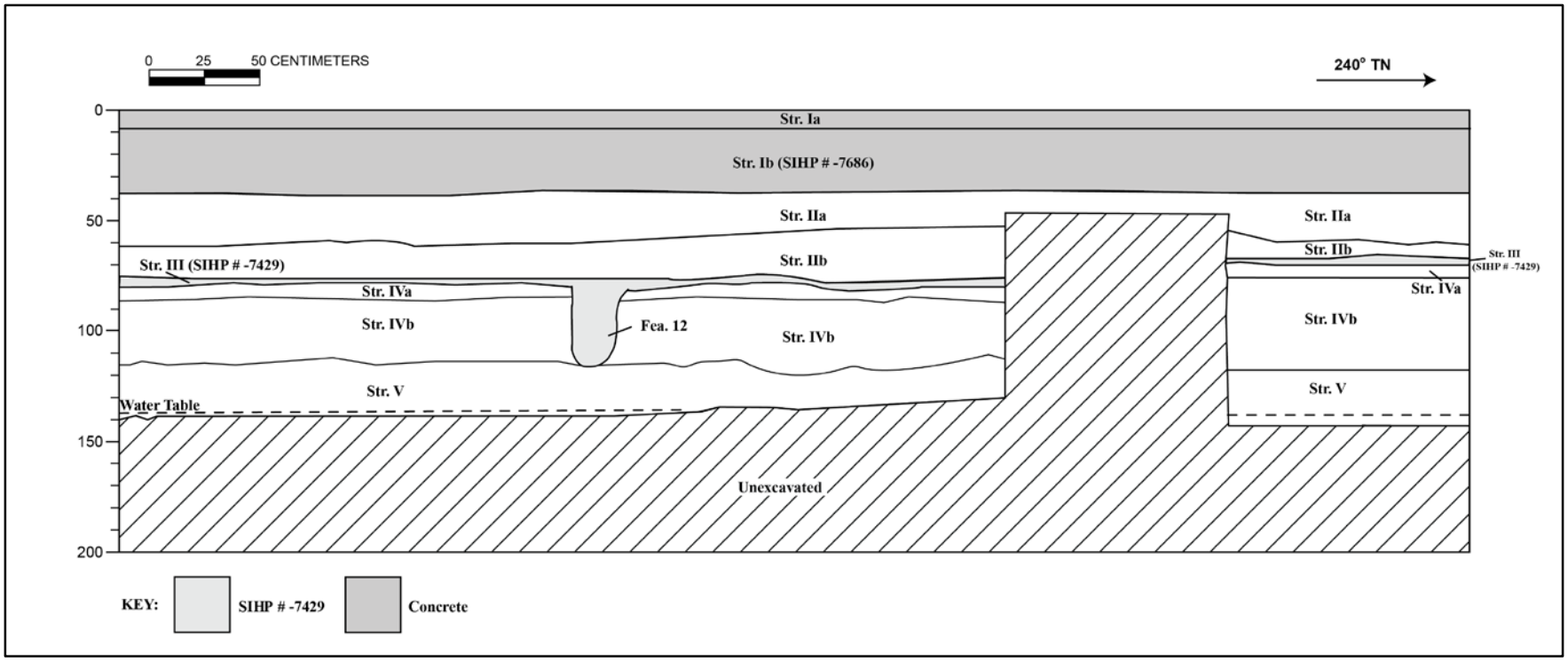


Figure 9. T-31 southeast profile, showing SIHP # -7429 Feature 12

SIHP # -7429 Feature 13 was a posthole that contained decomposing milled wood, identified in T-48 (Figure 10). Feature 13 originated from Stratum III (historic sand fill) and terminated at the coral shelf. The feature was documented between 80−133 cmbs and measured 50 cm long and 25 cm wide. SIHP # -7429 Feature 13 is interpreted as a historic posthole that may have been part of a fence line or some structural component.

SIHP # -7429 Feature 14 was a deep, narrow channel identified in T-66, associated with the locally procured, historic sand fill layer (Figure 11through Figure 13). Feature 14 extended *mauka-makai* through TE 66, truncated the buried natural A horizon (Stratum VIa), and terminated in Stratum VII. The feature was documented between 95−138 cmbs and measured 100 cm long by 48 cm wide. Feature 14 contained dark sandy clay and freshwater snails with a layer of humus at the upper boundary. SIHP # -7429 Feature 14 is interpreted as a man-made irrigation feature (*‘auwai*) which may have been used for either agricultural or domestic purposes. No cultural materials were observed within the feature contents.

SIHP # -7429 Feature 15 was a shallow circular pit stain identified in T-66, originating within the buried natural A horizon and extending into the underlying Jaucas sand (Figure 14Figure). Feature 15 was documented between 58−70 and measured 35 cm wide and 10 cm thick. No cultural material was observed. SIHP # -7429 Feature 15 is interpreted as a pit of indeterminate function.

SIHP # -7429 Feature 16 was a shallow, rectangular pit identified in T-68, associated with the locally procured, historic sand fill layer (Figure 15). Feature 16 truncated the locally procured, historic fill layer (Stratum IIIa) and the buried, natural A horizon (Stratum IVa) and terminated in Jaucas sand (Stratum IVb). It was documented between 50−75 cmbs. This feature measured 120 cm long and 30 cm deep with a 5−8 cm layer of sandy clay lining the base of the channel. SIHP # -7429 Feature 16 is interpreted as a man-made irrigation feature (*‘auwai*) which may have been used for either agricultural or domestic purposes. No cultural materials were observed within the feature contents.

In summary, SIHP # -7429 consists of two buried, culturally enriched layers and 16 associated features. These cultural deposits document cultural activity along the *makai* edge of a sand dune deposit which abuts the Kaka‘ako coastal wetlands. The Block M AIS results have extended the boundaries of SIHP # -7429, originally documented by Hammatt (2013) at the corner of Ward and Queen streets, to the corner of Queen and Kamake‘e streets. The intervening area between Block M and Ward Avenue consists of the Block I project area, the AIS results of which also documented continuous cultural deposits associated with SIHP # -7429 along this sand dune-wetland edge (CSH report in progress). The two cultural deposits consist of a historic fill deposit, comprised of locally procured sand and soil, and the underlying natural sandy loam A horizon. Cultural content within the A horizon cultural layer and associated features indicate a prolonged period of usage, or at least periodic habitation, ranging from as early as the fourteenth to fifteenth centuries to the historic period. Cultural content within the overlying historic fill layer and associated features indicate this land modification layer served as a stable living surface for a period of time, as evidenced by an accumulation of historic debris and the presence of posthole and water channel features.

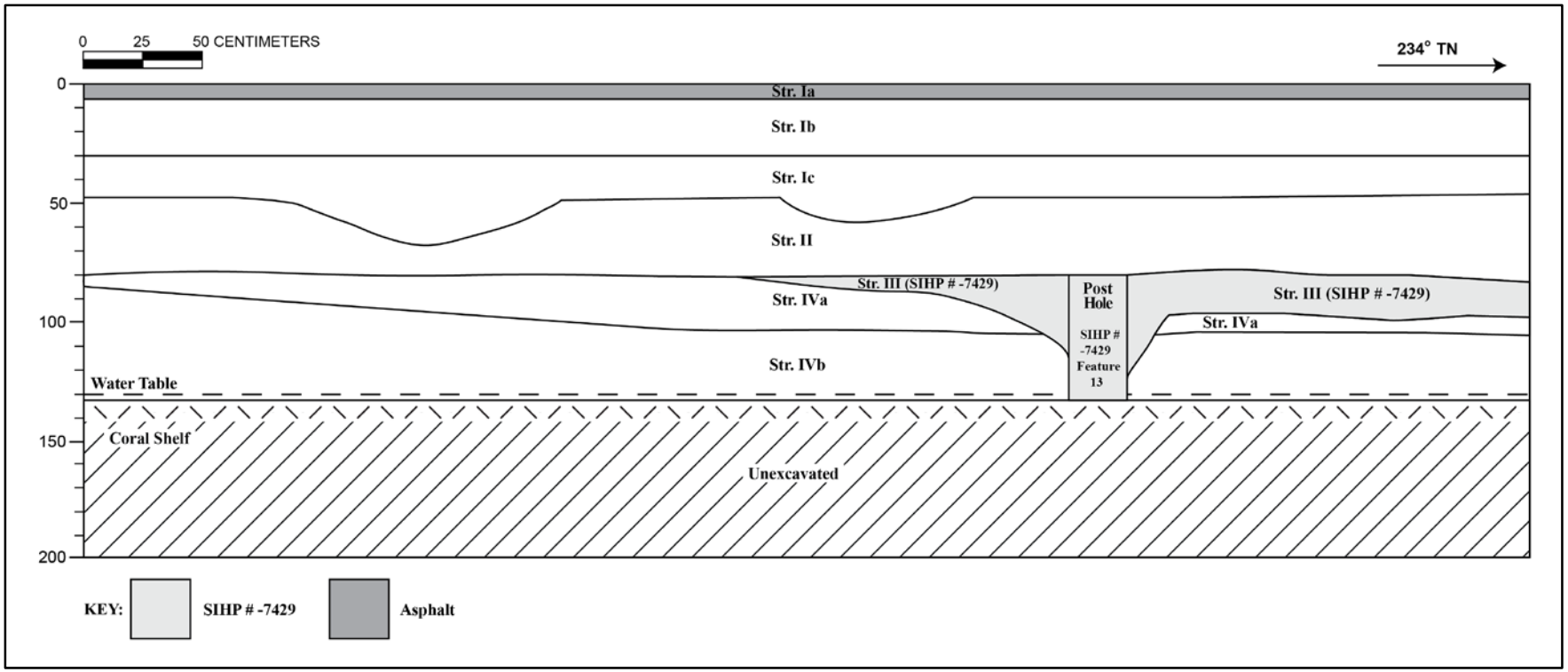


Figure 10. T-48 southwest profile, showing SIHP # -7429 Feature 13

Figure 11. T-66 northeast wall, showing SIHP # -7429 Feature 14 (‘*auwai*) at the south end

