



# Archaeological Inventory Survey for the Royal Kunia II Development Project

Ahupua'a of Hō'ae'ae, 'Ewa District, Island of O'ahu

City and County of Honolulu Tax Map Key Parcels:

(1) 9-4-002:070, (1) 9-4-002:071, and (1) 9-4-002:078

NOVEMBER 2024

**DRAFT**

PREPARED FOR

**Haseko Development, Inc.**

PREPARED BY

**SWCA Environmental Consultants**



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**DRAFT**

Prepared for

**Haseko Development, Inc.**  
91-1001 Kaimālie Street Suite 205  
'Ewa Beach, Hawai'i 96706  
Attn: Peter Kwan

Prepared by

**Ryan Gross, M.A., RPA**

Principal Investigator

**Rowland Reeve, M.A.**

**SWCA Environmental Consultants**

1200 Ala Moana Boulevard. #380  
Honolulu, Hawai'i 96814  
(808) 548-7922  
[www.swca.com](http://www.swca.com)

SWCA Project No. 80817-001-HON

SWCA Cultural Resources Report No. 24-861

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## EXECUTIVE SUMMARY

At the request of Haseko Royal Kunia, LLC (Haseko), SWCA Environmental Consultants (SWCA) conducted an archaeological inventory survey (AIS) for the Royal Kunia II Residential Development Project located within the *ahupua‘a* (traditional land division) of Hō‘ae‘ae, in the *moku* (district) of ‘Ewa, on the island of O‘ahu. The project area comprises approximately 211 acres of residentially zoned land located east of Kunia Road and north of the existing Royal Kunia I community and the Royal Kunia Country Club. The project area includes City and County of Honolulu Tax Map Key parcels (1) 9-4-002:070 (13 acres), (1) 9-4-002:071 (161 acres), and (1) 9-4-002:078 (37 acres).

In 2021, SWCA conducted an Archaeological Literature Review and Field Inspection (LRFI) of the project area (Gerrish et al. 2021) that identified several historic properties situated within the project area dating to the post-Contact period and related to the commercial cultivation of sugar cane by the Oahu Sugar Company. Five features belonging to three previously recorded historic properties (Features 3 and 4 of State Inventory of Historic Places [SIHP] Site 50-80-08-07671, Feature 7 of SIHP Site 50-80-08-07758, and Features RK1 and RK2 of SIHP Site 50-80-09-02268) were documented within the project area. These properties were originally identified and recorded during archaeological investigations conducted on adjacent parcels and extend into the project area. In addition, two newly identified archaeological features were also documented by Gerrish et al. (2021): SIHP Site 50-80-08-09385 and SWCA-65875-007 (subsequently designated as SIHP Site 50-80-08-10020).

The purpose of the AIS is to identify and document the historic properties located within the project area, gather sufficient information to evaluate the significance of the historic properties present, and compile the information into a written report for review and acceptance by the State Historic Preservation Division (SHPD). The resulting archaeological inventory survey report has been prepared to assist Haseko in fulfilling its historic preservation obligations under Hawaii Revised Statute 6E-42 and Hawaii Administrative Rules Chapter 13-276 (HAR §13-276).

Archaeological fieldwork for the AIS included pedestrian survey of approximately 6.5 acres and excavation of 32 mechanical test trenches in accordance with the AIS testing strategy (Reeve 2023) prepared for the project which was reviewed and accepted by SHPD in December 2023. Fieldwork was conducted over 23 days with a field crew of two to three SWCA project staff. One new feature associated with SIHP Site 50-80-08-10020 (former plantation camp) was identified during fieldwork, comprising a masoned rock culvert wall (Feature 1).

The results of the AIS demonstrated that no significant archaeological historic properties are present within the project area that could be affected by the project. No further archaeological work is recommended for the project. The AIS evaluated the only archaeological historic property identified within the project area (SIHP Site 50-80-08-10020 [former plantation camp]). This site was determined to be not significant due to it lacking several aspects of integrity.

### Report Citation:

Gross, Ryan

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# 1 INTRODUCTION

At the request of Haseko Royal Kunia, LLC (Haseko), SWCA Environmental Consultants (SWCA) has prepared the following archaeological inventory survey (AIS) report for the Royal Kunia II Residential Development Project located within the *ahupua'a* (traditional land division) of Hō'ae'ae, in the *moku* (district) of 'Ewa, on the Island of O'ahu.

This AIS was conducted under the supervision of SWCA Principal Investigator Ryan Gross, M.A., who also directed the pedestrian and subsurface survey components of fieldwork. Background archival research for the project was undertaken by Wainani Traub, B.A., and Hattie Gerrish, B.A., while archaeologist Renée Whitehouse and geographic information systems (GIS) specialist Sarah Halpern assisted with fieldwork. SWCA Cultural Resources Team Lead Aaron Elzinga, M.A., RPA, also contributed to the preparation of the AIS report, while quality review was conducted by Cultural Resources Quality Improvement Lead Rowland Reeve, M.A.

## 1.1 Project Background

The project area is planned to be developed for single-family or multi-family townhome style structures. This residential development will occur in phases, with the first phase (Parcel D) located within the southeast corner of City and County of Honolulu Tax Map Key (TMK) parcel (1) 9-4-002:071, adjacent to the existing Royal Kunia Country Club. Future development phases will expand to include the entire project area.

### 1.1.1 Project Area

The project area comprises approximately 211 acres of residentially zoned land located east of Kunia Road and north of the existing Royal Kunia I community and the Royal Kunia Country Club (Figure 1 and Figure 2). The project area includes City and County of Honolulu TMK parcels (1) 9-4-002:070 (13 acres), (1) 9-4-002:071 (161 acres), and (1) 9-4-002:078 (37 acres) (Figure 3).

### 1.1.2 Regulatory Setting

This AIS report has been prepared to assist Haseko in fulfilling its historic preservation obligations under Hawaii Revised Statute (HRS) 6E-42 and Hawaii Administrative Rules (HAR) Chapter 13-284 (HAR §13-284), "*Rules Governing Procedures for Historic Preservation Review to Comment on Section 6E-42, HRS, Projects*". This report meets the standards outlined in HAR Chapter 13-276, "*Rules Governing Standards for Archaeological Inventory Surveys and Reports*".

The purpose of an AIS is to identify and document the historic properties located within the project area, gather sufficient information to evaluate the significance of the historic properties present, and compile the information into a written report for review and acceptance by the State Historic Preservation Division (SHPD). HAR §13-276-3 states that an AIS shall:

- Determine if archaeological historic properties are present in the project area and, if so, identify all such historic properties.
- Gather sufficient information to evaluate each historic property's significance in accordance with the significance criteria listed in subsection 13-275-6(b).

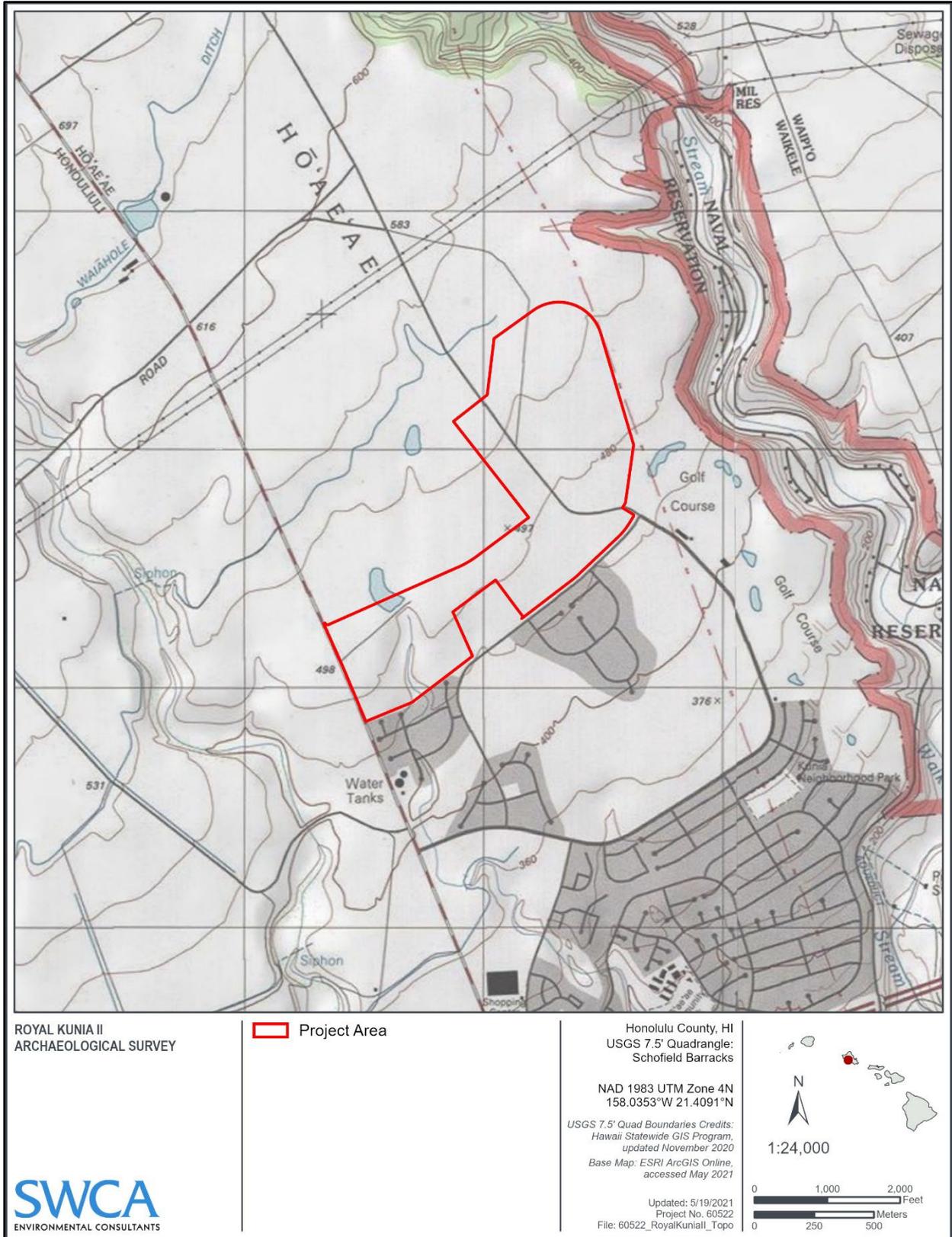


Figure 1. Project area depicted on the U.S. Geological Survey 7.5-minute Schofield Barracks (1998) quadrangle.

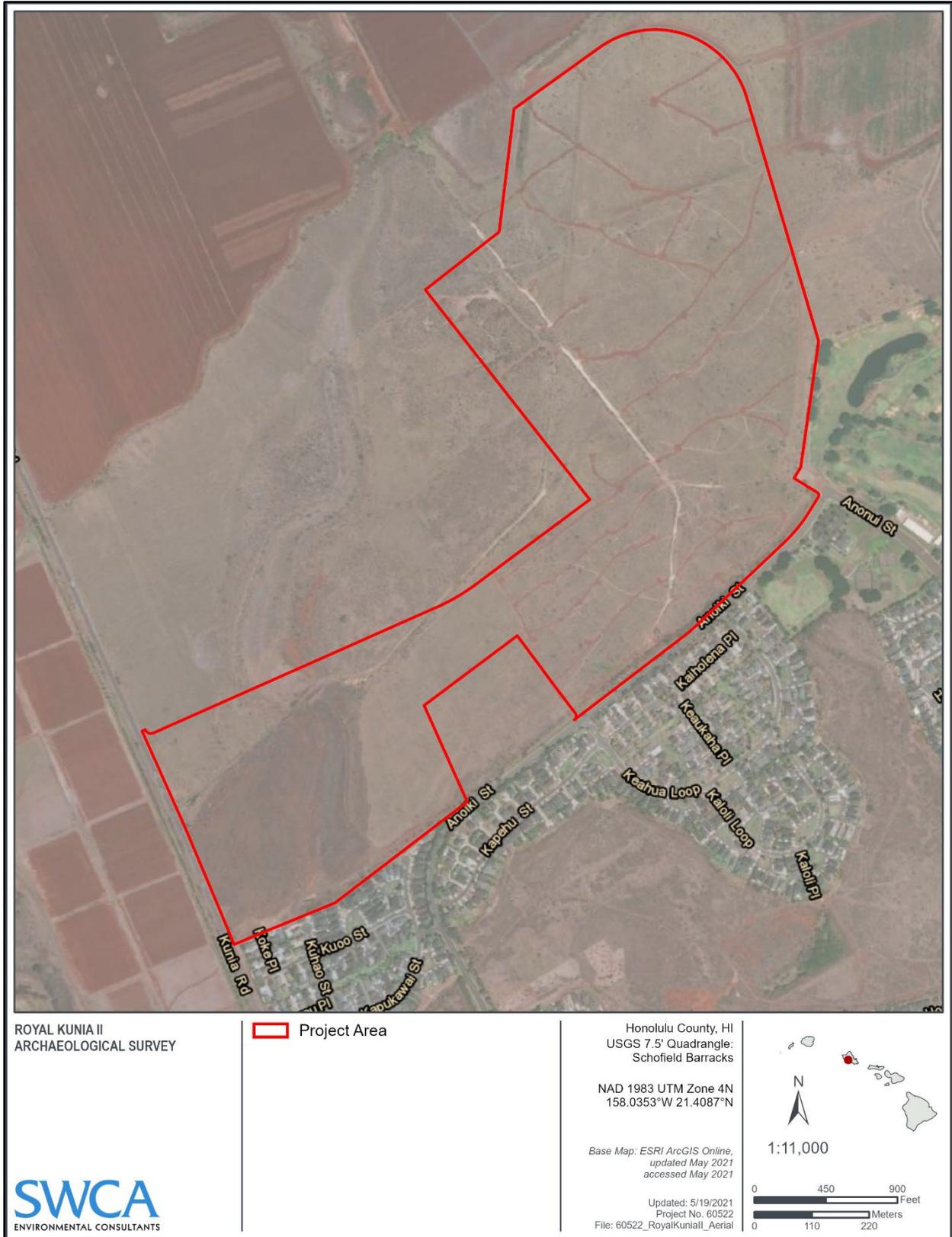


Figure 2. Project area depicted on satellite imagery (2021 base image from Esri ArcGIS).

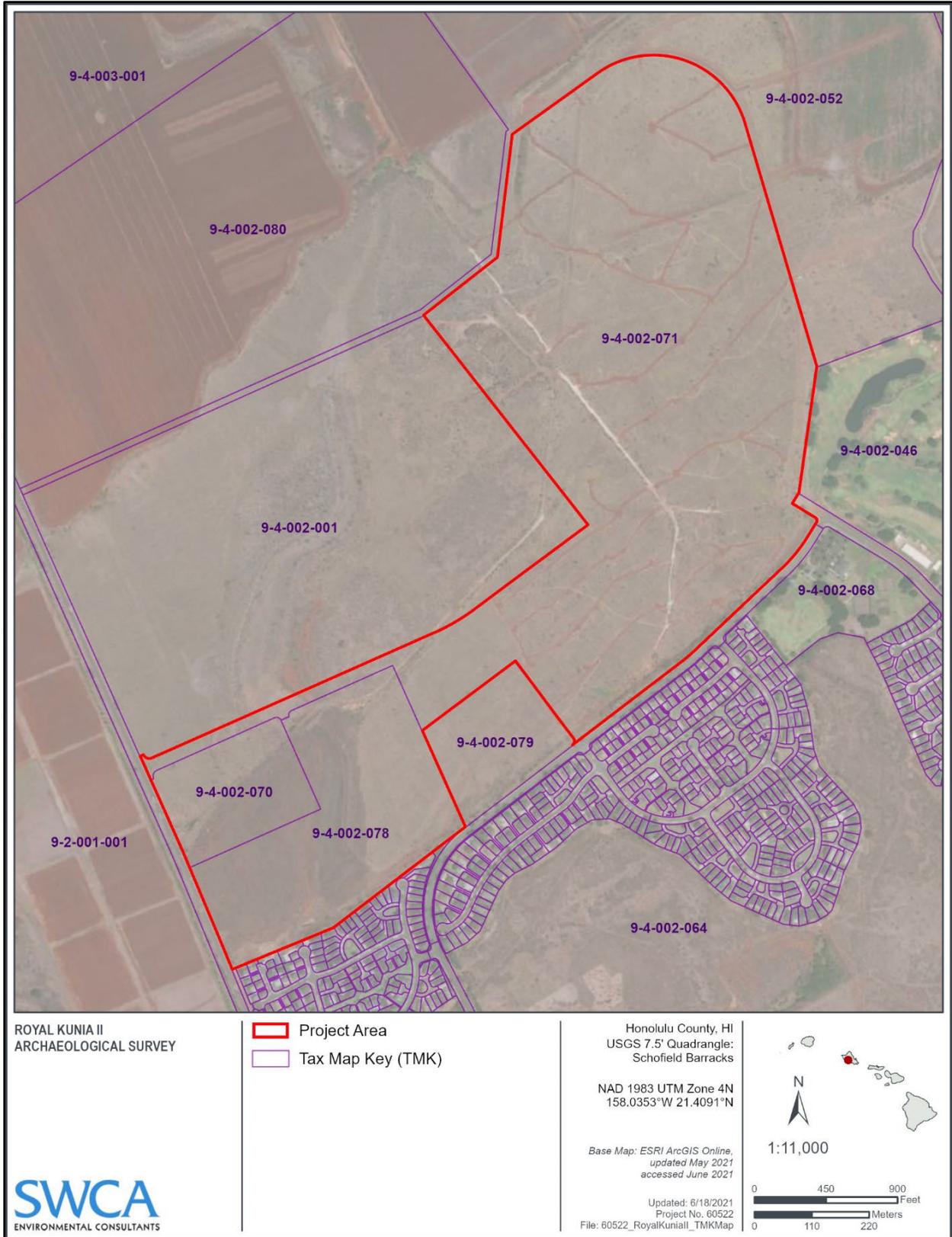


Figure 3. Project area depicted on satellite imagery (base image from Esri ArcGIS with parcel data from City and County of Honolulu).

### 1.1.3 Background of Historic Preservation Review

In 2021, SWCA conducted an Archaeological Literature Review and Field Inspection (LRFI) of the project area (Gerrish et al. 2021). The purpose of the Gerrish et al. (2021) LRFI was to support Haseko's request for historic preservation review by determining whether historic properties were present within the project area. The field inspection also included an unmanned aerial vehicle (UAV) survey which was used to create a high-resolution orthomosaic image of the entire project area (Figure 4) and to collect aerial images of several of the potential historic properties identified during the field inspection.

In their review letter responding to Haseko's request for historic preservation review (Project No. 2021PR01090, Doc No. 2303MA01), a copy of which is included in Appendix A of this report, the SHPD noted that:

The **SHPD agrees** that potentially significant historic properties were identified and preliminarily recorded within the Royal Kunia II Development Project area during research and fieldwork for this LRFI. The **SHPD further agrees** that additional identification and documentation efforts are needed across this project area in advance of the proposed development, to more fully identify, document, and assess these historic properties and the impact the proposed project will have on them. Based on the information provided, the **SHPD has insufficient information** to determine the potential impacts of the project on significant historic properties.

Based upon the findings of the Gerrish et al. (2021) LRFI report, the SHPD requested that:

...a Reconnaissance Level Survey (RLS) report be completed for the full Royal Kunia II Development Project area, given the presence of landscape-engineering historic properties within that project area.

A draft RLS report (Root and Gross 2024) was subsequently produced by SWCA and submitted to the SHPD for their review in August 2023. The SHPD's requested revisions were received by SWCA via Hawaii Cultural Resources Information System (HICRIS) on March 5, 2024, and included replacing a temporary site number with a newly assigned SIHP site number throughout the document, and clarifying project impacts to "landscape engineering" historic properties within the project area. A revised report containing these requested revisions was submitted via HICRIS in March 2024. In addition to the request to conduct an RLS, the SHPD requested that:

... an Archaeological Inventory Survey (AIS) be conducted for the entirety of the Master Plan project area. For all parcels this will entail incorporating the research and results of the LRFI (Gerrish et al. 2021) into an AIS that meets the standards set forth in HAR §13-276, including: consultation with knowledgeable individuals, significance assessments, and recommendations. The findings of this AIS and the requested RLS should correspond. The AIS will need to involve limited subsurface testing across the entire project area, to record baseline soils. General subsurface testing to record soils will extend into Parcel E, while a more focused testing strategy needs to be developed here to determine the presence, boundaries, integrity, and significance of the former plantation camp (SWCA-65875-007). The dry gulch in this parcel also needs to be subject to a 100% pedestrian survey with limited testing with transects at no more than 5-m intervals, needs to be conducted of the dry gulch south of the causeway/dam. The AIS report is subject to filing fees (\$450) per HAR §13-284-4(3). SIHP Request(s) will need to be submitted for any archaeological historic properties identified or further documented in this AIS report.

An AIS testing strategy (Reeve 2023) detailing the methods and goals of this AIS was approved by SHPD via HICRIS on December 18, 2023 (Submission 2021PR01090.012). The following AIS report has been prepared to meet the methods and goals outlined in the AIS testing strategy (Reeve 2023), to satisfy SHPD's requests, and to support the continued HRS 6E-42 historic preservation review for the project.

### 1.1.4 Consultation

To supplement this AIS, SWCA conducted consultation outreach and correspondence with community members and cultural practitioners knowledgeable about the project area. The results of these consultation efforts were included in an unpublished Cultural Impact Assessment (CIA) (Traub et al. 2023) prepared for Haseko in 2023. Oral history interviews were conducted with some of these individuals in order to gather information regarding the history of the study area and any traditions associated with it; knowledge of any particular historic properties or cultural sites within the study area; knowledge of traditional or post-Contact use of the study area; knowledge of any *wahi inoa* (place names), *wahi pana* (storied places), or sacred areas; knowledge of any *ilina* (burials) located within the study area; knowledge of traditional *ala hele* (trails) and other travel routes within the study area; knowledge of other places of cultural significance; and knowledge of cultural practices that took place or are currently taking place within the project area.

As part of the CIA, request for consultation letters were sent to 52 organizations and individuals requesting information regarding *kūpuna* (elders) and other local individuals knowledgeable concerning the background and contemporary cultural use of the project area. Of the 52 organizations and individuals contacted, 12 responded (Traub et al. 2023:98-102). Many of those who did respond shared information related to the cultural history of the ‘Ewa area or admitted they were not familiar with the area but offered to circulate the request for information letter to their contacts.

The results of archival research, supported by the information obtained through community consultation, indicated that the project area does not contain any known significant traditional cultural properties, places, or resources. Dramatic changes in the environment and land use of the project area have irrevocably altered its traditional landscape, while the long-term private ownership of the land has prevented contemporary cultural practices from taking place there. The CIA was unable to discover any traditions or traditional historic events directly associated with the project area, nor was the project area known to be linked with any traditional place names or to contain any places of known traditional significance. The development of the project area for residential housing will therefore have little direct effect on current cultural practices or on known traditionally significant cultural places, resources, or beliefs.

## 1.2 Report Organization

This report is composed of 10 sections and three appendices. Following this introductory section (Section 1), which presents the background of the project and the regulatory requirements related to it, Section 2 (Environmental Setting) describes both the natural and built environment of the project area. Section 3, Historic and Cultural Background, provides the cultural history of the project area including changes in land use and a summary of recent impacts to the land. The Archaeological Context section (Section 4) includes a review of relevant archaeological and architectural studies conducted, as well as previously documented historic properties within and adjacent to the project area. Section 5 (Methods) outlines the research questions investigated through the subsurface survey fieldwork. Section 6 (Fieldwork Results) describes the findings of fieldwork, including the results of the pedestrian survey, subsurface testing, and stratigraphic investigations. Section 7 (Laboratory Results) presents the results of laboratory analyses. Section 8 (Archaeological Resource Descriptions) provides descriptions of the archaeological historic property present within the project area while Section 9 (Significance Assessment) provides an assessment of its integrity and significance. Section 10 (Conclusions and Recommendations) includes the conclusions for the project, and includes recommendations for further work and disposition of the collected artifact assemblage. A glossary of Hawaiian words used in the text and references cited in this report are also included as Section 11 and Section 12, respectively.

The appendices that follow the report include:

- Appendix A. SHPD Correspondence
- Appendix B. Artifact Catalog

## 2 ENVIRONMENTAL SETTING

The project area is situated within the broad central plain that lies between the Wai‘anae and Ko‘olau mountain ranges on the island of O‘ahu. It is located approximately 3.75 km inland of Pearl Harbor and ranges in elevation from approximately 480 to 520 feet above mean sea level (amsl). At present, the project area is undeveloped. The terrain is relatively level with a slight southern aspect. The annual average temperature ranges from 60 to 90 degrees Fahrenheit with the highest temperatures occurring in August and September (Armstrong 1973).

### 2.1 Hydrology

Located in the rain shadow of the Ko‘olau Range, the project area averages approximately 18 inches of rainfall annually (Juvik and Juvik 1998:56). While the project area is a relatively unbroken plain, an ephemeral stream trends roughly north to south through the western portion of the project area (see Figure 4). A rock-faced earthen dam (now inoperable) was historically constructed to impound water within this natural, dry depression to support irrigation for commercial agriculture once conducted within the project area. The project area is located within 0.37 km of the watershed for the perennial Waikele Stream located to the east.

### 2.2 Geology and Soils

The soils underlying the project area are mapped as Lahaina series sediments, including Lahaina silty clays (LaA and LaB) (NRCS 2024) (Figure 5). These are well-drained soils that have developed in material weathered from igneous rock which are suitable for commercial sugar cane cultivation. Small areas of Molokai series soils are mapped within the southeastern portion of the project area, including Molokai clays (MuA and MuB). The ephemeral stream that crosses through the western portion of the project area is also mapped as Molokai clays (MuD) which similarly comprise well-drained soils that formed from igneous rock (NRCS 2021). Water (W) is also mapped within the area once impounded as a reservoir (see Figure 5); however, the reservoir is now drained.

### 2.3 Vegetation

The natural vegetation patterns within the project area have been severely altered by at least 100 years of intensive sugar cane agriculture. The vegetation observed within the project area consists of invasive species including dense stands of guinea grass (*Megathyrsus maximus*), California grass (*Brachiaria mutica*), and tangled vines (Figure 6). Small groves of *koa haole* (*Leucaena leucocephala*) are located in those areas more protected from the wind along with sparse solitary *Acacia confusa* trees.

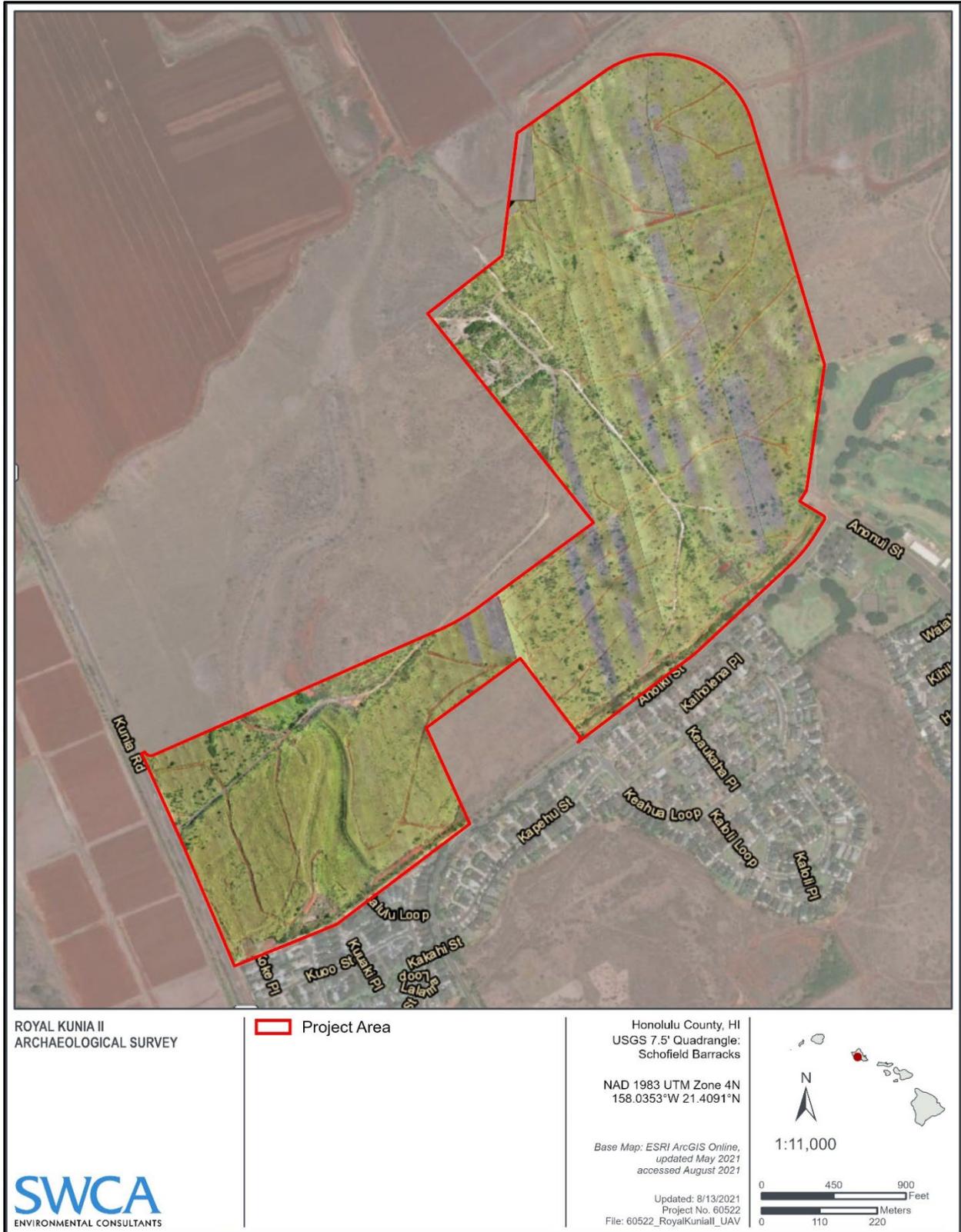


Figure 4. Orthomosaic image of project area, from Gerrish et al. (2021:50).

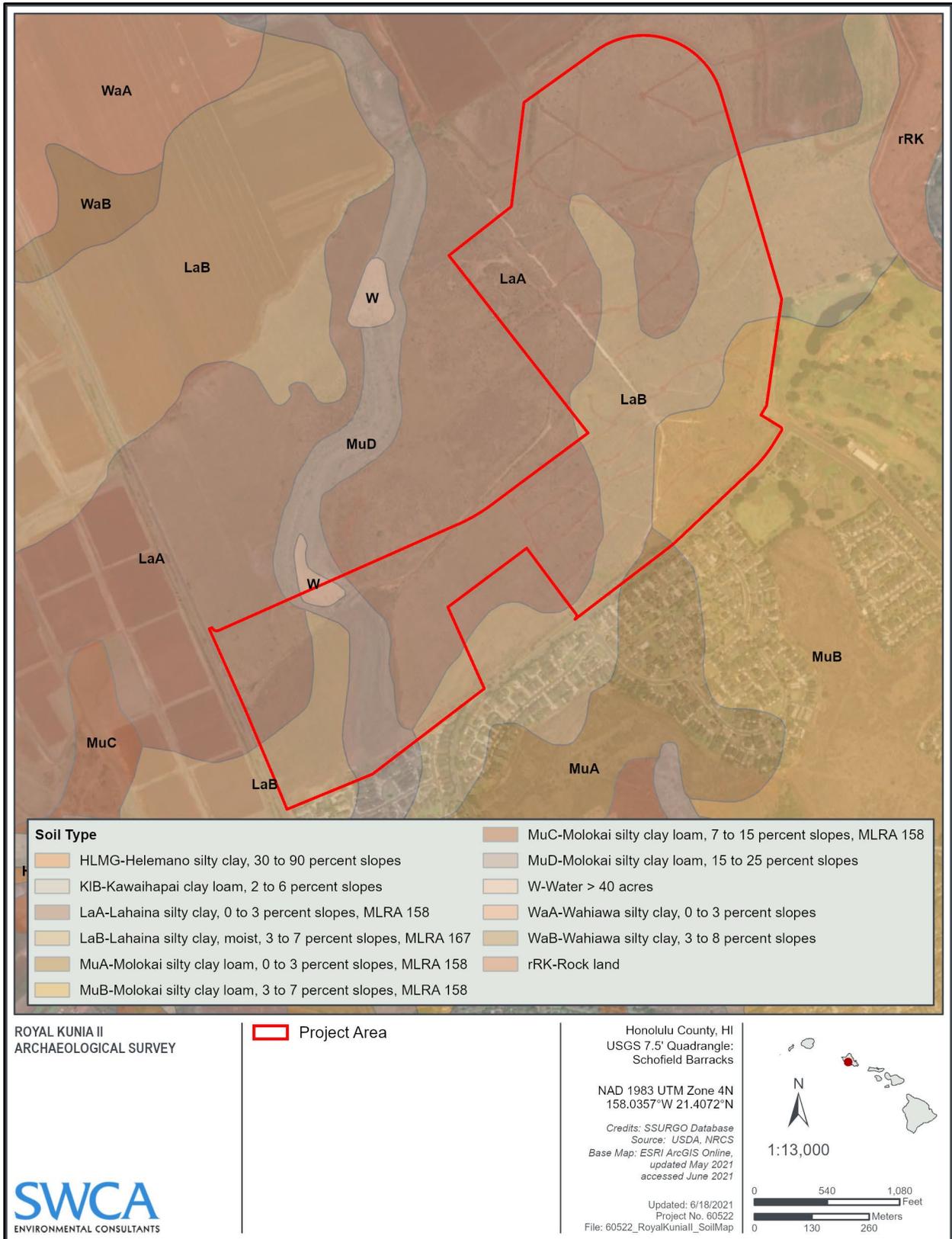


Figure 5. Soils mapped within the project area (NRCS 2021).



Figure 6. Overview of vegetation within the project area, view to the northwest.

## 2.4 Traditional Environmental Zones

During the traditional Hawaiian period, the project area would have formed part of the *kula uka* (inland plain). This environmental zone would have supported dry shrub and grasslands dotted with occasional dryland trees such as *wiliwili* (*Erythrina sandwicensis*), *lama* (*Diospyros sandwicensis*), and *'iliahi* (sandalwood; *Santalum* sp.). Native shrubs would have included *'a'ali'i* (*Dodonaea viscosa*) and *'ilima* (*Sida fallax*). The primary grass would most likely have been *pili* (*Heteropogon contortus*).

These open grasslands would traditionally have provided the residents of Hō'ae'ae with a number of resources such as the native pili grass, which would have been gathered by the pre-Contact inhabitants of the ahupua'a to provide thatching materials for their house walls and roofs (Neal 1948:72–73), as well as medicinal and decorative native dryland shrubs such as the *'ilima* (Neal 1948:485). Here also, birds like the *kōlea* (Pacific golden plover; *Pluvialis fulva*) were seasonally hunted for food.

### 3 HISTORIC AND CULTURAL BACKGROUND

This section presents an overview of the traditional Hawaiian and post-Contact land use of the project area and its possible cultural significance. It also reviews more recent impacts that have impacted the project area.

During the course of research, a range of documentary sources were consulted. Historic documents and reference volumes consulted were found in the Hawai'i State Archives, the Hawai'i State Library system, the University of Hawai'i Mānoa and Hilo libraries, as well as within SWCA's own extensive library of Hawaiian reference volumes. Historic maps from the collection of the Hawai'i State Survey Division were obtained through their web site, as were maps held at the University of Mānoa Library. Land documents and place name information was obtained from online sources. Relevant archaeological reports were obtained from the library of the SHPD. All of these sources are cited in the reference section at the end of this report.

The project area is located inland of Pu'uloa (Pearl Harbor) and adjacent to one of the main traditional routes of travel across O'ahu's central plain, running from the leeward to the windward side (roughly following the alignment of the present Kunia Road). The project area rests within the traditional ahupua'a of Hō'ae'ae, in the moku of 'Ewa. The 'Ewa district covers much of the southwest corner of the island as well as its central plain, with the project area spanning the full width of Hō'ae'ae Ahupua'a (Figure 7). During the pre-Contact period, the lands inland of Pu'uloa were dry pili grasslands that were not intensively cultivated due to the lack of water.

#### 3.1 Traditional Hawaiian Place Names of 'Ewa

The *inoa* (names) of *wahi pana* (stories and legendary places) (Pukui and Elbert 1986:376) are an integral part of Hawaiian culture. The traditions related to these places are often preserved within their names. Place names can contain information relating to environmental features or characteristics of the landscape, political history, mythological origins, and can often provide valuable cultural insights into the history and significance of an area. Therefore, place names are an appropriate starting point for archival research and investigation. Traditionally named places are found in *mo'olelo*, traditional Hawaiian stories, *mele* (songs), and *pule* (prayers) and concern the actions of gods, demi-gods, or *ali'i* (chief). The *inoa* were then passed on through language and oral tradition, thus preserving the unique significance of the place.

The project area is situated within the moku of 'Ewa, which translates to "crooked" or "unequal" (Pukui and Elbert 1986:42). An alternative interpretation of 'Ewa is "strayed," a reference to a legend about the gods Kāne and Kanaloa, who threw a stone to determine the boundary of the district.

When Kane and Kanaloa were surveying the islands they came to O'ahu and when they reached Red Hill saw below them the broad plains of what is now Ewa. To mark boundaries of the land they would throw a stone and where the stone fell would be the boundary line. When they saw the beautiful land lying below them, it was their thought to include as much of the flat level land as possible. They hurled the stone as far as the Waianae range and it landed somewhere, in the Waimanalo section. When they went to find it, they could not locate the spot where it fell. So Ewa (strayed) became known by the name. The stone that strayed. (Told to E.S. by Simeon Nawaa, March 22, 1954, cited in Sterling and Summers 1978:1)

Perhaps the most prominent environmental feature and significant resource within 'Ewa is Pu'uloa (later known as Pearl Harbor). Pu'uloa translates as "long hill." Pu'uloa was also known as Keawalau-o-Pu'uloa "the many harbored-sea of Puuloa" (Pukui 1983:182). An alternate name was Awawalei,

“garland (lei) of harbors” (Handy and Handy 1972:469). The harbor was named Pearl Harbor after the pearl oysters, which were once abundant on the harbor reefs, and later decimated by overharvesting. According to tradition, this oyster was brought from Kahiki by a *mo‘o* (water spirit) named Kānekua‘ana (Handy and Handy 1972:470).

