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O'ahu Island
P.O. Box 1114
Kailua, Hawai'i 96734
Ph: (808) 262-9972
Fax: (808) 262-4950

Maui Island
1860 Main Street
Wailuku, Hawai'i 96793
Ph: (808) 242-9882
Fax: (808) 244-1994

Branch Offices:
Hilo, Hawai'i
Kona, Hawai'i
Lāwai, Kaua'i

3 August 2016

Mr. Aedward Los Banos
Mr. Deepak Neupane
Hawaii Community Development Authority (HCDA)
547 Queen Street
Honolulu, HI 96813
Phone: (808) 594-0300
Fax: (808) 587-0299

Subject: *Archaeological Monitoring Plan for the Howard Hughes Corporation's Redesigned Block N East Project, Kaka'ako, Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu, TMKs: [1] 2-3-002:001 (por.), 086, and 087* (McDermott and Hensley 2016)

CSH Job Code: KAKAAKO 193

Dear Messrs. Los Banos and Neupane:

We are providing you with the draft *Archaeological Monitoring Plan for the Howard Hughes Corporation's Redesigned Block N East Project, Kaka'ako, Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu, TMKs: [1] 2-3-002:001 (por.), 086, and 087* (McDermott and Hensley 2016) in both hard and soft copies (PDF on CD). CSH prepared this archaeological monitoring plan (AMP) to support the Howard Hughes Corporation's historic preservation review (per Hawai'i Revise Statutes Chapter 6E) of the redesigned Block N East project.

Under a transmittal memorandum on HCDA letterhead, a single hard copy of this draft AMP will be delivered to SHPD, along with the required SHPD review submittal form and $25.00 review fee check.

If you have any questions or comments, please feel free to call me at (808) 262-9972 or toll free at 1-800-599-9962. You may also reach me by e-mail at mmcdermott@culturalsurveys.com.

Sincerely,

Matt McDermott
Cultural Surveys Hawai'i, Inc.

Draft

Archaeological Monitoring Plan for the Howard Hughes Corporation's Redesigned Block N East Project, Kaka'ako, Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu TMKs: [1] 2-3-002:001 (por.), 086, and 087

Prepared for
Victoria Ward, Limited/Howard Hughes Corporation

Prepared by
Matt McDermott, M.A.
and
Si-Si Hensley, M.A.

Cultural Surveys Hawai'i, Inc.
Kailua, Hawai'i
(Job Code: KAKAAKO 193)

August 2016

O'ahu Office
P.O. Box 1114
Kailua, Hawai'i 96734
Ph.: (808) 262-9972
Fax: (808) 262-4950

www.culturalsurveys.com

Maui Office
1860 Main St.
Wailuku, Hawai'i 96793
Ph.: (808) 242-9882
Fax: (808) 244-1994

Management Summary

Reference	Archaeological Monitoring Plan for the Howard Hughes Corporation’s Redesigned Block N East Project, Kaka‘ako, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu, TMKs: [1] 2-3-002:001 (por.), 086, and 087 (McDermott and Hensley 2016)
Date	August 2016
Project Number(s)	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: KAKAAKO 193
Investigation Permit Number	CSH will likely complete the archaeological monitoring fieldwork under its annual archaeological fieldwork permit number 16-26 and/or subsequent annual permits, issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-13-282.
Agencies	SHPD, Hawaii Community Development Authority (HCDA)
Land Jurisdiction and Project Funding	Private, Victoria Ward, Limited (VWL)/Howard Hughes Corporation (HHC)
HHC’s Ward Neighborhood Master Plan and Its Development Blocks	Finalized in 2012, HHC’s Ward Neighborhood Master Plan is a long-range development plan of 20-plus years expected to evolve over time to fulfill the needs of the Kaka‘ako community. It follows guidelines set forth in the Mauka Area Plan of the HCDA. As part of the master plan, HHC divided its 24.5-hectare (60.5-acre) Kaka‘ako land holdings into discrete development blocks. HHC is developing these blocks into an integrated community with residential, entertainment, and commercial components, as well as open space.
Realignment of the Original Boundaries of Block N East Project Area	As HHC’s Ward Neighborhood development proceeds, planning moves from the general ideas of the master plan to the specifics of individual development projects. Redesign of certain development block boundaries and their proposed build-outs are sometimes needed to better suit the actual development landscape based on the results of post-master plan studies and new information. For HHC’s Block N East, detailed archaeological inventory survey results of the development blocks in the vicinity (Blocks N East, I, and M, described below) showed that the locations of previously unknown Native Hawaiian burial sites conflicted with the initial development plans for Block N East that pre-dated the burials’ discovery. As a result, HHC consulted with the SHPD, recognized Native Hawaiian cultural descendants for the Kaka‘ako area, and the O‘ahu Island Burial Council (OIBC), and redesigned the Block N East boundaries and the proposed development within these boundaries. This redesign allowed for more appropriate burial treatment, with preservation in place of burial clusters and relocation of isolated fragmentary human remains. As a result, HHC’s current Block N East project area encompasses contiguous portions

	of the original Block N East, Block I, and Block M, as originally designated in the Ward Neighborhood Master Plan.
Project Location	The original as well as the current redesigned Block N East is in the current Ward Industrial Center, within the city block bounded by Ward Avenue, Queen Street, Kamake‘e Street, and Auahi Street. The current Block N East project area is depicted on the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle.
Project Description	The Block N East project will consist of a high-rise residential tower with a separate seven-story parking structure. Building podiums will be developed with a wrap of residential and retail spaces. Project-related utility connections will extend into Queen and Auahi streets.
Project Acreage	3.0 acres (1.22 hectares)
Project-Related Ground Disturbance	Ground disturbance will include demolition and removal of existing buildings and structures in the Ward Industrial Center, augering related to foundation pile installation, and excavation related to the installation of structural footings, utilities, roadway and parking areas, and landscaping.
Historic Preservation Regulatory Context	CSH prepared this archaeological monitoring plan (AMP) to support the project’s historic preservation review under Hawai‘i Revised Statutes (HRS) §6E-42 and HAR §13-13-284. This plan is also intended to support the HCDA’s review and approval of the Block N East project. Prepared in consultation with the SHPD, this document fulfills the requirements of HAR §13-13-279-4. The historic preservation mitigation requirement for archaeological monitoring during Block N East project construction is based on the mitigation commitments outlined in the completed AIS investigations for HHC Blocks I, M, and N East, described below.
Summary of Past Historic Preservation Documentation Related to the Redesigned Block N East Project	As precursors of the Block N East project’s historic preservation review process, CSH prepared separate cultural impact assessment (CIA) (Cruz et al. 2012) and archaeological literature review/predictive model (O’Hare et al. 2012) studies of the entire 60.5-acre Ward Neighborhood Master Plan. These were submitted to the SHPD on 20 July 2012. In June 2012, HHC submitted to the SHPD the architectural survey for the buildings within the 60.5-acre master plan area, prepared by Fung Associates, Inc. (2012). For the original Block N East project area (a portion of which is within the current redesigned Block N East project area), CSH prepared an archaeological inventory survey plan (AISP) (Sroat, O’Hare, and McDermott 2014c), which was accepted by the SHPD in a letter dated 21 January 2014 (LOG NO.: 2014.00644, DOC. NO.: 1402SL12). CSH’s archaeological inventory survey (AIS) report for the original Block N East project (Sroat et al. 2016) proposes an archaeological monitoring program and burial treatment as mitigation for the original Block N East project area.

	For the Block I project area (a portion of which is within the current redesigned Block N East project area), CSH prepared an AISP (Sroat, O'Hare, and McDermott 2014a), which was accepted by the SHPD in a letter issued 24 January 2014 (LOG NO.: 2013.6927; DOC. NO.: 1401SL23). CSH's Block I AIS report (Sroat et al. 2015) was accepted by the SHPD in a letter dated 12 June 2015 (LOG NO.: 2015.02101; DOC. NO.: 1505SL25). CSH's Block I AIS mitigation measures included an archaeological monitoring program, burial treatment, and an archaeological data recovery program. CSH's Block I archaeological monitoring plan (AMP) (Sroat, Leger, and McDermott 2015) was accepted by the SHPD in a letter dated 18 August 2015 (LOG NO.: 2015.02451, DOC. NO.: 1508SL16). CSH's burial treatment plan, describing the combination of preservation in place and relocation of the previously identified Native Hawaiian burial sites in Block I, was accepted by the SHPD in a letter dated 3 December 2015 (LOG NO.:2015.03320 DOC NO.:1512.RKH09). At its 9 December 2015 meeting, the OIBC determined this treatment was appropriate and approved the Block I burial treatment plan, with the understanding that the specifics of the burial treatment would be clearly outlined in a subsequent burial site component of a data recovery and preservation plan (BSCDR&PP). A draft of a Block N East BSCDR&PP (McDermott and Yucha 2016) detailing the treatment of the Block I burial sites that are now within the boundaries of the redesigned Block N East, was prepared in consultation with the SHPD, the OIBC, and recognized Native Hawaiian cultural descendants. The Block I archaeological data recovery plan will be developed when development plans for Block I are formalized. For the Block M project area (a portion of which is within the current redesigned Block N East project area), CSH prepared an AISP (Sroat, O'Hare, and McDermott 2014b), which was accepted by the SHPD in a letter dated 10 January 2014 (LOG NO.: 2013.6926, DOC. NO.: 1401SL10). CSH's Block M AIS report (Hawkins et al. 2015), was accepted by the SHPD in a letter dated 21 January 2015 (LOG NO.: 2015.00107, 2015.0087; DOC NO.: 1501SL15). CSH's Block M AIS mitigation measures included an archaeological monitoring program. CSH's Block M AMP (Leger and McDermott 2015) was accepted by the SHPD in a letter dated 21 January 2015 (LOG NO.: 2015.00107, 2015.00187; DOC NO.: 1501SL15).
Historic Properties Potentially Affected	The prior AIS investigations described above for the original Block N East, Block I, and Block M included all portions of the current redesigned Block N East project area. These AISs documented the following three historic properties that are at least partially within the redesigned Block N East project area: 1) State Inventory of Historic Places (SIHP) # 50-80-14-7429, previously identified subsurface cultural deposits within two discrete strata, including associated features and Native Hawaiian burial sites; 2)

	SIHP # 50-80-14-7655, previously identified historic salt pan remnants, including associated cultural features and Native Hawaiian burial sites; and 3) SIHP # 50-80-14-7686, previously identified subsurface historic infrastructure remnants associated with the development of Kaka‘ako during the late nineteenth to mid-twentieth centuries.
Consultation	Consultation with the SHPD, the OIBC, and recognized Native Hawaiian cultural descendants regarding the original Block N East project continued during the Block N East AIS investigation in 2014 and 2015. More recently in 2016, consultation with the SHPD, the OIBC, and the Block I and Block N East recognized Native Hawaiian cultural descendants focused on the reconfiguration of the Block N East project area and the ramifications for mitigation, including archaeological monitoring and burial treatment implementation and documentation. This consultation included the following: meetings with the recognized cultural descendants on 9 February 2016, 9 May 2016, and 1 August 2016; consultation and email exchanges with the SHPD Culture and History Branch on 13 April 2016 and 18 and 31 May 2016; meetings with the SHPD Archaeology Branch on 6 April, 10 May, and 13 June 2016; and a presentation to the OIBC on 8 June 2016. This AMP is a direct result of this consultation.
Monitoring Recommendations	Based on the results of the previous AIS studies in the redesigned Block N East project area, CSH recommends a program of on-site archaeological monitoring for all ground disturbing construction activities below the current land surface (e.g., asphalt parking areas and concrete building foundation pads). The burial treatment measures described in the Block N East BSCDR&PP should be carried out as part of this archaeological monitoring program. Changes to this monitoring program will only follow consultation with, and written agreement from, the SHPD.

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Section 1 Introduction

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 (AMP) for HHC’s redesigned Block N East Project, Kaka‘ako, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu, TMKs: [1] 2-3-002:001 (por.), 086, and 087. The Block N East project area is in the current Ward Industrial Center, within the city block bounded by Ward Avenue, Queen Street, Kamake‘e Street, and Auahi Street. The project area is depicted on a portion of 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). Block N East is a private development owned and funded by VWL/HHC.

1.1 Project Background

Block N East is a discrete project of HHC’s 24.5-hectare (60.5-acre) Ward Neighborhood Master Plan. Finalized in 2012, HHC’s master plan is a long-range development plan of 20-plus years expected to evolve over time to fulfill the needs of the Kaka‘ako community. It follows guidelines set forth in the Mauka Area Plan of the Hawaii Community Development Authority (HCDA). As part of the master plan, HHC divided its 24.5-hectare (60.5-acre) Kaka‘ako land holdings into discrete development blocks (Figure 4). HHC is developing these blocks into an integrated community with residential, entertainment, and commercial components, as well as open space.

As HHC’s Ward Neighborhood development proceeds, planning moves from the general ideas of the master plan to the specifics of individual development projects. Redesign of certain development block boundaries and their proposed build-outs are sometimes needed to better suit the actual development landscape based on the results of post-master plan studies and new information.

For HHC’s Block N East, initial development plans included uncertainty because final design depended on the final configuration of the adjacent Honolulu Authority for Rapid Transportation (HART) Honolulu Rail Transit Project (HRTP), located immediately *mauka* (inland) between Block N East and Queen Street. Additionally, detailed archaeological inventory survey results of the development blocks in the vicinity (Blocks N East, I, and M, described below) showed that the locations of previously unknown Native Hawaiian burial sites conflicted with the initial development plans for Block N East that pre-dated the burials’ discovery. As a result, HHC consulted with the SHPD, recognized Native Hawaiian cultural descendants for the Kaka‘ako area, and the O‘ahu Island Burial Council (OIBC), and redesigned the Block N East boundaries and the proposed development within these boundaries. This redesign allowed for more appropriate burial treatment, with preservation in place of burial clusters and relocation of isolated fragmentary human remains. As a result, HHC’s current Block N East project area encompasses contiguous portions of the original Block N East, Block I, and Block M, as originally designated in the Ward Neighborhood Master Plan (Figure 5).

Measuring approximately 1.22 hectares (3.0 acres), the redesigned Block N East project will consist of a high-rise residential tower with a separate seven-story parking structure (Figure 6).

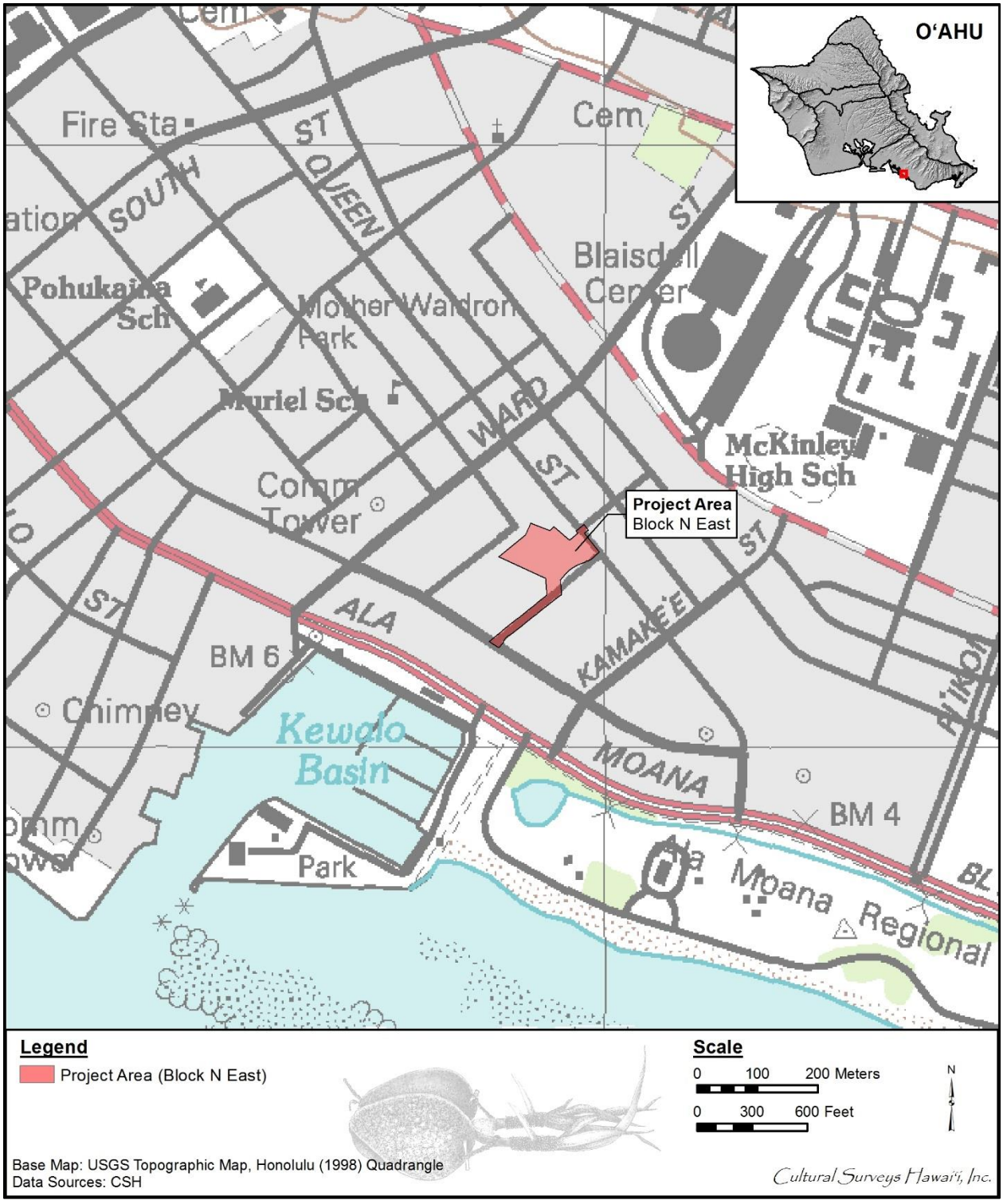

Figure 1. Portion of the 1998 Honolulu USGS 7.5-minute topographic quadrangle showing the location of the project area

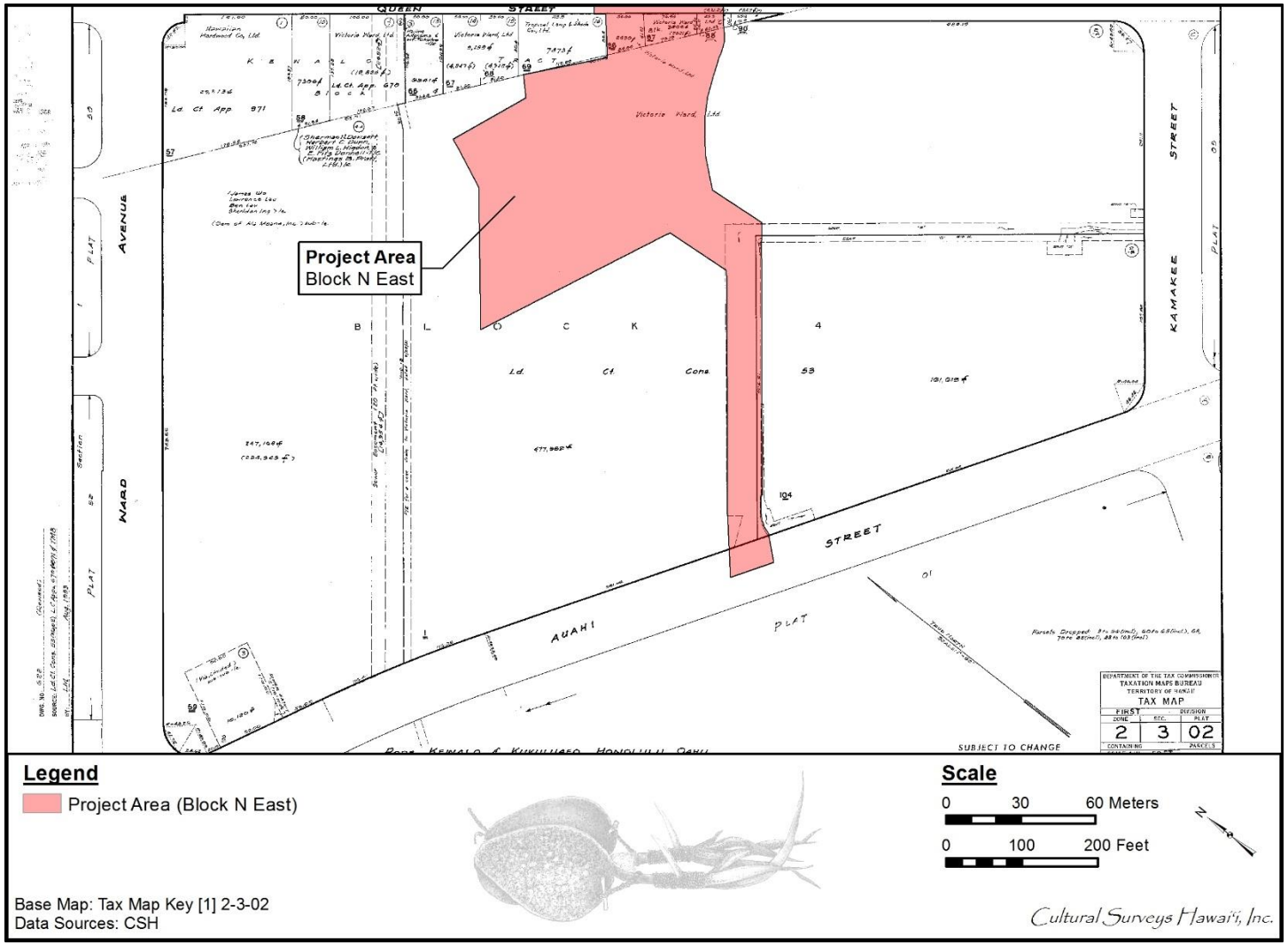

Figure 2. Tax Map Key (TMK) [1] 2-3-02 showing the project area (Hawai‘i TMK Services 2014)

Figure 3. Aerial photograph of the project area (Google Earth 2013)

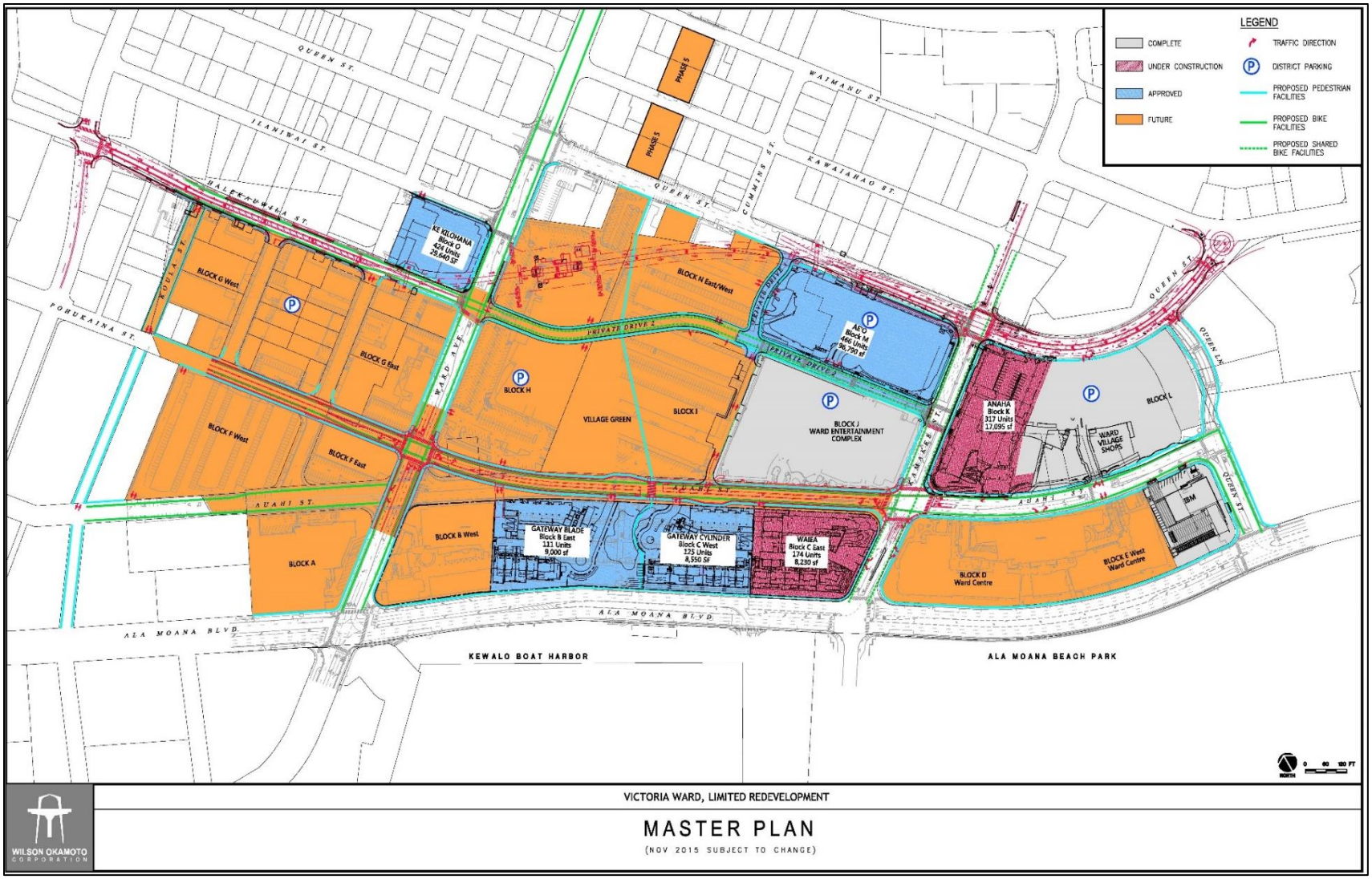

Figure 4. HHC’s 60.5-acre Ward Neighborhood Master Plan area divided into development blocks

Figure 5. The locations of the original Block N East, Block I, and Block M project areas shown over the current Block N East project area (area of red shading); note the “tails” extending into Queen Street and Auahi Street are needed utility corridors

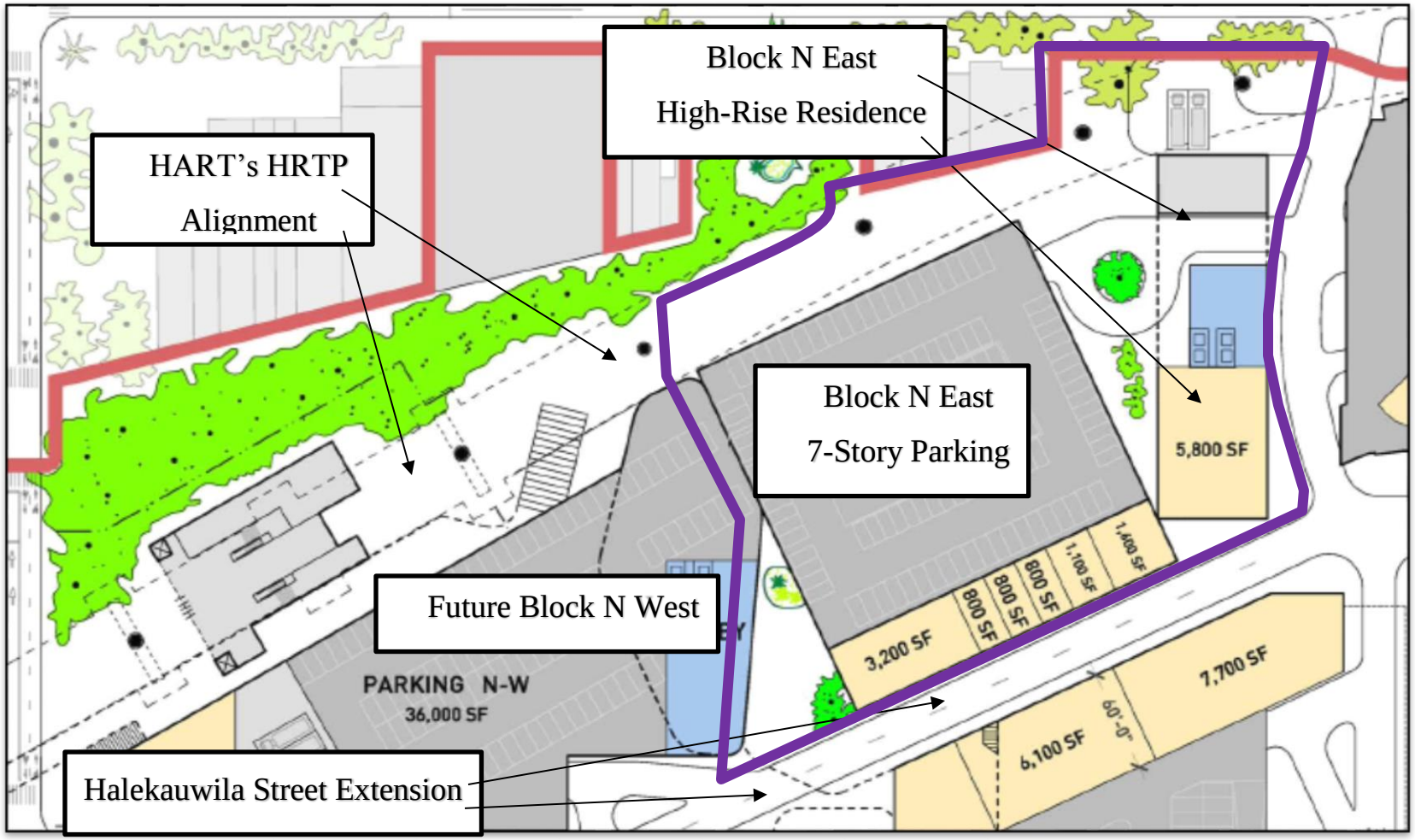

Figure 6. Preliminary plan view design sketch of HHC’s redesigned Block N East project area, outlined in purple, but not including utility corridor “tails”; shown are the seven-story parking building and the high-rise residential building in relation to HART’s HRTP alignment, the future (as yet undesigned) Block N West project, and HHC’s future Halekauwila Street extension

These buildings will be between the HART's HRTP alignment and the HHC's planned extension of Halekauwila Street through this city block, and adjacent to the as yet undesigned HHC Block N West development. Parking and residential building podiums will be developed with a wrap of residential and retail spaces. Project-related utility connections will extend into Queen Street and into Auahi Street (refer to Figure 3 and Figure 5 where the "tails" in the project area shape extending into Queen Street and Auahi Street are these needed utility corridors). Project-related ground disturbance will include demolition and removal of existing buildings and structures in the Ward Industrial Center, augering related to foundation pile installation, and excavation related to the installation of structural footings, utilities, roadway and parking areas, and landscaping.

1.2 Historic Preservation Regulatory Context and Document Purpose

CSH prepared this archaeological monitoring plan (AMP) to support the project's historic preservation review under Hawai‘i Revised Statutes (HRS) §6E-42 and Hawai‘i Administrative Rules (HAR) §13-13-284. This plan is also intended to support the HCDA's review and approval of the Block N East project. Prepared in consultation with the SHPD, this document fulfills the requirements of HAR §13-13-279-4.

As detailed below, the HHC development blocks in the vicinity have had well over two years of historic preservation studies and document review. As a result, archaeological inventory survey for the entire redesigned Block N East project footprint has been completed and mitigation commitments have been worked out in consultation with the SHPD. Based on this past historic preservation review, the redesigned Block N East project requires an archaeological monitoring program and a burial site component of a data recovery and preservation plan (BSCDR&PP) to be in effect before project construction can begin. The Block N East BSCDR&PP (McDermott and Yucha 2016) has been prepared. This archaeological monitoring plan describes the project's archaeological monitoring program, including the implementation of components of the BSCDR&PP.

1.2.1 Summary of Past Historic Preservation Documentation Related to the Current Block N East Project Area

As precursors of the Block N East project's historic preservation review process, CSH prepared separate cultural impact assessment (CIA) (Cruz et al. 2012) and archaeological literature review/predictive model (O'Hare et al. 2012) studies of the entire 60.5-acre Ward Neighborhood Master Plan. These were submitted to the SHPD on 20 July 2012. In June 2012, HHC submitted to the SHPD the architectural survey for the buildings within the 60.5-acre master plan area, prepared by Fung Associates, Inc. (2012).

For the original Block N East project area (a portion of which is within the current redesigned Block N East project area—refer to Figure 5), CSH prepared an archaeological inventory survey plan (AISP) (Sroat, O'Hare, and McDermott 2014c), which was accepted by the SHPD in a letter dated 21 January 2014 (LOG NO.: 2014.00644, DOC. NO.: 1402SL12). CSH's archaeological inventory survey (AIS) report for the original Block N East project (Sroat et al. 2016) recommends an archaeological monitoring program and burial treatment as mitigation for the original Block N East project area.

For the Block I project area (a portion of which is within the current redesigned Block N East project area—refer to Figure 5), CSH prepared an AISP (Sroat, O'Hare, and McDermott 2014a), which was accepted by the SHPD in a letter issued 24 January 2014 (LOG NO.: 2013.6927; DOC. NO.: 1401SL23). CSH's Block I AIS report (Sroat et al. 2015) was accepted by the SHPD in a letter dated 12 June 2015 (LOG NO.: 2015.02101; DOC. NO.: 1505SL25). CSH's Block I AIS mitigation measures included an archaeological monitoring program, burial treatment, and an archaeological data recovery program. CSH's Block I archaeological monitoring plan (AMP) (Sroat, Leger, and McDermott 2015) was accepted by the SHPD in a letter dated 18 August 2015 (LOG NO.: 2015.02451, DOC. NO.: 1508SL16). CSH's burial treatment plan, describing the combination of preservation in place and relocation of the previously identified Native Hawaiian burial sites in Block I, was accepted by the SHPD in a letter dated 3 December 2015 (LOG NO.:2015.03320 DOC. NO.:1512.RKH09). At its 9 December 2015 meeting, the OIBC determined this treatment was appropriate and approved the Block I burial treatment plan, with the understanding that the specifics of the burial treatment would be clearly outlined in a subsequent BSCDR&PP. A draft of a Block N East BSCDR&PP (McDermott and Yucha 2016), detailing the treatment of the Block I burial sites that are now within the boundaries of the redesigned Block N East, was prepared in consultation with the SHPD, the OIBC, and recognized Native Hawaiian cultural descendants, and is now under SHPD review. The Block I archaeological data recovery plan will be developed when development plans for Block I are formalized.

For the Block M project area (a portion of which is within the current redesigned Block N East project area—refer to Figure 5), CSH prepared an AISP (Sroat, O'Hare, and McDermott 2014b), which was accepted by the SHPD in a letter dated 10 January 2014 (LOG NO.: 2013.6926, DOC. NO.: 1401SL10). CSH's Block M AIS report (Hawkins et al. 2015), was accepted by the SHPD in a letter dated 21 January 2015 (LOG NO.: 2015.00107, 2015.0087; DOC. NO.: 1501SL15). CSH's Block M AIS mitigation measures included an archaeological monitoring program. CSH's Block M AMP (Leger and McDermott 2015) was accepted by the SHPD in a letter dated 21 January 2015 (LOG NO.: 2015.00107, 2015.00187; DOC. NO.: 1501SL15).

Copies of selected SHPD acceptance letters for these documents are included in Appendix A.

1.3 Environmental Setting

1.3.1 Natural Environment

The Block N East project area is within a portion of O‘ahu called the Honolulu Plain, an area generally less than 4.5 m, or 15 feet (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).

Foote et al. (1972) show the project area as being fill (FL), as shown in Figure 7. They indicate "[t]his 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 were found throughout the project area, the underlying natural soils consist largely of calcareous Jaucas sand (JaC). Foote et al. (1972) describe Jaucas sand as follows:

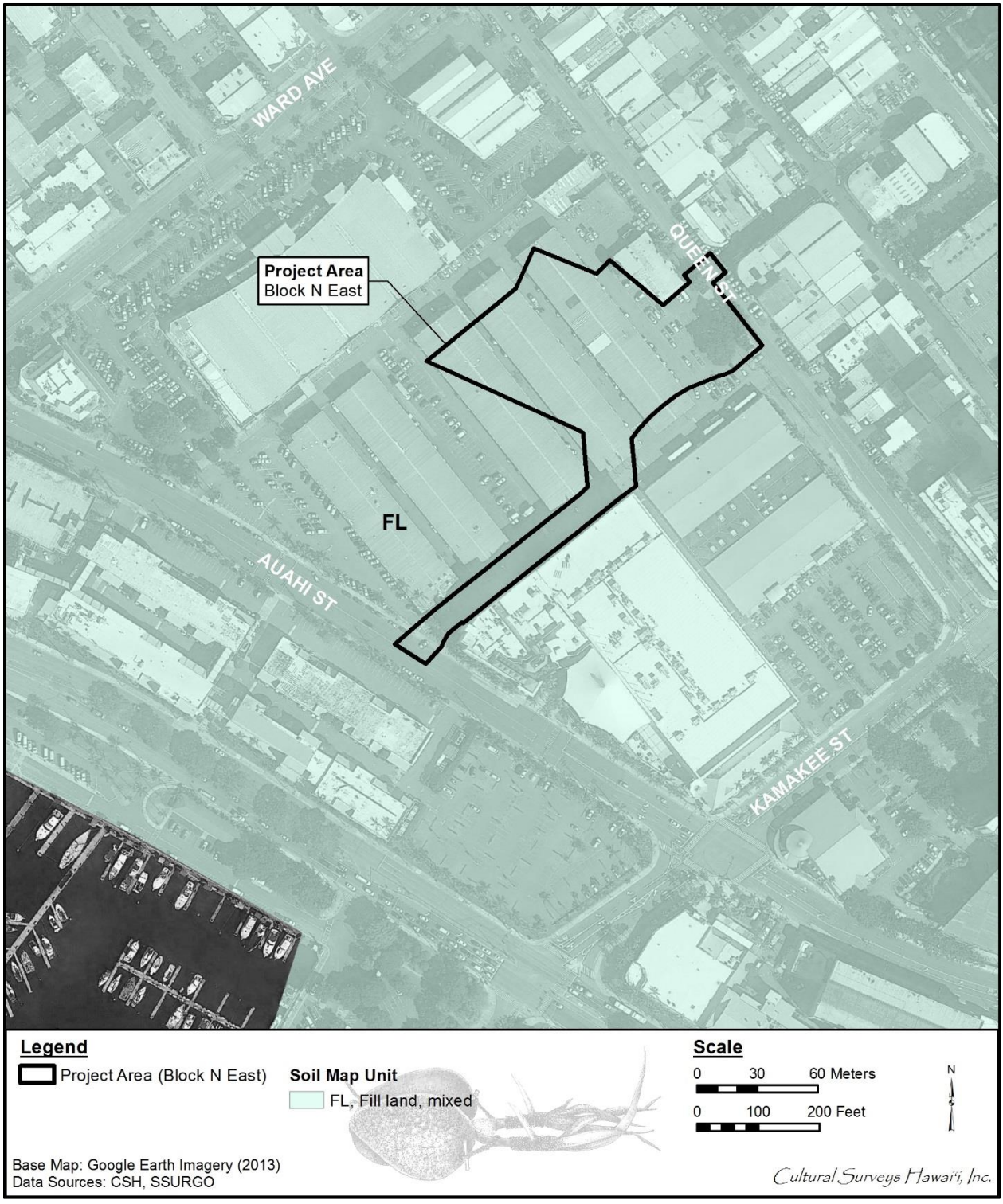

Figure 7. Overlay of *Soil Survey of the State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the project area (U.S. Department of Agriculture Soils Survey Geographic Database [SSURGO] 2001)

> 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 & Associates 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 (see Figure 3).

Section 2 Background Research

2.1 Traditional and Historical Background

2.1.1 Explanation of Place Names

The place name in common usage today refers to a much larger land area than the ancient boundary of Kaka‘ako. Today Kaka‘ako comprises 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 N East project area is within the *‘ili* of Kukuluāe‘o (Figure 8).

John Papa ‘Ī‘ī mentions some of these lands while discussing early nineteenth century trails in the Honolulu/Waikīkī area (Figure 9). 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).

2.1.2 Legendary Accounts

The Block N East 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* (Gotanda 1989) or in the index to *Fornander’s Collection of Hawaiian Antiquities and Folklore* (Fornander 1916–1920).

However, a *heiau* (pre-Christian 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
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]	

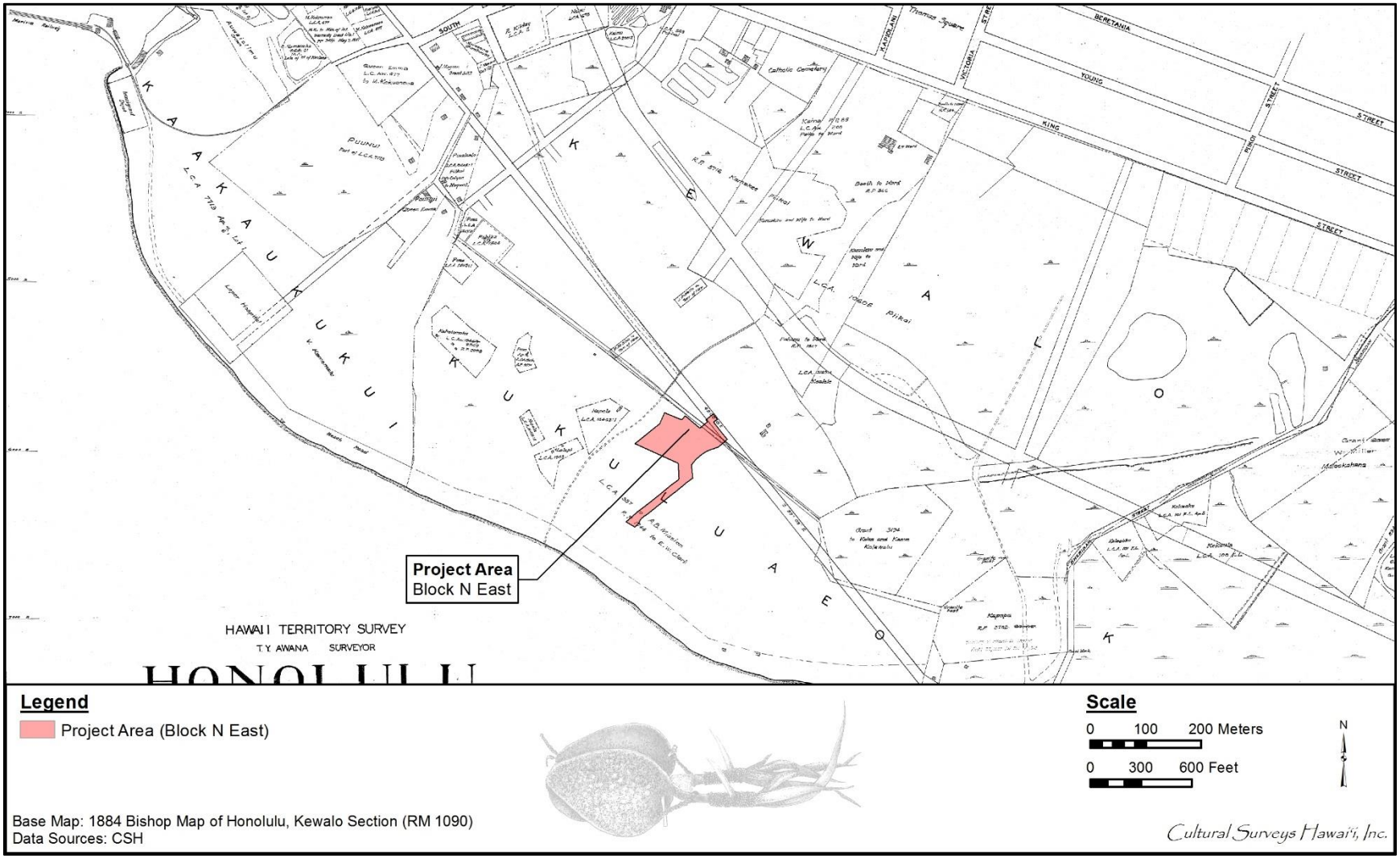

Figure 8. 1884 map of Honolulu, Kewalo Section (portion), by S.E. Bishop, showing place names and Land Commission Award (LCA) locations within and near the project area

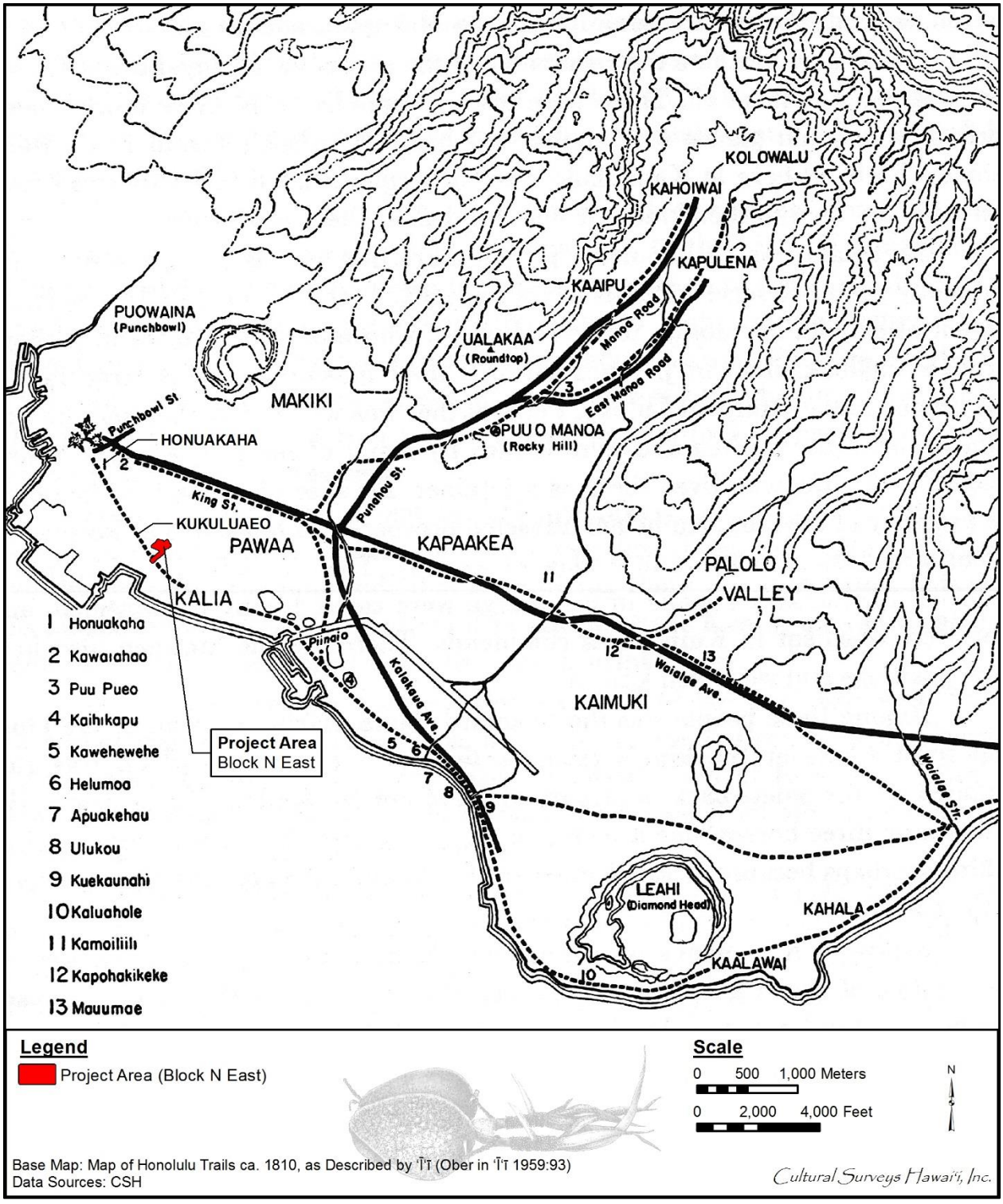

Figure 9. Early nineteenth century (ca. 1810) trails on the southwest coast of O‘ahu (illustration by Gerald Ober from ‘Ī‘ī 1959:93), showing the location of Honuakaha, Kukuluāe‘o, and Kālia

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, LCAs 1502 (not awarded) and 1504. LCA 1504 was located near the junction of Halekauwila and Cooke streets.

It is fairly common for a *heiau* to have the same name as the *‘ili* it is located within, so it is possible 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 and Queen streets, *mauka* of the low-lying coastal marsh lands on higher, dry ground. It is possible the *heiau* platform or the area 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.

2.1.3 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 taro *lo‘i* (irrigated terraces) fed by streams descending from Makiki, Mānoa, and Pālolo valleys blanketed the plain, and networks of fishponds 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; this population may have participated in some of the activities associated with them. Thus, any attempt to reconstruct the Kukuluāe‘o region (and the present project area) as it existed for the Hawaiians during the centuries before Western Contact and modern urbanization 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 westerners 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 preeminence 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 engineering design traditionally attributed to the chief Kalamakua, took advantage of streams descending from Makiki, Mānoa, and Pālolo valleys, which also provided ample fresh water for 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 the time of Western Contact, is given by E.S. Craighill Handy 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 (which as a result of variations in pronunciation is also written as Honoruru, and on some maps, Honoonoono) 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. The landlocked side in the northwest consists mostly of tarro [*sic*] 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 [Waikīkī], the soil around the village is less fertile, or at least not greatly cultivated. [Boelen 1988:62]

Boelen’s description implies the Kukuluāe‘o region and the current project area are within a “not greatly cultivated” region of Honolulu perhaps extending from Pūowaina (Punchbowl Crater) at the north through Kaka‘ako to the Kālia portion of Waikīkī in the east.