Figure 12. Close-up of SIHP # -7429 Feature 14

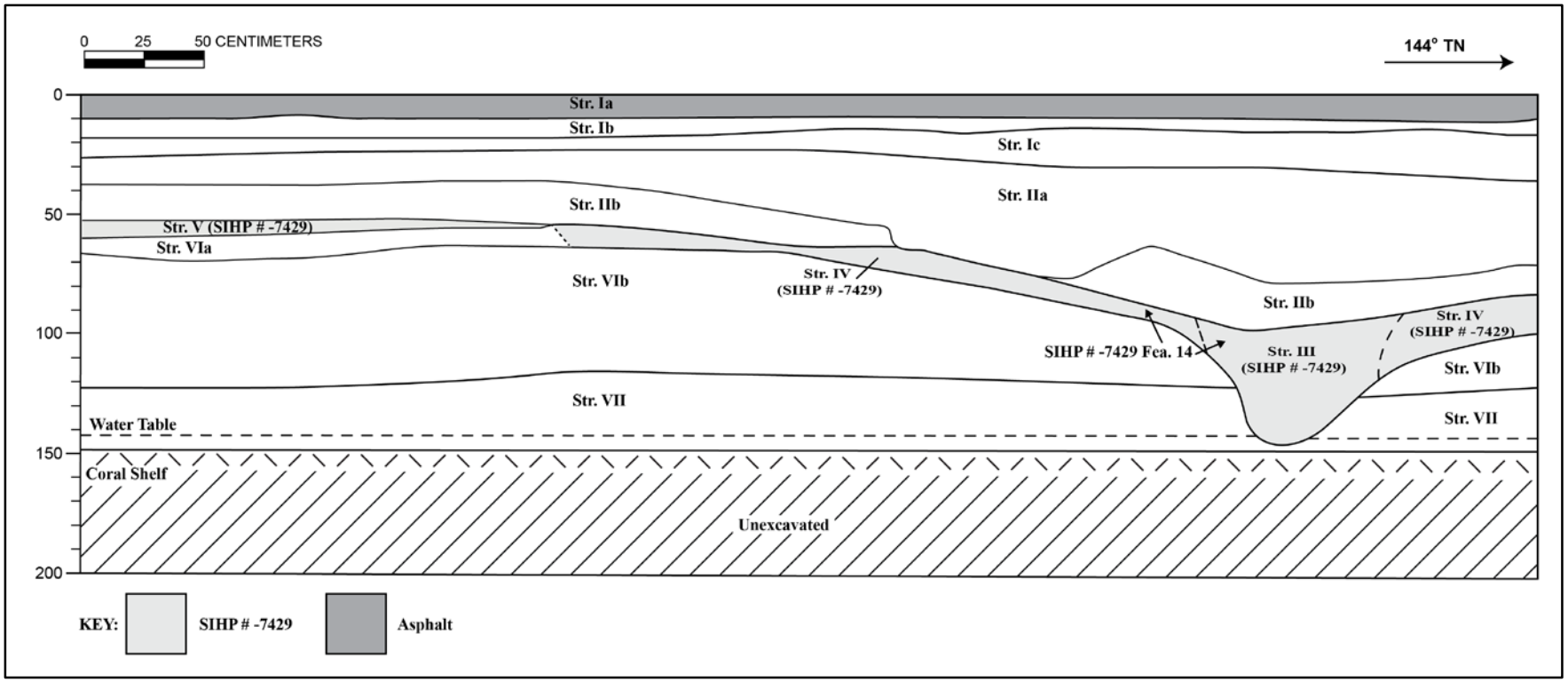


Figure 13. T-66 northeast profile, showing SIHP # -7429 Feature 14, *‘auwai*

Figure 14. Close-up of SIHP # -7429 Feature 15, pit feature

Figure 15. Close-up of SIHP # -7429 Feature 16, man-made irrigation feature

SIHP # -7429 was previously assessed by Hammatt (2013) as significant under Hawai‘i state historic property significance criterion “d” (have yielded, or may be likely to yield information important in prehistory or history) and “e” (historic property has cultural significance to an ethic group, including, but not limited to, religious structures, burials, and traditional cultural properties), pursuant to HAR §13-284-6. The results of this investigation support this previous significance assessment. SIHP # 50-80-14-7429 has provided, and can potentially provide, additional information on late pre- to early post-Contact habitation, historic land use, and pre- and post-Contact burial practices and distribution within Kaka‘ako. Based on the potential for SIHP # -7429 to provide further additional information, an archaeological monitoring program is believed to be warranted.

SIHP # 50-80-14-7686

FORMAL TYPE:	Historic buried surfaces
FUNCTION:	Commercial infrastructure
NUMBER OF FEATURES:	N/A
AGE:	Mid-twentieth century
TEST EXCAVATIONS:	T-7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 20, 23, 27, 28, 29, 31, 32, 33, 34, and 35
TAX MAP KEY:	[1] 2-3-002:001 (portion)
LAND JURISDICTION:	Private, Victoria Ward, Limited (VWL)
PREVIOUS DOCUMENTATION:	None

SIHP # -7686 consists of buried historic commercial infrastructure remnants associated with development during the mid- to late twentieth century. This historic property is distributed beneath the current commercial building within the central portion of the Block M project area. These structural remnants are all located immediately beneath the current commercial building concrete floor and associated base course layer. SIHP # -7686 includes 26 component buried surfaces that consist of two concrete footings, two buried asphalt surfaces with associated base course layers, and 22 concrete surfaces, 13 of which have associated base course layers (Figure 16, Table 6). Based on photographic and stratigraphic data, potential continuity among several subsurface layers was observed; and while some apparent contiguous historic surfaces have an associated base course, others do not. The buried concrete surfaces (both with and without associated base course layers) were all observed overlying crushed coral fill and hydraulic fill associated with the 1919–1927 Kaka‘ako land reclamation.

From the late nineteenth through the late twentieth centuries, the Block M project area underwent several landscape changes including the modification and leveling of the area with locally procured sand and soil, the later infilling of the wetland areas with material dredged from the nearby Kewalo Basin—the Kaka’ako land reclamation (1919–1927), and mid- to late twentieth century urban development. These buried historic structures are likely remnants of commercial infrastructure built following the historic land reclamation events. Use of aerial photos support

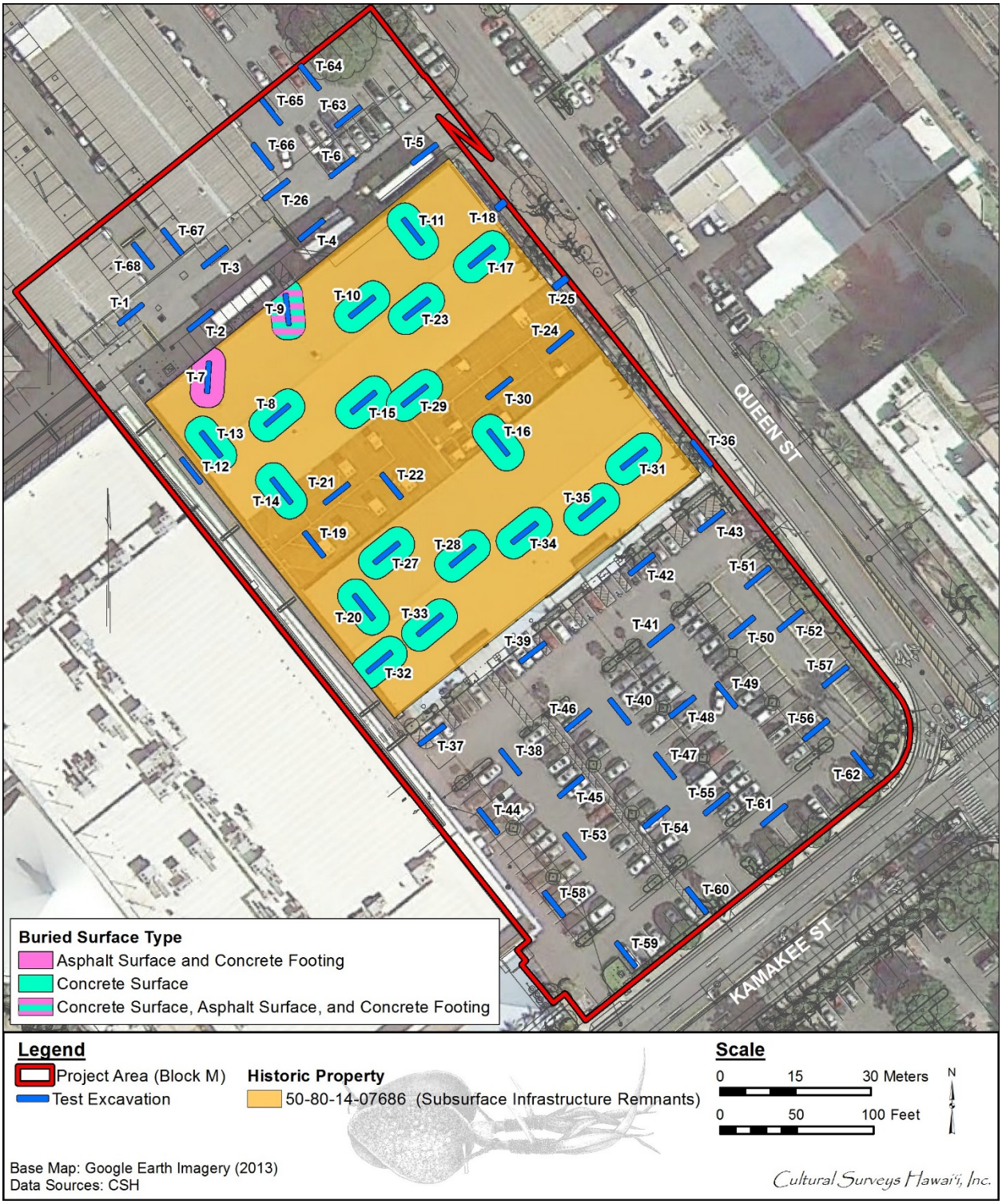


Figure 16. Aerial photograph showing the extent of the historic buried surfaces (SIHP # -7686) documented within the Block M project area (Google Earth 2013)

Table 6. SIHP # -7686 Subsurface Structures Identified in Block M

Test Excavation	Depth (cmbs)	Stratum	Description/Type	Associated Base Course (Y/N)	Base Course Depth (cmbs)
7	30–100	--	Concrete footing	No	--
7	35–40	Ib	Asphalt	Yes	40–47
8	37–50	Ic	Concrete surface	Yes	50–58
9	25–85	--	Concrete footing	No	--
9	26–37	Ic	Asphalt	Yes	37–40
9	26–37	Ie	Concrete surface	Yes	37–40
10	7–40	Ib	Concrete surface	Yes	32–42
11	7–35	Ib	Concrete surface	No	--
13	10–27	Ib	Concrete surface	Yes	27–37
13	37–50	Id	Concrete surface	Yes	48–57
14	7–19	Ic	Concrete surface	No	--
14	19–42	Id	Concrete surface	No	--
15	7–23	Ib	Concrete surface	Yes	23–28
15	28–40	Id	Concrete surface	Yes	40–44
16	13–35	Ic	Concrete surface	No	--
17	7–34	Ib	Concrete surface	No	--
20	13–41	Ib	Concrete surface	Yes	41–57
23	8–38	Ib	Concrete surface	No	--
27	10–40	Ib	Concrete surface	Yes	40–52
28	13–41	Ib	Concrete surface	Yes	41–50
29	19–40	Ic	Concrete surface	Yes	33–46
31	8–37	Ib	Concrete surface	No	--
32	13–40	Ib	Concrete surface	Yes	40–53
33	13–42	Ib	Concrete surface	Yes	42–85
34	10–33	Ib	Concrete surface	No	--
35	8–27	Ib	Concrete surface	No	--

estimation of a relative date range for the subsurface structures; however, due to the time span between each of the aerial photos and historic maps, only approximate dates could be determined. According to a 1927 aerial photograph (Figure 17), the project area is mostly barren with the exception of some trees. The area continued to lack commercial infrastructure on a 1939–1941 aerial photograph (Figure 18). On a subsequent 1943 U.S. Army War Department terrain map and a 1952 aerial photograph (Figure 19, Figure 20), it is clear that three parallel commercial warehouses were constructed in the Block M project area, indicating these subsurface structures date to sometime between 1939 and 1943. A 1993 aerial photograph continues to show the three warehouses in Block M (Figure 21). By the time a 2000 NOAA aerial photograph (Figure 22) was taken, the three warehouses have been replaced by a new commercial structure. The new and currently standing commercial structure took the place of portions of the northeastern two-thirds of the two northernmost warehouses, and a parking lot took the place of the third warehouse. The Block M interior trenches likely identified the structural remnants from two of these warehouses. The potential structural remnants of the third warehouse, if present, would have most likely been identified in the southeastern portion of the Block M project area. However, no structural remnants were recovered in this area, suggesting they were removed sometime between 1993 and 2000, when the parallel warehouse structures were removed from the area and the current commercial building was constructed.