Within ‘Ewa is the ahupua‘a (traditional land division) of Hō‘ae‘ae where the project area is located. Hō‘ae‘ae is bounded on the makai, or ocean side, by the north shore of Pu‘uloa’s West Loch, on its west side by the eastern edge of Honouliuli Gulch, and on its eastern side by Waikele Gulch. The *mauka* (inland) boundary of Hō‘ae‘ae ahupua‘a does not extend to the mountains but is enclosed by the neighboring ahupua‘a of Honouliuli (see Figure 7).

Hō‘ae‘ae means “to make soft or fine” (Pukui et al. 1974:47). Thrum (1922:632) states that Hō‘ae‘ae means “to pulverize.” Pukui and Elbert’s *Hawaiian Dictionary* (1986) references various possible meanings of Hō‘ae‘ae as “to rise the tide, to make fine, to pulverize, to refine, to soften.” ‘Ae can also mean to lend, to say yes, to consent, to approve, or to denote fine mash or sap derived from seaweed or leaves of plants such as *kalo* (taro).

Pukui et al. (1974) also note a famous *pōhaku* (stone) called Pōhaku-Pili located on the boundary between the ahupua‘a of Hō‘ae‘ae and Waikele. Another mention of Pōhaku-Pili is in the book *Waipahu: Its People and Heritage*, which states that Pōhaku-Pili (clinging stone) was located above Waipahu Spring and was placed there by the Hawaiian pig-god, Kamapua‘a (Mauricio 1997:7). The exact location of Pōhaku-Pili is unknown.

Honouliuli Ahupua‘a, located immediately west of Hō‘ae‘ae, is the largest and westernmost ahupua‘a in the moku of ‘Ewa. Honouliuli is defined as “dark water,” “dark bay,” or “blue harbor,” and was named for the waters of Pearl Harbor (Jarrett 1930:22). The traditions of Honouliuli have been compiled by several authors, including Sterling and Summers (1978), Hammatt and Folk (1981), Kelly (1991), Charvet-Pond and Davis (1992), and Maly (1992).

Waikele ahupua‘a, located east of Hō‘ae‘ae, is named for Waikele stream. Waikele translates to “muddy water” (Pukui et al. 1974:223). Waikele is famous for Waipahu (“bursting water”) Spring, which was used to irrigate many of the ancient *kalo* patches on the Waikele flood plain and later during the post-Contact period, rice and sugar cane crops. As a town and sugar mill expanded around it, the entire makai area of Hō‘ae‘ae and Waikele became known as Waipahu, and the older names were no longer used.

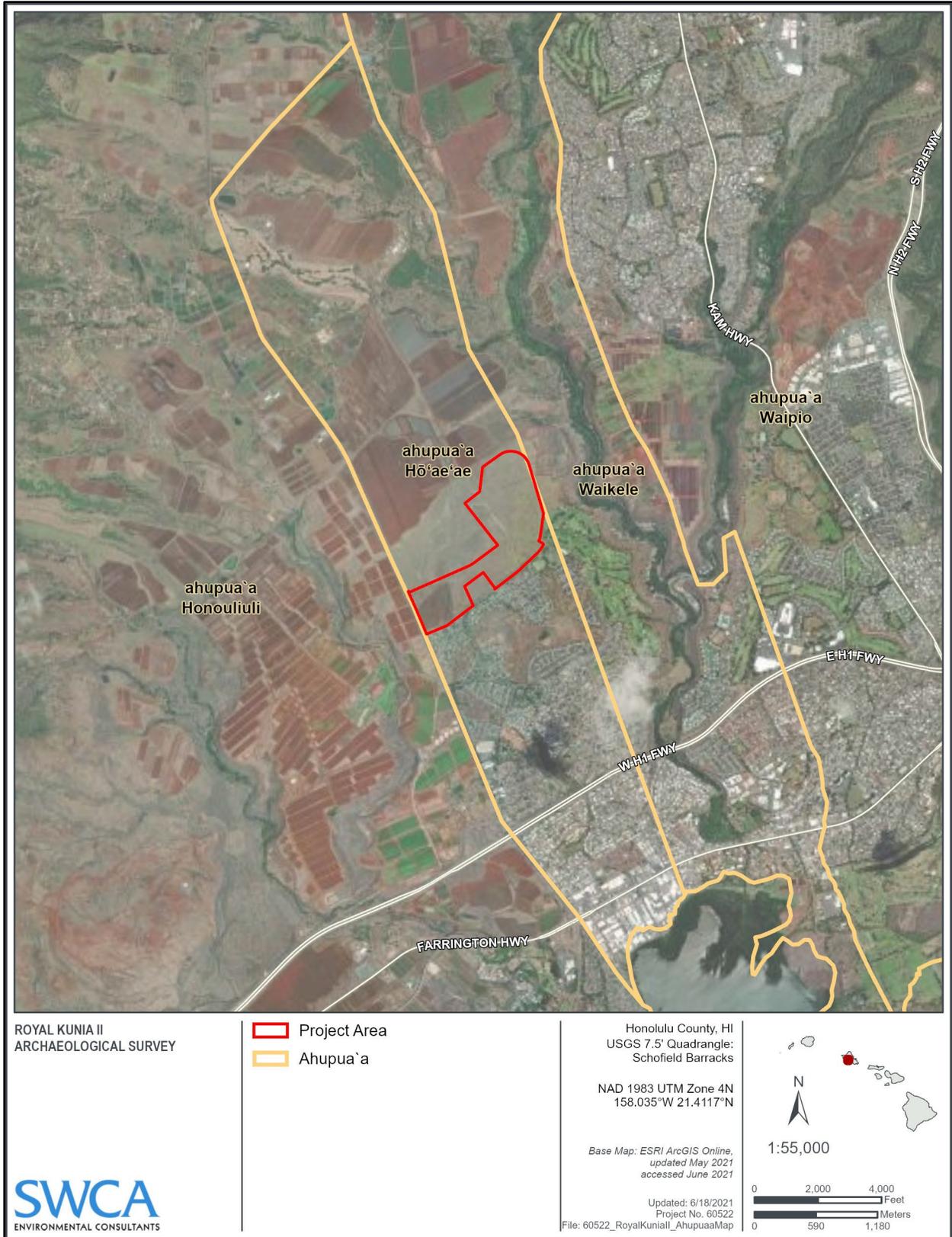


Figure 7. Project area within the ahupua'a of Hō'ae'ae.

## 3.2 Traditional Hawaiian Land Use

Early historical accounts depict the moku of 'Ewa as an abundant and populated land where chiefs of distinguished lineages were born and resided. The land was fertile and well fed by mountain streams that helped sustain the agricultural lifestyle required to support the ali'i, their households, and people. The ahupua'a of Honouliuli and Waipi'o are particularly well documented as places that were once widely inhabited by pre-Contact populations. However, far less is known of the pre-Contact population of Hō'ae'ae.

Pre-Contact settlement in 'Ewa is attributed for the most part to the plentiful marine and estuarine resources available along the coast to the south of the project area. The lochs of Pu'uloa were ideal for the construction of *loko kuapa*, shoreline fishponds enclosed by rock walls. Other subsistence-related features in this area include irrigated lowlands suitable for wetland kalo cultivation (Hammatt and Shideler 1990) and the lower forest area of the mountain slopes where upland forest resources were gathered. 'Ewa was famous for a rare kalo called the *kāi o 'Ewa*, which grew in mounds in marshy locations (Handy and Handy 1972:471).

Pre-Contact and early post-Contact agriculture in Hō'ae'ae ahupua'a was focused in the spring-fed floodplains adjacent to Pu'uloa's West Loch. The lands further inland of Pu'uloa were dry pili grasslands that were not intensively cultivated due to the lack of water. The current project area is located inland of Pu'uloa and likely rested within the open and uncultivated pili lands.

In the early 1940s, E. Craighill Handy surveyed existing and remnant agricultural areas of the Hawaiian Islands. Handy's survey revealed that the remnant agriculture areas of Hō'ae'ae were small in comparison to that of Waipi'o and Waikele, noting that Hō'ae'ae had "a moderate sized area of terraces watered by springs inland from West Loch of Pearl Harbor" (Handy 1940:82).

In a study of the resources and population of the ahupua'a in 'Ewa, Cordy (1996) correlated three factors: floodplain size, fishery size, and population size (Cordy 1996:12). Hō'ae'ae had a small floodplain area directly adjacent to the north shore of Pu'uloa's West Loch and a fairly small fishery, which took up only a small portion of West Loch. Waikele had a large floodplain and had irrigated fields along the lower Waikele Stream and the inland Waikakalaua Stream, but only a medium-sized fishery along the west shore of West Loch. Waipi'o had a large floodplain, irrigated fields along Kīpapa Stream, and a large fishery, encompassing most of Middle Loch and the fringes of West Loch along Waipi'o Peninsula. Cordy (1996) found that the floodplain and fishery size were good predictors for the sizes of pre-Contact and early post-Contact populations: Waipi'o had the largest population, Waikele and Waiawa had medium-sized populations, and Hō'ae'ae had the smallest population of the four ahupua'a.

Both Handy's (1940) observations and Cordy's (1996) conclusions regarding the subsistence resources available in Hō'ae'ae suggest that the ahupua'a's population was small and concentrated close to the shoreline fishery and adjacent floodplain area where pre-Contact Hawaiians would have had access to more abundant resources. Furthermore, the lack of water further inland would have made Hō'ae'ae a less desirable place to settle. The inland areas were, however, part of an extensive trail network that allowed for travel across the island. The already small number of inhabitants in the ahupua'a prior to Western contact would have declined sharply during the early post-Contact period, following broad trends across the Hawaiian Islands including the abandonment of traditional agriculture practices, the rise of the sandalwood trade, and widespread death from foreign diseases.

### 3.2.1 Leeward O‘ahu Trails

There were several pre-Contact and early historic-era *ala hele* (trails) that crossed ‘Ewa. These included a cross-ahupua‘a trail that traversed ‘Ewa and connected Honolulu to Wai‘anae; an *ala pi‘i* (mauka to makai trail) that branched off from the cross-ahupua‘a trail and followed the boundary between Honouliuli and Hō‘ae‘ae to the Pōhākea Pass and Kolekole Pass to Wai‘anae; and a second branch forming a mauka to makai trail generally following the path of Waikele Stream to Wahiawā in central O‘ahu.

John Papa ‘Ī‘ī described the first mauka to makai trail, “from Kunia the trail went to the plain of Keahumoa, on to Maunauna, and along Paupauwela, which met with the trails from Wahiawā and Waialua”(‘Ī‘ī 1959:97). ‘Ī‘ī places the area called Kunia east of Pōhākea Pass in the ahupua‘a of Honouliuli and Hō‘ae‘ae, makai of the modern town of Kunia, and places the plain of Keahumoa between Kunia and Paupauwela, in the most mauka portion of Honouliuli. The trail passed near the peak called Maunauna in upper Honouliuli. To the east of Honouliuli, this trail was just mauka of the floodplains near Pearl Harbor, skirting the inland edges of the fertile kalo fields. In western Honouliuli, the trail dipped down toward the coast in the direction of a prominent hill and landmark, Pu‘uokapolei. The trail then crossed into Wai‘anae at the coast near Pili o Kahe, the stone that marked the boundary between the ‘Ewa and Wai‘anae districts.

‘Ī‘ī also described a network of leeward O‘ahu trails that encircled and crossed the Wai‘anae Range, allowing passage from West Loch to the Honouliuli lowlands, past Pu‘u Kapolei and Waimānalo Gulch to the Wai‘anae coast, and onward along the shoreline of O‘ahu (‘Ī‘ī 1959:96–98). This trail system crossed the Wai‘anae Range, allowing passage from Wai‘anae to Honouliuli via Pōhākea Pass (‘Ī‘ī 1959:96–98). The modern Kunia Road marks the boundary between Hō‘ae‘ae and Honouliuli Ahupua‘a, following the traditional Hawaiian trail extending north from West Loch.

### 3.2.2 Political Rule in Pre-Contact and Early Post-Contact ‘Ewa

The rich resources of Pu‘uloa included shoreline fishponds, numerous springs, and irrigated agricultural lands along its streams, which made central ‘Ewa a prize for competing chiefs. Battles were fought for and on ‘Ewa lands, sometimes between competing O‘ahu chiefs, and sometimes by invading chiefs from other islands.

In the first half of the eighteenth century, the island of O‘ahu was ruled by a chief named Kūali‘i, who consolidated his supreme power over the entire island by defeating the chiefs of ‘Ewa (Cordy 2002:32). Kūali‘i met the competing army on the plains of Keahumoa, but the ‘Ewa chiefs surrendered when they saw Kūali‘i’s overwhelming forces, and they ceded the lands of Ko‘olauloa, Ko‘olaupoko, Waialua, and Wai‘anae to him (Fornander 1917:4(2):366, 400).

During the second half of the eighteenth century, Waipi‘o again became a focus of political intrigue and warfare. In 1783, the forces of the Maui chief Kahekili gained control of the island of O‘ahu by defeating the *mō‘ī* (paramount chief), Kahahana, who came “from the powerful ‘Ewa chiefs’ line” (Cordy 1981:207). Kahekili set up his friend Hu‘eu to rule over the districts of ‘Ewa, Wai‘anae, and Ko‘olauloa. The defeated O‘ahu chiefs plotted to kill the Maui chiefs, and succeeded in killing Hu‘eu, but Kahekili escaped. The murderers of Hu‘eu were later found in Waipi‘o, “therefore Ewa became famed as a land of deadly plots” (Ka Nūpepa Kū‘okok‘a, December 5, 1868; HEN:1:2734 cited in Sterling and Summers 1978:3).

Waipi‘o was subsequently called “Waipi‘o kīmopō,” or “Waipi‘o of secret rebellion” (Pukui 1983:319). Following the plan’s failure, Kahekili took revenge on the ‘Ewa and Kona districts:

... and when Ka-hekili learned that Elani of ‘Ewa was one of the plotters, the districts of Kona and ‘Ewa were attacked and men, women, and children were massacred, until the streams of Makaho and Niuhelewai in Kona and of Kahoa‘ai‘ai in ‘Ewa were choked with the bodies of the dead, and their waters became bitter to the taste, as eyewitnesses say, from the brains that turned the water bitter. All the O‘ahu chiefs were killed and the chiefesses tortured. (Kamakau 1992:138)

If Kamakau is correct, the population of Waipi‘o would have been decimated during the 1780s. Kahekili and the Maui chiefs retained control of O‘ahu until the 1790s. In 1794, Kahekili died at Waikīkī. His son, Kalanikūpule, was defeated the following year at the battle of Nu‘uanu by Kamehameha, who distributed the O‘ahu lands—including Waipi‘o Ahupua‘a—among his favorite followers, which resulted in the displacement of many families. Land belonging to the old chiefs was given to strange chiefs and that of old residents on the land to their companies of soldiers, leaving the old, settled families destitute (Kamakau 1992:376–377).

### 3.3 Historic Land Use

At Contact, the most populous ahupua‘a on the island was Honouliuli, with the majority of the population centered on Pearl Harbor. Later, in 1832, a missionary census of Honouliuli recorded the population as 1,026. Within 4 years, the population had decreased to 870 (Schmitt 1973:19, 22). In 1835, there were eight to 10 deaths for every birth (Kelly 1991:157–158). Between 1848 and 1853, a series of epidemics of measles, influenza, and whooping cough often wiped out whole villages. In 1853, the combined population of ‘Ewa and Wai‘anae was 2,451. In 1872, it was 1,671 (Schmitt 1968:71). The inland area of ‘Ewa was probably abandoned by the mid-nineteenth century due to population decline and migration to Honouliuli, near Kapapāhūi Point. Other early historical accounts of the larger region typically refer only to the more populated areas of the ‘Ewa district near Pearl Harbor, where missions and schools had been established, and subsistence resources may have been perceived to be greater.

By the mid-eighteenth century, the landscape of ‘Ewa was adversely affected by the eventual removal of its sandalwood forests and the introduction of domesticated animals and new vegetation species. Domesticated ungulates, including goats, sheep, and cattle, were brought to the Hawaiian Islands by Captain George Vancouver, a British Royal Navy officer, in the early 1790s. They were allowed to graze freely for some time by order of King Kamehameha I. These ungulates were a menace to native forests and cultivated fields across Hawai‘i. The animals quickly caused widespread destruction of verdant lowlands and upland forests, resulting in the drastic reduction and extinction of many native plant and animal species.

#### 3.3.1 Māhele ‘Āina

A dramatic change that affected the lives of the inhabitants of Hō‘ae‘ae in the 1840s was the *Māhele ‘Āina* (land division, also known as the Great Māhele or simply the Māhele), which put an end to the traditional system of land tenure and ushered in private ownership of property. Under the traditional system, the *maka ‘āinana* (commoners) occupied and worked the land under the supervision of the ali‘i and their *konohiki* (land stewards). The chiefs in turn held the land in trust for the *ali‘i nui* (high chiefs), who held it in trust for the *akua* (the gods). The Māhele, instituted by Kamehameha III, legalized the private ownership of land along the Western model, legislating that the lands of the Hawaiian Kingdom were to be “divided into three parts—one to the Chiefs, one for the support of the Government, and a third for the King’s personal use. These we know by the names of ‘Konohiki,’ ‘Government’ and ‘Crown

Lands” (Indices of Awards 1929:vii). It was principally from within the chief’s “one-third of the Great Māhele that the common people, who were their tenants, received title to the small holdings which are known as ‘Kuleanas.’ These Kuleanas were areas which these tenants had improved and used for their own purposes” (Indices of Awards 1929:vii).

In December 1845, a Board of Commissioners to Quiet Land Titles (often referred to as the Land Board or Land Commission) was established to investigate land claims and make awards based upon these claims and their supporting testimony. If a claim was approved by the Board, a Land Commission Award (LCA) was granted to the claimant. These LCA properties were known as kuleana lands. Each claim was assigned an LCA number (*helu*). Often a single kuleana claim consisted of several *‘āpana* (land sections). An index of these claims can be found in Indices of Awards Made by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands prepared by the Office of the Commissioner of Public Lands of the Territory of Hawai‘i in 1929 (Indices of Awards 1929).

In March 1855, after 9 years, the Land Commission was dissolved. “The Land Commission worked with most commendable energy, going to every part of the Islands to meet the people and prepare for awarding their claims, involving the hearing and taking of testimony in connection with nearly 12,000 individual claims. These awards are of record in ten immense volumes, and the testimony on which they are based is recorded in some fifty odd lesser volumes” (Indices of Awards 1929:vii–viii). The claims and supporting testimony presented before the Land Commission are preserved in the Land Commission Records presently housed at the Hawai‘i State Archives. Among the documents that make up these records are the Buke Kakau Paa no ka Māhele aina i Hooholoia i waena o Kamehameha III a me Na Lii a me na Konohiki ana, commonly referred to as the Māhele Book, which records the division of lands between Kamehameha III, the chiefs, and the konohiki (Māhele Book 1848); the LCAs of kuleana claims (Land Commission Awards 1836–1855); the Native Register of claims (Native Register 1846–1848); the Foreign Register of claims (Foreign Register 1846–1848); the Buke Hoike, commonly referred to as Native Testimony, which includes testimony on land claims, chiefly in Hawaiian, of both Native and foreign-born residents made during the Māhele ‘Āina (Native Testimony 1844–1854); and Foreign Testimony, which includes testimony on land claims, chiefly in English, of both Native and foreign-born residents (Foreign Testimony 1846–1853).

The concept of land ownership was foreign to the traditional Hawaiian way of thought. As a result, not all Hawaiians occupying lands submitted claims to the Land Commission. In addition, not all claimants were awarded land; even those claims that were granted did not always include the fallow fields and scattered agricultural plots that had traditionally been part of a kuleana. Although LCA records are occasionally difficult to decipher, they can provide a great deal of information concerning what was happening on the land at the time of the claim. Claimants often supported their claims by testifying as to the presence of house sites, fields, gardens, and other features on their land. This documentation can be used to infer possible traditional land uses.

During the Māhele, a total of 23 land claims were made in Hō‘ae‘ae Ahupua‘a, with 19 claims awarded to maka‘āinana. The bulk of these claims relate to Hō‘ae‘ae Fisheries located around West Loch, south of the project area. No kuleana were awarded within or near the project area, providing additional evidence that it was not considered a favorable place for either habitation or agriculture.

All unclaimed lands within the ahupua‘a were awarded to Nueku Nāmau‘u as Māhele Award 63 (LCA 10474). Nāmau‘u was a descendant of Hawai‘i Island chieftains and was cousin (or nephew) to Mataiaf Kekūanao‘a, the father of two Hawaiian monarchs, Alexander Liholiho (Kamehameha IV) and Lot Kapuāiwa (Kamehameha V) (Day 1984:69).

### **3.3.2 The Oahu Sugar Company**

Established in 1894 for the commercial cultivation of sugar cane, the Oahu Sugar Company eventually expanded to include roughly 14,000 acres of plantation lands on O'ahu (Saito 1984:1) (Figure 8). By 1925, its workforce comprised approximately 10,000 individuals from a mixture of German, Portuguese, Filipino, Japanese, Chinese, and Norwegian ancestry. The company's plantation infrastructure consisted of roads, railway lines, plantation camps for its workers, irrigation ditches, pipelines, flumes, and a mill for refining the raw cane into sugar (Saito 1984:1). During the period of commercial sugar cane cultivation in Hawai'i, crop land was usually chain dragged to clear them of vegetation and loose rock. The process of chain dragging would have resulted in the destruction of any traditional Hawaiian surface structures that may have existed within the project area. The Oahu Sugar Company thrived for a century under various names, finally closing its mill in 1995.

Sugar cultivation activities conducted within the project area from the early twentieth century can be traced in a series of historic-era maps of the Waipahu area. The earliest of these, a 1913 U.S. Army map (U.S. Army 1913) of the Schofield Barracks quadrangle, shows the project area almost completely planted in sugar cane (Figure 9). It is not clear when the Oahu Sugar Company extended its cane fields to include the project area, but it must not have been more than a decade after the company's first harvest.

Several plantation-related infrastructure elements can be seen on the 1913 map. Among these is a railway line and adjacent road that enters the project area from the north, trending south before splitting in two, with one branch running southwest to Kunia Road and the other trending southwest and south, exiting the project area. The rail line ends just north of the project area at what appears to have then been the edge of cultivation, because the stylized pattern of sugar cane fields is replaced a short distance further inland by a pattern of trees and brush (see Figure 9). Two other roads are also depicted within the project area, one crossing it north-south (and crossing the rail line) and the other extending south from the rail line/road near the southern edge of the project area. The third road runs roughly west from the rail line, departing the project area before turning north, terminating at a reservoir. In the northwest corner of the project area, adjacent to the rail line, two structures of unknown function are depicted.

This combination of rail lines, roads, reservoirs, and structures can be seen repeated in later historical maps of the area, including two War Department topographic maps of the Waipahu quadrangle dating from 1935 (U.S. Army 1935) (Figure 10) and 1943 (U.S. Army 1943) (Figure 11). The rail line, labeled OAHU SUGAR CO, is depicted extending north and west outside of the project area. An additional road is depicted near the eastern edge of the project area, and two roughly east-west irrigation ditches trend through the project area, the first trending south along the southwest-trending branch of the rail line and road, and the second following a contour along the southern boundary of the project area. These irrigation ditches carried water from across the Ko'olau Range via the Waiahole Ditch, an extensive network of tunnels, ditches, and reservoirs.

The 1935 and 1943 maps also differ from the 1913 map in their depiction of another water reservoir that had been constructed closer to Kunia road, along the ephemeral stream that begins at the older reservoir and trends south through the project area. This second reservoir is located just north of where the rail line crosses the stream. These reservoirs were constructed to impound water for irrigation. Along the western edge of the stream, where the 1913 map depicted two structures, the 1935 and 1943 maps show a cluster of at least 32 structures and adjacent green spaces. These structures reflect a camp for plantation workers, which extended on both northern and southern sides of the rail line, just west of the stream.

A 1953 U.S. Geological Survey (USGS) topographic map of the Schofield Barracks quadrangle (USGS 1953) depicts many of the same plantation features (Figure 12). The rail line, clearly visible on the 1935 and 1943 topographic maps, is no longer shown, only a road is present. By 1953, the segment of the Oahu

Sugar Company railway within the project area had been abandoned. The 1953 map also depicts the area of the structures as a “Camp” (see Figure 12). Additional irrigation ditches are also visible.

By 1967, all of the structures associated with the former plantation camp (SIHP Site 50-80-08-11020) had been removed (Figure 13). While the 1967 USGS topographic map of the Schofield Barracks quadrangle (USGS 1967) still depicts the extensive irrigation infrastructure throughout the project area and larger region, including reservoirs, flumes, siphons, water tanks, and ditches, no structures are present within the project area.

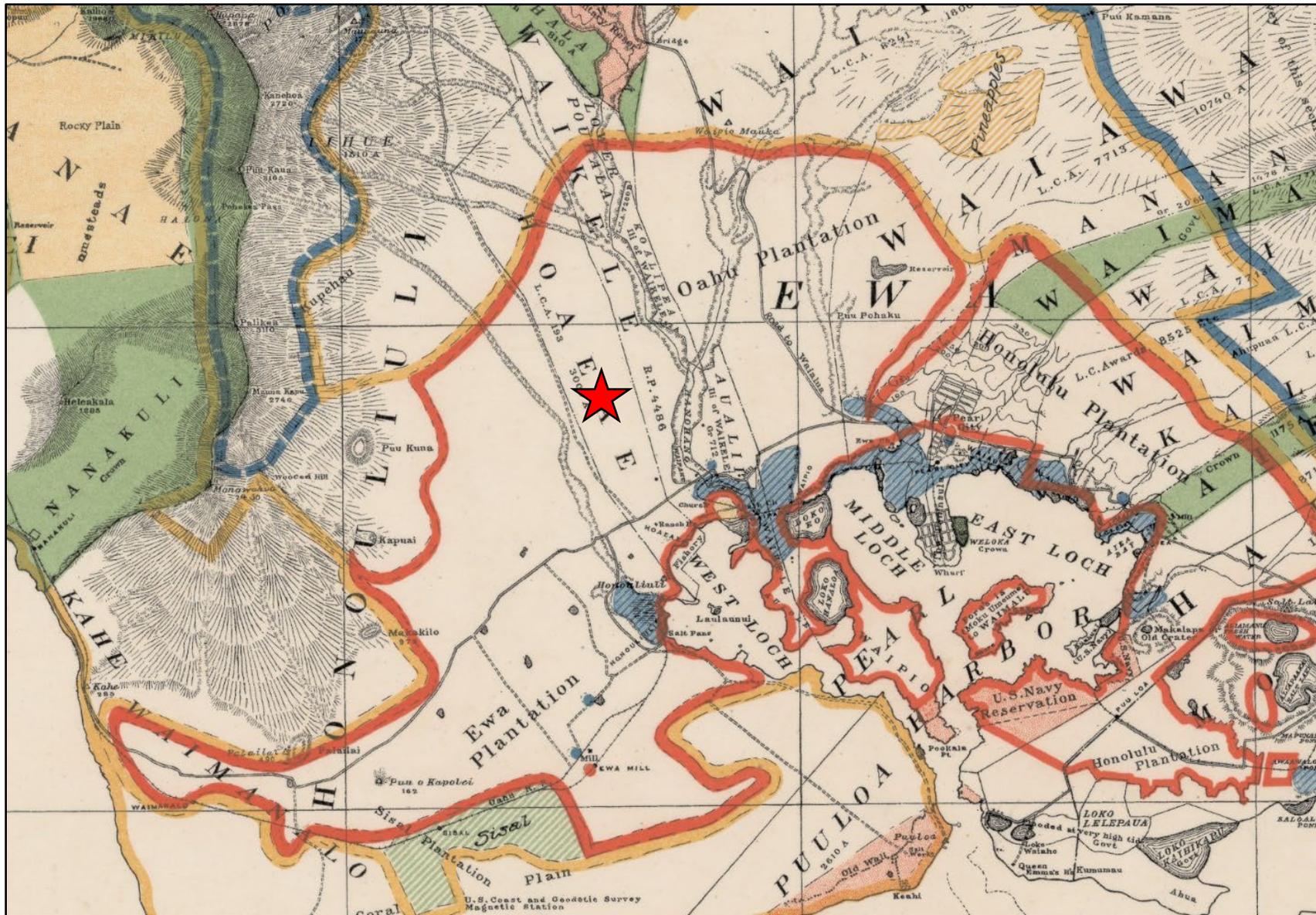


Figure 8. Walter Wall's (1902) map of Oahu depicting approximate location of project area denoted with red star in an area bounded in red indicating sugar cane lands.

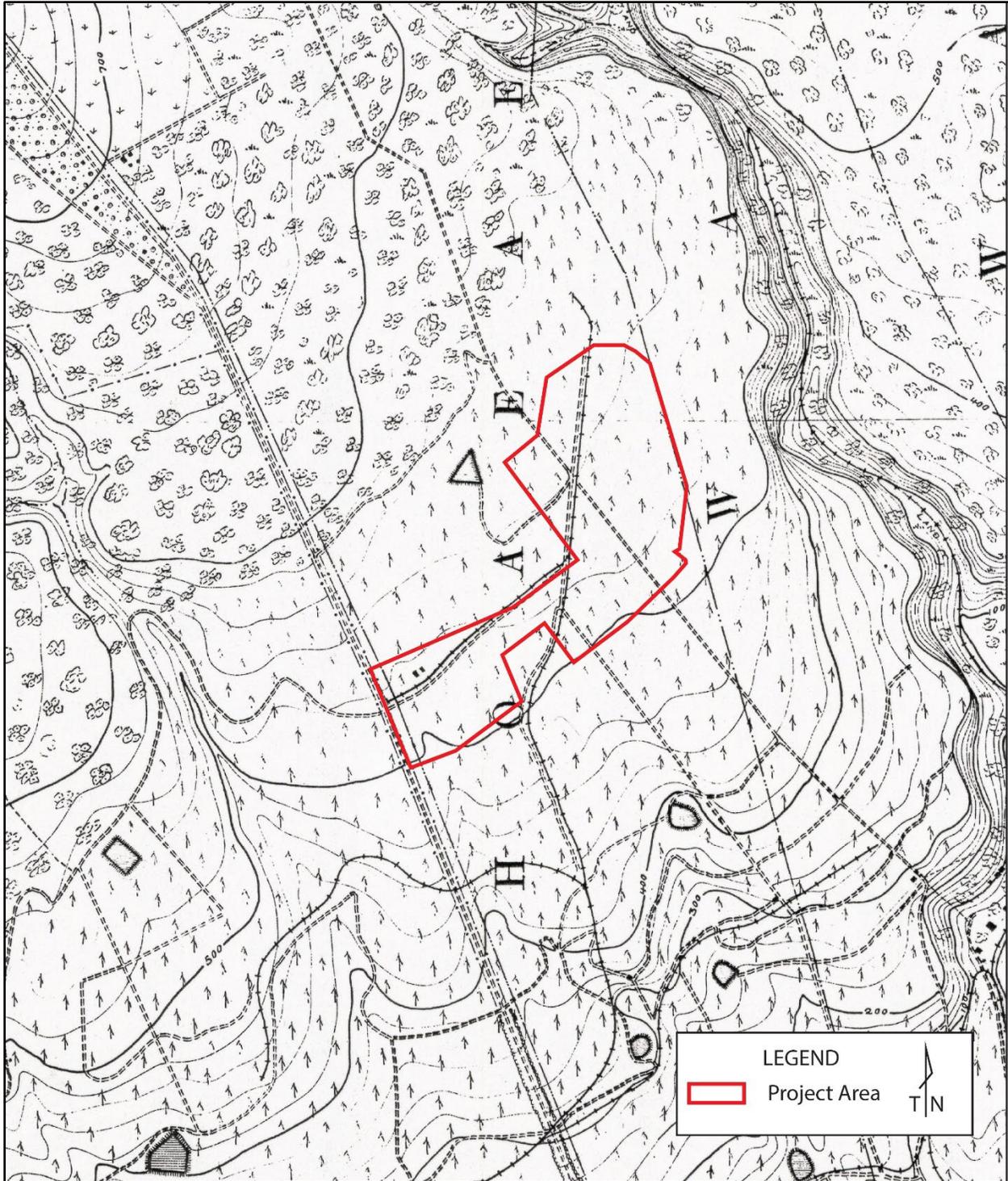


Figure 9. Portion of U.S. Army (1913) War Department map depicting project area and two structures just north of the railroad in the area of the plantation camp.

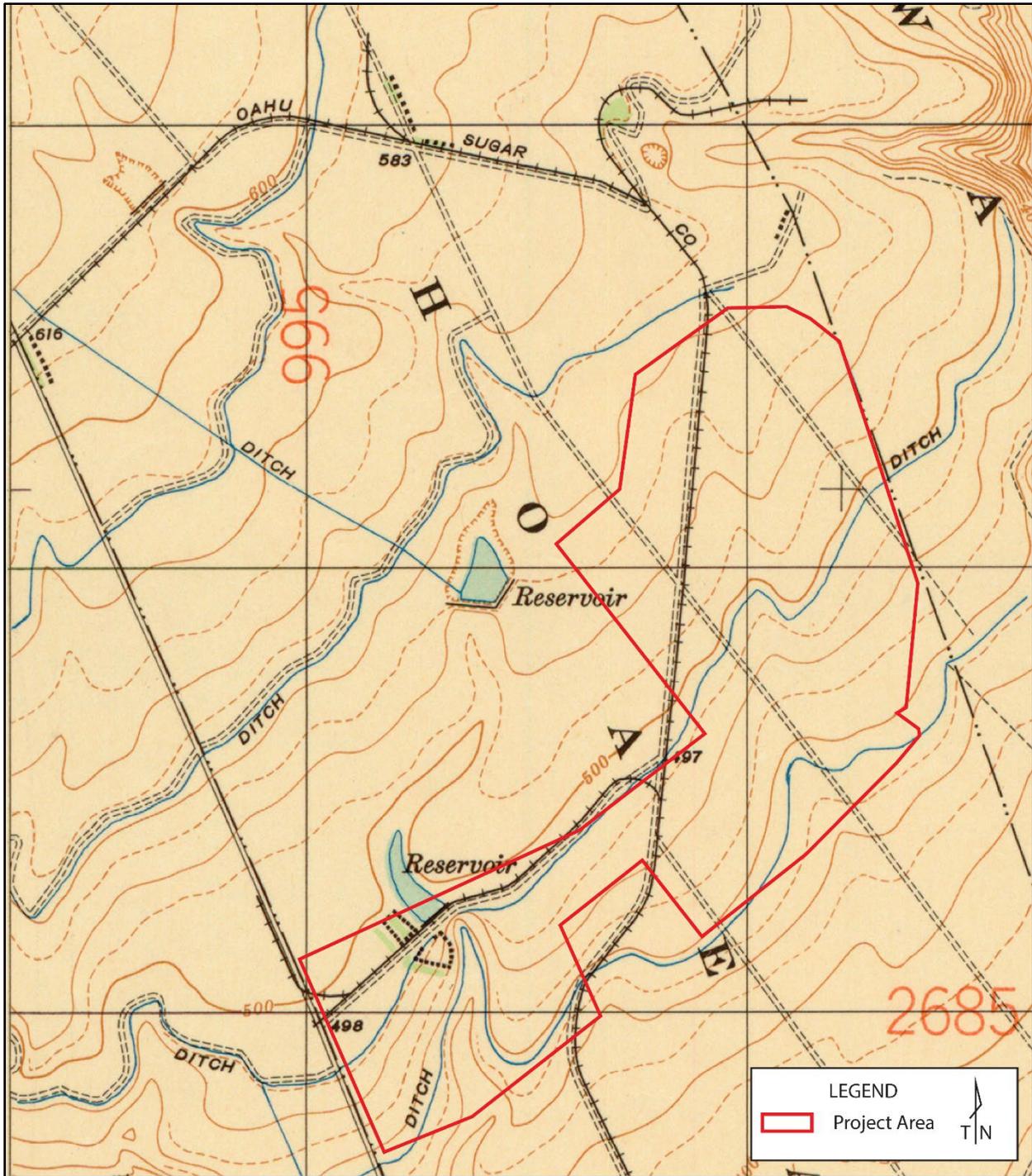


Figure 10. Portion of 1935 U.S. Geological Survey (1935) Waipahu quadrangle showing additional structures and green spaces associated with the plantation camp.