An early, somewhat generalized depiction of pre-Contact Native Hawaiian shaping of Waikīkī, Honolulu, and the Kukuluāe‘o region is given on an 1817 map by Otto von Kotzebue (1821), commander of the Russian ship *Rurick*, who had visited O‘ahu the previous year. The map (Figure 10) shows taro *lo‘i* (the rectangles, representing irrigated fields) massed around the streams descending from Nu‘uanu and Mānoa valleys. The depicted areas of population and habitation

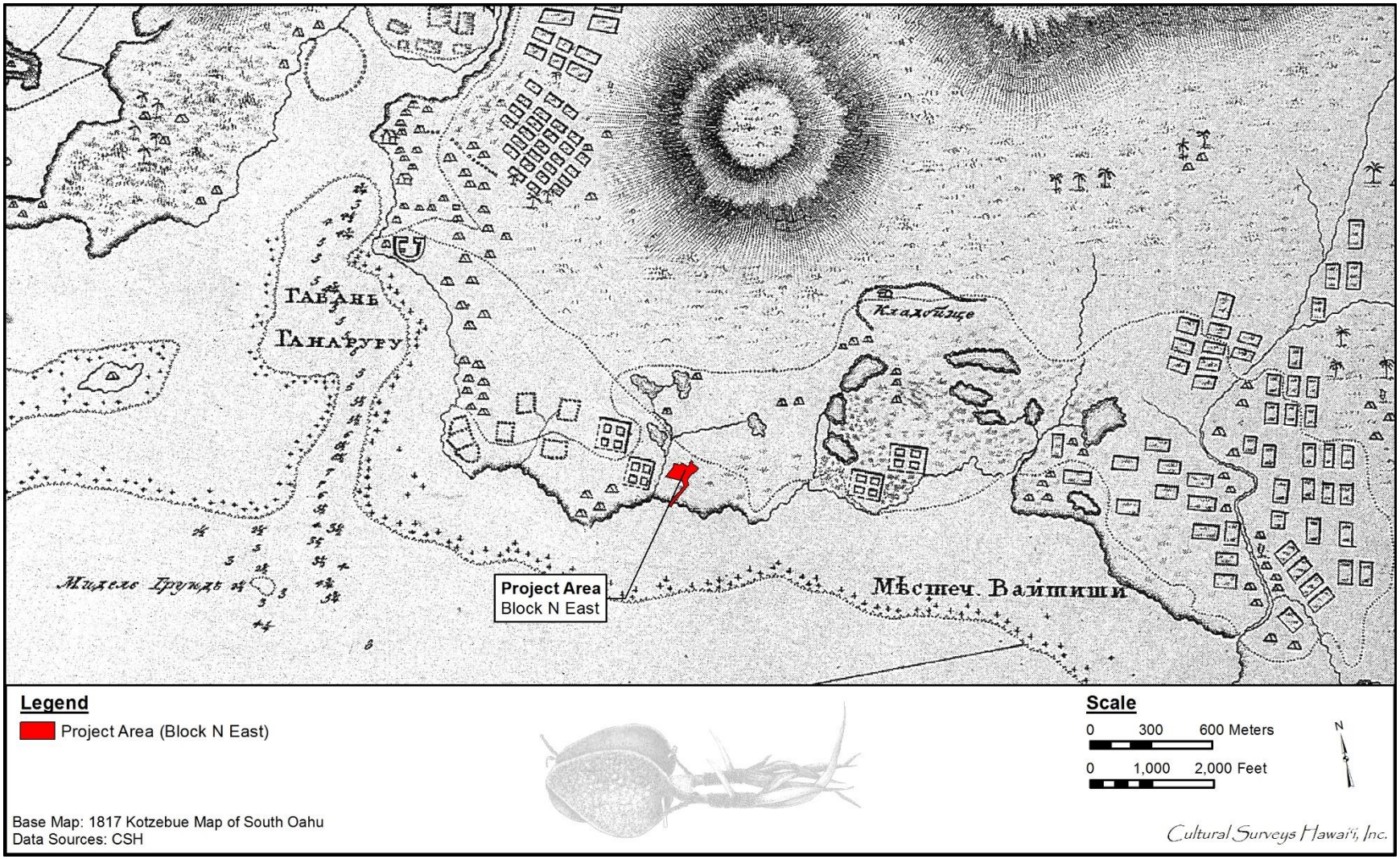

Figure 10. 1817 map by Otto von Kotzebue showing taro *lo‘i*, fishponds, and salt pans in Honolulu and Waikīkī; few habitations are depicted along much of the shoreline portions near the project area (map reprinted in Fitzpatrick 1986:48–49)

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 O‘ahu 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 Kukuluāe‘o 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 *lo‘i* and habitation sites.

A clearer picture of Kukuluāe‘o and the current 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* side, the waters of the harbor; on the *mauka* 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 Kawaiaha‘o 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. Stewart arrived on Maui after living at the mission and 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 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 11) when Kawaiaha‘o Church was still a long grass-thatched building and one made in 1853 (Figure 12) 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 with 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 of the area (Figure 13 and Figure 14) 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 (*Paradise of the Pacific* 1950:21).

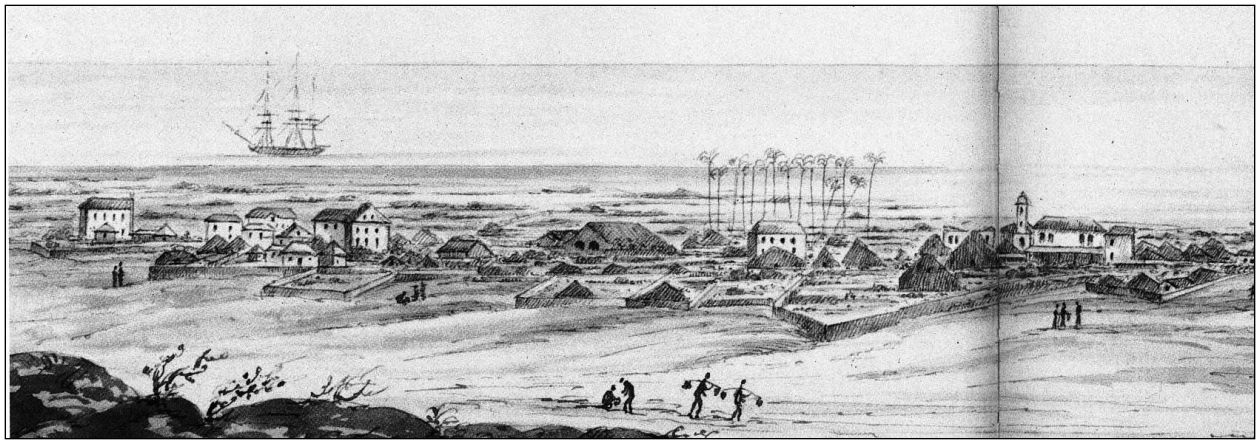

Figure 11. “Town of Honolulu: Island of Woahoo: Sandwich Islands,” portion of 1834 sketch by anonymous illustrator; the project area is east and south (left and back) of Kawaiaha‘o Church, the long thatched structure in the center of the sketch (original sketch at Bernice Pauahi Bishop Museum; reprinted in Grant 2000:64–65)

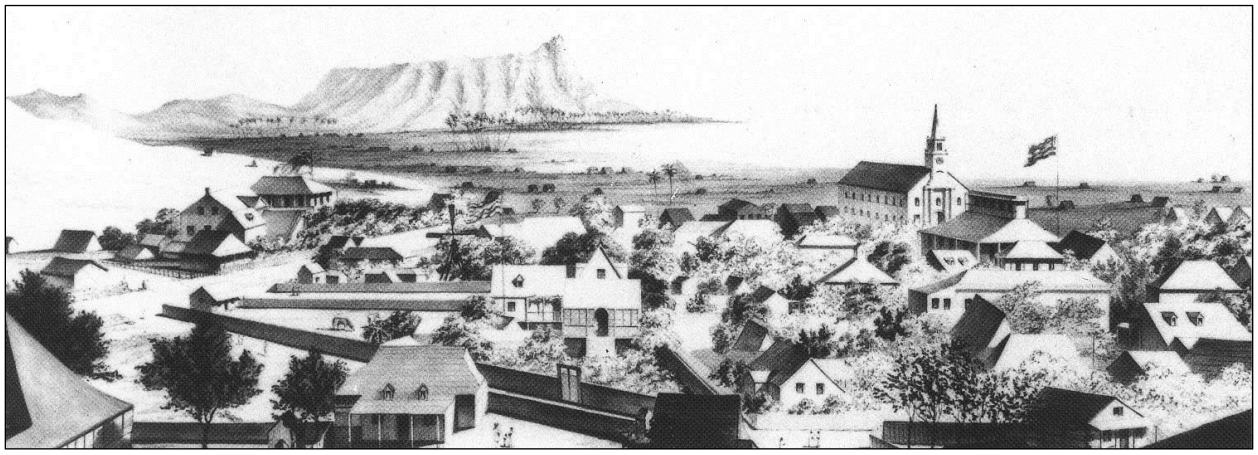

Figure 12. “View of Honolulu from the Catholic Church No. 2,” central panel of sketch by Paul Emmert ca. 1853; the project area is east and south (left and back) of the coral block Kawaiaha‘o Church (structure with steeple completed in 1842) (original sketch at Hawaiian Historical Society; reprinted in Grant 2000:5)

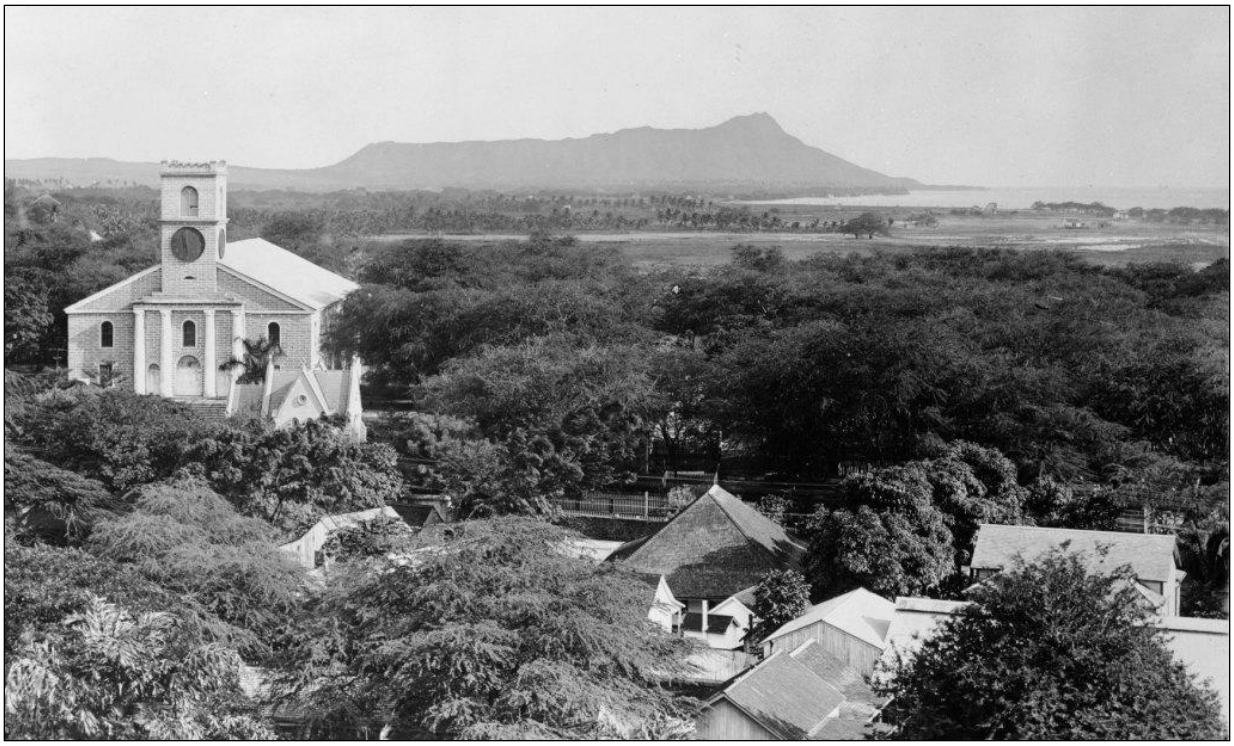

Figure 13. Kawaiaha‘o Church and Honuakaha Village, ca. 1887 photograph; the Ward’s House roof cupola, on the *mauka* end of Old Plantation, can be seen to the left of the church steeple; the project area is within the marshlands to the rear of the church (Hawai‘i State Archives, Henry L. Chase Collection; reprinted in Stone 1983:84–85)

Figure 14. Kaka‘ako area, portion of a ca. 1887 photograph (see Figure 13 above), close-up of right upper background area, showing marshlands and scattered huts along the coast

2.1.4 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 among the king of Hawai‘i, the *ali‘i* (chiefs), and the common people, which introduced the concept of private property into Hawaiian society. In 1848, Kamehameha III divided the land into four divisions: Crown Lands to be reserved for himself and the royal house; Government Lands set aside to generate revenue for the government; Konohiki Lands claimed by *ali‘i* and their *konohiki* (supervisors); *kuleana*, habitation and agricultural plots claimed by the common people (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 (ABCFM). The claim (in English) with witness testimony and the award (in Hawaiian) with a map of the surveyed lot are presented in Appendix B. Initially this land was associated with Punahou School in Makiki and Mānoa valleys, 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; see Appendix B]

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 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 (Figure 15). This figure 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 located within the project area.

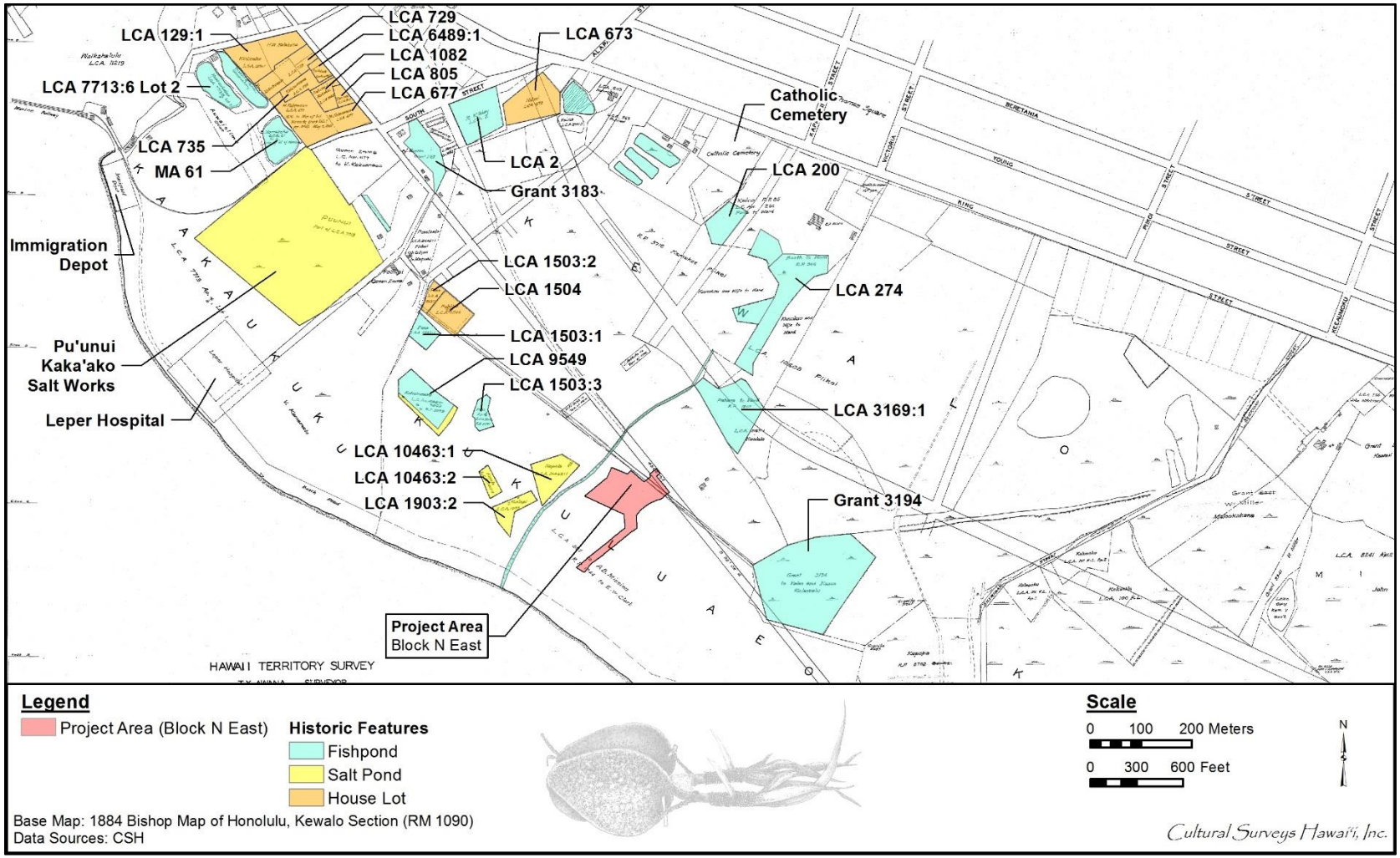

Figure 15. 1884 map of Honolulu, Kewalo Section (portion), by Sereno Bishop, showing the locations of LCA parcels, fishponds, salt lands, and house lots surrounding the project area; there are no LCAs parcels located within the project area

2.1.5 Nineteenth Century Land Use in Kukuluāe‘o

2.1.5.1 Salt Making

In the testimony for LCA 10463 (located just west of the current project area), salt lands, ditches, and deposits (probably related to salt) were mentioned. In the testimony for LCA 1903 (located southwest of the current project area), two *ālia* (salt beds), 15 *ho‘oliu*, two *poho kai*, and one salt *kula* were claimed. Four separate types of salt features are mentioned—the ponds near the shore that fill with salt water at high tide (*ālia*), the drains (*ho‘oliu*) 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. The claimant of LCA 1504 (located northwest of the current project area), Pahiha, had a house near his fishpond 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 Kawaiaha‘o Church viewed from the “Old Salt Pans” (Figure 16 and Figure 17).

As indicated by the description of various salt features, traditional Hawaiian salt production was accomplished by diverse methods. The Native Hawaiian historian, David Malo, described one salt making method:

> Salt was manufactured in certain places. The women brought sea-water in calabashes, or conducted it in ditches to natural holes, hollows, and shallow ponds (kekaha) on the sea-coast, where it soon became strong brine from evaporation. Thence it was transferred to another hollow or shallow vat, where crystallization into salt was completed. [Malo 1951:123]

Captain Cook was the first to note the method of making salt in prepared salt pans:

> Their salt pans are made of earth, lined with clay; being generally six or eight feet square, and about eight inches deep. They are raised upon a bank of stones near the high-water mark, from whence the salt water is conducted to the foot of them, in small trenches, out of which they are filled, and the sun quickly performs the necessary process of evaporation. . . . Besides the quantity we used in salting pork, we filled our empty casks, amounting to sixteen puncheons, in the Resolution only. [Cook 1784:151]

The missionary William Ellis, on a tour of the Hawaiian Islands in 1822 and 1823, also noted these salt pans and recorded the final step of crystallization.

> The natives of this district (Kawaihae) manufacture large quantities of salt, by evaporating sea water. We saw a number of their pans, in the disposition of which they display great ingenuity. They have generally one large pond near the sea, into which the water flows by a channel cut through the rocks, or is carried thither by the natives in large calabashes. After remaining there for some time, it is conducted into a number of smaller pans about six or eight inches in depth, which are made with great care, and frequently lined with large evergreen leaves, in order to prevent absorption. Along the narrow banks or partitions between the different pans, we saw a number of large evergreen leaves placed. They were tied up at each end, so

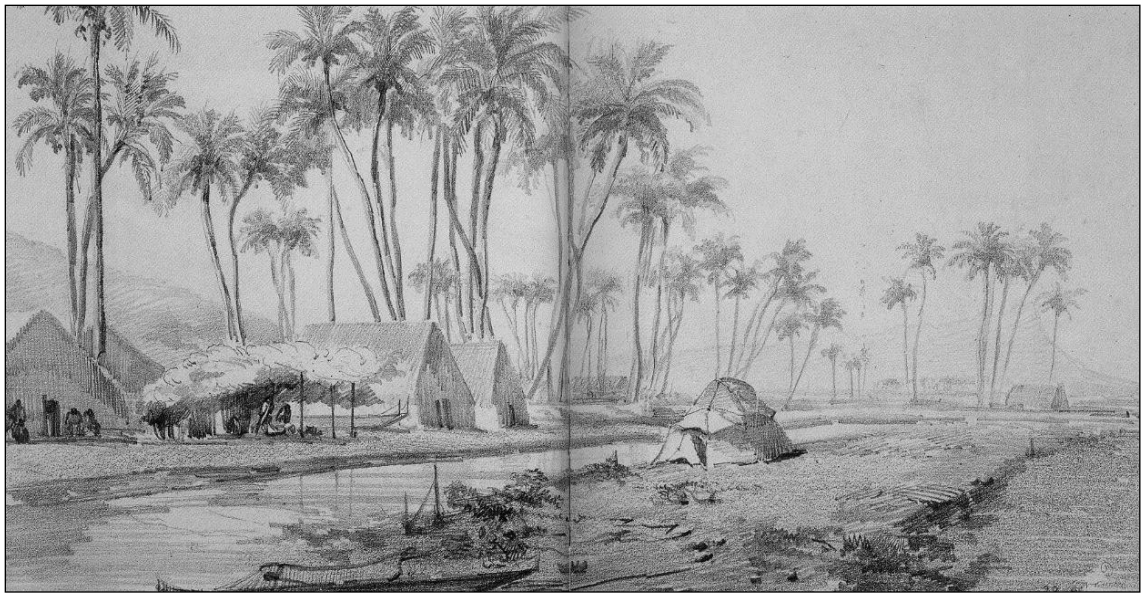

Figure 16. “Honolulu Salt Pan, near Kaka‘ako,” 1838 sketch drawn by a French visitor, Auguste Borget (original sketch at Peabody Essex Museum, Salem, Massachusetts; reprinted in Grant 2000:64–65)

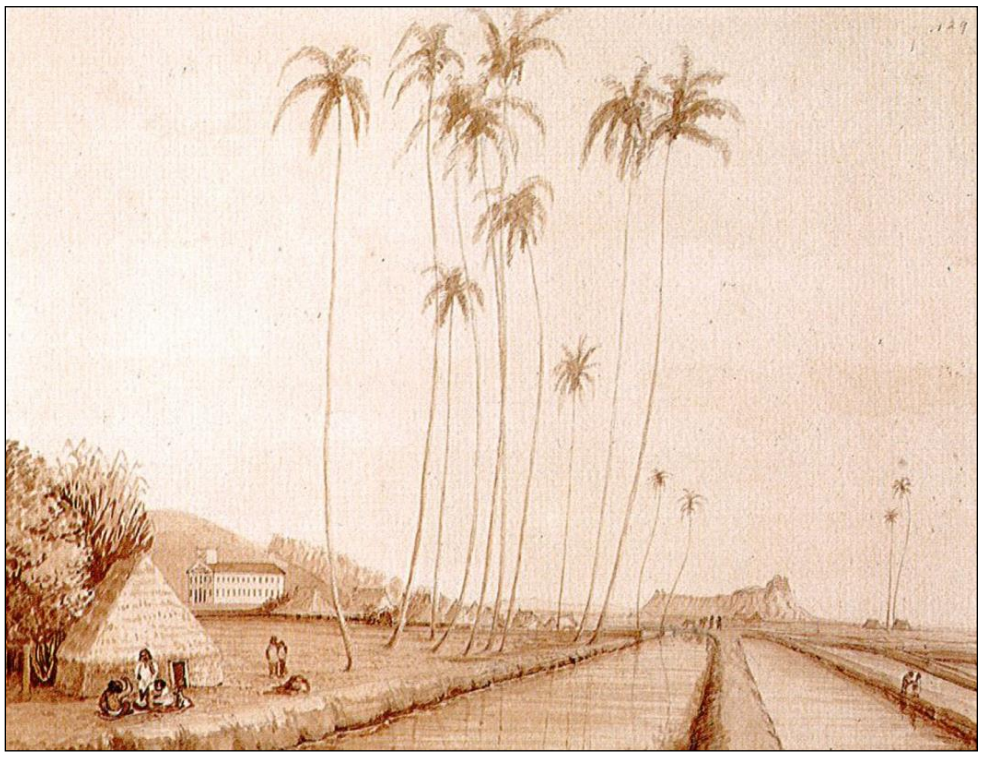

Figure 17. “Native Church [Kawaiaha‘o Church], Oahu, from the Old Salt Pans,” 1845 sketch drawn by John B. Dale, from the U.S. Exploring Expedition led by Lt. Charles Wilkes (J. Welles Henderson Collection, reprinted in Forbes 1992:126); the sketch is probably from the salt pans in Ka‘ākaukukui, west of the project area

> as to resemble a narrow dish, and filled with salt water, in which the crystals of salt were abundant. [Ellis 1827:403–404]

Following Western Contact in 1778, commercial trading vessels began to frequent Hawaiian waters at an increasing rate; one important reason for their visit was to trade for salt. Kotzebue noted during his visit in 1816 and 1817 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 [*Turnbull's Voyage 1800–1804*] 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 order to supply this demand, commercial salt production works began to multiply throughout the early to late 1800s, including within the Kaka‘ako area. Figure 18 (1883 Baldwin map) shows a large grid-like area of historic salt pans that extends across a large portion of Kaka‘ako. The current Block N East project area appears to be just outside (at the northeastern fringe) this salt works zone.

In an article on Hawaiian salt works, Thomas Thrum (1924:116) mentions a salt works in Kaka‘ako, likely the Kaka‘ako Salt Works, in the vicinity of the present Ala Moana Shopping Center.

> 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]

Figure 19 shows these types of large scale historic salt works, comprised of grid-like salt pans separated by man-made berms, wide transport causeways, and water transport channels.

Thrum (1924:116) states that the apex of the salt export trade in the Hawaiian Islands was in 1870, and that by 1883 "pulu, salt, and oil have disappeared entirely" from the list of yearly exports (Thrum 1884:68). However, salt continued to be manufactured for local use, as evidenced by the continued existence of the Kaka‘ako Salt Works until at least 1891. Thrum (1924:116) noted that the only salt producer on O‘ahu in 1916 was the Honolulu Salt Company. This is substantiated by a 1916 Commerce Report that in its discussion regarding salt production only mentioned the Honolulu Salt Company, which operated "salt beds at Puuloa, Kalihi, and Waikiki" (Taylor 1916:723).

2.1.5.2 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 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

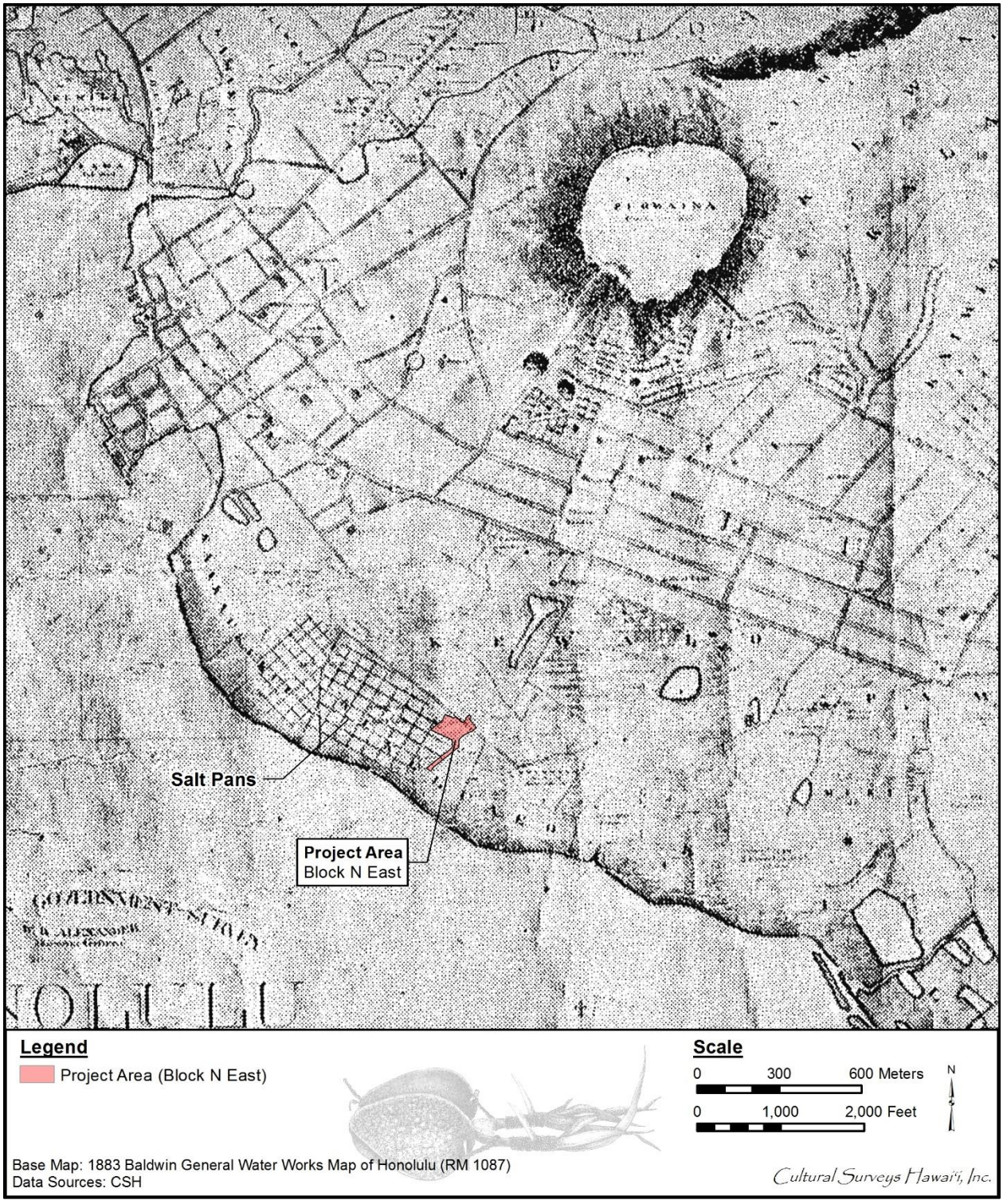

Figure 18. 1883 map of the Honolulu Water Works System (portion), by E.D. Baldwin (1883) (Hawai‘i Land Survey Division, Registered Map 1087); the grid symbol represents salt pans

Figure 19. Historic salt works within Kaka‘ako, 1902 photograph (Bishop Museum Archives, reprinted in Scott 1968:579)

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 20). 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 21). *Makaloa* grass (*Cyperus laevigatus*; Wagner et al. 1990), 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 22; 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 horses, plant 6,000 coconut trees, plant *kiawe* trees (*Prosopis pallida*; Wagner et al. 1990) for firewood, and restore the *kāhaka* (salt pans) near the shore (Hustace 2000:41). A house in the southern style was built at the *mauka* end of the property 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 [*Cynodon dactylon*; Wagner et al. 1990], 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.

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.”

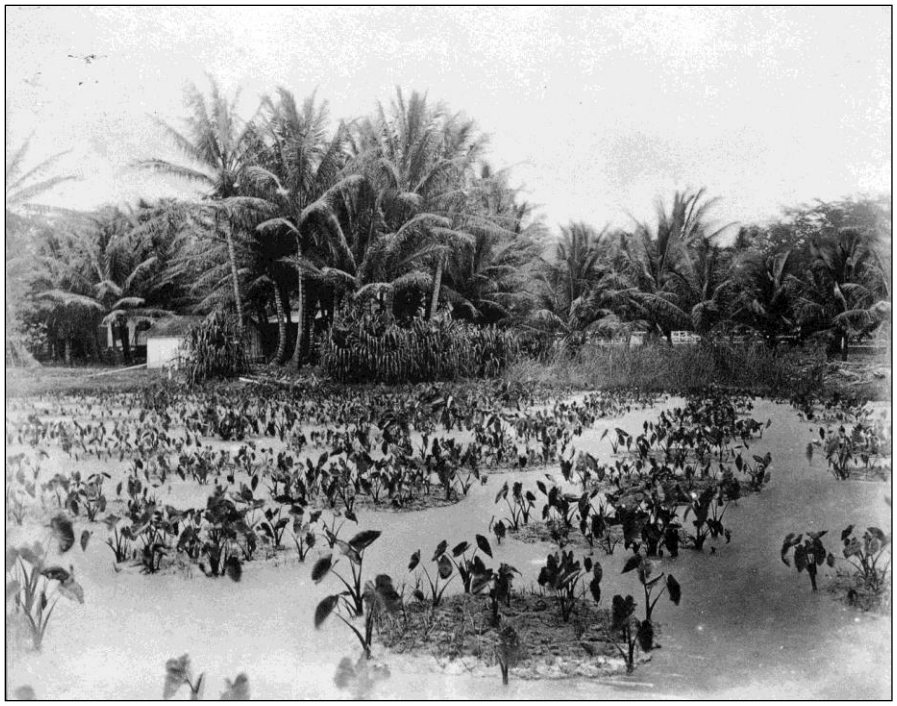

Figure 20. The Kukuluāe‘o portion of the Ward Estate, nineteenth century photograph (reprinted in Hustace 2000:49)

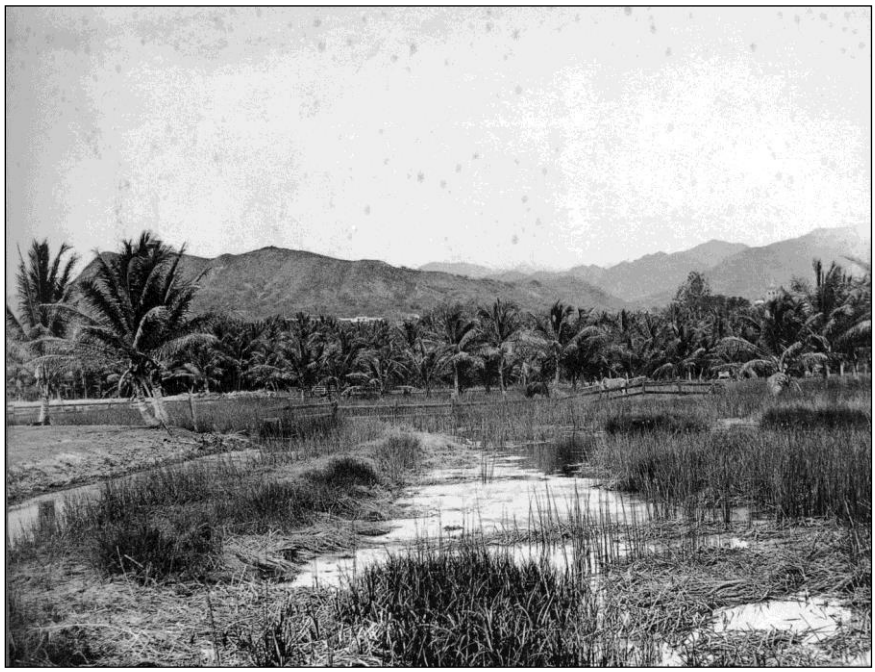

Figure 21. The Old Plantation *‘auwai*, extending from the sea to the *mauka* “lagoon” of the Ward Estate, nineteenth century photograph, view north toward Punchbowl (Hustace 2000:51)

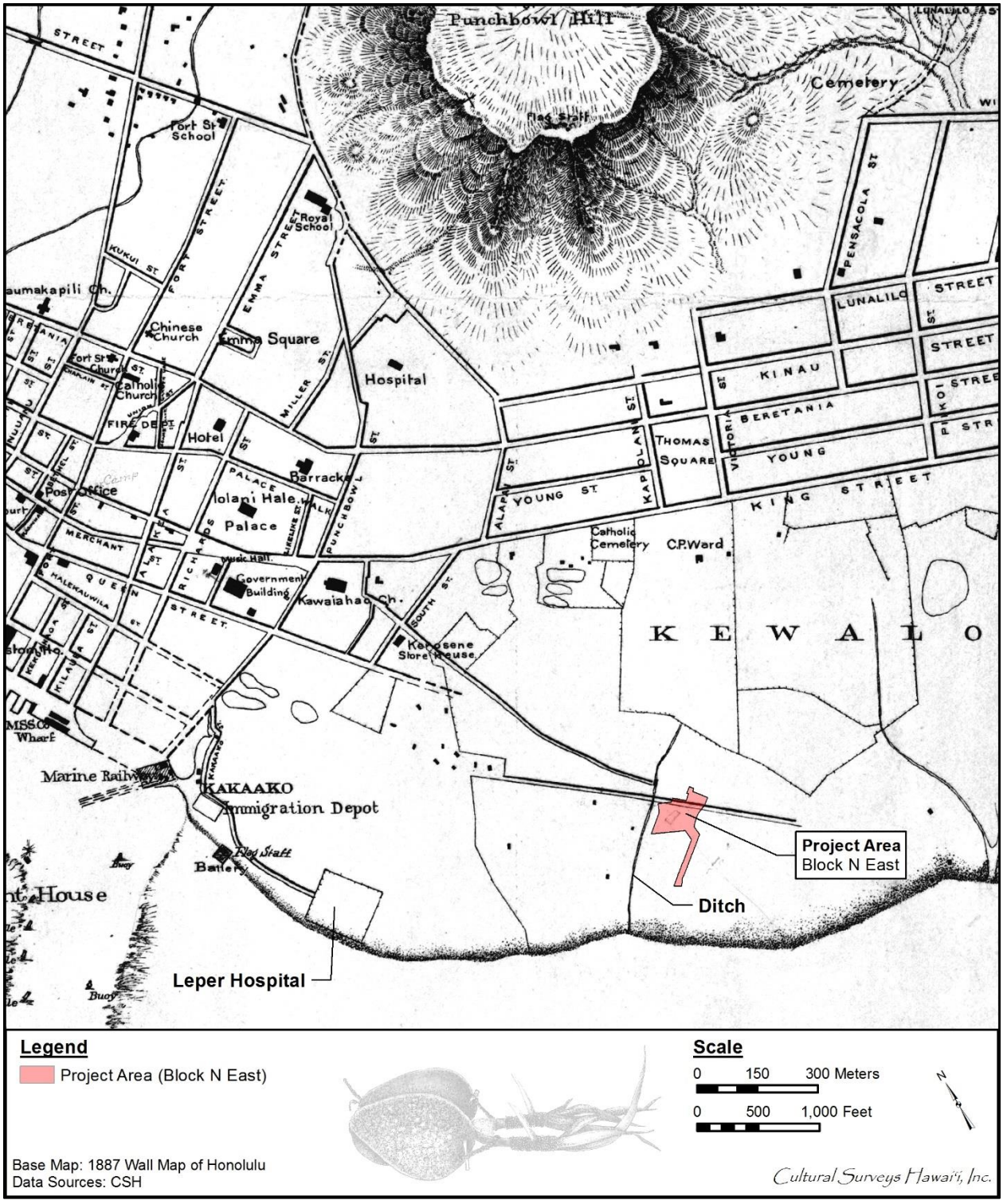

Figure 22. 1887 map of Honolulu (portion), by W.A. Wall (copy at Library of Congress, Geography and Map Division), showing the project area location and the Ward Estate *‘auwai* (labeled ditch)

> 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]

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).

2.1.6 Twentieth Century Land Use

2.1.6.1 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" trash (mainly animal and fish waste) could be burned, 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 and 1906:

> 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 1905:177]
>
> 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 1906:148–149]

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 1906:148–149]

In the early 1920s, trash was burned in the open at the Ala Moana Dump (landfill area *makai* of Ala Moana Boulevard) (Figure 23). The Hawaii Public Works recommended that an incinerator should be built for the burning of "putrescible" waste. The Kewalo Incinerator (Incinerator

Figure 23. Open-air burning of trash in area between Kewalo Basin and Ala Moana Park, 1921 photograph (Hill 1921, reprinted in Scott 1968:578)

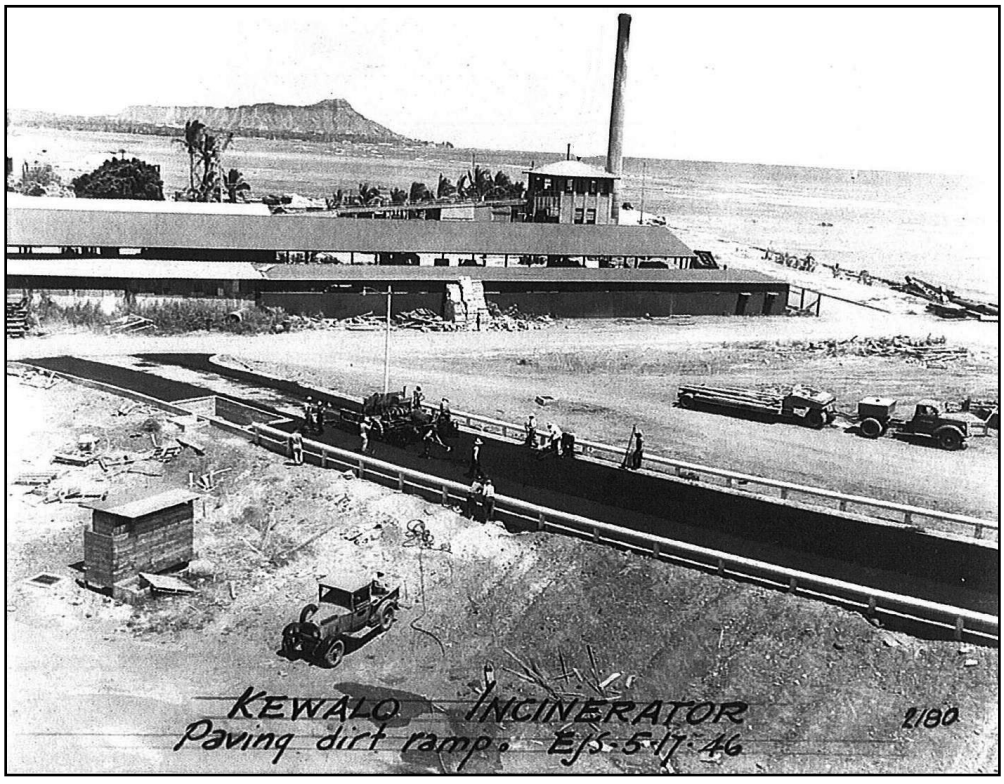

Figure 24. 1946 photograph of Kewalo Incinerator No. 1, west side of Kewalo Harbor (Mason Architects 2002)

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 in the late 1940s, the ash was used to fill the seawall in Ka‘ākaukukui to create 29 additional acres of land, adjacent to Fort Armstrong (see Figure 24). It ceased operations in 1945 when a new incinerator was built. The second incinerator, built on Ohe Street from 1946–1948, was used for waste burning until 1997 (Mason Architects 2002).

2.1.6.2 Kaka‘ako Reclamation

The first efforts to deepen Honolulu Harbor were made in the 1840s. The idea to use the 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 as “reclaimed” land atop the reefs (Hawaii Department of Transportation, Harbors Division 2007:3).

By the 1880s, filling-in of the mud flats, marshes, and salt ponds in the Kaka‘ako and Kewalo areas 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 the following:

> 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 outward to Kaka‘ako (Griffin et al. 1987:13). The first fill material may have been set down for the 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 ordered 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 (see Figure 22). A Hawaii 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 (1901) 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 1901:168]

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 in. 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.”

2.1.6.3 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 the areas once known as Kukuluāe‘o and Ka‘ākaukukui), which had numerous ponds (Hawaii 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 the property owners, informing them that they must fill in the lands to the grade of the street level within 60 days. Only a few of the landowners complied, filling their land with a variety of materials. Most of the landowners 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 landowners sued to stop the work; in the suit, the method of hydraulic filling is described as follows:

> 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 through 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 Avenue, and from Ala Moana Boulevard to Queen Street had been filled.

Legal proceedings in 1914 did manage to shut down operations planned for the area from Ward Avenue 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 1916:148–149). 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).

2.1.6.4 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 Hawaii 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 25). In 1941, the basin was dredged and expanded to its current 55 acres. In 1955, dredged material was placed along the *makai* side to form an 8-acre land section protected by a revetment, now part of Kewalo Basin Park (Kewalo Basin Harbor 2013).

Figure 25. 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

2.1.6.5 Waikīkī Reclamation Project

It was during the 1920s that southeast O‘ahu was transformed when 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. 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 a 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.

2.1.6.6 Commercial and Residential Development

Subsequent maps show the future development of the Kukuluāe‘o area in a grid of streets extending from Honolulu town toward 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 Kukuluāe‘o, including the conversion of taro *lo‘i* to rice fields. The urban development of the area is shown on a series of late nineteenth and twentieth century maps and aerial photographs from 1897 through 1982 (Figure 26 through Figure 38).

The 1884 Bishop map (see Figure 8) shows the nascent traces of future development in the grid of roads stretching *mauka* of the project area. Kaka‘ako was considered to be 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 details of the original character of the Kewalo lands and the disappearance of that landscape.

An 1897 map (see Figure 26) 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 of the project area, and the “arm” of streets projecting from downtown Honolulu into Kaka‘ako and Kewalo. It is on this map that Kamake‘e Street first appears, running from Queen Street and dead-ending *mauka* of Waimanu Street toward where Kapi‘olani Boulevard would eventually be constructed. A large portion of Kaka‘ako, however, remains open and the map reveals that the area adjacent to (east of) the Old Plantation and *mauka* of the project area has become “Rice Fields.” This 1897 map also shows the Cyclomere, a pond surrounded by a bicycle racing track in Kewalo area. This was located on the *makai* side of Kapi‘olani Avenue between Cooke Street and Ward Avenue.

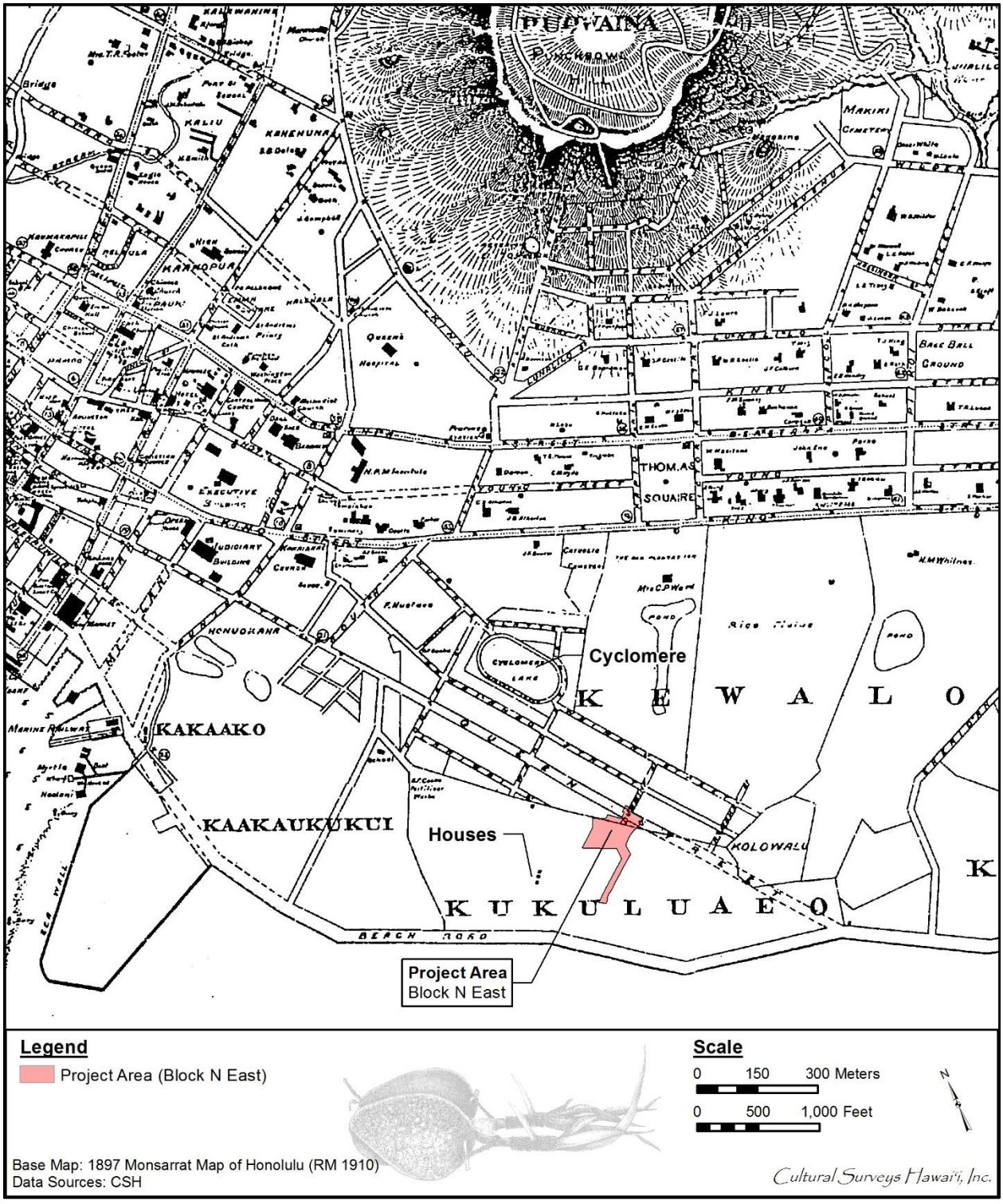

Figure 26. Portion of 1897 map of Honolulu by M.D. Monsarrat showing the location of the project area; the map also shows the location of the “Cyclomere”

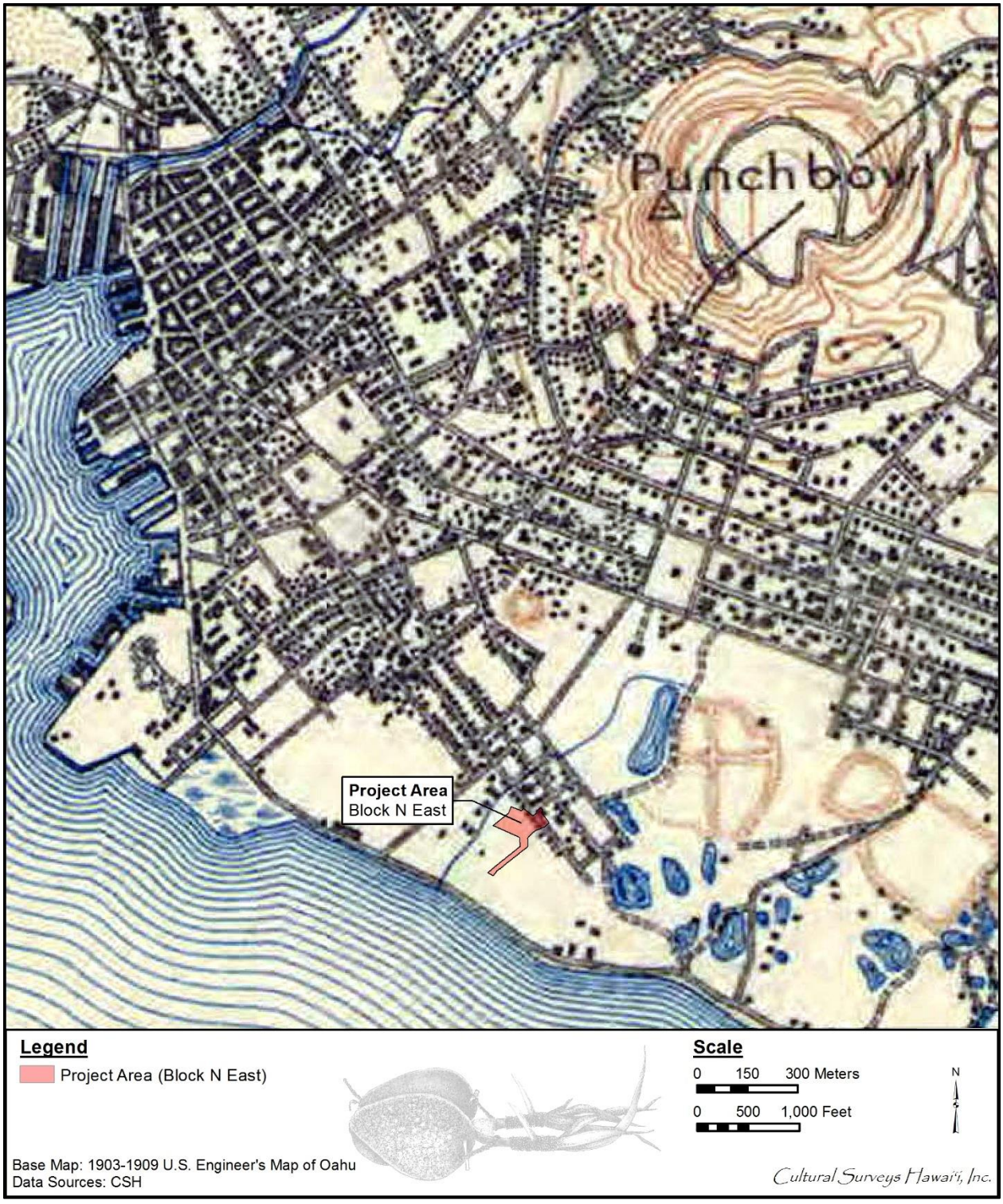

Figure 27. Portion of 1903-1909 (published 1917) U.S. Engineer’s map of O‘ahu depicting Kaka‘ako; many ponds, including Kolowalu and the Ward Estate “Long Lagoon,” are still open and unfilled east of Ward Avenue