Of the 22 historic concrete subsurfaces identified within Block M (SIHP # -7686), the nine subsurfaces without associated base course layers were predominantly located beneath the northeastern half of the current commercial building, while the 13 buried concrete surfaces with associated base course layers were located predominantly beneath the southwestern half of the current commercial building (Figure 23). Among all of the buried concrete surfaces, there appear to be five instances of consistency among test excavations based on relative depths of the structures, suggesting potential continuity of those subsurface structures (Table 7).

Buried concrete surfaces without associated base course layers were observed in eight test excavations (T-11, 14, 16, 17, 23, 31, 34, and 35) (Figure 24 through Figure 27). Continuity between these historic concrete layers is seen within seven test excavations (T-11, 17, 23, 31, 34, 35, and possibly T-16 (see Table 7). These surfaces range between approximately 7–37 cmbs, with an average thickness of 25 cm, and are directly underlying the current commercial building surface. Of note, T-14 presented a slightly different configuration, with two buried concrete surfaces that more closely resembled the buried historic surfaces with associated base course layers.

Thirteen buried concrete surfaces with associated base course layers were observed and documented in 11 test excavations (T-8, 9, 10, 13, 15, 20, 27, 28, 29, 32, and 33 (Figure 28 through Figure 31). The majority of these test excavations contained a single historic, subsurface concrete layer (see Figure 28 and Figure 29); however, T-13 and T-15 contained two historic subsurface concrete layers (see Figure 30 and Figure 31). The upper boundary of the concrete surfaces ranged from 7 to 37 cmbs with an average thickness of 21 cm.

Potential continuity of many of these concrete surfaces is seen within ten test excavations: T-8, 9, 13, 15, 20, 27, 28, 29, 32, and 33. The concrete surfaces located beneath the central-northwestern portion of the current building (T-9, 15, and 29) ranged between approximately 19–40 cmbs with an average thickness of 14.7 cm. The concrete surfaces located beneath the southern corner of the current building (T-20, 27, 28, 32, and 33) ranged between 10–42 cmbs with an average thickness

Figure 17. 1927 UH SOEST aerial photograph showing the absence of any commercial infrastructure within the Block M project area

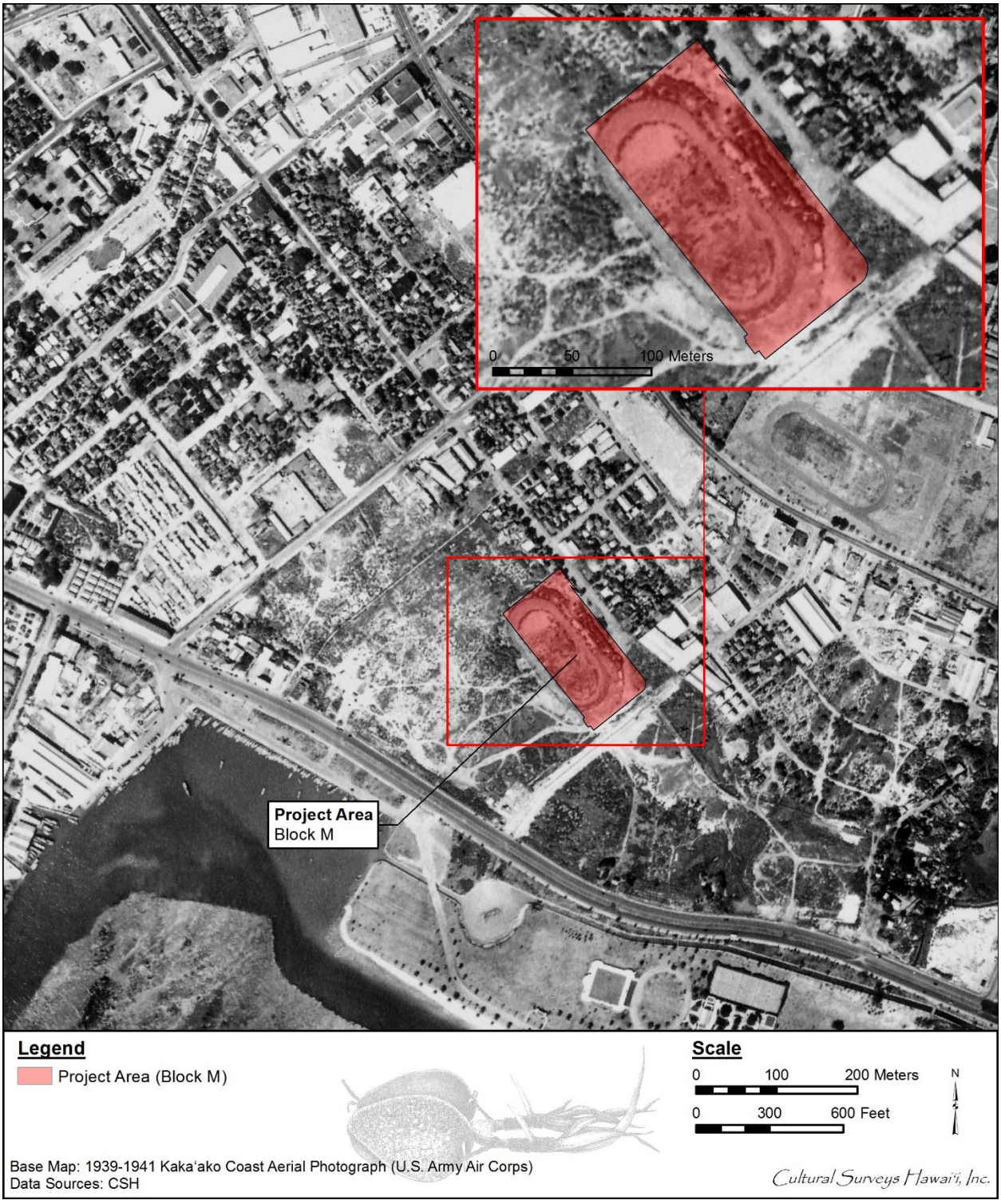


Figure 18. 1939-1941 aerial photograph (U.S. Army Air Corps) of Kaka‘ako showing a circular track in the location of the Block M project area and the absence of any large commercial structures

Figure 19. 1943 U.S. Army War Department terrain map showing a series of three parallel warehouse commercial structures located within the Block M project area

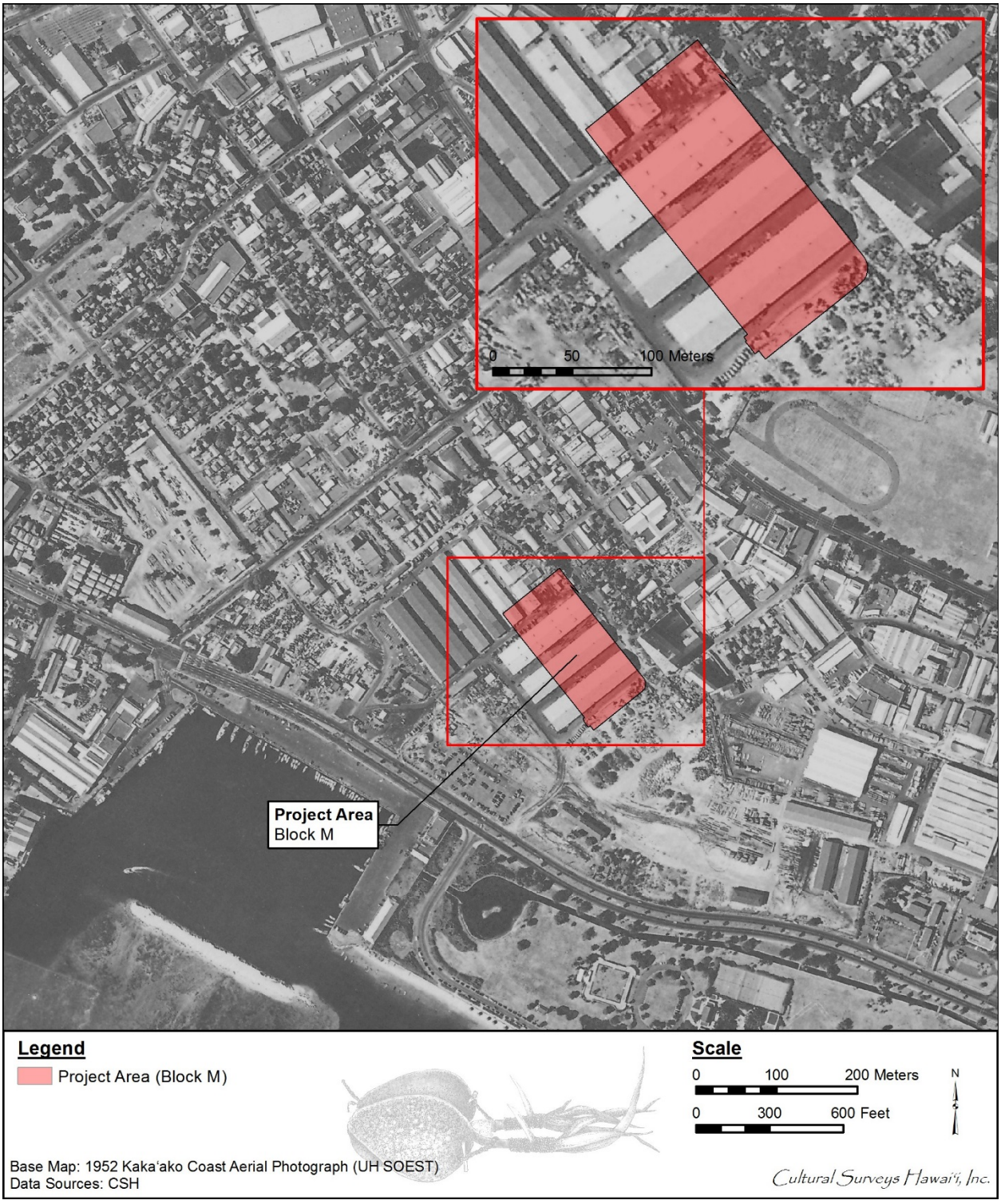


Figure 20. 1952 aerial photograph showing asphalted roadways and parking areas within the commercial warehouse complex