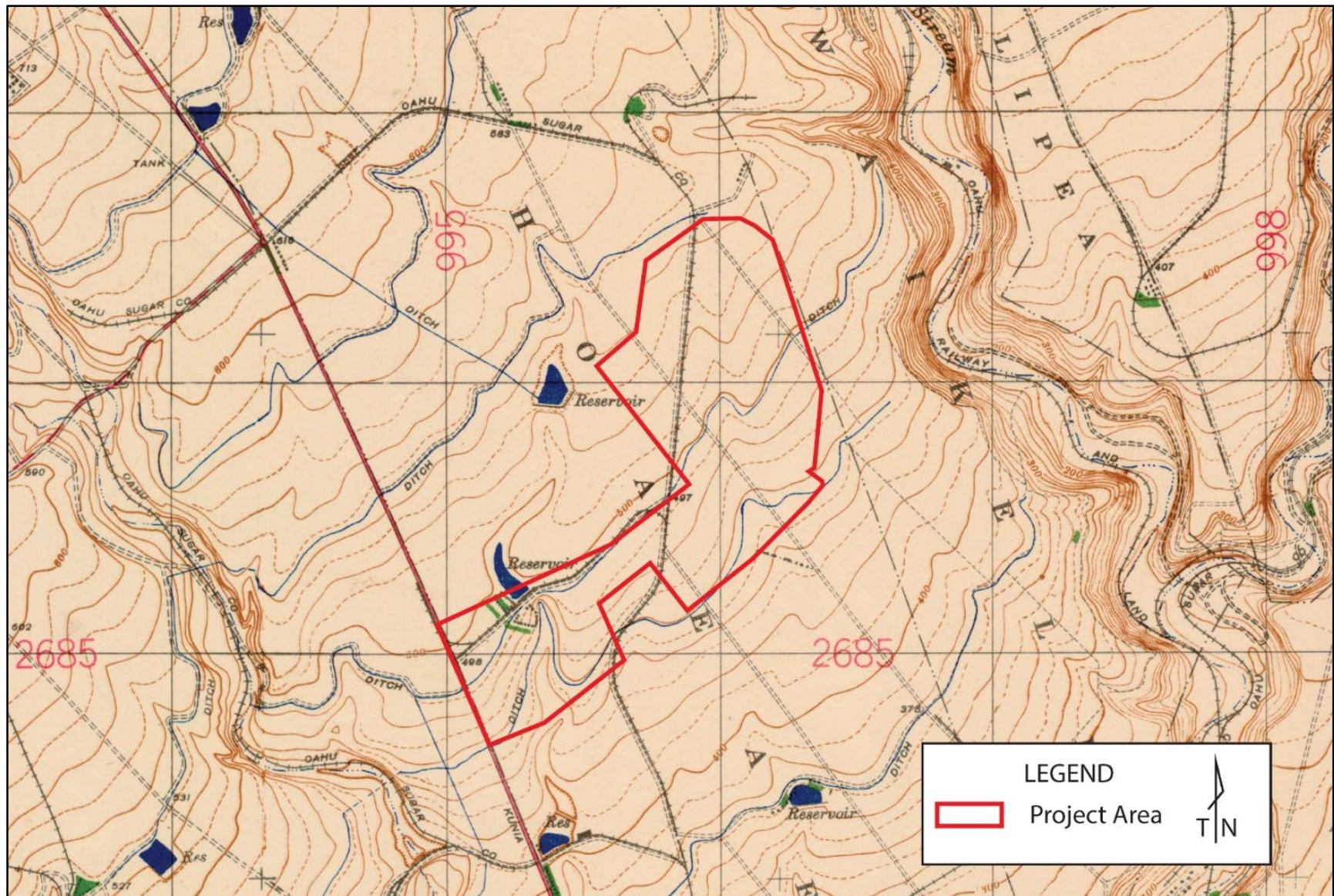


Figure 11. Portion of U.S. Army (1943) War Department map showing no significant changes to the plantation camp since 1935.

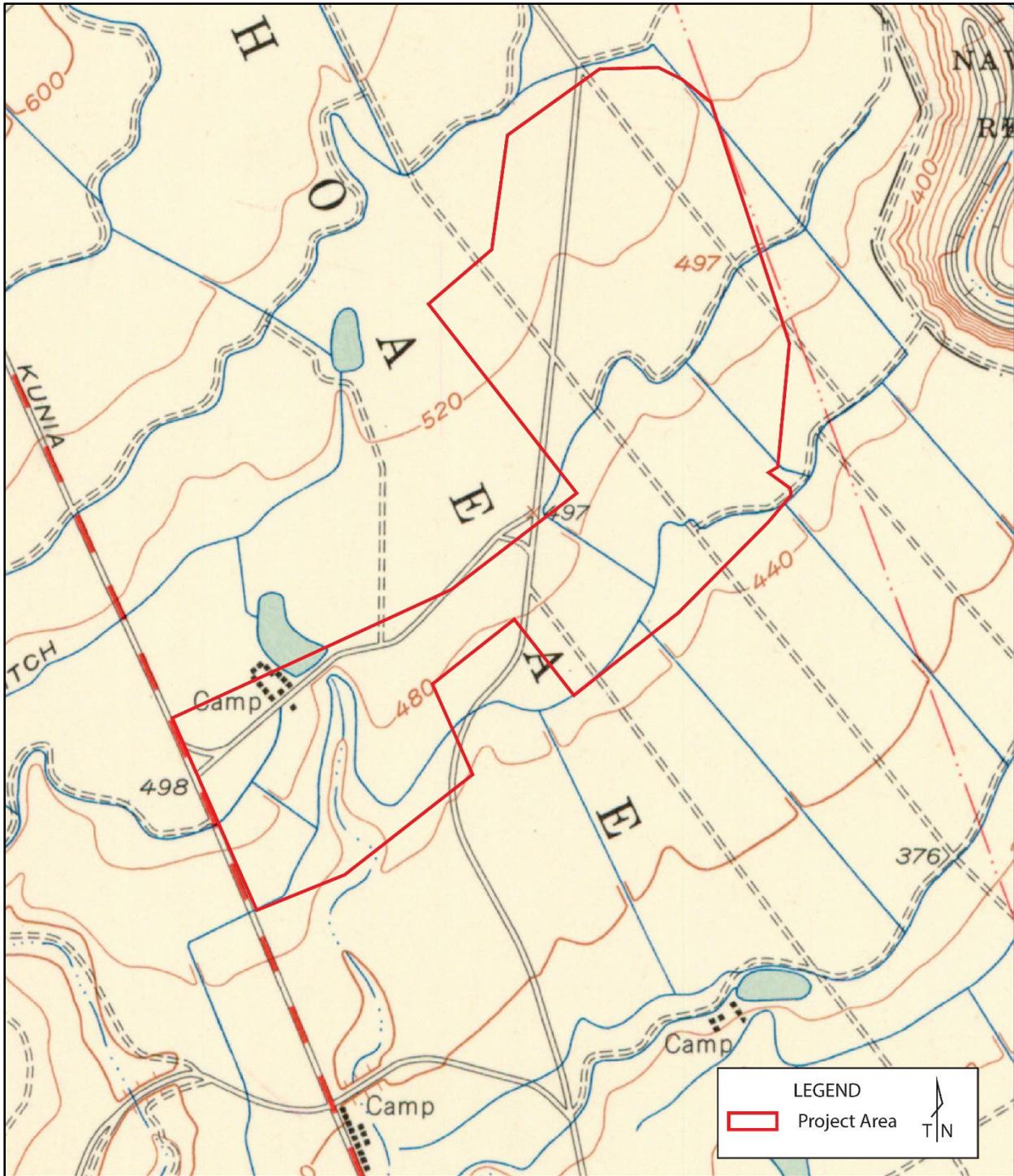


Figure 12. Portion of U.S. Geological Survey (1953) Schofield Barracks quadrangle depicting just one structure south of the roadway within the plantation camp.

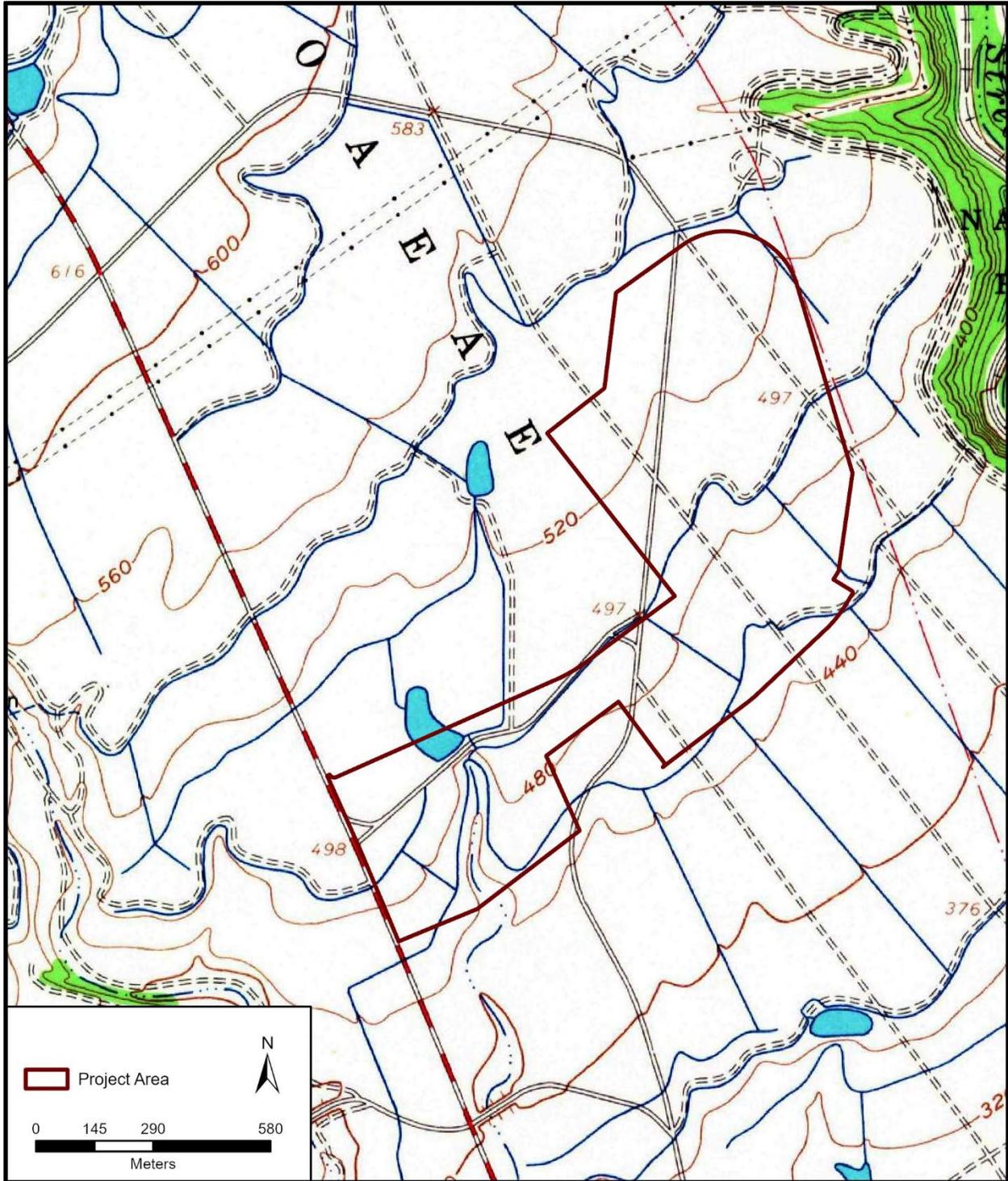


Figure 13. Detail of 1967 U.S. Geological Survey (1967) Schofield Barracks quadrangle depicting the complete removal of the plantation camp.

### **3.4 Recent History and Impacts to the Project Area**

Since the abandonment of sugar cane cultivation in 1995, substantial portions of the project area have been subject to various ground-disturbing activities. Figure 14 shows those areas of ground disturbance detected through an examination of Google Earth satellite images going back to 2002. These portions of the project area are unlikely to possess any surface archaeological features or even subsurface features (depending upon the depth of the ground disturbance). The northeast corner of the project area also appears to be overlapped by recent agricultural areas (see Figure 14).

An area of ground disturbance located near the southeast corner of the project area appears to have served as a staging area for construction equipment and vehicles during the construction of portions of the adjacent Royal Kunia I residential development and golf course (Figure 15).

In the northern portions of the project area, a 2002 Google Earth satellite image reveals what appears to be a rock crushing operation (Figure 16). This same 2002 satellite image shows bulldozers working around the northern central section of the project area (Figure 17). Construction dust reduction fencing visible in a 2006 Google Earth satellite image indicates that ground-disturbing activities had taken place in the area just north of the fencing (Figure 18). This area is currently raised above the surrounding ground level and the remnants of the wooden frame for the dust fencing are still present (Figure 19). This ground disturbance appears to be related to the environmental cleanup of a former airstrip that was used during the later plantation period by crop dusting planes.

In 1995, two aboveground fuel storage tanks were removed and soil sampling was conducted adjacent to the former private airplane runway (Muetting 1996:1). The soil sampling results revealed the presence of arsenic (Muetting 1996:1). As a result, possibly between 2002 and 2006 (based upon the Google satellite image), an environmental cleanup of this area was apparently undertaken. Before 2006, two stockpiles of material were placed at the old airfield site. The southwest and northeast stockpiles were located along the north side of the dirt road, measure approximately 8.5 to 10 acres in area with heights exceeding 10 feet above the natural grade (Chen 2021:1). This raised the ground surface is visible in Figure 18.

In July of 2021, GeoLabs, Inc. conducted testing of the two stockpiles to see if the material could be used for general site grading fills. Testing found that the stockpiled materials generally consisted of silty clay with coralline cobbles extending to depths ranging between about 7.5 and 10.5 feet below the existing stockpile surface. Underlying the stockpiles, the test pits encountered natural ground conditions consisting of clayey residual soils extending to the maximum depth explored of 11 feet below the existing stockpile surface (Chen 2021:1).

These relatively recent construction-related and agricultural activities have impacted substantial portions of the project area, making it unlikely that they still contain surface archaeological features dating to either the pre- or post-Contact periods. The remaining portions of the project area were disturbed during the sugar era by activities associated with preparing the ground for cultivation. It is really only in those areas that were not under sugar cane cultivation that potential historic properties can be expected to be found.



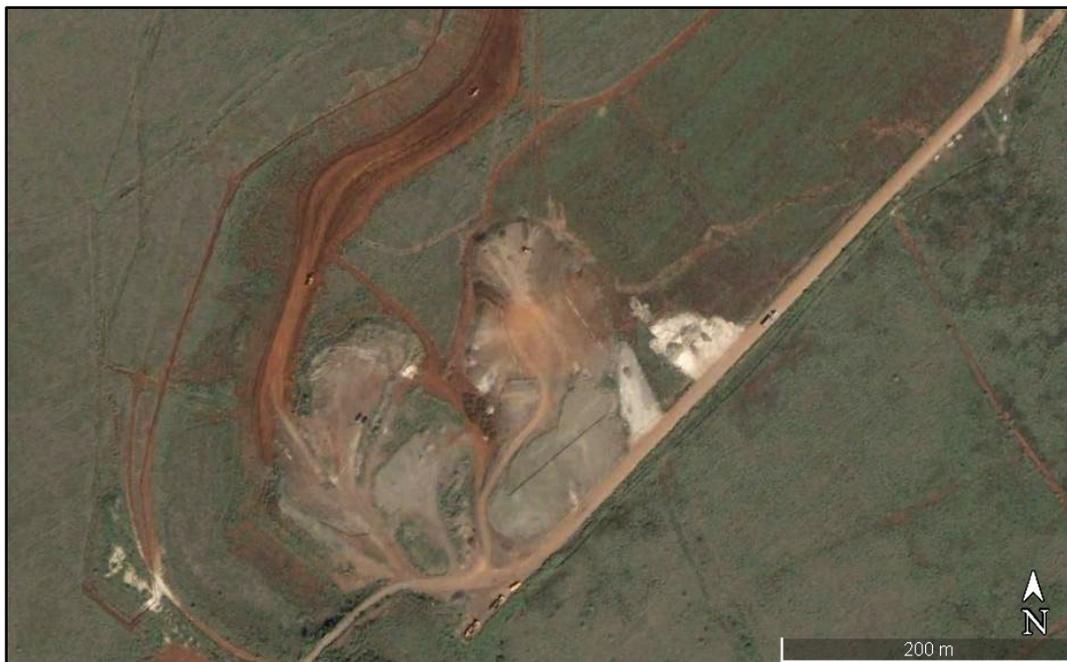
Figure 14. Project area on satellite imagery showing areas of ground disturbance from 2002 to 2006 as detected on Google Earth.



**Figure 15. Detail from a 2002 Google Earth satellite image showing what appears to be a staging area in the southeastern portion of the project area.**



**Figure 16. Detail from a 2002 Google Earth satellite image showing what appears to be a gravel crushing operation in the northern portion of the project area.**



**Figure 17. Detail from a 2002 Google Earth satellite image showing bulldozing in the northern portions of the project area.**



**Figure 18. Detail from a 2006 Google Earth satellite image showing construction fencing erected around a disturbed area that overlaps the northern portion of the project area.**



**Figure 19. Remnants of construction dust barrier, view to the east.**

## 4 ARCHAEOLOGICAL CONTEXT

The following section presents archaeological contextual information on the project area including a summary of previous relevant archaeological studies conducted within the project area and vicinity, and a discussion of historic properties identified in the project area. Archaeological expectations for the project are also presented.

### 4.1 Previous Archaeological Studies

Several relevant archaeological studies have been conducted adjacent to and in the vicinity of the project area (Figure 20). Kennedy (1988) conducted an archaeological survey that encompassed the entire project area, and SWCA has also conducted more recent studies within the project area (i.e., Gerrish et al. 2021; Root and Gross 2024). These investigations are summarized below, and those studies that identified historic properties in the project area are listed in Table 1.

#### 4.1.1 *Barrera 1985*

In 1985, an AIS (Barrera 1985) was conducted on approximately 692 acres of land south of the project area (see Figure 20). No surface historic properties were identified during the survey.

#### 4.1.2 *Riford and Cleghorn 1986*

In 1986, the Bishop Museum conducted an archaeological survey (Riford and Cleghorn 1986) of a portion of the Waikele Branch of the Lualualei Naval Magazine. The 264-acre study area is east of the project area and is centered on a segment of Waikakalaua Gulch (see Figure 20). Riford and Cleghorn (1986) recorded five sites along the gulch which were designated SIHP Sites 50-80-08-02919 to -02923. These traditional Hawaiian sites consisted of temporary habitation caves, crawlspaces, and a rockshelter. Their location within the gulch had apparently protected them from the impacts of sugar cane cultivation. The historic sites are described as a probable quarry, a rock wall composed of quarried material, boulder mounds, stream facings, abandoned roadbeds, railroad berms, and construction tailings, all of which likely date to the plantation era (Riford and Cleghorn 1986).

#### 4.1.3 *Hammatt et al. 1988*

An archaeological survey (Hammatt et al. 1988) for the proposed Waikakalaua Storage Tunnels project was conducted on approximately 422 acres along Waikakalaua Gulch, northeast of the project area and immediately north of the Riford and Cleghorn (1986) study area (see Figure 20). The survey documented three sites. SIHP Site 50-80-08-09529 includes the remnants of a labor camp related to the construction of the Waiāhole Ditch. SIHP Site 50-80-08-09534 is the intake for a 1930s dressed stone ditch. SIHP Site 50-80-08-09534 is a pile of stones associated with Oahu Sugar Company activities.

#### 4.1.4 *Kennedy 1988*

An archaeological reconnaissance survey (Kennedy 1988) of approximately 670 acres was conducted in 1988 that encompassed the project area (see Figure 20). No surface historic properties were identified during the survey.

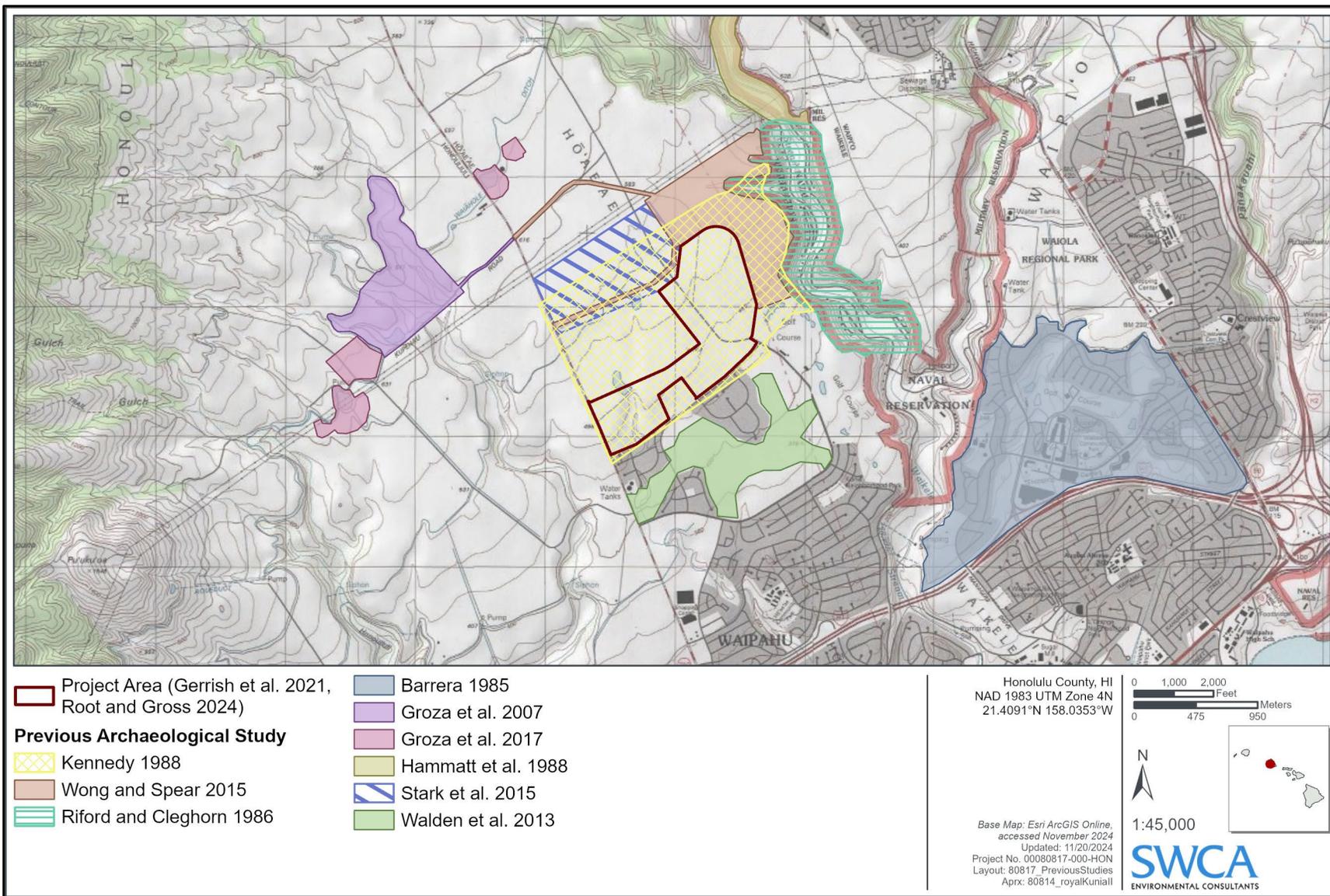


Figure 20. Previous archaeological studies conducted within and in the vicinity of the project area.

#### **4.1.5 Groza et al. 2007**

Groza et al. (2007) conducted an AIS for the 143-acre Mauka Detention Basin project, located northwest of the project area (see Figure 20). The study area is situated west of Kunia Road on TMK (1) 9-2-001:001, within the neighboring ahupua‘a of Honouliuli. The survey documented four sites associated with the Waiāhole Ditch Irrigation System, the Oahu Sugar Company, and water/irrigation infrastructure. These were designated SIHP Sites 50-80-06-02268, -06892, -06893, and -06394 and included two concrete slab bridges, one inscribed with “9.27.1929” (Groza et al. 2007).

#### **4.1.6 Walden et al. 2013**

Walden et al. (2013) conducted an archaeological assessment of approximately 152 acres for a proposed solar array to the south of the project area (see Figure 20). No historic properties were identified during the study.

#### **4.1.7 Groza et al. 2017**

Groza et al. (2017) conducted an AIS in the ahupua‘a of Honouliuli and Hō‘ae‘ae (see Figure 20). Part of the survey area included a historic-era reservoir (Reservoir 225) within a portion of TMK: (1) 9-4-003:001 to the north of the project area. Groza et al. (2017) documented eight features associated with the reservoir, which is a component of SIHP Site 50-80-09-02268, the Waiāhole Ditch Irrigation System.

#### **4.1.8 Stark et al. 2015**

Stark et al. (2015) conducted an AIS for the proposed 150-acre Kunia Agricultural Park, adjacent to and northwest of the project area (see Figure 20). Six archaeological test trenches were also excavated as part of the Stark et al. (2015) project, which identified five plantation era features designated as SIHP Site 50-80-08-07758: Feature 1 is a dry stacked stone retaining wall for a road; Features 2 and 3 are cut stone and concrete irrigation ditches; Feature 4 is a stone and concrete wall and cistern; Feature 5 consists of cut basalt blocks and associated debitage interspersed within a linear bulldozer push pile. The debitage is associated with the reduction and shaping of boulders used in structures such as the retaining wall (Feature 1). SIHP Site 50-80-08-07758 was assessed as significant under Criterion “d” (HAR 13-284-6) for having yielded information important to the plantation era history of the area (Stark et al. 2015:120). No further archaeological work was recommended as the documentation of the site during the AIS was deemed adequate to mitigate any impacts (Stark et al. 2015:122).

#### **4.1.9 Wong and Spear 2015**

In 2015, an AIS (Wong and Spear 2015) was conducted on a 160-acre parcel for the proposed Ho‘ohana Solar Farm Project to the northeast of the project area (see Figure 20). Limited subsurface testing was also conducted in the form of six shovel probes which identified historic-era to modern cultural constituents in the majority of the shovel probes (Wong and Spear 2015:19). The survey identified three features which were designated SIHP Site 50-80-08-07671 (plantation road complex) (Wong and Spear 2015:1). Feature 3 of SIHP Site 50-80-08-07671 extends into the project area from the north. Wong and Spear (2015:54) assessed SIHP Site 50-80-08-07671 as significant under Criterion “d” (HAR 13-284-6), having yielded information about prior historical land use.

Wong and Spear (2015:55) also indicated that their project area had been intensively cultivated, that no traditional Hawaiian sites or features were identified, that the identified plantation features were adequately documented, and that there was a low potential to encounter intact subsurface cultural deposits. No further archaeological work was recommended for the project.

#### **4.1.10 Gerrish et al. 2021**

In 2021, SWCA conducted an Archaeological Literature Review and Field Inspection (LRFI) of the project area (Gerrish et al. 2021). The purpose of this LRFI was to support Haseko's request for historic preservation review of the project by determining whether historic properties were present within the project area. The field inspection also included an uncrewed aerial vehicle (UAV) survey which was used to create a high-resolution orthomosaic image of the entire project area (see Figure 4) and to collect aerial images of several of the historic properties identified during the Gerrish et al. (2021) study.

Contrary to the results of the Kennedy (1988) survey, which found no surface archaeological remains within the project area, Gerrish et al. (2021) identified several historic properties situated within the project area. All of these archaeological features date to the post-Contact period and are related to the commercial cultivation of sugar cane by the Oahu Sugar Company.

Five features belonging to three previously recorded historic properties (Features 3 and 4 of SIHP Site 50-80-08-07671, Feature 7 of SIHP Site 50-80-08-07758, and Features RK1 and RK2 of SIHP Site 50-80-09-02268) were documented within the project area. These properties were originally identified and recorded during archaeological investigations conducted on adjacent parcels and extend into the project area. In addition, two newly identified archaeological features were also documented: SIHP Site 50-80-08-09385 and SWCA-65875-007 (subsequently designated as SIHP Site 50-80-08-10020).

Features 3 and 4 of SIHP Site 50-80-08-07671 and SIHP Site 50-80-08-07758 represent the remains of former plantation-era routes of travel (rail lines and cane haul roads) that were used to transport the harvested cane to the mill. Feature 4 is a substantially constructed stone faced causeway/dam that supports the historic Oahu Sugar Company railway and the adjacent cane haul road as it bridges the north-south-running gully in the southwest corner of the project area. This causeway feature is located immediately adjacent to a former reservoir, which is now dry, and likely also served as a dam for the reservoir. Extending beneath the causeway/dam is an iron drainpipe that appears to have acted as a sluice to control the water level in the reservoir. The features of SIHP Site 50-80-09-02268 are irrigation ditches that formerly carried water to irrigate the cane fields and are likely associated with the Waiāhole Ditch Irrigation System.

One of the newly identified historic properties (SIHP Site 50-80-08-09385) represents the site of a former plantation-era water reservoir. The reservoir and the causeway/dam (SIHP Site 50-80-08-07671, Feature 4) were created concurrently, at some time between 1913 and 1935, and the reservoir appears to have been in use until the 1990s. The other archaeological site, SIHP Site 50-80-08-10020, initially identified and designated SWCA-65875-007 by Gerrish et al. (2021), marks the site of a former worker's camp. Although the camp was demolished by 1967, the potential for subsurface deposits such as trash pits, post holes, and other foundational remnants to be present was suggested by a sparse historic-era artifact scatter.

No traditional Hawaiian archaeological features or artifacts were identified within the Gerrish et al. (2021) project area.

#### **4.1.11 Root and Gross 2024**

At the request of the SHPD, Root and Gross (2024) conducted an architectural reconnaissance level survey (RLS) for the current project (see Appendix A), which evaluated the built environment resources in the project area (see Figure 20). The report included the results of archival background research and RLS fieldwork, a listing and photograph of each historic property identified within the project area, maps

showing the location of historic properties and their relationship to each other, preliminary significance evaluations, and recommendations regarding the project.

Background archival research and the RLS fieldwork demonstrated that the Oahu Sugar Company constructed a number of plantation-related features within the project area. While these landscape engineering features have become eligible as historic properties due to their age, Root and Gross (2024:34-37) determined that only one feature of SIHP Site 50-80-08-07671 retained the necessary aspects of integrity and was considered a significant historic property. Root and Gross (2024) proposed mitigation measures for Feature 3 (causeway/dam) of SIHP Site 50-80-08-07671 which included Historic American Engineering Record (HAER)–like documentation of the causeway/dam and interpretive signage to be installed in the project area for educational purposes. No further architectural work was recommended for the other built environment resources identified by Gerrish et al. (2021).

**Table 1. Previous Studies That Identified Historic Properties in the Project Area.**

Author (Year)	Title	Historic Properties Identified
Goodman and Nees (1991)*	<i>Archaeological Reconnaissance and Inventory Surveys of 3,600 Acres in Waiawa Ahupua'a, 'Ewa, O'ahu.</i> Applied Research Group, Bishop Museum, Honolulu.	SIHP Site 50-80-09-02268
Stark et al. (2015)	<i>Archaeological Inventory Survey Report for the Kunia Agricultural Park Project, Hō'ae'ae Ahupua'a, 'Ewa District, O'ahu, TMK: [1] 9-4-002:080.</i> Prepared for R. M. Towill Corporation. Cultural Surveys, Kailua, Hawai'i.	SIHP Site 50-80-08-07758
Wong and Spear (2015)	<i>An Archaeological Inventory Survey Report for the Ho'ohana Solar Farm Project in Kunia, Waikele Ahupua'a, 'Ewa District, Island of O'ahu, Hawai'i, TMK: (1) 9-4-002:052.</i> Prepared for Group 70 International, Inc. Scientific Consulting Services, Inc., Honolulu, Hawai'i.	SIHP Site 50-80-08-07671
Gerrish et al. (2021)	Archival Research and Field Inspection for the Royal Kunia II Residential Development Property, Ahupua'a of Hō'ae'ae, 'Ewa District, Island of O'ahu City and County Tax Map Key Parcels (1) 9-4-002:070, (1) 9-4-002:071, and (1) 9-4-002:078.	Features RK-1 and RK-2 (irrigation ditches) associated with SIHP Site 50-80-09-02268. Features 3 and 4 (roads) associated with SIHP Site 50-80-08-07671. Feature 7 (road) associated with SIHP Site 50-80-08-07758 SIHP 50-80-08-09385 (reservoir) and SWCA-65875-007 (former plantation camp, subsequently designated SIHP Site 50-80-08-10020).

\* The Goodman and Nees (1991) surveys were conducted several km east of the project area.

## 4.2 Historic Properties in the Project Area

While Kennedy (1988) did not identify any historic properties within the project area, archaeological investigations undertaken in adjacent properties (e.g., Stark et al. 2015; Wong and Spear 2015) identified three linear historic properties (SIHP Sites 50-80-08-07671, 50-80-08-07758, and 50-80-09-02268) that extend into the project area which were incorporated into their existing SIHP numbers by Gerrish et al. (2021) (Table 2). These historic properties were evaluated during an architectural RLS conducted by Root and Gross (2024). The Gerrish et al. (2021) study identified one archaeological resource within the project area, a former plantation camp that was designated SIHP Site 50-80-08-10020.

**Table 2. Historic Properties and Features in the Project Area Identified by Gerrish et al. (2021).**

SIHP Number	Temporary Number	Feature Designation	Feature Type	Probable Feature Age	Possible Feature Function
50-80-08-07671	SWCA-65875-001	3	Road/railway alignment	Post-Contact	Travel
50-80-08-07671	SWCA-65875-002	4	Causeway/dam	Post-Contact	Travel/water control
50-80-08-07758	SWCA-65875-003	6	Road	Post-Contact	Travel
50-80-09-02268	SWCA-65875-004	RK-1	Irrigation ditch	Post-Contact	Agriculture
50-80-09-02268	SWCA-65875-005	RK-2	Irrigation ditch	Post-Contact	Agriculture
50-80-08-09385	SWCA-65875-006		Former reservoir	Post-Contact	Agriculture
50-80-08-10020	SWCA-65875-007		Plantation camp	Post-Contact	Habitation

### **4.2.1 Former Plantation Camp (SIHP 50-80-08-10020)**

SIHP Site 50-80-08-10020 (former plantation camp) is a potential historic property identified during the Gerrish et al. (2021) study. The site represents remnant features associated with a plantation era workers' camp that was identified through historic-era maps. The camp appears to have been dismantled and bulldozed sometime between 1953 and 1967. All that remains of the site are several rubble piles containing structural elements (e.g., reinforced concrete foundation rubble, painted/burned milled lumber fragments, and metal sheeting) interspersed within a low-density historic-era artifact scatter and modern trash.

## **4.3 Archaeological Expectations**

A review of the previous archaeological investigations undertaken within, adjacent to, and in the vicinity of the project area reveals a distinct pattern of site distribution. The only pre-Contact Hawaiian sites identified by any of the surveys have been found within the limits of nearby gulches. Any pre-Contact sites that may once have existed on the flats flanking the gulches would have been destroyed by activities associated with commercial agriculture. The only historic properties identified in the project area are related to commercial agricultural activities of the Oahu Sugar Company. These include roads, rail lines, irrigation ditches, a causeway/dam, and other plantation-related infrastructure. The archaeological expectations for site types to be encountered within SIHP Site 50-80-08-10020 (former plantation camp) include refuse pits, surface artifact scatters, and remnant habitation or infrastructural features (e.g., in-situ foundation slabs, walls, curbing, or road alignments).

## 5 METHODS

An AIS testing strategy (Reeve 2023) detailing the methods and goals of this AIS was approved by SHPD via HICRIS on December 18, 2023 (Submission 2021PR01090.017). The research questions detailed in the Reeve (2023:15-16) AIS testing strategy, which focused on the subsurface testing component of the project, are detailed below.

### 5.1 Research Questions

The subsurface testing component for the project was designed to address, and hopefully answer, a specific set of research questions. These questions were developed based on the findings of the Gerrish et al. (2021) literature review and field inspection, as well as the intent of the SHPD review letter.

Research questions to be answered by a program of test excavation included the following:

1. Is there subsurface evidence of pre-Contact land use within the project area?

Archival research suggested that the project area was not the site of intensive habitation or cultivation during the pre-Contact period. Subsurface excavations undertaken at various locations throughout project area was intended to provide a window into the underlying stratigraphy which could reveal the presence or absence of agricultural soils and/or subsurface cultural deposits indicative of pre-Contact Hawaiian habitation.

2. Does the sediment profile within the dry gulch show evidence of the former plantation-era water reservoir?

Historic maps suggest that during the plantation era, the stone-faced dam (SIHP Site 50-80-08-07671, Feature 4) created a reservoir within the now dry gulch that runs from north to south through the western portion of the project area. The placement of a test trench within the gulch just north of Site 50-80-08-07671, Feature 4, might reveal sediment deposits confirming the existence of this reservoir.

3. Are there any surviving subsurface remnants of the plantation-era camp?

The presence of rubble push piles as well as fragmentary surface artifacts at the site of the former plantation-era worker's camp (SIHP Site 50-80-08-10020) suggest that the camp was bulldozed following its abandonment. Subsurface testing undertaken in this area could reveal whether any subsurface cultural deposits associated with the camp have survived its destruction. Such excavations could also recover temporally diagnostic artifacts that might better date the occupation of the camp and help to determine the range of activities carried out there, as well as possibly the ethnic background of its residents.

4. What do the artifacts recovered from the plantation-era camp say about its former inhabitants and the activities that went on there?

The types of artifacts recovered from the former plantation camp could potentially provide information, not only on the period during which the camp was occupied, but also who lived there (plantation camps were often occupied by members of a single ethnic group), whether the population was made up solely of men or composed of entire families, and what activities its inhabitants engaged in.

## 6 FIELDWORK RESULTS

Archaeological fieldwork for the project included pedestrian survey of approximately 6.5 acres and excavation of 32 mechanical test trenches in accordance with the Reeve (2023) AIS plan. Fieldwork was conducted over 23 days with a field crew of two to three SWCA project staff. One new feature associated with SIHP Site 50-80-08-10020 (former plantation camp) was identified during fieldwork, comprised of a masoned rock culvert wall (Feature 1).

### 6.1 Pedestrian Survey

Pedestrian survey fieldwork of the “dry gulch,” as requested by the SHPD (see Appendix A), was conducted on March 7, 2024. The roughly 5-acre survey area was heavily vegetated with tall grasses and small stands of haole koa (Figure 21 and Figure 22). No historic properties, features, or artifacts were observed in this area. While accessing the survey area from the west side of the streambank, however, a masoned rock culvert wall containing a concrete pipe was identified. The feature was sketched and photographed, and metrics were obtained (Figure 23 and Figure 24). This feature is situated within the boundary of SIHP Site 50-80-08-10020 (former plantation camp) and was designated Feature 1. Dozens of push piles containing construction debris interspersed with local sediments were also noted within the boundary of SIHP Site 50-80-08-10020 (former plantation camp) but were not designated as features. The description, location and size of several push piles were documented but no deliberate or indeliberate patterning of their locations is apparent (see Section 8).