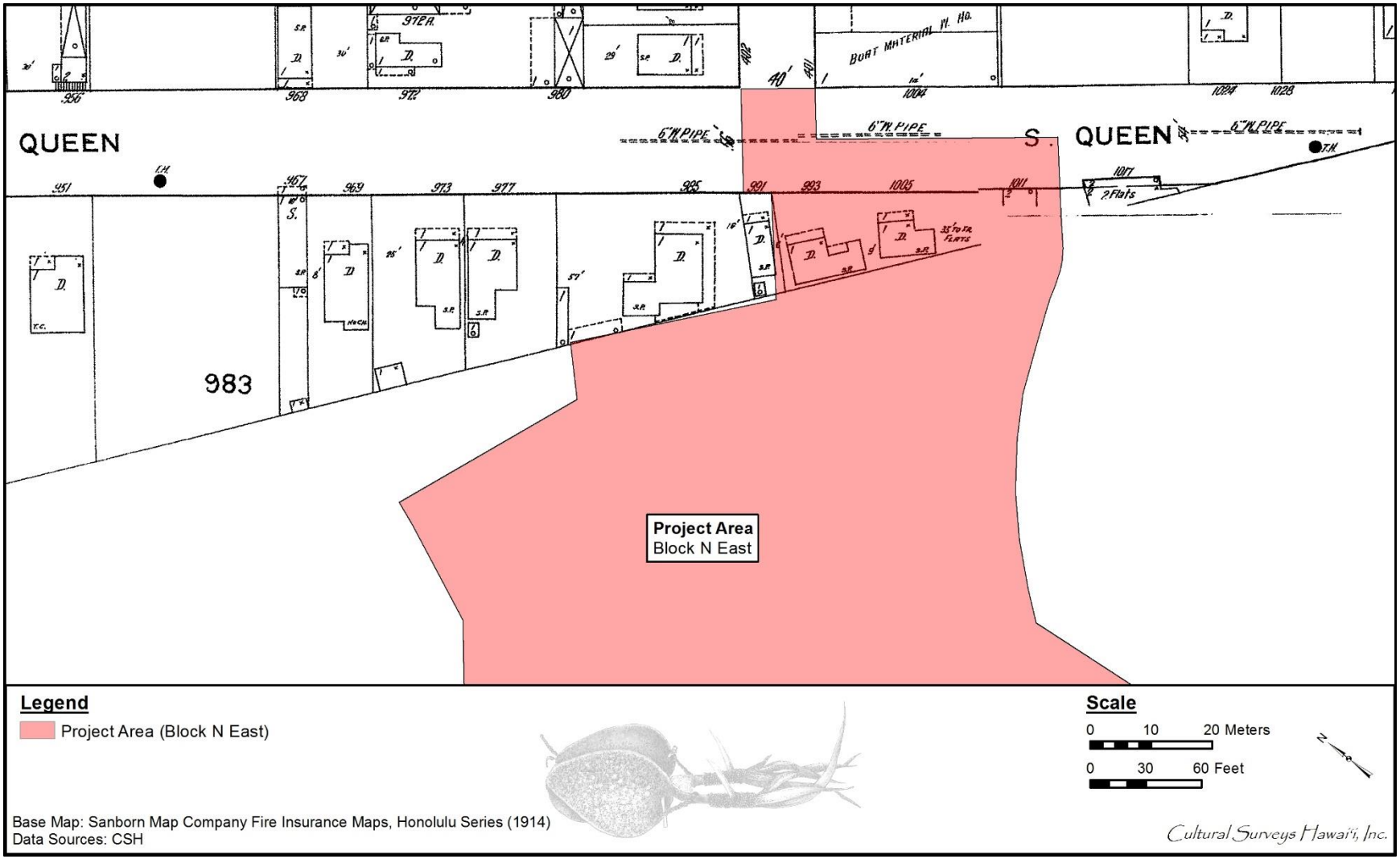

Figure 28. Portion of 1914 Sanborn Fire Insurance map, showing single-story residential structures (denoted by the abbreviation “D.”) along Queen Street

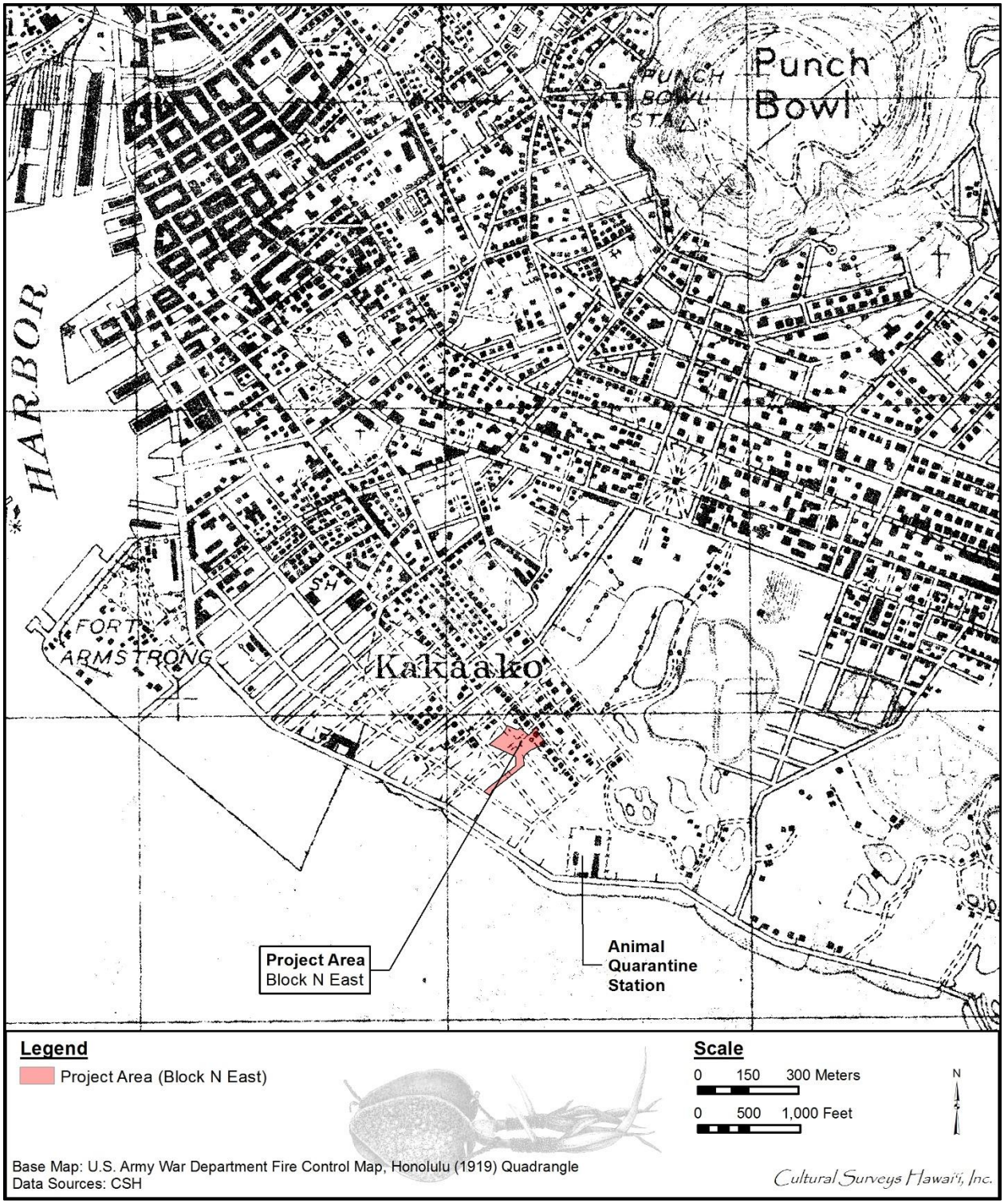

Figure 29. Portion of 1919 U.S. Army War Department Fire Control map of O‘ahu, Honolulu Quadrangle, showing the location of the project area within a grid of streets; solid lines denote paved streets, while dotted lines represent unpaved or proposed streets

Figure 30. 1927 aerial photograph of the Kaka‘ako area showing small residential structures within the project area along Queen Street (UH SOEST)

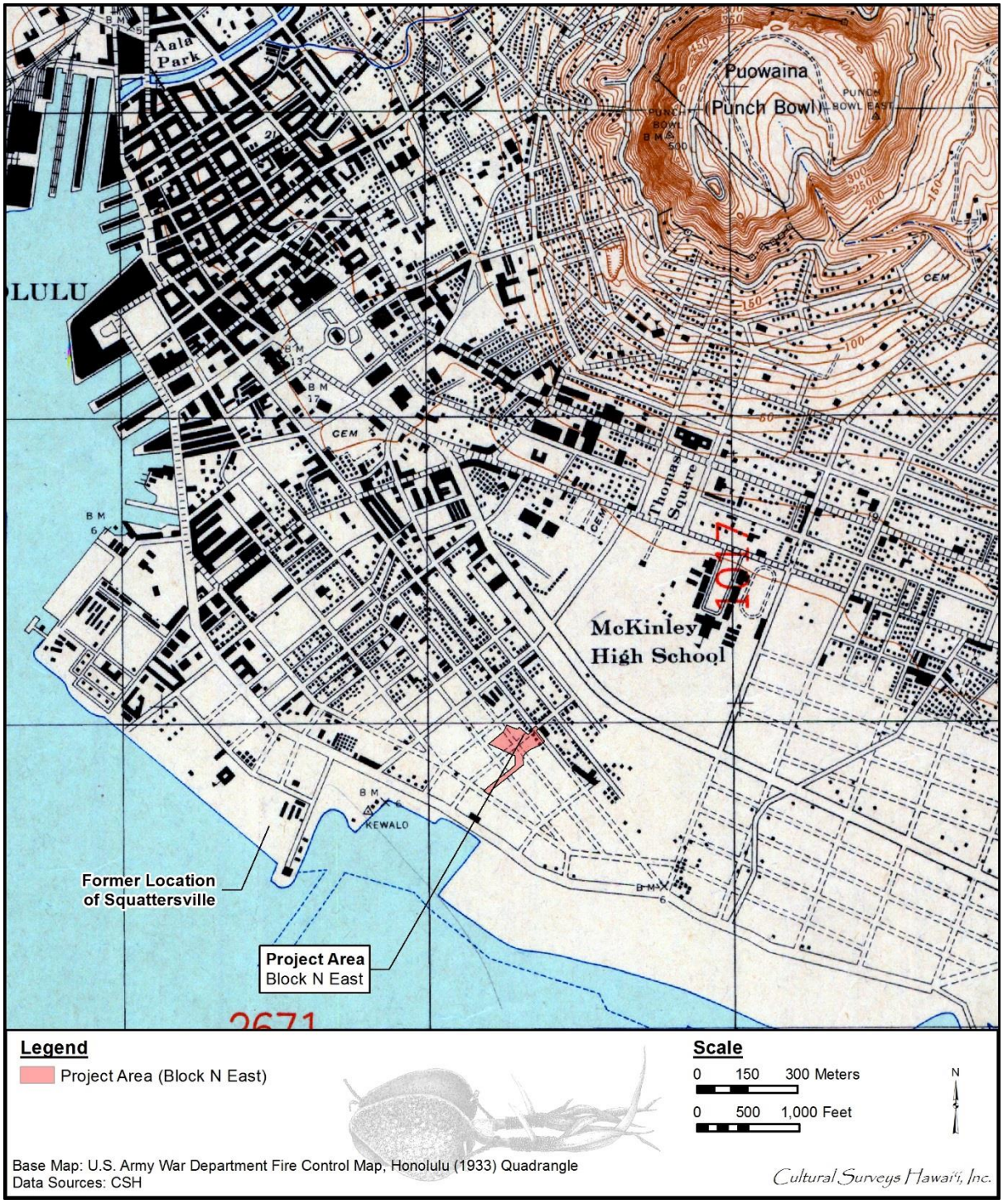

Figure 31. Portion of 1927–1928 (published 1933) U.S. Army War Department Fire Control map of O‘ahu, Honolulu Quadrangle, showing the project area within a grid of unpaved/proposed streets; note the former location of Squattersville, adjacent to Kewalo Basin and east of Fort Armstrong

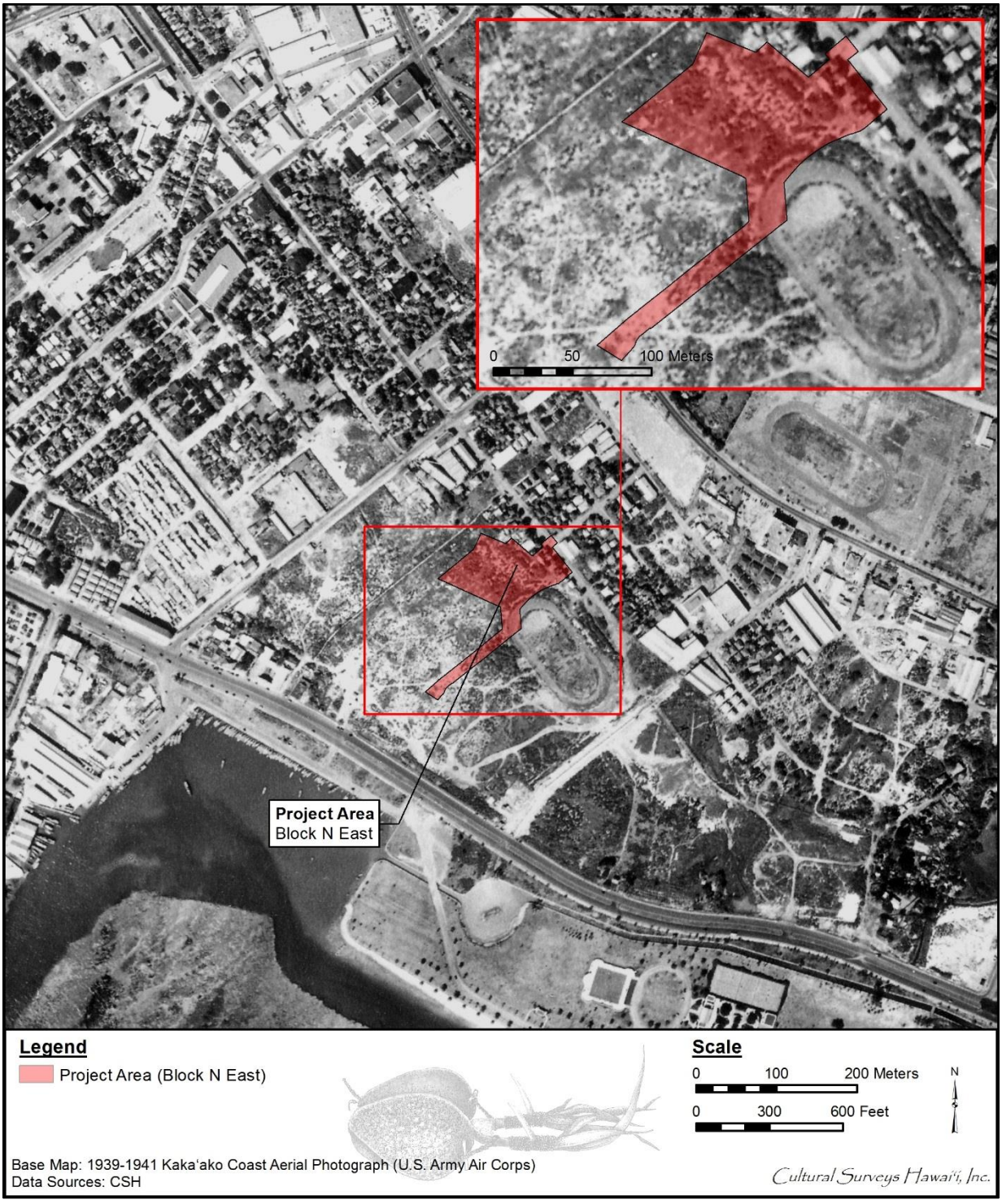

Figure 32. Portion of 1939–1941 aerial photograph (U.S. Army Air Corps) of Kaka‘ako, showing small residential structures within the project area along Queen Street; note the completion of Kewalo Harbor to the west and the construction of Ala Moana Park to the east along the shore

Figure 33. Portion of 1943 U.S. Army War Department Terrain Map of O‘ahu, Honolulu Quadrangle; note the addition of a large warehouse within the *makai* portion of Block N East

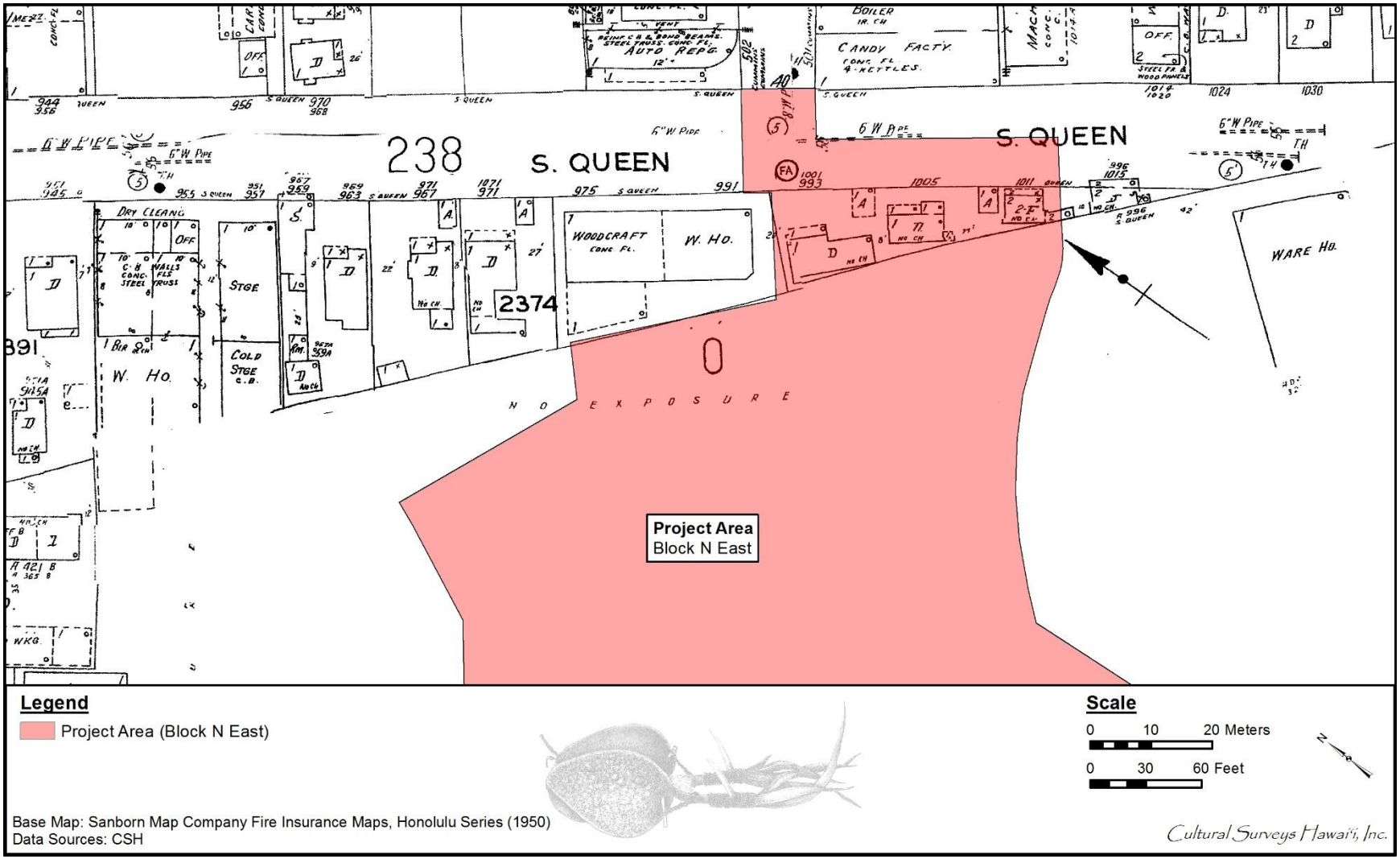

Figure 34. Portion of 1950 Sanborn Fire Insurance map showing the development of commercial industry along Queen Street; domestic residences are still visible within the Block N East project area

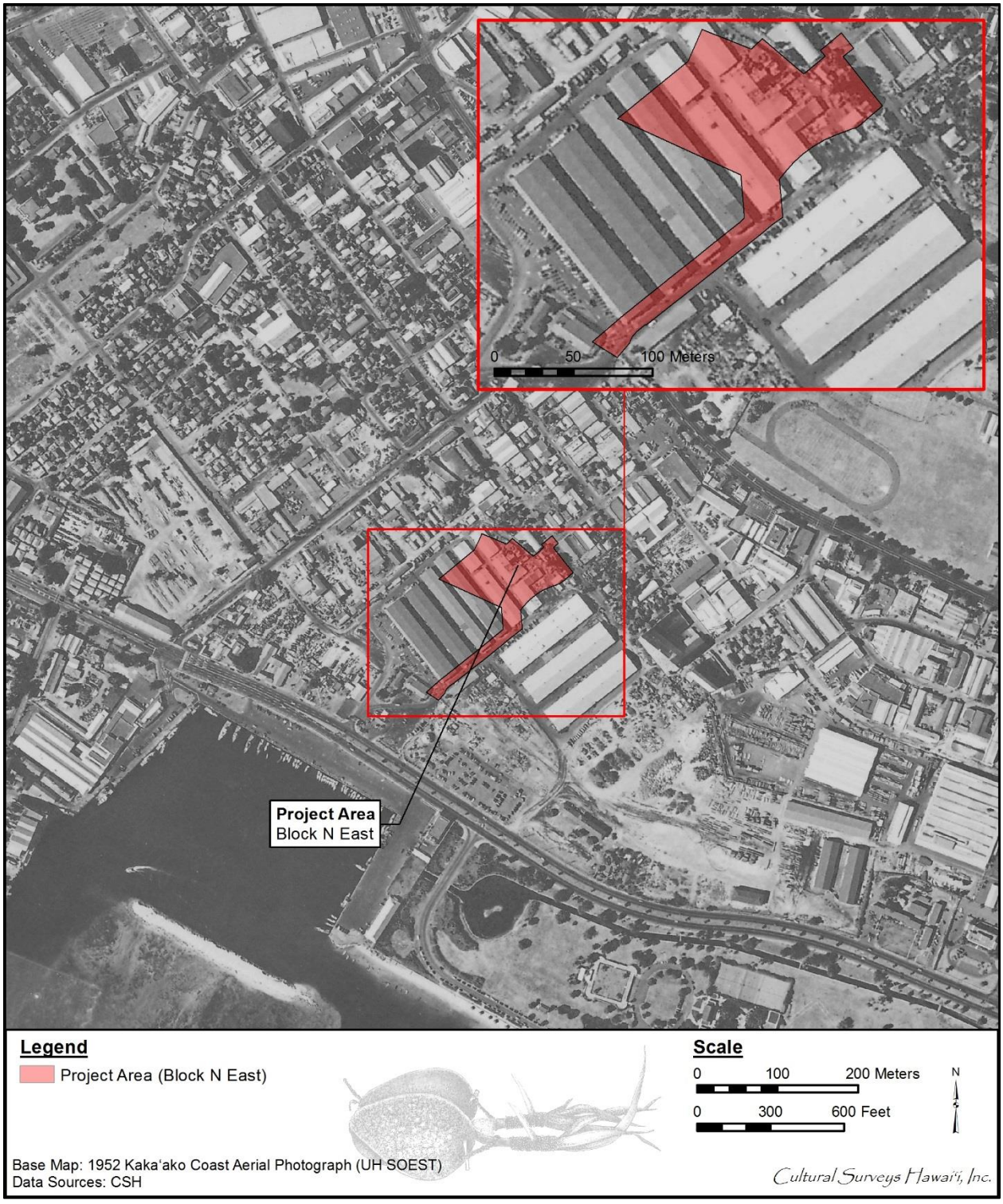

Figure 35. Portion of 1952 aerial photograph showing a large warehouse within the *makai* portion of the project area (UH SOEST)

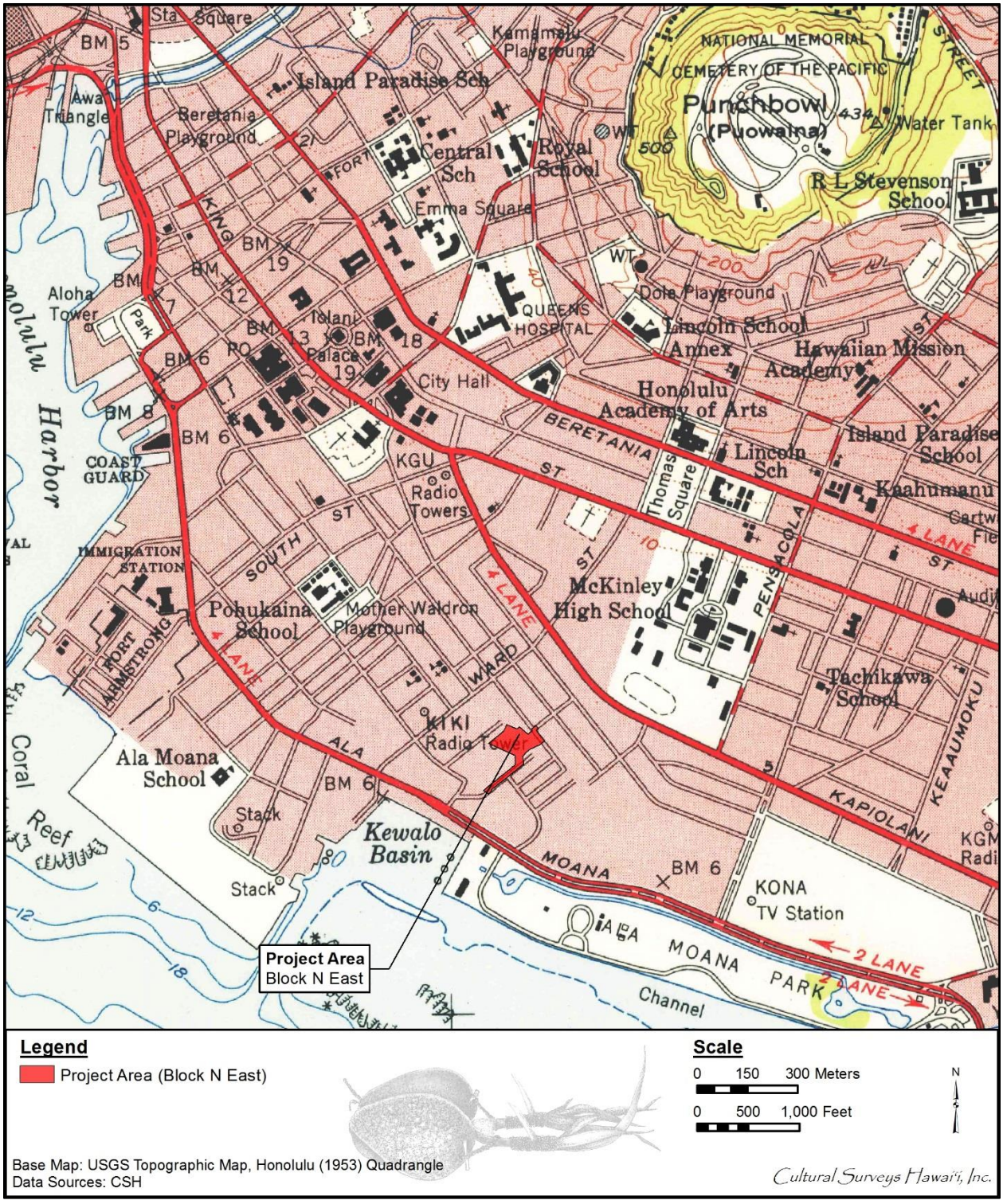

Figure 36. Portion of 1953 Honolulu USGS topographic quadrangle, showing Block N East within an improved street grid

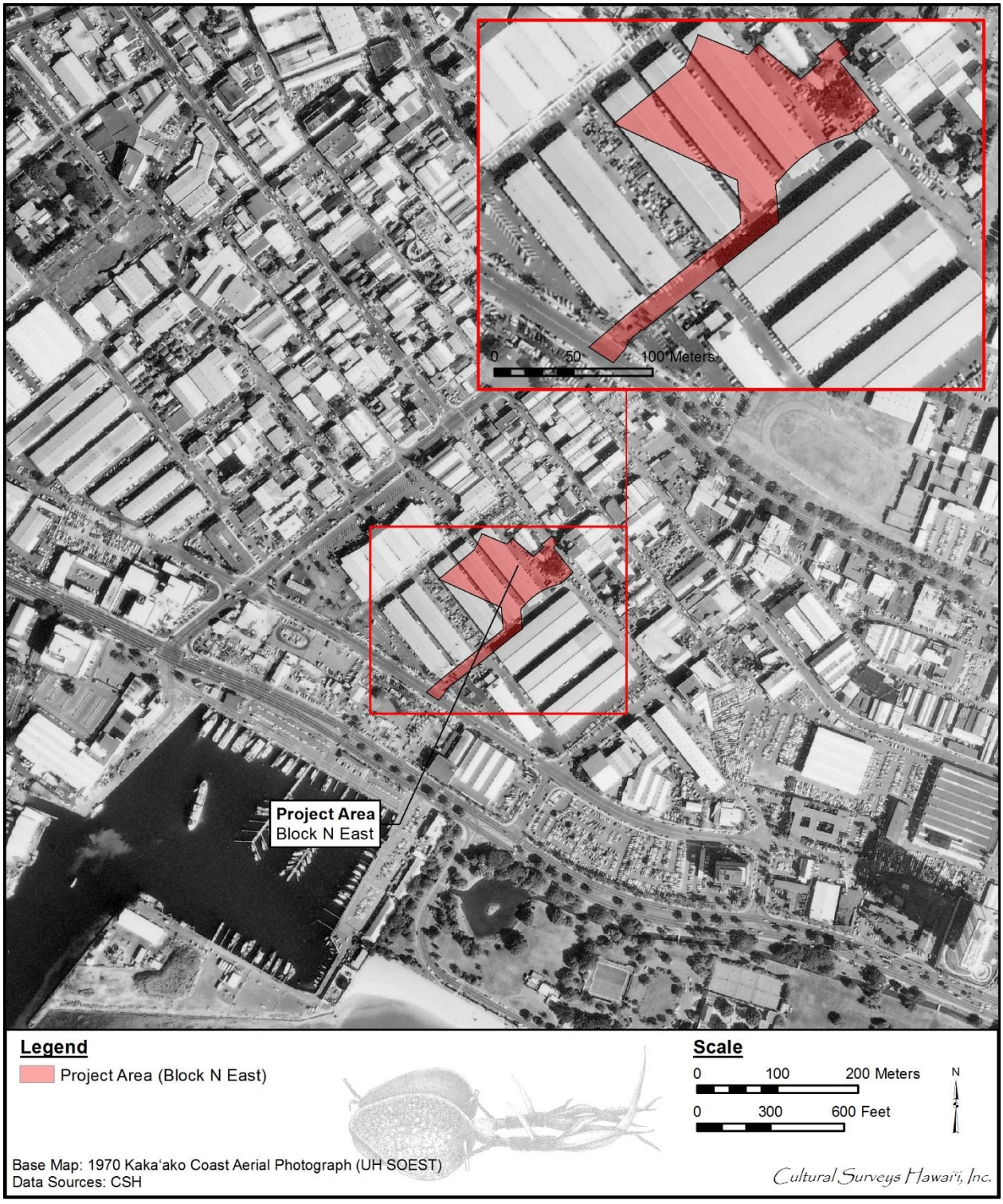

Figure 37. Portion of 1970 aerial photograph (UH SOEST) showing the project area

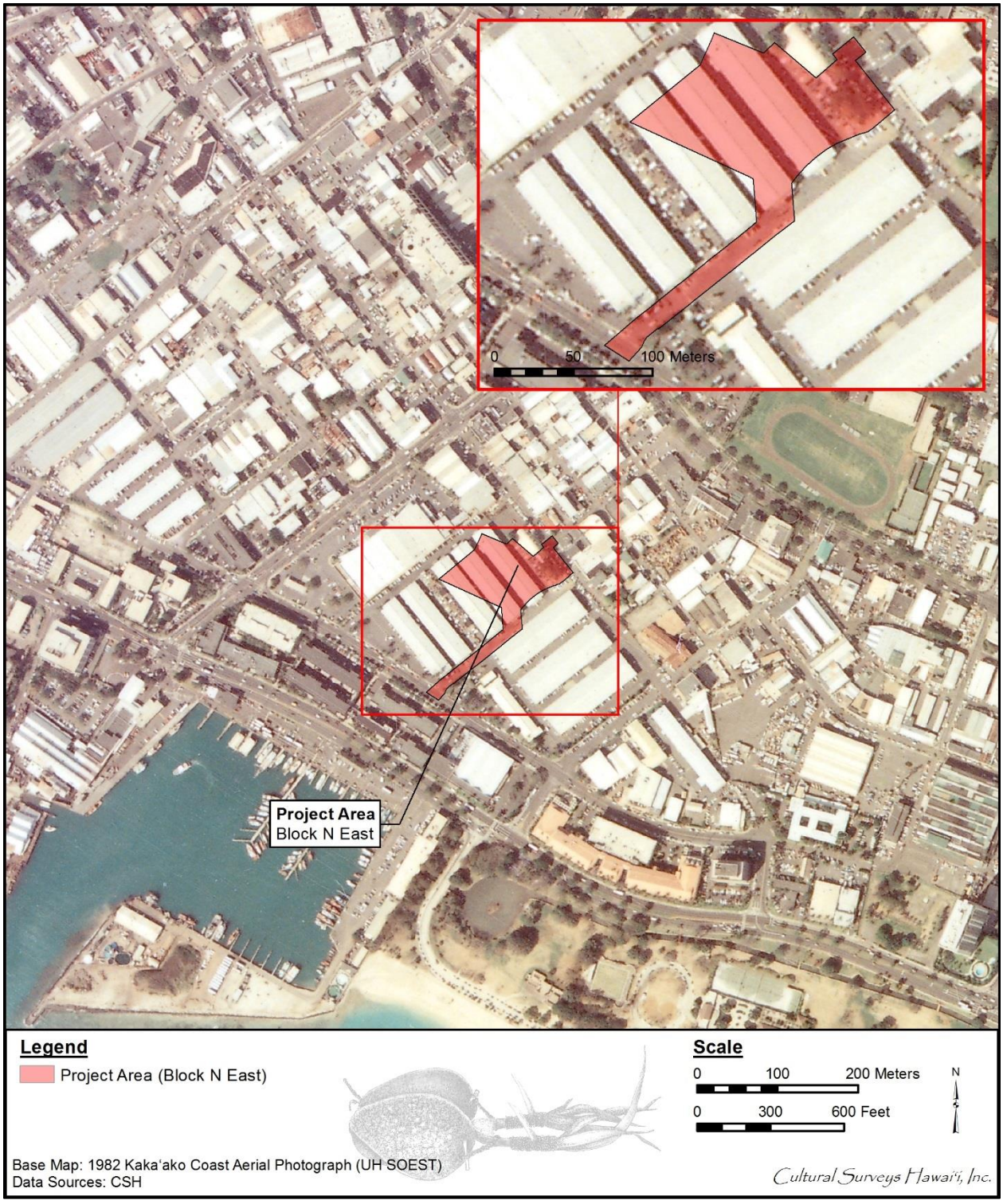

Figure 38. 1982 aerial photograph (UH SOEST) depicting large warehouses throughout Kaka‘ako and within the Block N East project area

A 1903-1909 U.S. Engineer’s map (see Figure 27) depicts houses clustered around the few paved roads, including along the *makai* side of Queen Street within the Block N East project area and a scatter of houses also 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, which will later be dredged to create Kewalo Basin. Numerous ponds are shown to the east of the project area, in particular Kolowalu Pond at the eastern terminus of Queen Street, and the “Long Lagoon” of the Ward Estate, north of the Queen Street terminus.

A 1914 Sanborn Fire Insurance map (see Figure 28) also shows four single-story residential structures within Block N East along the *makai* side of Queen Street (denoted by the abbreviation “D.” for dwelling).

The 1919 U.S. Army War Department Fire Control map (see Figure 29) shows residences clustered around Queen Street and Ward Avenue. The project area is now located within a grid of largely unpaved or proposed roads. 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 (see Figure 30) 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, including Block N 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 Kolowalu Pond, shown to the east of the project area. Kewalo Basin is an ill-defined dredged area of deep water east of Fort Armstrong. Several small structures (residences) are still visible along Queen Street within the Block N East project area.

A 1933 U.S. Army War Department Fire Control map (see Figure 31) 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, including within the majority of Block N East. However, the land was more inhabited than is evident from this map. The Ward family leased land to the Japanese for camps, schools, playgrounds, 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 (see Figure 32), 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, including the Block N East project area, 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, leveled, and covered with several new campus buildings. The long lagoon of the Ward Estate is still unfilled.

On a 1943 U.S. Army War Department terrain map (see Figure 33), this eastern section of Kaka‘ako is an area of open lumber yards and large warehouses. A large warehouse is now located within the *makai* portion of the Block N East project area. 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 by the military in 1941 after the attack on Pearl Harbor. The cannery was converted to military use and used to make airplane gas tanks (Schug 2001:29). Land in Kaka‘ako taken by the military was not returned until 1946 (Clark 1977:64; Gessler 1938:182–185).

A 1950 Sanborn Fire Insurance map shows the development of commercial activity along Queen Street in the immediate vicinity of Block N East (see Figure 34). Four residential structures, denoted as “D” on the map, are still present, however, within the Block N East project area.

A 1952 aerial photograph (see Figure 35) also shows major development in the eastern section of Kaka‘ako, with a large warehouse building covering the *makai* portion of Block N East. Coral fill has been placed to create the substrate for the new Ala Moana Shopping Center to the east of the project area, and 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 USGS topographic map (see Figure 36), less detailed than earlier maps, indicates 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 of the eastern section of Kaka‘ako (see Figure 37), the new Ala Moana Shopping Center is completed and the Blaisdell Civic Center has replaced the grounds, house, and lagoon of the Ward Estate. The residential structures within the northern portion of Block N East have been replaced by an asphalt parking lot, while a single indeterminate structure is visible within the southern portion along Queen Street.

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 through 1990s, portions of eastern Kaka‘ako were used for various small businesses that existed in warehouses, along with parking lots, as shown on a 1982 aerial photograph (see

Figure 38). 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 Block N East 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 among the last areas of urban Honolulu to be built on and developed, with many of the roads in the area not being constructed until World War II.

2.2 **Previous Archaeological Research**

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 et al. 1987). In his report on the survey of O‘ahu sites conducted in 1930, 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 3.1.2), 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]

Prior archaeological studies have been conducted within portions of the redesigned Block N East project area—including the Honolulu Authority for Rapid Transportation’s (HART) Honolulu Rapid Transit Project (HRTP) City Center AIS and supplemental AIS (Hammatt 2013; Humphrey et al. 2015), and portions of the AIS studies for HHC Block I (Sroat et al. 2015) and Block M (Hawking et al. 2015). Several additional archaeological investigations have been conducted immediately adjacent to Block N East project area. Figure 39 shows the locations of previous archaeological investigations in relation to the redesigned Block N East project area. Figure 40 shows the locations of documented historic properties and burials. The results of archaeological investigations are summarized in Table 1 and the following text.

2.2.1 Ward Village Phase II (Ward Theaters)

In 2000, CSH performed archaeological monitoring for Victoria Ward, Limited at the site of the Ward Village Phase II (Ward Theaters) construction project in Kaka‘ako (Winieski and Hammatt 2001). This project area is located adjacent to Block I and is bounded by Auahi Street to the south and Kamake‘e Street to the east. The theater building’s construction did not include subsurface structures (e.g., underground parking, businesses, storage); instead, the building is supported by numerous foundation piles. Pile cap foundation installation involved excavation of 4 by 4 m areas, 130 cm deep. Trenching, typically less than a meter deep, was also required for

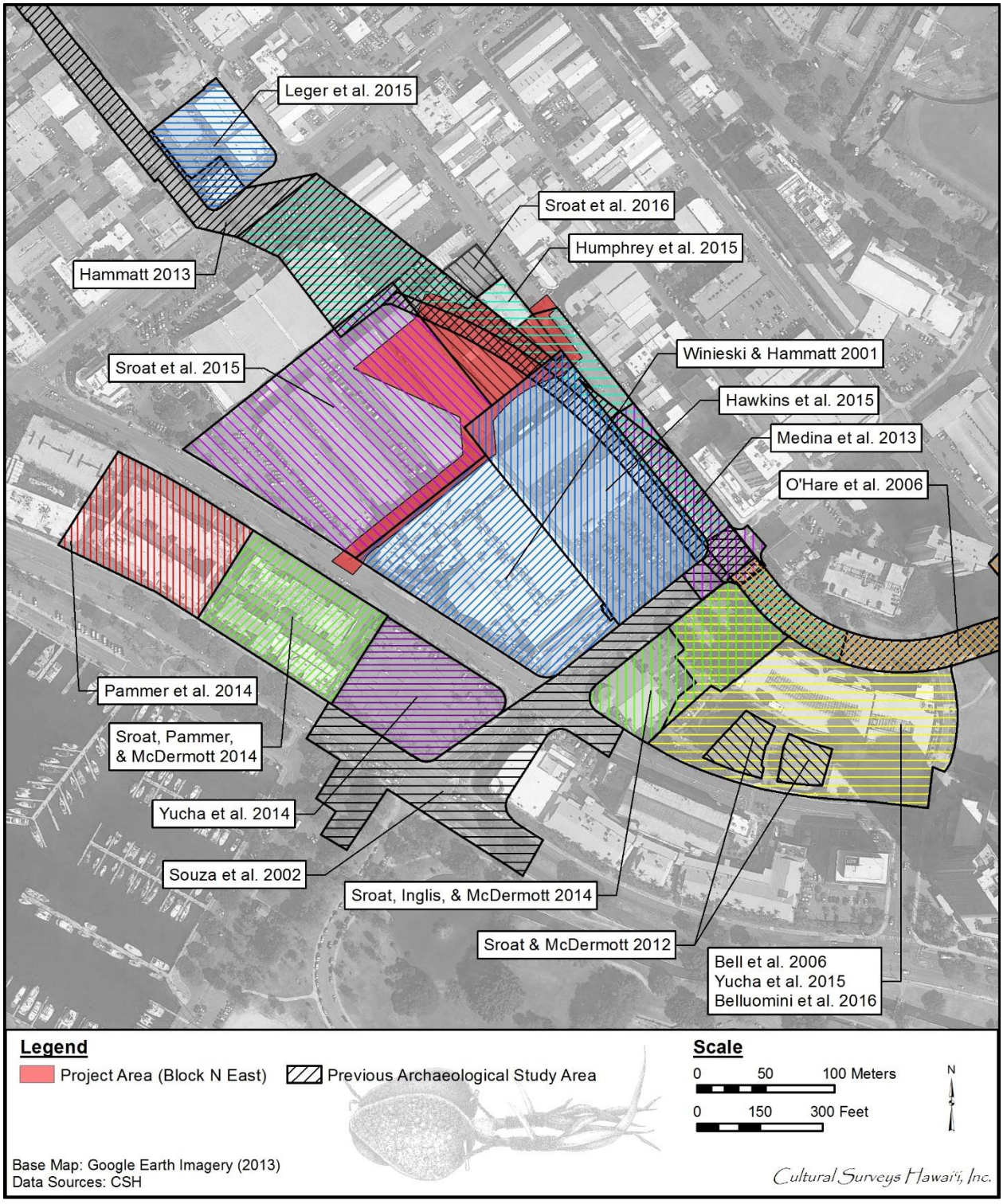

Figure 39. Previous archaeological studies within and surrounding the Block N East project area

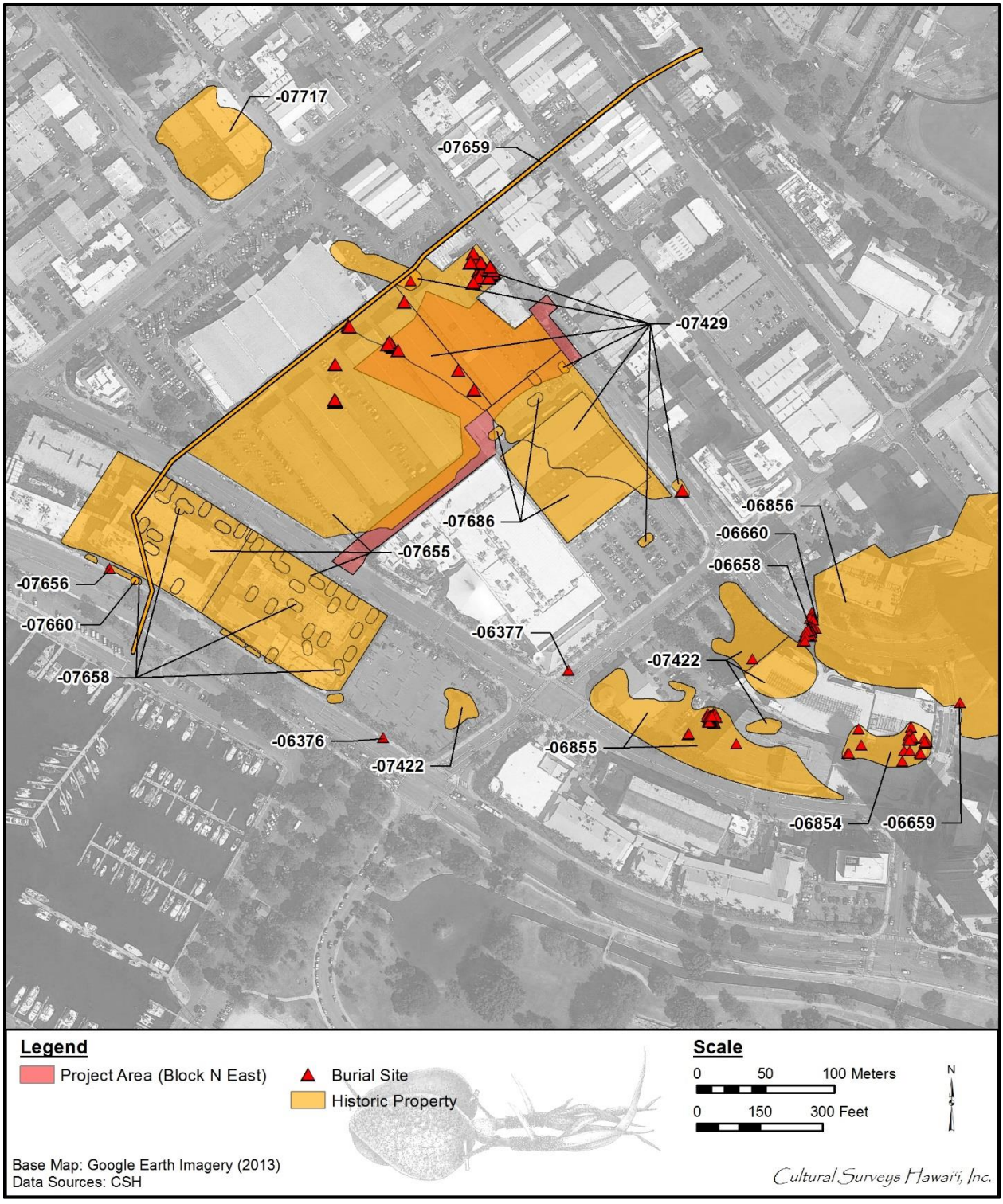

Figure 40. Previous archaeological sites in the vicinity of the project area

Table 1. Previous Archaeological Studies in the Vicinity of the Project Area

Reference	Location	Type of Study	Results (SIHP # 50-80-14****)
Winieski and Hammatt 2001	Ward Theaters	Archaeological monitoring	No burials or cultural deposits found; buried A horizon documented within pile caps in northwest and southeast corners of project area
Souza et al. 2002	Kaka‘ako ID-7 on Kamake‘e and surrounding streets	Archaeological monitoring	Three disturbed pre-Contact burials recorded (SIHP #s -6376, -6377, -6378); buried A horizon documented in seven of ten profiles
Bell et al. 2006	Victoria Ward Village Shops	Archaeological inventory survey	Identified three historic properties in 86 test trenches: 1) SIHP # -6854, subsurface cultural layer/activity area remnant with five Native Hawaiian burials; 2) SIHP # -6855, activity area remnant comprised of pronounced subsurface traditional Hawaiian cultural layer and six Native Hawaiian 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 in Queen St	Archaeological monitoring	Three historic properties documented: 1) SIHP # -6658, a cemetery comprised of 28 historic burials; 2) SIHP # -6659, two isolated disturbed burials; and 3) SIHP # -6660, a historic trash pit
Sroat and McDermott 2012	Victoria Ward Village Shops	Supplemental archaeological inventory survey	Five test excavations within or adjacent to SIHP # -6855 substantiated the Bell et al. (2006) extrapolated boundaries of this cultural layer; no additional finds identified
Hammatt 2013	Honolulu High-Capacity Transit Corridor–City Center (Section 4)	Archaeological inventory survey	One historic property documented in the vicinity of Block N East, SIHP # -7429, consisting of a culturally enriched A horizon with pit features overlying Jaucas sand; included an isolated human skeletal element within the A horizon

Reference	Location	Type of Study	Results (SIHP # 50-80-14****)
Medina et al. 2013	Queen and Kamake‘e St traffic signal	Archaeological monitoring	No historic properties noted within existing utility trenches; isolated in situ pockets of natural calcareous sand observed below fill layers
Pammer et al. 2014	Ward Neighborhood Block B East (Ward Village Gateway)	Archaeological inventory survey	Identified five historic properties in 38 test excavations: 1) SIHP # -7655, subsurface salt pan remnants; 2) SIHP # -7656, human skeletal remains; 3) SIHP # -7658, historic buried surfaces; 4) SIHP # -7659, an historic water channel; and 5) SIHP # -7660, an historic fill layer
Sroat, Inglis, and McDermott 2014	Ward Neighborhood Block K	Archaeological inventory survey	Identified portions of two historic properties in 35 test excavations: 1) SIHP # -6855, subsurface cultural deposits; and 2) SIHP # -7422, a burned trash layer; majority of project area contained modern developed land surface, fill layers, and hydraulic (dredged) fill overlying remnant buried A horizon or organic-rich peat material, Jaucas sand, and gleyed marine sandy clay
Sroat, Pammer, and McDermott 2014	Ward Neighborhood Block C West (Ward Village Gateway)	Archaeological inventory survey	Identified two historic properties in 36 test excavations: 1) SIHP # -7655, subsurface salt pan remnants; and 2) SIHP # -7658, historic buried surfaces
Yucha et al. 2014	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; no cultural material or features observed
Hawkins et al. 2015	Ward Neighborhood Block M	Archaeological inventory survey	Identified portions of two historic properties in 68 test excavations: 1) SIHP # -7429, subsurface cultural deposits, consisting of two discrete cultural deposits, and associated features; and 2) SIHP # -7686, twentieth century commercial infrastructure remnants
Humphrey et al. 2015	HRTP (City Center)	Supplemental archaeological inventory survey	Identified additional components of SIHP # -7429 in 15 test excavations, including three pit features and a human burial

Reference	Location	Type of Study	Results (SIHP # 50-80-14****)
Leger et al. 2015	Ward Neighborhood Block O	Archaeological inventory survey	Identified one historic property in 27 test excavations: SIHP # -7717, pre- to post-Contact subsurface residential and commercial surfaces; project area contained modern developed land surface and fill layers overlying two sequences of natural layers: 1) loamy sand A horizon, Jaucas sand, and natural wetland or marine deposits; and 2) wetland A horizon over natural wetland or marine deposits
Sroat et al. 2015	Ward Neighborhood Block I	Archaeological inventory survey	Documented portions of three previously identified historic properties in 88 test excavations: 1) SIHP # -7655, subsurface historic salt pan remnants, including cultural deposits and a human burial site; 2) SIHP # -7429, subsurface cultural deposits, consisting of two discrete cultural deposits, including associated features, burial sites, and dislocated human remains; and 3) SIHP # -7659, the Ward Estate concretized *‘auwai* (irrigation canal)
Yucha et al. 2016; Belluomini et al. 2016	Victoria Ward Village Shops	Archaeological monitoring	Further documented four previously identified historic properties: SIHP #s -6854 and -6855, subsurface cultural deposits/activity area remnants; SIHP # -6856, Kolowalu Fishpond sediments; and SIHP # -7422, a burnt trash fill layer; within SIHP # -6854, documented an additional 23 human burials and 31 features; within SIHP # -6855, documented an additional 31 human burials and eight features
Sroat et al. 2016	HHC Original Block N East	Archaeological inventory survey	Identified additional portions of two historic properties in 35 test excavations: 1) SIHP # -7429, subsurface cultural deposits, consisting of two discrete cultural deposits, and associated features with a cluster of pre-Contact and post-Contact human burials; and 2) SIHP # -7686, twentieth century commercial infrastructure remnants

utility installation. No pre-Contact materials, historic cultural materials, or human burials were encountered during the Ward Village Phase II (Ward Theaters) monitoring program.