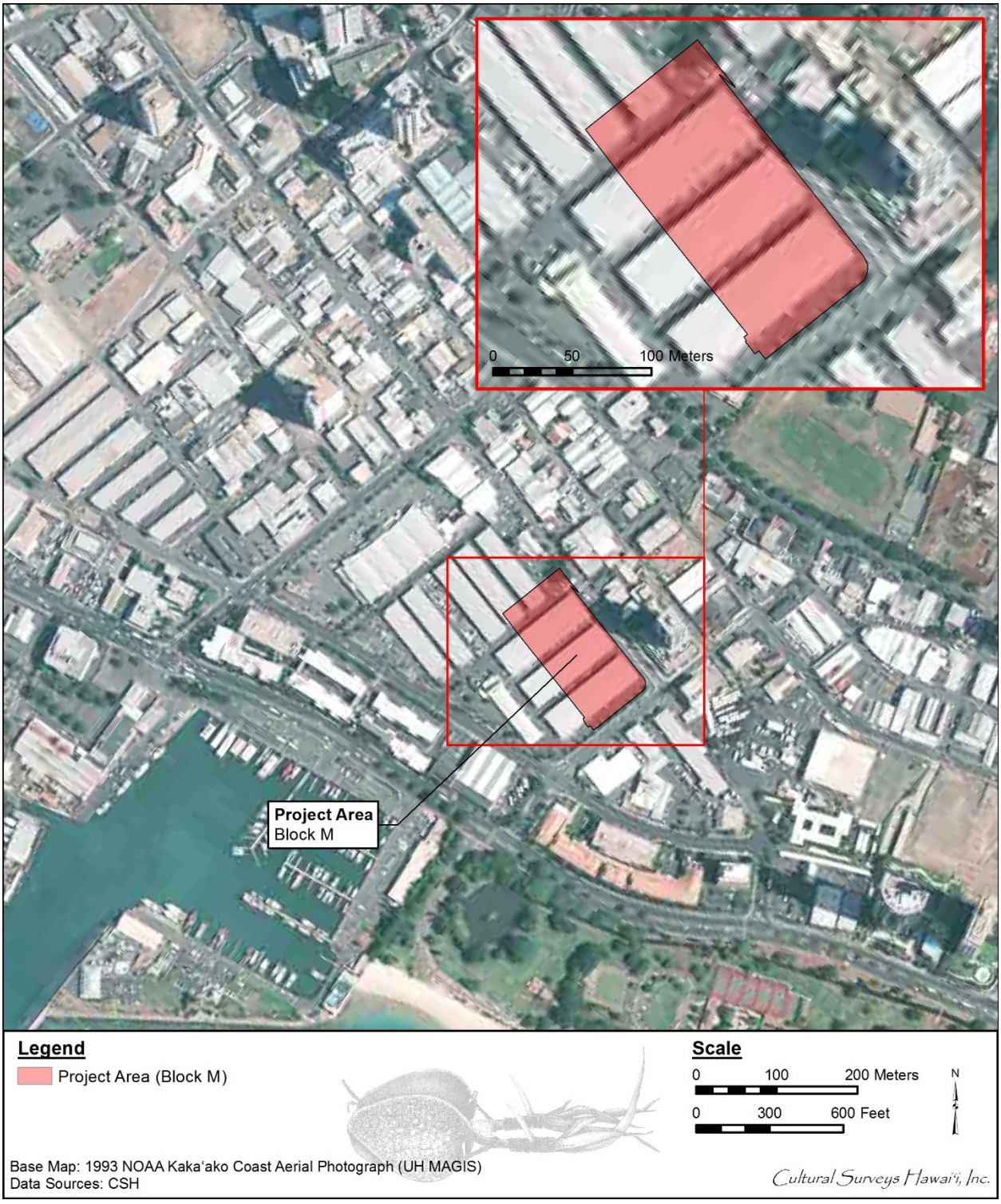


Figure 21. 1993 NOAA aerial photograph showing asphalted roadways and parking areas along with the commercial warehouse complex in the Block M project area

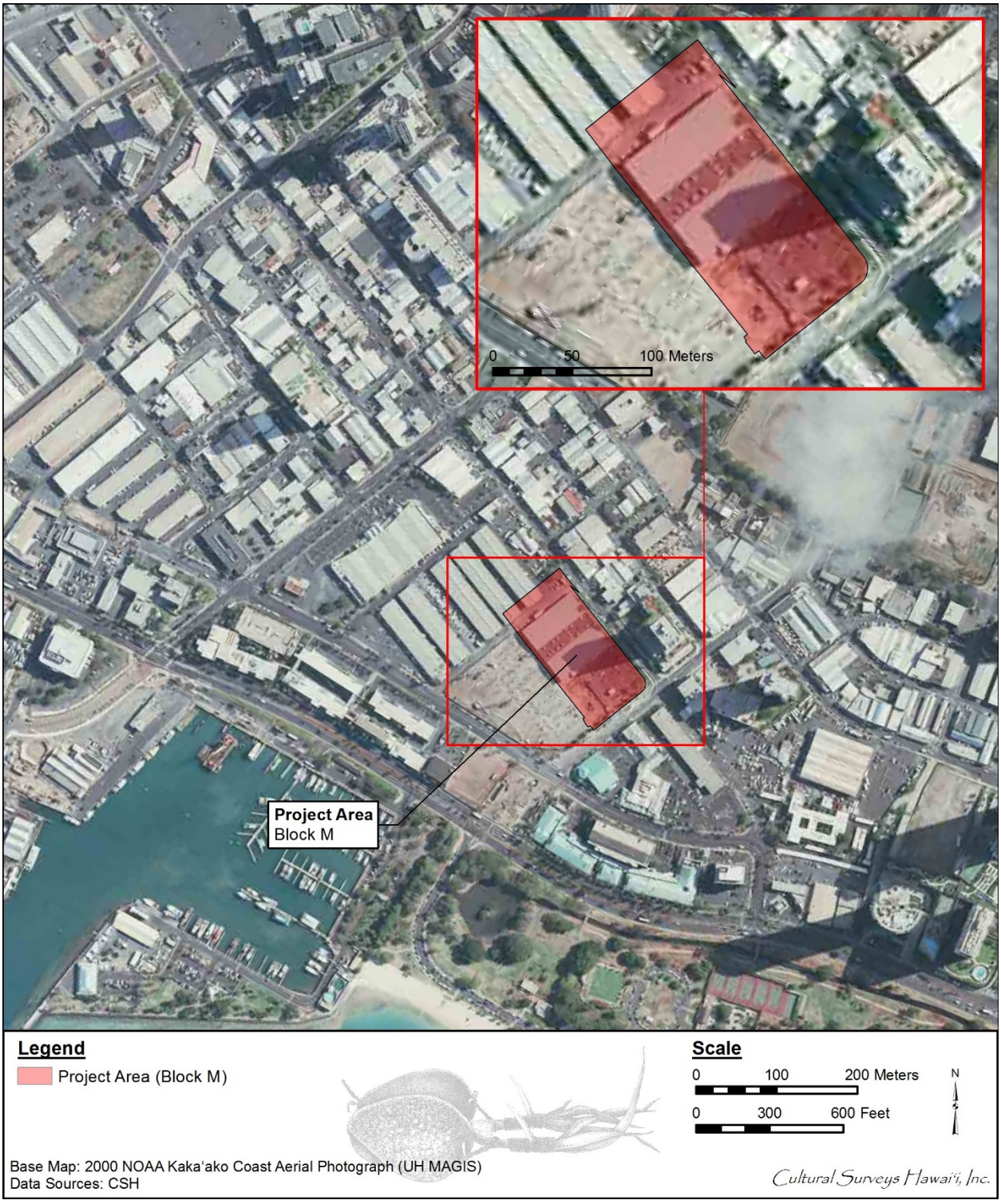


Figure 22. 2000 NOAA aerial photograph showing the absence of the warehouse complex, now replaced by the current commercial building in the Block M project area

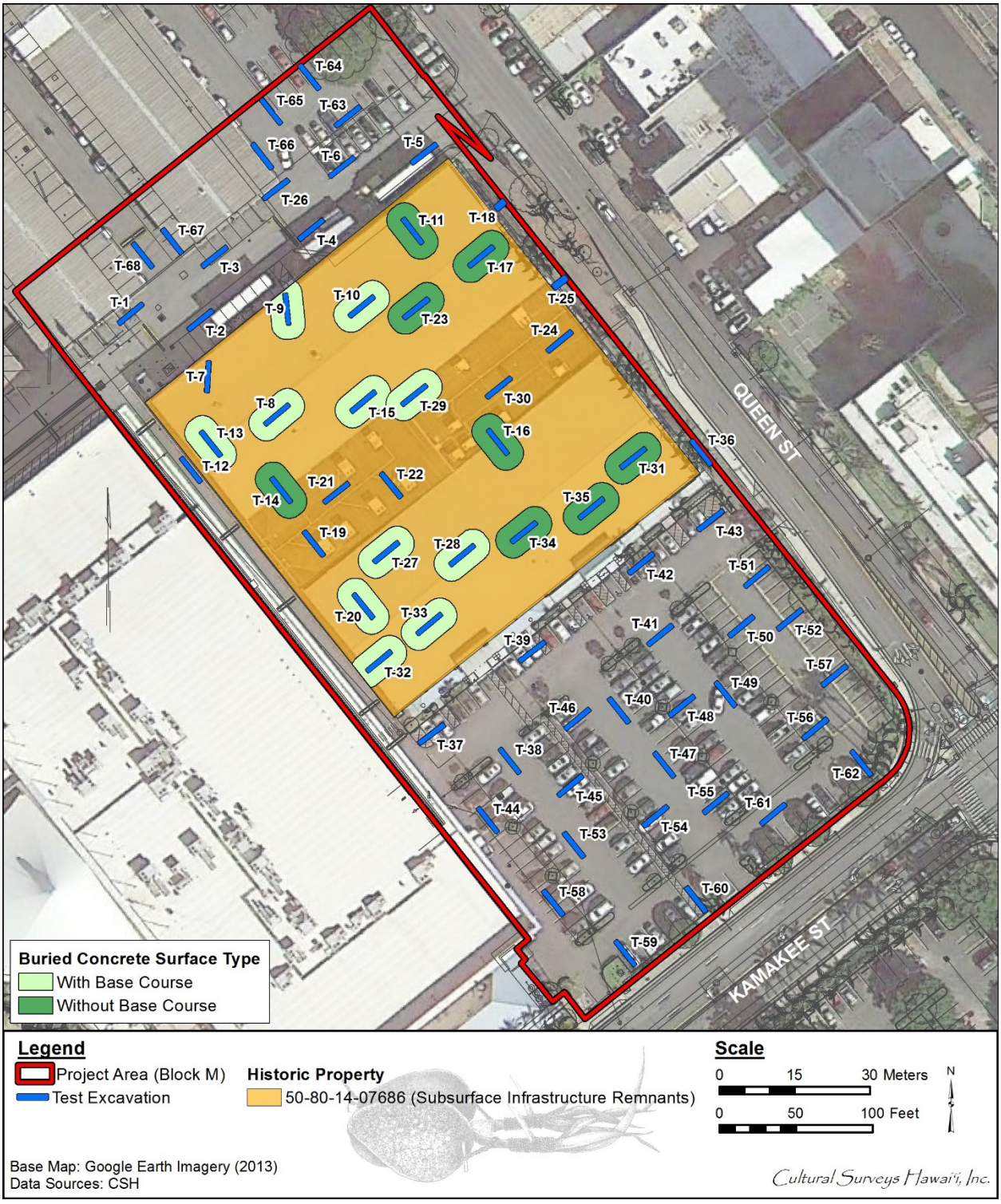


Figure 23. Aerial photo showing the locations of buried concrete surfaces with associated base course layers and concrete surfaces without associated base course layers (SIHP # -7686) in the Block M project area