**Figure 21. Overview of the “dry gulch” showing dense vegetation taken from SIHP Site 50-80-08-07671 (causeway/dam), view to the southeast.**



**Figure 22. Overview of northern portion of “dry gulch,” taken from a survey transect, view to the northwest.**



**Figure 23. Feature 1 (culvert wall) identified at SIHP Site 50-80-08-10020, view to the southwest.**

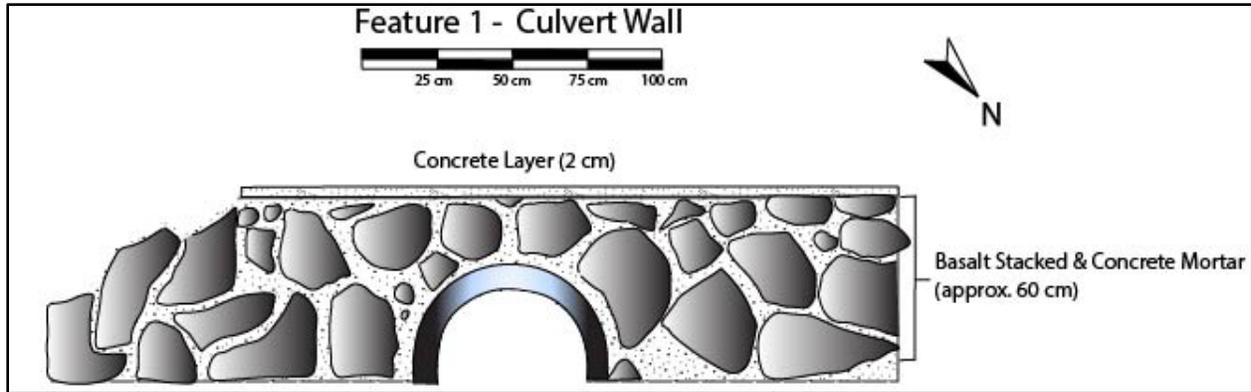


Figure 24. Sketch of Feature 1 (culvert wall) identified at SIHP Site 50-80-08-10020.

As the 32 areas subjected to subsurface testing were cleared of dense vegetation prior to excavation, these areas were also inspected while a clear view of the ground surface was available. The areas grubbed in order to access and excavate the trenches ranged from approximately 10 to 20 m in diameter around each trench, representing approximately 0.8 to 1.5 acres in total. While no additional archaeological features were noted in these areas, several isolated artifacts were collected.

Pedestrian survey was also conducted within an approximately 0.2-acre unvegetated area along the central northern portion of the project area boundary, where artifacts were noted in low densities while accessing a trench (Trench 14) excavated in the central portion of SIHP Site 50-80-08-09385 (former reservoir) within the project area. This area was heavily eroded, sloping west into the stream bed. All observed artifacts were non-diagnostic, and a representative sample was photographed in the field but not collected. These included basalt and wire-reinforced concrete debris, and clay pipe fragments (Figure 25), bottle glass and modern trash (e.g., small fire extinguisher, plastic irrigation parts, and milled lumber, metal, and tile fragments) (Figure 26). This may represent an activity area where basalt materials to construct or repair historic-era irrigation features (e.g., ditches or the causeway/dam) were cut and shaped.



## **6.2 Subsurface Testing**

Following the requirements of the AIS testing strategy (Reeve 2023), 32 trenches were excavated at various locations throughout the project area. This mechanical excavation was conducted using a mini-excavator under the supervision of SWCA archaeologists (Figure 27). No historic properties or archaeological features were identified during subsurface testing.

Of the 20 trenches excavated outside the boundary of SIHP Site 50-80-08-10020 (former plantation camp), just one contained cultural material. These consisted of an isolated ceramic cup fragment (CN 5) collected from a subsurface context in Trench 14. Of the 12 trenches excavated within the boundary of SIHP Site 50-80-08-10020 (former plantation camp), seven contained sparse cultural constituents, often interspersed with late historic-era (e.g., 1970s to 1990s) and more recent trash.

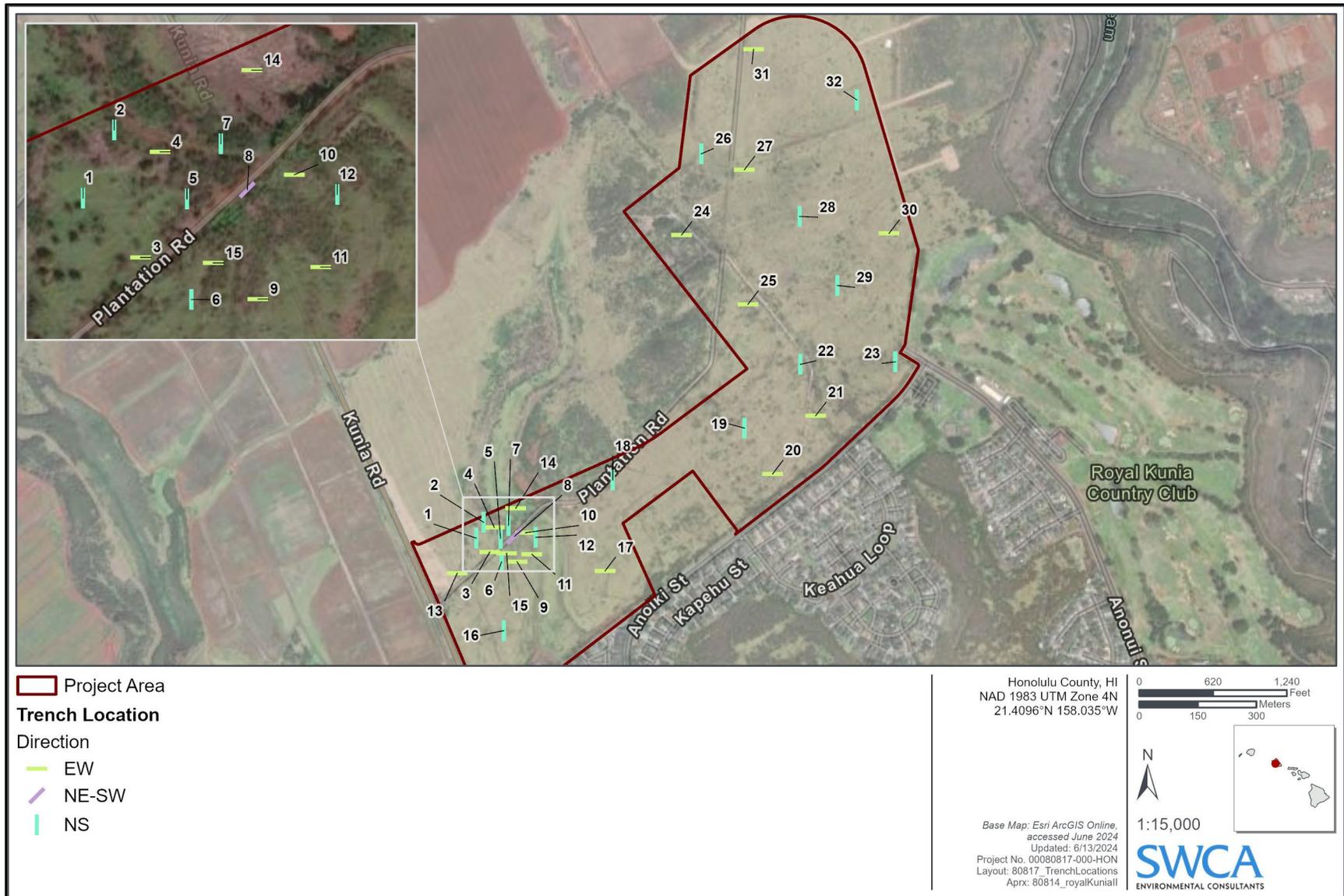


Figure 27. Archaeological test trenches excavated within the project area.

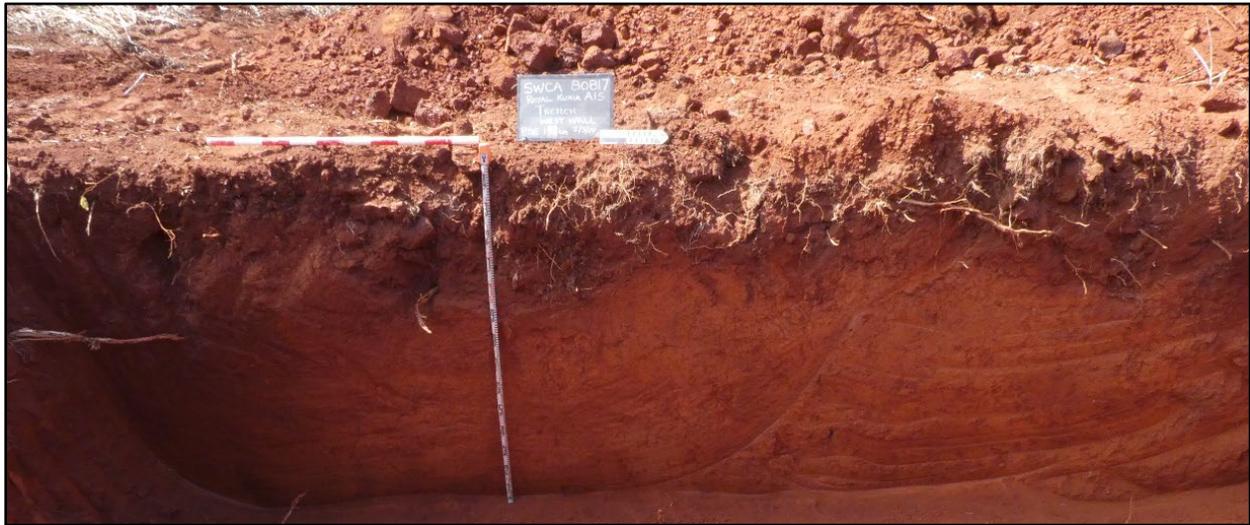
### 6.2.1 Trench 1

Trench 1 was located along the western perimeter of SIHP Site 50-80-08-10020 (former plantation camp) and was oriented north-south (see Figure 27). A large (approximately 15 feet tall) *Acacia confusa* tree was removed from the trench footprint prior to excavation. The maximum excavated dimensions of Trench 1 were 570 centimeters (cm) in length, 280 cm in width, and 160 cm in depth. No cultural constituents were identified during excavation or within the vicinity of the trench, although the sediments within the trench (Table 3) were particularly compacted, possibly related to its location within a former roadway. The west wall of the trench was photographed and sketched following excavation (Figure 28 and Figure 29).

**Table 3. Stratigraphic Descriptions for Trench 1.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
I (0–15 cmbs)	Dark reddish brown (2.5 YR 2.5/3)	Silty clay; strong, coarse blocky structure; dry, very hard consistence; non-plastic; few fine roots; clear, wavy lower boundary.	Formerly graded road surface.
II (3–62 cmbs)	Dark reddish brown (2.5 YR 3/4)	Silty clay; strong, fine granular structure; dry, hard consistence; slightly plastic; few coarse roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



**Figure 28. Trench 1 west wall profile photograph.**

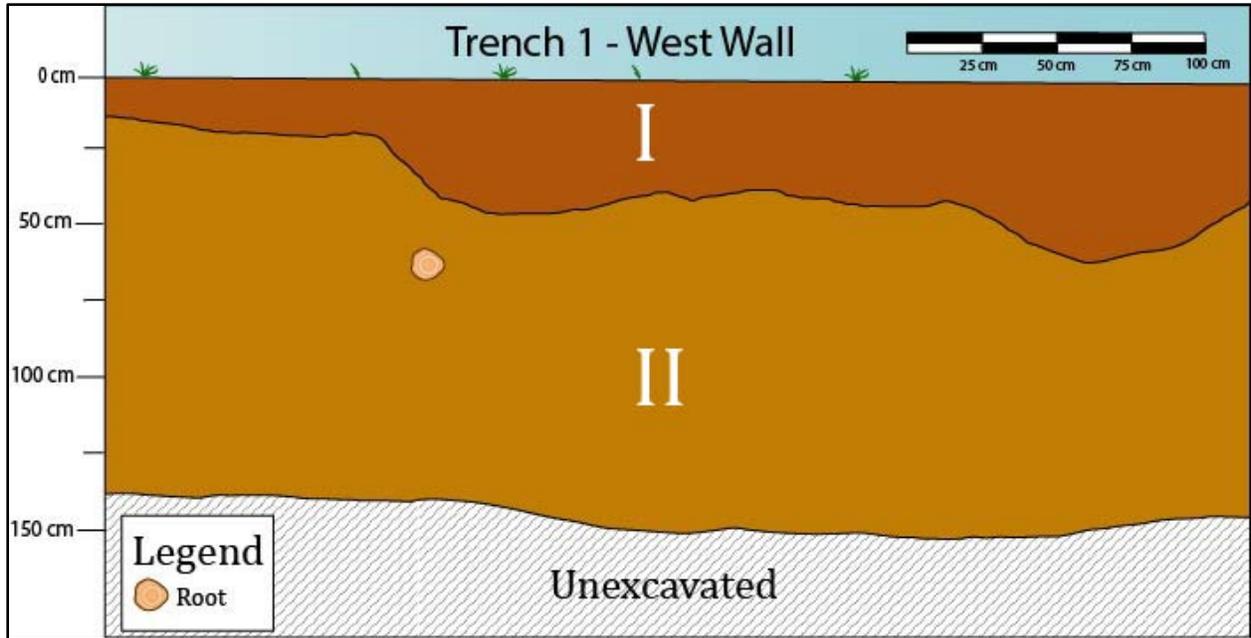


Figure 29. Trench 1 west wall profile sketch.

### 6.2.2 Trench 2

Trench 2 was located along the northern perimeter of the project area in the northern portion of SIHP Site 50-80-08-10020 (former plantation camp) and was oriented north-south (see Figure 27). The trench was relocated to investigate a small (approximately 6 m diameter and 125 cm in height) bulldozer push pile situated approximately 10 m southeast of the originally planned location (Figure 30).

The maximum excavated dimensions of Trench 2 were 480 cm in length, 205 cm in width, and 125 cm in depth. Cultural constituents recovered from Trench 2 included construction debris and residential refuse which originated from the pile above the ground surface (Table 4). Other construction debris on the surface in the vicinity of the trench was photographed but not collected including burned and painted milled lumber fragments and a segment of ferrous metal pipe (Figure 31 and Figure 32). Modern trash was also observed on the surface in the vicinity of the trench, including plastic sheeting, irrigation tubing, a straw, an aluminum can, and a Styrofoam cup fragment printed with the date July 8, 1997 (Figure 33 and Figure 34).

The sediments observed within the pile (Table 5) were comprised of loose, darkened sediments interspersed with concrete and asphalt rubble, engineered gravels, and sparse construction debris, which had been mechanically deposited in a push pile on top of the natural ground surface (Figure 35 and Figure 36). The soil layer directly beneath the pile (Stratum IV) was highly compacted (see Table 3). The west wall of the trench was photographed and sketched following excavation (Figure 37 and Figure 38).



Figure 30. Pre-excavation photograph of Trench 2 following the removal of surface vegetation from the bulldozer push pile, view to the south.

Table 4. Summary of Cultural Constituents Recovered From Trench 2.

Catalog Number (CN)	Stratum (Depth)	Description	Material	Count	Weight (g)
037	I-II (35–110 cmas)	Pipe fragment	Ferrous metal	1	126.16
038	I-II (35–110 cmas)	Wire fragment	Ferrous metal	2	25.51
039	I-II (35–110 cmas)	Can seam fragment	Ferrous metal	1	5.67
040	I-II (35–110 cmas)	Nail	Ferrous metal	4	21.26
041	I-II (35–110 cmas)	Mirror	Glass	1	8.5
042	I-II (35–110 cmas)	Window	Glass	5	26.93
043	I-II (35–110 cmas)	Non-diagnostic bottle fragment	Glass	2	36.85
044	I-II (35–110 cmas)	Tile	Fired clay	1	8.5
045	I-II (35–110 cmas)	Non-diagnostic white improved earthenware fragment	Fired clay	1	1.42

Note: cmas = centimeters above the surface



Figure 31. Painted and burned milled lumber fragments from the surface in the vicinity of Trench 2.



Figure 32. Ferrous metal pipe fragment from the surface in the vicinity of Trench 2.



Figure 33. Modern trash observed on the surface in the vicinity of Trench 2.

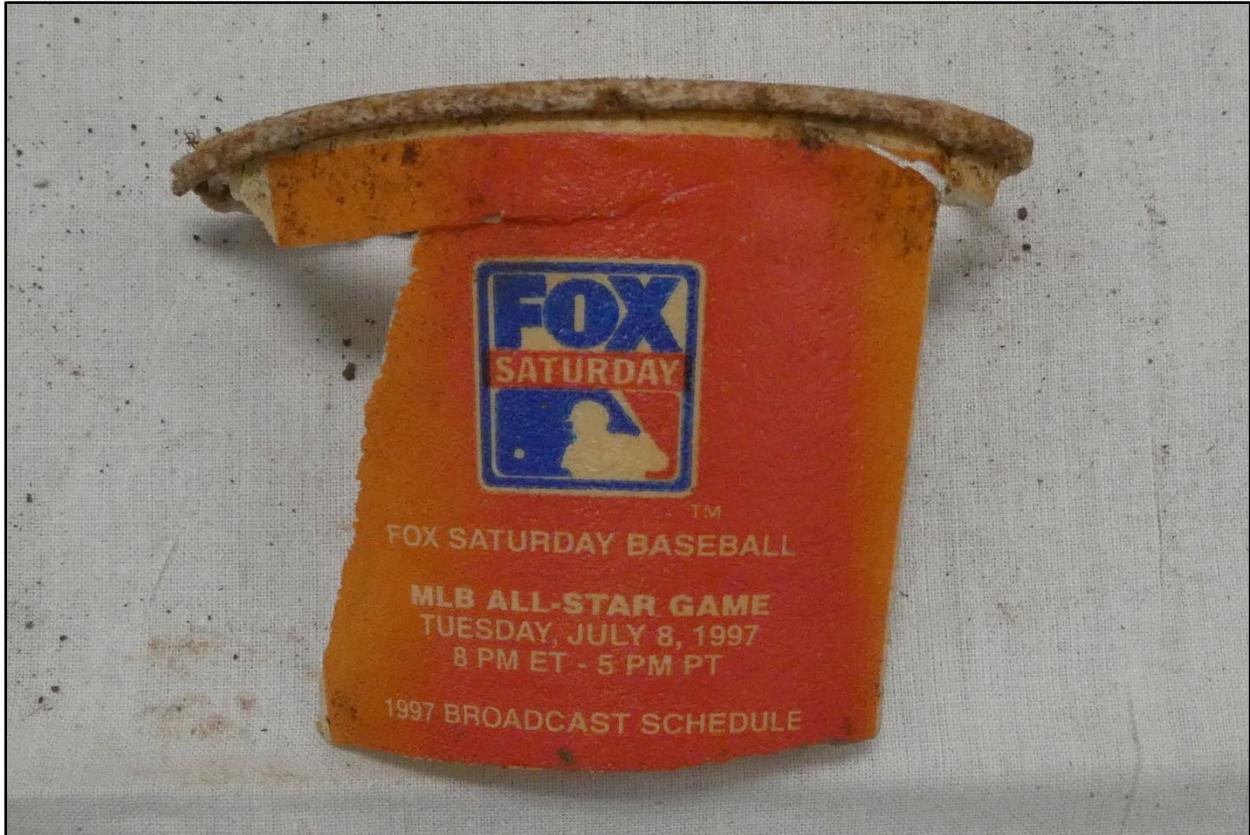


Figure 34. Detail of Styrofoam cup fragment advertising the 1997 Major League Baseball All-Star Game.



Figure 35. In progress excavation photograph of Trench 2 following removal of push pile sediments showing natural ground surface, view to the northwest.



Figure 36. Post-excavation photograph showing detail of push pile sediments in west wall interspersed with concrete and asphalt debris, engineered gravels, and roots.

**Table 5. Stratigraphic Descriptions for Trench 2.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
I (30–105 cmas)	Reddish black (10R 2.5/1)	Silty clay loam; weak, fine granular structure; moist, loose consistence; moderately plastic; many fine to medium roots; clear, irregular lower boundary.	Push pile of mixed sediments.
II (40–80 cmas)	Dark gray (5YR 3/1)	Very gravelly sandy clay; weak, fine granular structure; moist, loose consistence; non-plastic; common fine to medium roots; abrupt, smooth lower boundary (pocket).	Push pile of mixed sediments.
III (0–45 cmas)	Dark reddish brown (5YR 3/3)	Gravelly silty clay; weak, fine granular structure; moist, friable consistence; slightly plastic; few fine roots; very abrupt, smooth lower boundary.	Push pile of mixed sediments.
IV (0–25 cmbs)	Dark reddish brown (2.5YR 3/3)	Silty clay; strong, coarse blocky structure; dry, hard consistence and weakly cemented; slightly plastic; few fine roots; clear, smooth lower boundary.	Truncated natural ground surface.
V (5–120 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; moderate, very fine granular structure; moist, very firm consistence; slightly plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmas = centimeters above the surface; cmbs = centimeters below the surface



**Figure 37. Trench 2 west wall profile photograph.**

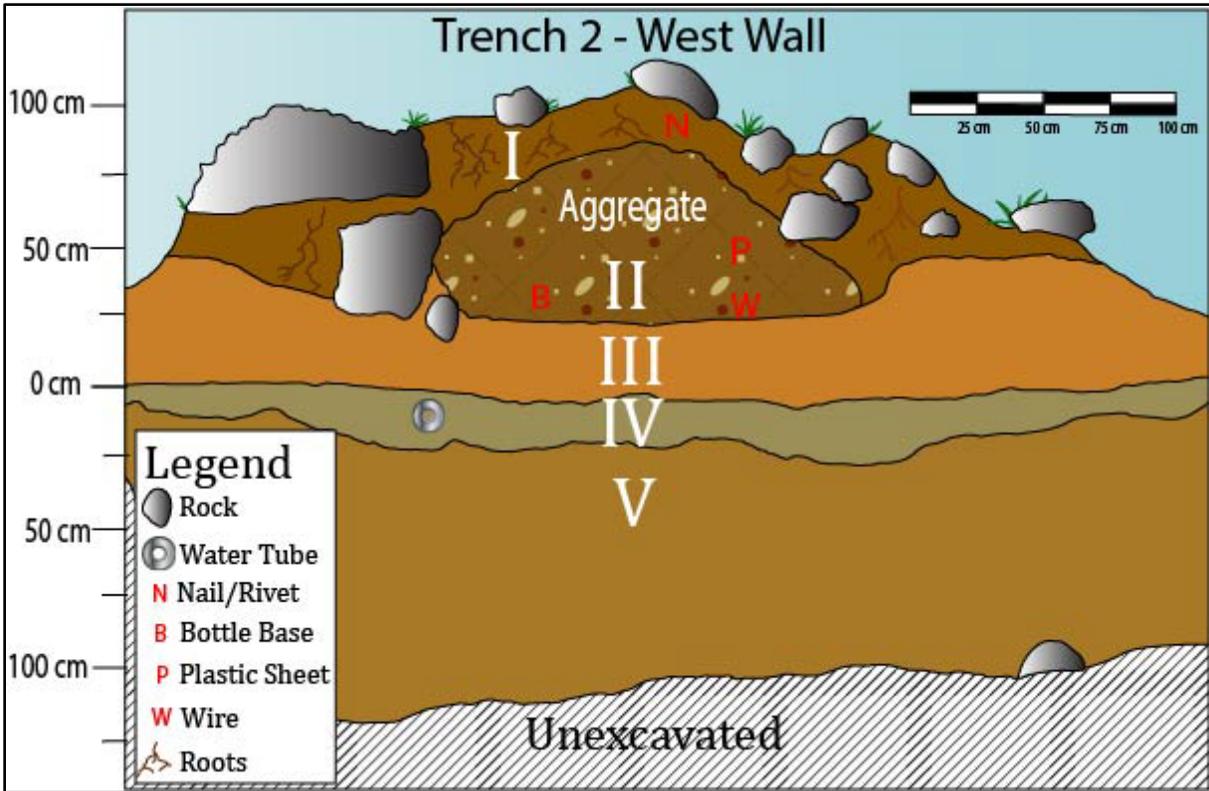


Figure 38. Trench 2 west wall profile sketch.

### 6.2.3 Trench 3

Trench 3 was located along the southwestern perimeter of SIHP Site 50-80-08-10020 (former plantation camp) was oriented east-west (see Figure 27). An isolated historic-era bottle base was collected from the vicinity of the trench during vegetation clearance (see Section 6.5). The maximum excavated dimensions of Trench 3 were 500 cm in length, 240 cm in width, and 155 cm in depth. No cultural constituents were identified during excavation, although sparse plastic irrigation tubing related to more recent agricultural activities were noted in the upper 40 cm of the exposure. The sediments within the trench were in three strata (Stratum Ia, Stratum Ib, and Stratum II) (Table 6). The north wall of the trench was photographed and sketched following excavation (Figure 39 and Figure 40).

Table 6. Stratigraphic Descriptions for Trench 3.

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–27 cmbs)	Dark reddish brown (2.5 YR 3/4)	Silty clay; moderate, fine granular structure; moist, friable consistence; slightly plastic; common fine roots; clear, wavy lower boundary.	Formerly graded road surface.
Ib (7–49 cmbs)	Dark red (2.5YR 3/6)	Silty clay; moderate, fine granular structure; moist, firm consistence; moderately plastic; few fine roots; clear, irregular lower boundary.	Disturbed natural soil.
II (25–79 cmbs)	Dark red (2.5 YR 3/6)	Silty clay; strong, very fine granular structure; moist, firm consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



Figure 39. Trench 3 north wall profile photograph.

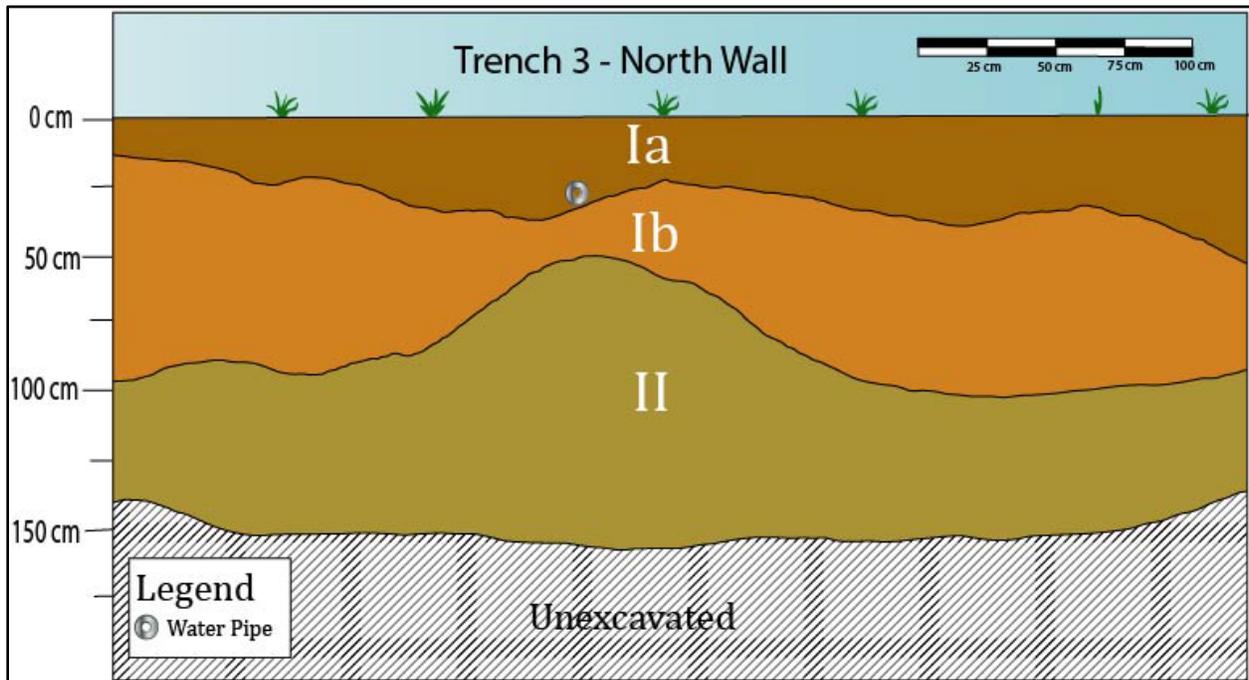


Figure 40. Trench 3 north wall profile sketch.

### 6.2.4 Trench 4

Trench 4 was located in the central northern portion of SIHP Site 50-80-08-10020 (former plantation camp) and was oriented east-west (see Figure 27). The maximum excavated dimensions of Trench 4 were 490 cm in length, 240 cm in width, and 150 cm in depth. No cultural constituents were identified during excavation or within the vicinity of the trench. The sediments within the trench occurred in three strata designated Ia, Ib, and II (Table 7). Root burn was observed in the south wall of the trench, and large boulders and decomposing bedrock were present from approximately 90 to 150 cm below the surface

(cmbs) in the eastern portion of the trench (Figure 41). The south wall of the trench was photographed and sketched following excavation (Figure 42 and Figure 43).

**Table 7. Stratigraphic Descriptions for Trench 4.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–60 cmbs)	Dark reddish brown (2.5 YR 2.5/3)	Silty clay; strong, coarse blocky structure; dry, very hard consistence; non-plastic; few fine roots; clear, wavy lower boundary.	Formerly graded road surface.
Ib (25–110 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; moderate, fine granular structure; moist, firm consistence; moderately plastic; no roots; gradual, wavy lower boundary.	Intact natural soil.
II (90–150 cmbs)	Dark reddish brown (2.5 YR 3/4)	Silty clay; strong, fine granular structure; dry, hard consistence; slightly plastic; few coarse roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



**Figure 41. Post excavation overview of Trench 4 showing a large boulder and decomposing bedrock in the eastern portion of the trench base, view to the southeast.**



Figure 42. Trench 4 south wall profile photograph.

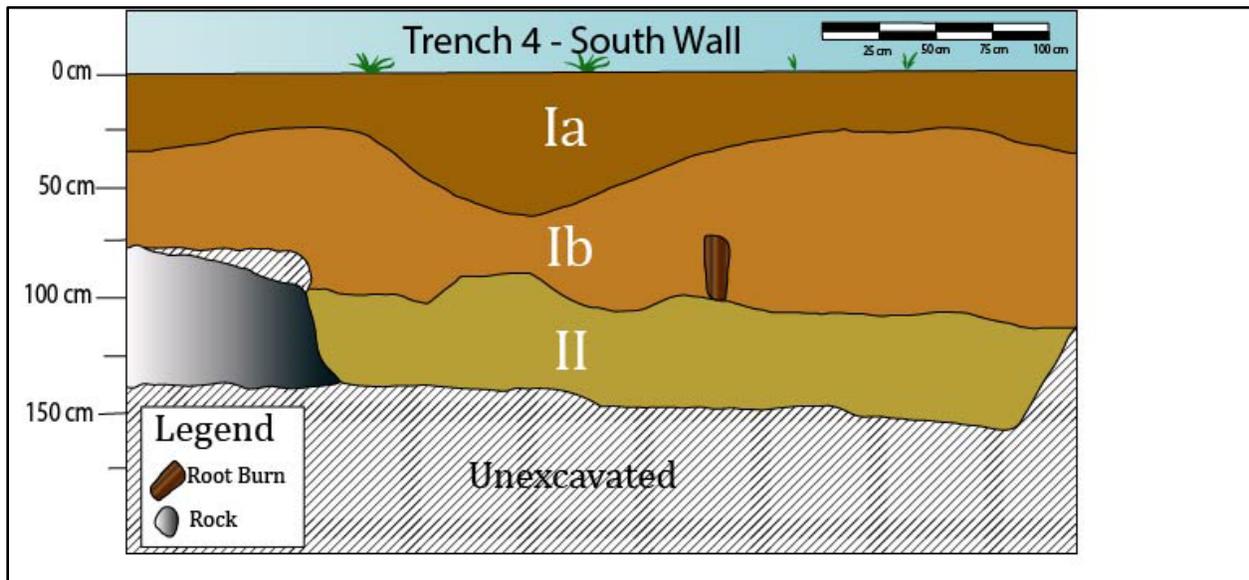


Figure 43. Trench 4 south wall profile photograph.

### 6.2.5 Trench 5

Trench 5 was located in the central portion of SIHP Site 50-80-08-10020 (former plantation camp) approximately 11 m north of SIHP 50-80-08-07671 (railway/dam) and was oriented north-south (see Figure 27). Evidence of surface burning was present in the vicinity of the trench including burned surficial sediments, vegetation, and vehicle tires. A flat fragment of marble, possibly representing a flooring tile, was photographed but not collected (Figure 44). The maximum excavated dimensions of Trench 5 were 470 cm in length, 270 cm in width, and 155 cm in depth. The sediments observed within the trench were in three strata (Stratum Ia, Ib, and II) (Table 8). An isolated marble from the trench spoils associated with Stratum Ia was recovered, and a sample of coal tar pitch roofing material from the surface was collected prior to excavation (Table 9). The west wall of the trench was photographed and sketched following excavation (Figure 45 and Figure 46).



Figure 44. Possible marble floor tile from the vicinity of Trench 5.

Table 8. Stratigraphic Descriptions for Trench 5.

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–50 cmbs)	Dark reddish brown (2.5YR 3/4)	Silty clay; moderate, fine granular structure; moist, friable consistence; slightly plastic; common fine roots; clear, wavy lower boundary.	Disturbed natural soil.
Ib (10–95 cmbs)	Dark red (2.5YR 3/6)	Silty clay; moderate, fine granular structure; moist, firm consistence; moderately plastic; few fine roots; clear, irregular lower boundary.	Intact natural soil.
II (50–150 cmbs)	Dark red (2.5YR 3/6)	Silty clay; strong, very fine granular structure; moist, firm consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface

Table 9. Summary of Cultural Constituents Recovered From Trench 5.

Catalog Number (CN)	Stratum (Depth)	Description	Material	Count	Weight (g)
032	Ia (0–50 cmbs)	Marble	Glass	1	26.93
033	Surface (0 cmbs)	Roofing material fragment	Coal tar pitch	2	72.29

Note: cmbs = centimeters below the surface



Figure 45. Trench 5 west wall profile photograph.

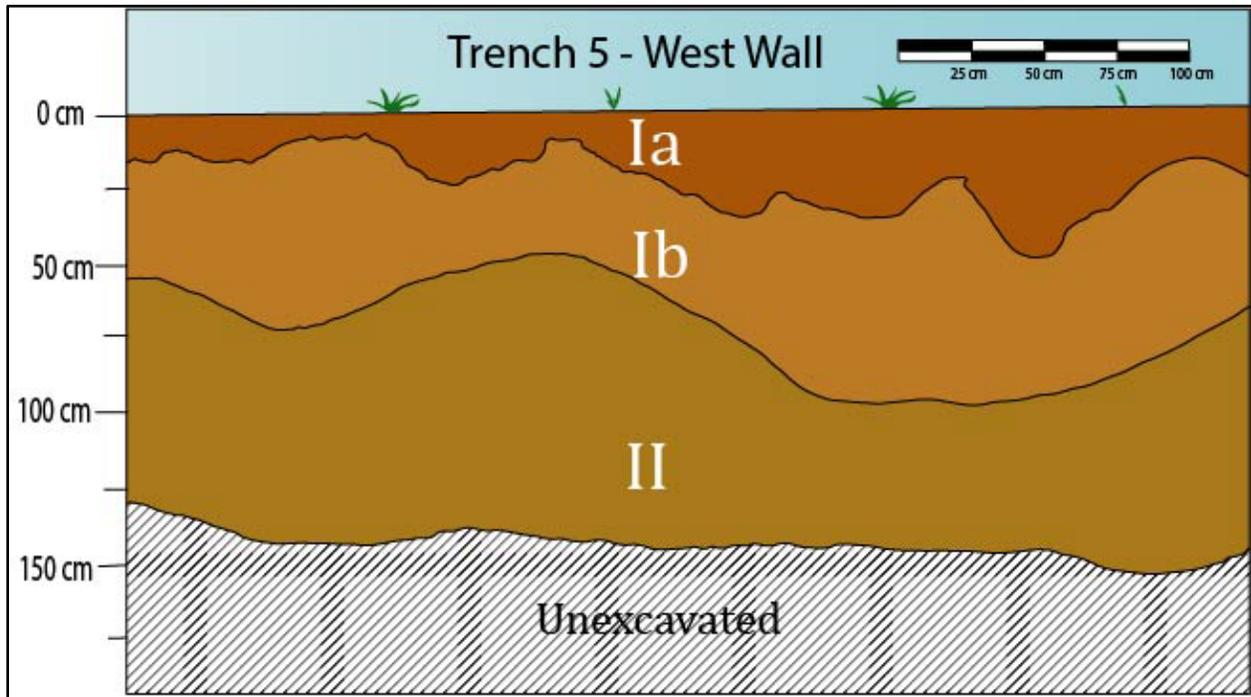


Figure 46. Trench 5 west wall profile sketch.

### 6.2.6 Trench 6

Trench 6 was located in the southern portion of SIHP Site 50-80-08-10020 and was oriented north-south (see Figure 27). An isolated historic-era bottle base was collected from the vicinity of the trench during vegetation clearance (see Section 6.5), and a cut basalt block with possible tool marks was photographed but not collected (Figure 47). The maximum excavated dimensions of Trench 6 were 500 cm in length, 240 cm in width, and 152 cm in depth. No cultural constituents were identified during excavation, although fragments of sparse plastic irrigation tubing related to more recent agricultural activities were noted within Stratum Ia in the upper 30 cm of the exposure. Concrete rubble was also identified Stratum Ia which was photographed but not collected (Figure 48). The uppermost sediments observed within the trench (Table 10) appear to have been subjected to prior disturbance, likely grading, appearing as mixed

and mottled sediments (Figure 49). The west wall of the trench was photographed and sketched following excavation (see Figure 49 and Figure 50).