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, overlying hydraulic (i.e., pumped dredged material) clay fill, overlying the decomposing coral shelf.

At the northwest corner of the Ward Theaters project area, near the western boundary of the current Block N East project area, a few of the pile cap excavations exposed an in situ A horizon beneath fill materials, shown in a profile and a photograph (Figure 41 and Figure 42). The silty sand A horizon overlies a light brownish gray sandy clay, which was interpreted as pond sediments. An in situ sand A horizon was also present above a sterile calcareous sand layer in a 50-m long shallow trench dug for associated telephone cable conduits, just *mauka* of the Ward Theaters project area (within the western portion of the current Block M project area [Hawkins et al. 2015]). In this trench the A horizon and sand layer were continuous, apparently not disturbed by previous construction.

At the southeast corner of the Ward Theaters project area, near the intersection of Auahi and Kamake‘e streets, an A horizon and sand layer are also present, however, they are discontinuous, having been disturbed by previous construction activities and replaced with backfill. It is near this area that a human burial was encountered within the sand matrix during the adjacent Kaka‘ako Improvement District 7 project (SIHP # -6377, Souza et al. 2002, refer to Table 1) (see Figure 41).

2.2.2 Honolulu High-Capacity Transit Corridor Project/ Honolulu Rapid Transit Project (City Center)

Between November 2011 and February 2013, CSH conducted an archaeological inventory survey of the Honolulu Authority for Rapid Transportation’s (HART) Honolulu High-Capacity Transit Corridor project (HHCTCP—now known as the Honolulu Rapid Transit Project [HRTP])—City Center, which extended from Kalihi Stream in the west to 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; however, only one historic property was documented within the vicinity of HHC’s Block N East, SIHP # -7429 (see Figure 39 and Figure 40). SIHP # -7429 was identified as a culturally enriched buried A horizon overlying Jaucas sand, exhibiting both pre- and post-Contact land use. Seven archaeological features were identified, consisting of six pits (two identified as possible post molds) and one isolated human cranial fragment. Stratigraphy documented within and immediately adjacent to the current Block N East project area showed interspersed areas of wetland (peaty clay) and sand dunes (A horizon developed within calcareous sand).

A 2014 supplemental AIS of HART’s HHCTCP (now termed the HRTP) City Center project area, from the location of the Kaka‘ako Station to just east of Kamake‘e Street (Figure 43), further identified and documented SIHP # -7429 within two cultural deposits (Humphrey et al. 2015). The cultural deposits consist of an in situ loamy sand A horizon and an overlying historic fill deposit comprised of redeposited local sediments. These two cultural deposits are designated Component 1 (culturally enriched historic fill) and Component 2 (culturally enriched natural A horizon). Four additional features of SIHP # -7429 were identified, including a fire pit feature within Component 2 and a flexed human burial within the underlying natural Jaucas sand. Stratigraphy consisted of interspersed sand and wetland deposits.

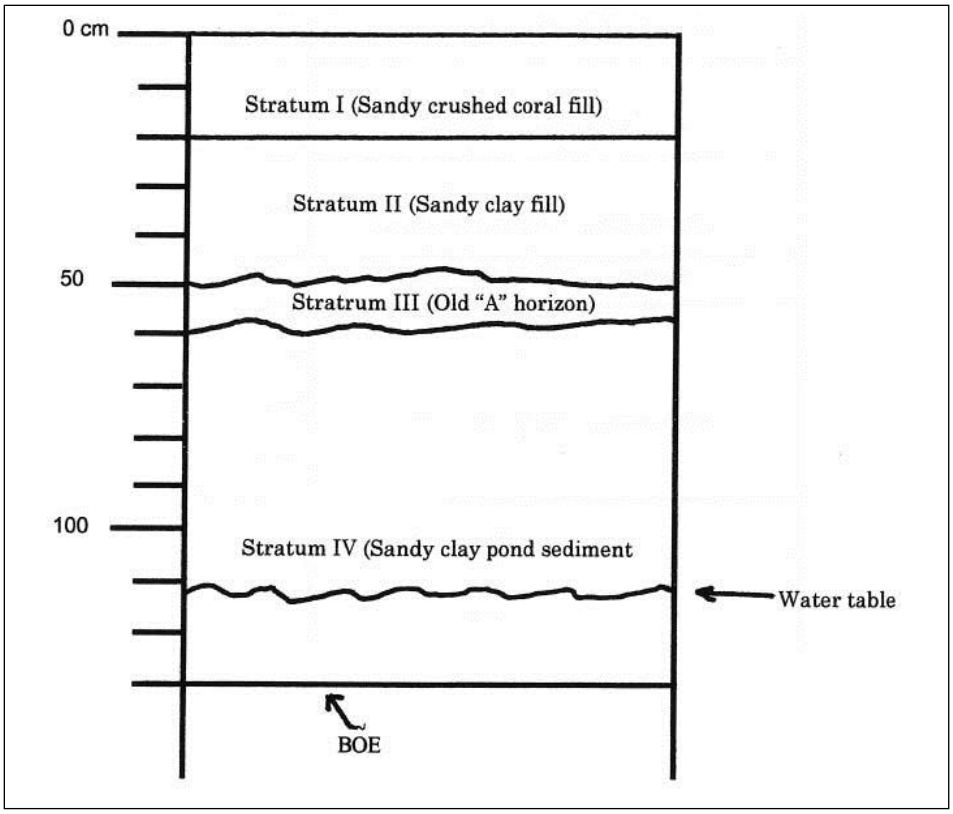

Figure 41. Profile of pile cap excavation in northeast corner of Ward Village Phase II (Ward Theaters) footprint showing old A horizon and pond sediment (Winieski and Hammatt 2001)

Figure 42. Photograph of pile cap trench showing old A horizon (dark stratum) capping sandy clay pond sediments (Winieski and Hammatt 2001)

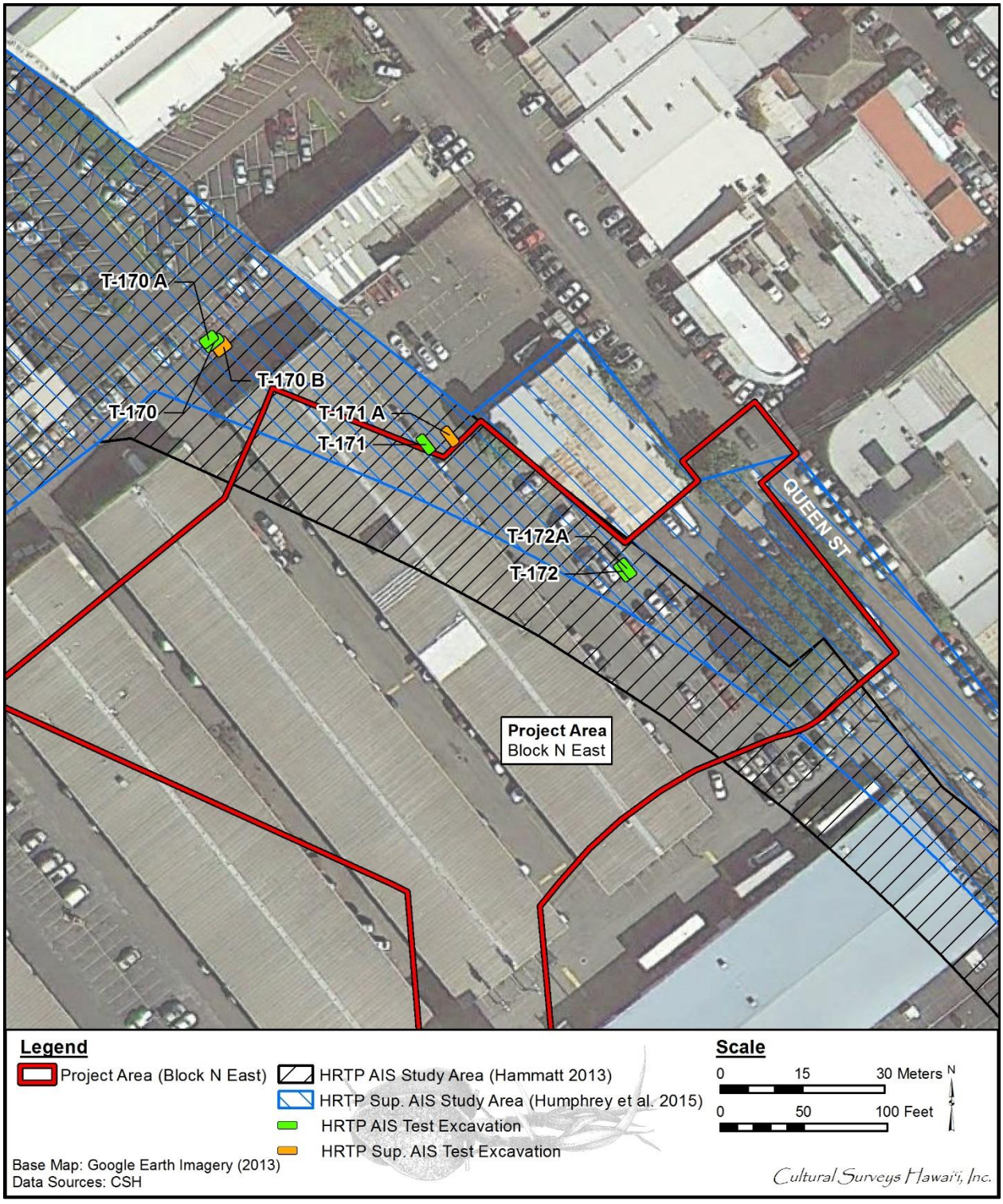

Figure 43. HART’s HRTP AIS and supplemental AIS test excavations is the vicinity of the current Block N East project area.

2.2.3 Ward Gateway Project (Blocks B East and C West)

Between 14 April and 9 June 2014, CSH conducted archaeological inventory surveys of Block B East (Pammer et al. 2014) and Block C West (Sroat, Pammer, and McDermott 2014), contiguous project areas, which together comprise the proposed Ward Village Gateway project. CSH completed 38 test excavations within Block B East and 36 test excavations within Block C West, and documented components of five historic properties (Figure 44).

The modern developed land surface consisted of asphalt parking lot surfaces and concrete commercial floors associated with the Ward Warehouse commercial complex, as well as various layers of fill. Beneath these modern layers, CSH documented previous twentieth century development land surfaces (SIHP # -7658) consisting of asphalt, concrete, coral and tar pavement, and oil-rolled surfaces (see Figure 44).

Underlying the modern and historic surfaces and fill layers were extensive reclamation fill deposits, utilized to in-fill low-lying wetland areas and create a dry, level land surface. The reclamation fill deposits consisted of crushed coral and hydraulic-dredged marine clays. AIS results show reclamation fill throughout the Gateway project area with the exception of the *makai*-most portions. Background research indicated land reclamation activity within the Block B East and C West project areas occurred sometime between 1919 and 1927, following allocation of territorial funds for the dredging of Kewalo Basin in 1919.

Underlying the reclamation fill deposits, historic salt pan remnants were documented (SIHP # -7655) (see Figure 44). The historic salt pan remnants were located within areas of natural low-lying wetlands, which had been converted to salt pan basins enclosed by man-made berm structures. The berm structures are comprised of archaeosediments believed to be marine sandy clay deposits previously located within or in the immediate vicinity of the project area. The salt pan beds consisted of the natural underlying wetland sediments covered with very thin organic laminations, likely associated with salt production methods.

Two features associated with the historic salt pans (SIHP # -7655 Features 1 and 2) were identified. Feature 1 consisted of naturally tabular limestone boulders, placed to create a relatively level surface over the natural marine sandy clay. The limestone boulders were determined to be associated with the land altering events connected to the historic salt pans. Feature 2 consisted of limestone boulders integrated into a man-made berm adjacent to a small section of peaty pond sediments.

Along the *makai* edge of the Gateway project area, the stratigraphy changed to disturbed and reworked Jaucas sand and coastal marine sandy clay sediments overlain by various fill deposits and crisscrossed by utility lines. Much of the disturbance to the natural sediments in this area appeared to be due to the surrounding urban development including landscaping, roadway improvements, and various construction events.

The western portion of the Ward Village Gateway project (Block B East) contained three additional historic properties (see Figure 44). SIHP # -7656 consisted of a single human cranial fragment encountered within disturbed sand along the *makai* boundary of the project area. SIHP # -7659 consisted of the concretized and rerouted Ward Estate *‘auwai*. SIHP # -7660 consisted of an historic trash fill deposit located within an abandoned storm drain box along the *makai* boundary of the project area. The historic trash included bottles, ceramic, metal fragments, and boat trash likely related to the nearby fishing and tuna cannery industry.

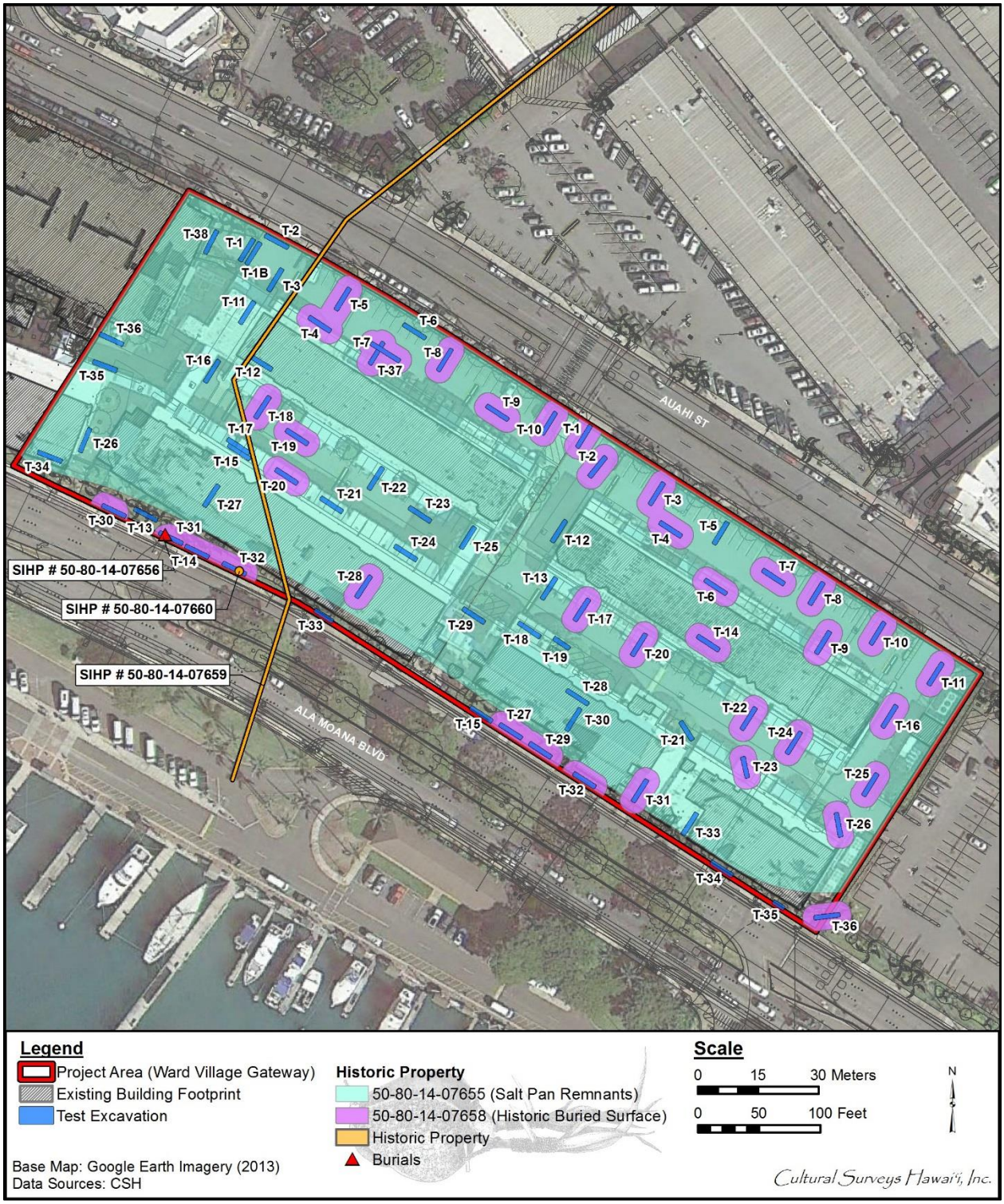

Figure 44. Aerial photograph showing the distribution of historic properties identified within the Block B East and Block C West (Ward Village Gateway) project areas (Google Earth 2013)

2.2.4 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 Block N East project area within a parking lot at the intersection of Ala Moana Boulevard and Kamake‘e Street (Yucha et al. 2014). CSH documented 41 test excavations within the project area, identifying a single historic property comprised of a burned trash layer located near the corner of Kamake‘e and Auahi streets (SIHP # -7422) (Figure 45). Stratigraphy within the project area was largely consistent. A deposit of hydraulic fill material associated with the reclamation infilling of Kaka‘ako during the 1913 to 1930 period was found within the north, west, and south portions of the project area. Beneath the fill layers, a majority of the project area (35 test excavations) contained Jaucas sand. Other than the burned trash layer, no cultural material or features were observed.

2.2.5 Ward Neighborhood Block M Project

Between 13 January and 1 June 2014, CSH conducted an archaeological inventory survey of the Block M project, a component of HHC’s Ward Neighborhood Master Plan (Hawkins et al. 2015). The Block M project area is located at the western corner of the intersection of Queen and Kamake‘e streets, and is bounded to the southwest by Ward Theaters and to the northwest by Ward Industrial Center. CSH excavated 68 test excavations and documented portions of two historic properties within the Block M project area: 1) a portion of SIHP # -7429, consisting of two cultural deposits and associated features; and 2) SIHP # -7686, consisting of twentieth century commercial infrastructure remnants.

SIHP # -7429 was previously identified during HART’s HRTP (City Center) AIS (Hammatt 2013 and Humphrey et al. 2015, see above) and its boundaries expanded during the Block M AIS. Approximately 150 m southeast of the previously identified SIHP # -7429 subsurface cultural deposits, cultural deposits (similar in soil color, texture, and material content) and associated features were encountered in the Block M project area. As previously documented, SIHP # -7429 within Block M consisted of cultural deposits along the *makai* edge of a continuous sand dune abutting the Kaka‘ako coastal wetlands. These were included as part of SIHP # -7429 based on similar cultural content, depositional history, and spatial continuity.

The Block M AIS documented SIHP # -7429 within 13 test excavations (T-2, T-4, T-5, T-10, T-15, T-23, T-31, T-43, T-48, T-64, T-65, T-66, and T-68) (Figure 46). Seven test excavations contained associated features, SIHP # -7429 Features 8–19. Two discrete cultural deposits were identified, consisting of a very thin, culturally enriched historic sand and soil fill deposit (Component 1) overlying a buried sandy loam A horizon (Component 2). The overlying historic deposit was not originally identified by Hammatt (2013); however, re-inspection 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).

SIHP # -7429 Component 1 consists of a layer of mixed sand and soil that contains historic artifacts, faunal material (including a modified dog bone), shell midden, charcoal, milled wooden posts, and irrigation features. This layer 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 overlies, and in most cases, truncates the buried

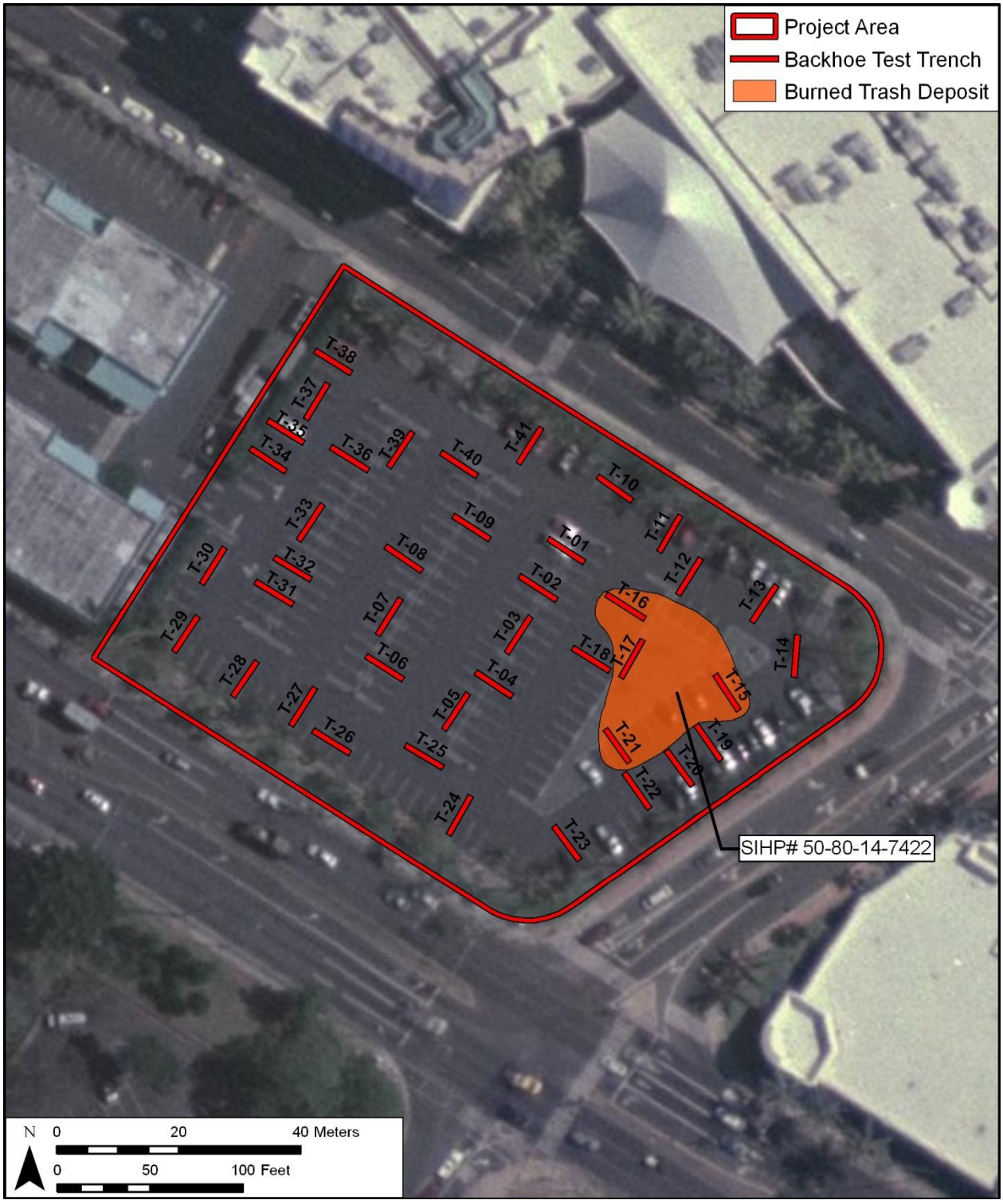

Figure 45. Aerial photograph (Google Earth 2013) from the Yucha et al. (2014) AIS report showing the Ward Neighborhood Block C project area at the corner of Ala Moana Blvd. and Kamake‘e Street, with its AIS test excavations and the boundaries of SIHP # -7422

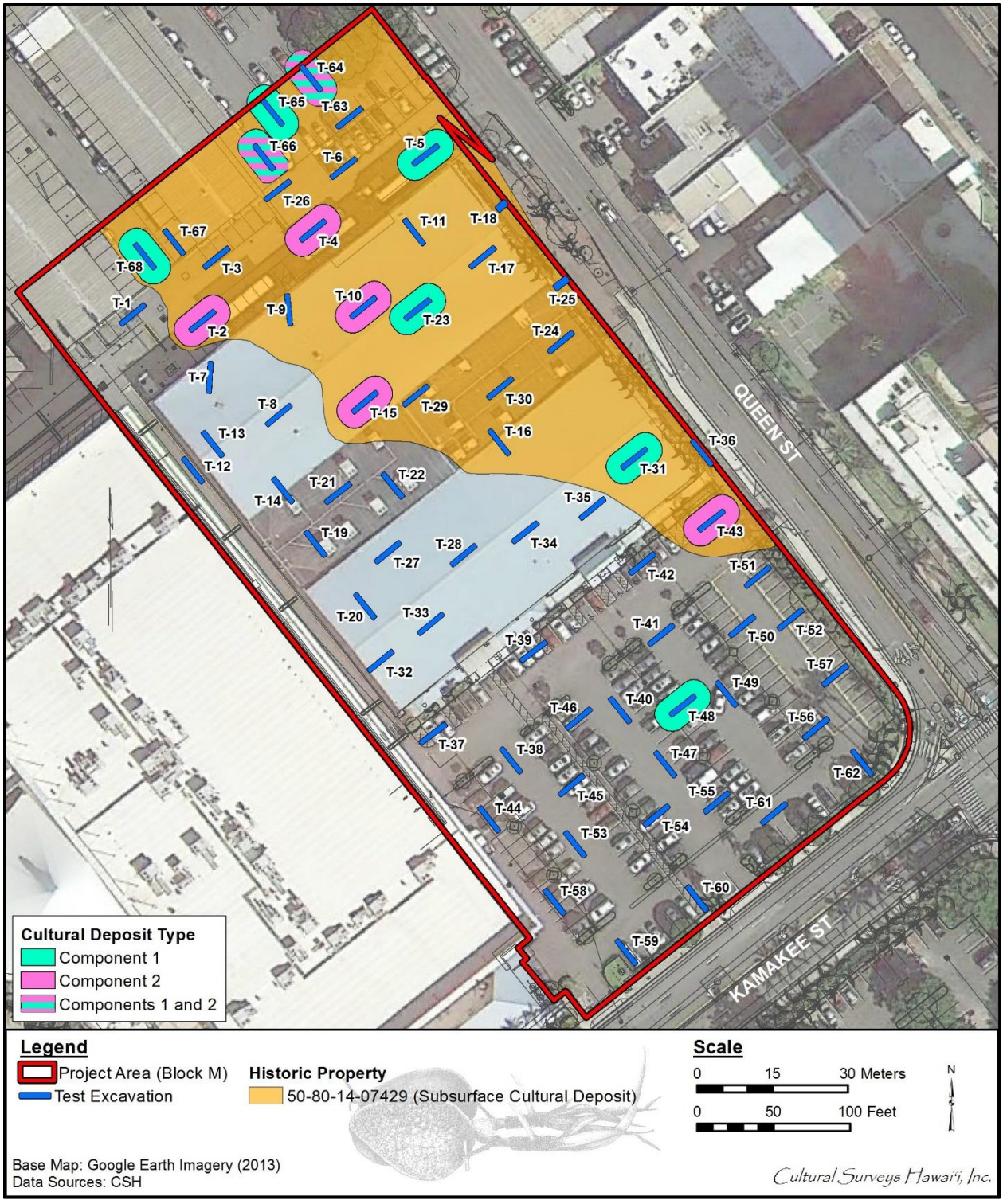

Figure 46. Figure from Hawkins et al. (2015) AIS showing the location of SIHP # -7429 documented within the Block M project area (Google Earth 2013)

natural A horizon (Component 2). SIHP # -7429 Component 2 consists of a buried natural A horizon developed within calcareous Jaucas sand that contains both traditional Hawaiian and historic cultural deposits consisting of marine midden, charcoal, faunal material, glass and ceramic fragments, a wooden die, and miscellaneous historic artifacts. The 12 features associated with SIHP # -7429 originated from both components. SIHP # -7429 Features 8–19 consisted of pits for food preparation and consumption, pits of indeterminate function, two postholes, and two *‘auwai* (irrigation channel).

SIHP # -7686 was a newly identified historic property consisting of buried historic commercial infrastructure remnants associated with development during the mid- to late twentieth century. The subsurface commercial remnants, comprised of buried concrete surfaces, asphalt surfaces, associated base course layers, concrete footings and beams, and a cinder block structural remnant, were documented within 23 of the 68 AIS test excavations and were located within the central and northwest portions of the Block M project area (Figure 47). Based on aerial photographs and historic maps, three parallel warehouses were constructed within the project area sometime between 1939 and 1943 and remained in use until the 1990s when they were removed in order to build the current commercial building. The structural remnants documented during the Block M AIS corresponded with the locations of the ‘Ewa and central warehouses, as well as asphalt roadways located immediately northwest of the ‘Ewa warehouse (Figure 48). No structural remnants of the Diamond Head (southern) warehouse were identified during the Block M AIS and were likely completely removed during the 1990s.

2.2.6 Ward Neighborhood Block O Project

Between 14 April and 16 October 2014, CSH conducted an archaeological inventory survey of the Block O project, a component of HHC’s Ward Neighborhood Master Plan (Leger et al. 2015). The Block O project area is located at the *mauka*, north corner of the intersection of Ward Avenue and Halekauwila Street. The project area is bound to the west by a residential building, to the north by Ilaniwai Street, to the south by Halekauwila Street, and to the east by Ward Avenue. CSH excavated 27 test excavations and documented one historic property within the Block O project area: SIHP # -7717, consisting of subsurface residential and commercial surfaces (Figure 49, Figure 50, and Figure 51).

The modern developed land surface consists of asphalt parking lot surfaces and concrete commercial floors associated with the present commercial complex, as well as various layers of fill, including base course and landscaping fill.

Underlying the modern and historic surfaces and fill layers, were extensive reclamation fill deposits, utilized to in-fill low-lying wetland areas and create a dry, level land surface. All Block O test excavations contained reclamation fill. In some instances, these reclamation fill deposits also show evidence of having served as a stable living surface and contain cultural deposits and/or features; these were designated as part of SIHP # -7717.

SIHP # -7717 is composed of multiple buried residential and commercial surfaces and features located throughout the Block O project area. These buried surfaces and associated features evidenced residential (living) and commercial land use within Block O over an extended period of time. These buried commercial surfaces indicate a change in land use within the project area from residential to commercial sometime in the mid-twentieth century. The majority of the subsurface residential and commercial surfaces are a part of the numerous building events that took place

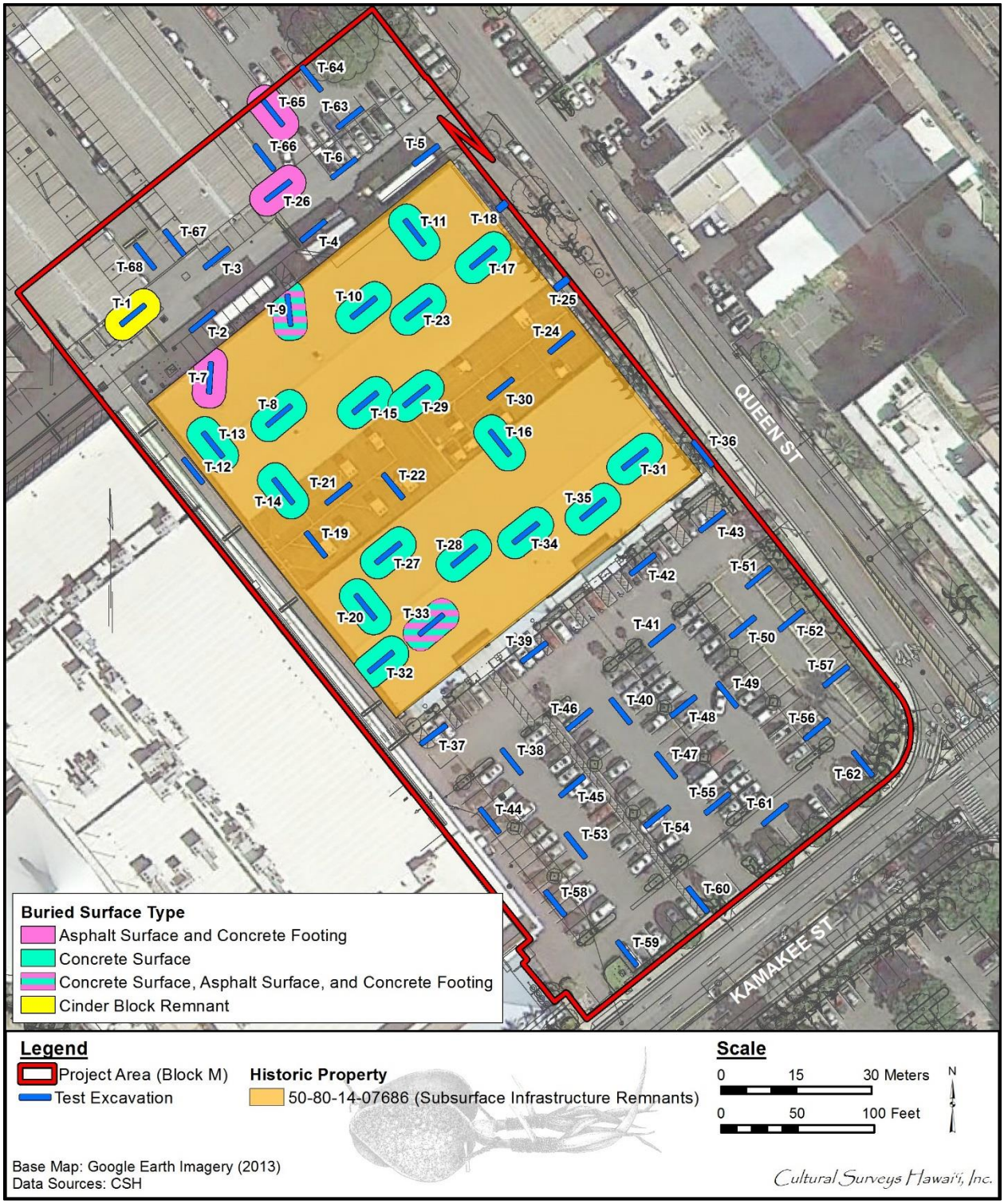

Figure 47. Figure from Hawkins et al. (2015) AIS showing the location of SIHP # -7686 documented within the Block M project area (Google Earth 2013)

Figure 48. 1952 aerial photograph showing three parallel warehouse structures within the Block M project area, in relation to a GIS overlay of AIS test excavations which documented SIHP # -7686, buried historic commercial structural remnants (UH SOEST)

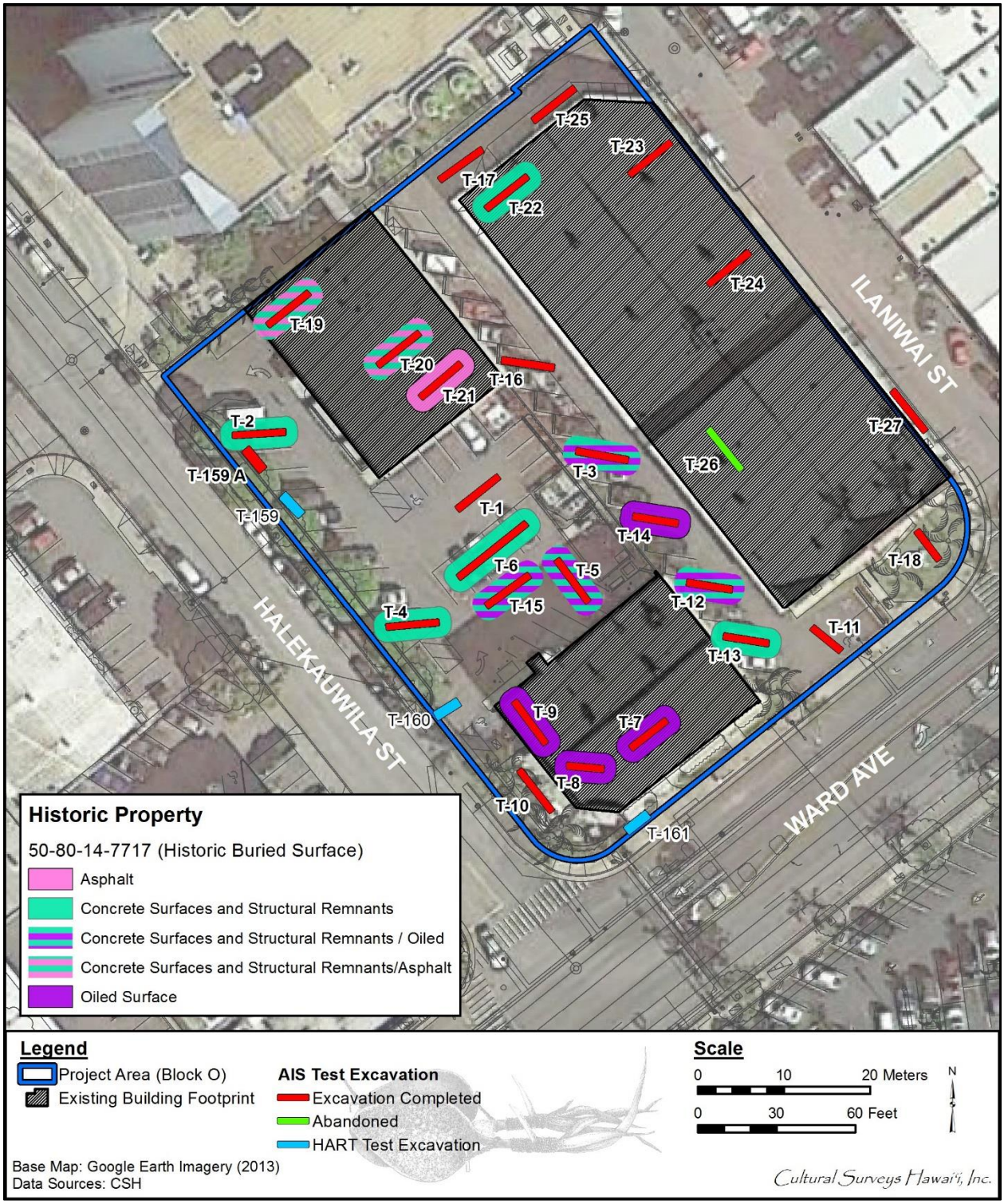

Figure 49. Figure from Leger et al. 2015 showing the extent of SIHP # -7717 buried commercial surfaces and infrastructure remnants documented within the Block O project area (Google Earth 2013)

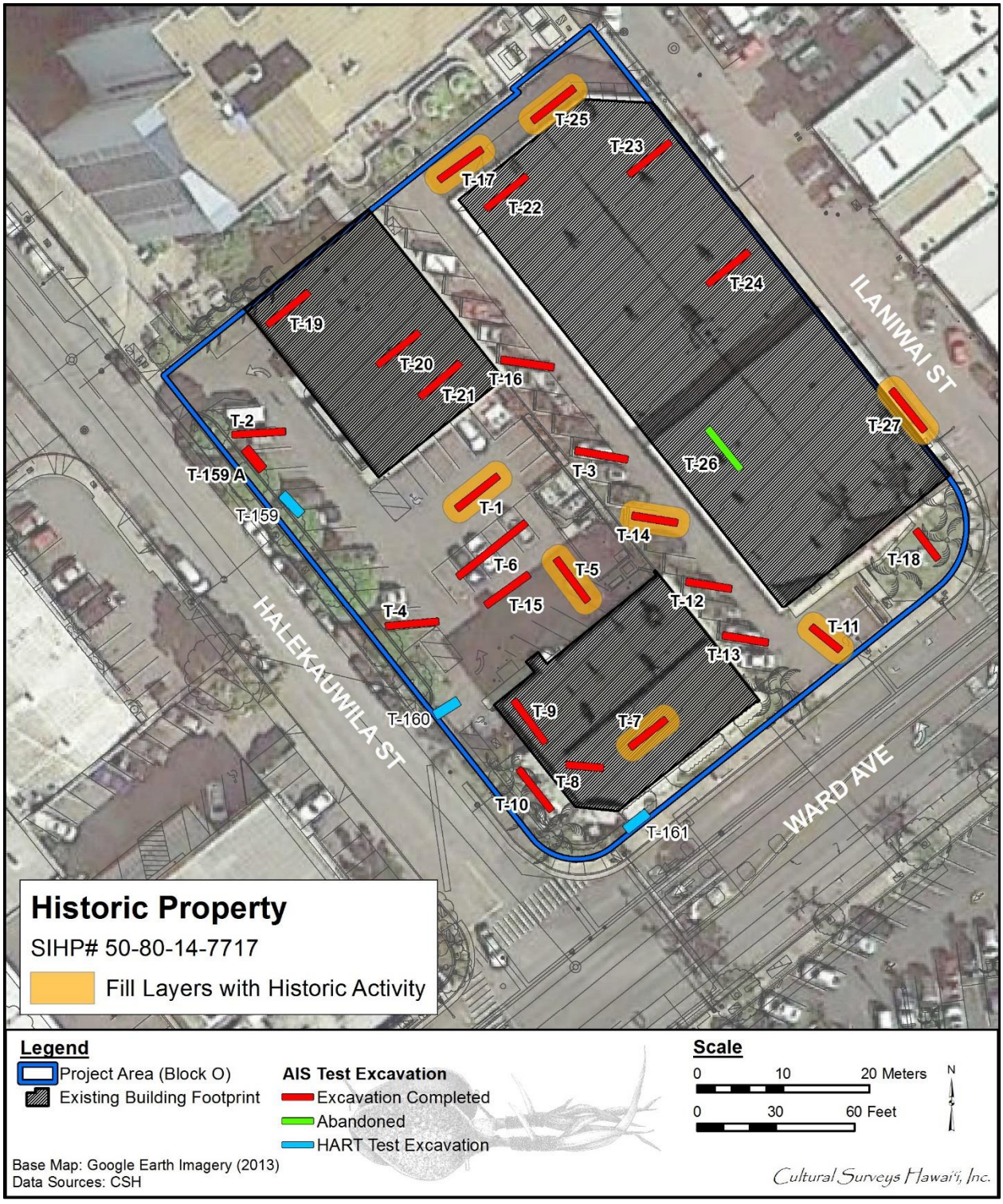

Figure 50. Figure from Leger et al. 2015 showing the extent of SIHP # -7717 historic living surfaces documented within the Block O project area (Google Earth 2013)

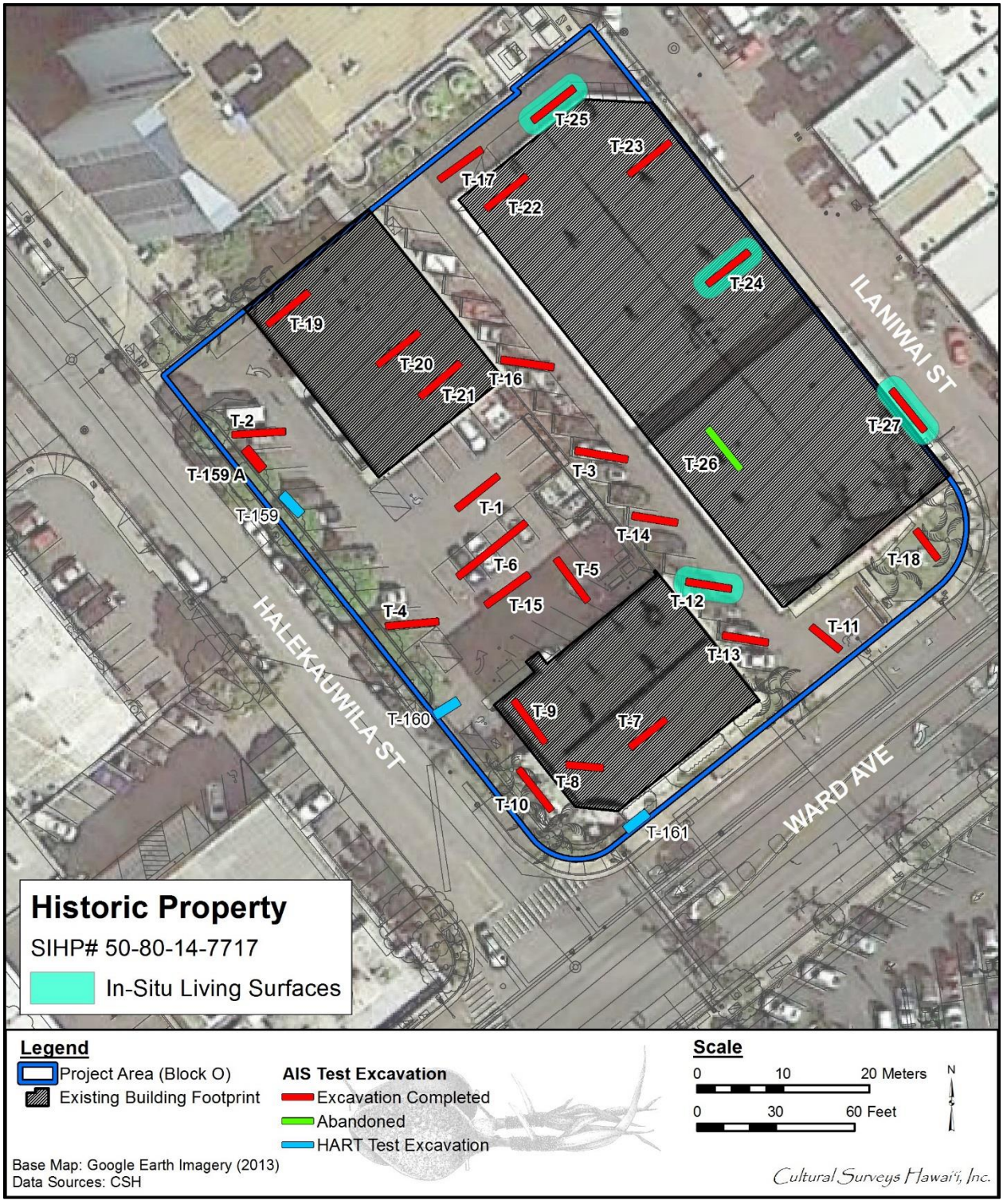

Figure 51. Figure from Leger et al. 2015 showing the extent of SIHP # -7717 in situ, natural land surfaces documented within the Block O project area (Google Earth 2013)

following the infilling associated with the Kewalo Reclamation project (1910–1914) and prior to the construction of the current standing architecture that is visible on aerial photographs by 1970.

2.2.7 Ward Neighborhood Block I

Between 17 March and 2 August 2014, CSH conducted an archaeological inventory survey of Block I, a component of HHC's Ward Neighborhood Master Plan area (Sroat et al. 2015). The Block I project area is located *mauka* of Auahi Street and is bound to the southeast by Ward Theaters and to the northwest by Ward Gateway Center.

CSH excavated 88 test excavations (Figure 52) and documented portions of the following three historic properties within the Block I project area: 1) SIHP # -7655, previously identified historic salt pan remnants; 2) SIHP # -7429, previously identified subsurface cultural deposits and Native Hawaiian burial sites; and 3) SIHP # -7659, the previously identified concretized Ward Estate *‘auwai* (irrigation channel).

Within Block I, the modern developed land surface consists of asphalt parking lot surfaces, associated base courses, and concrete commercial floors associated with the present commercial complex, as well as various layers of imported fill. Beneath these modern layers are crushed coral and hydraulic (dredged) reclamation fills, utilized to in-fill low-lying wetland areas and create a dry, level land surface. Background research indicates land reclamation activity within Block I occurred sometime between 1919 and the 1930s, following allocation of territorial funds for the dredging of Kewalo Basin in 1919. Two buried historic properties with multiple components, SIHP #s -7429 and -7655, were documented underlying the fill layers throughout the study area. Beneath these were natural terrestrial deposits (e.g., Jaucas sand) and/or wetland deposits (i.e., accumulated in a submerged or continually saturated environment) that often contained an O or A horizon at the upper boundary.

SIHP # -7429 is a subsurface cultural deposit consisting of two discrete strata and associated features including Native Hawaiian burial sites. SIHP # -7429 was previously identified during the HHCTCP (HRTP) (City Center) AIS (Hammatt 2013), and subsequently documented during the Block M AIS (Hawkins et al. 2015) and HRTP (City Center) supplemental AIS (Humphrey at al. 2015). Within Block I, SIHP # -7429 extends across the *mauka* boundary of the project area, along the *makai* edge of a continuous sand dune deposit that abuts the Kaka‘ako coastal wetlands, bridging between the two previously identified areas.

Within Block I, SIHP # -7429 is documented below land reclamation fill within 19 test excavations and is comprised of two discrete cultural deposits, Components 1 and 2. Component 1 is comprised of multiple, culturally enriched, historic sandy fill deposits; composed of locally procured and redeposited sediment, including Jaucas sand, redistributed A horizon material, and clayey wetland sediment. These deposits were likely used to modify, or level, the natural topography, and based on the presence of associated pit features, these layers also served as a land surface for a period of time. Component 1 historic fill deposits contained historic debris, faunal material (including marine midden), charcoal, fire-altered rock, coconut and *kukui* nut shells, traditional Hawaiian artifacts, and human skeletal remains. Component 2 is a culturally enriched buried natural A horizon developed within natural calcareous Jaucas sand. This culturally enriched A horizon was consistently documented below Component 1 and/or culturally sterile historic fill deposits or, rarely, reclamation fill. The overlying layers often truncated the A horizon.