Table 7. SIHP # -7686 Potentially Associated Subsurface Concrete Surfaces

Test Excavation	Depth (cmbs)	Stratum	Description
1. Potentially associated surfaces, 7– 40 cmbs, average thickness 25.3 cm			
11	7–35	Ib	Concrete surface
16	13–35	Ic	Concrete surface
17	7–34	Ib	Concrete surface
23	8–38	Ib	Concrete surface
31	8–37	Ib	Concrete surface
34	10–33	Ib	Concrete surface
35	8–27	Ib	Concrete surface
10	7–40	Ib	Concrete surface (associated base course 32–42 cmbs)
13	10–27	Ib	Concrete surface (associated base course 27–37 cmbs)
2. Potentially associated surfaces, 19–40 cmbs, average thickness 14.7 cm			
9	26–37	Ie	Concrete surface (associated base course 37–40 cmbs)
15	28–40	Id	Concrete surface (associated base course 40–44 cmbs)
29	19–40	Ic	Concrete surface (associated base course 33–46 cmbs)
3. Potentially associated surfaces, 10–42 cmbs, average thickness 28 cm			
20	13–41	Ib	Concrete surface (associated base course 41–57 cmbs)
27	10–40	Ib	Concrete surface (associated base course 40–52 cmbs)
28	13–41	Ib	Concrete surface (associated base course 41–50 cmbs)
32	13–40	Ib	Concrete surface (associated base course 40–53 cmbs)
33	13–42	Ib	Concrete surface (associated base course 42–85 cmbs)
4. Potentially associated surfaces, 19–50 cmbs, average thickness 16.3 cm			
8	37–50	Ic	Concrete surface (associated base course 50–58 cmbs)
13	37–50	Id	Concrete surface (associated base course 48–57 cmbs)
14	19–42	Id	Concrete surface
5. Potentially associated surfaces, 7–27 cmbs, average thickness 15 cm			
14	7–19	Ic	Concrete surface
15	7–23	Ib	Concrete surface (associated base course 23–28 cmbs)
13	10–27	Ib	Concrete surface (associated base course 27–37 cmbs)

*T-13 appears to correlate with two separate assemblages of associated surfaces

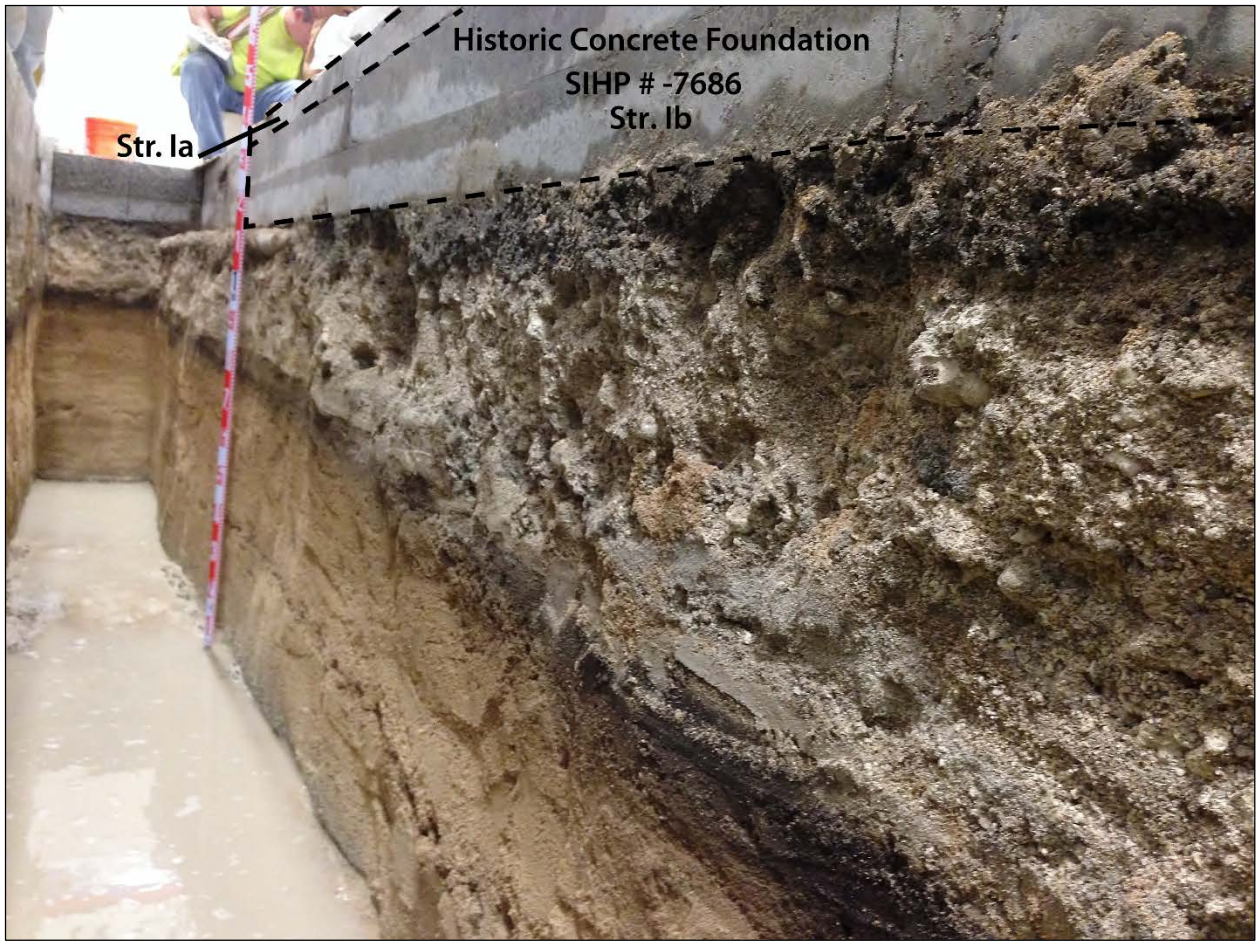


Figure 24. Photograph of a buried concrete surface (SIHP # -7686) without an associated base course layer within T-17 southeast wall

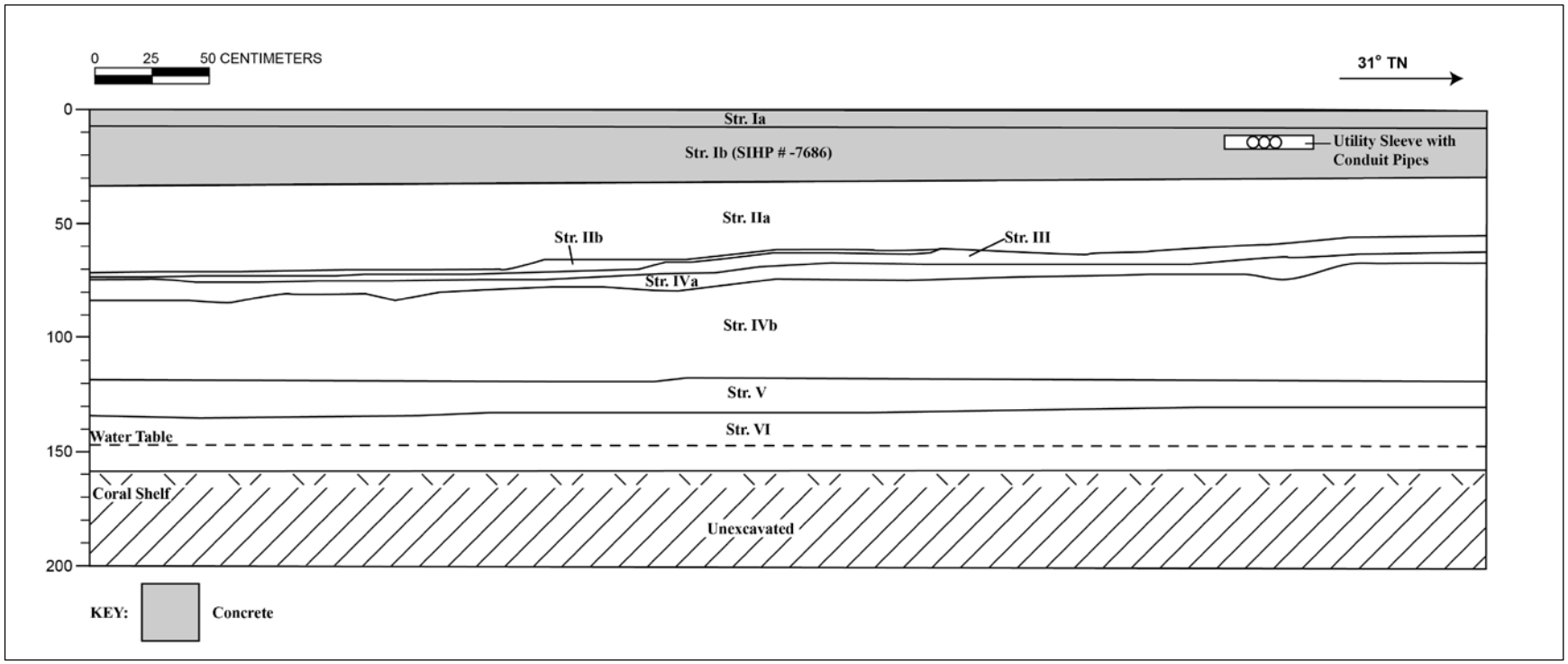


Figure 25. Profile of T-17, showing a buried concrete surface (SIHP # -7686) (without an associated base course layer) within the northwest wall