**Figure 47. Cut basalt block with possible tool mark from vicinity of Trench 6.**



Figure 48. Concrete rubble originating from Stratum Ia in Trench 6.

Table 10. Stratigraphic Descriptions for Trench 6.

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–50 cmbs)	Dark reddish brown (2.5YR 2.5/3)	Silty clay loam; moderate, fine blocky structure; moist, firm consistence; slightly plastic; common fine to medium roots; abrupt, smooth lower boundary.	Disturbed natural soil.
Ib (35–100 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; moderate, fine granular structure; moist, friable consistence; moderately plastic; few fine roots; gradual, broken lower boundary.	Disturbed natural soil.
II (2–153 cmbs)	Dark red (10R 3/6)	Silty clay; strong, very fine granular structure; dry, hard consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface

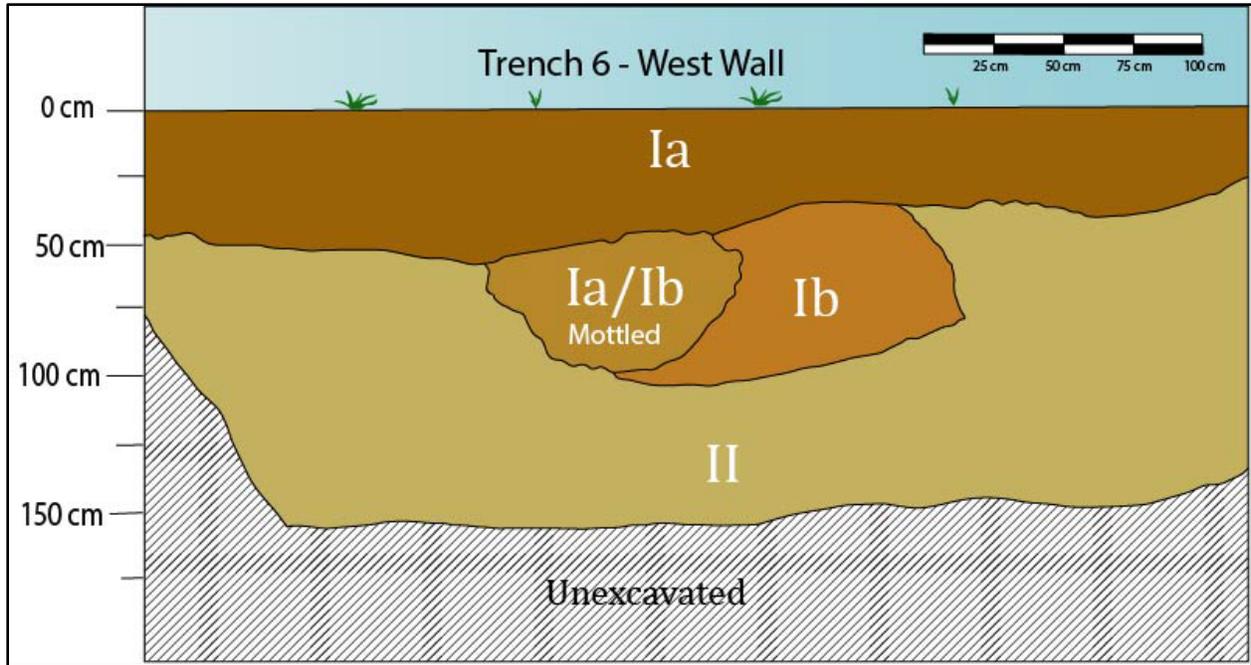


Figure 49. Trench 6 west wall profile sketch.



Figure 50. Trench 6 west wall profile photograph.

### 6.2.7 Trench 7

Trench 7 was located along the western portion of the project area in the northern portion of SIHP Site 50-80-08-10020 (former plantation camp) and approximately 3 m south of a road which trended along the western edge of SWCA-548875-006 (former reservoir) (see Figure 27). Cultural constituents were point provenienced and collected from the surface of Trench 7 prior to excavation (Figure 51) and additional objects were collected from a screened sample of the uppermost soil layer (Stratum I) taken from beyond the east wall of the trench (Figure 52). These materials appear to represent modern trash likely originating from more recent opportunistic dumping episodes following the cessation of commercial agricultural activities in the mid-1990s (Table 11).

Additional modern trash in the vicinity of the trench was photographed but not collected, including a sandal and fragments of irrigation tubing, milled lumber, and safety glasses (Figure 53). The maximum excavated dimensions of Trench 7 were 490 cm in length, 230 cm in width, and 158 cm in depth. The east wall of the trench was photographed and sketched following excavation (Figure 54 and Figure 55). The sediments within Trench 7 comprised four strata (Stratum I to Stratum IV) (Table 12), one of which (Stratum II) was thermally altered.

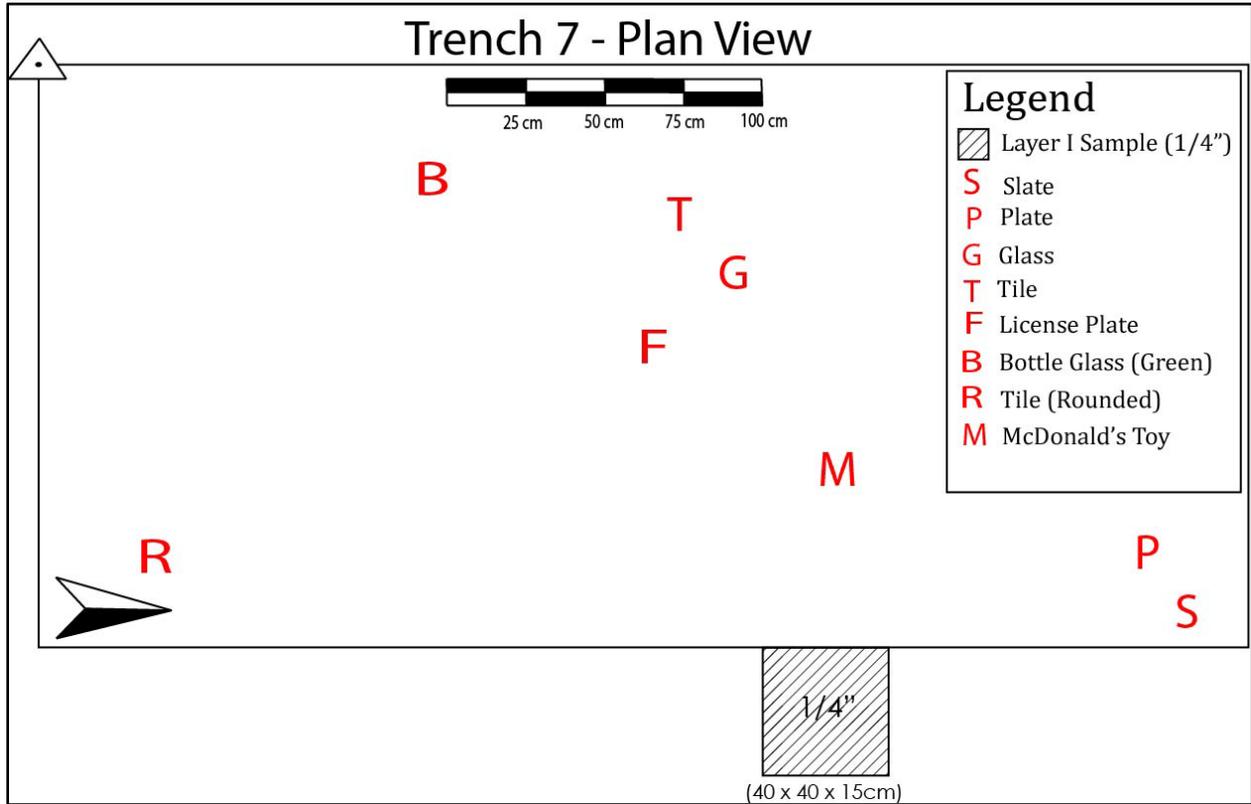


Figure 51. Pre-excavation plan view sketch depicting surface-collected objects and area of screened sample.



Figure 52. Post-excavation photograph showing screened sample of Stratum I removed.

Table 11. Summary of Cultural Constituents Recovered From Trench 7.

Catalog Number (CN)	Stratum (Depth)	Description	Material	Count	Weight (g)
013	Surface (0)	Non-diagnostic bottle fragment	Glass	2	8.5
014	Surface (0)	Ceramic tile	Fired clay	1	8.5
015	Surface (0)	License plate frame fragment	Non-ferrous metal	2	35.44
016	Surface (0)	Happy Meal™ toy	Plastic	1	62.37
017	Surface (0)	Mirror fragment	Glass	2	119.07
018	Surface (0)	Plate fragment	Plastic	1	5.67
019	Surface (0)	Non-diagnostic bottle fragment	Glass	3	15.59
020	Surface (0)	Ceramic tile	Fired clay	1	274.99
021	I (0–15 cmbs)	Bottle fragment	Fired clay	16	11.34
022	I (0–15 cmbs)	Slag fragment	Metal oxide	2	15.59
023	I (0–15 cmbs)	Synthetic material	Plastic/unknown	1	2.83
024	I (0–15 cmbs)	Window fragment	Glass	2	1.42
057	Ia (0–40 cmbs)	Non-diagnostic bottle fragment	Glass	23	392.64
058	Ia (0–40 cmbs)	Mirror fragment	Glass	9	146.0
059	Ia (0–40 cmbs)	Drainpipe	Fired clay	1	19.84
060	Ia (0–40 cmbs)	Vertebrate faunal remains	Bone	1	0.57
061	Ia (0–40 cmbs)	Bottle finish fragment	Glass	2	28.3

Note: cmbs = centimeters below the surface



Figure 53. Modern trash observed on the surface in the vicinity of Trench 7.



Figure 54. Trench 7 east wall profile photograph.

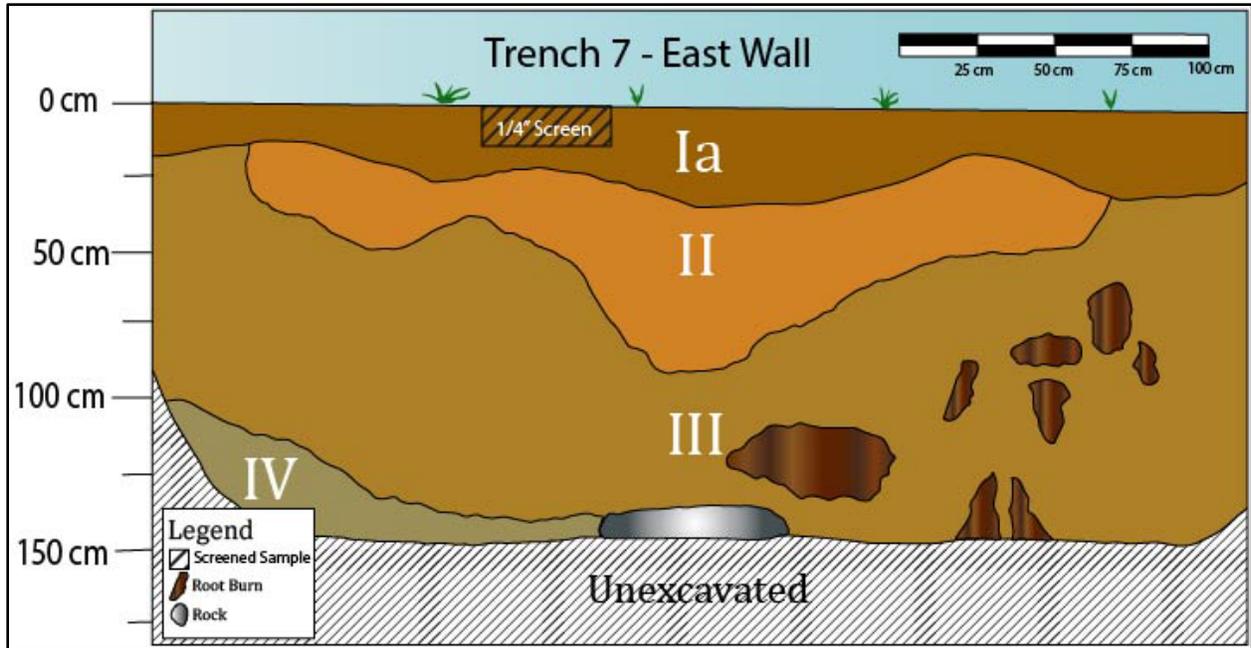


Figure 55. Trench 7 east wall profile sketch.

Table 12. Stratigraphic Descriptions for Trench 7.

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
I (0–28 cmbs)	Dark reddish brown (2.5YR 2.5/3)	Silty clay loam; weak, very fine granular structure; moist, loose consistence; non-plastic; common fine roots; gradual, wavy lower boundary.	Disturbed natural soil.
II (15–80 cmbs)	Dark brown (7.5YR 3/4)	Silty clay; moderate, very fine granular structure; moist, firm consistence; slightly plastic; few very fine to medium roots; gradual, broken lower boundary.	Disturbed natural soil, thermally affected.
III (20–148 cmbs)	Very dark brown (7.5YR 2.5/3)	Silty clay; moderate, fine granular structure; moist, firm consistence; slightly plastic; few medium roots; lower boundary not observed.	Intact natural subsoil.
IV (102–148 cmbs)	Yellowish red (5YR 4/6)	Very cobbly silty clay; strong, very fine granular structure; dry, slightly hard consistence; slightly plastic; no roots; abrupt, lower boundary not observed.	Natural subsoil with decomposing bedrock.

Note: cmbs = centimeters below the surface

### 6.2.8 Trench 8

Trench 8 was located along the western portion of the project area in the central portion of SIHP Site 50-80-08-10020 and approximately 5 m south of SIHP 50-80-08-07671 (railway alignment/dam) (see Figure 27). The trench was relocated and reoriented (northwest-southeast) to investigate an apparent push pile identified approximately 30 m north of the originally planned location (Figure 56 and Figure 57).

The maximum excavated dimensions of Trench 8 were 550 cm in length, 220 cm in width, and 110 cm in depth. Cultural constituents collected from Trench 8 included construction debris and residential refuse, mostly recovered from the pile above the original ground surface (Table 13). Uncollected cultural constituents observed in the pile during excavation included plastic sheeting and a plastic shopping bag, an aluminum beer can, and fiberglass, tar pitch roofing, and concrete rubble fragments (Figure 58). Larger fragments of lime mortar and ceramic drainpipe were observed in the northeast quadrant of the trench at

50 cmbs and were photographed but not collected (Figure 59). Modern trash in the vicinity of the trench was photographed but not collected including a propane tank, a fiberglass pipe coupling fragment, additional construction debris (i.e., concrete, asphalt, and cinderblock rubble), and a vehicle radiator hose (Figure 60, Figure 61, and Figure 62).

The sediments within the push pile were comprised of loose, darkened sediments interspersed with sheet metal, concrete and asphalt rubble and other construction debris, which had been mechanically deposited in a push pile on top of the natural ground surface (Table 14, Figure 63, and Figure 64). The soils directly beneath the pile were heavily compacted. The southeast wall of the trench was photographed and sketched following excavation (Figure 65 and Figure 66).



**Figure 56. Push pile in area of Trench 8 prior to vegetation clearance, view to the northeast.**



Figure 57. Pre-excitation photograph of push pile following manual vegetation clearance, view to the northeast.

Table 13. Summary of Cultural Constituents Recovered From Trench 8.

Catalog Number (CN)	Stratum (Depth)	Description	Material	Count	Weight (g)
027	1c (0–25 cmbs)	Non-diagnostic bottle fragment	Glass	2	9.92
028	1c (0–25 cmbs)	Road base course material	Marine shell	2	11.34
029	1c (5 cmbs)	Ceramic tube insulator	Fired clay	1	15.59
062	1a (10–140 cmas)	Modern bottle fragment	Glass	21	110.56
063	1a (10–140 cmas)	Window fragment	Glass	1	9.92
064	1a (10–140 cmas)	Non-diagnostic white improved earthenware fragment	Fired clay	1	4.25
065	1a (10–140 cmas)	Bottle base fragment	Glass	1	8.5
066	1a (10–140 cmas)	Nail	Ferrous metal	2	21.26
067	1a (10–140 cmas)	Glazed drainpipe fragment	Fired clay	1	9.92
068	1a (10–140 cmas)	Road base course material	Fired clay	1	2.83

Note: cmas = centimeters above the surface; cmbs = centimeters below the surface



Figure 58. Modern, uncollected cultural constituents observed in push pile during excavation of Trench 8.



Figure 59. Lime mortar and ceramic drainpipe fragments observed in Trench 8.



Figure 60. Fiberglass pipe coupling and propane tank observed on the surface in the vicinity of Trench 8.



**Figure 61. Cinderblock, concrete, and asphalt rubble observed on the surface in the vicinity of Trench 8.**



**Figure 62. Vehicle radiator hose observed on the surface in the vicinity of Trench 8.**



**Figure 63. In progress excavation photograph showing exposed ground surface and push pile interspersed with sheet metal, tar pitch roofing, concrete and asphalt debris, and roots, view to the northeast.**



Figure 64. In progress excavation photograph showing detail of push pile profile, view to the north.

Table 14. Stratigraphic Descriptions for Trench 8.

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (90 cmas–20 cmbs)	Very dusky red (10R 2.5/2)	Silty clay loam; weak, fine granular structure; moist, very friable consistence; non-plastic; many fine to medium roots; clear, wavy lower boundary.	Push pile of mixed sediments.
Ib (50 cmas–5 cmbs)	Dark reddish brown (2.5YR 2.5/3)	Gravelly silty clay; weak, fine granular structure; moist, very friable consistence; slightly plastic; common fine to medium roots; discrete pocket within pile.	Push pile of mixed sediments.
Ic (0–60 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; moderate, fine granular structure; moist, firm consistence; moderately plastic; common fine to medium roots; gradual, broken lower boundary.	Truncated natural soil.
II (5–10 cmbs)	Dark red (2.5YR 3/6)	Silty clay; moderate, very fine block structure; dry, slightly hard consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmas = centimeters above the surface; cmbs = centimeters below the surface



**Figure 65. Trench 8 southeast wall profile photograph (oblique view to the east, with horizontal scale at approximate level of surrounding ground surface).**

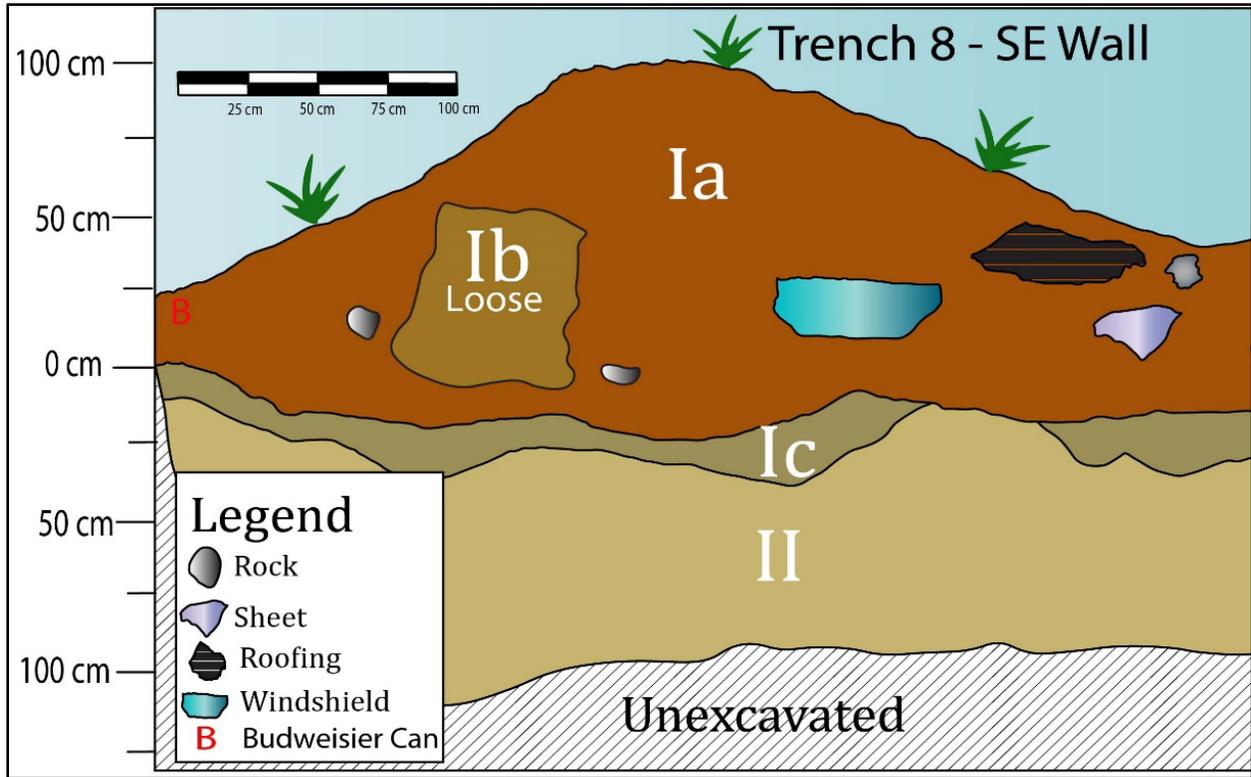


Figure 66. Trench 8 southeast wall profile sketch.

### 6.2.9 Trench 9

Trench 9 was located in the central western portion of the project area in the southern portion of SIHP Site 50-80-08-10020 (former plantation camp) and approximately 6 m east of Feature RK2 (irrigation ditch) of SIHP 50-80-09-02268 (Waiahole Ditch) (see Figure 27). Cultural constituents were point plotted and collected from the surface of Trench 9 prior to excavation and two additional artifacts were collected from subsurface contexts (Table 15). These materials appear to represent sparse construction debris and residential refuse likely originating from more recent commercial agricultural activities. Additional artifacts were collected from the surface in the vicinity of the trench during vegetation clearance (see Section 6.5). The maximum excavated dimensions of Trench 9 were 480 cm in length, 260 cm in width, and 155 cm in depth. The north wall of the trench was photographed and sketched following excavation (Figure 67 and Figure 68). The sediments within the trench comprised three strata (Stratum Ia, Stratum Ib, and Stratum II) (Table 16).

Table 15. Summary of Cultural Constituents Recovered From Trench 9.

Catalog Number (CN)	Stratum (Depth)	Description	Material	Count	Weight (g)
046	Surface (0 cmbs)	Unidentified fragment	Ferrous metal	6	371.38
047	Surface (0 cmbs)	Drain pipe	Fired clay	1	155.92
048	Surface (0 cmbs)	Rubble fragment	Concrete	1	228.21
049	Surface (0 cmbs)	Brick fragment	Fired clay	1	239.55

Catalog Number (CN)	Stratum (Depth)	Description	Material	Count	Weight (g)
050	Ib (28 cmbs)	Non-diagnostic bottle fragment	Glass	1	8.5
051	Ia-Ib (0-75 cmbs)	Bottle base fragment	Glass	2	12.76

Note: cmbs = centimeters below the surface



Figure 67. Trench 9 north wall profile photograph.

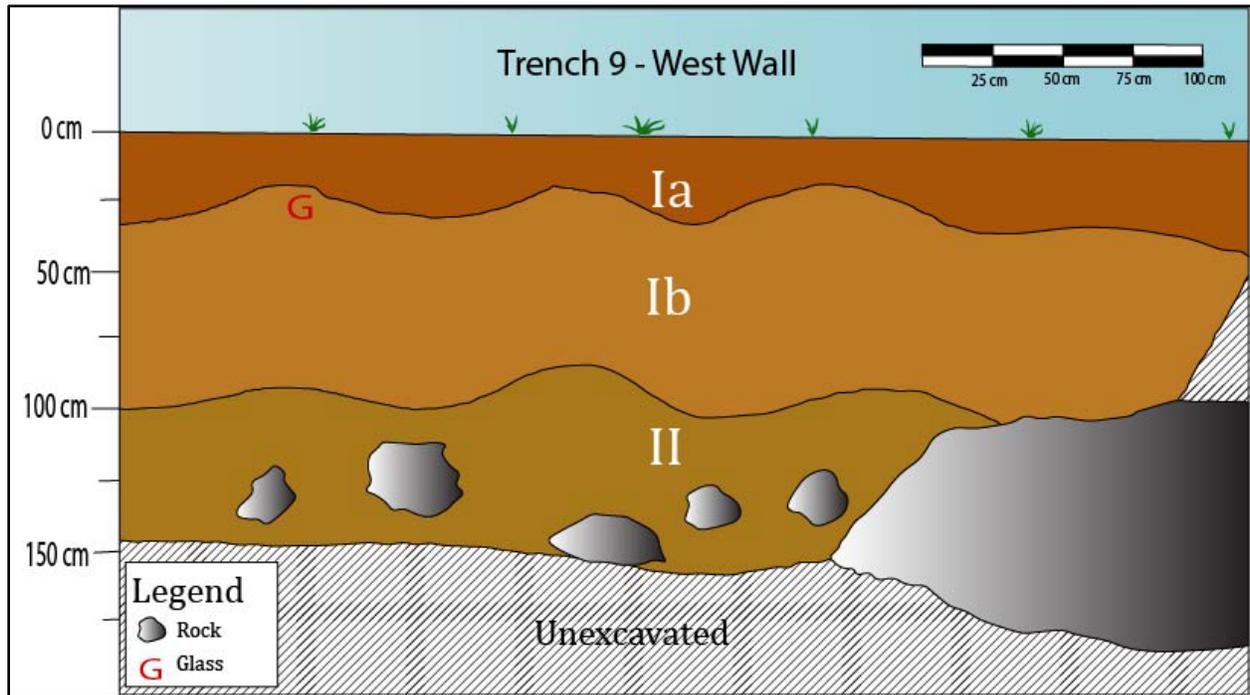


Figure 68. Trench 9 north wall profile sketch.

**Table 16. Stratigraphic Descriptions for Trench 9.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–40 cmbs)	Dark reddish brown (2.5YR 2.5/3)	Silty clay loam; weak, very fine granular structure; moist, loose consistence; non-plastic; common fine roots; clear, wavy lower boundary.	Disturbed natural soil.
Ib (25–100 cmbs)	Dark brown (2.5YR 2.5/4)	Silty clay; moderate, very fine granular structure; moist, firm consistence; slightly plastic; few very fine to medium roots; gradual, wavy lower boundary.	Intact natural soil.
II (85–160 cmbs)	Yellowish red (5YR 4/6)	Stony silty clay; strong, very fine granular structure; dry, slightly hard consistence; slightly plastic; no roots; abrupt, lower boundary not observed.	Natural subsoil with decomposing bedrock.

Note: cmbs = centimeters below the surface

### 6.2.10 Trench 10

Trench 10 was located in the central western portion of the project area within the eastern portion of SIHP Site 50-80-08-10020 (former plantation camp) and was oriented east-west (see Figure 27). The trench was situated on an approximately 12-degree slope with a southeastern aspect leading down to the dry gulch makai of Feature 4 (causeway/dam) of SIHP 50-80-08-07671. An isolated marble was collected from the surface in the vicinity of the trench during vegetation clearance (see Section 6.5). The maximum excavated dimensions of Trench 10 were 520 cm in length, 230 cm in width, and 173 cm in depth. The sediments within the trench comprised three strata (Stratum I, Stratum II, and Stratum III) (Table 17). A fragment of asphalt rubble was observed during excavation of the uppermost portion of Stratum I which was photographed but not collected (Figure 69). No other cultural constituents were observed during excavation. Sparse plastic irrigation tubing was also noted in the upper portion of Stratum I, along with root burning and bioturbation in Stratum II. The south wall of the trench was photographed and sketched following excavation (Figure 70 and Figure 71).

**Table 17. Stratigraphic Descriptions for Trench 10.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–98 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; moderate, fine granular structure; moist, friable consistence; slightly plastic; common very fine to medium roots; very abrupt, wavy lower boundary.	Disturbed natural soil.
Ib (30–90 cmbs)	Dark brown (7.5YR 3/4)	Silty clay; moderate, fine granular structure; moist, very firm consistence; slightly plastic; few fine roots; gradual, broken lower boundary.	Intact natural soil.
II (40–153 cmbs)	Red (2.5YR 4/8)	Silty clay; strong, very fine granular structure; dry, very hard consistence; non-plastic; few fine roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



Figure 69. Asphalt rubble fragment originating from Stratum I in Trench 10.

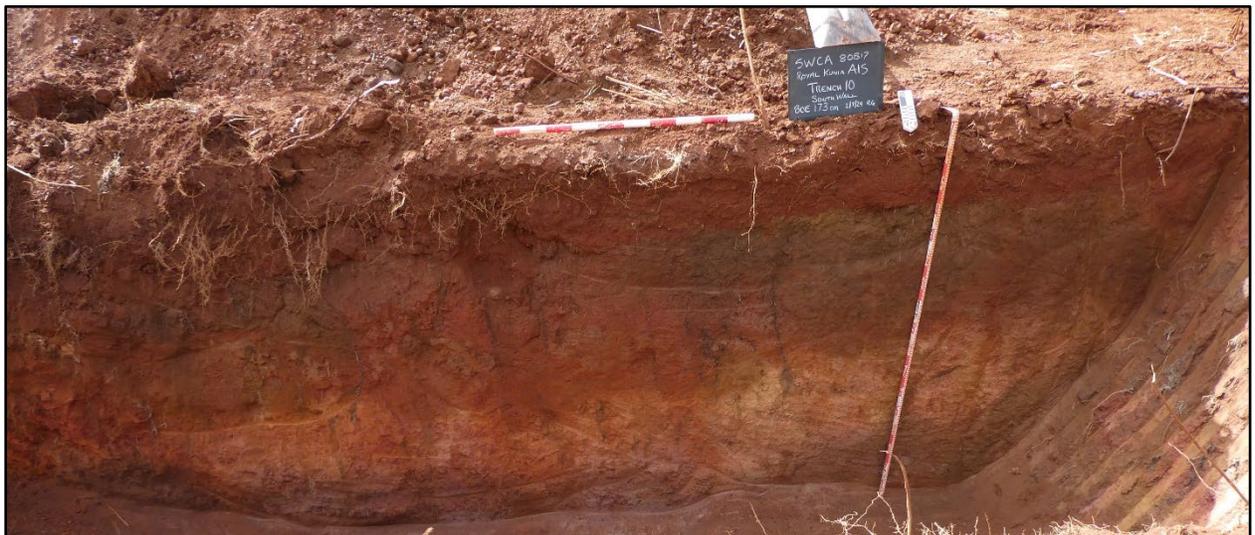


Figure 70. Trench 10 south wall profile photograph.

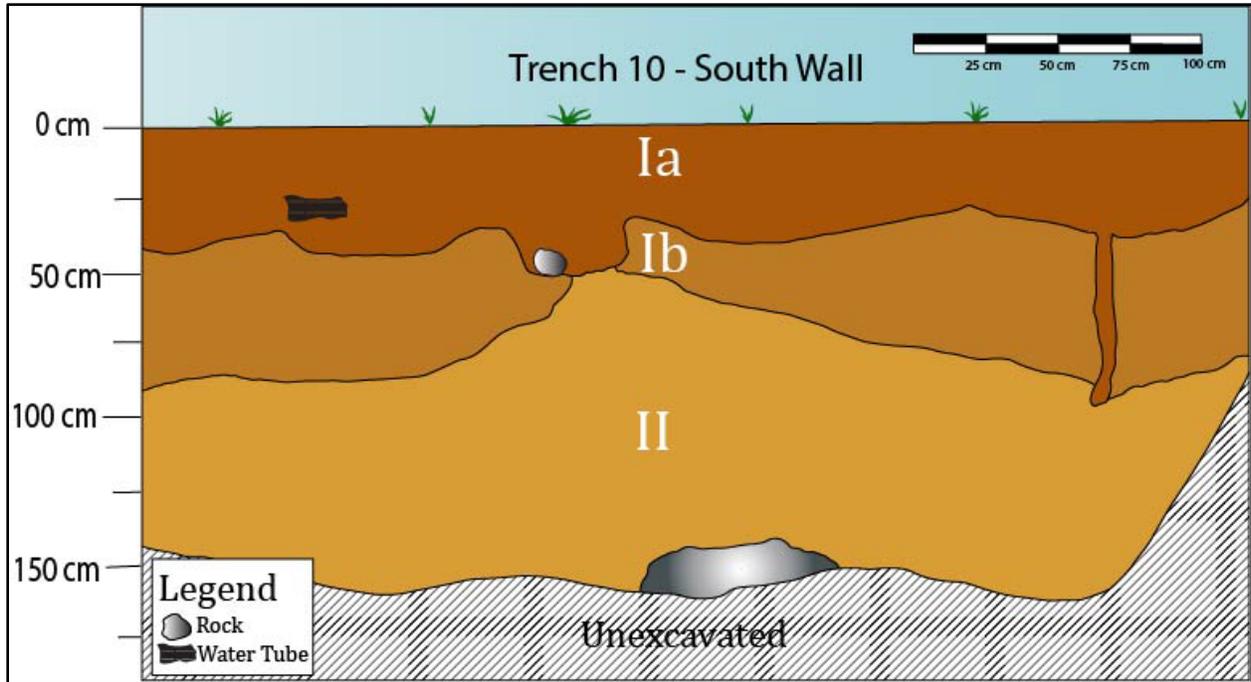


Figure 71. Trench 10 south wall profile sketch.

### 6.2.11 Trench 11

Trench 11 was located in the central western portion of the project area along the southern boundary of SIHP Site 50-80-08-10020 (former plantation camp) and was oriented east-west (see Figure 27). Construction debris on the surface in the vicinity of the trench was photographed but not collected including a non-ferrous metal strip with rubber attached, ceramic drainpipe, concrete rubble and plastic irrigation tubing fragments (Figure 72 and Figure 73). The maximum excavated dimensions of Trench 11 were 480 cm in length, 255 cm in width, and 155 cm in depth. The sediments within the trench comprised three strata (Stratum Ia, Stratum Ib, and Stratum II) (Table 18). Cultural constituents were point provenienced and collected from Stratum Ia during excavation (Table 19). The north wall of the trench was photographed and sketched following excavation (Figure 74 and Figure 75).



Figure 72. Construction debris observed on the surface in the vicinity of Trench 11.



Figure 73. Ceramic drainpipe fragments observed on the surface in the vicinity of Trench 11.

Table 18. Stratigraphic Descriptions for Trench 11.

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–55 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; weak, fine granular structure; moist, very friable consistence; slightly plastic; common fine roots; gradual, wavy lower boundary.	Disturbed natural soil.
Ib (40–100 cmbs)	Dark reddish brown (5YR 3/4)	Silty clay; moderate, fine granular structure; moist, friable consistence; slightly plastic; few fine roots; diffuse, smooth lower boundary.	Intact natural soil.
II (75–140 cmbs)	Brown (7.5YR 4/4)	Gravelly silty clay; strong, very fine granular structure; dry, very hard consistence; non-plastic; no roots; very abrupt lower boundary (where observed).	Intact natural subsoil.

Note: cmbs = centimeters below the surface

**Table 19. Summary of Cultural Constituents Recovered From Trench 11.**

Catalog Number (CN)	Stratum (Depth)	Description	Material	Count	Weight (g)
034	1a (30 cmbs)	Pipe fragment	Ferrous metal	3	102.06
035	1a (20 cmbs)	Non-diagnostic bottle fragment	Glass	1	2.83
036	1a (25 cmbs)	Drainpipe	Fired clay	2	133.24

Note: cmbs = centimeters below the surface



**Figure 74. Trench 11 north wall profile photograph.**

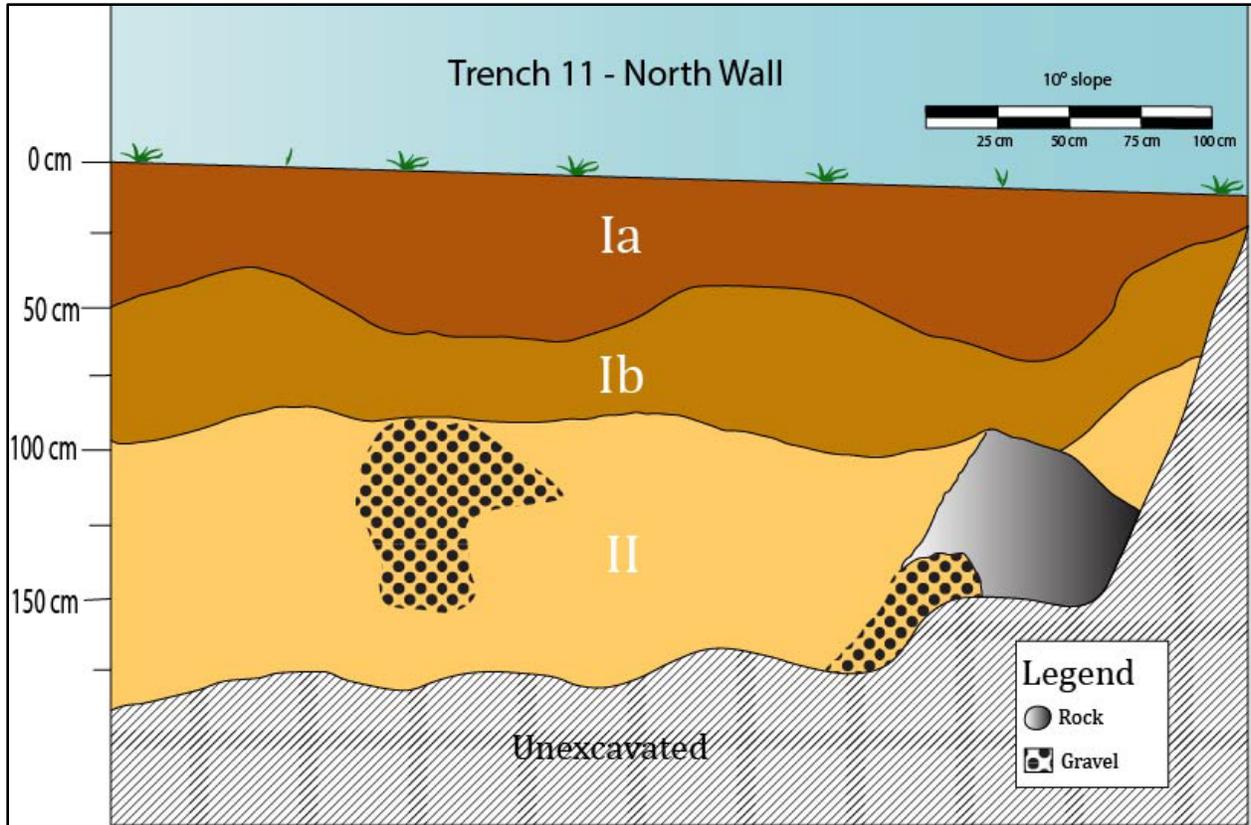


Figure 75. Trench 11 north wall profile sketch.