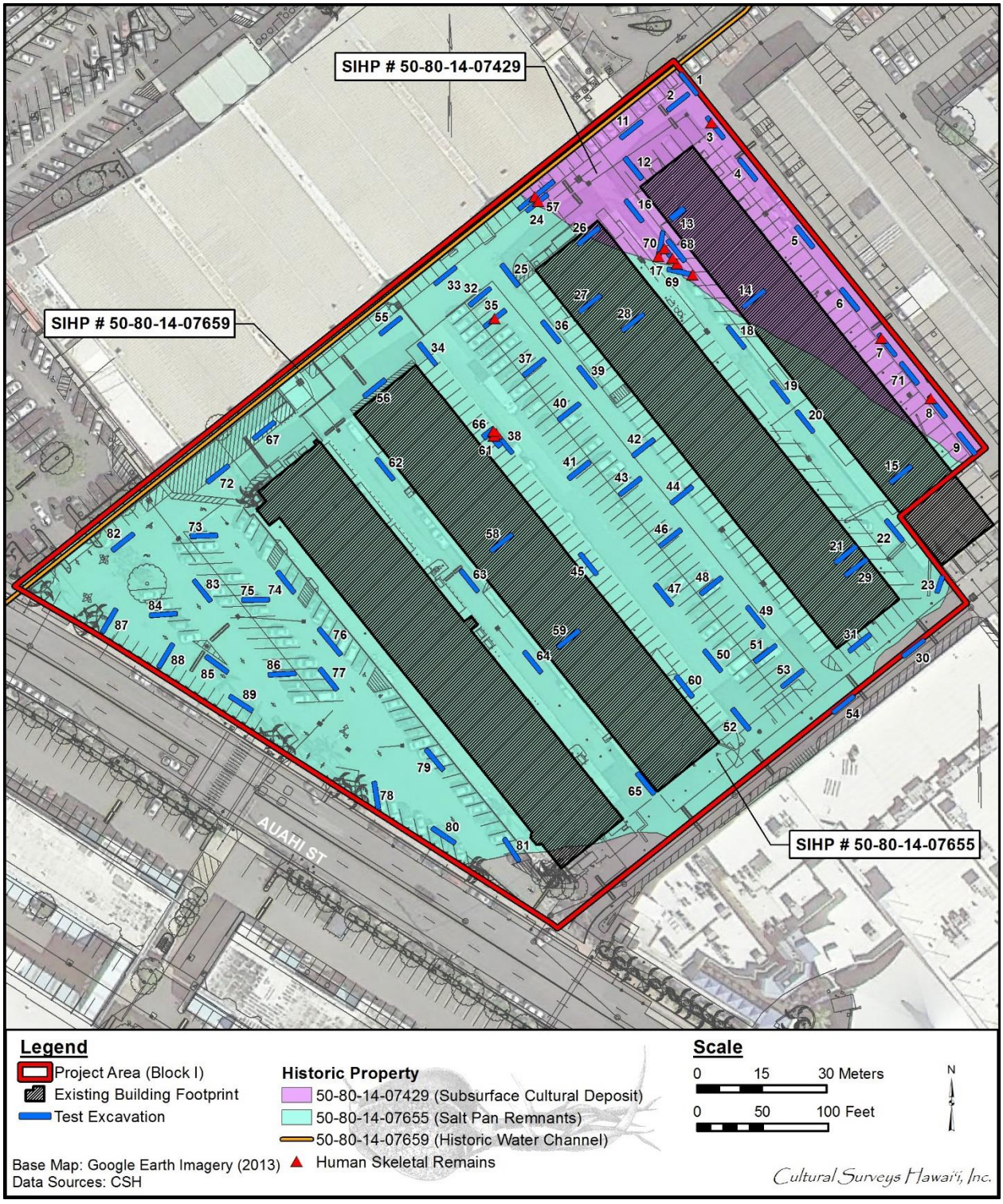

Figure 52. Aerial photograph showing the location of the AIS test excavations and the boundaries of the three historic properties documented within the Block I project area (Google Earth 2013)

Component 2 contained historic debris, faunal material (including marine midden), charcoal, fire-altered rock, and traditional Hawaiian artifacts.

CSH documented 62 features associated with SIHP # -7429 within the Block I project area. These features consisted of Native Hawaiian burial sites (comprised of both historic coffin burials and pre-Contact or early post-Contact flexed burials, previously disturbed skeletal fragments in fill sediments, and a secondary bundle burial—see Figure 52), a concentration of *‘ili‘ili* (small gravel often used for paving), midden pits, post molds, fire pits, a cobble hearth, a grouping of manuports, a cat burial, and pits of indeterminate function. Twenty-nine of these features were associated with Component 1 historic fill layers, and 33 were associated with the Component 2 natural A horizon.

SIHP # -7655, buried salt pan remnants, was previously documented by Pammer et al. (2014) and Sroat et al. (2014) within the Ward Village Gateway project area (HHC Blocks B East and C West), located immediately *makai* of the Block I project area, where CSH documented an extensive, interconnected system of man-made linear structural features (berms) and low-lying, level wetland sediments overlain by thin organic laminations (salt pan beds). Based on the magnitude of this structural complex and the significant earth-moving activity that would have been required to construct its component features, the complex was interpreted to represent historic commercial salt production activity.

Within the Block I portion of SIHP # -7655, the man-made berm structures are composed of relatively homogenous sediments, consisting of medium-grained sandy clay, loamy clay sand, or slight variations thereof. The color of the berm sediment ranges slightly from very pale brown to grayish brown to light gray, and is readily distinguished from the surrounding sediments. The salt pan bed deposits associated with SIHP # -7655 consist of thinly to thickly bedded (1–8 cm thick), laminated organic deposits, with the laminated micro-layers observable as variations of color, sediments, and texture.

The combined results of the Block I AIS and the Ward Village Gateway AIS (Blocks B East and C West) indicate the presence of three types of salt pan liners. Type 1 was documented within the *makai* salt pan beds of Blocks B East and C West. Type 2 salt pan bed lining deposits were encountered within the *makai* portion of the Block I study area. These deposits have an average thickness of 5–8 cm and consist of highly fibrous, laminated organic material. Type 3 salt pan bed lining deposits were encountered within the central and *mauka* portions of Block I, and consist of a dense layer of finely laminated, humic material with an average thickness of 5–7 cm. The laminations are comprised of intact leaf structures, clay, and decomposing organic material.

SIHP # -7659 is the subsurface concrete channel associated with the Ward Estate concretized *‘auwai*. While this historic property was not documented in any of the Block I test excavations, it is visible at ground surface along the northwest boundary of the study area, traveling from *mauka* to *makai*. The Ward Estate *‘auwai* is a continuous feature running from Kapi‘olani Boulevard into Kewalo Basin. SIHP # -7659 was initially identified during the Block B East AIS (Pammer et al. 2014). The concretized Ward Estate *‘auwai* was constructed in the early twentieth century to replace the existing Old Plantation *‘auwai,* prior to land reclamation activity within the Ward Estate lands.

Within the Block I project area, CSH documented skeletal remains associated with SIHP #s -7429 and -7655 (see Figure 52). Based on the SHPD’s ethnicity determinations and Hawai‘i State burial law definitions (HRS §13-300-2) these are Native Hawaiian burial sites. Human skeletal

remains associated with SIHP # -7429 were identified within eight test excavations in the *mauka* portion of Block I, including in situ burials, exhumed burials, and isolated, previously disturbed remains. An in situ burial cluster was located in T-17 and two adjacent test excavations, T-69 and T-70. Isolated, previously disturbed human skeletal fragments were located in T-3, T-7, T-8, T-24, T-35, and T-57. Possible disturbed coffin remnants consisting of a wood fragment with metal hardware were located in T-13, however, no human remains were identified; the remnants may also represent a wood box. These are summarized below in Table 2.

Human skeletal remains associated with SIHP # -7655 were identified within four test excavations in the central portion of Block I, consisting of an in situ secondary bundle burial located in T-38, T-61, and T-66. These three test excavations were immediately adjacent to each other with the burial located at the intersection of the three trenches. A worked human bone tool was located in T-35 within a pit feature. These are summarized below in Table 3.

Table 2. SIHP # 50-80-14-7429 Previously Identified Native Hawaiian Burial Sites within Block I

Fea. #	Provenience	Depth (mbs)	Cultural Deposit Component	Description	Content/Elements	Interpreted Age
23	T-3; Str. IIIb	0.7	1	Disarticulated human skeletal remains	Lunate and humerus fragment	Pre- to early post-Contact
25	T-7; Str. IV	0.7	1	Probable disarticulated human skeletal remains	Long bone fragment	Pre- to early post-Contact
26	T-8; Str. VIa	0.39–0.52	2	Concentration of *‘ili‘ili* and disarticulated human skeletal remains	Ulna portion and tiny bone fragments, approximately 65 *‘ili‘ili*, and two pieces of charcoal	Pre- to early post-Contact
53	T-13; Str.IIIb	0.79-0.83	1	Possible burial pit; contains remnant wood box or coffin with metal hardware; no human remains identified	Remnant of wood box or coffin with metal hardware	Post-Contact
57	T-17; Str. II	0.4–0.65	1	Human burials	Adult and newborn burials, coffin remnants, and two buttons	Post-Contact

Fea. #	Provenience	Depth (mbs)	Cultural Deposit Component	Description	Content/Elements	Interpreted Age
58a	T-17; Str. IIIa	0.65	2	Original burial pit; underlying later disinterment pit feature (Fea. 58b)	Adult calcaneus, coffin remnants, historic grave goods, dog bones, fish bone, charcoal, *kukui* nuts, matches	Post-Contact
59a	T-17; Str. IIIa	0.2–1.14	2	Original burial pit; underlying later disinterment pit feature (Fea. 59b)	Coffin remnants, historic grave goods, red brick fragment, faunal bone fragment	Post-Contact
60	T-24; Str. IIIf	0.72	1	Disarticulated human skeletal remains	Deciduous tooth	Pre- to early post-Contact
68	T-57; Str. IIIi	1.1–1.2	1	Disarticulated human skeletal remains	Cranial fragment	Pre- to early post-Contact
70	T-69; Str. IIb	0.63–0.75	1	Human burial	Adult or adolescent burial—only cranium exposed	Post-Contact
79	T-70; Str. IIIa	0.88–1.1	2	Human burial	Adult or older adolescent burial	Pre- to early post-Contact

Table 3. SIHP # 50-80-14-7655 Previously Identified Native Hawaiian Burial Sites within Block I

Fea. #	Provenience	Depth (mbs)	Description	Content/Elements	Interpreted Age
3	T-35; Str. IIIa	0.35–0.8	Fire feature	Worked human bone tool, charcoal, fire-affected rock, a waterworn basalt manuport, a dog tooth pendant, faunal bone, and marine shell midden	Post-Contact
6	T-38 (Str. III); T-61, and T-66 (Str. IIa)	0.2–0.4	Secondary human burial	Adult burial	Post-Contact

2.2.8 Ward Neighborhood Original Block N East AIS Results

Between 5 May 2014 and 10 October 2015, CSH conducted an archaeological inventory survey of the original Block N East, a component of HHC's Ward Neighborhood Master Plan area (Sroat et al. 2016). The original Block N East project area was located within Ward Industrial Center, along the *makai* side of Queen Street between Ward Avenue and Kamake‘e Street, covering approximately 0.63 hectares (1.55 acres) (Figure 53). CSH excavated 35 test excavations and documented portions of the following two previously documented historic properties: 1) SIHP # -7429, subsurface, pre- to post-Contact cultural deposits including Native Hawaiian burial sites, and 2) SIHP # -7686, subsurface historic infrastructure remnants associated with the development of Kaka‘ako during the late nineteenth to mid-twentieth centuries (Figure 54). The Block N East modern developed land surface consisted of asphalt parking lot surfaces, associated base courses, and concrete commercial floors associated with the present commercial complex, as well as various layers of modern imported fill.

SIHP # -7429 was identified in 25 of the original Block N East AIS test excavations. As previously noted, this historic property had been initially identified by Hammatt (2013) during the HRTP City Center AIS, near the corner of Ward Avenue and Queen Street, and was subsequently documented by the Block M AIS (Hawkins et al. 2015) and the Block I AIS (Sroat et al. 2015), as well as by the supplemental HRTP AIS (Humphrey et al. 2015) investigations. Within the original Block N East project area, as was the case in adjacent Ward Neighborhood blocks, SIHP # -7429 comprised two discrete cultural components: historic fill living surfaces (Component 1) overlying culturally enriched, in situ natural sand deposits (Component 2).

Within Block N East, SIHP # -7429 Component 1 consists of two distinct types of cultural deposits: a) locally procured fill layers, and b) mixed (local and imported sediment) fill layers. The mixed fill living surfaces were not documented within the surrounding project areas containing SIHP # -7429 and appear to be specific to a row of historic houses which previously fronted Queen Street within the original Block N East project area. CSH documented 70 features associated with SIHP # -7429 (Features 84–154) within the original Block N East study area. These features were categorized as belonging to either Component 1 or Component 2. If within Component 1, these features were further categorized as contained within either the locally procured fill layers or mixed fill layers.

Within Block N East the locally procured Component 1 deposits of SIHP # -7429 contained mostly historic artifacts and faunal bone (cat, pig, chicken, rat, dog, cow, fish, and medium mammal), with some charcoal, marine shell midden, and traditional-type artifacts (two basalt flakes and a chert core). The historic artifacts include bottle and flat glass fragments, ceramic fragments, wood, brick, metal nails and fragments, buttons, and marbles. These Component 1 cultural deposits also contained 19 associated features consisting of nine indeterminate pits, two trash pits, three post molds, three possible post molds, and two areas of disturbed and fragmented human skeletal remains.

SIHP # -7429 Component 2 within Block N East consists of culturally enriched, in situ natural deposits. These deposits comprise a buried sand dune that runs east-west through the Blocks N East, I, and M project areas, and consist of sandy loam A horizons, Jaucas sand, and wetland A horizons that formed in small pockets of low-lying areas within the sand dune.

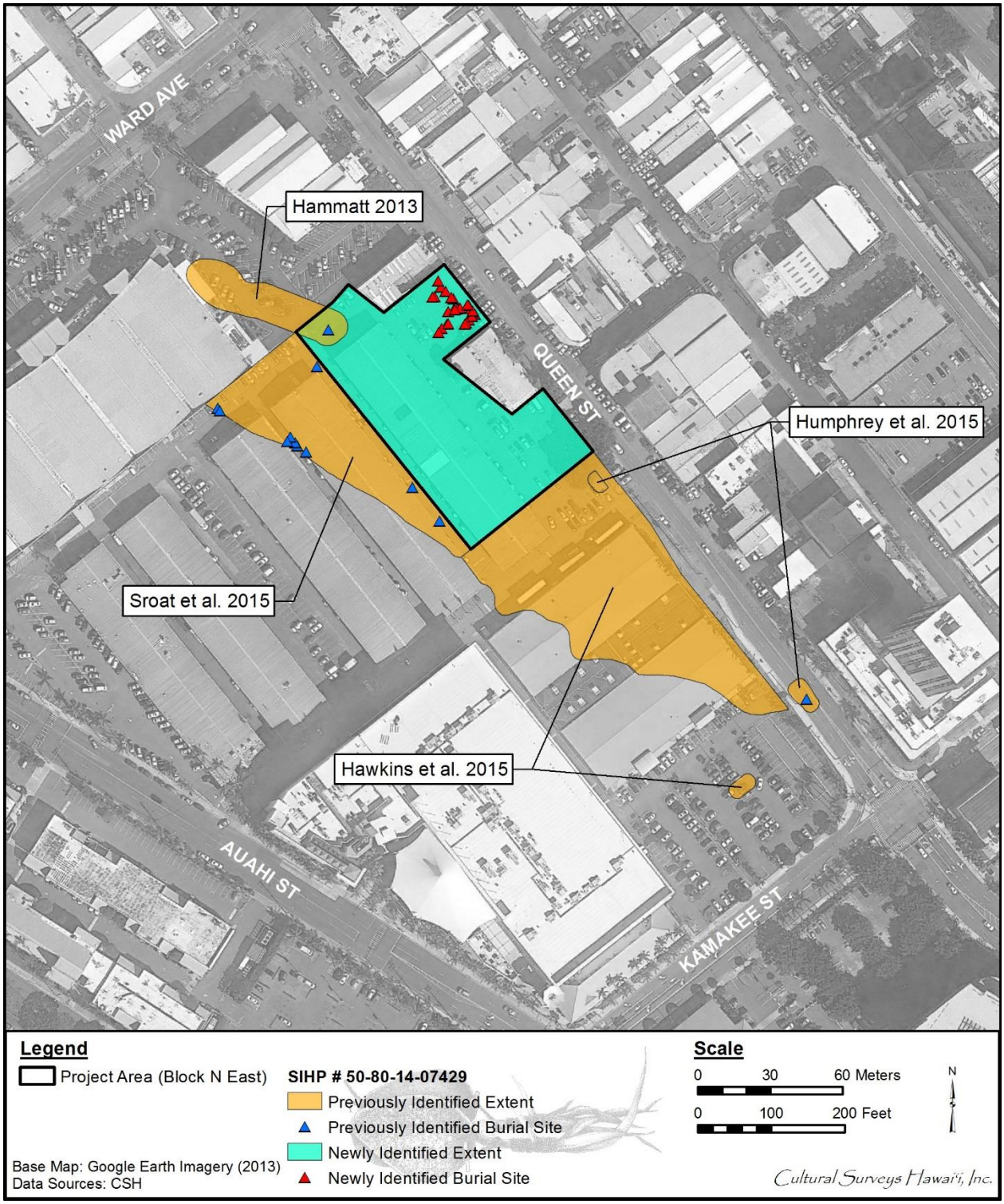

Figure 53. Google Earth (2013) aerial photograph showing the boundaries of the original Block N East project area (light blue) and the extent of previously documented SIHP # -7429 in the vicinity, showing previously identified Native Hawaiian burial sites

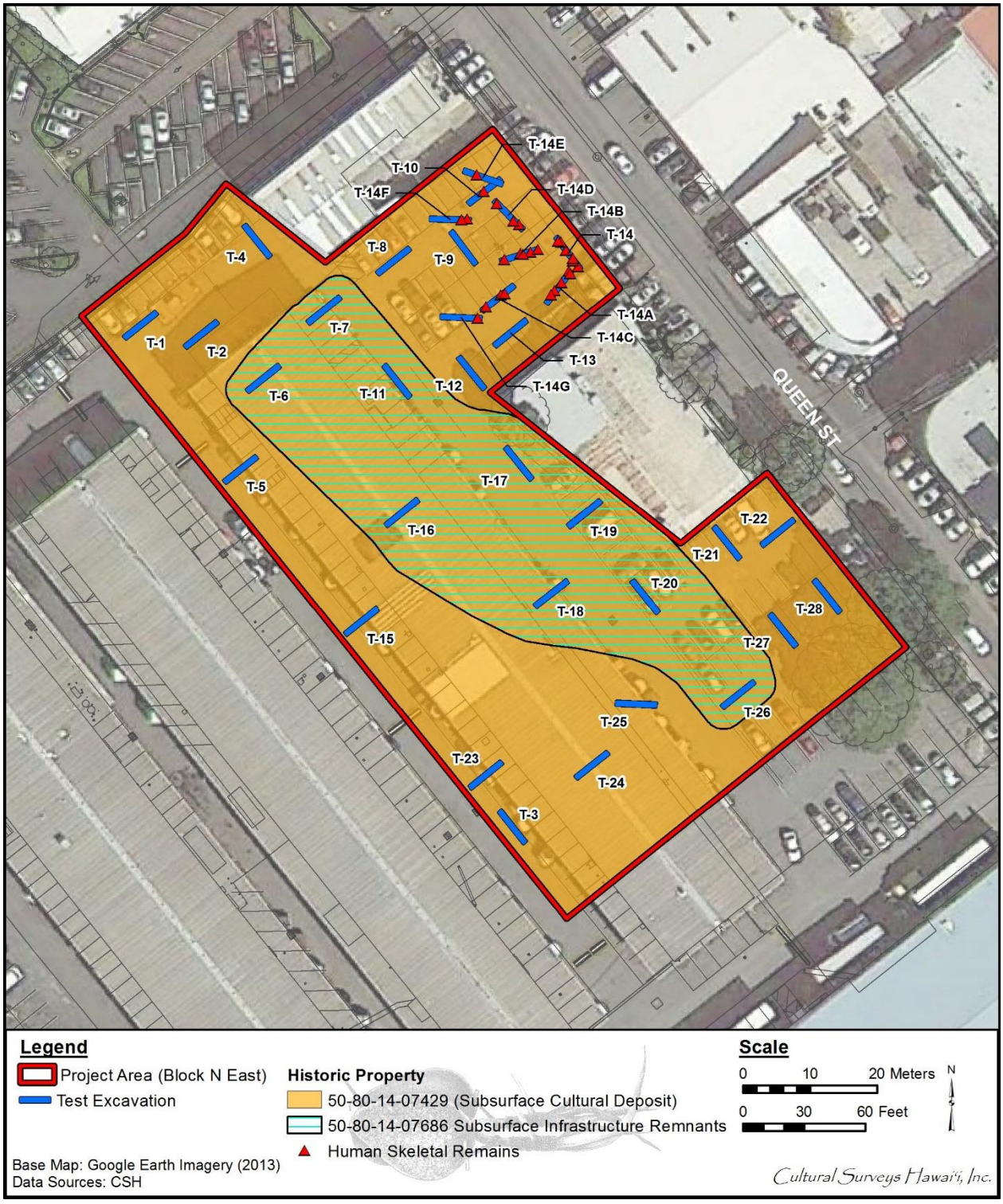

Figure 54. Google Earth (2013) aerial photograph showing the boundaries of the two historic properties documented in the original Block N East AIS and the documented Native Hawaiian burial sites *makai* of Queen Street

The Component 2 natural sandy loam A horizons within Block N East have been significantly truncated and, in many cases, partially or completely removed by later depositional events, particularly within the *mauka* portion of the project area. Much of this material was likely incorporated into the overlying Component 1 fill layers. Notwithstanding this disturbance, cultural enrichment of these A horizons was documented within ten test excavations (T-1, T-2, T-5, T-8, T-10, T-14A, T-14B, T-14C, T-14G, and T-24). The A horizons contain only very light cultural content (similar to the adjacent Block M), including small amounts of marine shell midden (Neritidae), fire-affected rock, charcoal, a basalt manuport, faunal bone (pig, dog, cow, rat), and glass and ceramic fragments (T-1, T-2, T-8, T-14A, T-14B, and T-24). However, numerous features are also associated with the Component 2 A horizons.

A total of 19 features originate from the Block N East Component 2 sand A horizons, including 11 indeterminate pits, two possible post molds, five in situ human burials, and one area of disturbed human skeletal remains. The majority of the indeterminate pits contain little or no cultural content (e.g., charcoal, manuports); however, based on their morphology and thickness, they are interpreted as indicative of cultural activity. Three pits within T-8 contain historic material, including a glass insulator fragment with a post-1865 manufacture date. This indicates the A horizon was still a living surface at least up through 1865 and that the overlying Component 1 mixed fill (historic residential layer) was deposited sometime after 1865.

SIHP # -7686 was identified within nine test excavations for the original Block N East AIS (refer to Figure 54). This historic property consisted of buried asphalt and oil-rolled surfaces, which may represent historic road remnants and/or commercial paved roadways. It was previously identified by Hawkins et al. (2015) within the Block M project area.

CSH documented 23 in situ burials and three instances of previously disturbed, fragmented human remains in test excavations T-10 and T-14 through T-14G within the Block N East project area (see Figure 54). Based on AIS documentation, the 23 in situ burials consist of both traditional Hawaiian burials and historic coffin burials, indicating this area was an established burial site for a period of time. The majority of these in situ burials were located within natural Jaucas sand, often lacking a burial pit. The burials span traditional Hawaiian to historic Christian burial practices, although the vast majority of burials (21) are traditional-type burials lacking evidence of a coffin or other western-style interment practices.

Section 3 Consultation

Consultation with the SHPD, the OIBC, and recognized Native Hawaiian cultural descendants regarding the original Block N East project continued during the Block N East AIS investigation in 2014 and 2015. More recently in 2016, consultation with the SHPD, the OIBC, and the Block I and Block N East recognized Native Hawaiian cultural descendants focused on the reconfiguration of the Block N East project area and the ramifications for mitigation, including archaeological monitoring and burial treatment implementation and documentation. This consultation included the following: meetings with the recognized cultural descendants on 9 February 2016, 9 May 2016, and 1 August 2016; consultation and email exchanges with the SHPD Culture and History Branch on 13 April 2016 and 18 and 31 May 2016; meetings with the SHPD Archaeology Branch on 6 April, 10 May, and 13 June 2016; and a presentation to the OIBC on 8 June 2016. This AMP is a direct result of this consultation.

Section 4 Archaeological Monitoring Provisions

As described in this document's Introduction section and Previous Archaeology subsection, the entire footprint of the redesigned Block N East has undergone archaeological inventory survey (Figure 55). Based on these past AIS investigations, and related SHPD consultation, the mitigation requirements for the redesigned Block N East are two-fold:

1) An archaeological monitoring program during project construction; and

2) A BSCDR&PP that describes the treatment (a combination of preservation in place and relocation) for the Native Hawaiian burial sites formerly in the adjacent Block I, but now within, or immediately adjacent to, the redesigned Block N East project area.

The BSCDR&PP (McDermott and Yucha 2016) has been prepared. This AMP is for the redesigned Block N East monitoring program, which will include BSCDR&PP implementation.

4.1 Provisions

Under Hawai‘i State historic preservation review 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 §13-13-279-3).

Hawai‘i State historic preservation review legislation governing archaeological monitoring programs requires that each monitoring plan discuss eight specific items (HAR §13-13-279-4). The monitoring provisions below address these eight requirements in terms of archaeological monitoring for the excavations within the current project area.

1) Anticipated Historic Properties:

   The original Block N East AIS, Block I AIS, and Block M AIS documented portions of three historic properties within the revised Block N East project area: 1) SIHP # -7429, previously identified subsurface cultural deposits within two discrete strata, including associated features and Native Hawaiian burial sites; 2) SIHP # -7655, previously identified historic salt pan remnants, including associated cultural features and Native Hawaiian burial sites; and 3) SIHP # -7686, previously identified subsurface historic infrastructure remnants associated with the development of Kaka‘ako during the late nineteenth to mid-twentieth centuries (Figure 56).

2) Locations of Historic Properties:

   SIHP # -7429, subsurface pre- and post-Contact cultural deposits with associated features and Native Hawaiian burial sites, was documented within the *mauka* portion of Block N East, within an area of Jaucas sand deposits (buried sand dune). SIHP # -7429 extends beyond the boundaries of Block N East to the northwest (Hammatt 2013) and east (Hawkins et al. 2015, Humphrey et al. 2015) (see Figure 53 and Figure 56). SIHP # -7655, historic salt pan remnants with associated cultural features and Native Hawaiian burial sites, was documented within the *makai* (southwest) portions of Block N East (see Figure 56).

Figure 55. Location of the previous trenching within the project area during the previous AIS studies of the original Block N East, Block I and Block M. A description of a representative number of these test excavations can be found in Appendix B.

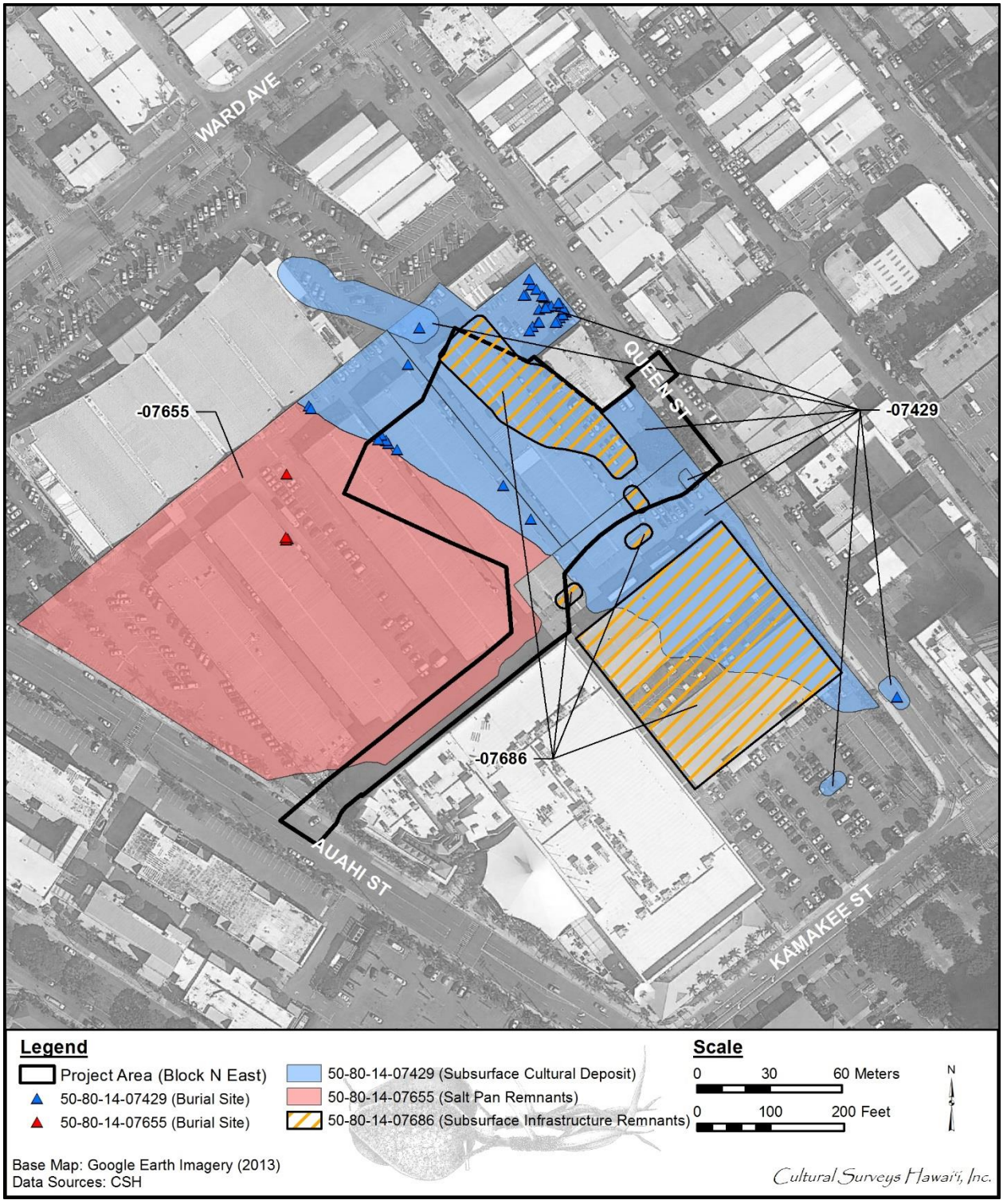

Figure 56. Extent of SIHP #s -7429, -7655, and -7686 within the redesigned Block N East project area

SIHP # -7686, previously identified subsurface historic infrastructure remnants associated with the development of Kaka‘ako during the late nineteenth to mid-twentieth centuries was documented within the northern portion of the Block N East project area (see Figure 56).

3) Fieldwork:

Field monitoring and reporting

Based on the results of the original Block N East, Block I, and Block M AIS investigations, and in consultation with the SHPD, an archaeological monitoring program was determined to be warranted for the entire redesigned Block N East project area. In order to mitigate construction impact on identified historic properties and to facilitate the identification and proper treatment of any potential historic properties that might be newly encountered during construction activities, CSH recommends a program of on-site monitoring be implemented for all subsurface construction activities below the current ground surface (i.e., asphalt parking areas and concrete building foundation pads). This recommendation is based on the results of the previous AIS studies in the project area.

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. These exposures will be photographed and located on project area maps. Photographs and representative profiles of excavations will also be taken even if no archaeological deposits are observed. As appropriate, sampling will include the collection of representative artifacts, bulk sediment samples, and/or the on-site screening of measured volumes of feature fill or other potentially culturally enriched strata to determine cultural content. Potential bulk sediment samples will include salt pan liner deposits, *‘auwai* deposits, and sediments that may need further characterization within the CSH laboratory. Collection of artifacts will include 100% collection of traditional artifacts and representative collection of historic artifacts. Artifacts not collected will be photo documented and recorded in the field.

If non-burial archaeological historic properties not previously identified by the original Block N AIS, Block I AIS, and Block M AIS investigations 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-43 and HAR §13-300 and SHPD will be consulted regarding appropriate measures.

Any departure from this monitoring plan will occur only following consultation with, and written concurrence, from the SHPD.

Implementation of the Block N East BSCDR&PP (McDermott and Yucha 2016)

The landowner and recognized Native Hawaiian cultural descendants are agreed to a combination of preservation in place and relocation for the human skeletal remains associated with SIHP #s -7429 and -7655 that are the subject of the redesigned Block N East

BSCDR&PP (McDermott and Yucha 2016). The implementation of the redesigned Block N East BSCDR&PP will be carried out as part of this monitoring program.

The burial sites from SIHP # -7429 are within, or in the immediate vicinity of, the redesigned Block N East boundaries. The single burial site from SIHP # -7655 is not within the redesigned Block N East boundaries, but is in close proximity (Figure 57). These burial sites are included in the BSCDR&PP because of an existing (9 December 2015) OIBC burial treatment determination based on HHC's Block I BTP, which pertains to all the burial sites addressed in the redesigned Block N East BSCDR&PP. These human skeletal remains consist of both purposeful interments—termed in situ burials—and isolated, previously disturbed skeletal fragments found outside what would be considered a burial context. Based on available information the SHPD has determined ethnicity for these remains is reasonably believed to be Native Hawaiian.

The Block N East burial preserve area will be established over the cluster of in situ burials associated with the portion of SIHP # -7429 within the redesigned Block N East project area (SIHP # -7429 Feature 57 in Block I AIS Test Excavation [T]-17, Feature 58 in T-17, Feature 59 in T-17, Feature 60 in T-24, Feature 68 in T-57, Feature 70 in T-69, and Feature 79 in T-70) (refer to Figure 57). The previously disturbed, fragmentary human skeletal remains and a potential find of coffin wood and hardware (SIHP # -7429 Feature 23 in T-3, Feature 25 in T-7, Feature 26 in T-8, and Feature 53 in T-13, respectively), as well as the worked human bone tool (SIHP # -7655 Feature 3 in T-35) will be exhumed from where they were found and relocated to within the backfilled AIS test excavations within the newly established Block N East burial preserve area. Table 2 and Table 3 summarize these previously identified Native Hawaiian burial sites documented during the Block I AIS.

In consultation with the Block I and Block N East recognized cultural descendants, HHC has worked with their project architects and engineers to create the burial preserve area in the vicinity to Block I AIS T-17 (refer to Figure 57) for preservation in place and relocation. The surface of the burial preserve area will be largely open to the sky and landscaped with Native Hawaiian vegetation. Only the easternmost portion of the burial preserve area will be under the Block N East parking structure footprint and will be paved over for parking. The BSCDR&PP includes a metes and bounds description of the burial preserve area, which will be recorded with the Bureau of Conveyances.

Based on consultation with the SHPD, the OIBC, and Block I and Block N East recognized cultural descendants, Native Hawaiian burial sites from Block I AIS test excavations T-38, T-61, and T-66 will be the subject of a future Block I burial site component of a preservation plan (BSCPP), and the Native Hawaiian human skeletal remains from the former Block N East AIS test excavations T-10 and T-14 –T14G will be the subject of a future BTP for Block N West (refer to Figure 57). The preparation of these future burial treatment documents will await the formalization of development plans for HHC's Block I and Block N West projects.

Figure 57. Google Earth aerial photograph showing the Block I AIS Native Hawaiian burial sites that are the subject of the BSCDR&PP for the redesigned Block N East (McDermott and Yucha 2016). Note: the remains from Block I AIS test excavations T-38, T-61, and T-66 will be the subject of a future Block I BSCPP, and the remains from the former Block N East test excavations T-10 and T-14 –T14G will be the subject of a future BTP for Block N West

4) Archaeologist’s Role:

The on-site archaeologist will have the authority to stop work immediately in the area of any finds so that documentation can proceed and appropriate treatment can be determined. In addition, the archaeologist will have the authority to slow and/or suspend 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 on-site archaeologist shall hold a coordination meeting to orient the construction 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 construction site. At this time it will be made clear that the archaeologist must be on site during all subsurface excavations.

6) Laboratory Work:

Laboratory work will be conducted in accordance with HAR §13-13-279-5(6). Laboratory analysis of non-burial related finds will be tabulated and standard artifact and midden recording will be conducted as follows. Artifacts will be documented as to provenience, measurements, weight, 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 lowest possible taxa, and then tabulated by provenience.

As appropriate, collected charcoal material obtained within intact cultural deposits will be analyzed for species identification. Charcoal samples ideal for dating analyses will be sent to Beta Analytic, Inc. for radiocarbon dating. If appropriate, artifacts may be sent to the University of Hawai‘i-Hilo Geoarchaeology Lab for Energy-Dispersive X-ray Fluorescence (EDXRF) analysis in order to identify and possibly geographically locate the source material. 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 §13-13-279-5). 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, 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, per HAR §13-300. 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. All data generated will be stored at the CSH offices.

4.2 **Research Questions**

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

1. SIHP # -7429 consists of two culturally enriched deposits: a historic fill deposit, comprised of locally procured sand and soil, which contains scattered historic artifacts, milled wooden posts, and water control features (Component 1); and an underlying natural loamy sand A horizon, which contains both traditional-type and historic cultural material as well as pit features (Component 2). The culturally enriched historic fill deposit (Component 1) appears to represent the first significant historic modification to the natural landscape in this area. What additional evidence can be gathered to further characterize the function of this deposit, the time period of deposition, and its spatial extent?
2. The underlying natural A horizon (Component 2) contains a light cultural signature and is similar in this respect to SIHP # -7429 deposits found during the prior AIS investigations in the vicinity. How do the traditional-type features and cultural material associated with this stratum within the Block N East project area interrelate with the SIHP # -7429 Component 2 deposits within these adjacent project areas?
3. The Block N East 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?
4. How do the salt pan deposits of SIHP #-7655 within Block N East compare to those observed the adjacent Block I project area?

For comparative purposes, Appendix B has representative test excavation descriptions from the AIS investigations for the original HHC Block N East, Block I, and Block M. Trench locations are shown on Figure 55.

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Appendix A SHPD Acceptance Letters

Block N East AISP 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 21, 2014

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

LOG NO: 2014.00644
DOC NO: 1402SL12
Archaeology

Dear Ms. Sroat:

SUBJECT: **Chapter 6E-42 Historic Preservation Review –**
Archaeological Inventory Survey Plan for the Block N East Project Area
Kaka'ako Ahupua'a, Honolulu (Kona) District, O'ahu
TMK: (1) 2-3-002:001 por., 067, 086, 087

Thank you for the opportunity to review this draft report titled *Archaeological Inventory Survey Report for the Block N East Project Area, Kaka'ako Ahupua'a, Honolulu (Kona) District, O'ahu Island TMK: (1) 2-3-002:001 (por.), 067, 086, 087* (Sroat et al. February 2014). We received this submittal on February 12, 2014.

The archaeological inventory survey was conducted at the request of Victoria Ward, Limited (VWL) and the Howard Hughes Corporation (HHC) in support of construction of a high-rise residential tower with commercial space located on the ground floor. This private development is owned and funded by VWL. The project area is located within Ward Industrial Center, along the *makai* side of Queen Street between Ward Avenue and Kamakee Street. The project area totals 1.8 acres. Ground disturbance associated with project construction will include demolition and removal of existing buildings and structures in the Ward Industrial Center, borings related to foundation pile installation, and excavation for structural footings, utilities, roadways and parking, and landscaping.

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 N East. The field methods involve excavation of about 33 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 research objectives to indicate you will focus on better characterizing the SIHP# 7429, the wetland sediments, as well as the sand areas to examine change in the nature and intensity of land use from the pre-Contact period into the 20th century; this will require analysis of bulk samples, charcoal samples, and palynology. Also that you will examine the potential of correlating historic maps showing residences on the property in the 20th century with historic deposits below the fill layers. Remove any mention of correlating these deposits with ethnicity.

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 these revisions and send one hardcopy of the

Ms. Sroat
January 21, 2014
Page 2

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

Block I AISP 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
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BUREAU OF CONVEYANCES
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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 24, 2014

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

LOG NO: 2013.6927
DOC NO: 1401SL23
Archaeology

Dear Ms. Sroat:

SUBJECT: Chapter 6E-42 Historic Preservation Review –
Archaeological Inventory Survey Plan for the Block I 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 I Project, Kaka'ako Ahupua'a, Honolulu (Kona) District, O'ahu TMK (1) 2-3-002:001 (por.)* (Sroat et al., December 2013). We received this submittal on December 10, 2013. The 5.1-acre Block I project area is owned by Victoria Ward, Limited (VWL) and is part of the VWL's 60.5-acre Ward Neighborhood Master Plan. The project area is bounded to the southwest by Auahi Street, to the southeast by Ward Theaters, and to the northwest by Ward Gateway Center.

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 I East. The field methods involve excavation of about 89 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.

Please revise the following:

(1) Remove any mention of a supplemental AIS and insert agreed-upon language from Block M AISP.
(2) Update Yamauchi et al. 2011 and Yucha et al. 2013 to show current status of these project references.
(3) Add SIHP 6378 to Figure 36.

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 these revisions 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

Block I AISR SHPD Acceptance Letter

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

KEKOA KALUHIWA
FIRST DEPUTY

W. ROY HARDY
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
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HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

June 12, 2015

Anthony J. H. Ching, Executive Director
Hawaii Community Development Authority
461 Cooke Street
Honolulu, Hawaii 96813

Log No. 2015.02101
Doc. No. 1505SL25
Archaeology

Mr. Race Randle, Senior Director of Development
The Howard Hughes Corporation
1240 Ala Moana Blvd., Suite 200
Honolulu, HI 96814

Dear Sirs:

SUBJECT: **Chapter 6E-42 Historic Preservation Review —**
Archaeological Inventory Survey Report for the Block I Project, Kaka‘ako, KAK 14-058
Honolulu Ahupua‘a, Honolulu (Kona) District, Island of O‘ahu
TMK: (1) 2-3-002:001 por.

Thank you for the opportunity to review your revised draft report titled *Archaeological Inventory Survey Report for the Block I Project, Kakaako, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu (TMK: [1] 2-3-002:001 (portion))* (Sroat et al., May 2015). We received two copies of the initial draft, one from Cultural Surveys Hawaii, Inc. (CSH) on November 17, 2014 (Log No. 2015.05178) and another from the Hawaii Community Development Authority (HCDA) on November 18, 2014 (Log No. 2014.05201), revised drafts from CSH on April 14, 2015 (Log No. 2015.01468) and on May 29, 2015 (Log No. 2015.02101), and minor final revisions via email on June 12, 2015.

A cultural impact assessment (CIA) (Cruz et al. 2012) and an archaeological literature review and predictive model study (O’Hare et al. 2012) were submitted to SHPD for review on July 20, 2012. An archaeological inventory survey plan (Sroat et al. 2014) for the Block I study area was reviewed and accepted by SHPD on January 24, 2014 (Log No. 2013.6927, Doc. No. 1401SL23). The archaeological inventory survey (AIS) was conducted at the request of Victoria Ward, Limited (VWL) and the Howard Hughes Corporation (HHC).

The 5.8-acre Block I AIS study area is located within Ward Village, and 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 involves construction of a high-rise residential tower with commercial space on the ground floor. Ground disturbance will include demolition and removal of existing buildings and structures in Ward Village, borings related to foundation pile installation, and excavations for structural footings, utilities, roadways and parking, and for landscaping. As the location of the tower was not finalized prior to initiation of the AIS, the AIS study area was defined as the entire 5.8-acre potential project area. The tower project footprint has subsequently been identified as consisting of a 2.5-acre area in the *makai*/Diamond Head corner of the 5.8-acre Block I AIS study area. The completion of an AIS for the entire 5.8-acre parcel facilitates planning decisions regarding future development in other portions of the property.

The AIS identified three archaeological historic properties within the Block I study area, each of which were assigned State Inventory of Historic Places (SIHP) numbers. These historic properties consist of the following:

(1) Pre- and post-Contact cultural deposits with associated in-filled pit features, including human burials (SIHP 50-80-14-7429). This historic property was previously documented in areas to the north and south of the current study area (Hammatt 2013, Hawkins et al. 2015);
(2) Historic salt plan remnants, including man-made berms, laminated salt pan beds, as well as evidence of in-filled pit features, including fire features and human burials (SIHP 50-80-14-7655). This historic property was initially identified within the Block B East and Block C West project areas located Makai (seaward) of Block I (Pammer et al. 2014, Sroat et al. 2014); and
(3) A historic concretized Ward Estate *'auwai* (irrigation ditch) (SIHP 50-80-14-7659). This historic property was previously identified in the Block B East project area which is *makai* of Block I (Pammer et al. 2014).

Pursuant to Hawaii Administrative Rules (HAR) §13-284-6(b)(1-5), SIHP # 7429 is assessed as significant under Criteria d (information potential) and e (important to a particular group). SIHP # 7655 is significant under Criteria c (distinctive type), d, and; and SIHP # 7659 is significant under Criterion d. Per HAR §13-284-7(a)(2), the tower project effect determination is "effect, with agreed upon mitigation commitments." The mitigation recommendations are data recovery in the form of archaeological monitoring for the proposed tower project area per HAR §13-284-8(a)(1)C). Elsewhere within the Block I AIS study area, the effect determination for any future project(s) involving ground disturbance is "effect, with mitigation commitments," and the agreed-upon mitigation is research-defined data recovery for SIHP # -7655 and SIHP # -7429; on-site archaeological monitoring of SIHP # 7429, # 7655, and # 7659), submittal of a burial treatment plan for all burials and/or displaced human skeletal remains identified during the AIS within SIHP # 7429 and # 7655. Data recovery and archaeological monitoring each will be preceded by submittal and SHPD acceptance of the respective required plans. SHPD concurs with the site significance assessments, project effect determination, and the mitigation commitments.

The revisions adequately address the issues and concerns raised in our consultation and earlier correspondence. The report meets the standards set forth in HAR §13-276-5. It is accepted by SHPD. Please 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.

As stipulated in HAR §13-284-7(e), when SHPD comments that the project will have an "effect, with agreed upon mitigation commitments," then detailed mitigation plans shall be developed for SHPD review and acceptance. Per HAR §13-284-8(a)(1)C), the agreed-upon mitigation measure for the tower project area is data recovery in the form of archaeological monitoring. Pursuant to HAR §13-284-8(a)(3)(e), we look forward to receiving an archaeological monitoring plan that meets HAR §13-279-4.

Please contact me at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov if you have any questions or concerns regarding this letter.

Aloha,

Susan A. Lebo

Susan A. Lebo, PhD
Oahu Lead Archaeologist
Acting Archaeology Branch Chief

cc: Matt McDermott, Projects Manager, Cultural Surveys Hawai‘i, Inc. (mmcdermott@culturalsurveys.com)

Block I AMP SHPD Acceptance Letter

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

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STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

August 18, 2015

Log No. 2015.02451
Doc. No. 1508SL16
Archaeology

Mr. Anthony Ching
Hawaii Community Development Authority
547 Queen Street
Honolulu, HI 96813

Dear Mr. Ching:

SUBJECT: **Chapter 6E-8 Historic Preservation Review –**
Archaeological Monitoring Plan for Block I, Kaka‘ako
Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu
TMK: (1) 2-3-002:001

Thank you for the opportunity to review the draft report titled *Archaeological Monitoring Plan for Block I, Kaka‘ako, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu TMK: [1] 2-3-002:001 (portion)* (Sroat et al., June 2015). We received this submittal on June 22, 2015.

A cultural impact assessment (CIA) (Cruz et al. 2012) and an archaeological literature review and predictive model study (O’Hare et al. 2012) were submitted to SHPD for review on July 20, 2012. An archaeological inventory survey plan (Sroat et al. 2014) for the Block I study area was reviewed and accepted by SHPD on January 24, 2014 (Log No. 2013.6927, Doc. No. 1401SL23). The archaeological inventory survey (AIS) was reviewed and accepted by SHPD on June 12, 2015 (Log No. 2015.02101, Doc. No. 1505SL25).

The 5.8-acre Block I AIS study area is located within Ward Village, and 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 involves construction of a high-rise residential tower with commercial space on the ground floor. Ground disturbance will include demolition and removal of existing buildings and structures in Ward Village, borings related to foundation pile installation, and excavations for structural footings, utilities, roadways and parking, and for landscaping. As the location of the tower was not finalized prior to initiation of the AIS, the AIS study area was defined as the entire 5.8-acre potential project area. The tower project footprint has subsequently been identified as consisting of a 2.5-acre area in the *makai*/Diamond Head corner of the 5.8-acre Block I AIS study area. The completion of an AIS for the entire 5.8-acre parcel facilitates planning decisions regarding future development in other portions of the property.

The AIS identified three archaeological historic properties within the Block I study area, each of which were assigned State Inventory of Historic Places (SIHP) numbers. These historic properties consist of the following:

(1) Pre- and post-Contact cultural deposits with associated in-filled pit features, including human burials (SIHP 50-80-14-7429). This historic property was previously documented in areas to the north and south of the current study area (Hammatt 2013, Hawkins et al. 2015);
(2) Historic salt plan remnants, including man-made berms, laminated salt pan beds, as well as evidence of in-filled pit features, including fire features and human burials (SIHP 50-80-14-7655). This historic

property was initially identified within the Block B East and Block C West project areas located Makai (seaward) of Block I (Pammer et al. 2014, Sroat et al. 2014); and

(3) A historic concretized Ward Estate *'auwai* (irrigation ditch) (SIHP 50-80-14-7659). This historic property was previously identified in the Block B East project area which is *makai* of Block I (Pammer et al. 2014).

SHPD concurred on June 12, 2015 (Log No. 2015.02101, Doc. No. 1505SL25) that SIHP # 7429 is significant under Criteria d (information potential) and e (important to a particular group); SIHP # 7655 is significant under Criteria c (distinctive type), d, and; and SIHP # 7659 is significant under Criterion d. SHPD also concurred that the effect determination for the tower project and for any future project(s) involving ground disturbance within the Block I property is "effect, with agreed upon mitigation commitments." The agreed upon mitigation recommendations are as follows:

- data recovery in the form of archaeological monitoring for the entire Block I property, including the proposed tower project area and SIHP # 7429, #7644, and #7659;
- research-defined data recovery excavation for those portions of SIHP # 7655 and SIHP # 7429 located within the western and northwestern portions of Block I; and
- burial treatment plan for all burials and/or displaced human skeletal remains identified during the AIS within SIHP # 7429 and # 7655.

This archaeological monitoring plan (AMP) addresses the entire Block I study area and is designed to fulfill the state requirements for monitoring plans (HAR §13-279-4). On-site archaeological monitoring shall occur for all construction related ground disturbance below the current asphalt or concrete surface. It also shall include targeted data collection and focus on specific research objectives and questions pertaining to SIHP #s 7429, 7655, and 7659.

The report meets the standards set forth in HAR §13-279-4. It is accepted by SHPD. Please 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.

Please contact me at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov if you have any questions or concerns regarding this letter.

Aloha,

Susan A. Lebo

Susan A. Lebo, PhD
Archaeology Branch Chief

cc: Mr. Race Randle, The Howard Hughes Corporation (Race.Randle@howardhughes.com)
Mr. Matt McDermott, Cultural Surveys Hawaii, Inc. (Mmcdermott@culturalsurveys.com)

Block I BTP SHPD Compliance Letter

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

KEKOA KALUHIWA
FIRST DEPUTY

JEFFREY T. PEARSON
DEPUTY DIRECTOR - WATER

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD. STE 555
KAPOLEI, HAWAII 96707

December 3, 2015

Ms. Malina L. Reveal
Ms. Ena Sroat
Mr. Matt McDermott
Cultural Surveys Hawaii, Inc.
P.O. Box 1114
Kailua, HI 96734

LOG NO: 2015.03320
DOC NO: 1512.RKH09

Aloha mai,

Subject: **DRAFT Burial Treatment Plan for SIHP #s 50-80-14-7429 and 50-80-14-7655, Block I, Kaka'ako, Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu, TMK: [1] 2-3-002:001 (por.)**

The above draft plan has been reviewed and is in compliance with HAR §13-300-33 such that you may address the O'ahu Island Burial Council (OIBC) for a determination on whether to preserve-in-place or relocate the human skeletal remains identified above. Per your request, this item has been placed on the OIBC's December 9th, 2015 agenda.

If you have any questions or concerns, please contact the Oahu Burial Sites Specialist, Regina Hilo via email at Regina.Hilo@hawaii.gov, or at (808) 436-4801.