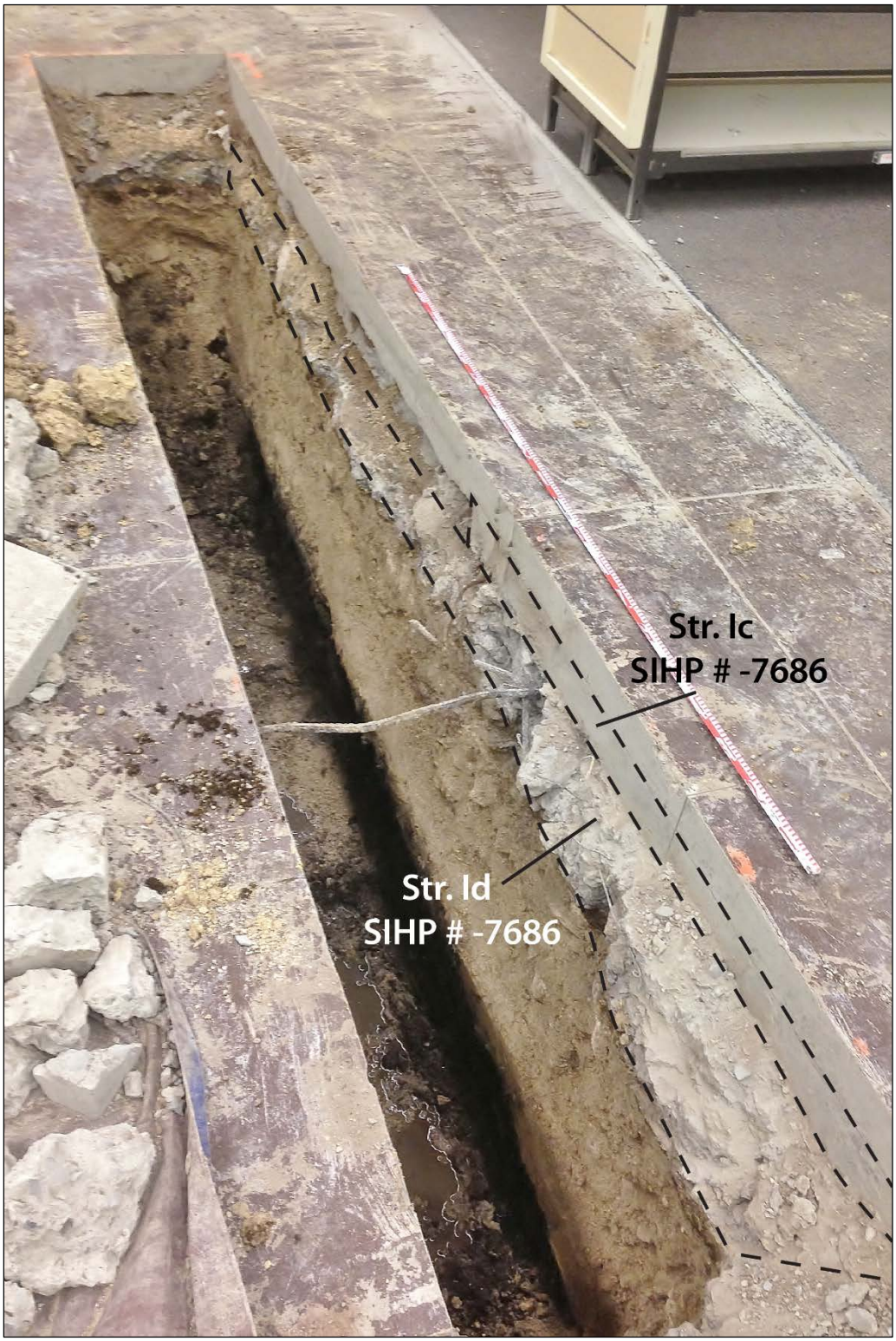


Figure 26. Photograph of the buried concrete surfaces (SIHP # -7686) within the T-14 northeast wall

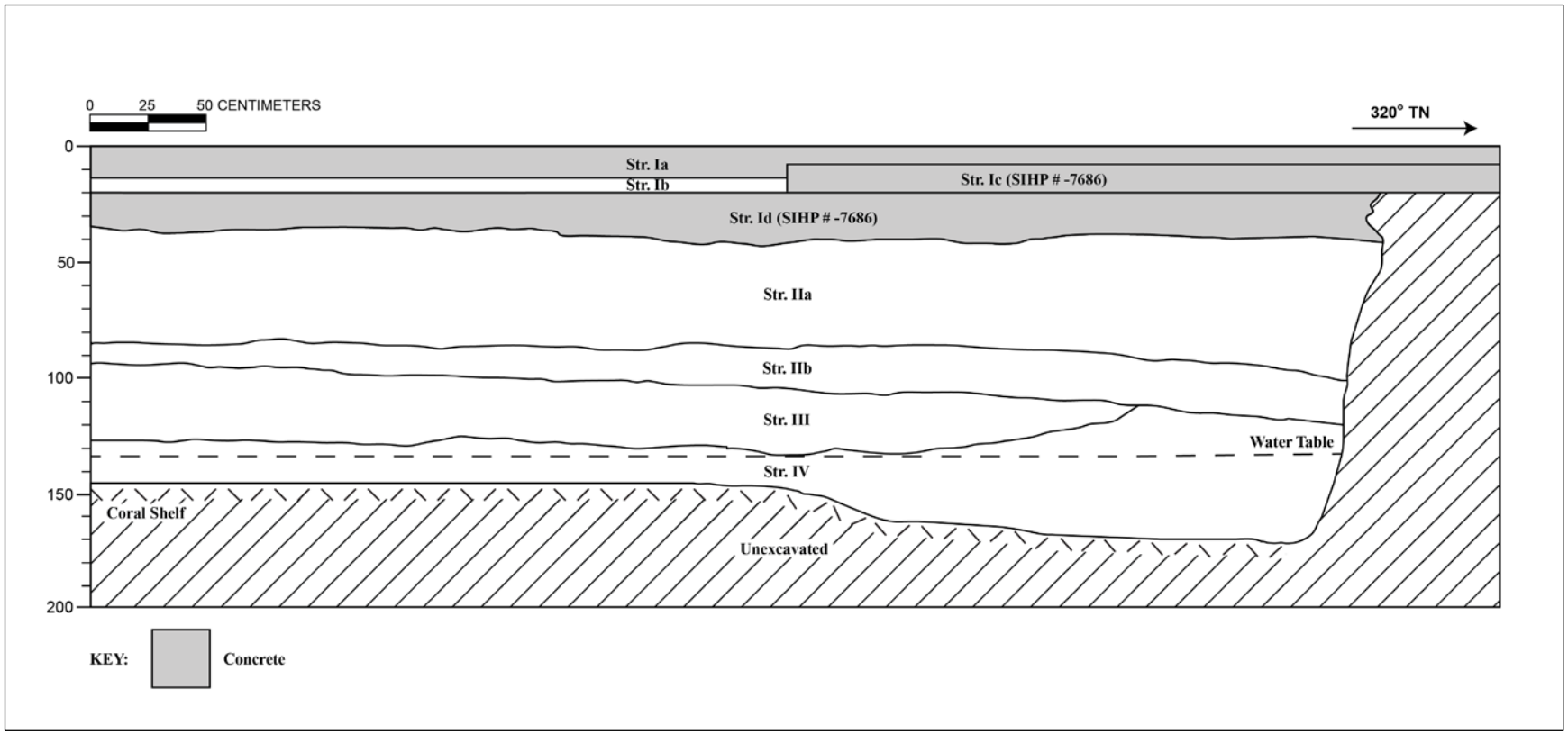


Figure 27. Profile of T-14, showing the multiple layers of buried concrete surfaces (SIHP # -7686) within the northeast wall

Figure 28. Photograph of the buried concrete surface (SIHP # -7686) with its associated base course layer within T-27 northwest sidewall

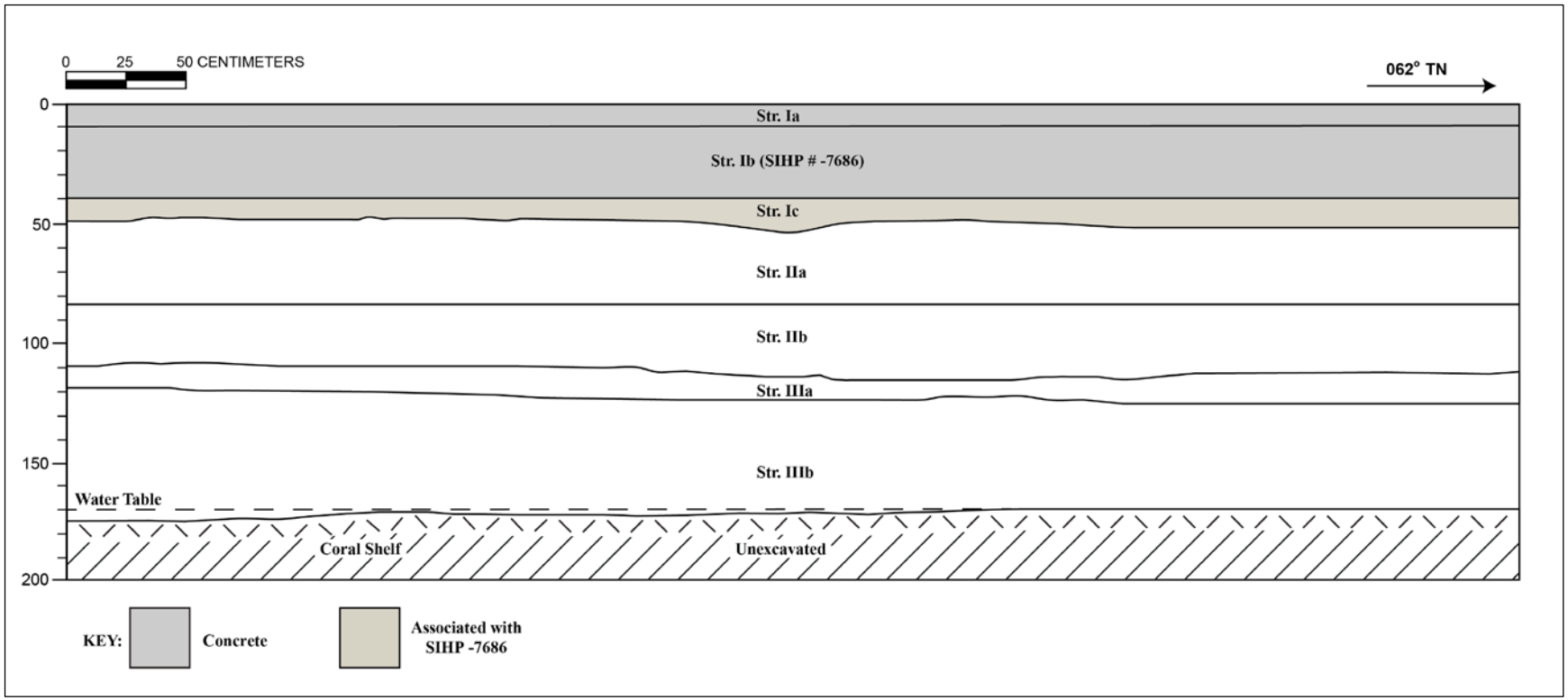


Figure 29. Profile of T-27, showing a buried concrete surface (SIHP # -7686) with associated base course layer within the northwest wall