### 6.2.12 Trench 12

Trench 12 was located in the central western portion of the project area along the eastern boundary of SIHP Site 50-80-08-10020 (former plantation camp) and was oriented north-south (see Figure 27). The trench was situated on an approximately 10-degree slope with an eastern aspect leading down to the dry gulch makai of Feature 4 (causeway/dam) of SIHP Site 50-80-08-07671. Concrete rubble, ceramic drainpipe, and plastic irrigation tubing fragments were noted in the vicinity of the trench and were photographed but not collected (Figure 76). The maximum excavated dimensions of Trench 12 were 510 cm in length, 290 cm in width, and 174 cm in depth. Twenty-five to 30 large (up to 60 cm in diameter) cobbles and boulders were present in the lower portion of the trench, from approximately 75 cmbs to the base of the exposure (Figure 77). The sediments within the trench comprised four strata (Stratum Ia, Stratum Ib, Stratum IIa, and Stratum IIb) (Table 20). Cultural constituents were collected from the surface of the trench prior to excavation and from the upper 10 cm of Stratum Ia (Table 21). The east wall of the trench was photographed and sketched following excavation (Figure 78 and Figure 79).



Figure 76. Concrete rubble, ceramic drainpipe, and irrigation tubing observed on the surface in the vicinity of Trench 12 during vegetation clearance.



Figure 77. Large cobbles in spoils pile originating from the lower excavated portions of Trench 12.

**Table 20. Stratigraphic Descriptions for Trench 12.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
1a (0-48 cmbs)	Dusky red (10R 3/3)	Silty clay; moderate, fine granular structure; moist, friable consistence; moderately plastic; common fine to coarse roots; gradual, wavy lower boundary.	Disturbed natural soil.
1b (15-70 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; moderate, fine granular structure; moist, firm consistence; moderately plastic; few fine roots; clear, wavy lower boundary.	Intact natural soil.
11a (50-160 cmbs)	Dark red (2.5YR 3/6)	Silty clay; strong, very fine granular structure; dry, hard consistence; slightly plastic; no roots; lower boundary not observed.	Intact natural subsoil.
11b (60-160 cmbs; discontinuous pockets)	Dark red (2.5YR 3/6)	Very gravelly silty clay; strong, very fine granular structure; dry, hard consistence; slightly plastic; no roots; broken lower boundary.	Decomposing cobbles/bedrock.

Note: cmbs = centimeters below the surface

**Table 21. Summary of Cultural Constituents Recovered From Trench 12.**

Catalog Number (CN)	Stratum (Depth)	Description	Material	Count	Weight (g)
030	Surface (0 cmbs)	Non-diagnostic bottle fragment	Glass	2	11.34
031	1a (0-10 cmbs)	Drainpipe	Fired clay	1	26.93

Note: cmbs = centimeters below the surface



**Figure 78. Trench 12 east wall profile photograph.**

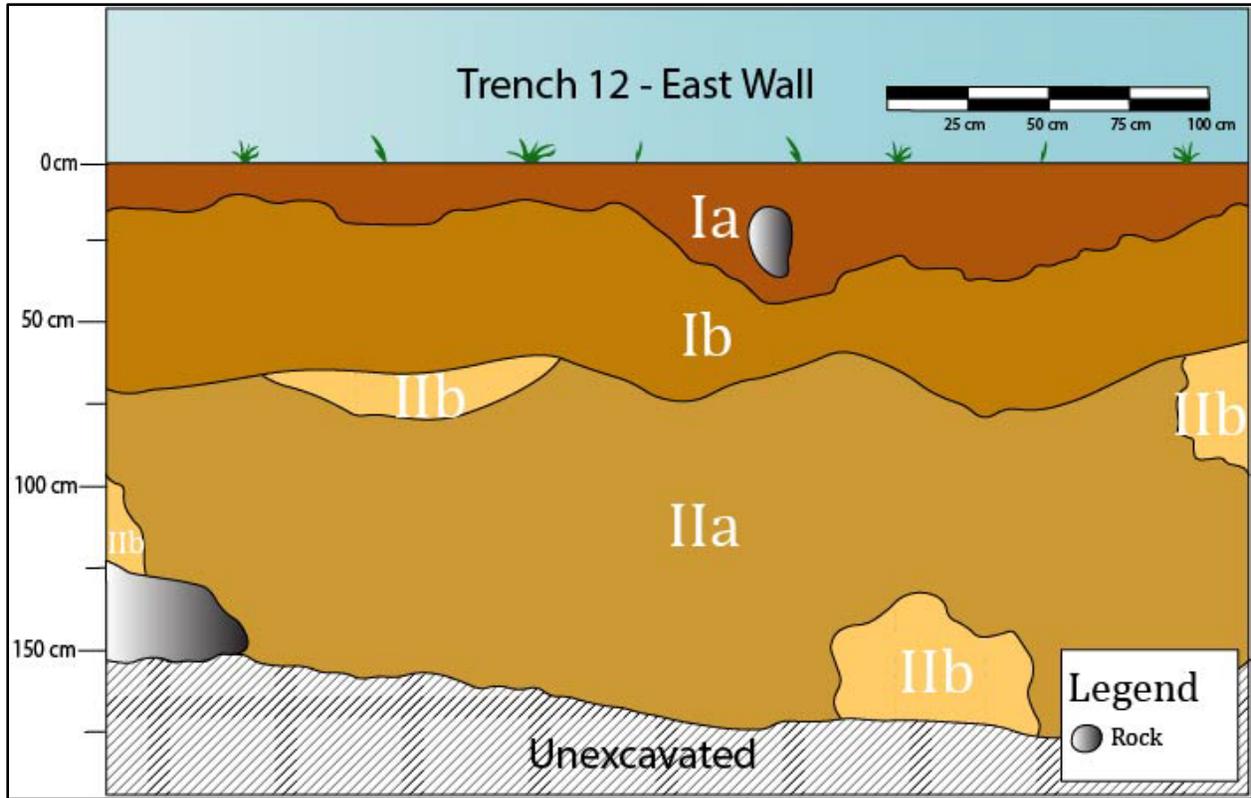


Figure 79. Trench 12 east wall profile sketch.

### 6.2.13 Trench 13

Trench 13 was located in the western portion of the project area approximately 25 m north of Feature 4 (road) of SIHP Site 50-80-08-07671 and was oriented east-west (see Figure 27). The maximum excavated dimensions of Trench 13 were 440 cm in length, 240 cm in width, and 166 cm in depth. No cultural constituents were identified during excavation or within the vicinity of the trench, although plastic irrigation tubing was observed on the surface in the vicinity of the trench during vegetation clearance. The stratigraphic sequence of sediments within the trench occurred in three strata (Stratum Ia, Stratum Ib, and Stratum II) (Table 22). The north wall of the trench was photographed and sketched following excavation (Figure 80 and Figure 81).

Table 22. Stratigraphic Descriptions for Trench 13.

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–60 cmbs)	Dark reddish brown (2.5 YR 2.5/3)	Silty clay loam; moderate, very fine granular structure; moist, friable consistence; slightly plastic; many very fine to coarse roots; clear, wavy lower boundary.	Disturbed natural soil.
Ib (35–102 cmbs)	Dark reddish brown (2.5 YR 2.5/4)	Silty clay; moderate, very fine granular structure; moist, firm consistence; slightly plastic; common very fine to coarse roots; clear, smooth lower boundary.	Intact natural soil.
II (85–175 cmbs)	Dark red (10R 3/6)	Silty clay; strong, fine blocky structure; moist, very firm consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.



Figure 80. Trench 13 north wall profile photograph.

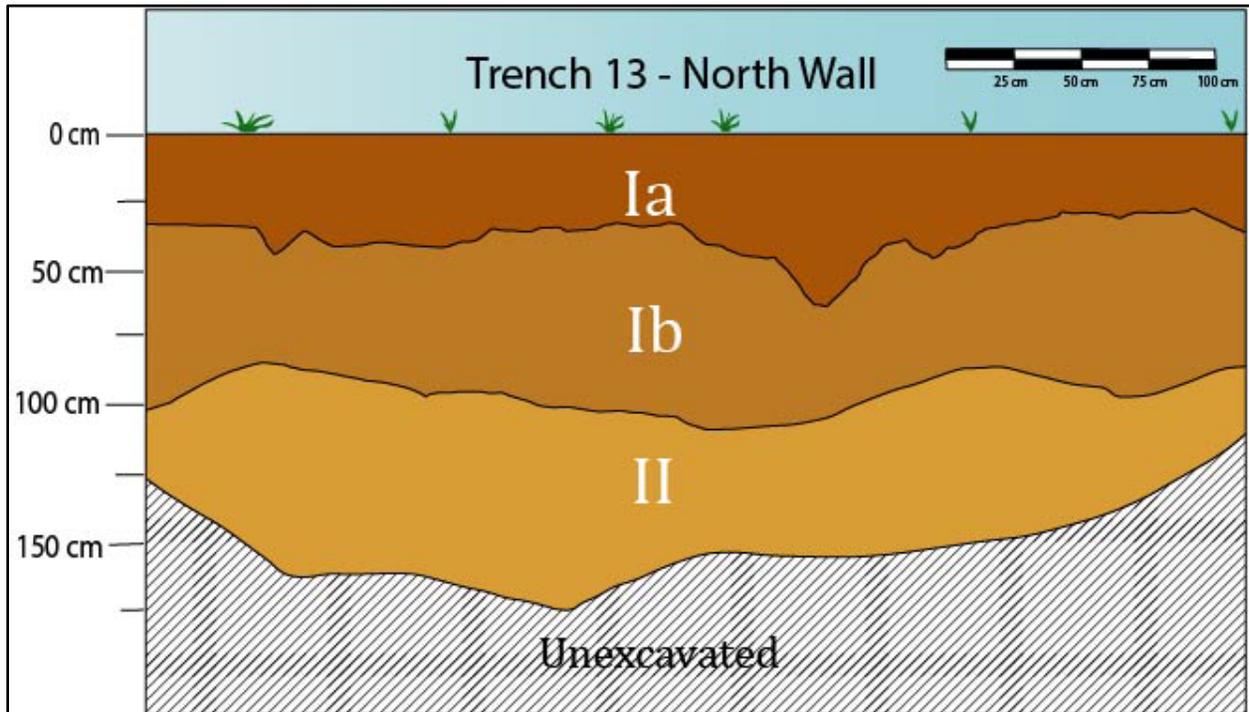


Figure 81. Trench 13 north wall profile sketch.

### 6.2.14 Trench 14

Trench 14 was located near the northern project area boundary in the western portion of the project area within the southern portion of SIHP Site 50-80-08-09385 (former reservoir) (see Figure 27). The trench was oriented east-west and the maximum excavated dimensions were 460 cm in length, 240 cm in width, and 155 cm in depth. The stratigraphy consisted of three strata designated Stratum Ia, Stratum Ib, and Stratum II (Table 23). One isolated historic-era artifact, Catalog Number (CN) 005 (ceramic cup fragment) was collected from excavated spoils associated with Stratum Ib (Table 24). No other cultural constituents were identified during excavation, although plastic irrigation tubing and plastic sheeting was

noted at depths from just below the ground surface to the base of the exposure. A rough cut basalt block (Figure 82) was observed on the surface in the vicinity of the trench and several possible cut basalt block fragments were noted during the excavation of Strata Ia and Ib. The north wall of the trench was photographed and sketched following excavation (Figure 83 and Figure 84).

**Table 23. Stratigraphic Descriptions for Trench 14.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–26 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay loam; weak, fine granular structure; moist, very friable consistence; slightly plastic; common very fine to fine roots; diffuse, wavy lower boundary.	Disturbed natural soil.
Ib (0–115 cmbs)	Dark reddish brown (2.5YR 2.5/3)	Gravelly silty clay; moderate, fine granular structure; moist, friable consistence; slightly plastic; few very fine to fine roots; diffuse, wavy lower boundary.	Intact natural soil.
II (45–170 cmbs)	Red (2.5YR 4/6)	Silty clay; moderate, fine granular structure; moist, friable consistence; moderately plastic; few very fine roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface

**Table 24. Summary of Cultural Constituents Recovered From Trench 14.**

Catalog Number (CN)	Stratum (Depth)	Description	Material	Count	Weight (g)
005	Ib (0–75 cmbs)	Ceramic cup fragment	Fired clay	1	31.18

Note: cmas = centimeters above the surface; cmbs = centimeters below the surface

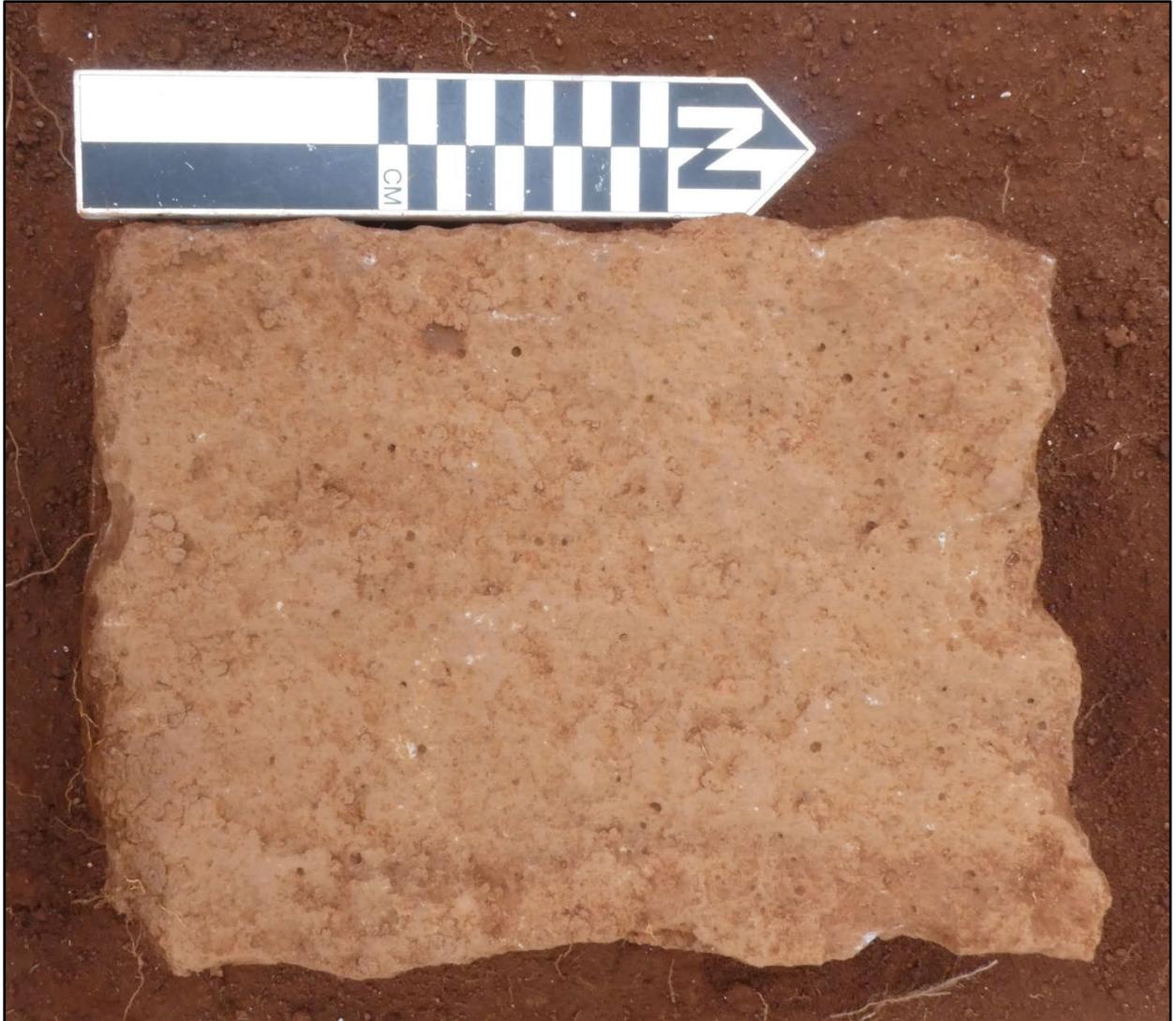


Figure 82. Rough cut basalt block from the vicinity of Trench 14.



Figure 83. Trench 14 north wall profile photograph, note basalt fragments in spoils in center top of frame.

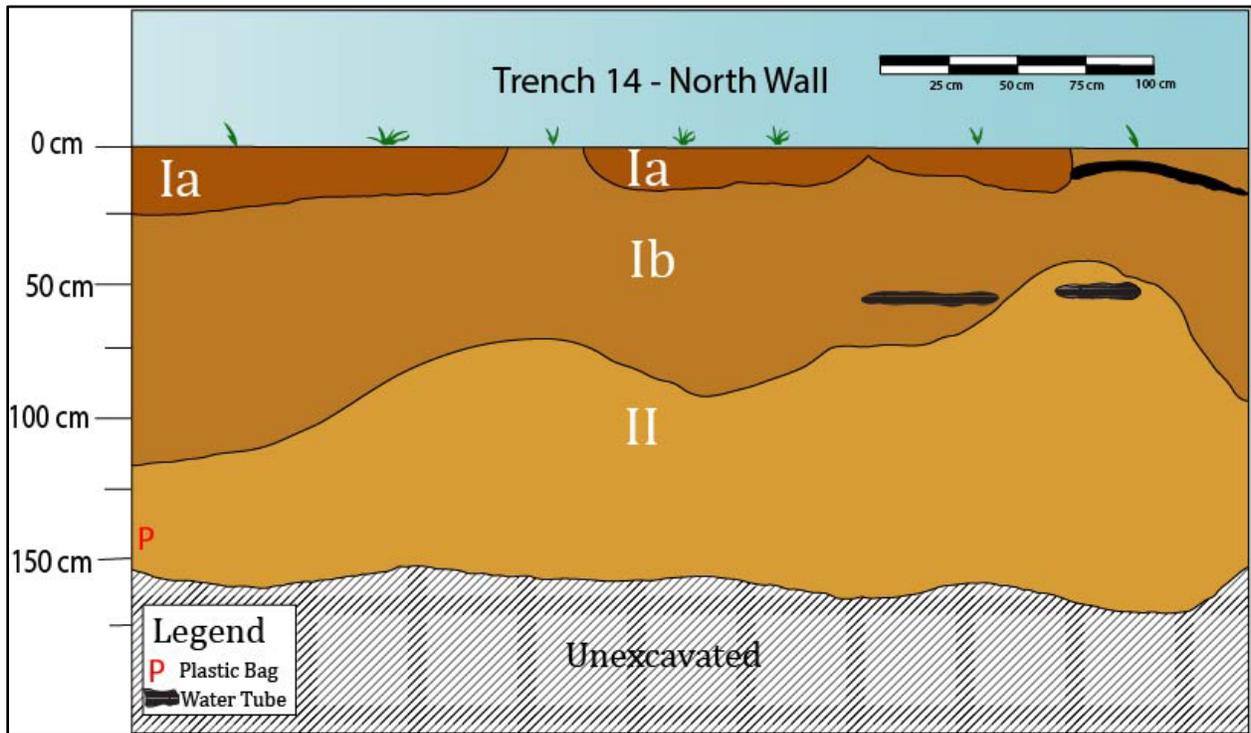


Figure 84. Trench 14 north wall profile sketch.

### 6.2.15 Trench 15

Trench 15 was located in the central western portion of the project area in the southern portion of SIHP Site 50-80-08-10020 (former plantation camp) and approximately 25 m south of Feature 3 (road) of SIHP

Site 50-80-08-07671 (see Figure 27). A pile of concrete rubble was situated approximately 3 m north of the trench. Trench 15 was oriented north-south and the maximum excavated dimensions were 490 cm in length, 260 cm in width, and 155 cm in depth. No cultural constituents were identified during excavation or within the vicinity of the trench, although plastic irrigation tubing and small (up to 10 cm diameter) fragments of concrete rubble were observed on the surface of the trench prior to excavation. The stratigraphic sequence of sediments within the trench occurred in three strata (Stratum Ia, Stratum Ib, and Stratum II) (Table 25). The east wall of the trench was photographed and sketched following excavation (Figure 85 and Figure 86).

**Table 25. Stratigraphic Descriptions for Trench 15.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–20 cmbs)	Very dusky red (2.5YR 2.5/2)	Silty clay loam; moderate, fine blocky structure; moist, friable consistence; moderately plastic; common fine to very coarse roots; gradual, smooth lower boundary.	Disturbed natural soil.
Ib (20–100 cmbs)	Dusky red (5YR 3/4)	Silty clay; moderate, fine granular structure; moist, firm consistence; moderately plastic; no roots; clear, wavy lower boundary.	Intact natural soil.
II (60–130 cmbs)	Dark red (2.5YR 3/6)	Silty clay; strong, fine granular structure; moist, very firm consistence; slightly plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



**Figure 85. Trench 15 east wall profile photograph.**

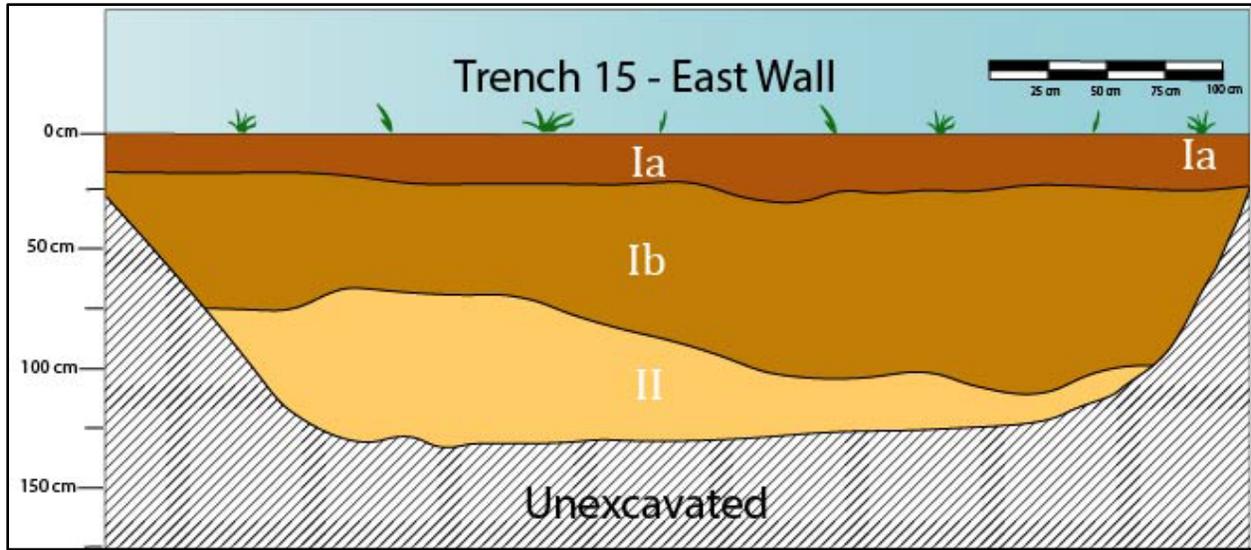


Figure 86. Trench 15 east wall profile sketch.

### 6.2.16 Trench 16

Trench 16 was located in the southwest portion of the project area on a slight (approximately 8 degrees) slope with a southern aspect and was oriented north-south (see Figure 27). The trench was situated on a gentle (approximately 12-degree) slope with a southern aspect trending makai to the southwest boundary of the project area. The maximum excavated dimensions of Trench 16 were 500 cm in length, 240 cm in width, and 165 cm in depth. The sediments within the trench comprised three strata (Stratum Ia, Stratum Ib, and Stratum II) (Table 26). Several small (11 to 27 cm long), thin (1-inch-thick) fragments of finished concrete, appearing to be from the same object/structure, were observed during excavation of Stratum Ia, which were photographed but not collected (Figure 87). No other cultural constituents were observed during excavation. The east wall of the trench was photographed and sketched following excavation (Figure 88 and Figure 89).

Table 26. Stratigraphic Descriptions for Trench 16.

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–40cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay loam; weak, fine granular structure; moist, very friable consistence; slightly plastic; common, very fine to fine roots; clear, wavy lower boundary.	Disturbed natural soil.
Ib (40–105 cmbs)	Dark red (2.5YR 3/6)	Silty clay; moderate, fine granular structure; moist, friable consistence; moderately plastic; few fine to medium roots; clear, wavy lower boundary.	Intact natural soil.
II (105–160 cmbs)	Red (2.5YR 4/8)	Silty clay; strong, very fine granular structure; moist, firm consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface

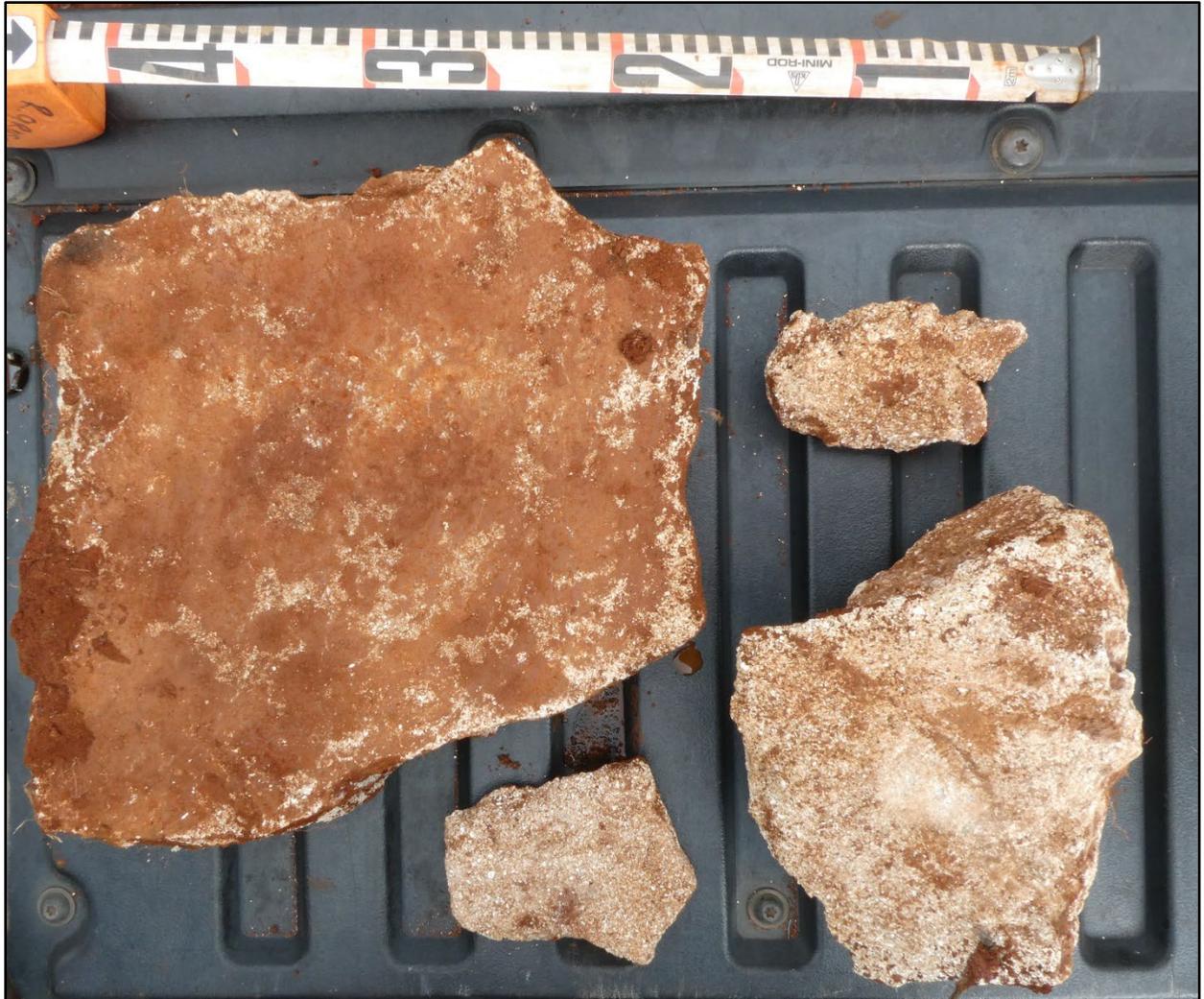


Figure 87. Concrete fragments originating from Stratum Ia in Trench 16.



Figure 88. Trench 16 east wall profile photograph.

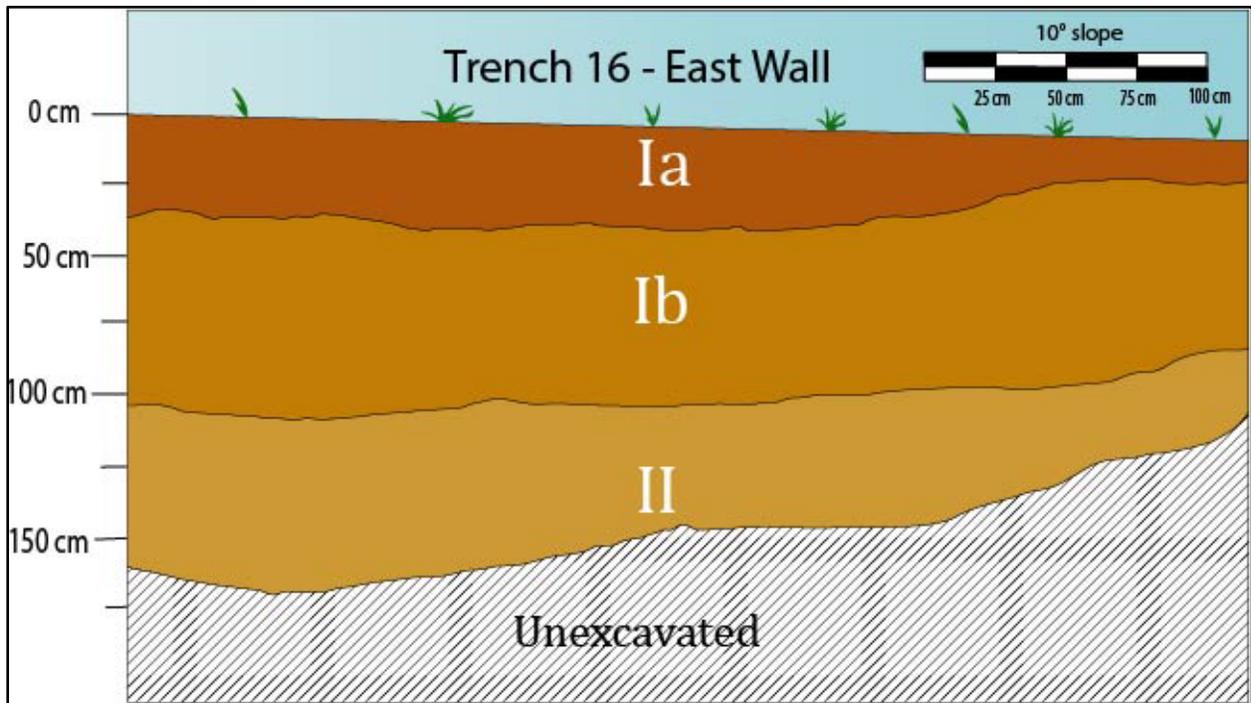


Figure 89. Trench 16 east wall profile sketch.

### 6.2.17 Trench 17

Trench 17 was located in the southwestern portion of the project area and was oriented east-west (see Figure 27). The final excavated dimensions of the trench were 510 cm long × 245 cm wide × 163 cm deep. No cultural materials were identified within the trench or vicinity. The stratigraphic sequence

consisted of three distinct strata, designated as Stratum Ia, Stratum Ib, and Stratum II (Table 27). The north wall of Trench 17 was photographed and sketched following excavation (Figure 90 and Figure 91).

**Table 27. Stratigraphic Descriptions for Trench 17.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–160 cmbs)	Dark reddish brown (2.5YR 2.5/3)	Silty clay loam; moderate, fine granular structure; moist, friable consistence; slightly plastic; common fine to medium roots; clear, smooth lower boundary.	Disturbed natural soil.
Ib (28–115 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; moderate, fine granular structure; moist, firm consistence; moderately plastic; no roots; gradual, wavy lower boundary.	Intact natural soil.
II (60–170 cmbs)	Dusky red (10R 3/4)	Clay; strong, very fine granular structure; moist, firm consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



**Figure 90. Trench 17 north wall profile photograph.**

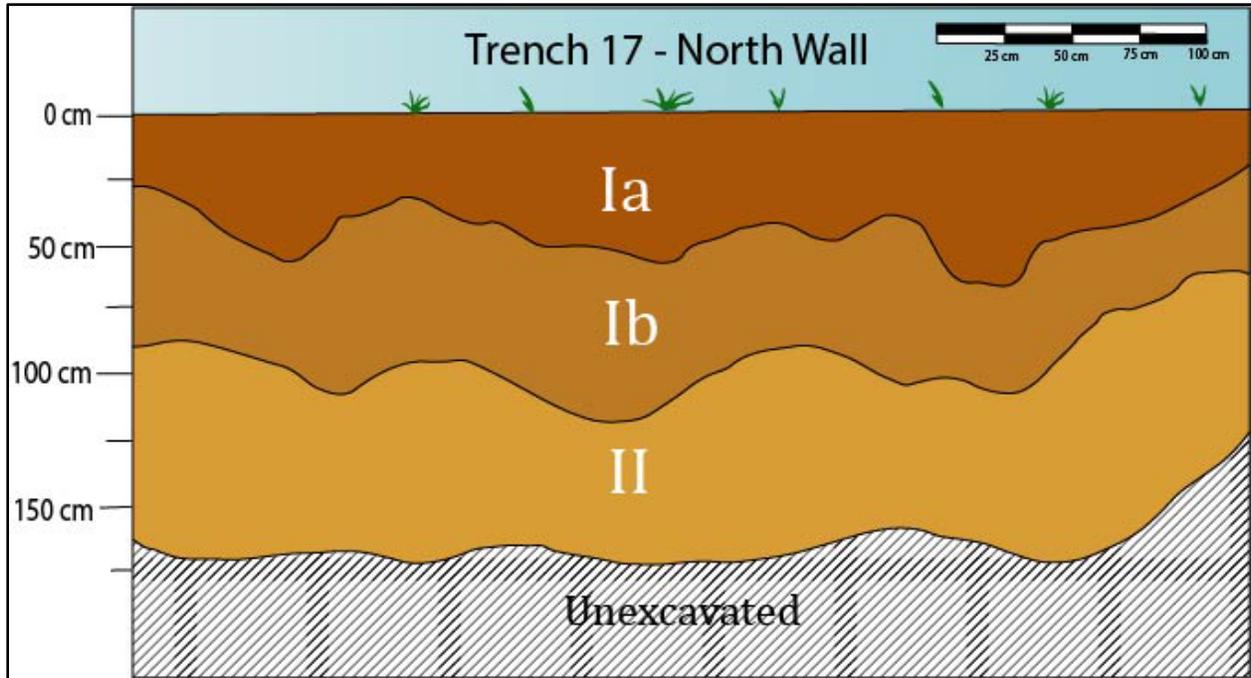


Figure 91. Trench 17 north wall profile sketch.

### 6.2.18 Trench 18

Trench 18 was oriented north-south and was located in the central western portion of the project area approximately 6 m south of Feature RK2 (irrigation ditch) of SIHP Site 50-50-80-09-02268 (irrigation ditch) (see Figure 27). The final excavated dimensions of the trench were 410 cm long × 190 cm wide × 145 cm deep. No cultural materials were identified within the trench or vicinity. The stratigraphic sequence consisted of three distinct strata, designated as Stratum Ia, Stratum Ib, and Stratum II (Table 28). The west wall of the trench was photographed and sketched following excavation (Figure 92 and Figure 93).

Table 28. Stratigraphic Descriptions for Trench 18.

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–46 cmbs)	Dark reddish brown (2.5YR 2.5/3)	Silty clay loam; weak, fine granular structure; moist, friable consistence; slightly plastic; common very fine to medium roots; clear, smooth lower boundary.	Disturbed natural soil.
Ib (8–73 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; moderate, fine granular structure; moist, firm consistence; moderately plastic; no roots; gradual, wavy lower boundary.	Intact natural soil.
II (62–145 cmbs)	Dusky red (10R 3/4)	Clay; strong, very fine granular structure; moist, firm consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



Figure 92. Trench 18 west wall profile photograph.