Ke aloha,

Hinano Rodrigues

Mr. Hinano Rodrigues
History and Culture Branch Chief
State Historic Preservation Division

Block M AISP 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

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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

Block M AISR SHPD Acceptance Letter

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 21, 2015

Anthony J. H. Ching, Executive Director
Hawaii Community Development Authority
461 Cooke Street
Honolulu, Hawaii 96813

LOG NO: 2015.00188
DOC NO: 1501SL14
Archaeology

Dear Mr. Ching:

SUBJECT: **Chapter 6E-42 Historic Preservation Review —**
Archaeological Inventory Survey Report for the Block M Project, Kaka‘ako, KAK 14-074
Honolulu Ahupua‘a, Honolulu (Kona) District, Island of O‘ahu
TMK: (1) 2-3-002:001 por.

Thank you for the opportunity to review your revised draft report titled *Archaeological Inventory Survey Report for the Block M Project, Kakaako, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu (TMK: [1] 2-3-002:001 (portion))* (Hawkins et al., January 2015). We received this submittal on January 15, 2015, with final minor revisions on January 21, 2015. A cultural impact assessment (CIA) (Cruz et al. 2012) and an archaeological literature review and predictive model study (O’Hare et al. 2012) were submitted to SHPD for review on July 20, 2012. An archaeological inventory survey plan (Sroat et al. 2014) for the project was reviewed and accepted by SHPD on January 10, 2014 (Log No. 2013.6926, Doc. No. 1401SL10). The archaeological inventory survey (AIS) was conducted at the request of Victoria Ward, Limited (VWL) and the Howard Hughes Corporation (HHC).

The 4-acre Block M project area is located within Ward Village, and 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 involves construction of a high-rise residential tower with commercial space on the ground floor. Ground disturbance will include demolition and removal of existing buildings and structures in Ward Village, borings related to foundation pile installation, and excavations for structural footings, utilities, roadways and parking, and for landscaping.

The AIS further documented one previously-identified historic property (Site 50-80-14-7429) and documented one newly-identified historic property (Site 50-80-14-7686). Site 7429 consists of several subsurface cultural layers and associated features associated with pre- to post-Contact habitation and burial land use. Site 7686 consists of buried historic infrastructure remnants (e.g., concrete floors and footings, asphalt slabs) and associated base courses related to several warehouses built in the early 1940s. Both sites were assessed as significant per Hawaii Administrative Rules (HAR) §13-284-6(b)(1-5) as significant under Criterion “d” (has yielded, or may yield information important in prehistory and history). Site 7429 was also assessed as significant under Criterion “e” (has cultural significance to an ethnic group). Pursuant to HAR §13-284-7(a)(2), the project specific effect recommendation is “effect, with agreed upon mitigation commitments.” The recommended mitigation is archaeological data recovery in the form of archaeological monitoring, per HAR §13-284-8(a)(1)C). The proposed mitigation involves on-site archaeological monitoring for all ground disturbance below 2 feet within the zone of natural sand deposits in which Site 7429 is located; and on-call monitoring with weekly spot checks within the zone of natural wetland deposits. In addition, the on-site monitoring shall include targeted monitoring of specific features associated with Site 7429. These features and data recordation methods will be determined in consultation with SHPD and be included in the archaeological

monitoring plan submitted for SHPD review and approval per HAR §13-279-4. We concur with the site significance assessments, effect recommendation, and the mitigation recommendations.

The revisions adequately address the issues and concerns raised in our earlier correspondence (January 12, 2015; Log No. 2014.04227, Doc. No. 1501SL08). The report meets the standards set forth in HAR §13-276-5. It is accepted by SHPD. Please 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.

As stipulated in HAR §13-284-7(e), when SHPD comments that the project will have an "effect, with agreed upon mitigation commitments," then detailed mitigation plans shall be developed for SHPD review and acceptance. Per HAR §13-284-8(a)(1)C), the agreed-upon mitigation measure for this project is data recovery in the form of archaeological monitoring. Pursuant to HAR §13-284-8(a)(3)(e), we look forward to receiving an archaeological monitoring plan that meets HAR §13-279-4.

Please contact me at (808) 692-8019 or at Susan.A.Lebo@hawaii.gov if you have any questions or concerns regarding this letter.

Aloha,

Susan A. Lebo

Susan A. Lebo, PhD
Oahu Lead Archaeologist
Acting Archaeology Branch Chief

cc: Race Randle, Development Director, Howard Hughes Corporation (Race.Randle@howardhughes.com)
Matt McDermott, Projects Manager, Cultural Surveys Hawai'i, Inc. (mmcdermott@culturalsurveys.com)

Appendix B Representative Test Excavations from Archaeological Inventory Surveys within the Current Block N East Project Area

The following are representative test excavations from previous archaeological inventory surveys whose project areas overlapped with the redesigned Block N East project area. Six representative test excavations (T-3, 5, 15, 16, 18, and 23) were selected from original Block N East AIS (Sroat et al. 2016), seven representative test excavations (T-4 through 9 and 28) were taken from the Block I AIS (Sroat, Hawkins, Burke, Pammer, O'Hare, and McDermott 2015), and one representative test excavation (T-1) was taken from Block M (Hawkins et al. 2015). Figure 55 (above) shows these trench locations in their original context and their relation to the present Block N East project area. Except for re-numbered sections, figures, and tables, the text below is unchanged from the original reports.

B.1 Original Block N East Subsurface Testing Results (Sroat et al. 2016)

B.1.1 Test Excavation 3

T-3, an exterior test excavation located in the south portion of the project area, was oriented northwest-southeast and measured 6.1 m long by 0.7 m wide. The water table was encountered at 1.25 mbs, and the base of excavation was determined by the hard coral shelf at 1.28 mbs.

The stratigraphy of T-3 consists of the asphalt surface (Stratum Ia), associated extremely gravelly sandy loam base course (Stratum Ib), and cobbly silty clay loam fill (Stratum Ic), over Kaka‘ako reclamation fill deposits consisting of cobbly sand (crushed coral) (Stratum IIa) and hydraulic (dredged) clay sand (Stratum IIb), over gravelly loamy sand fill (Stratum III), gravelly to cobbly sandy loam fill (Stratum IV), and a sandy loam fill (Stratum V), over natural Jaucas sand (Stratum VIa), a thin layer of indurated sand (Stratum VIb), clay sand (Stratum VIc), and marine clay sand (Stratum VII) (Figure 58, Figure 59, and Table 4).

T-3 is very similar to T-23, which was located approximately 5 m to the northwest. The excavation of T-3 documented modern deposits (Strata Ia–Ic), over early twentieth century land reclamation fill (Strata IIa and IIb), over a burnt loamy sand deposit (Stratum III), a mixed non-local and local fill (Stratum IV), and reworked/redeposited local A horizon material (Stratum V), over natural sand deposits (Strata VIa–VIc and VII). Stratum III is composed of black fine loamy sand with burnt historic material (Figure 60). It is present only within the southern (Diamond Head) portion of the test excavation. Similar lenses of burnt material were observed within T-23, located just 4 m northwest, and within two adjacent Block I AIS test excavations, T-8 and T-71 (Sroat et al. 2015). In each of these instances, the burnt deposits are discontinuous, localized deposits that appear to have been utilized as fill rather than representative of individual combustion events. Stratum IV consists of a mixture of non-local and locally procured sandy loam sediment. This

deposit is present within T-3 and T-23 but absent within all surrounding test excavations (i.e., Block I test excavations T-8, T-9, and T-71; Block N East test excavations T-15 and T-24; and Block M test excavations T-67 and T-68). It may have been utilized to infill/grade a low portion of the natural land surface. Stratum IV contains glass bottle fragments, brick fragments, a non-local quartz rock, oxidized metal fragments, and faunal bone (not collected) (Figure 61 and Figure 62). This material is likely in a secondary context.

Underlying Strata III and IV is a thin layer of redeposited local A horizon material (Stratum V). Field screening of this deposit yielded no cultural material. The natural Jaucas sand deposit (Stratum IVa) also appears slightly churned within the upper portion and contains small glass and brick fragments, as well as a dog long bone fragment and two isolated, water-rounded, basalt cobbles (not collected) (Figure 63).

Figure 58. Original Block N East T-3 southwest sidewall, view to south

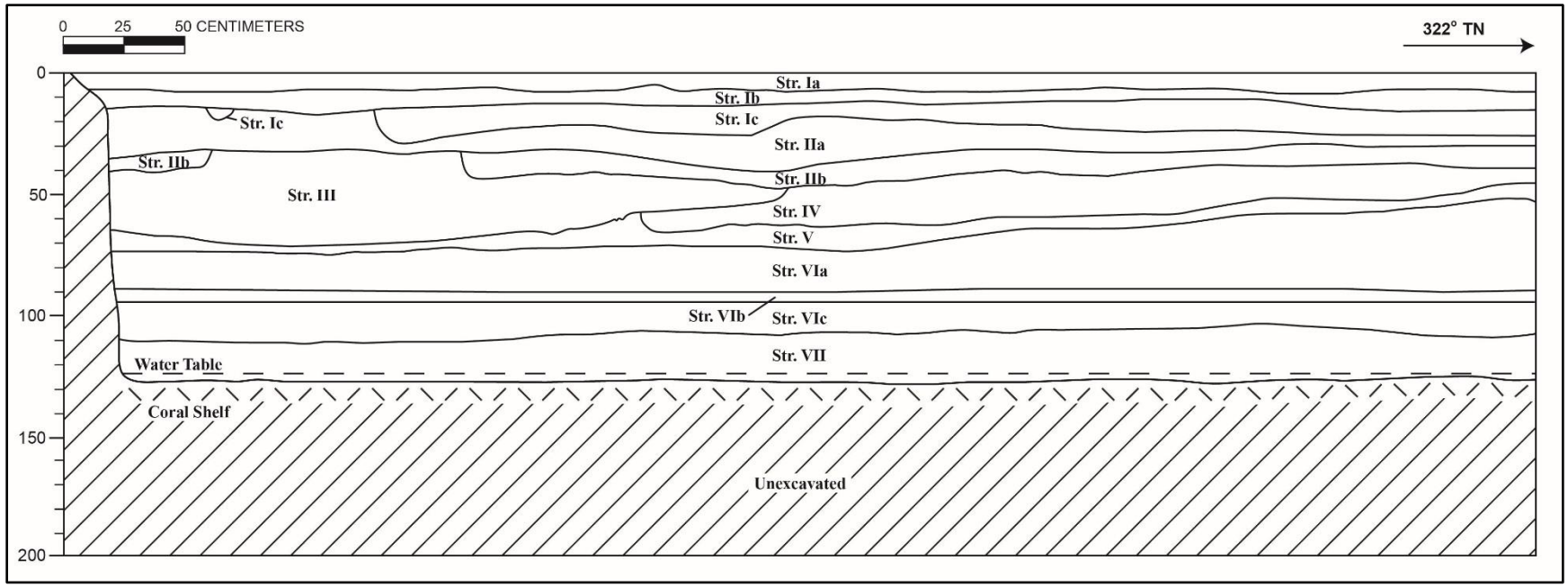

Figure 59. Original Block N East T-3 southwest profile

Table 4. Original Block N East T-3 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–8	Asphalt; road surface
Ib	8–15	Fill; 10YR 4/3, brown; extremely gravelly sandy loam; weak, fine, crumb structure; moist, very friable consistence, weak cementation; non-plastic; mixed origin; clear, smooth lower boundary; base course for road surface
Ic	11–25	Fill; 10YR 5/4, yellowish brown; cobbly silty clay loam; moderate, fine, blocky structure; friable consistence; slightly plastic; mixed origin; clear, smooth lower boundary; fill with coral cobble inclusions
IIa	18–41	Fill; 10YR 7/2, light gray, cobbly sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; crushed coral fill related to early twentieth century land reclamation
IIb	25–45	Fill; 10YR 7/1, light gray; clay sand; structureless (massive); moist, firm consistence; strong cementation; plastic; mixed origin; abrupt, smooth lower boundary; hydraulic (dredged) clay sand related to early twentieth century land reclamation
III	32–71	Fill; 10YR 2.5/1, black; gravelly loamy fine sand; weak, fine, granular structure; moist, loose consistence; non-plastic; mixed origin; clear, discontinuous lower boundary; contains burnt metal, brick fragments, glass fragments, and cinder
IV	41–66	Fill; 2.5Y 6/3, light yellowish brown, mottled with 10YR 3/1, very dark gray; gravelly to cobbly sandy loam; weak, medium, crumb structure; moist, friable consistence; non-plastic; marine origin; clear, discontinuous lower boundary; contains glass bottle fragments, brick fragments, a non-local quartz rock, metal fragments, and faunal bone (not collected); mix of non-local and locally procured sediment
V	45–74	Fill; 10YR 5/2, grayish brown; sandy loam; weak, fine, crumb structure; moist, very friable consistence; non-plastic; marine origin; abrupt, smooth lower boundary; likely locally procured and redeposited A horizon material; no cultural material observed
VIa	53–90	Natural; 2.5Y 7/4, pale yellow; loamy sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; abrupt, smooth lower boundary; contains small glass bottle and brick fragments, two water-rounded basalt cobbles (not collected), and dog bone; calcareous Jaucas sand with historic impact in the upper portion
VIb	90–95	Natural; 2.5YR 8/1, white; calcified sand; structureless (massive); cemented; indurated consistence; non-plastic; marine origin; abrupt, smooth lower boundary; indurated Jaucas sand

Stratum	Depth (cmbs)	Description
VIc	95–111	Natural; 10YR 7/3, very pale brown; medium clay sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; many, fine roots; calcareous Jaucas sand
VII	105–128	Natural; 2.5Y 7/1, light gray; clay sand; structureless (single-grain); moist, loose consistence, weak cementation; non-plastic; marine origin; clear, smooth lower boundary; few fine to medium roots; natural marine deposit
VIII	128 (BOE)	Natural; coral shelf

Figure 60. Original Block N East T-3 Brick and metal fragments observed in Stratum III

Figure 61. Original Block N East T-3 Glass bottle fragments and non-local quartz observed in Stratum IV

Figure 62. Original Block N East T-3 Glass bottle fragments, bricks, and oxidized metal observed in Stratum IV

Figure 63. Original Block N East T-3 Water worn basalt cobbles observed in Stratum VI

B.1.2 Original Block N East Test Excavation 5

T-5, an exterior test excavation located *makai* of the warehouse in the west portion of the project area, was oriented northeast-southwest and measured 6.1 m long by 0.7 m wide. The water table was encountered at 1.42 mbs, and the base of excavation was determined by the hard coral shelf at 1.46 mbs.

The stratigraphy of T-5 consists of the asphalt surface (Stratum Ia) and associated extremely gravelly loamy sand base course (Stratum Ib), over a Kaka‘ako reclamation fill deposit consisting of extremely cobbly clay sand (crushed coral) (Stratum IIa) and hydraulic (dredged) clay (Stratum IIb), over a locally procured sandy loam fill deposit (Stratum III), over a natural, loamy sand A horizon (Stratum IVa; SIHP # -7429) that developed within natural, calcareous Jaucas sand (Stratum IVb), over a thin layer of natural indurated sand (Stratum IVc), natural clay sand (Stratum IVd), and saturated clay sand (Stratum V) (Figure 64 through Figure 68 and Table 5).

The excavation of T-5 documented modern deposits (Strata Ia and Ib) over early twentieth century land reclamation fill (Strata IIa and IIb), over a nineteenth to early twentieth century fill deposit that consists of a thin, compact layer of reworked sediment, likely including A horizon material (Stratum III), over an in situ A horizon (Stratum IVa), over natural sands (Strata IVb–IVd and VI). An approximately 17–liter sample of Strata III and IVa was screened in the field, yielding a single pig incisor. The Stratum IVa A horizon also contained five pit features. The A horizon and associated features are considered components of SIHP # -7429 (Component 2) (Figure 69). All five features terminate in Jaucas sand.

SIHP # -7429 Feature 86 is a large, circular pit feature that measures 60 cm long, 70 cm wide, and 8 cm thick (see Figure 64, Figure 70, Figure 67, and Figure 69). It spans the width of the test excavation, extending slightly into the southeast sidewall. The feature extends from 75–83 cmbs. One gallon of feature matrix was screened and yielded charcoal flecks. The function of this feature is indeterminate.

SIHP # -7429 Feature 87 is an oblong pit feature that measures 62 cm long, 30 cm wide, and 11 cm thick (see Figure 70, Figure 68, and Figure 69). It extends into the northwest test excavation sidewall. The feature ranges from 70–81 cmbs. Two gallons of feature matrix were screened and yielded charcoal flecks. The function of this feature is indeterminate.

SIHP # -7429 Feature 88 is an oblong pit feature that measures 52 cm long, 20 cm wide, and 11 cm thick (see Figure 71, Figure 67, and Figure 69). It extends into the southeast test excavation sidewall. The feature ranges from 75–86 cmbs. Charcoal flecks were noted within the feature matrix. The function of this feature is indeterminate.

SIHP # -7429 Feature 89 is a small pit of dark-colored sediment that measures 26 cm wide and 17 cm thick (see Figure 65 and Figure 67). It is located solely within the southeast test excavation sidewall and extends from 75–92 cmbs. No cultural material was observed within the feature. Based on feature morphology (e.g., vertical edges and circular shape), Feature 107 is believed to be a post mold.

SIHP # -7429 Feature 90 is a small pit of dark-colored sediment that measures 15 cm wide and 19 cm thick (see Figure 66 and Figure 68). It is located solely within the northwest test excavation sidewall, within the vicinity of Feature 89, and extends from 75–94 cmbs. No cultural material

was observed within the feature. Based on similar feature morphology, Feature 108 is believed to be a post mold.

Figure 64. Original Block N East T-5, southeast sidewall, southwest half; note SIHP # -7429 Feature 86 within the sidewall, view to south

Figure 65. Original Block N East T-5, southeast sidewall, northeast half; note SIHP # -7429 Feature 89, view to east

Figure 66. Original Block N East T-5, northwest sidewall, northeast end; note SIHP # -7429 Feature 90, view to northwest

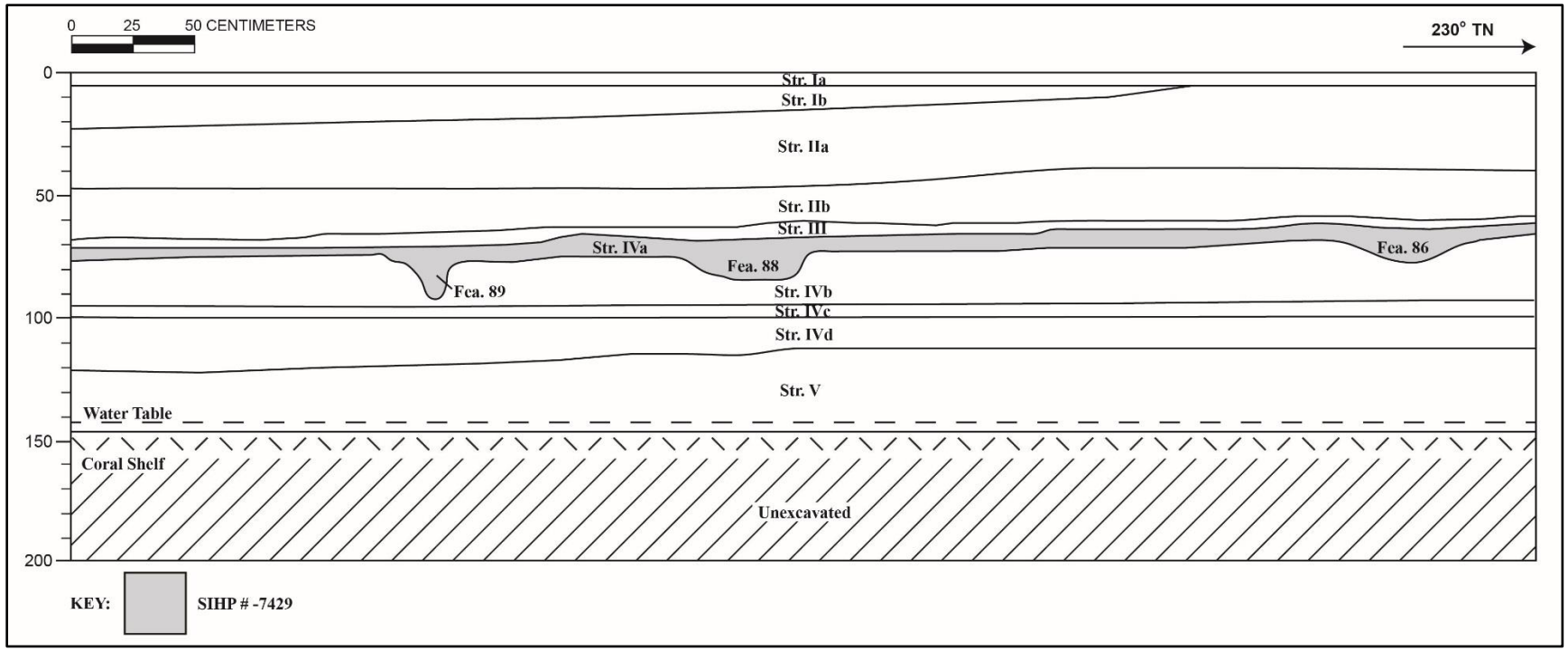

Figure 67. Original Block N East T-5 southeast profile

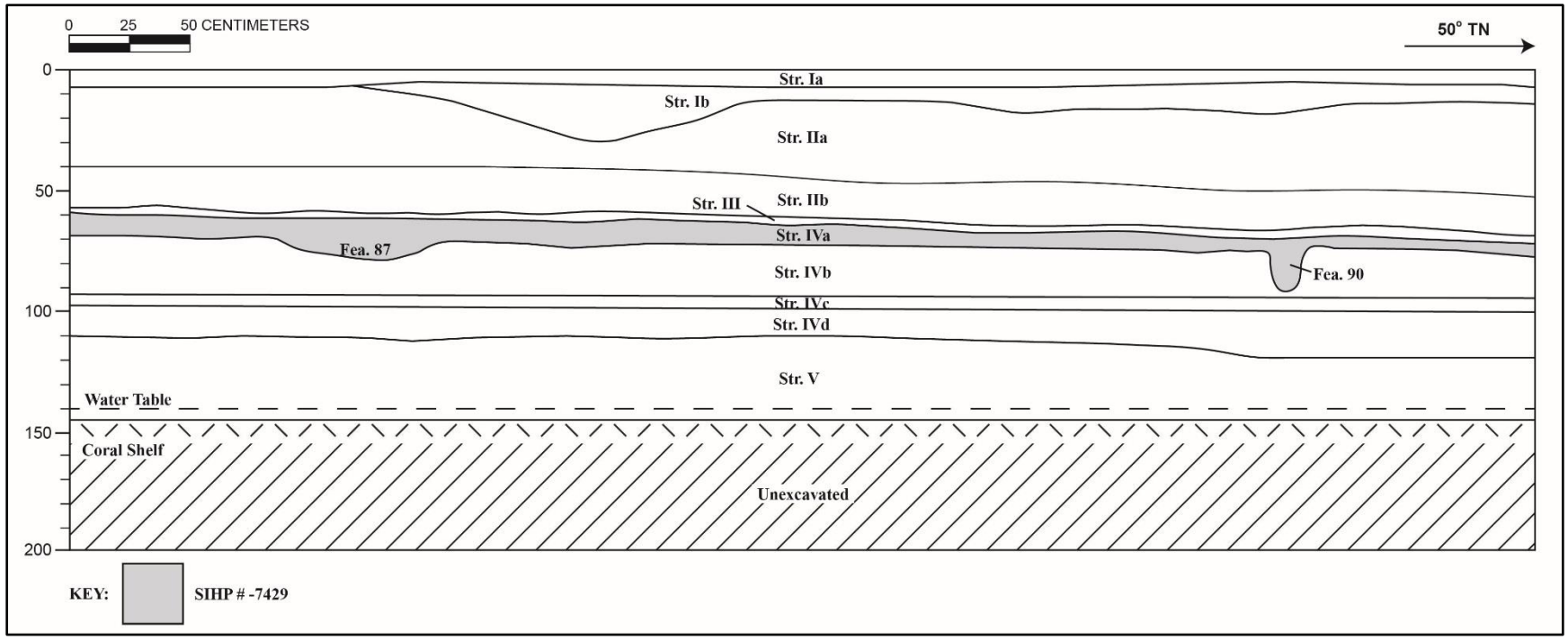

Figure 68. Original Block N East T-5 northwest profile

Table 5. Original Block N East T-5 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–9	Asphalt; road surface
Ib	6–30	Fill; 5YR 4/2, dark reddish gray, mottled with 10YR 4/3, brown; extremely gravelly loamy sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; clear, wavy lower boundary; mixed base course material for overlying road surface
IIa	9–54	Fill; 2.5Y 7/1, light gray; extremely cobbly clay sand; structureless (massive); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; crushed coral fill related to early twentieth century land reclamation
IIb	40–66	Fill; 5Y 7/4, pale brown; clay; structureless (massive); moist, friable to firm consistence; plastic; marine origin; abrupt, smooth lower boundary; transitions from sand to clay toward lower boundary; hydraulic (dredged) fill related to early twentieth century land reclamation
III	58–72	Fill; 2.5Y 5/3, light olive brown; sandy loam; medium, fine, crumb structure; moist, friable to firm consistence; slightly plastic; mixed origin; clear, smooth lower boundary; compact layer of locally procured, reworked A horizon material
IVa	61–75	Natural; 2.5Y 3/2, very dark grayish brown; loamy sand; structureless (single-grain); moist, loose consistence; slightly plastic; mixed origin; diffuse, smooth lower boundary; contains faunal (pig) remains; in situ A horizon; SIHP # -7429 Component 2; contains SIHP # -7429 Features 86–90
	75–83	SIHP # -7429 Feature 86; contains charcoal flecks; indeterminate pit
	70–81	SIHP # -7429 Feature 87; contains charcoal flecks; indeterminate pit
	75–86	SIHP # -7429 Feature 88; contains charcoal flecks; indeterminate pit
	75–92	SIHP # -7429 Feature 89; probable post mold
	75–94	SIHP # -7429 Feature 90; probable post mold
IVb	70–95	Natural; 2.5Y 7/4, pale brown; sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; diffuse, smooth lower boundary; calcareous Jaucas sand grading to clay sand
IVc	93–100	Natural; 2.5YR 8/1, white; calcified sand; structureless (massive); cemented; indurated consistence; non-plastic; marine origin; abrupt, smooth lower boundary; indurated Jaucas sand
IVd	98–120	Natural; 10YR 6/3, pale brown; clay medium sand; moderate, medium to coarse, crumb structure; wet, slightly sticky consistence; slightly plastic; marine origin; diffuse, smooth lower boundary; root staining; Jaucas sand and clay

Stratum	Depth (cmbs)	Description
V	110–146	Natural; Gley 1, 10GY 6/1, greenish gray; coarse sand; structureless (single-grain); wet, non-sticky consistence; non-plastic; marine origin; abrupt, smooth lower boundary; marine deposit
VI	146 (BOE)	Natural; coral shelf

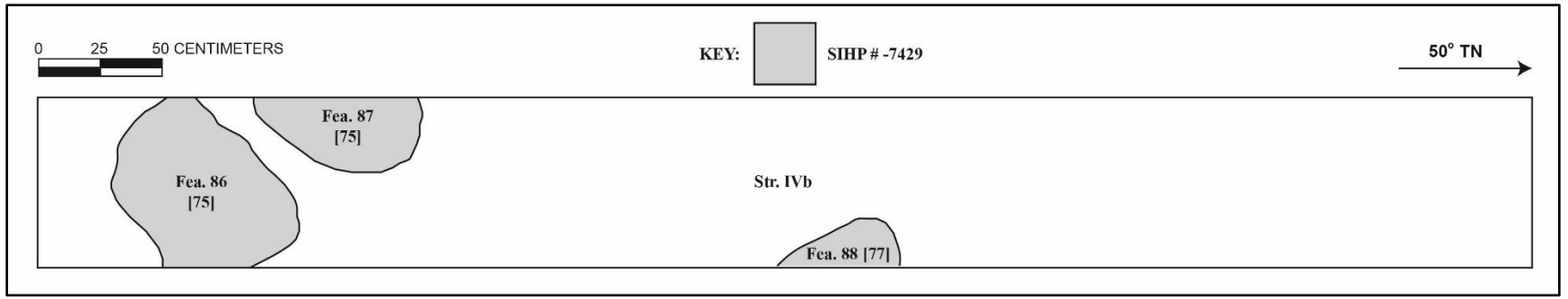

Figure 69. Original Block N East T-5 plan view showing SIHP # -7429 Features 86–88

Figure 70. Original Block N East T-5 SIHP # -7429 Features 86 and 87

Figure 71. Original Block N East T-5 SIHP # -7429 Feature 88

B.1.3 Original Block N East Test Excavation 15

T-15, an exterior test excavation located makai of the warehouse building in the southwest portion of the project area, was oriented northeast-southwest and measured 6.1 m long by 0.7 m wide. The water table was encountered at 1.5 mbs, and the base of excavation was determined by the hard coral shelf at 1.57 mbs.

The stratigraphy of T-15 consists of the asphalt surface (Stratum Ia) and associated extremely gravelly sandy loam base course (Stratum Ib), over a Kaka‘ako reclamation fill deposit consisting of cobbly sand (crushed coral) (Stratum IIa) and hydraulic (dredged) clay sand (Stratum IIb), over locally procured and redeposited loamy sand fill (Stratum III), over an in situ, loamy sand A horizon (Stratum IVa) that developed within natural, calcareous Jaucas sand (Stratum IVb), a thin layer of indurated sand (Stratum IVc), clay sand (Stratum IVd), and marine clay sand (Stratum VI) (Figure 145, Figure 146, and Table 22).

The excavation of T-15 documented modern deposits (Strata Ia–Ib) over an early twentieth century land reclamation fill deposit (Strata IIa–IIb), over a graded, historic fill layer composed of locally procured and redeposited A horizon sediment (Stratum III), over a truncated, in situ A horizon (Stratum IVa) and natural sands (Strata IVb–IVd and VI).

Five gallons of sediment were screened from the Strata III–IVa interface, but yielded no cultural material. Cow bone (cut with a metal blade) was hand-collected from the interface of Strata IIb and III at approximately 73 cmbs.

Figure 72. Original Block N East T-15 northwest sidewall, view to west

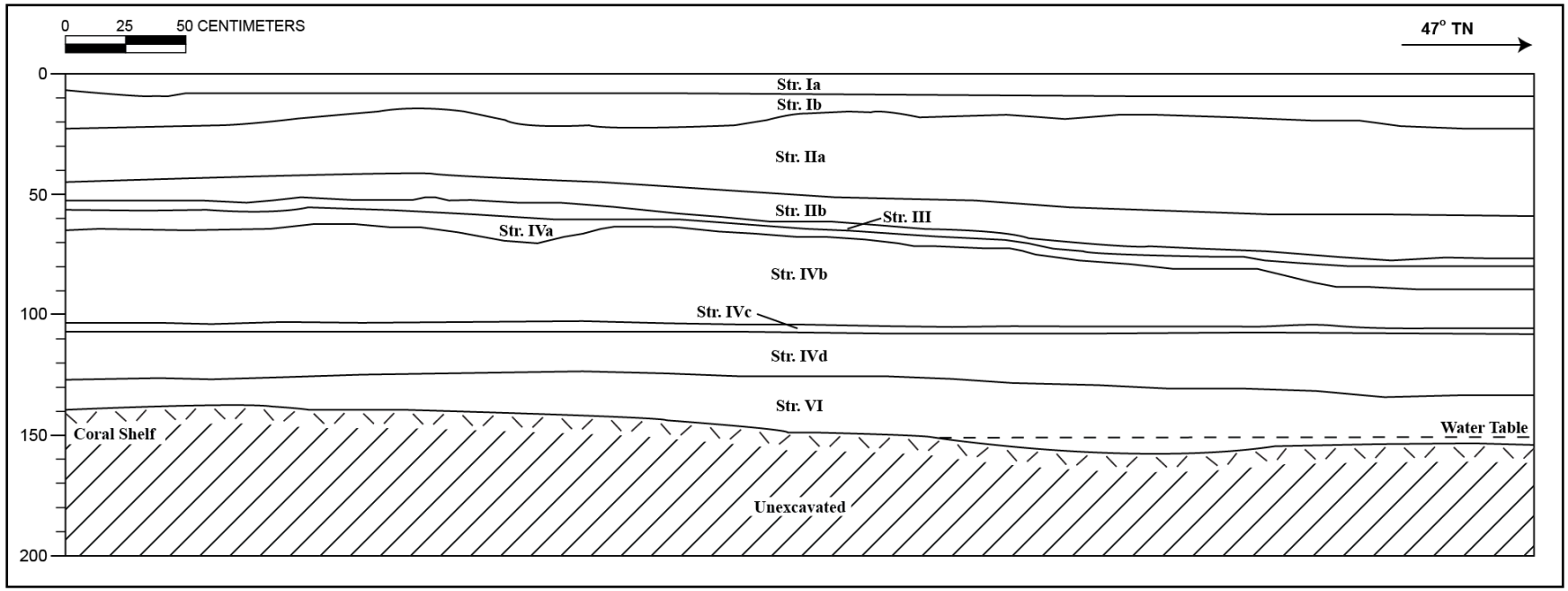

Figure 73. Original Block N East T-15 northwest profile

Table 6. Original Block N East T-15 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–9	Asphalt; road surface
Ib	9–28	Fill; 10YR 3/1, very dark gray; extremely gravelly sandy loam; structureless (single-grain); moist, loose consistence; non-plastic; terrigenous origin; abrupt, smooth lower boundary; basalt base course for road surface
IIa	16–60	Fill; 10YR 7/2, light gray; extremely cobbly sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; common, fine roots; contains rusted nails and a metal fragment (not collected); crushed coral fill related to early twentieth century land reclamation
IIb	45–76	Fill; 10YR 7/4, very pale brown; clay sand; structureless (massive); moist, friable consistence; slightly plastic; marine origin; clear, smooth lower boundary; common, fine roots; hydraulic (dredged) material related to early twentieth century land reclamation
III	52–80	Fill; 10YR 5/3, brown, loamy sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; contains cow bone (cut with a metal blade); compacted and graded historic surface composed of locally procured and redeposited A horizon material
IVa	56–89	Natural; 10YR 4/2, dark grayish brown; loamy sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; clear, smooth lower boundary; truncated/graded, in situ A horizon
IVb	65–105	Natural; 2.5Y 8/3, pale brown; sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; calcareous Jaucas sand
IVc	103–107	Natural; 2.5Y 8/3, pale brown; calcified sand; structureless (massive); cemented; indurated consistence; non-plastic; marine origin; very abrupt, smooth lower boundary; indurated Jaucas sand
IVd	107–125	Natural; 10YR 7/4, very pale brown; clay sand; structureless (single-grain); wet, non-sticky consistence; non-plastic; marine origin; clear, smooth lower boundary; saturated clay and Jaucas sand
VI	125–157	Natural; 5Y 7/1, light gray; clay sand; structureless (single-grain); wet, non-sticky consistence; non-plastic; marine origin; saturated marine clay sand
V	137–157 (BOE)	Natural; coral shelf

B.1.4 Original Block N East Test Excavation 16

T-16, an interior test excavation located inside commercial warehouse space in the central portion of the project area, was oriented northeast-southwest and measured 6.0 m long by 0.7 m wide. The base of excavation was determined by the water table at 1.52 mbs. The coral shelf was not encountered.

The stratigraphy of T-16 consists of the concrete floor surface (Stratum Ia) and associated extremely gravelly sandy loam base course (Stratum Ib), over a buried, former asphalt surface (Stratum IIa; SIHP # -7686) and associated gravelly sandy loam base course (Stratum IIb; SIHP # -7686), over a Kaka‘ako reclamation fill deposit consisting of extremely gravelly sand (crushed coral) (Stratum IIIa) and hydraulic (dredged) sand and sandy clay (Stratum IIIb), over an oil-rolled cinder surface (Stratum IV; SIHP # -7686) and an in situ sandy clay wetland A horizon (Stratum Va) that developed within natural marine sand (Stratum Vb) (Figure 147, Figure 148, and Table 23).

The excavation of T-16 documented modern deposits (Strata Ia–Ib), over a buried asphalt road surface (Strata IIa–IIb), over Kaka‘ako reclamation fill (Strata IIIa–IIIb), over an oil-rolled surface (Stratum IV) and natural wetland sediments (Strata Va–Vb). The buried surfaces represent successive phases of historic development within the project area and are considered components of SIHP # -7686. The buried oil-rolled surface (Stratum IV) consists of compacted, crushed cinder with a strong hydrocarbon odor (Figure 149). The surface is stratigraphically located beneath the 1919–1927 Kaka‘ako reclamation fill deposits, indicating that it was constructed sometime prior to to this time period. The asphalt surface and associated base course layer (Strata IIa–IIb) directly overlie and post-date the 1919–1927 Kaka‘ako reclamation fill deposits (see Figure 149). Similar asphalt surfaces located atop reclamation fill deposits were documented within eight additional Block N East test excavations.

Figure 74. Original Block N East T-16 southeast sidewall, view to east

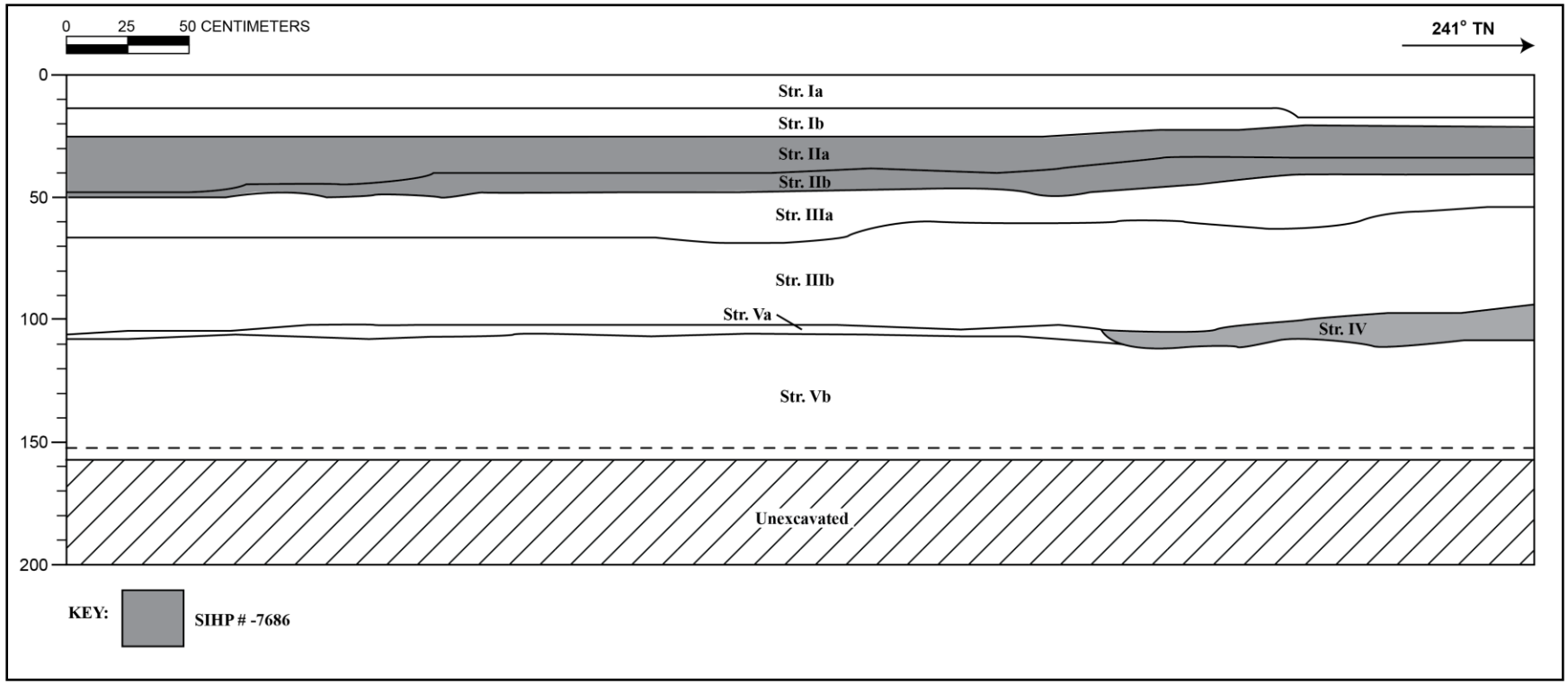

Figure 75. Original Block N East T-16 southeast profile

Table 7. Original Block N East T-16 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–18	Concrete; building floor
Ib	16–25	Fill; 7.5YR 3/2, dark brown; extremely gravelly sandy loam; weak, fine, granular structure; moist, loose consistence; non-plastic; mixed origin; abrupt, smooth lower boundary; base course for concrete
IIa	20–48	Asphalt; buried former road surface; SIHP # -7686
IIb	35–50	Fill; 10YR 3/4, dark yellowish brown; gravelly sandy loam; weak, fine granular structure; moist, loose consistence; non-plastic; mixed origin; clear, smooth lower boundary; base course for Stratum IIa asphalt; SIHP # -7686
IIIa	40–67	Fill; 2.5Y 7/3, pale yellow; extremely gravelly sand; weak, fine, granular structure; moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; crushed coral fill related to early twentieth century land reclamation
IIIb	53–105	Fill; 10YR 7/6, yellow; sand grading to sandy clay; moderate, fine granular structure; moist, friable consistence; non-plastic; marine origin; abrupt, smooth lower boundary; hydraulic (dredged) fill related to early twentieth century land reclamation
IV	95–111	Fill; oil-rolled, historic road surface; SIHP # -7686
Va	101–110	Natural; 2.5Y 5/2, grayish brown; sandy clay; moderate, fine, blocky structure; moist, friable consistence; slightly plastic; mixed origin; abrupt, smooth lower boundary; in situ, organic-rich, wetland A horizon
Vb	105–152 (BOE)	Natural; GLEY 1 10Y 6/1, greenish gray; sand; weak, fine, granular structure; wet, non-sticky consistence; non-plastic; marine origin; lower boundary not visible; few, fine roots; marine sand

B.1.5 Original Block N East Test Excavation 18

T-18, an exterior test excavation located in the central portion of the project area, was oriented northeast-southwest and measured 6.1 m long by 0.7 m wide. The water table was encountered at 1.33 mbs, and the base of excavation was determined by the decomposing coral shelf at 1.45 mbs.

The stratigraphy of T-18 consists of the asphalt surface (Stratum Ia), associated extremely gravelly sandy loam base course (Stratum Ib), and sandy clay fill (Stratum Ic), over a buried asphalt surface (Stratum IIa; SIHP # -7686) and associated base course (Stratum IIb; SIHP # -7686), over Kaka‘ako reclamation fill deposits consisting of very cobbly sand (crushed coral) (Stratum IIIa) and hydraulic (dredged) sandy clay (Stratum IIIb), over a thin, compact layer of locally procured and redeposited loamy sand fill (Stratum IV), over a natural sandy clay loam A horizon (Stratum Va) that developed within natural calcareous Jaucas sand (Stratum Vb), that transitions into saturated, natural clay sand (Stratum VIa) and sandy clay (Stratum VIb) (Figure 153, Figure 154, and Table 25).

The excavation of T-18 documented modern deposits (Strata Ia–Ic), over a buried asphalt road surface (Strata IIa–IIb), over Kaka‘ako reclamation fill (Strata IIIa–IIIb), over a historic fill deposit of locally procured and redeposited sediment, likely including A horizon material (Stratum IV), over an in situ sandy A horizon (Stratum Va) that developed within natural sandy deposits (Strata Vb, VIa, and VIb). The buried asphalt surface is likely older that 50 years of age and is considered a component of SIHP # -7686. Similar asphalt surfaces located atop reclamation fill deposits were documented within eight additional Block N East test excavations (see Figure 2).

Figure 76. Original Block N East T-18 central and *makai* portions, view to southwest

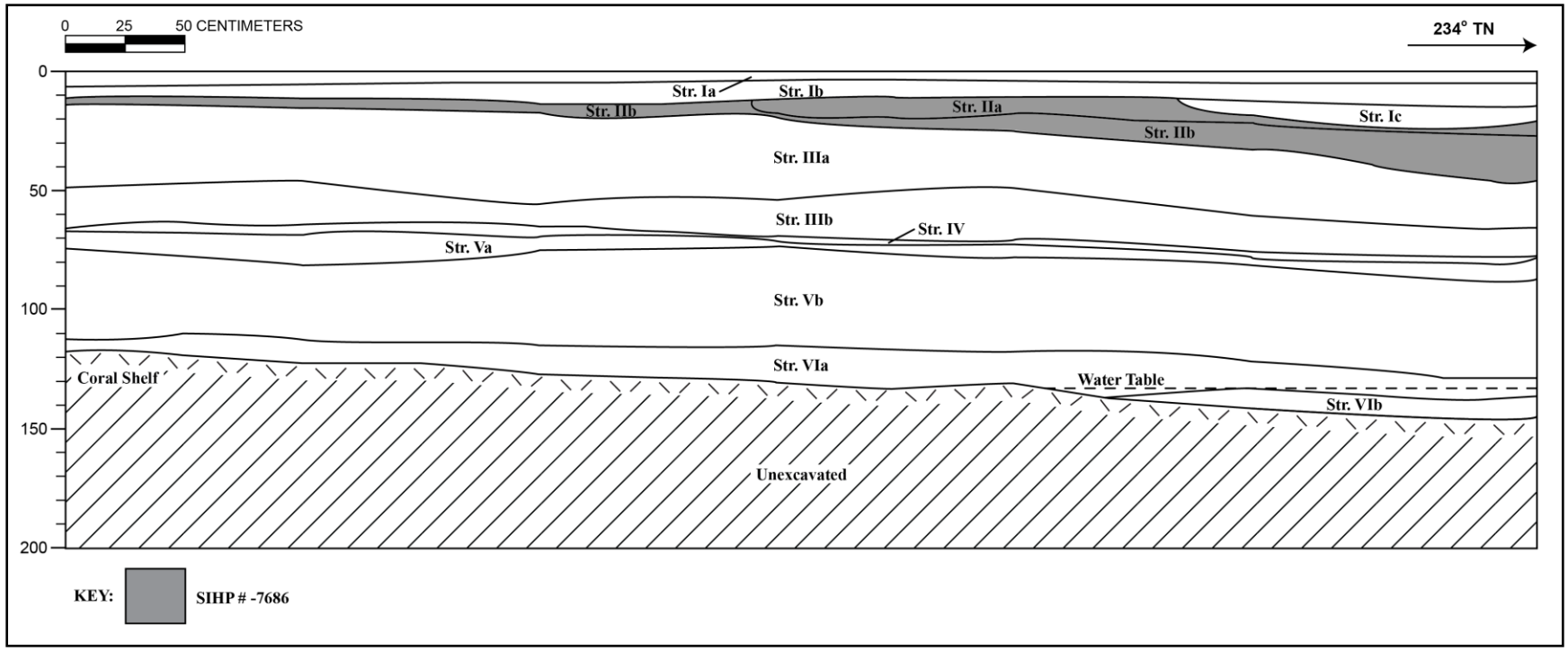

Figure 77. Original Block N East T-18 southeast wall profile

Table 8. Original Block N East T-18 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–8	Asphalt; road surface
Ib	5–15	Fill; 10YR 3/2, very dark grayish brown; extremely gravelly sandy loam; structureless (single-grain); moist, loose consistence; non-plastic; terrigenous origin; clear, smooth lower boundary; base course for the road surface
Ic	12–25	Fill; 5Y 4/1, dark gray; sandy clay; weak, coarse, crumb structure; moist, loose consistence; non-plastic; terrigenous origin; clear, broken lower boundary; coral cobble inclusions; fill associated with raising land for commercial warehouses
IIa	12–23	Asphalt; buried former road surface; SIHP # -7686
IIb	12–47	Fill; 2.5Y 4/3, olive brown; loam; weak, medium to coarse, granular structure; moist, loose consistence; non-plastic; mixed origin; clear, smooth lower boundary; rusted metal layer observed within the stratum; base course fill containing coral cobbles, likely associated with asphalt surface; SIHP # -7686
IIIa	15–56	Fill; 10YR 8/4, very pale brown; very cobbly sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, wavy lower boundary; crushed coral fill related to early twentieth century land reclamation
IIb	46–80	Fill; 5Y 7/2, light gray; sandy clay; structureless (massive); moist, very friable consistence; non-plastic; marine origin; very abrupt, smooth lower boundary; grades from fine sand to clay; hydraulic (dredged) clay related to early twentieth century land reclamation
IV	64–77	Fill; 10YR 6/1, gray, mottled with 10YR 6/4, light yellowish brown; loamy sand; structureless (single-grain); dry, extra hard consistence; non-plastic; mixed origin; clear to diffuse, smooth lowery boundary; no roots observed; no cultural material observed; highly compact, indurated layer of locally procured fill material; likely used to level the land surface
Va	65–83	Natural; 2.5Y 3/1, very dark gray; sandy clay loam; weak, medium, crumb structure; moist, loose consistence; non-plastic; mixed origin; clear to abrupt, smooth lower boundary; no roots observed; no cultural material observed; disturbed former A horizon with compact upper boundary
Vb	75–130	Natural; 2.5Y 7/4, pale yellow; sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; diffuse, smooth lower boundary; calcareous Jaucas that grades to clay sand

Stratum	Depth (cmbs)	Description
VIa	110–137	Natural; 5Y 7/1, light gray; clay sand; structureless (single-grain); wet, non-sticky consistence; non-plastic; marine origin; abrupt, smooth lower boundary; common, fine roots; saturated natural deposit
VIb	133–145	Natural; 5Y 7/1, light gray; clay sand; structureless (single-grain); wet, non-sticky consistence; non-plastic; marine origin; abrupt, smooth lower boundary; common, fine roots; saturated natural deposit
VII	118–145 (BOE)	Natural; coral shelf

B.1.6 Original Block N East Test Excavation 23

T-23, an exterior test excavation located makai of the warehouse building in the southern portion of the project area, was oriented southwest-northeast and measured 6.1 m long by 0.7 m. The water table was encountered at 1.45 mbs, and the base of excavation was determined by the water table and the hard coral shelf at 1.45 mbs.

The stratigraphy of T-23 consists of the asphalt surface (Stratum Ia) and associated extremely gravelly sandy loam base course (Stratum Ib), over Kaka‘ako reclamation fill deposits consisting of cobbly sand (crushed coral) (Stratum IIa) and hydraulic (dredged) sandy clay (Stratum IIb), over three historic fill deposits consisting of sandy loam (Stratum III), a burnt, gravelly loamy sand (Stratum IV), and a locally procured loamy sand fill (Stratum V), over natural, calcareous Jaucas sand (Stratum VIa), a thin layer of indurated sand (Stratum VIb), and clay sand (Strata VIc and VId) (Figure 165, Figure 166, and Table 30).

T-23 is very similar to T-3, located approximately 5 m to the southeast. The excavation of T-23 documented modern deposits (Strata Ia–Ib) over land reclamation fill (Strata IIa–IIb), over nineteenth to early twentieth century fill deposits consisting of a mixed non-local and local sediment (Stratum III), a lens of burnt material (Stratum IV), and a layer of locally procured and redeposited A horizon and sand material (Stratum V), over natural sands (Strata VIa–VIc and VII). The Strata IIa–IIb (land reclamation) and III fill deposits contain a small amount of historic material, consisting of fragments of glass, ceramic, metal, and brick (Figure 167). These items were not collected. Several burnt historic artifacts, as well as cow and pig bone, were also observed within the Stratum IV burnt fill sediment (Figure 168). The entirety of the Stratum V reworked local sediment was screened in the field; no cultural material was observed. The Stratum VIa Jaucas sand layer was also somewhat disturbed, as evidenced by a porcelain fragment documented within the stratum at 80 cmbs.