Figure 30. Photograph of the multiple buried concrete surfaces (SIHP # -7686) with associated base courses within the T-15 southeast wall

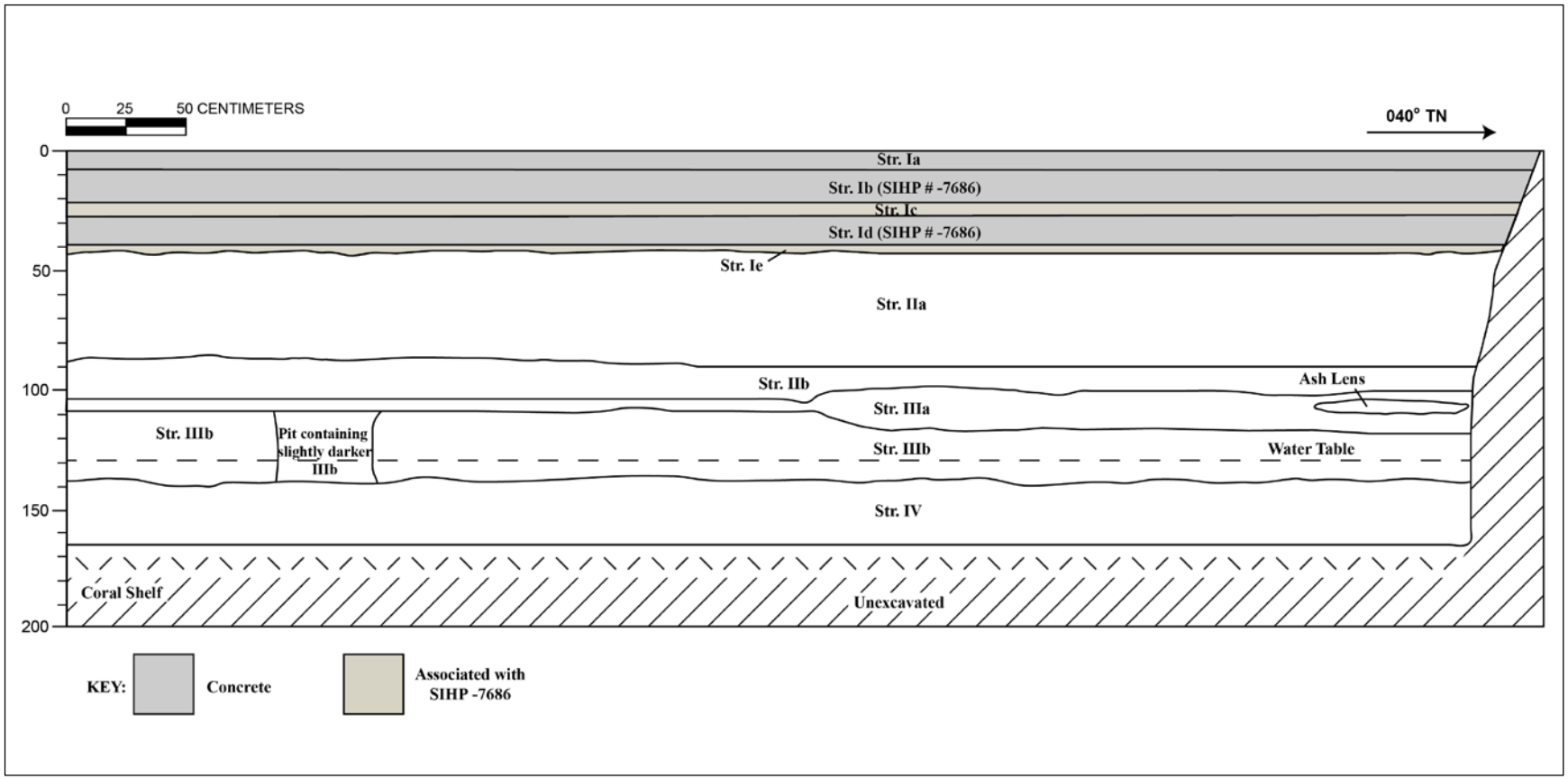


Figure 31. Profile of T-15, showing multiple buried concrete surfaces (SIHP # -7686) with associated base course layers within the northwest sidewall

of 28 cm. The concrete surface within T-8 and one of the surfaces within T-13 were located beneath the west corner of the current commercial building, and ranged from 37–50 cmbs, with a thickness of 13 cm each. TE 14 appears to have a concrete surface that is potentially consistent with T-8 and T-13 (see Table 7). One concrete surface within T-14 also appears to have continuity with one concrete surface within T-15. These test excavations were located beneath the central-southwestern portion of the current building, and had a range of 7–23 cmbs and an average thickness of 14 cm. T-10 presented a buried concrete surface that appeared to be consistent with the set of associated concrete surfaces without associated base course layers (see Table 7). One of the concrete surfaces within T-13 had potential continuity with two sets of associated surfaces (see (see Table 7).

SIHP # -7686 contains two concrete footings within two test excavations in the northwest portion of Block M (Figure 32, Figure 33). One concrete footing was identified in T-7, at 30 cmbs with a thickness of 70 cm. While excavation of this footing ceased in the south end of the test trench, the footing is believed to have intersected a buried asphalt surface (Stratum Ib, SIHP # -7686) prior to a more recent disturbance and utility installation. One subsurface concrete footing was observed and documented in T-9, at 25 cmbs, with a thickness of 60 cm (see Figure 32 and Figure 33). The concrete footing in T-9 intersected a buried asphalt surface (Stratum Ic, SIHP # -7686) (Figure 34, see also Figure 33) and a buried concrete surface (Stratum Ie, SIHP # -7686) (see Figure 32 and Figure 33) which demonstrated continuity among all three types of subsurface structures included with SIHP # -7686. The concrete footings in T-7 and T-9 were observed at similar location and depth within the excavation trenches and were of comparable thickness. These observations suggest consistency in construction and function of the buried historic surfaces as well as indicates a related purpose and contemporaneous use of said surfaces. The concrete footing in T-9 was observed overlying hydraulic fill associated with the 1919-1927 Kaka’ako land reclamation. The location of the concrete footings in the southern end of both T-7 and T-9, along with their relationship to the other types of subsurface structures associated with SIHP # -7686 within the trenches, suggests this area was the boundary of the ʻEwa (northwestern) most concrete commercial structure and the asphalt alleyway and parking area (see Figure 16, Figure 23).

SHIP # -7686 contains two buried asphalt surfaces with associated base course layers, also located within T-7 and T-9, in the northwest portion of Block M project area (see Figure 16, Table 6). The buried asphalt surface in T-7 was observed and documented at 35 cmbs with a thickness of 5 cm, overlying an associated base course layer 7 cm thick (Figure 35). The buried asphalt surface in T-9 was documented at 26 cmbs with a thickness of 12 cm, overlying an associated base course layer 8 cm thick (see Figure 33, Figure 34). Both asphalt surfaces were associated with the other types of subsurface structures associated with SIHP # -7686, and were observed overlying crushed coralline sand fill and hydraulic fill associated with the 1919-1927 Kakaʻako land reclamation.

Asphalt parking areas are not visible on 1927 and 1939 – 1941 aerial photos (see Figure 17, Figure 18). The asphalt alleyway and parking area ʻEwa (northwest) of the northernmost former commercial structure was visible in the 1952 aerial photo (see Figure 20) and presumably existed in the early 1940s, based on the 1943 terrain map (see Figure 19). This photographic evidence indicates that the historic buried asphalt surfaces associated with SIHP # -7686 were likely related to the former commercial structures in existence from approximately the early 1940s through the 1990s. Aerial photos taken in 1993 confirm the continued existence of the three warehouse structures (see Figure 21); however, a 2000 aerial photograph reveals that these warehouses were

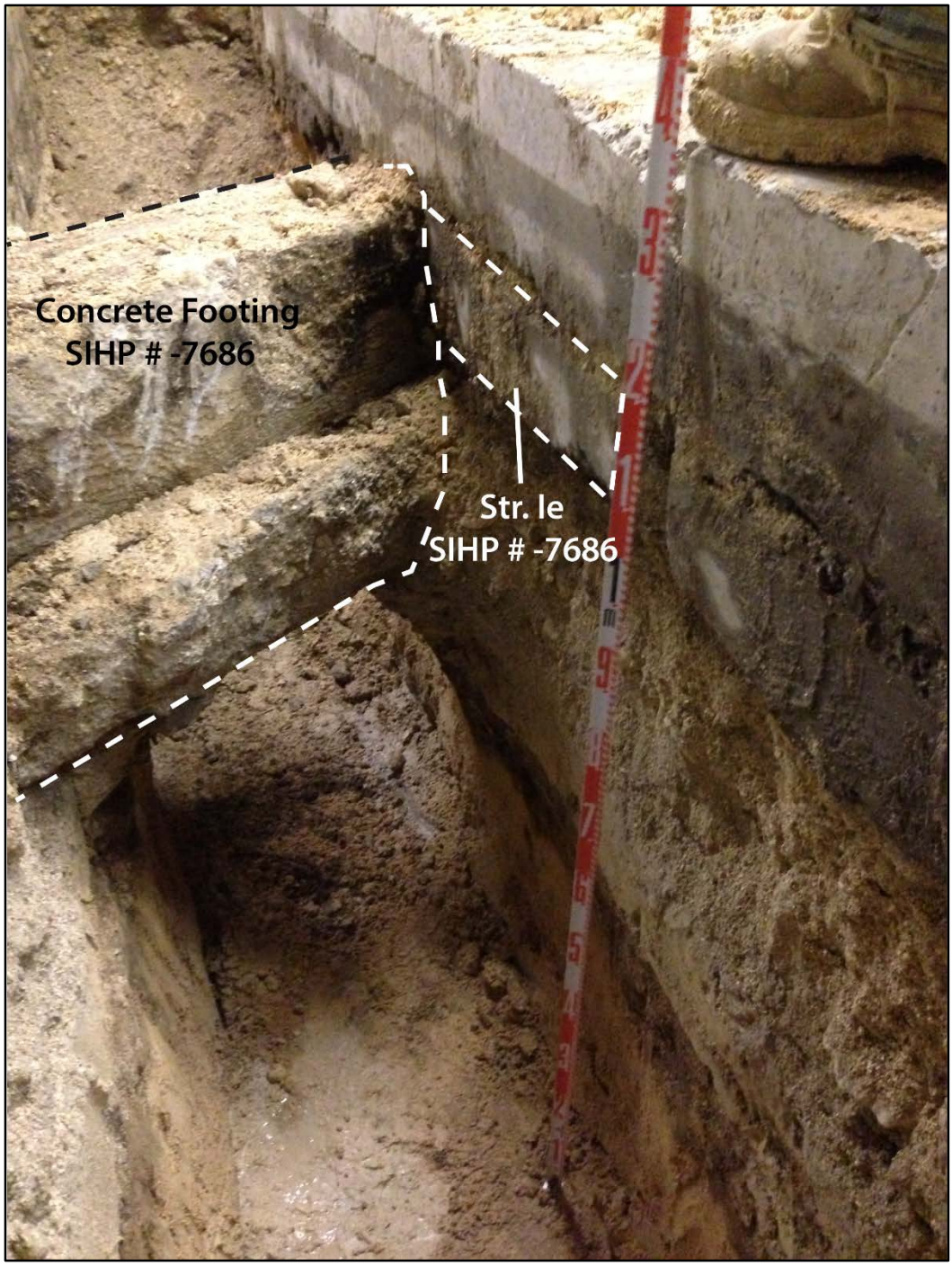


Figure 32. Photograph of concrete footing intersecting with buried concrete surface (SIHP # -7686) identified in T-9 east sidewall