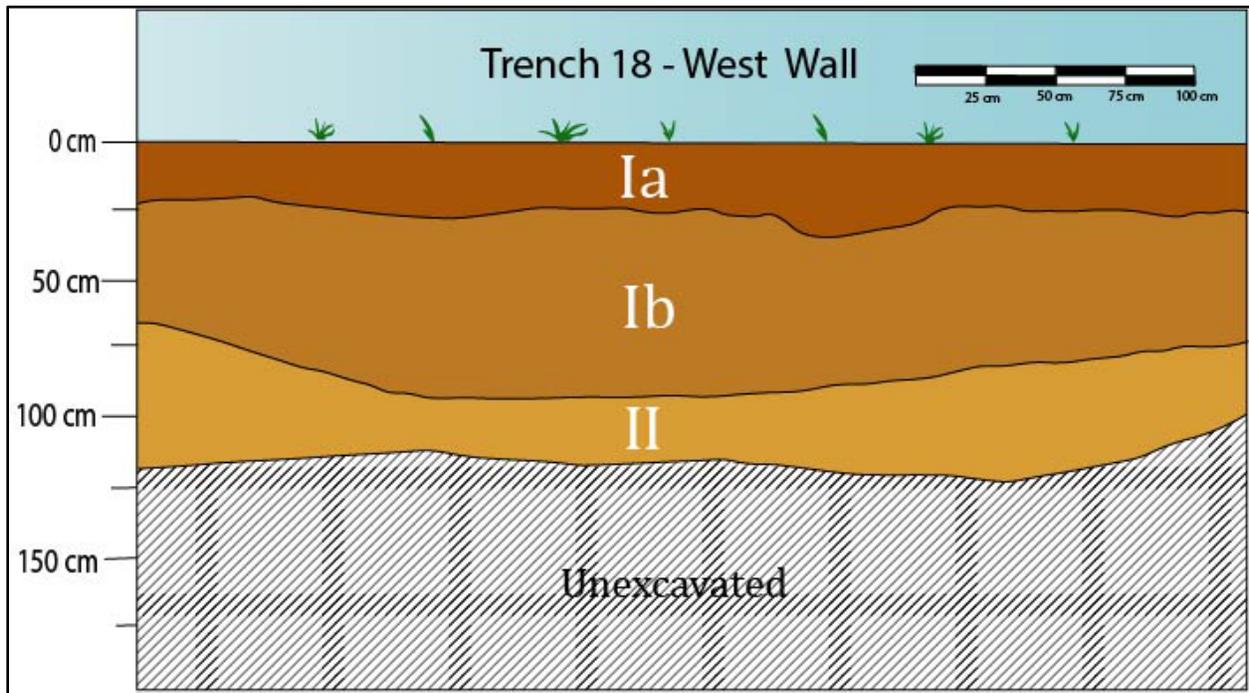


Figure 93. Trench 18 west wall profile sketch.

### 6.2.19 Trench 19

Trench 19 was located in the central portion of the project area and was oriented north-south (see Figure 27). The maximum excavated dimensions of the trench were 440 cm in length, 230 cm in width, and 140 cm in depth. No cultural constituents were identified during excavation or within the vicinity of the trench, although plastic irrigation tubing was observed on the surface of the trench prior to excavation. The stratigraphic sequence of sediments within the trench occurred in three strata (Stratum Ia, Stratum Ib, and Stratum II) (Table 29). The west wall of the trench was photographed and sketched following excavation (Figure 94 and Figure 95).

**Table 29. Stratigraphic Descriptions for Trench 19.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–55 cmbs)	Dark reddish brown (2.5YR 2.5/3)	Silty clay loam; moderate, fine granular structure; moist, very friable consistence; slightly plastic; common fine to medium roots; clear, wavy lower boundary.	Disturbed natural soil.
Ib (25–125 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; moderate, fine granular structure; moist, firm consistence; moderately plastic; no roots; gradual, wavy lower boundary.	Intact natural soil.
II (100–160 cmbs)	Dark reddish brown (5YR 3/4)	Silty clay; strong, fine granular structure; moist, very firm consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



**Figure 94. Trench 19 west wall profile photograph.**

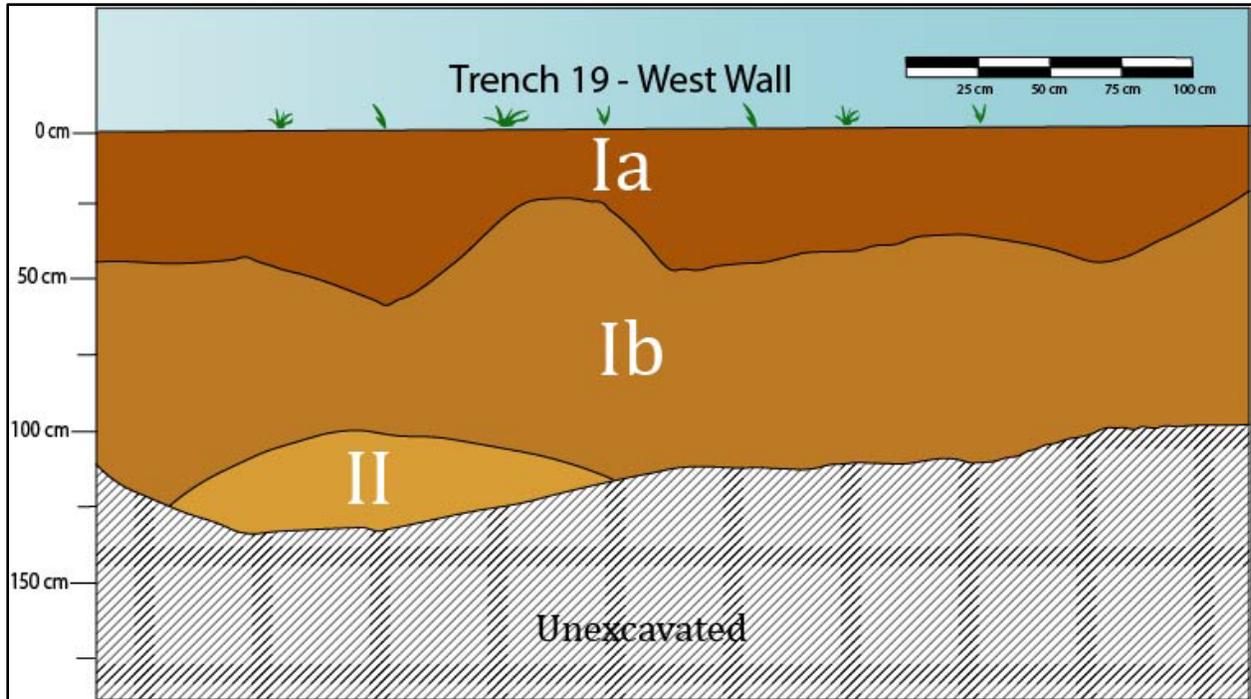


Figure 95. Trench 19 west wall profile sketch.

### 6.2.20 Trench 20

Trench 20 was located in the central southern portion of the project area and was oriented east-west (see Figure 27). A medium (approximately 10 feet tall) *Acacia confusa* tree was removed from the trench footprint prior to excavation. The maximum excavated dimensions of the trench were 460 cm in length, 225 cm in width, and 145 cm in depth. No cultural constituents were identified during excavation or within the vicinity of the trench. The stratigraphic sequence of sediments within the trench occurred in three strata (Stratum Ia, Stratum Ib, and Stratum II) (Table 30). The south wall of the trench was photographed and sketched following excavation (Figure 96 and Figure 97).

Table 30. Stratigraphic Descriptions for Trench 20.

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–60 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay loam; moderate, fine granular structure; moist, friable consistence; slightly plastic; many fine to coarse roots; clear, wavy lower boundary.	Disturbed natural soil.
Ib (20–80 cmbs)	Dark reddish brown (2.5YR 2.5/3)	Silty clay; moderate, fine granular structure; moist, firm consistence; moderately plastic; few coarse roots; abrupt, wavy lower boundary.	Intact natural soil.
II (55–145 cmbs)	Dark reddish brown (5YR 3/4)	Silty clay; strong, fine blocky structure; moist, very firm consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



Figure 96. Trench 20 south wall profile photograph.

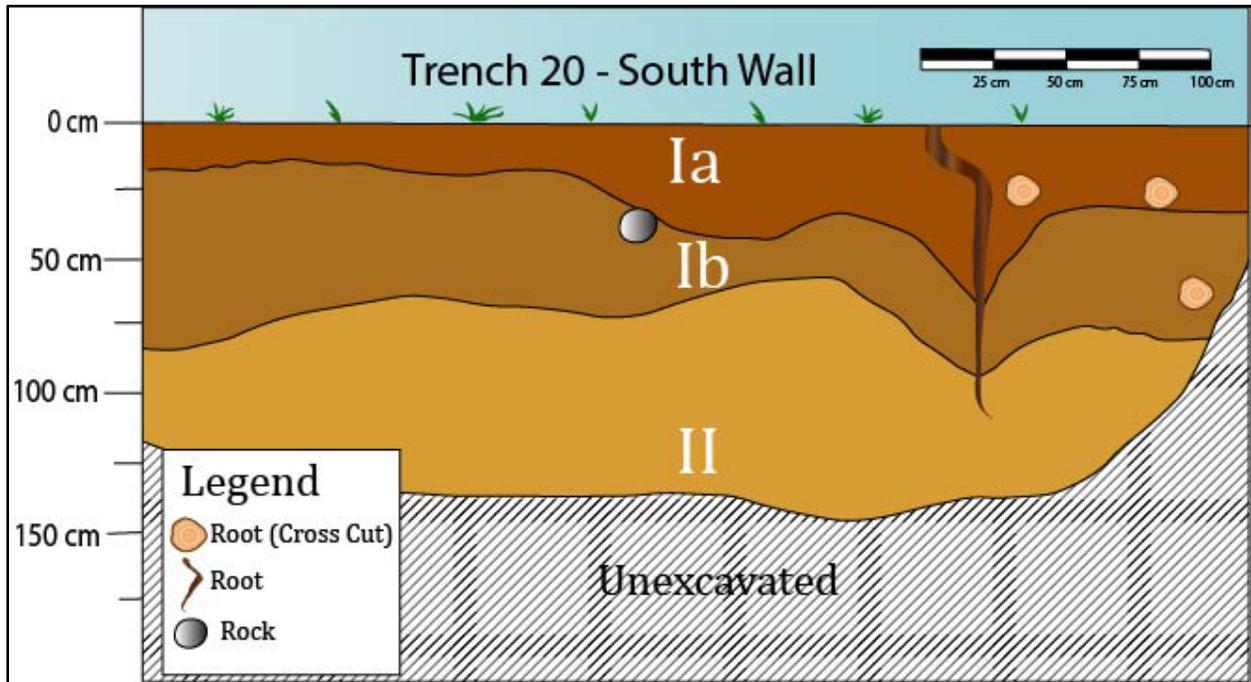


Figure 97. Trench 20 south wall profile sketch.

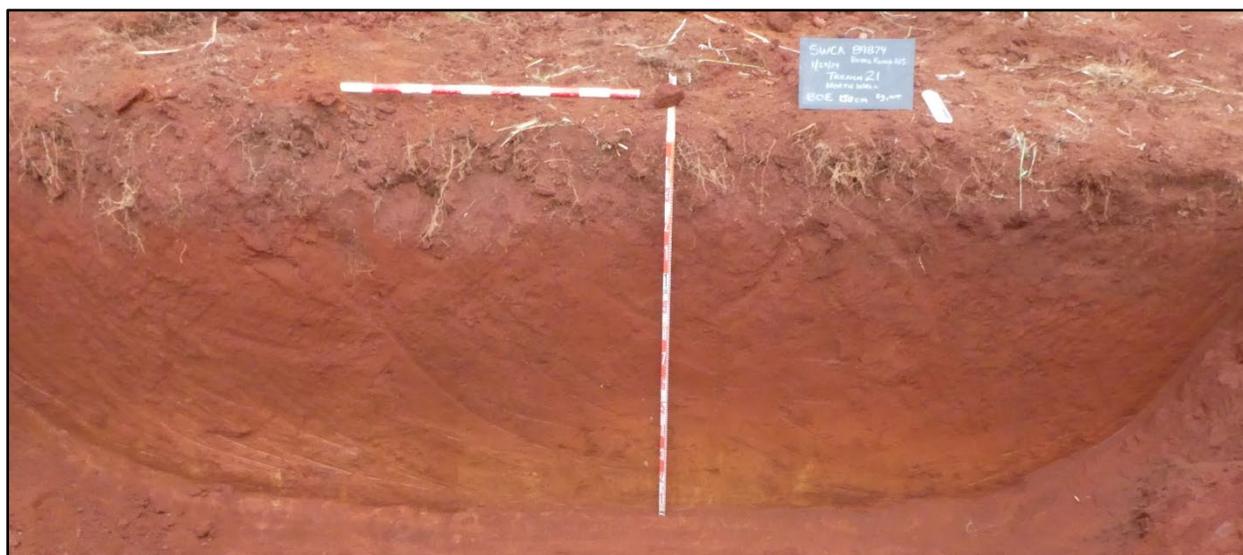
### 6.2.21 Trench 21

Trench 21 was located in the central portion of the project area approximately 25 m east of Feature 7 (road) of SIHP Site 50-80-08-07671 (see Figure 27). The trench was oriented east-west and the maximum excavated dimensions of the trench were 470 cm in length, 250 cm in width, and 150 cm in depth. No cultural constituents were identified during excavation or within the vicinity of the trench. The stratigraphic sequence of sediments within the trench occurred in three strata (Stratum Ia, Stratum Ib, and Stratum II) (Table 31). The north wall of the trench was photographed and sketched following excavation (Figure 98 and Figure 99).

**Table 31. Stratigraphic Descriptions for Trench 21.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–45 cmbs)	Dark reddish brown (2.5YR 3/4)	Silty clay; moderate, fine granular structure; moist, friable consistence; moderately plastic; many very fine to fine roots; gradual, smooth lower boundary.	Disturbed natural soil.
Ib (30–110 cmbs)	Dusky red (10R 3/4)	Silty clay; moderate, fine granular structure; moist, firm consistence; very plastic; few very fine to fine roots; abrupt, wavy lower boundary.	Intact natural soil.
II (80–135 cmbs)	Dark red (10R 3/6)	Silty clay; strong, fine granular structure; moist, very firm consistence; very plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



**Figure 98. Trench 21 north wall profile photograph.**

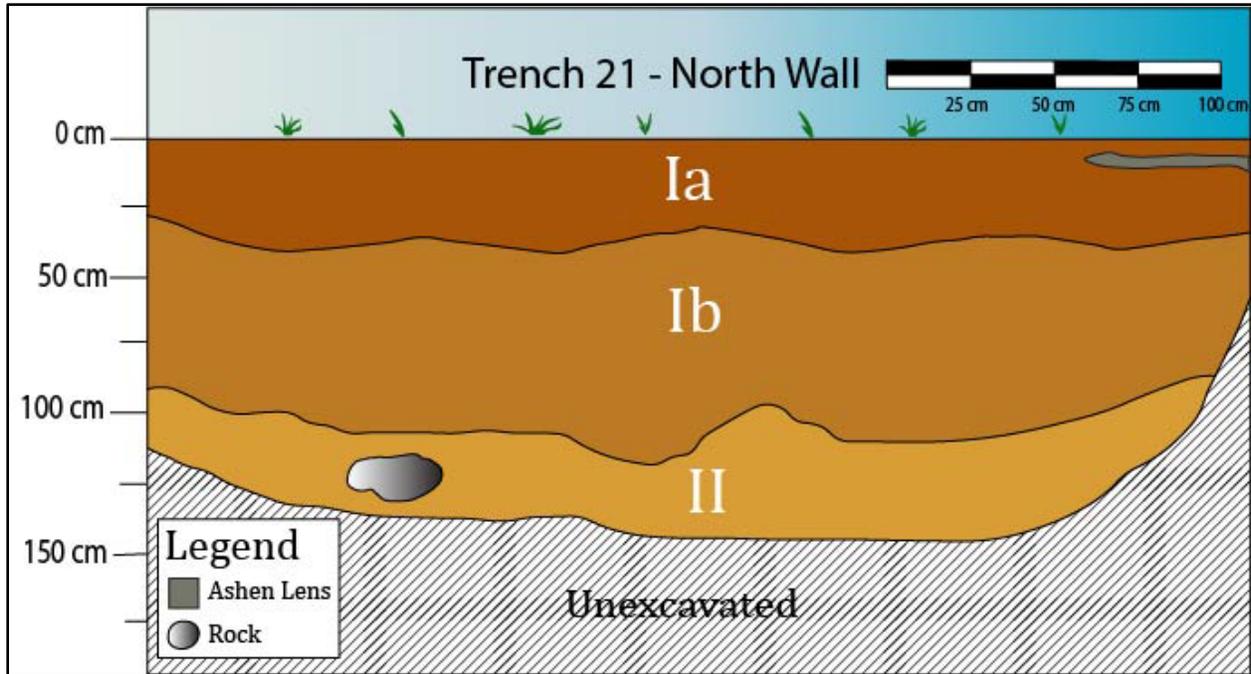


Figure 99. Trench 21 north wall profile sketch.

### 6.2.22 Trench 22

Trench 22 was oriented north-south and was located in the central eastern portion of the project area approximately 20 m west of Feature 7 (road) of SIHP Site 50-80-08-07758 (see Figure 27). The final excavated dimensions of the trench were 396 cm long  $\times$  200 cm wide  $\times$  150 cm deep. No cultural materials were identified within the trench or vicinity, although two small 1-inch-thick concrete slab fragments were observed from 25 to 30 cmbs which were photographed but not collected (Figure 100). The stratigraphic sequence consisted of three distinct strata, designated as Stratum Ia, Stratum Ib, and Stratum II (Table 32). The east wall of the trench was photographed and sketched following excavation (Figure 101 and Figure 102).



**Figure 100. One of the two concrete slab fragments observed within Stratum Ia of Trench 22.**

**Table 32. Stratigraphic Descriptions for Trench 22.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–74 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay loam; weak, fine granular structure; moist, friable consistence; slightly plastic; common very fine roots; clear, wavy lower boundary.	Disturbed natural soil.
Ib (27–43 cmbs)	Dark red (2.5YR 3/6)	Silty clay; moderate, very fine granular structure; moist, friable consistence; slightly plastic; few fine roots; gradual, wavy lower boundary.	Intact natural soil.
II (112–145 cmbs)	Red (2.5YR 4/8)	Clay; strong, very fine granular structure; moist, firm consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



Figure 101. Trench 22 east wall profile photograph.

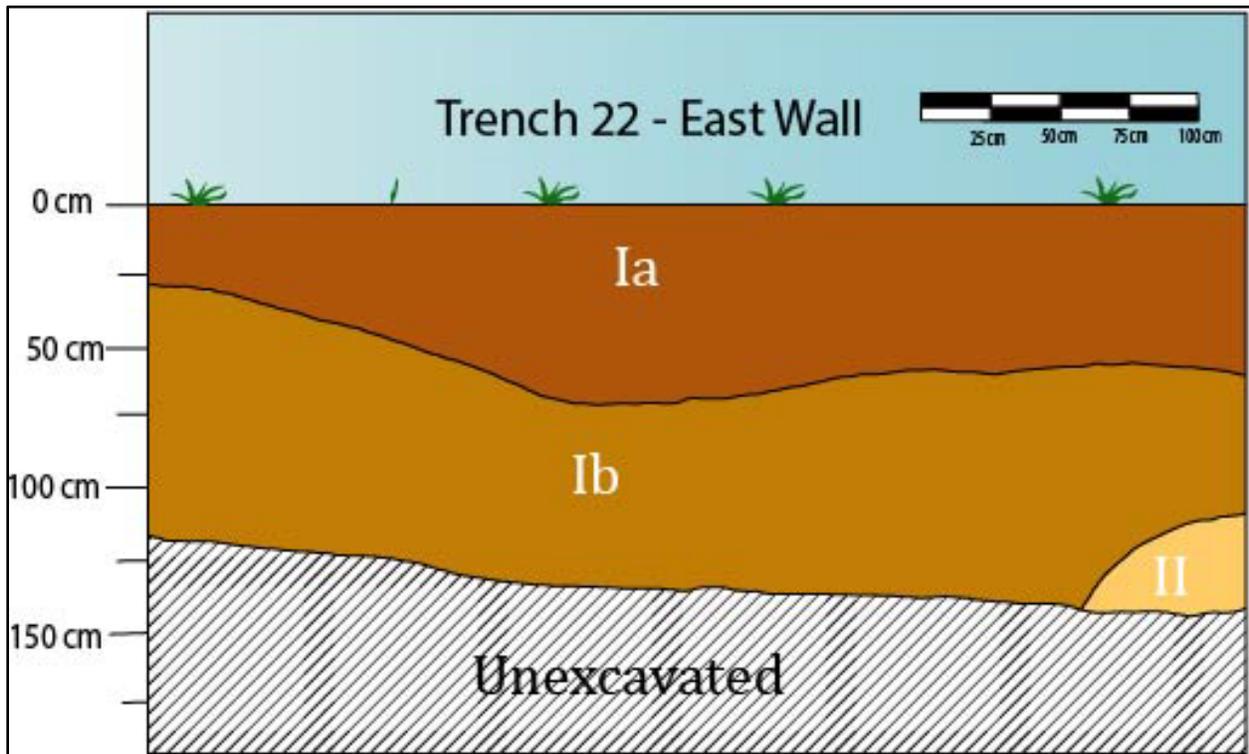


Figure 102. Trench 22 east wall profile sketch.

### 6.2.23 Trench 23

Trench 23 was located in the southeasternmost portion of the project area where Feature 7 (road) of SIHP Site 50-80-08-07758 terminates at the project area boundary (see Figure 27). Non-native gravels and modern trash were noted on the surface of the trench prior to excavation including green bottle glass, plastic irrigation pipe and tubing, and a rusted spray paint can which were photographed but not collected (Figure 103). The excavation took place in the location of a former gravel-crushing operation and several large pre-cast concrete box culverts were located in the vicinity (Figure 104). The trench was oriented

north-south and the maximum excavated dimensions were 470 cm in length, 220 cm in width, and 158 cm in depth. No cultural constituents were identified during excavation, although an abandoned 2-inch-diameter plastic irrigation pipe crossed through the length of the trench footprint from southeast to northwest at a depth of 50 cmbs. The stratigraphic sequence included three strata: Stratum Ia, Stratum Ib, and Stratum II (Table 33). The east wall of the trench was photographed and sketched following excavation (Figure 105 and Figure 106).



**Figure 103. Modern trash from the surface of Trench 23 and segment of plastic irrigation pipe (lower right of frame) noted during excavation.**



**Figure 104. Post-excitation overview of Trench 23 showing pre-cast concrete box culverts in vicinity, view to the southeast.**

**Table 33. Stratigraphic Descriptions for Trench 23.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–15 cmbs)	Dark reddish brown (2.5YR 2.5/3)	Silty clay; weak, fine granular structure; moist, loose consistence; slightly plastic; common fine to medium roots; clear, broken lower boundary.	Disturbed natural soil.
Ib (0–54 cmbs)	Dark reddish brown (10R 3/6)	Silty clay; moderate, fine granular structure; moist friable consistence; moderately plastic; no roots; clear, smooth lower boundary.	Intact natural soil.
II (46–78 cmbs)	Dark red (10R 3/6)	Silty Clay; moderate, very fine granular structure; moist, firm consistence; moderately plastic; no roots, lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



Figure 105. Trench 23 east wall profile photograph.

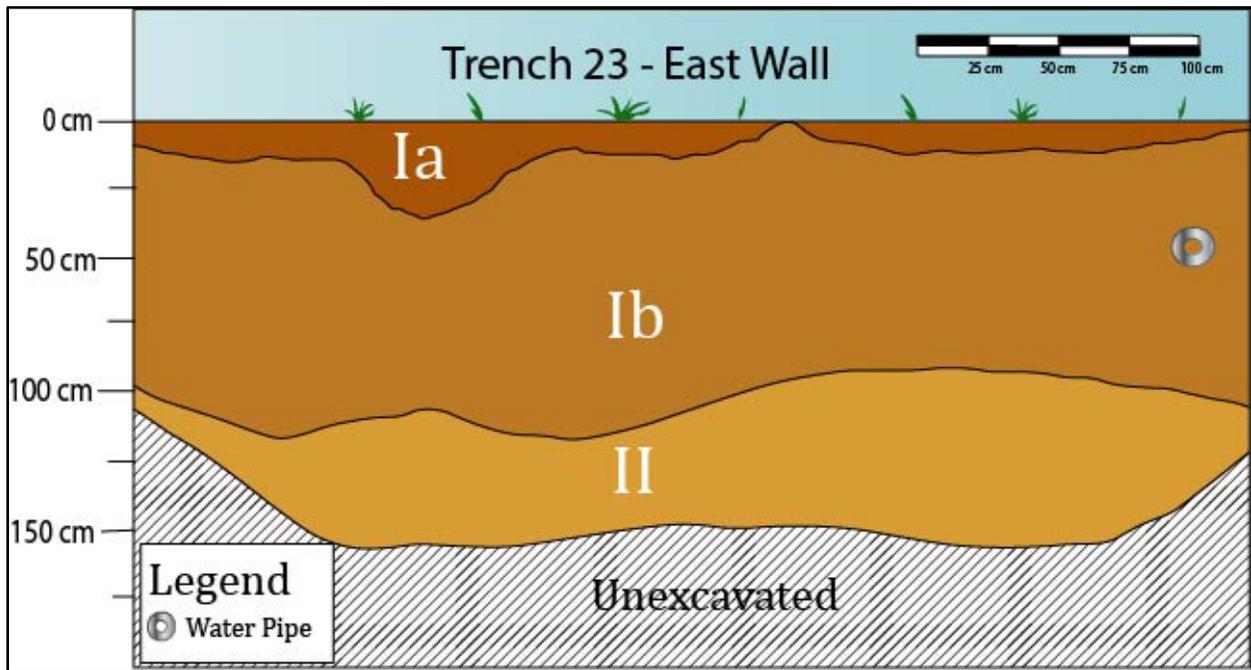


Figure 106. Trench 23 east wall profile sketch.

### 6.2.24 Trench 24

Trench 24 was located near the northern boundary of the project area where SIHP Sites 50-80-08-07758 (road) and 50-80-08-07761 (road) enter the project area (see Figure 27). The trench was situated on the southeastern edge of a very large (30 m in diameter and more than 10 m tall) pile of darkened sediments interspersed with crushed coral, concrete, and asphalt rubble (Figure 107). This pile likely represents the demolition and stockpiling of surfacing material associated with the roadways in the vicinity. Trench 24 was oriented east-west and the maximum excavated dimensions were 520 cm in length, 190 cm in width, and 110 cm in depth. No cultural constituents were identified during excavation. Three strata (Stratum I to

Stratum III) were present in Trench 24 including the uppermost stratum (Stratum I) which represented the disturbed ground surface beneath the deflating pile (Table 34). The north wall of the trench was photographed and sketched following excavation (Figure 108 and Figure 109).



**Figure 107. Post-excavation photograph of Trench 24 showing large pile rising in background beyond exposure, view to the west.**

**Table 34. Stratigraphic Descriptions for Trench 24.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
I (0–30 cmbs)	Dark red (2.5YR 3/6)	Clay loam; moderate, fine granular structure; moist, loose consistence; moderately plastic; common fine roots; gradual, wavy lower boundary.	Disturbed natural soil.
II (12–100 cmbs)	Dusky red (10R 3/6)	Clay loam; moderate, fine granular structure; moist, friable consistence; moderately plastic; no roots; clear, smooth lower boundary.	Intact natural soil.
III (30–110 cmbs)	Dusky red (10R 3/6)	Clay; strong, medium blocky structure; dry, hard consistence; moderately plastic; no roots, lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



Figure 108. Trench 24 north wall profile photograph.

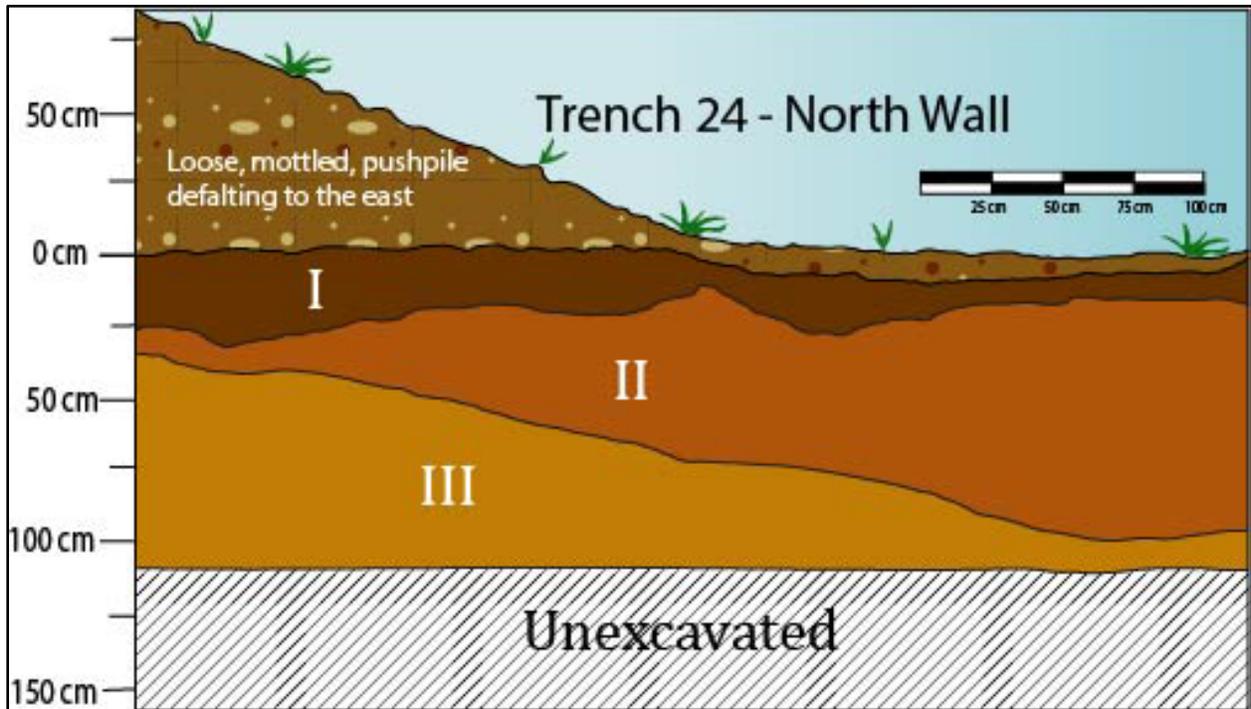


Figure 109. Trench 24 north wall profile sketch.

### 6.2.25 Trench 25

Trench 25 was located in the central portion of the project area between Feature 7 (road) of SIHP Sites 50-80-08-07758 and 50-80-08-07671 (road) (see Figure 27) and was situated in a dense grove of haole koa trees. The trench was oriented east-west and the maximum excavated dimensions were 410 cm in length, 220 cm in width, and 145 cm in depth. No cultural constituents were identified during excavation or within the vicinity of the trench, although plastic irrigation tubing related to more recent agricultural activities were noted in the upper 20 cm of the exposure. The sediments within the trench comprised three strata: Stratum Ia, Stratum Ib, and Stratum II (Table 35). The south wall of the trench was photographed and sketched following excavation (Figure 110 and Figure 111).

**Table 35. Stratigraphic Descriptions for Trench 25.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
1a (0–30 cmbs)	Dark red (2.5YR 3/6)	Clay loam; weak, fine, granular structure; moist, loose consistence; slightly plastic; common fine to medium roots; gradual, wavy lower boundary.	Disturbed natural soil.
1b (25–80 cmbs)	Red (2.5YR 4/6)	Clay loam; moderate, fine granular structure; moist, firm consistence; moderately plastic; no roots; clear, smooth lower boundary.	Intact natural soil.
II (50–140 cmbs)	Red (2.5YR 4/6)	Clay; strong, medium blocky structure; dry, very hard consistence; moderately plastic; no roots, lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



**Figure 110. Trench 25 south wall profile photograph.**

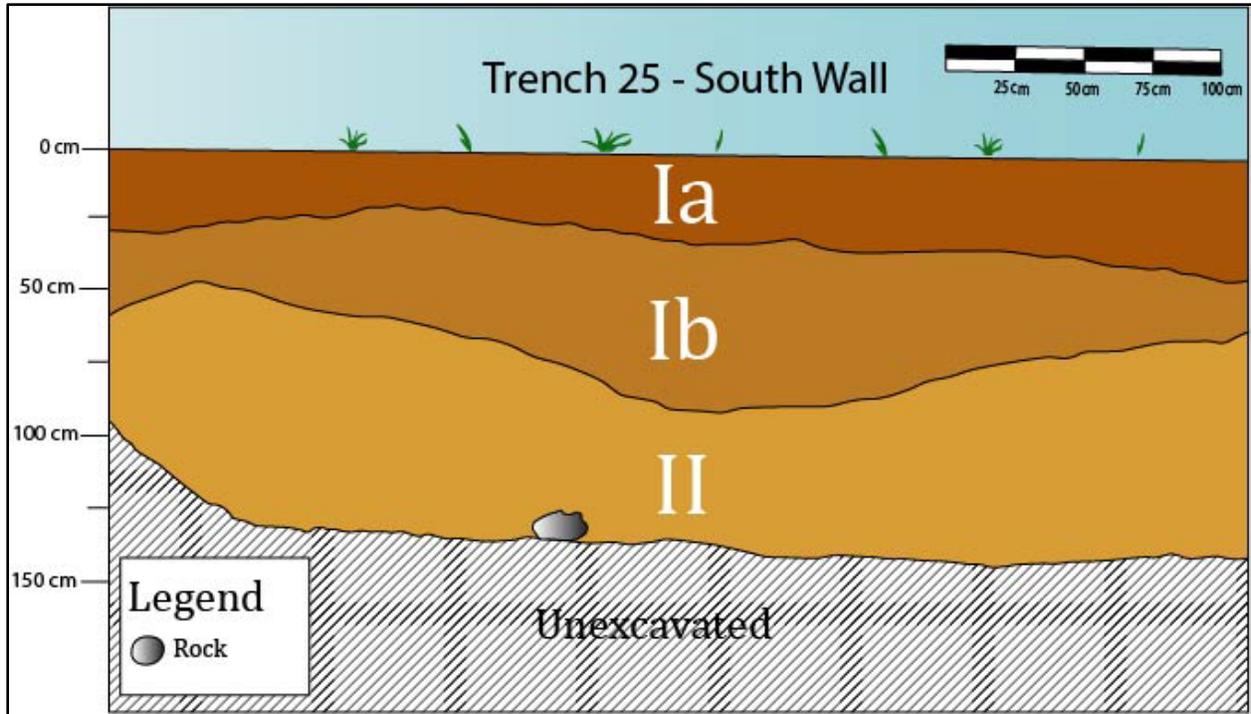


Figure 111. Trench 25 south wall profile sketch.

### 6.2.26 Trench 26

Trench 26 was located in the northern portion of the project area between Feature 3 (road) of SIHP Site 50-80-08-07671 and Feature 7 (road) of SIHP Site 50-80-08-07758 (see Figure 27). The trench was oriented north-south and the maximum excavated dimensions of Trench 26 were 420 cm in length, 210 cm in width, and 144 cm in depth. No cultural constituents were identified during excavation or within the vicinity of the trench. The stratigraphic profile comprised three strata (Stratum Ia, Stratum Ib, and Stratum II) (Table 36) The east wall of the trench was photographed and sketched following excavation (Figure 112 and Figure 113).

Table 36. Stratigraphic Descriptions for Trench 26.

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–70 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay loam; weak, fine granular structure; moist, very friable consistence; slightly plastic; many very fine to medium roots; gradual, wavy lower boundary.	Disturbed natural soil.
Ib (35–120 cmbs)	Dark red (2.5YR 3/6)	Silty clay; moderate, fine granular structure; moist, friable consistence; slightly plastic; few very fine roots; clear, wavy lower boundary.	Intact natural soil.
II (60–125 cmbs)	Red (2.5YR 4/6)	Silty clay; moderate, fine to medium granular structure; moist, firm consistence; moderately plastic; no roots, lower boundary not visible.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



Figure 112. Trench 26 east wall profile photograph.

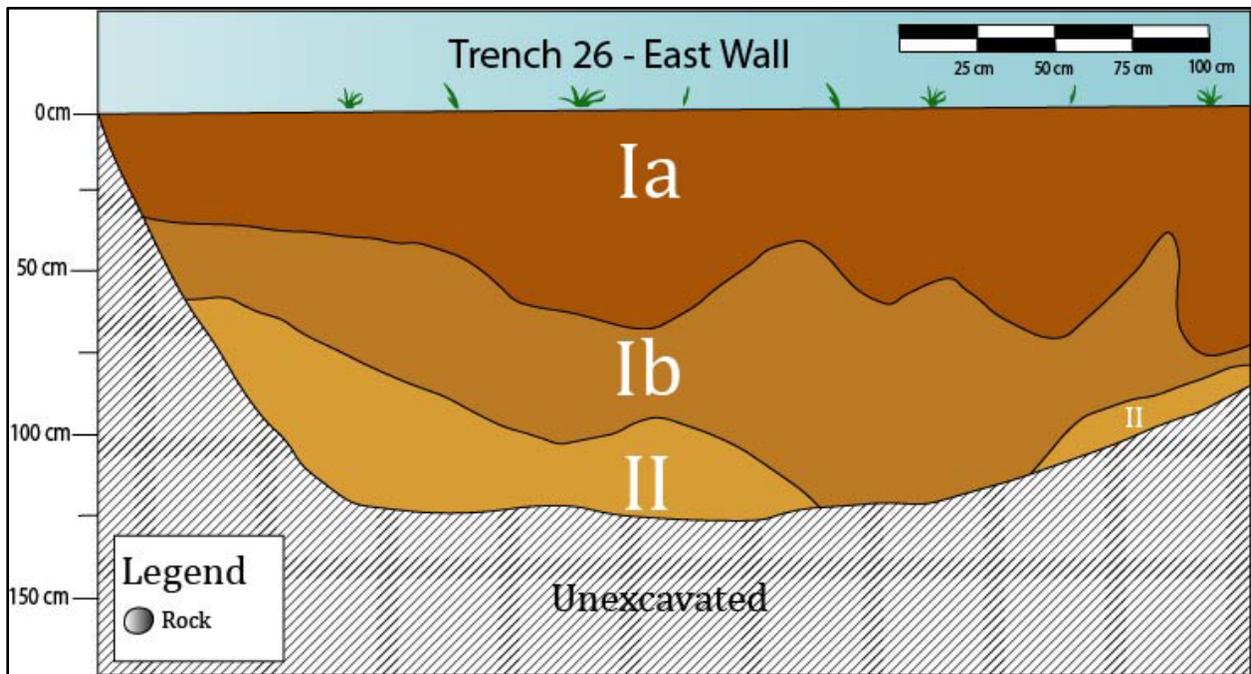


Figure 113. Trench 26 east wall profile sketch.