Figure 78. Original Block N East T-23 northwest sidewall, view to southwest

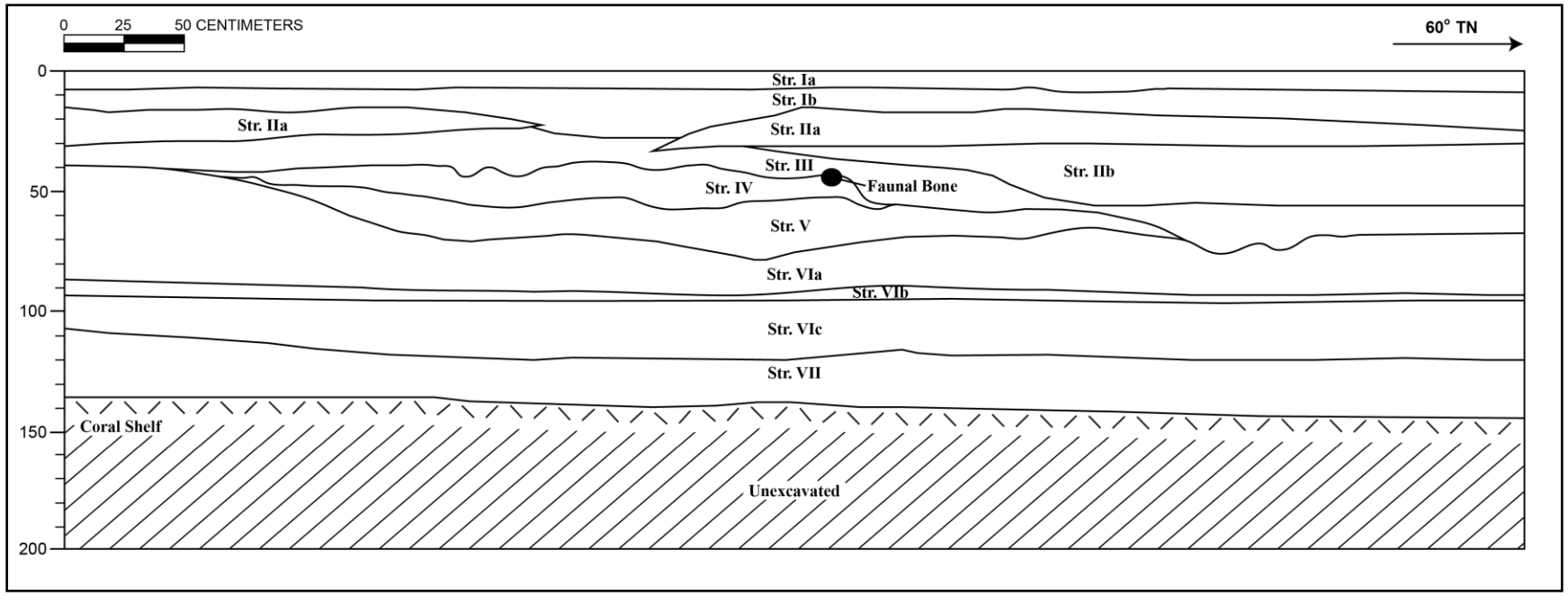

Figure 79. Original Block N East T-23 northwest sidewall profile

Table 9. Original Block N East T-23 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–8	Asphalt; road surface
Ib	8–30	Fill; 10YR 4/1, dark gray; extremely gravelly sandy loam; structureless (single-grain); moist, loose consistence; non-plastic; terrigenous origin; clear, smooth lower boundary; base course for road surface
IIa	17–30	Fill; 10YR 7/2, light gray; cobbly sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; abrupt, discontinuous lower boundary; contains sparse historic material; crushed coral fill related to early twentieth century land reclamation
IIb	30–55	Fill; 10YR 7/4, very pale brown; sandy loam; structure (massive); moist, friable consistence; slightly plastic; marine origin; abrupt, discontinuous lower boundary; contains sparse historic material; hydraulic (dredged) material related to early twentieth century land reclamation
III	25–76	Fill; 10YR 4/2, dark grayish brown, gravelly to cobbly sandy loam; weak, fine to medium, crumb structure; moist, friable consistence, non-plastic; mixed origin; abrupt, irregular lower boundary; contains volcanic cinder, basalt and coral cobbles, and sparse historic material; mix of non-local and local sediment
IV	38–58	Fill; 10YR 2/1, black; gravelly loamy fine sand; weak, fine, granular structure; moist, very friable consistence; non-plastic; mixed origin; abrupt, wavy lower boundary; lens containing burnt material such as brick, metal, and faunal bone (cow and pig)
V	49–79	Fill; 10YR 5/2, grayish brown; loamy fine to medium sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; clear to abrupt, wavy, lower boundary; likely locally procured and redeposited A horizon material
VIa	41–88	Natural; 2.5Y 7/4, pale yellow; medium sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; contained a porcelain fragment (not collected); disturbed, calcareous Jaucas sand
VIb	88–95	Natural; 2.5YR 8/1, white; calcified sand; structureless (massive); cemented; indurated consistence; non-plastic; marine origin; abrupt, smooth lower boundary; indurated Jaucas sand
VIc	95–120	Natural; 10YR 7/3, very pale brown; medium clay sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; many, fine roots; calcareous Jaucas sand

Stratum	Depth (cmbs)	Description
VII	110–145	Natural; 2.5Y 7/1, light gray; medium to coarse clay sand; structureless (single-grain); wet, non-sticky consistence; non-plastic; marine origin; abrupt, smooth lower boundary; contains many sea urchin spines and crustacean fragments; many, fine roots; marine sand deposit
VIII	145 (BOE)	Natural; coral shelf

B.1.7 Original Block N East Test Excavation 28

T-28, an exterior test excavation located in the eastern corner of the project area near Queen Street, was oriented northwest-southeast and measured 6.1 m long by 0.7 m wide. The water table was encountered at 1.38 mbs, and the base of excavation was determined by the coral shelf at 1.7 mbs.

The stratigraphy of T-28 consists of the asphalt surface (Stratum Ia), associated extremely gravelly sandy loam base course (Stratum Ib), and extremely gravelly sandy loam fill (Stratum Ic), over a very gravelly sandy loam fill living surface (Stratum II; SIHP # -7429), over an in situ sandy loam A horizon (Stratum IIIa) that developed within natural, calcareous Jaucas sand (Stratum IIIb), over marine sand (Stratum IV) and extremely gravelly sand (the decomposing coral shelf; Stratum IV) (Figure 80, Figure 81, and Table 10).

The excavation of T-28 documented modern deposits (Strata Ia–Ic), over a historic living surface (Stratum II), over a truncated and graded, natural sandy loam A horizon (Stratum IIIa), natural sands (Strata IIIb and IV), and the decomposing coral shelf (Stratum V). Early twentieth century land reclamation fill deposits were not encountered. Stratum II consists of a mix of non-local and locally procured sediment and contains historic artifacts. Collected items include a post-1954 Bayer aspirin glass medicine bottle (Acc. # 227), a 1963 Seagram’s glass liquor flask (Acc. #s 228), an additional glass flask manufactured between 1934-1970 (Acc. # 230), a post-1940 miniature glass whiskey bottle (Acc. # 229), a 1963 glass beer bottle (Acc. # 231), a synthetic window screen portion (Acc. # 232), and a glass cold cream jar with a plastic lid (Acc. # 233). These mid-twentieth century historic artifacts represent domestic items likely associated with the previous residences in this area. Based on the presence of residential-type historic cultural material and similarity with culturally enriched, locally procured fill deposits in the area of historic residences along Queen Street (i.e., fill deposits documented within T-8 through T-14G, T-21, T-22, and T-27), Strata II likely represents a historic living surface and is considered a component of SIHP # -7429 (Component 1).

An in situ, natural sandy loam A horizon (Stratum IIIa) was documented beneath Stratum II. The A horizon appeared truncated and graded. Approximately 3 gallons of the Stratum IIIa A horizon sediment was screened; no cultural material was observed.

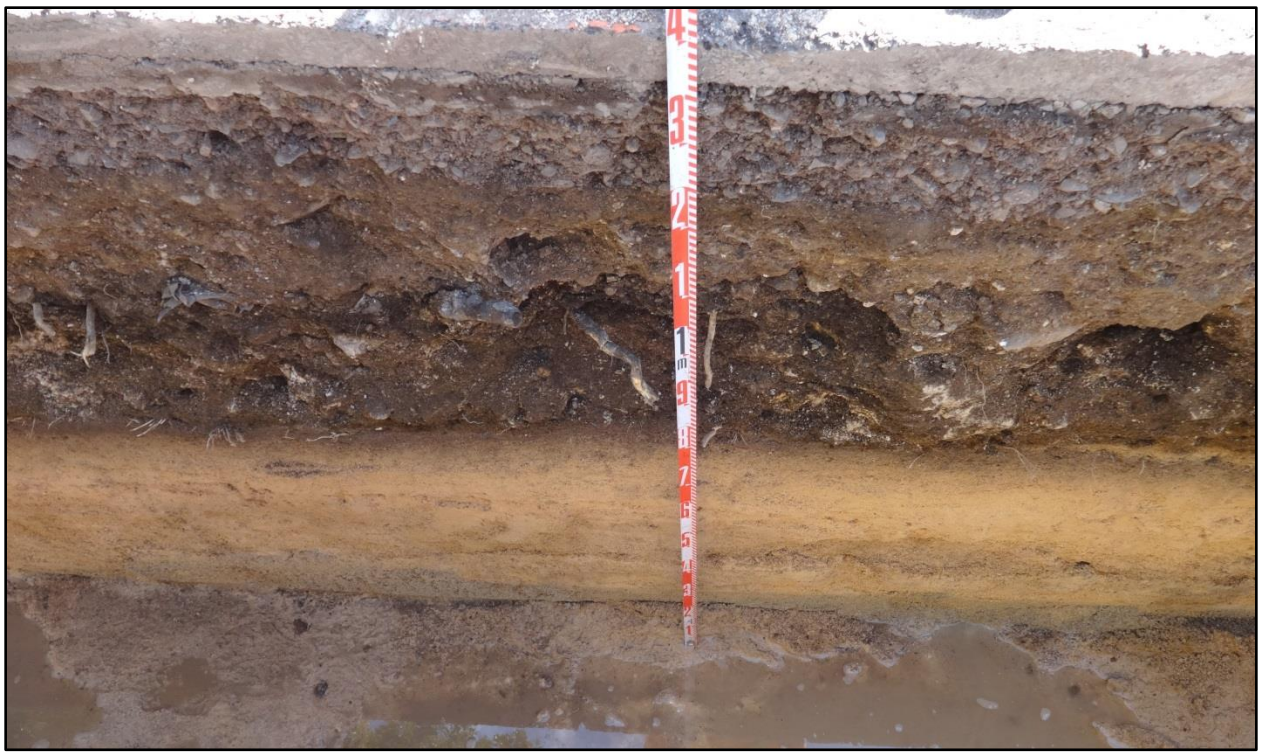

Figure 80. Original Block N East T-28 northeast sidewall, view to east

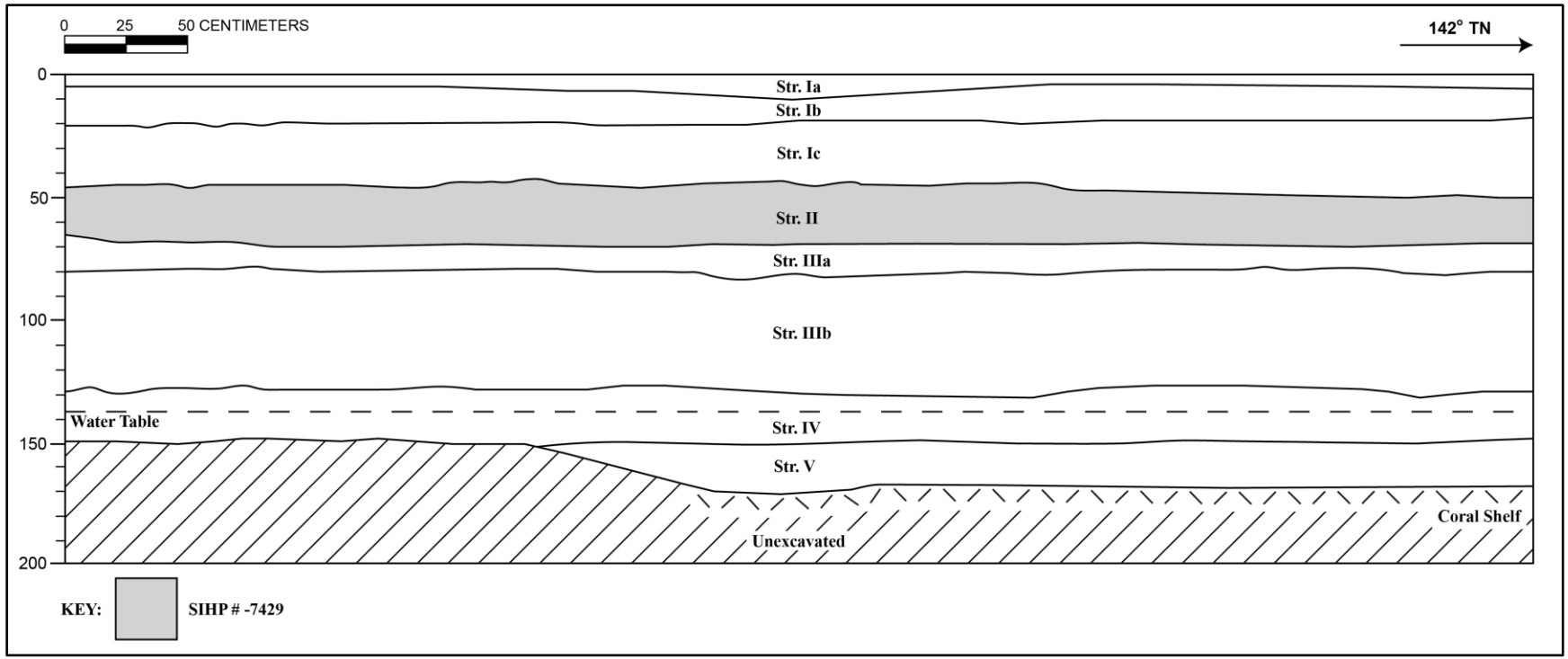

Figure 81. Original Block N East T-28 northeast profile

Table 10. Original Block N East T-28 Stratigraphic Description

Stratum	Depth (cmbs)	Description
Ia	0–10	Asphalt; road surface
Ib	5–20	Fill; 5YR 4/2, dark reddish gray; extremely gravelly sandy loam; weak, fine, crumb structure; moist, loose consistence; non-plastic; mixed origin; abrupt, wavy lower boundary; basalt gravel base course for road surface
Ic	20–50	Fill; 10YR 3/6, dark yellowish brown; extremely gravelly sandy loam; fine, crumb structure; moist, friable consistence; slightly plastic; mixed origin; abrupt, smooth lower boundary; common, coarse roots; contains faunal remains (cow)
II	45–70	Fill; 10YR 2/2, very dark brown; very gravelly sandy loam; weak, fine, crumb structure; moist, friable consistence; slightly plastic; mixed origin; abrupt, smooth lower boundary; common, coarse to very coarse roots; contains glass bottles (Acc. #s 227–231 and 233), synthetic window screen (Acc. # 232), a plastic comb/ brush and a plastic circular canister (not collected); mixed locally procured and non-local sediment; historic living surface; SIHP # -7429 Component 1
IIIa	65–83	Natural; 10YR 3/2, very dark grayish brown; sandy loam; medium, crumb structure; moist, loose consistence; non-plastic; mixed origin; clear, smooth lower boundary; common, medium roots; truncated, in situ A horizon
IIIb	80–132	Natural; 10YR 8/4, very pale brown; medium sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear and smooth lower boundary; calcareous Jaucas sand
IV	133–150	Natural; 10YR 6/1, gray; medium to coarse sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; marine sand
V	150–170 (BOE)	Natural; GLEY 1, 10Y 6/1, greenish gray; extremely gravelly/cobbly sand; coarse structure; wet, non-sticky consistence; non-plastic; marine origin; abrupt, smooth lower boundary; decomposing coral shelf with 95% coral cobbles

B.2 Block I Subsurface Testing Results (Sroat, Hawkins, Burke, Pammer, O’Hare, and McDermott 2015)

B.2.1 Block I Test Excavation 4

Test Excavation 4 (T-4) was an exterior trench located between Warehouse Buildings 4 and 5 along the mauka boundary of the study area. It was oriented northeast-southwest and measured 6.03 m long by 0.8 m wide. The water table was reached at 1.32 mbs, and the base of excavation was determined by the presence of the hard coral shelf at 1.4 mbs.

The stratigraphy of T-4 consists of the asphalt road surface (Stratum Ia) and associated base course (Stratum Ib) overlying a gravelly sand fill (Stratum Ic), a Kaka‘ako reclamation fill deposit consisting of extremely gravelly sand (crushed coral) (Stratum IIa) and hydraulic (dredged) silty clay (Stratum IIb), redeposited, locally procured loamy sand (Stratum III), a culturally sterile, natural loamy sand A horizon (Stratum IVa), which developed within Jaucas sand (Stratum IVb), a sandy clay deposit (Stratum V), and a coarse marine sand deposit (Stratum VI) (Figure 34, Figure 35, and Table 5).

The stratigraphic sequence of T-4 is similar to that of T-1 through T-3. Specifically, beneath the modern fill (Strata Ia–Ic) and reclamation fill (Strata IIa–IIb), these test excavations contain extremely indurate, reworked local sediment (Stratum III), likely including A horizon material, located above an in situ A horizon (Stratum IVa), Jaucas sand (Stratum IVb), a sandy clay deposit (Stratum V), and marine sand (Stratum VI). A screened 10-gallon sample of Stratum IVa, natural A horizon soil, yielded no cultural material. The lack of cultural material in this test excavation suggests this area was not previously extensively utilized.

Figure 82. Block I T-4 northeast sidewall, view to north

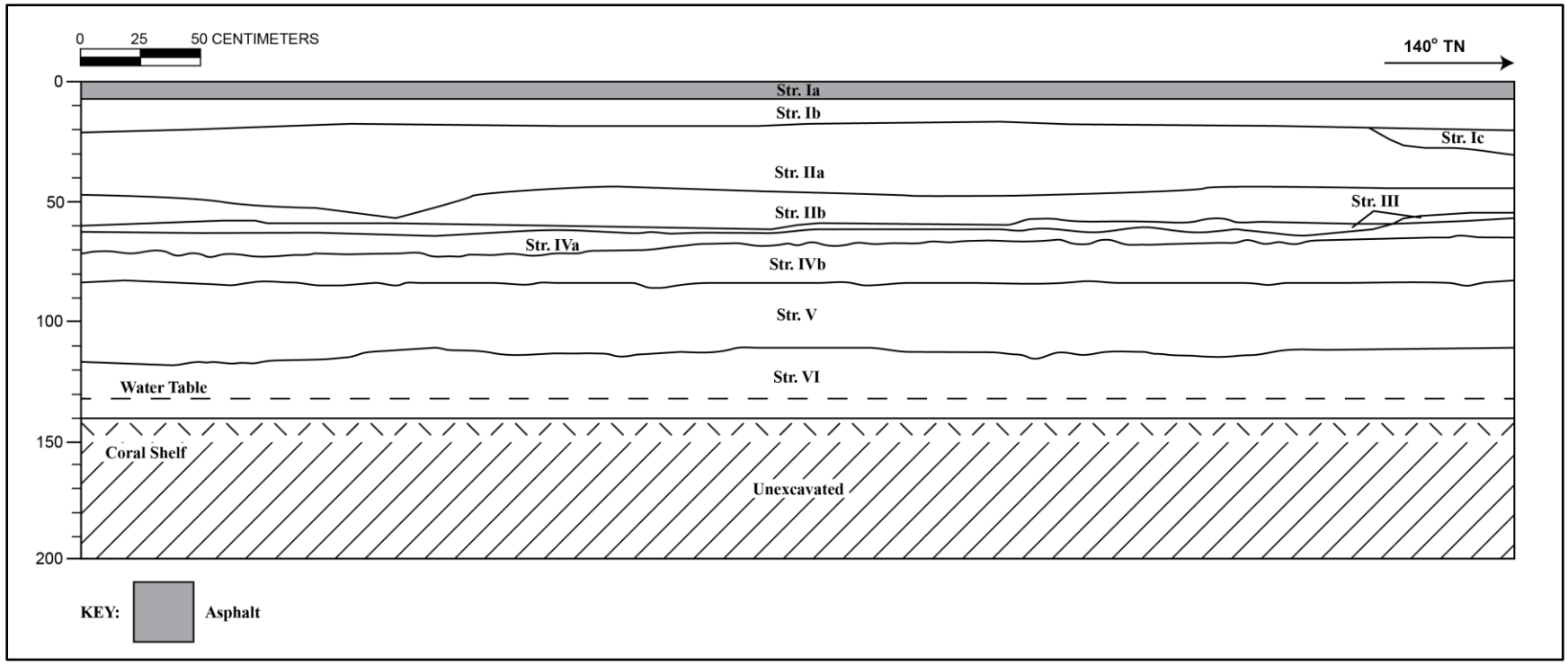

Figure 83. Block I T-4 northeast profile

Table 11. Block I Stratigraphic Description for T-4

Stratum	Depth (cmbs)	Description of Sediment
Ia	0–5	Asphalt; road surface
Ib	16–22	Fill; gravel base course
Ic	19–30	Fill; 10YR 5/3, brown; gravelly fine sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; clear, broken lower boundary
IIa	20–56	Fill; 2.5YR 8/4, pale yellow; extremely gravelly silty sand; structureless (single-grain); moist, very friable consistence; non-plastic; marine origin; clear, wavy lower boundary; crushed coral fill associated with early twentieth century land reclamation
IIb	44-60	Fill; 10YR 8/2, very pale brown; silty clay; weak, fine, platy structure; moist, friable consistence; plastic; marine origin; abrupt, smooth lower boundary; hydraulic (dredged) fill associated with early twentieth century land reclamation
III	54–64	Fill; 10YR 3/4, dark yellowish brown; loamy sand; weak, fine, crumb structure; moist, very friable consistence; non-plastic; mixed origin; abrupt, smooth, lower boundary; redeposited local sand and reworked A horizon material; no cultural material observed
IVa	56–73	Natural; 10YR 3/2, very dark grayish brown; loamy sand; weak, fine, crumb structure; moist, very friable consistence; non-plastic; mixed origin; diffuse, wavy lower boundary; natural A horizon; no cultural material observed
IVb	65–85	Natural; 10YR 8/4, very pale brown; fine to medium sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth, lower boundary; Jaucas sand; Stratum IVa parent material
V	82–117	Natural; 10YR 7/4, very pale brown; sandy clay; structureless (massive); wet, slightly sticky consistence; plastic; marine origin; diffuse, wavy lower boundary
VI	110–140 (BOE)	Natural; 10Y 7/1 (GLEY 1), light greenish gray; coarse to very coarse sand; structureless (single-grain); wet, non-sticky consistence; marine origin; abrupt, smooth lower boundary; marine sand; overlying coral shelf

B.2.2 Block I Test Excavation 5

Test Excavation 5 (T-5) was an exterior trench located between Warehouse Buildings 4 and 5 along the *mauka* boundary of the study area. It was oriented northeast-southwest and measured 6 m long by 0.8 m wide. The water table was reached at 1.57 mbs, and the base of excavation was determined by the presence of the soft decomposing coral shelf at 1.7 mbs. The coral shelf was initially reached at 1.33 mbs, but excavations continued through a void in the soft decomposing coral shelf for an additional 0.37 mbs.

The stratigraphy of T-5 consists of the asphalt road surface (Stratum Ia) and associated base course (Stratum Ib) overlying a Kaka‘ako reclamation fill deposit consisting of extremely gravelly sand (crushed coral) (Stratum IIa) and hydraulic (dredged) silty clay (Stratum IIb), redeposited, locally procured loamy sand fill (Stratum III), a culturally sterile, natural loamy sand A horizon (Stratum IVa), which developed within Jaucas sand (Stratum IVb), and a sandy clay deposit (Stratum V) (Figure 84, Figure 85, and Table 12).

The stratigraphic sequence of T-5 is similar to that of T-1 through T-4. Specifically, beneath the modern fill (Strata Ia and Ib) and reclamation fill (Strata IIa and IIb), these test excavations contain extremely indurate, reworked local sediment (Stratum III), likely including A horizon material, located above an in situ A horizon (Stratum IVa), Jaucas sand (Stratum IVb), and sandy clay deposit (Stratum V). A screened 5-gallon sample of Stratum IVa (A horizon soil) yielded no cultural material. The lack of cultural material in this test excavation suggests this area was not previously extensively utilized.

Figure 84. Block I T-5 northeast wall, view to north

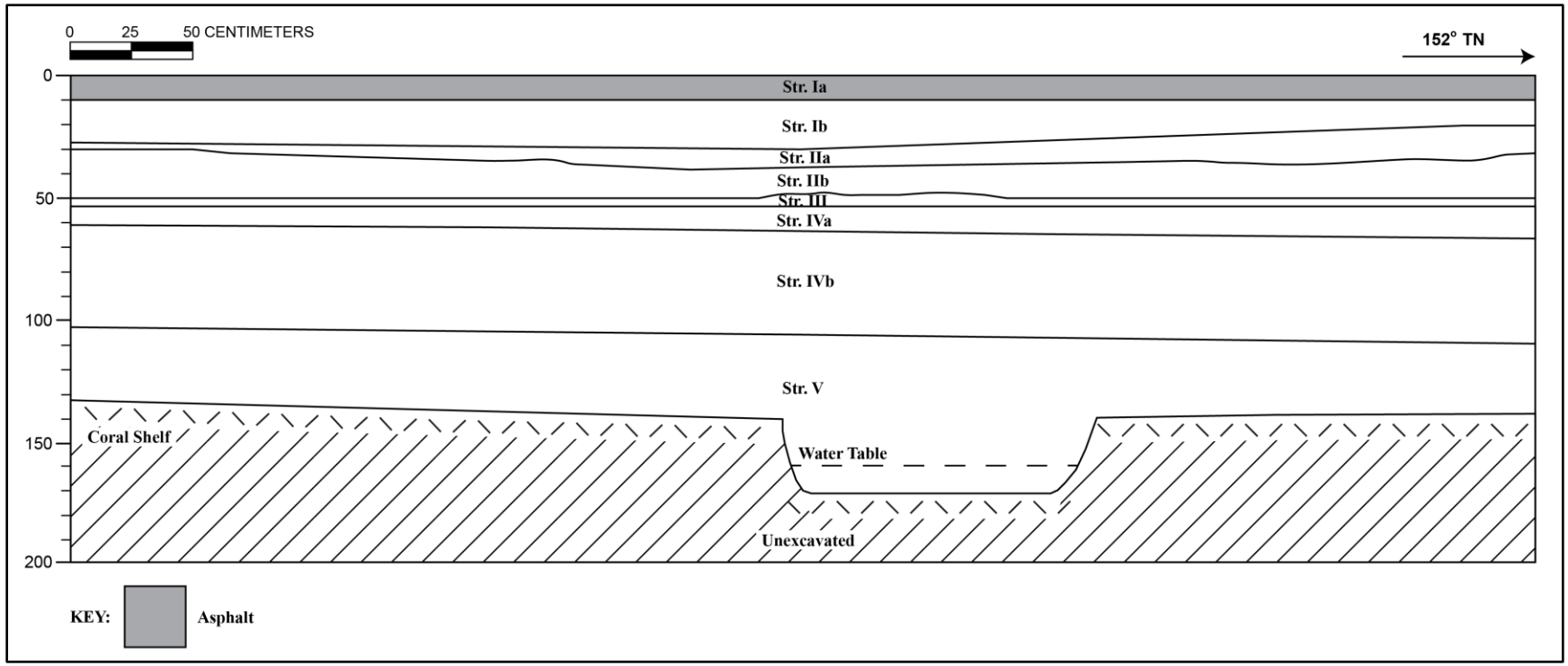

Figure 85. Block I T-5 northeast profile

Table 12. Block I Stratigraphic Description for T-5

Stratum	Depth (cmbs)	Description of Sediment
Ia	0–10	Asphalt; road surface
Ib	10–30	Fill; gravel base course
IIa	20–38	Fill; 10YR 7/2, light gray; extremely gravelly sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; crushed coral fill associated with early twentieth century land reclamation
IIb	31–50	Fill; 10YR 8/2, very pale brown; silty clay; weak, fine, platy structure; moist, friable consistence; slightly plastic; marine origin; abrupt, smooth lower boundary; hydraulic (dredged) material associated with early twentieth century land reclamation
III	47–53	Fill; 10YR 4/3, brown; loamy sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; clear, smooth lower boundary; redeposited and reworked local sand and A horizon material; no cultural material observed
IVa	53–67	Natural; 10YR 3/2, very dark grayish brown; loamy sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; clear, smooth lower boundary; natural A horizon; no cultural material observed
IVb	60–109	Natural; 10YR 8/4, very pale yellow brown; sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; Jaucas sand; Stratum IVa parent material
V	103–170 (BOE)	Natural; 10YR 7/1, light gray; sandy clay; weak, fine to medium, blocky structure; wet, slightly sticky consistence; slightly plastic; marine origin; abrupt, wavy lower boundary; overlying coral shelf

B.2.3 Block I Test Excavation 6

Test Excavation 6 (T-6) was an exterior trench located between Warehouse Buildings 4 and 5 along the mauka boundary of the study area. It was oriented northeast-southwest and measured 6.12 m long by 0.76 m wide. The water table was reached at 1.39 mbs, and the base of excavation was determined by the presence of the hard coral shelf at 1.4 mbs.

The stratigraphy of T-6 consists of the asphalt road surface (Stratum Ia) and associated base course (Stratum Ib), overlying a Kaka‘ako reclamation fill deposit consisting of extremely gravelly sand (crushed coral) (Stratum IIa) and hydraulic (dredged) silty clay (Stratum IIb), an incinerator fill deposit (Stratum III), a redeposited, locally procured loamy sand fill (Stratum IV; SIHP # -7429), a layer of mixed local sediment (Stratum V), natural Jaucas sand (Stratum VI), sandy clay (Stratum VII), and a coarse marine sand deposit (Stratum VIII) (Figure 38 through Figure 40, Table 7).

The stratigraphic sequence of T-6 is similar to T-1 through T-5, although T-6 has experienced more disturbance. Like the previous test excavations, T-6 contains modern fill (Strata Ia and Ib), reclamation fill (Strata IIa and IIb), redeposited locally procured sediment (Stratum IV), natural Jaucas sand (Stratum VI), a sandy clay deposit (Stratum VII), and a marine sand deposit (Stratum VIII). Unlike the previous test excavations, T-6 contains an incinerator fill deposit (Stratum III) in the northern portion of the trench (below the reclamation fill and above the redeposited local sediment), as well as what appears to be a machine-backfilled deposit of swirled local sediment (Stratum V) in the southern portion (below the reclamation fill and above Jaucas sand) (see Figure 39). These deposits may have been used as early twentieth century fill, utilized to infill areas of disturbance. These fill deposits have removed any trace of the in situ, loamy sand A horizon that is prevalent in the area.

The Stratum III incinerator fill deposit contained two ceramic bowl fragments (dated from 1865 to the present) (Acc. # 42), one glass bottle fragment (dated from 1880–1920) (Acc. # 41), slag, conglomerated and melted metal, and faunal bone (Bos taurus long bone cut with a metal blade). The Stratum IV locally procured and redeposited loamy sand contained isolated faunal remains—a Bos taurus rib fragment cut with a metal blade and Canis lupus familiaris (dog) tooth and bone fragments. A 4.5-gallon screened sample of Stratum V yielded no cultural material.

One feature was observed within T-6. SIHP # -7429 Feature 24, a square discoloration of soil, is interpreted as a post mold (Figure 41 and Figure 42). It was 0.18 m square and 0.1 m thick. Feature 24 was first observed at 0.95 mbs but may have started at a higher depth. The originating stratum was unclear, although it is likely this feature originated in Stratum IV, based on the presence of similar post molds originating from this deposit within other areas of SIHP # -7429 (see Hawkins et al. 2014). In this portion of the trench, Stratum IV had been previously removed and the area in-filled by Stratum V. The feature terminated at 1.05 mbs within the Stratum VII sandy clay deposit. A 0.5-liter screened sample of Feature 24 yielded one Nerita picea shell, likely incorporated from natural A horizon material within the vicinity. Based on the possible association of Feature 24 with Stratum IV, Stratum IV was considered part of SIHP # -7429.

Figure 86. Block I T-6 northeast wall, view to north

Figure 87. Block I T-6 southwest sidewall showing the dark incinerator fill deposit (Stratum III) within the northwest portion of the test excavation and the backfilled, swirled local sediment utilized as fill (Stratum V) within the southeast portion, view to west

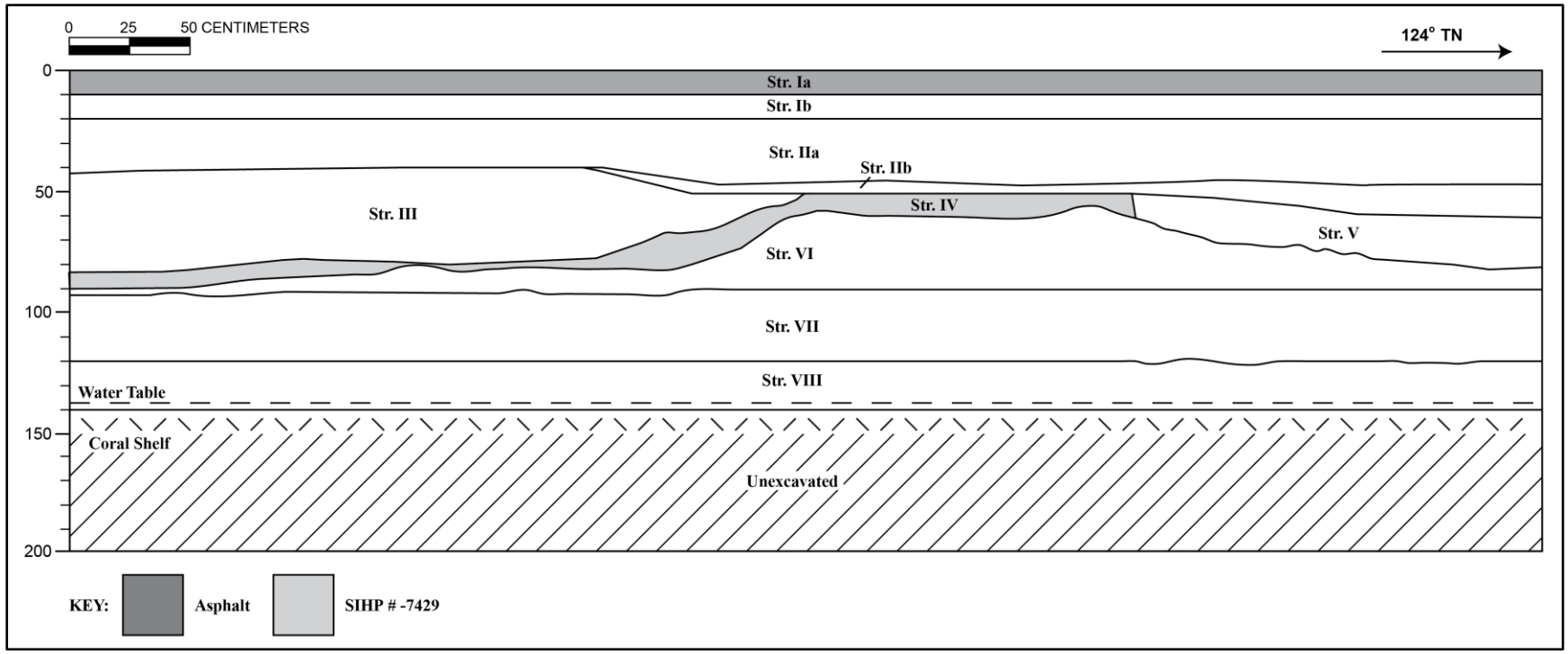

Figure 88. Block I T-6 northeast profile

Table 13. Block I Stratigraphic Description for T-6

Stratum	Depth (cmbs)	Description of Sediment
Ia	0–10	Asphalt; road surface
Ib	10–20	Fill; basalt gravel base course
IIa	20–48	Fill; 10YR 8/4, very pale brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; crushed coral fill associated with early twentieth century land reclamation
IIb	40-60	Fill; 10YR 8/2, very pale brown; silty clay; weak, fine, platy structure; moist, friable consistence; slightly plastic; marine origin; abrupt, smooth lower boundary; hydraulic (dredged) material associated with early twentieth century land reclamation
III	40–85	Fill; 10YR 2/2, very dark brown; silt loam; structureless (single-grain); moist, loose consistence; non-plastic; terrigenous origin; very abrupt, broken/discontinuous lower boundary; incinerator fill deposit; contains glass bottle fragments (Acc. # 41), ceramic fragments (Acc. # 42), conglomerated and melted metal, slag, and butchered faunal bone
IV	50–90	SIHP # -7429; 10YR 4/4, dark yellowish brown; fine loamy sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; clear, irregular, discontinuous lower boundary; redeposited locally procured sand and A horizon material; contains faunal remains; likely associated with SIHP # -7429 Feature 24
	95–105	SIHP # -7429 Feature 24; post mold; believed to be associated with Stratum IV based on matrix components and similarity with other post mold features associated with this deposit
V	50–81	Fill: 10YR 5/2, grayish brown; loamy sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; abrupt, broken/discontinuous lower boundary; swirled mixture of gray to dark grayish brown sand and pale brown clay sand; redeposited locally procured material consistent with a machine-backfilled pit
VI	55–92	Natural; 10YR 7/4, very pale brown; medium to coarse sand; structureless (single-grain); wet, non-sticky consistence; non-plastic; marine origin; diffuse, smooth lower boundary; Jaucas sand
VII	90–121	Natural; 10YR 6/4, light yellowish brown; clay sand; weak, fine, granular structure; wet, slightly sticky consistence; non-plastic; marine origin; clear, smooth lower boundary
VIII	120–140 (BOE)	Natural; 5GY 6/1 (GLEY 1), greenish gray; coarse to very coarse sand; structureless (single-grain); wet, non-sticky consistence; marine origin; abrupt, smooth lower boundary; marine sand; overlying coral shelf

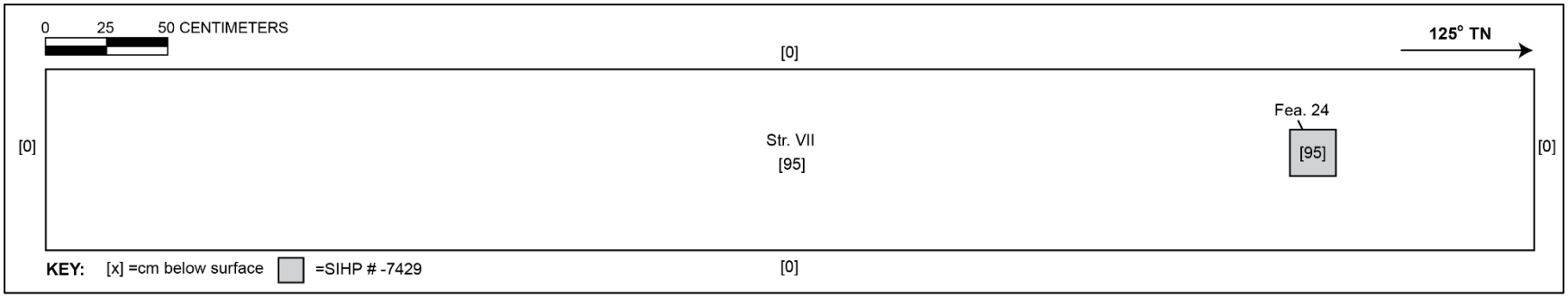

Figure 89. Block I plan view map of T-6 at 0.95 mbs depicting SIHP # -7429 Feature 24

Figure 90. Block I T-6 photograph of SIHP # -7429 Feature 24, square-sided post

B.2.4 Block I Test Excavation 7

Test Excavation 7 (T-7) was an exterior trench located between Warehouse Buildings 4 and 5 along the mauka boundary of the study area. It was oriented northeast-southwest and measured 6.1 m long by 0.75 m wide. The water table was reached at 1.25 mbs, and the base of excavation was determined by the presence of the hard coral shelf at 1.3 mbs.

The stratigraphy of T-7 consists of the asphalt road surface (Stratum Ia) and associated base course (Stratum Ib) overlying mixed cobbly sand fill (Stratum Ic), a Kaka‘ako reclamation fill deposit consisting of extremely gravelly sand (crushed coral) (Stratum IIa) and hydraulic (dredged) silty sand (Stratum IIb), redeposited, locally procured loamy sand fill (Stratum III), a layer of mixed local sediment (Stratum IV; SIHP # -7429), a natural loamy sand A horizon (Stratum Va: SIHP # -7429) that developed within Jaucas sand (Stratum Vb), a silty clay deposit (Stratum VI), and a sandy clay deposit (Stratum VII) (Figure 43 through Figure 47, Table 8).

The stratigraphic sequence of T-7 varies slightly from T-6 in that T-7 contains an in situ natural A horizon (Stratum Va) and does not contain an incinerated fill deposit. As in T-6, it contains a deposit of swirled local sediments (Stratum IV) consisting of sand, clay, and A horizon material. This mixed fill appears to have completely removed Strata III and Va within the central and northern portions of the test excavation and intrudes into the Jaucas sand. It is likely this deposit is the same event observed within the southern portion of the adjacent T-6. Stratum IV contains several areas of charcoal staining at its upper boundary as well as isolated probable human skeletal remains.

Within the southern portion of T-7, a remnant area of natural A horizon (Stratum Va) was documented. A 7.5-gallon screen of the A horizon material yielded ceramic fragments (Acc. # 43), faunal bone consisting of Mammalia fragments (0.1 g), and marine shell midden consisting of Theodoxus neglectus (20.2 g). In addition, faunal remains consisting of Canis lupus familiaris rib fragments were observed. Based on the cultural material documented within Strata IV and Va, these deposits are considered part of SIHP # -7429.

The probable human skeletal remains identified within Stratum IV consist of a 2-inch fragment of a worn long bone. This bone was isolated and recovered from a disturbed fill context that dates to or prior to the 1919–1927 land reclamation activity. The bone may have been previously disturbed during the scraping and leveling activities of the in situ A horizon (Stratum Va). The bone is designated SIHP # -7429 Feature 25.

Protective measures were implemented to secure the iwi kūpuna until such time as a burial treatment plan for the Block I study area is approved and implemented. In consultation with on-site Hawaiian cultural practitioners, protective measures included the construction of a clean sand pedestal in the approximate original location of the find, which was lined with tī leaves. The iwi kūpuna were then wrapped in muslin, secured in a lauhala (pandanus leaf) basket, and placed on the pedestal by the on-site cultural practitioner. After all cultural protocols were observed, clean sand was deposited over the basket, followed by a wooden board, and the whole was covered again with clean sand (Figure 48). T-7 was then backfilled to the level of the current ground surface.

Figure 91. Block I T-7 northeast wall, view to north

Figure 92. Block I T-7 Close-up photograph of Stratum IV, showing the swirled mixture of local sediments consisting of sand, clay, and A horizon material, view to east

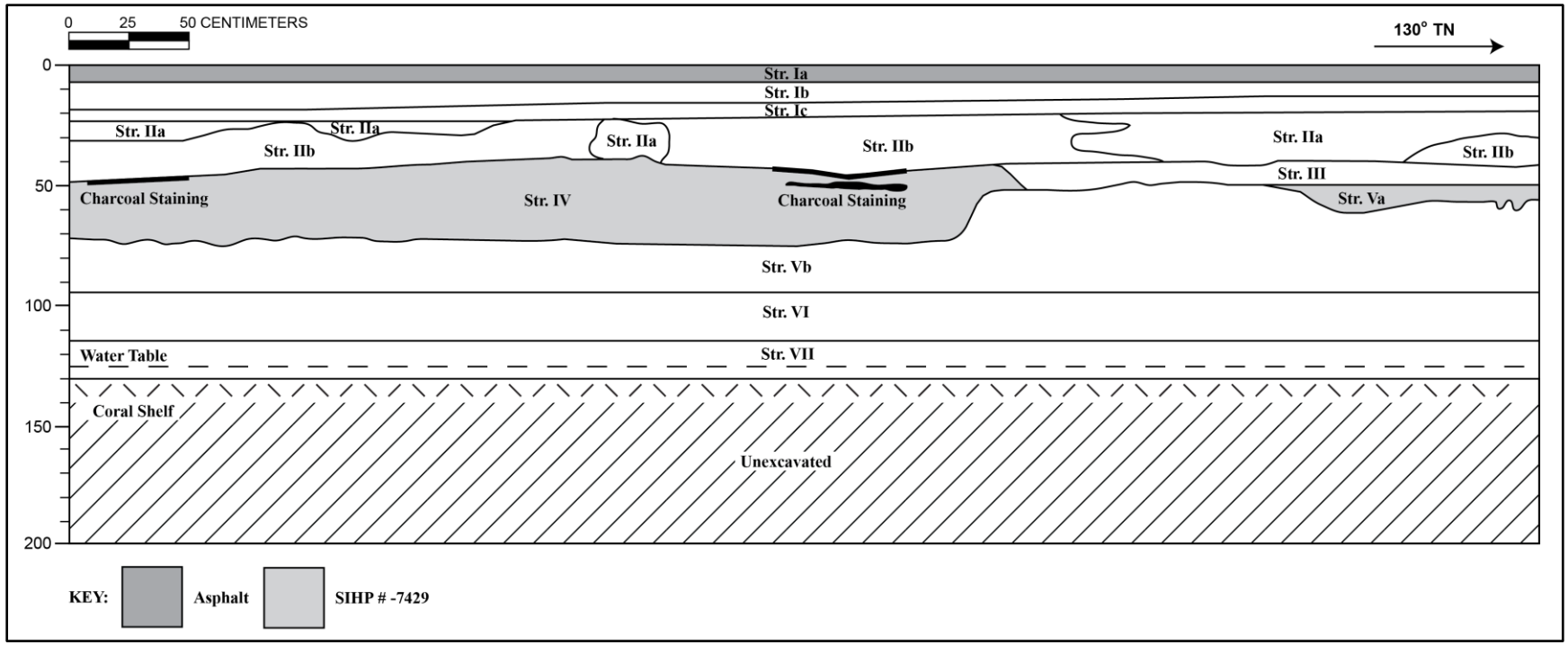

Figure 93. Block I T-7 northeast profile

Figure 94. Block I T-7 southwest wall, view to west

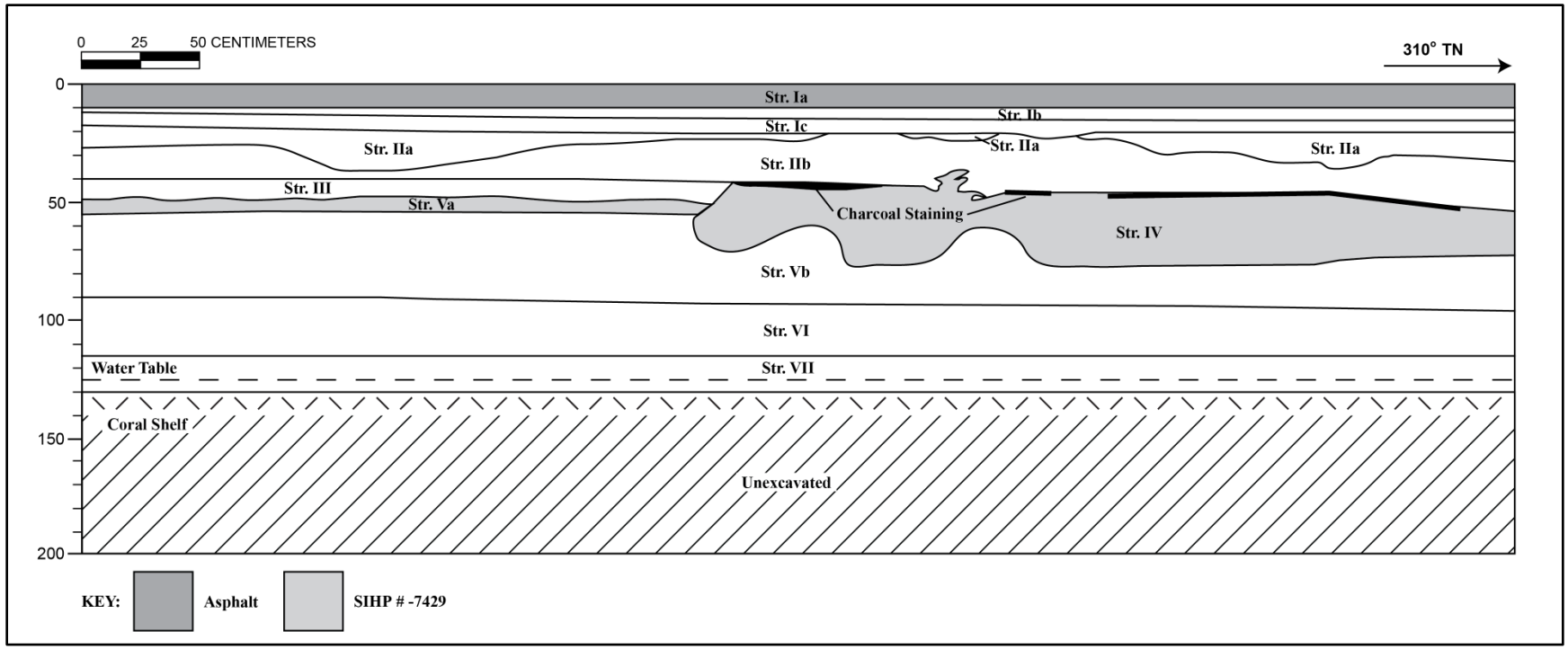

Figure 95. Block I T-7 southwest profile

Table 14. Block I Stratigraphic Description for T-7

Stratum	Depth (cmbs)	Description of Sediment
Ia	0–8	Asphalt; parking lot surface
Ib	8–18	Fill; gravel base course
Ic	12–25	Fill; 10YR 3/3, dark brown; cobbly silty sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; abrupt, smooth lower boundary
IIa	20–44	Fill; 10YR 7/3, very pale brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, irregular, discontinuous lower boundary; crushed coral fill associated with early twentieth century land reclamation
IIb	20–45	Fill; 10YR 7/2, light gray; very fine silty sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; abrupt, broken/discontinuous, lower boundary; hydraulic (dredged) fill associated with early twentieth century land reclamation
III	40–52	Fill; 10YR 4/3, dark grayish brown; loamy sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; clear, smooth lower boundary; redeposited, locally procured sand and A horizon material; contains rusted metal, slag, and faunal remains
IV	40–76	SIHP # -7429; 10YR 5/2, grayish brown, with mottles of gray, dark gray brown, and pale brown; loamy sand and clay sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; abrupt, broken/discontinuous lower boundary; mixed locally procured material consistent with a machine-backfilled event; contains charcoal staining and a probable human long bone fragment (SIHP # -7429 Feature 25)
	70	SIHP # -7429 Feature 25; isolated, probable human long bone fragment
Va	45–55	SIHP # -7429; 10YR 3/3, dark brown; silt loam; structureless (single-grain); moist, loose consistence; non-plastic; terrigenous origin; diffuse, discontinuous lower boundary; natural A horizon; contains ceramic fragments (Acc. # 43), faunal bone, and marine shell midden
Vb	40–99	Natural; 10YR 7/4, very pale brown; medium sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; Jaucas sand; Stratum Va parent material
VI	99–115	Natural; 10YR 8/3, very pale brown; silty clay; weak, fine, blocky structure; moist, firm consistence; plastic; marine origin; clear, smooth lower boundary; common fine roots observed
VII	115–129 (BOE)	Natural; 10YR 7/1, light gray; sandy clay; moderate, medium, blocky structure; wet, sticky consistence; plastic; marine origin; abrupt, smooth lower boundary; overlying coral shelf

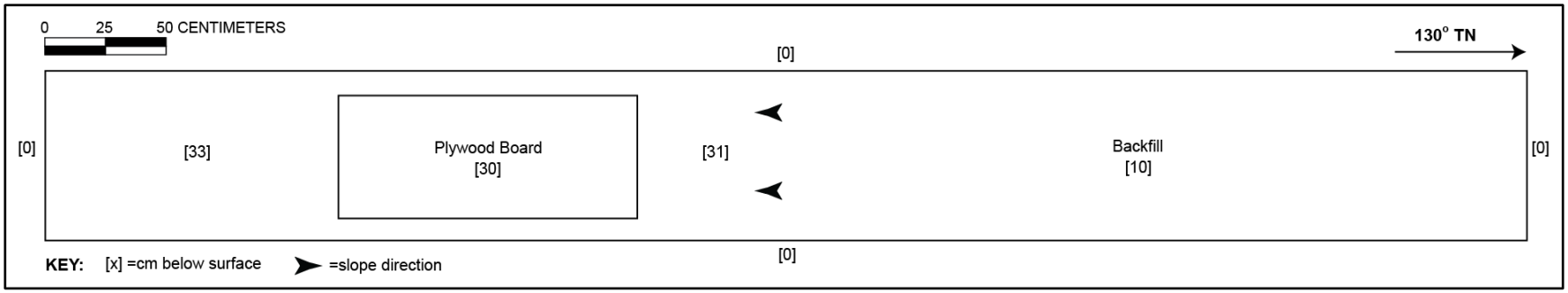

Figure 96. Block I plan view of T-7 depicting location and temporary protection measures of *iwi kūpuna*

B.2.5 Block I Test Excavation 8

Test Excavation 8 (T-8) was an exterior trench located southeast of T-7 between Warehouse Buildings 4 and 5. It was oriented northeast-southwest and measured 6 m long by 0.7 m wide. The water table was reached at 1.25 mbs, and the base of excavation was determined by the presence of the hard coral shelf at 1.28 mbs.