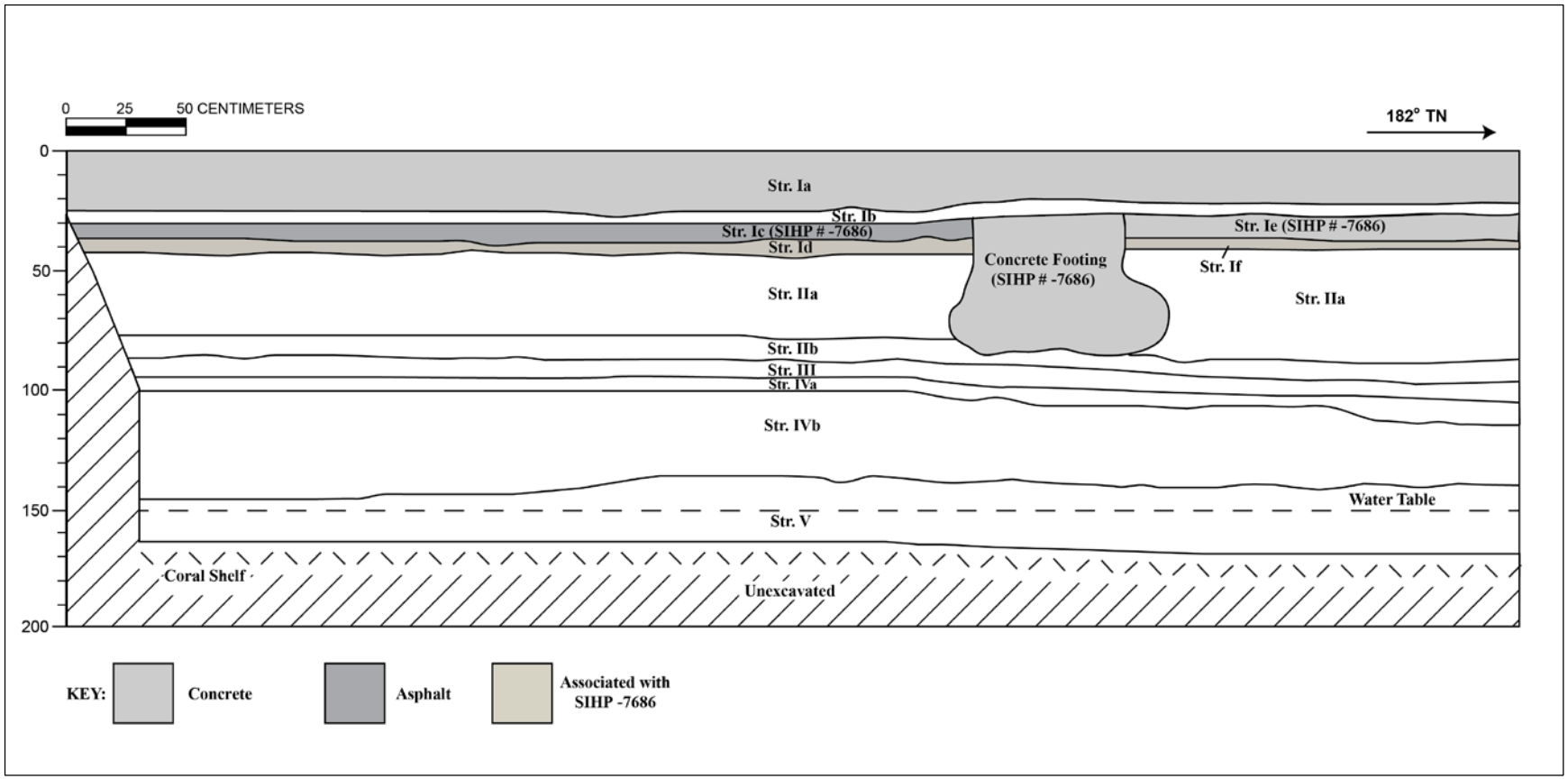


Figure 33. T-9 east profile, showing the commercial infrastructure remnants beneath the modern commercial building surface (Strata Ia–Ib), consisting of a buried concrete footing and concrete surface (Stratum Ie) contiguous with a buried asphalt layer (Stratum Ic) (SIHP # -7686); Kaka‘ako reclamation fill deposits (Strata IIa–IIb) and natural wetland sediments (Strata IVa–V) lie beneath SIHP # -7686

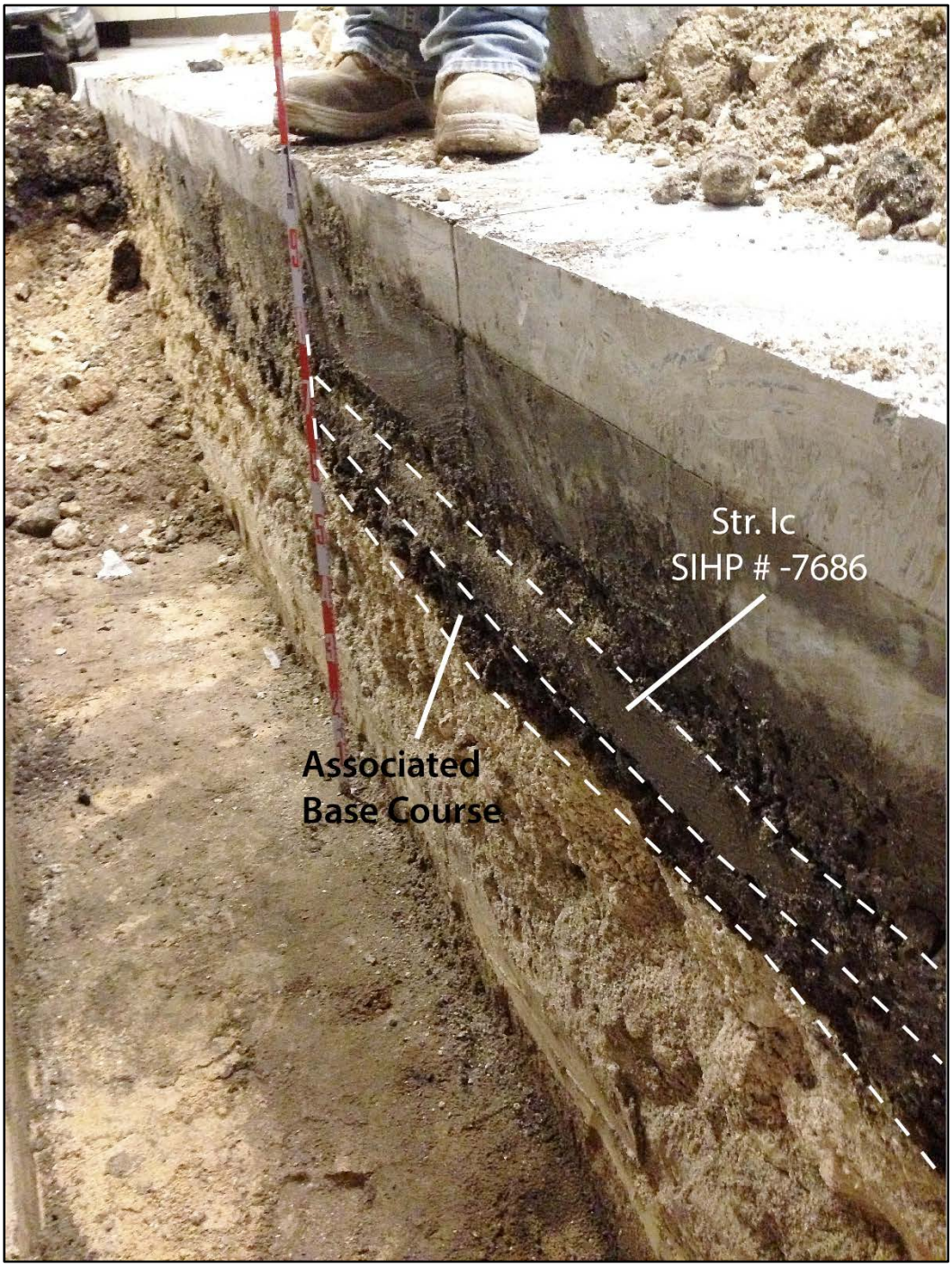


Figure 34. Photograph of asphalt surface (Stratum Ic, SIHP # -7686) identified in T-9 west wall; the asphalt surface intersects with concrete footing (not visible) in the top left corner of photo

Figure 35. Photograph of the asphalt (SIHP # -7686) and associated base course within T-7 east wall

replaced by the current commercial building on the site (see 2). These asphalt surfaces were likely in use contemporaneously with the commercial infrastructure visible in the photos, as asphalt alleyways or parking areas. The asphalt surfaces are located primarily in the north end of T-7 and T-9, indicating the likely boundary of the parking surfaces against the warehouses.

In summary, SIHP # -7686 contains 26 buried historic commercial infrastructure remnants associated with development and urbanization during the mid- to late twentieth century. These remnants consist of subsurface concrete layers, subsurface asphalt layers, and subsurface concrete footings and appear to have served as foundational slabs and former floor surfaces associated with commercial warehouse land use spanning approximately 50 to 60 years. SIHP # -7686 overlies crushed coralline sand and hydraulic dredge fill associated with the 1919–1927 Kaka‘ako land reclamation. Additional fill overlying SIHP # -7686, when present, is associated with the grading and construction of the current commercial structure. Urban development within the Block M project area has changed significantly between the 1927 and 2000 aerial photographs, indicating that urban development within the project area was on-going and changing. It is possible additional structures and surfaces were present within the project areas that are not pictured on any maps or aerial photos. SIHP # -7686 is assessed as significant under Hawai‘i state historic property significance criterion “d” (have yielded, or is likely to yield information important for research on prehistory or history) pursuant to HAR §13-284-6.