The stratigraphy of T-8 consists of the asphalt road surface (Stratum Ia) and associated base course (Stratum Ib) overlying gravelly silty sand fill (Stratum Ic), a Kaka‘ako reclamation fill deposit consisting of extremely gravelly sand (crushed coral) (Stratum IIa) and hydraulic (dredged) silty clay (Stratum IIb), a loam fill deposit (Stratum III), incinerator fill (Stratum IV), redeposited, locally procured sandy loam fill (Stratum V), a natural loamy sand A horizon (Stratum VIa; SIHP # -7429) that developed within Jaucas sand (Stratum VIb), sandy clay (Stratum VII), and a clay sand marine deposit (Stratum VIII) (Figure 49, Figure 50, and Table 9).

The stratigraphic sequence of T-8 is very similar to T-6. In particular, both test excavations contain an incinerator fill deposit (Stratum IV). The Stratum IV incinerator trash deposit contained thermally altered and fused materials such as metal, glass, and slag. T-8 also contains a historic fill layer (Stratum III) beneath the early twentieth century land reclamation layers. The top boundary of this layer of material is extremely indurated.

The natural sandy loam A horizon (Stratum VIa) appeared to have been largely removed by historic fill layers (Strata III–V) and was only observed within the extreme ends of the test excavation. A 5-gallon screened sample of Stratum VIa yielded no cultural material. Two features, however, were documented as originating within Stratum VIa, SIHP # -7429 Features 26 and 27.

SIHP # -7429 Feature 26, an irregular discoloration of soil within Stratum VIa, covered an area of approximately 0.45 by 0.42 m that extended from approximately 0.39 to 0.52 mbs at the northwest end of the trench (Figure 51, Figure 52). The feature contained a concentration of ‘ili‘ili (water-worn pebbles) (Figure 53), two pieces of charcoal that adhered to two of the pebbles, and a human ulna portion and tiny bone fragments. The ‘ili‘ili and human remains appeared to have been previously disturbed and scattered from their original location(s). Several scattered ‘ili‘ili were observed in the overlying Stratum III fill deposit as well as one pebble within the nearby Stratum IV incinerator fill deposit. The ‘ili‘ili numbered approximately 65 and measured 1.0–3.2 cm in diameter. These pebbles were concentrated within a 0.3 by 0.24 m area within Feature 26. The human ulna was located at the interface of this feature within Stratum VIa and the overlying Stratum III. The bone has been calcified by prolonged exposure to water, suggesting its original interment location was at or below the water table or possibly that the fragment spent time in a pool of water after it was removed from its original location.

A charcoal sample from Feature 26 was submitted to Gail Murakami at the International Archaeological Research Institute, Inc. (IIARII) for taxonomic analysis. The sample was determined to be wood from cf. Arecaceae, palm tree varieties. This sample was then sent to Beta Analytic, Inc. for radiocarbon testing. The sample produced an “extremely low” 14C level that was “almost identical to the background signal.” The date was reported as >43,500 BP.

Figure 97. Block I T-8 northeast wall, view to east

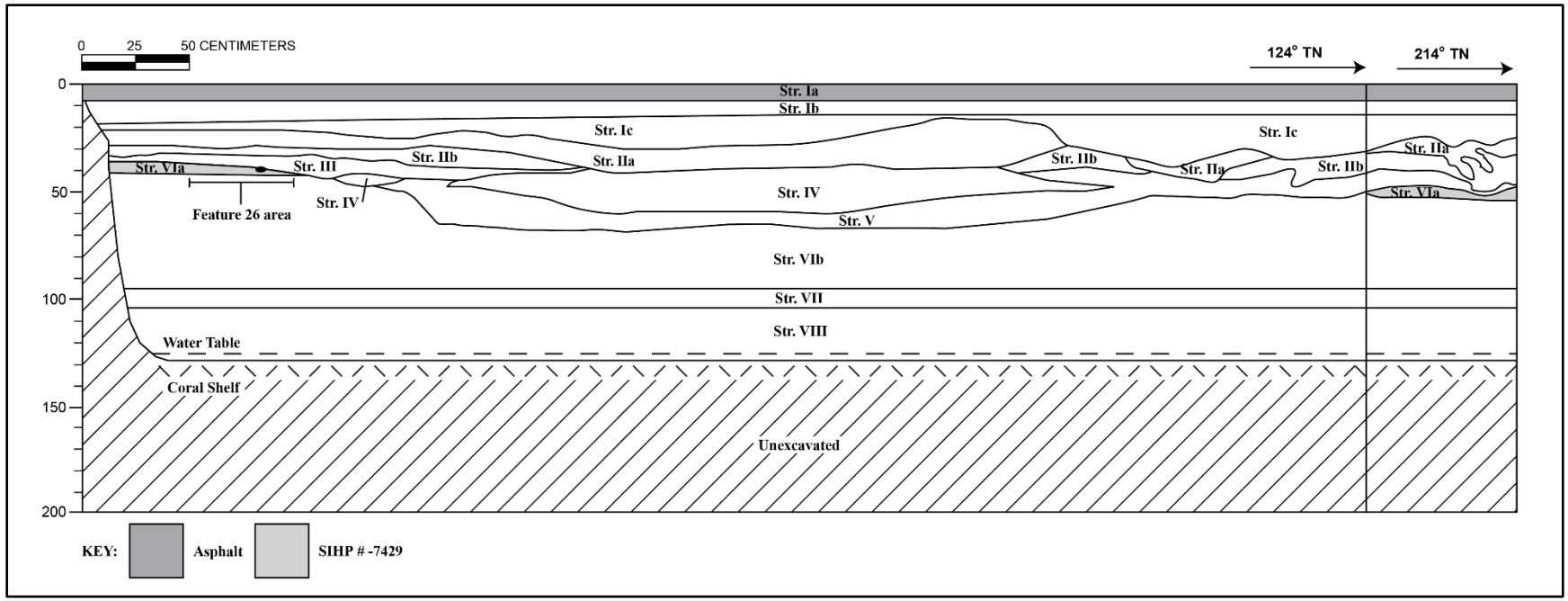

Figure 98. Block I T-8 northeast (124° TN) and southeast (214° TN) profiles

Table 15. Block I Stratigraphic Description for T-8

Stratum	Depth (cmbs)	Description of Sediment
Ia	0–7	Asphalt; road surface
Ib	7–16	Fill; gravel base course
Ic	16–23	Fill; 10YR 3/3, dark brown; cobbly silty sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; clear wavy lower boundary
IIa	15–41	Fill; 10YR 5/3, brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, broken/discontinuous lower boundary; crushed coral fill associated with early twentieth century land reclamation
IIb	30–48	Fill; 10YR 8/1, white; silty clay; weak, fine, platy structure; moist, friable consistence; slightly plastic; marine origin; clear, irregular and broken/discontinuous lower boundary; hydraulic (dredged) fill associated with early twentieth century land reclamation
III	36–45	Fill; 10YR 5/4, yellowish brown; loam; moderate, medium, crumb structure; moist, friable consistence; slightly plastic; mixed origin; clear, broken/discontinuous lower boundary; highly compacted fill; contains scattered (previously displaced) *‘ili‘ili*
IV	43–61	Fill; incinerator fill deposit composed of thermally altered and fused metal, glass, and slag; no sediment matrix; contained one displaced *‘ili‘ili;* extremely indurated at upper boundary; clear, broken/discontinuous lower boundary
V	40–70	Fill; 10YR 4/3, dark grayish brown; sandy loam; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; clear, smooth lower boundary; redeposited, locally procured sand and A horizon material
VIa	47–55	SIHP # -7429; 10YR 4/2, dark grayish brown; loamy sand; weak, fine, granular structure; moist, very friable consistence; non-plastic; mixed origin; clear, irregular and discontinuous lower boundary; natural A horizon; contains SIHP # -7429 Features 26 and 27
	39–52	SIHP # -7429 Feature 26; disturbed area containing *‘ili‘ili* stones and human skeletal remains
	43–67	SIHP # -7429 Feature 27; pit feature of indeterminate function; no cultural material observed
VIb	35–95	Natural; 10YR 7/4, very pale brown; medium sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; Jaucas sand; Stratum VIa parent material
VII	95–105	Natural; 2.5YR 8/2, pale yellow; sandy clay; moderate, coarse, blocky structure; wet, sticky consistence; slightly plastic; marine origin; diffuse, smooth lower boundary; contained common fine to medium roots

Stratum	Depth (cmbs)	Description of Sediment
VIII	105–128 (BOE)	Natural; 2.5YR 7/1, light gray; clay sand; weak, fine, blocky structure; wet, sticky consistence; slightly plastic; marine origin; abrupt, smooth lower boundary; contains fine decomposing roots; marine deposit; overlying coral shelf

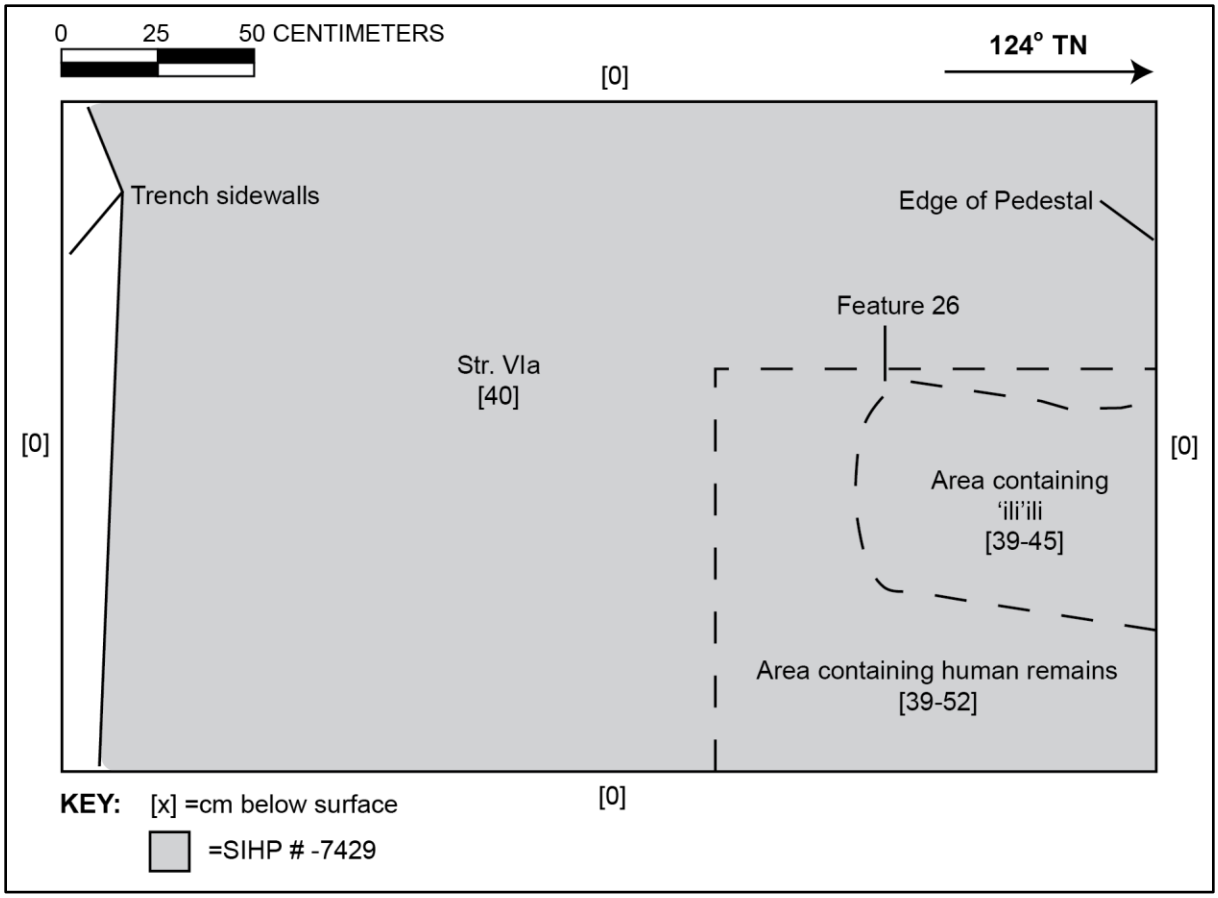

Figure 99. Block I plan view of northwest end of T-8 depicting SIHP # -7429 Feature 26

Figure 100. Block I T-8 photograph of base of Feature 26 (lower right corner) at northwest end

Figure 101. Block I T-8 photograph of *‘ili‘ili* from Feature 26

SIHP # -7429 Feature 27, a rectangular discoloration of soil, was located within the northwest corner of T-8 and extended from 0.43 to 0.67 mbs (Figure 102, Figure 103). The feature originated in Stratum VIa and terminated in Stratum VIb. It measured 0.69 m in length and 0.25 m in width. A 6.5-gallon screened sample of Feature 27 yielded no cultural material. The function of this pit is indeterminate.

Protective measures were implemented to secure the *iwi kūpuna* discovered in this test excavation until such time as a burial treatment plan for the Block I study area is approved and implemented. In consultation with on-site Hawaiian cultural practitioners, protective measures included the construction of a clean sand pedestal in the approximate original location of the find, which was lined with *tī* leaves. The *iwi kūpuna* were then wrapped in muslin and secured in a *lauhala* (pandanus leaf) basket, and they, along with the *ʻiliʻili*, were placed on the pedestal by the on-site cultural practitioner. After all cultural protocols were observed, clean sand was deposited over the basket, followed by a wooden board, and the whole was covered again with clean sand. T-8 was then backfilled to the level of the current ground surface.

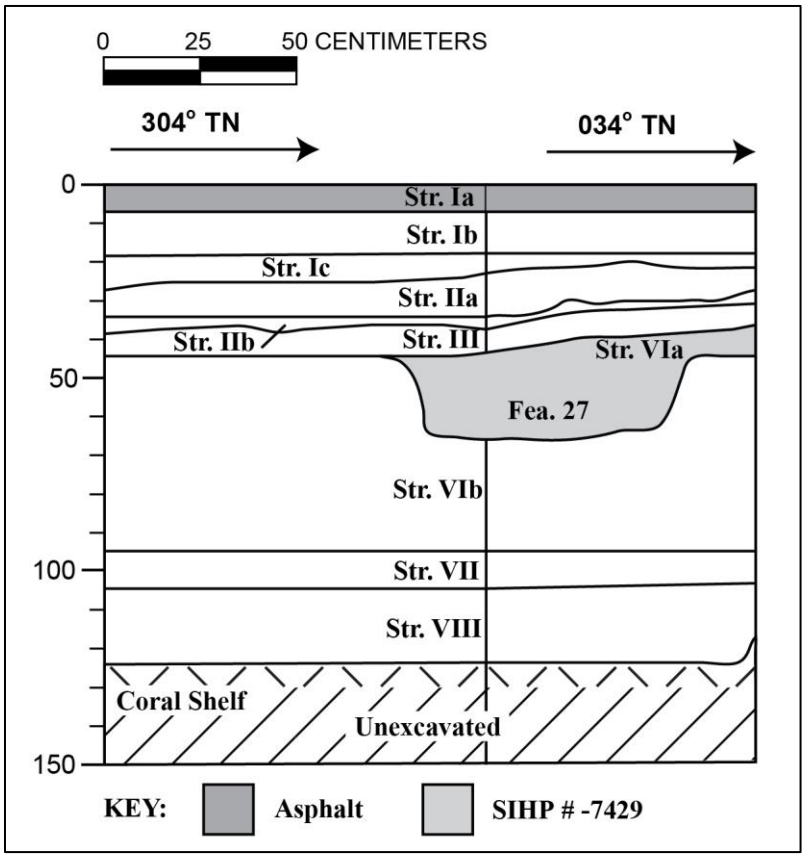

Figure 102. Block I T-8 profile of southeast sidewall (34° TN) and portion of southwest sidewall (304° TN) depicting SIHP # -7429 Feature 27

Figure 103. Block I T-8 photograph of Feature 27 after sampling

B.2.6 Block I Test Excavation 9

Test Excavation 9 (T-9) was an exterior trench located in the southeast corner of the study area along the mauka boundary of the study area. It was oriented northeast-southwest and measured 6 m long by 0.7 m wide. The water table was reached at 1.33 mbs, and the base of excavation was determined by the presence of the hard coral shelf 1.4 mbs.

The stratigraphy of T-9 consists of the asphalt road surface (Stratum Ia) and associated base course (Stratum Ib) overlying a gravelly silty sand fill (Stratum Ic), a Kaka‘ako reclamation fill deposit consisting of extremely gravelly sand (crushed coral) (Stratum IIa) and hydraulic (dredged) sandy clay (Stratum IIb), redeposited locally procured loamy sand fill (Stratum III), a natural loamy sand A horizon (Stratum IVa; SIHP # -7429) that developed within Jaucas sand (Stratum IVb), clay sand (Stratum V), and sandy clay (Stratum VI) (Figure 56, Figure 57, and Table 10). At the northwest end of the trench, the Stratum IIa crushed coral fill extends into a large pit, intruding through the lower strata. A water line approximately 30.5 cm (12 inches) in diameter and an associated utility trench were encountered running perpendicular through the northwest portion of the trench (Figure 58). The utility is capped by Stratum Ib and is intrusive through Strata Ic–IVb. The water line was pedestaled, and the sediment directly below it was not excavated.

The stratigraphic sequence of T-9 is very similar to that of T-1 through T-5. Specifically, beneath the modern fill (Strata Ia–Ic) and reclamation fill (Strata IIa and IIb), these test excavations contain reworked local sediment (Stratum III), likely including A horizon material, located above an in situ A horizon (Stratum IVa), natural Jaucas sand (Stratum IVb), and sandy clay deposits (Strata V and VI). Rusted metal pieces (not collected) were observed within the Stratum III locally procured and reworked sediment.

The Stratum IVa in situ A horizon is present throughout the majority of the test excavation, although it appears to have been truncated during the deposition of Stratum III. A screened 5-gallon sample of Stratum IVa from 0.55 to 0.6 mbs yielded no cultural material. However, three features were documented originating from Stratum IVa. Stratum IVa and the three associated features are designated as part of SIHP # -7429.

SIHP # -7429 Feature 28 was a circular discoloration of soil that measured 0.48 m in diameter (Figure 59 through Figure 61). The feature extended from 0.64 to 0.86 mbs, originating in Stratum IVa and terminating in Stratum IVb. A screened 1-gallon sample of Feature 28 yielded no cultural material. The function of this pit is considered indeterminate.

SIHP # -7429 Feature 29 was an irregular discoloration of soil that measured approximately 0.8 m in length and extended into both sidewalls (see Figure 59 through Figure 61). The feature extended from 0.69 to 0.85 mbs, originating in Stratum IVa and terminating in Stratum IVb. The upper boundary of this feature was truncated by Strata IIa and III. Feature 29 contained dark charcoal staining, although no intact pieces of charcoal were observed. A screened 17.5-gallon sample of Feature 29 yielded no cultural material. The function of this pit is considered indeterminate.

SIHP # -7429 Feature 30 was a discoloration of soil that measured 0.79 m in length and 0.62 m in width (see Figure 60 and Figure 62). The feature extended from 0.62 to 0.75 mbs, originating in Stratum IVa and terminating in Stratum IVb. Screened 0.5-gallon and 0.1-gallon samples of

Feature 30 yielded charcoal (0.7 g) and fire-altered rock (32.1 g). This feature is considered a possible fire pit.

A sample of charcoal from Feature 30 was submitted to Gail Murakami at IARII for taxonomic analysis. The analysis distinguished seven different types of charcoal, although three of the samples were varieties of “unknown” and one sample was “not identified.” The three identified taxa were Chenopodium oahuense (‘āheahea), cf. Sida fallax (‘ilima), and cf. Arecaceae (Palm family). ‘Āheahea and ‘ilima are native shrubs, while Arecaceae are palm trees. A sample of the ‘ilima charcoal was sent to Beta Analytic, Inc. for radiocarbon testing. The sample yielded three calibrated (2-sigma) date ranges of AD 1646–1690 (24.9% probability), AD 1729–1810 (51.2% probability), and AD 1962 to the present (19.3% probability). Detailed results of these analyses are presented in Volume I, Section 6.5.

Figure 104. Block I T-9 northeast wall, view to east

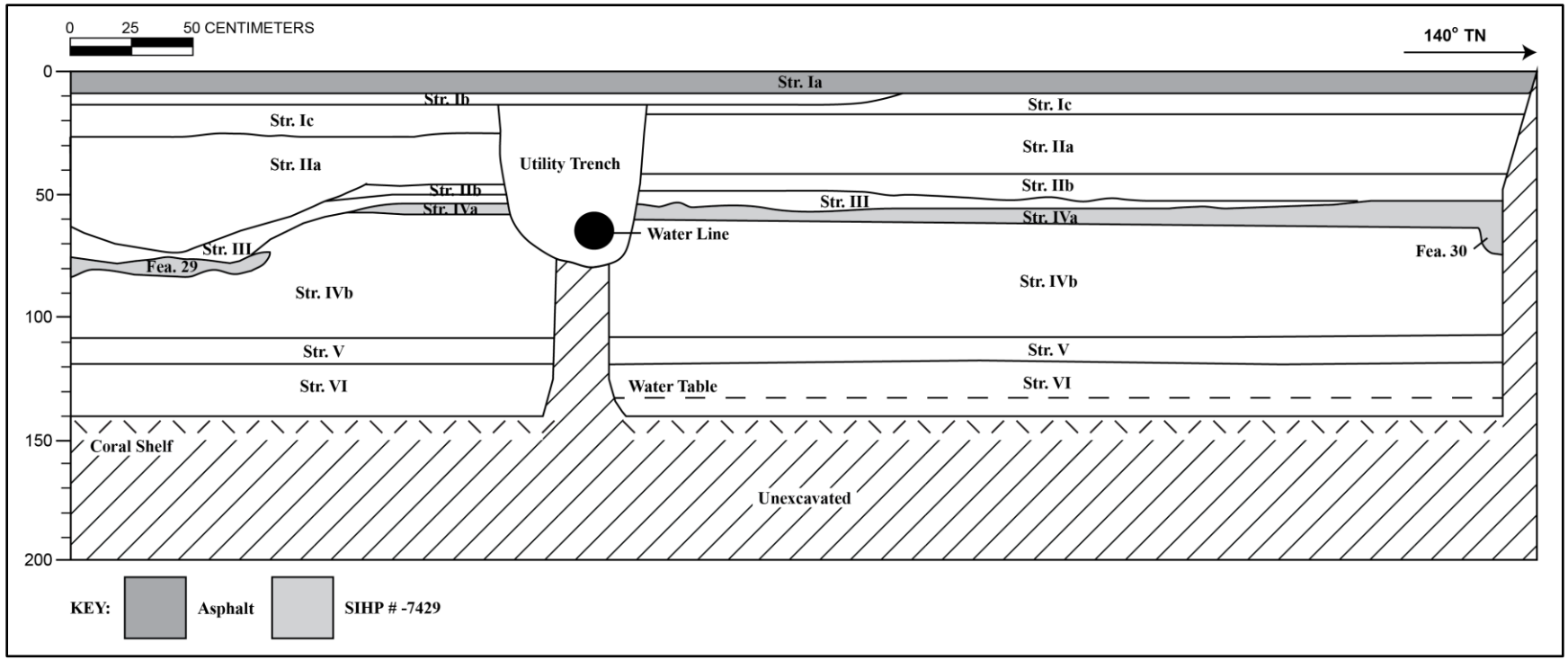

Figure 105. Block I T-9 northeast profile, showing SIHP # -7429 Features 29 and 30

Table 16. Block I Stratigraphic Description for T-9

Stratum	Depth (cmbs)	Description of Sediment
Ia	0–9	Asphalt; road surface
Ib	9–14	Fill; gravel base course
Utility trench	14–80	Fill; gravelly loamy sand; fill associated with water line utility
Ic	9–23	Fill; 10YR 3/3, dark brown; gravelly silty sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; abrupt, smooth lower boundary
IIa	23–42	Fill; 10YR 4/2, dark grayish brown; extremely gravelly sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; abrupt, wavy lower boundary; crushed coral fill associated with early twentieth century land reclamation
IIb	42–52	Fill; 10YR 4/2, dark grayish brown, grading to 2.5Y 7/1, light gray, silty sand grading to sandy clay; structureless (single-grain to massive); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; hydraulic (dredged) fill associated with early twentieth century land reclamation
III	49–78	Fill; 10YR 4/2, dark grayish brown; loamy sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; clear, wavy lower boundary; redeposited locally procured sand and A horizon material; contains rusted metal (not collected)
IVa	52–63	SIHP # -7429; 10YR 3/3, dark brown; loamy sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; diffuse, smooth lower boundary; natural A horizon; contains SIHP # -7429 Features 28–30
	64–86	SIHP # -7429 Feature 28; pit of indeterminate function; no cultural material observed
	69–85	SIHP # -7429 Feature 29; pit of indeterminate function; no cultural material observed
	62–75	SIHP # -7429 Feature 30; possible fire pit; contained charcoal and fire-altered basalt cobbles
IVb	58–108	Natural; 2.5YR 8/2, pale yellow; sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; abrupt, smooth lower boundary; grades from fine to coarse sand, extremely hard coral arms present at lower boundary; Jaucas sand; Stratum IVa parent material
V	108–119	Natural; 2.5Y 7/4, pale yellow; clay sand; structureless (single-grain); wet, slightly sticky consistence; non-plastic; marine origin; diffuse, smooth lower boundary

Stratum	Depth (cmbs)	Description of Sediment
VI	118–140 (BOE)	Natural; 10Y 7/1, light gray; sandy clay; structureless (single-grain); wet, sticky consistence; slightly plastic; marine origin; contains few decomposing roots; overlying coral shelf

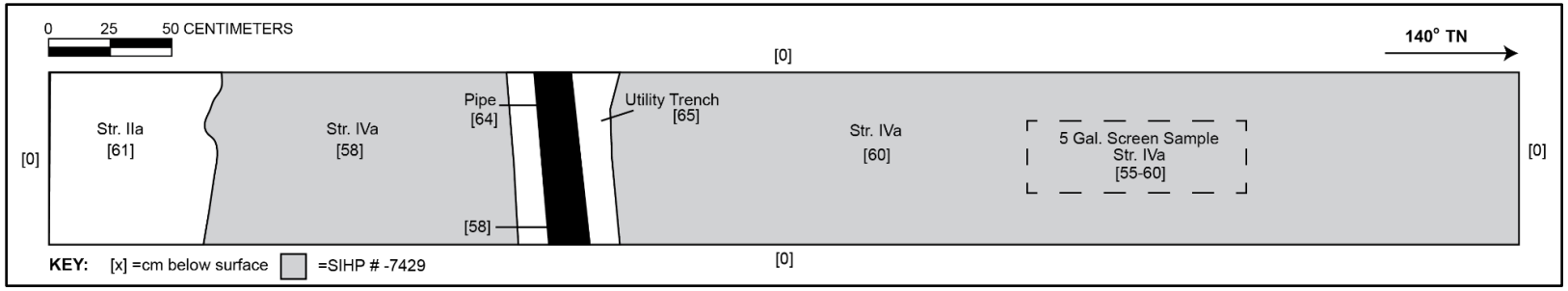

Figure 106. Block I plan view of T-9 from 0.55–0.65 mbs depicting a water line and associated trench, the Stratum IIa pit, and the Stratum IVa screened sample location

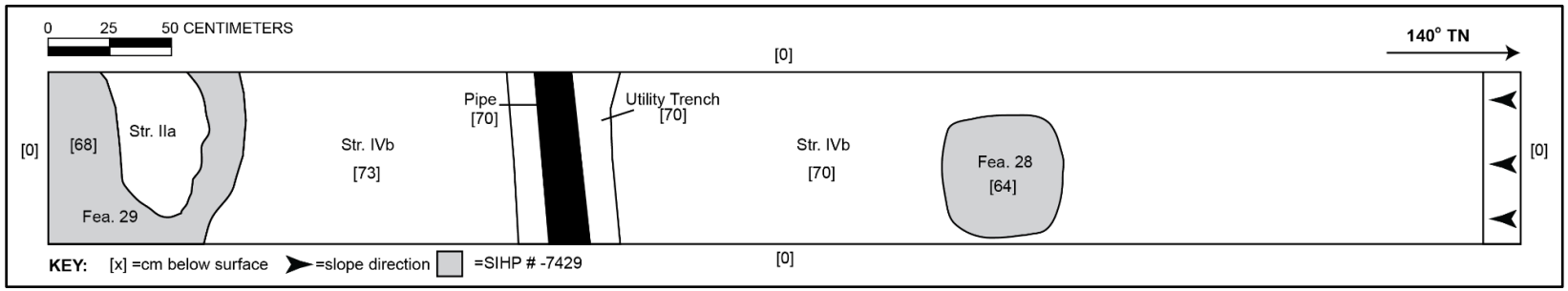

Figure 107. Block I plan view of T-9 from 0.64–0.73 mbs depicting a water line/trench and SIHP # -7429 Features 28 and 29

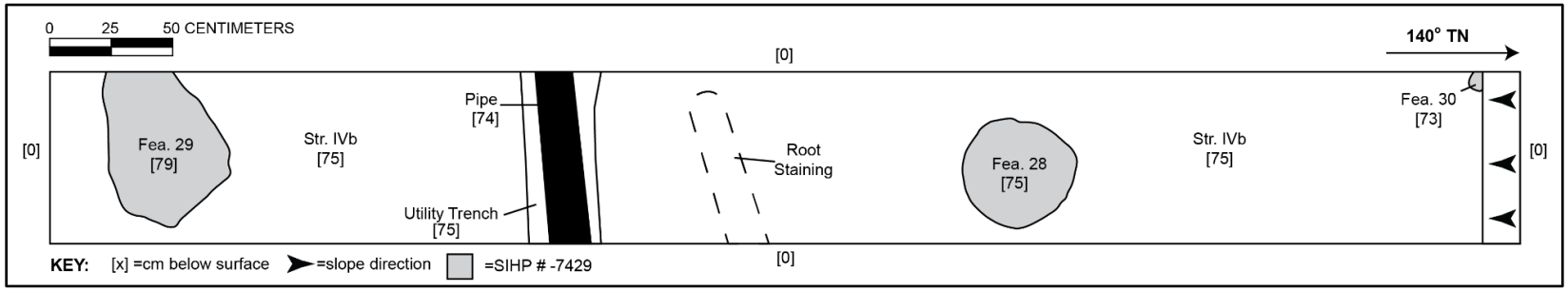

Figure 108. Block I plan view of T-9 from 0.73–0.79 mbs depicting a water line/trench and SIHP # -7429 Features 28–30

Figure 109. Block I photograph of T-9 at approximately 0.65 mbs depicting Features 28 and 29 and the water line and associated utility trench

Figure 110. Block I T-9 photograph of SIHP # -7429 Feature 30

B.2.7 Block I Test Excavation 28

Test Excavation 28 (T-28) was an interior excavation located in Warehouse Building 3. T-28 was oriented southwest-northeast and measured 6.0 m long by 0.60 m wide. The base of excavation was determined by the presence of the hard coral shelf at 1.73 mbs.

The stratigraphy of T-28 consists of a concrete surface (Stratum Ia), associated extremely gravelly sandy loam base course (Stratum Ib), very gravelly sandy loam (Stratum Ic), and two layers of Kaka‘ako reclamation fill deposits consisting of very gravelly sand (crushed coral) (Stratum IIa) and hydraulic (dredged) sandy to silty clay (Stratum IIb), overlying a laminated, silty loamy clay O horizon (Stratum III; SIHP # -7655), a silty clay wetland deposit (Stratum IVa), and loamy sand (Stratum IVb) (Figure 157, Figure 158, and Table 28). A 2-inch utility conduit traversed diagonally across the northeast end of T-28 which prevented further excavation in this area.

T-28 documented the presence of historic salt pan remnants, SIHP # -7655, consisting of laminated humic material (Stratum III) that ranged in color from black to dark brown to tan (Figure 159, Figure 160). The sections of laminae were cohesive yet flexible and resilient, similar to that of a rubbery substance. This humic layer is interpreted as an anthropogenic O horizon representative of a historic salt pan bed lining. SIHP # -7655 was observed as a continuous layer extending through the trench and is consistent with the organic laminations observed within other test excavations in the study area. Additionally, Stratum Ic contained construction debris consisting of large asphalt chunks, basalt stones, and a large coral boulder.

One column sample was taken of Strata IIb (hydraulic dredge), III (SIHP # -7655), and IVa (wetland sediment) from the southeast sidewall and has been held in reserve. A bulk samples was taken of Stratum III from the test excavation floor. The Stratum III bulk sample, laminated salt pan bed lining, was collected from 1.36 to 1.40 mbs. The sample was wet screened and analyzed in the CSH laboratory. The sample contained waterworn crustacean, organic material, and fresh/brackish water snails. Fresh/brackish water snails present within Strata III were submitted to Dr. Carl Christensen of the Bishop Museum for malacological analyses. Only a single species was present, consisting of the indigenous semi-aquatic species Tryonia porrecta, frequently found in sediments from fishponds and irrigated wetlands.

Figure 111. Block I T-28 southeast wall, view to south

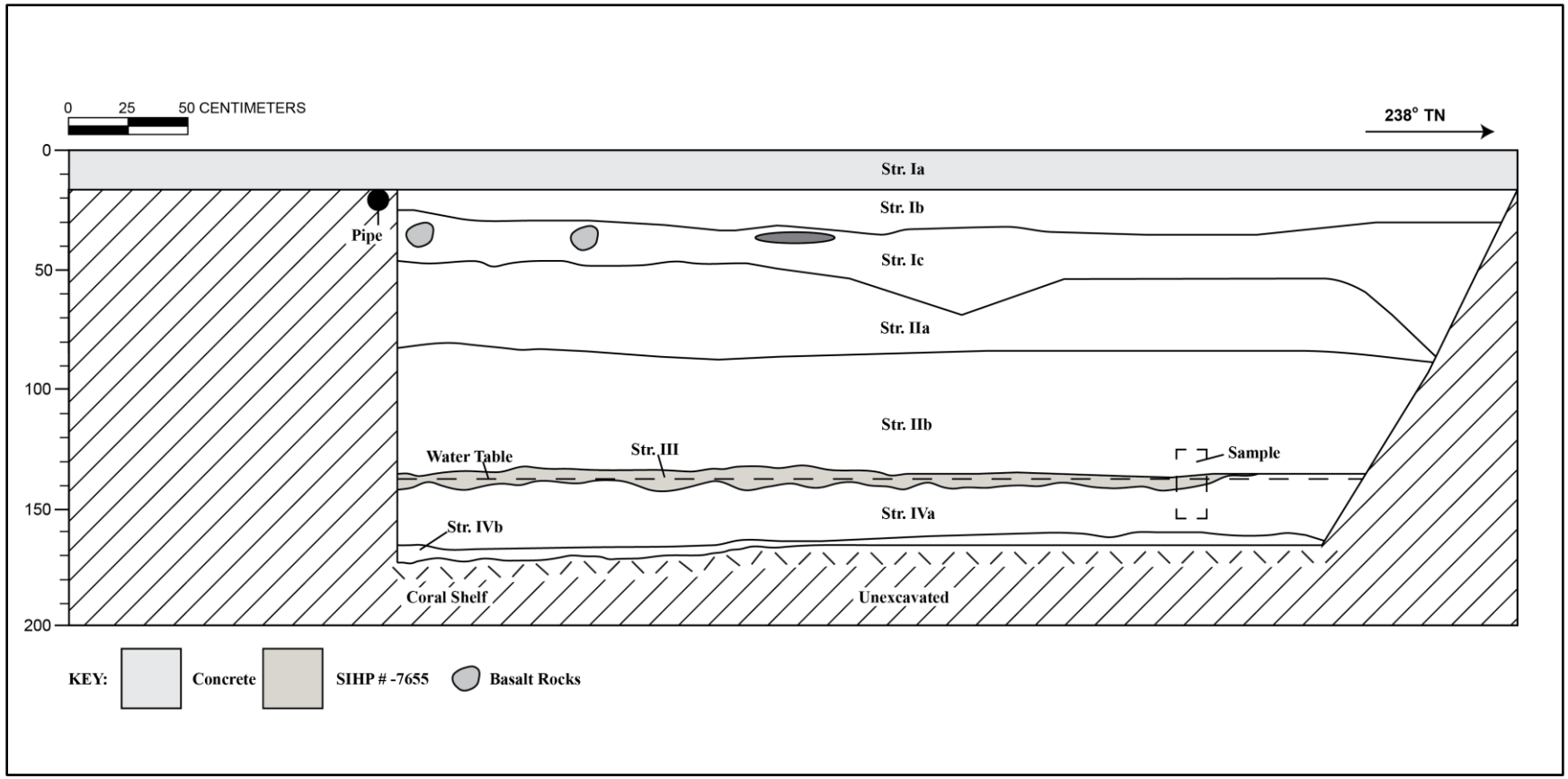

Figure 112. Block I T-28 northwest profile

Table 17. Block I Stratigraphic Description for T-28

Stratum	Depth (cmbs)	Description of Sediment
Ia	0−17	Concrete
Ib	17−35	Fill; 5YR 3/2, dark reddish brown; extremely gravelly sandy loam; structureless (single-grain); moist, loose consistence; non-plastic; terrigenous origin; abrupt, smooth lower boundary; construction grade base course
Ic	25−70	Fill; 10YR 3/3, dark brown; very gravelly sandy loam; weak, fine to medium, crumb structure; moist, loose consistence; non-plastic; abrupt, wavy/irregular lower boundary; imported mixed fill with large asphalt chunks, basalt stones, and a large coral boulder
IIa	47−90	Fill; 10YR 7/3, very pale brown; very gravelly sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, irregular lower boundary; crushed coralline sand fill associated with Kaka‘ako land reclamation activities
IIb	110−135	Fill; 10YR 7/3 to 2.5Y 7/3, very pale brown to pale yellow; sandy clay grading to silty clay; structureless (massive); moist to wet, firm and slightly sticky consistence; slightly plastic; very abrupt, wavy lower boundary; hydraulic (dredged) fill associated with Kaka‘ako land reclamation activities
III	135−141	SIHP # - 7655; 10YR 4/3, brown; silty loamy clay; moderate, laminated structure; moist to wet, firm and slightly sticky consistence; plastic; terrigenous origin; abrupt, smooth lower boundary; anthropogenic O horizon consisting of laminate humus; brown with black, yellow, and white laminated striations; former salt pan bed
IVa	141−165	Natural; 10YR 5/1, gray; silty clay; structureless (massive); wet, sticky consistence; plastic; mixed origin; clear, smooth lower boundary; wetland sediment
IVb	163−173 (BOE)	Natural; 10YR 5/1, gray; loamy sand; granular; wet, sticky consistence; marine origin; abrupt, smooth lower boundary; marine sand; overlying coral shelf

Figure 113. Block I T-28 close-up of in situ laminations of SIHP # -7655, Stratum III

Figure 114. Block I T-28 photograph ofStratum III prior to wet screening, showing micro-laminations

B.3 Block M Subsurface Testing Results (Hawkins et al. 2015)

B.3.1 Block M Test Excavation 1

Test Excavation 1 (T-1), an exterior excavation located in the alleyway between the current Office Depot building and Warehouse Building 4, was oriented northeast-southwest and measured 6.1 m long by 0.7 m wide. The base of excavation was determined by the presence of the hard coral shelf at 1.37 mbs. The stratigraphy of T-1 consisted of an asphalt surface (Stratum Ia) and associated base course (Stratum Ib), overlying very gravelly sand fill (Stratum Ic), a utility pit (intrusive through Strata Ic–IVb), and a cinder block footing (intrusive through Stratum Ic; SIHP # -7686), overlying fine sand fill (Stratum Id) (intrusive through Strata IIa–IIb), overlying 1919-1927 Kaka‘ako reclamation fill deposits consisting of coarse sand (crushed coral) (Stratum IIa) and hydraulic (dredge) sandy clay (Stratum IIb), overlying a redeposited, locally procured loamy sand (Stratum III), overlying a natural clay wetland deposit (Stratum IVa), an organic clay sand wetland deposit (Stratum IVb), and a layer of sand and decomposing coral shelf (Stratum V) (Figure 11 through Figure 13, and Table 2). Due to the presence of a utility line and cinder block structure, the makai portion of T-1 was not excavated below Stratum Ic.

T-1 documented recent fill deposits (Strata Ia–Id), overlying historic fill deposits (Strata IIa, IIb, III), resting over a natural wetland environment. Strata IIa and IIb consisted of crushed coral and hydraulic dredge material associated with Kaka‘ako land reclamation efforts dating to 1919–1927. Underlying the hydraulic fill was a heavily mixed, culturally sterile, sand fill (Stratum III), likely composed of locally procured sand and soil. This local fill material appeared to have been deposited to level and/or build up the ground surface and which served as a historic land surface for a period of time prior to reclamation activities. The natural wetland clay sand A horizon (Stratum IVa) appeared to have been truncated during previous ground disturbance activities.

A cinder block structural remnant, consisting of a possible footing or foundation, was documented within the makai portion of the test excavation, extending perpendicular to the adjacent commercial warehouse structure (see Figure 12 through Figure 15). At least two courses of cinder block were exposed, measuring 20 cm wide. The cinder blocks were capped by Strata Ia and Ib and intrusive into Stratum Ic. Based on the results of subsequent Block M AIS test excavations, which documented the presence of buried mid-twentieth century commercial structural remnants within a large portion of the project area, the cinder block structure likely represents similar buried commercial infrastructure and was designated part of SIHP # -7686.

Figure 115. Block M photograph of T-1 northwest wall, view to northwest

Figure 116. Block M photograph of T-1 showing a cinder block structural remnant (SIHP # -7686) and a 7–cm utility line within the *makai* portion of the test excavation and wetland sediments underlying modern and historic fill deposits and a utility line within the *mauka* portion

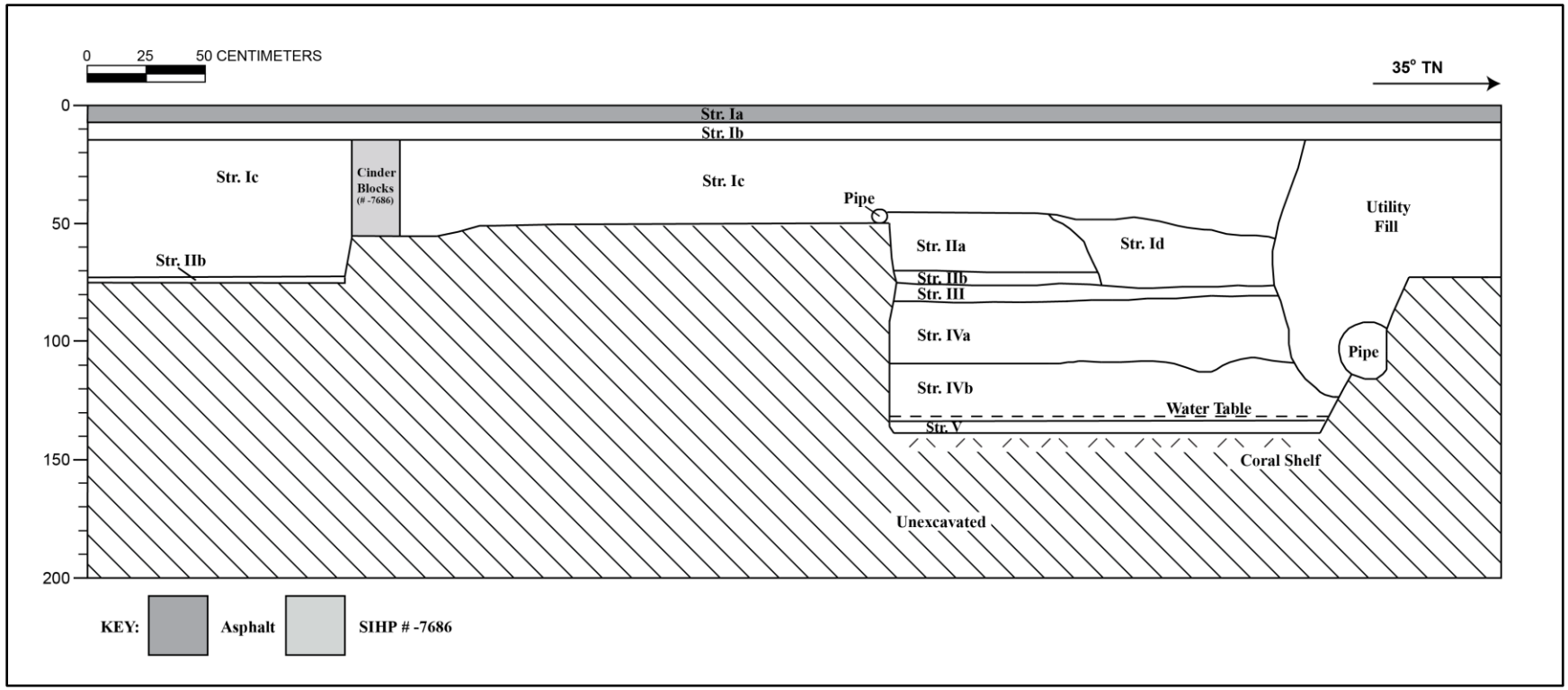

Figure 117. Block M T-1 northwest profile

Table 18. Block M T-1 Stratigraphic Description

Stratum	Depth (cmbs)	Description of Sediment
Ia	0–8	Asphalt
Ib	8–15	Fill; 10YR 3/2, very dark grayish brown; extremely gravelly sandy loam; moist, loose consistence; non-plastic; terrigenous origin; clear, smooth lower boundary; base course consisting of mixed fill and coral cobbles
Utility Pit	25~125	Fill; extremely gravelly sandy loam; moist, loose consistence; non-plastic; mixed origin; lower boundary not visible; utility pit fill
Cinder Blocks	15-unkn.	SIHP # -7686; cinder block structural remnant; possible footing or foundation; twentieth century commercial structural remnant
Ic	15–55	Fill; 2.5Y 7/2, light gray; very gravelly sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; crushed coral; contains or overlies a utility pipe
Id	47–76	Fill; 2.5Y 7/3, pale yellow; sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, broken/discontinuous lower boundary
IIa	45–70	Fill; 10YR 8/2, very pale brown; fine sand; structureless (single-grain); moist, loose consistence; non-plastic; marine origin; clear, smooth lower boundary; multiple layers of very fine to fine sand associated with Kaka‘ako land reclamation activities (1919–1927)
IIb	70–75	Fill; 10Y 7/1 (GLEY 1), light greenish gray; sandy clay grading to clay; structureless (massive); moist, firm consistence; plastic; marine origin; abrupt, smooth and discontinuous lower boundary; hydraulic (dredge) fill associated with Kaka‘ako land reclamation activities (1919–1927)
III	75–83	Fill; 2.5Y 5/2 to 5/3, grayish brown to olive brown; loamy sand; structureless (single-grain); moist, loose consistence; non-plastic; mixed origin; clear, smooth and discontinuous lower boundary; redeposited, likely locally procured sand utilized for land modification; contained rusted metal fragments and slag
IVa	80–112	Natural; 10Y 5/1 (GLEY 1), greenish gray; clay sand; weak, fine, granular structure; moist, very friable consistence; slightly plastic; marine origin; clear, smooth lower boundary; wetland sediment; contained brackish water snails
IVb	108–133	Natural; 10Y 7/1 (GLEY 1), light greenish gray; clay sand; weak, fine, granular structure; moist, very friable consistence; slightly plastic; marine origin; clear, smooth lower boundary; common, fine roots; wetland sediment with decomposing roots

Stratum	Depth (cmbs)	Description of Sediment
V	133–137 (BOE)	Natural; 10Y 7/1 (GLEY 1), light greenish gray; coarse gravelly sand; structureless (single-grain); wet, non-sticky consistence; non-plastic; marine origin; abrupt, smooth lower boundary; coarse sand and decomposing coral shelf; overlying coral shelf

Figure 118. Block M T-1 photograph of cinder block structural remnant (SIHP # -7686) within the *makai* portion of test excavation

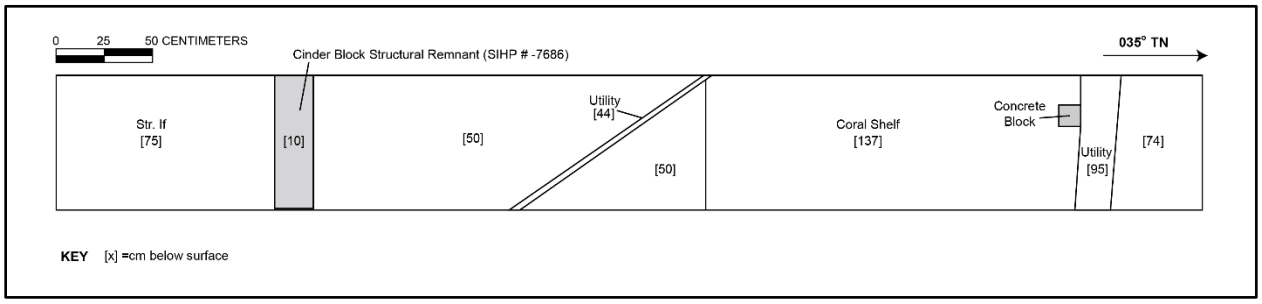

Figure 119. Block M plan view of T-1, showing a cinder block structural remnant (SIHP # -7686) and two utility lines