### 6.2.27 Trench 27

Trench 27 was located in the central northern portion of the project area approximately 30 m east of Feature 3 (road) of SIHP Site 50-80-08-07671 (see Figure 27). The trench was oriented east-west and the maximum excavated dimensions were 493 cm in length, 254 cm in width, and 153 cm in depth. No cultural constituents were identified during excavation or within the vicinity of the trench, although sparse fragments of plastic irrigation tubing related to more recent agricultural activities were noted in the

upper 20 cm of the exposure. The stratigraphic profile included two strata (Stratum Ia and Stratum Ib) (Table 37). The south wall of the trench was photographed and sketched following excavation (Figure 114 and Figure 115).

**Table 37. Stratigraphic Descriptions for Trench 27.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–37 cmbs)	Dark reddish brown (2.5YR 2.5/3)	Silty clay loam; weak, fine granular structure; moist, very friable consistence; slightly plastic; many very fine roots; abrupt, wavy lower boundary.	Disturbed natural soil.
Ib (18–80 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; moderate, fine granular structure; moist, friable consistence; slightly plastic; few very fine roots; lower boundary not observed.	Intact natural soil.

Note: cmbs = centimeters below the surface



**Figure 114. Trench 27 south wall profile photograph.**

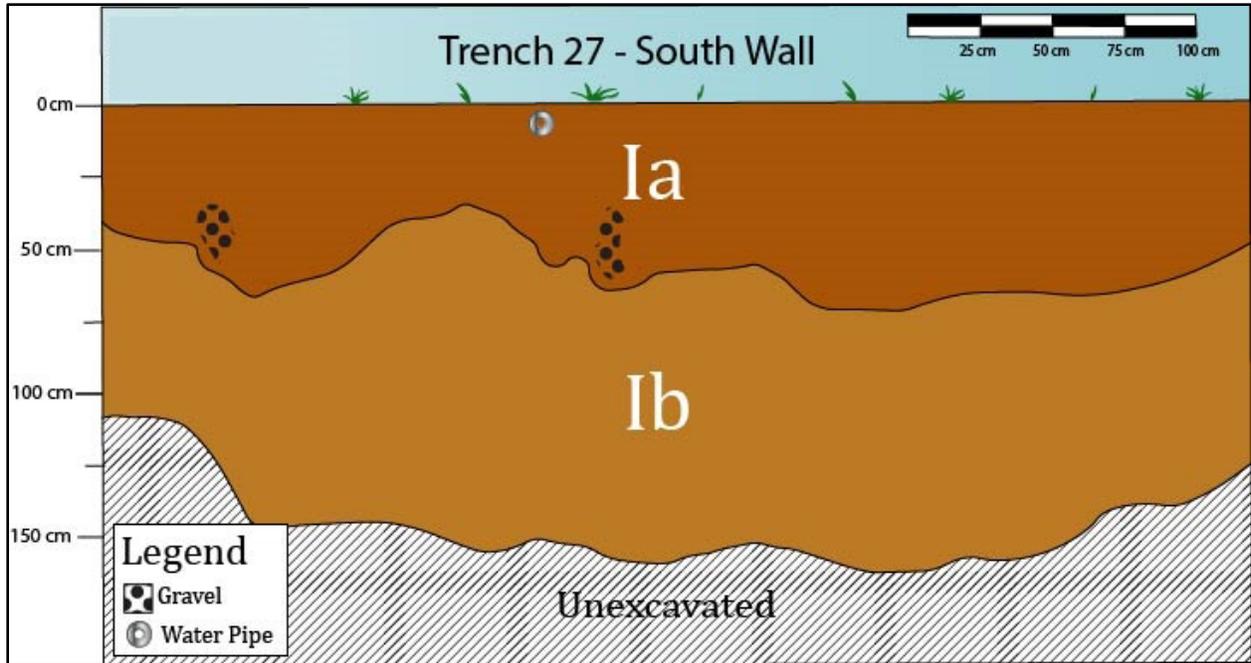


Figure 115. Trench 27 south wall profile sketch.

### 6.2.28 Trench 28

Trench 28 was located in the central northern portion of the project area and was oriented north-south (see Figure 27). The maximum excavated dimensions of Trench 28 were 400 cm in length, 200 cm in width, and 135 cm in depth. No cultural constituents were identified during excavation or within the vicinity of the trench. The sediments within the trench (Table 38) were in three strata designated Stratum Ia, Stratum Ib, and Stratum II. The east wall of the trench was photographed and sketched following excavation (Figure 116 and Figure 117).

Table 38. Stratigraphic Descriptions for Trench 28.

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–21 cmbs)	Dark reddish brown (2.5YR 2.5/3)	Silty clay loam; weak, fine granular structure; moist, friable consistence; slightly plastic, common very fine to fine roots; clear, smooth lower boundary.	Disturbed natural soil.
Ib (25–73 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; weak, fine granular structure; moist, friable consistence; slightly plastic; few very fine roots; clear, broken lower boundary.	Intact natural soil.
II (58–71 cmbs)	Dusky red (10R 3/3)	Silty clay; moderate, very fine granular structure; moist, firm consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



Figure 116. Trench 28 east wall profile photograph.

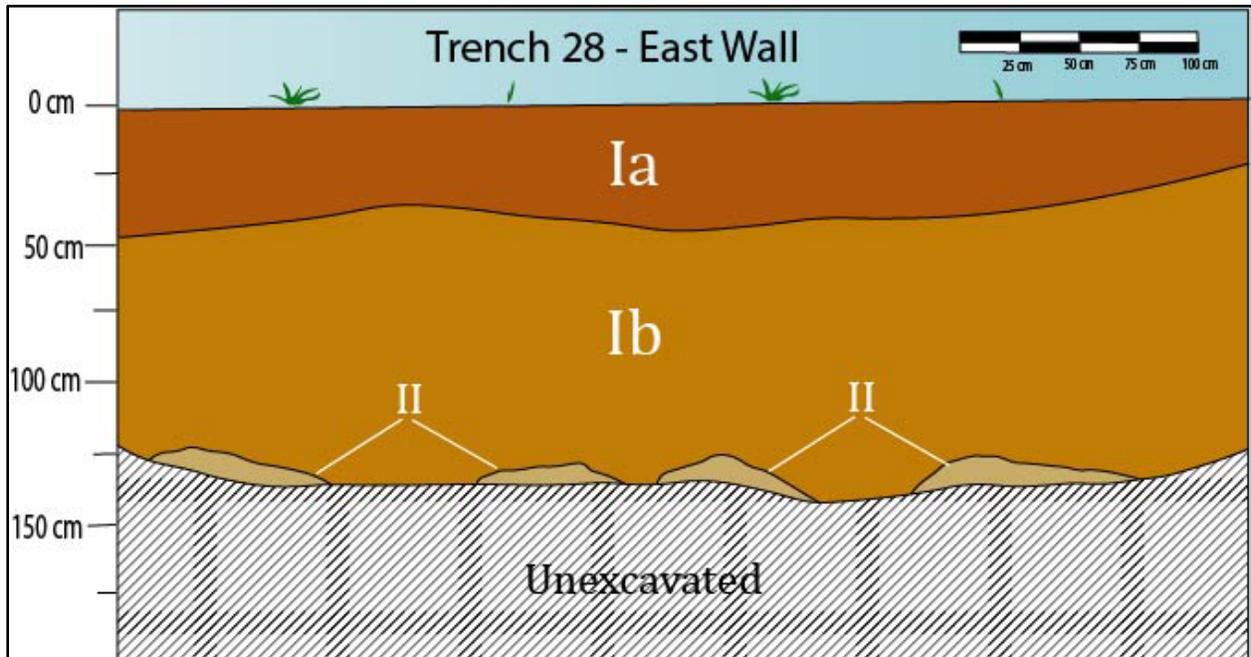


Figure 117. Trench 28 east wall profile sketch.

### 6.2.29 Trench 29

Trench 29 was located in the central eastern portion of the project area and was oriented north-south (see Figure 27). The maximum excavated dimensions of Trench 29 were 460 cm in length, 260 cm in width, and 152 cm in depth. No cultural constituents were identified during excavation or within the vicinity of the trench. The sediments within the trench were in three strata: Stratum Ia, Stratum Ib, and Stratum II (Table 39). The west wall of the trench was photographed and sketched following excavation (Figure 118 and Figure 119).

**Table 39. Stratigraphic Descriptions for Trench 29.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
1a (0–20 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay loam; moderate, very fine granular structure; moist, friable consistence; slightly plastic; common very fine to medium roots; clear, smooth, lower boundary.	Disturbed natural soil.
1b (9–53 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; moderate, fine granular structure; moist, firm consistence; moderately plastic; no roots; gradual, wavy lower boundary.	Intact natural soil.
II (21–75 cmbs)	Dark reddish brown (5YR 3/4)	Silty clay; strong, very fine blocky structure; moist, very firm consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.



**Figure 118. Trench 29 west wall profile photograph.**

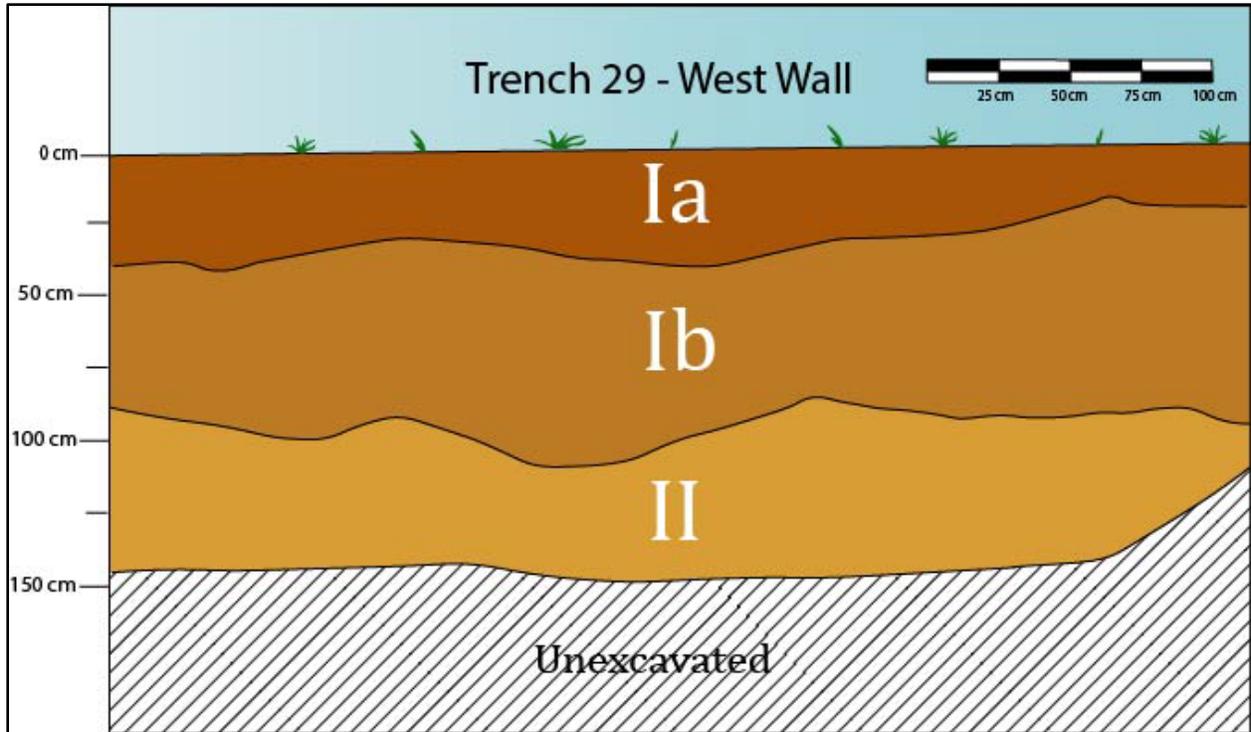


Figure 119. Trench 29 west wall profile sketch.

### 6.2.30 Trench 30

Trench 30 was located along the eastern perimeter of the project area and was oriented east-west (see Figure 27). The excavation took place amidst intermittent rains. The maximum excavated dimensions of Trench 30 were 460 cm in length, 250 cm in width, and 157 cm in depth. No cultural constituents were identified during excavation or within the vicinity of the trench. The stratigraphy consisted of three strata designated Stratum Ia, Stratum Ib, and Stratum II (Table 40). The north wall of the trench was photographed and sketched following excavation (Figure 120 and Figure 121).

Table 40. Stratigraphic Descriptions for Trench 30.

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–14 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; moderate, fine granular structure; moist, firm consistence; moderately plastic; no roots; gradual, broken lower boundary.	Disturbed natural soil.
Ib (0–65 cmbs)	Dark red (10R 3/6)	Silty clay; moderate, very fine granular structure; moist, firm consistence; moderately plastic; no roots; gradual, wavy lower boundary.	Intact natural soil.
II (36–81 cmbs)	Dark reddish brown (5YR 3/4)	Silty clay; strong, very fine granular structure; moist, very firm consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



Figure 120. Trench 30 north wall profile photograph.

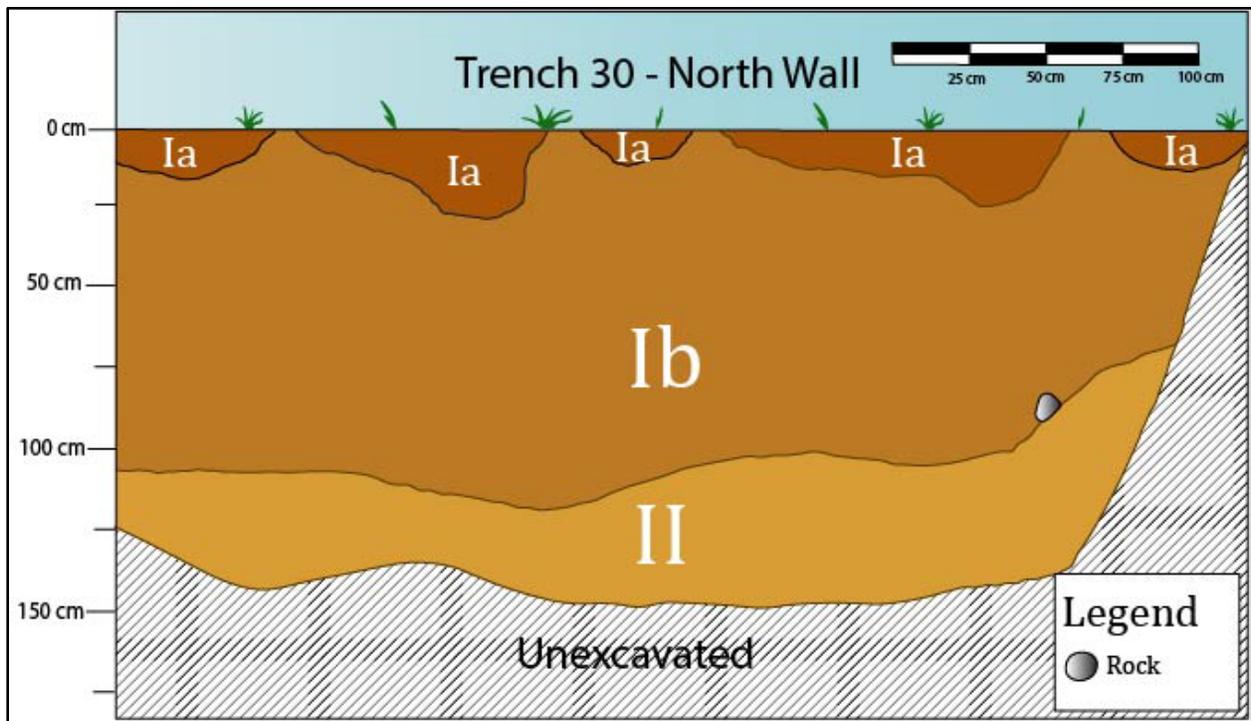


Figure 121. Trench 30 north wall profile sketch.

### 6.2.31 Trench 31

Trench 31 was located in the northernmost portion of the project area approximately 35 meters east of Feature 3 (road) of SIHP 50-80-08-07671 (see Figure 27). The trench was oriented east-west and the maximum excavated dimensions were 460 cm in length, 260 cm in width, and 163 cm in depth. Intermittent rains were reported prior to and during trench excavations. No cultural constituents were identified during excavation or within the vicinity of the trench, although sparse fragments of black plastic sheeting related to more recent agricultural activities was noted in the upper 30 cm of the exposure. The stratigraphic sequence included three strata designated Stratum Ia, Stratum Ib, and Stratum II (Table 41). The south wall of the trench was photographed and sketched following excavation (Figure 122 and Figure 123).

**Table 41. Stratigraphic Descriptions for Trench 31.**

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–30 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; moderate, very fine granular structure; moist, firm consistence; slightly plastic; few fine roots; gradual, broken lower boundary.	Disturbed natural soil.
Ib (12–78 cmbs)	Dark red (2.5YR 3/6)	Silty clay; moderate, very fine granular structure; moist, firm consistence; moderately plastic; no roots; gradual, wavy lower boundary.	Intact natural soil.
II (60–80 cmbs)	Dusky red (10R 3/4)	Silty clay; strong, very fine granular structure; moist, very firm consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



**Figure 122. Trench 31 south wall profile photograph.**

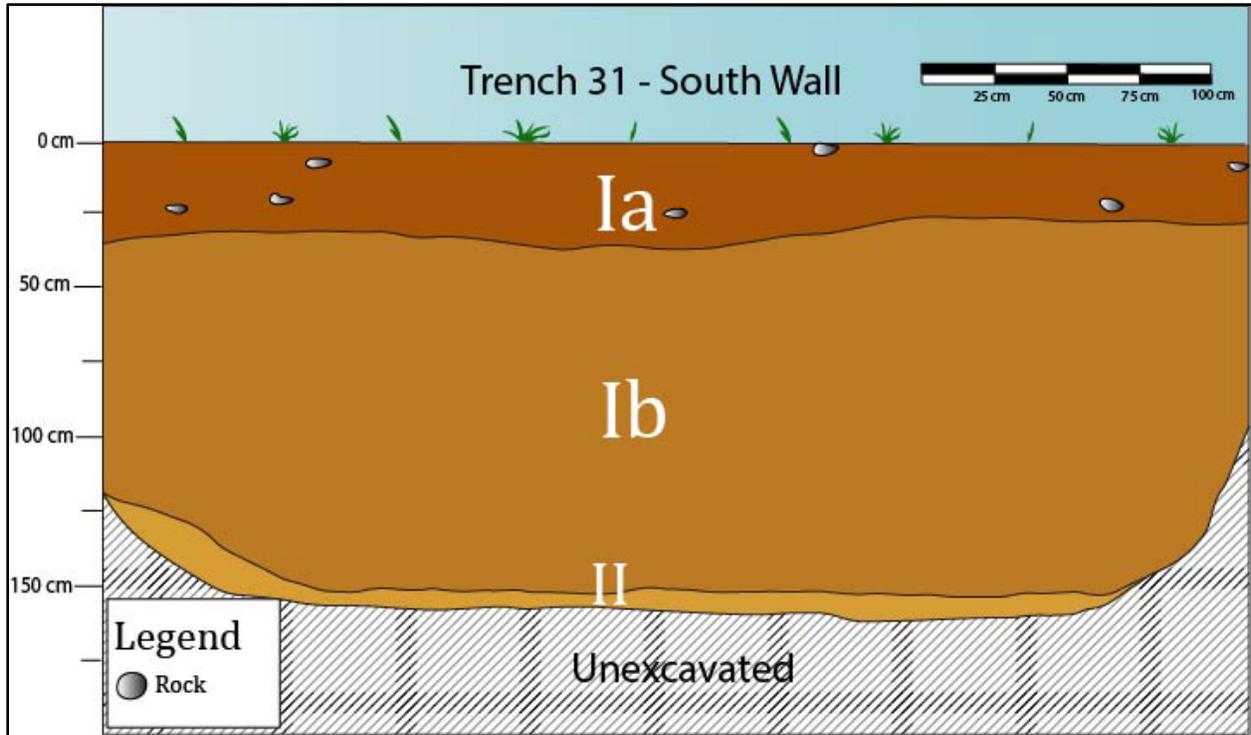


Figure 123. Trench 31 south wall profile sketch.

### 6.2.32 Trench 32

Trench 32 was oriented north-south and was located along the eastern boundary of the project area (see Figure 27). The final excavated dimensions of the trench were 515 cm long × 260 cm wide × 163 cm deep. No cultural materials were identified within the trench or vicinity, although small fragments of black plastic sheeting were observed within the upper 30 cm of the exposure. The stratigraphic sequence consisted of three distinct strata, designated as Stratum Ia, Stratum Ib, and Stratum II (Table 42). The east wall of the trench was photographed and sketched following excavation (Figure 124 and Figure 125).

Table 42. Stratigraphic Descriptions for Trench 32.

Stratum (Depth)	Munsell Color (Value)	Description	Interpretation
Ia (0–46 cmbs)	Dark reddish brown (2.5YR 2.5/3)	Silty clay loam; weak, fine granular structure; wet, slightly sticky consistence; slightly plastic; common very fine to medium roots; abrupt, wavy lower boundary.	Disturbed natural soil.
Ib (8–73 cmbs)	Dark reddish brown (2.5YR 2.5/4)	Silty clay; moderate, fine granular structure; moist, friable consistence; moderately plastic; no roots; gradual, wavy lower boundary.	Intact natural soil.
II (62–83 cmbs)	Dusky red (10R 3/4)	Clay; strong, very fine granular structure; moist, firm consistence; moderately plastic; no roots; lower boundary not observed.	Intact natural subsoil.

Note: cmbs = centimeters below the surface



Figure 124. Trench 32 east wall profile photograph.

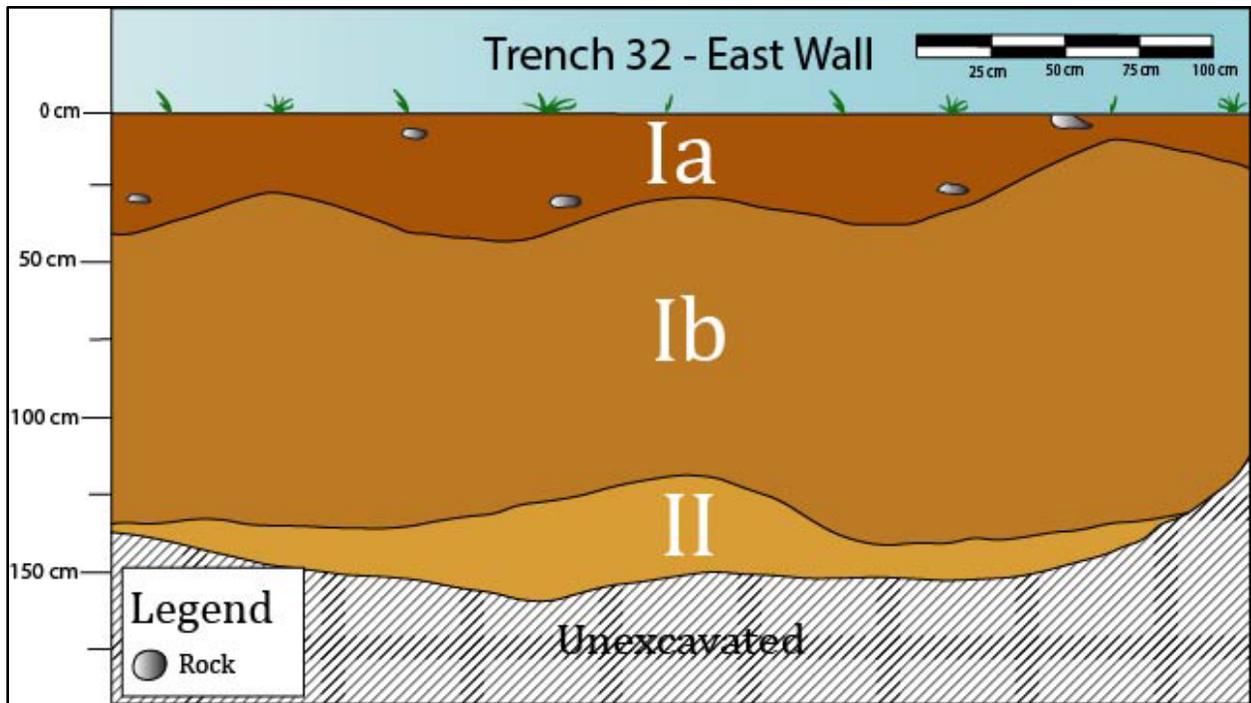


Figure 125. Trench 32 east wall profile sketch.

### 6.3 Stratigraphic Investigation

The stratigraphy was generally very consistent throughout the project area, comprising dark reddish brown to dark red silty clay sediments usually occurring in 3 distinct strata. These included Stratum Ia, a truncated, heavily disturbed silty clay loam containing a moderately developed A-horizon. Most cultural constituents recovered during subsurface testing were identified within this uppermost layer. Stratum Ib, usually present directly below Stratum Ia, represented the often intact, undisturbed portion of Stratum Ia,

although the upper boundaries of Stratum Ib sometimes showed evidence of disturbances from former land use (e.g., interspersed trash, construction debris, concrete rubble, and abrupt and truncated strata boundaries). Stratum II was a heavily compacted natural silty clay subsoil, often dry and hard. Decomposing basaltic bedrock was occasionally encountered near the base of trenches, around 5 feet below the ground surface, in the form of gravels and larger cobbles and boulders. The silty clay sediments observed throughout the project area and mapped within the larger region probably do not extend much further in depth, where bedrock is likely present at a relatively shallow depth. No evidence of traditional Hawaiian agricultural soils was encountered during the AIS.

More variation in the sediment profiles was present in trenches excavated within the boundaries of SIHP Site 50-80-08-10020 (former plantation camp). Disturbed sediments often extended deeper than those outside the plantation camp and contained more cultural constituents and recent trash.

## 7 LABORATORY RESULTS

The artifact assemblage collected during the AIS consists of 146 individual historic-era to modern objects comprised of glass, ceramic, metal, and other miscellaneous materials which were cataloged under 68 catalog numbers (CNs). No traditional Hawaiian artifacts or cultural constituents were encountered during the project. A full list containing artifact information is included in Appendix B. Most of the artifacts were collected from within trench excavation footprints, both from surface and subsurface contexts. Isolated artifacts were also collected from the surface, mostly within the boundary of SIHP Site 50-80-08-10020 (former plantation camp). Due to the high level of prior disturbances throughout the project area, the entire assemblage has likely been displaced from its original context.

### 7.1 Glass Artifacts

The glass assemblage comprises 27 cataloged objects, including historic-era and modern bottle fragments, construction materials or vehicle parts (i.e., window fragments), toys (marbles), and domestic refuse (e.g., tableware and mirror fragments). Few of the objects are temporally diagnostic. All, however, appear to represent activities associated with the range of historical land use taking place within the project area from the mid- to late-twentieth century.

CN 1 is an isolated black glass marble collected from the surface within SIHP Site 50-80-08-10020 (former plantation camp) (Figure 126). The marble is complete and has a diameter of 0.65 inch.



Figure 126. Glass marbles (CN 1 [left], CN 25 [center], and CN 32 [right]).

CN 6 are two non-diagnostic fragments of bottle glass. One fragment is a colorless body fragment with an embossed stippled texture while the second fragment is aqua in color, also representing a body fragment.

CN 8 is a square colorless bottle base fragment that appears to be manufactured by hand from a mold (Figure 127). A seam is present along the intersection of the heel and base but no side seams are present, and the thickness of the base interior is not uniform. This artifact was collected from the surface during vegetation clearance activities prior to the excavation of Trench 3 within SIHP Site 50-80-08-10020 (former plantation camp).



**Figure 127. CN 8 (colorless bottle base) showing irregular thickness of interior of base.**

CN 13 is a fragment of green, thin-walled, non-diagnostic modern bottle glass collected from the surface prior to excavation of Trench 7 within SIHP Site 50-80-08-10020 (former plantation camp).

CN 17 are two oxidized fragments of mirrored glass collected from the surface prior to excavation of Trench 7 within SIHP Site 50-80-08-10020 (former plantation camp).

CN 19 are 3 fragments of amber, thin-walled, non-diagnostic modern bottle glass collected from the surface prior to excavation of Trench 7 within SIHP Site 50-80-08-10020 (former plantation camp).

CN 21 and 24 are modern glass fragments collected from a screened (1/4-inch) sample excavated adjacent to Trench 7. CN 21 are 16 fragments of modern, non-diagnostic bottle glass (14 amber and two aqua-colored) and CN 24 are two small window glass fragments of different thicknesses.

CN 25 is an isolated light-blue glass marble collected from the surface during vegetation clearance activities in the vicinity of Trench 10 within SIHP Site 50-80-08-10020 (former plantation camp) (see Figure 126). The marble is complete and has a diameter of 0.58 inch.

CN 26 is an isolated colorless glass bottle or jar base fragment collected from the surface during vegetation clearance activities in the vicinity of Trench 6 within SIHP Site 50-80-08-10020 (former plantation camp). The heel is embossed with a repeating asterisk (\*) design while the base is stippled and embossed “3762”.

CN 27 are two fragments of non-diagnostic, modern bottle glass collected from Stratum Ic (0–25 cmbs) within Trench 8 at SIHP Site 50-80-08-10020 (former plantation camp). Trench 8 was excavated to investigate a push pile which contained a few historic-era artifacts but was otherwise found to be interspersed with modern trash from more recent opportunistic dumping episodes. One fragment is colorless and has a side seam while the other fragment is aqua-colored, both are body fragments.

CN 30 are two fragments of non-diagnostic bottle glass collected from the surface prior to excavation of Trench 12 within SIHP Site 50-80-08-10020 (former plantation camp). Both fragments are amber in color and include a partial base fragment embossed with “-1” or “1-” (the orientation of the text is indeterminate as no top serif/tail is present on the “1”) and a body fragment.

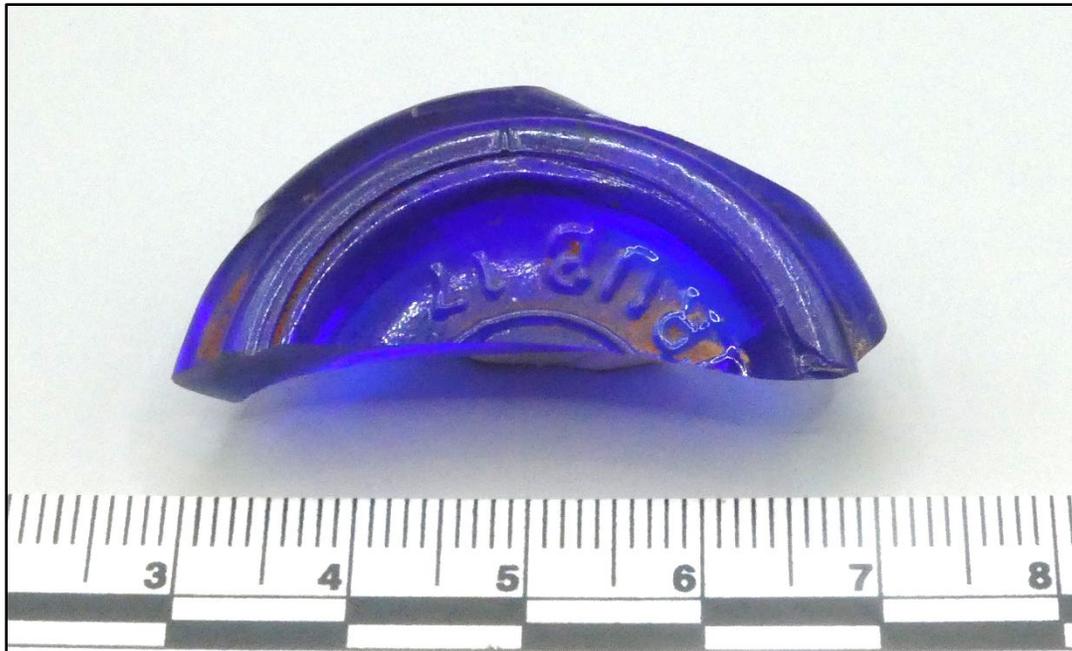
CN 32 is an isolated glass marble collected from the excavated spoils of Stratum Ia in within Trench 5 at SIHP Site 50-80-08-10020 (former plantation camp) (see Figure 126). The marble is white with blue swirling and has a diameter of 0.62 inch.

CN 35 is a glass bottle body fragment collected from Stratum Ia in within Trench 11 at SIHP Site 50-80-08-10020 (former plantation camp). Two partial letters are embossed on the fragment, one of them likely representing an “R”. This appears to be a modern object, possibly representing a beverage or liquor bottle.

CN 41, 42, and 43 are non-diagnostic modern glass objects collected from Strata I and II within Trench 2 at SIHP Site 50-80-08-10020 (former plantation camp). Trench 2 was excavated to investigate a push pile which contained a few historic-era artifacts but was otherwise found to be littered with modern trash from more recent opportunistic dumping episodes. CN 41 is a shard of mirrored glass, CN 42 is five fragments of window glass from at least two different objects, and CN 43 are two fragments of colorless, non-diagnostic bottle glass comprised of one base and one body fragment.

CN 50 is a non-diagnostic glass bottle body fragment collected from the north sidewall of Trench 9 at SIHP Site 50-80-08-10020 (former plantation camp). The fragment originated from 28 cmbs within Stratum Ib.

CN 51 is a partial cosmetic/medicine jar (in two fragments) collected from the excavated spoils associated with Strata Ia and Ib within Trench 9 at SIHP Site 50-80-08-10020 (former plantation camp). The two fragments refit to form a partial base and heel portion of a cobalt blue Vicks VapoRub jar with the base portion embossed “...RUB 17” (Figure 128). The “17” indicates the mold number. These common jars were produced beginning in 1911, with this particular object representing the more recent “Type 4” bottle, produced from the mid-1960s until 1983.



**Figure 128. CN 51 (Vicks VapoRub jar fragment) showing embossing.**

CN 52 is a Woodbury brand “Beauty Cream” jar fragment manufactured from milk glass with a banded geometric embossed motif (Figure 129). This style of jar was advertised beginning in the 1940s. The cross-section is not uniform in thickness. This isolated artifact was collected from the surface in the vicinity of Trench 9 at SIHP Site 50-80-08-10020 (former plantation camp).



**Figure 129. CN 52 (Woodbury brand Beauty Cream fragment).**

CN 53 is a non-diagnostic fragment of amber bottle glass, likely originating from a beverage bottle. This isolated artifact was collected from the surface in the vicinity of Trench 9 at SIHP Site 50-80-08-10020 (former plantation camp).

CN 57 are modern bottle glass fragments collected from Stratum Ia (0–40 cmbs) within Trench 7 at SIHP Site 50-80-08-10020 (former plantation camp). The vicinity of Trench 7 was found to be littered with modern trash from more recent opportunistic dumping episodes. CN 57 includes seven amber fragments (five body, two base), 14 light green fragments (13 body, one base), one colorless body and one aqua body fragment.

CN 58 are nine mirrored glass fragments collected from Stratum Ia (0–40 cmbs) within Trench 7 at SIHP Site 50-80-08-10020 (former plantation camp). Trench 7 was excavated to investigate a push pile which contained a few historic-era artifacts but was otherwise found to be littered with modern trash from more recent opportunistic dumping episodes. These mirror fragments, originating from at least two different objects based on their thicknesses, are likely related to CN 17 (mirror fragments collected from the surface of Trench 7).

CN 61 is a neck/finish bottle fragment with its screw cap still adhered. This object was collected from Stratum Ia (0–40 cmbs) within Trench 7 at SIHP Site 50-80-08-10020 (former plantation camp). Trench 7 was excavated to investigate a push pile which contained a few historic-era artifacts but was otherwise found to be littered with modern trash from more recent opportunistic dumping episodes. A small fragment of the object has been broken off but refits. This object represents a modern beverage bottle fragment.

CN 62, 63, and 65 were collected from Stratum Ia within Trench 8 at SIHP Site 50-80-08-10020 (former plantation camp). Trench 8 was excavated to investigate a push pile which contained a few historic-era artifacts but was otherwise found to be littered with modern trash and construction debris from more recent opportunistic dumping episodes. CN 62 are 21 fragments of modern green bottle glass, CN 63 is a solarized window glass fragment, and CN 65 is a partial amber machine-made bottle base fragment embossed with five concentric rings surrounding an underlined “11”.

## **7.2 Ceramic Artifacts**

The ceramic assemblage includes 12 cataloged objects comprised of construction materials (drainpipe, electrical insulators, and tile fragments) and residential refuse (ceramic tableware, flowerpot). Few of the objects are temporally diagnostic, but all appear related to the range of land use taking place within the project area from the mid- to late-twentieth century.

CN 4 are 3 porcelain fragments collected from the surface within SIHP Site 50-80-08-10020 (former plantation camp). The fragments are fairly thick (0.35 to 0.47 inch) and are not uniform in cross-section, indicating they may originate from an irregularly shaped household fixture such as a sink or toilet.

CN 5 is a celadon ware cup fragment represented by the partial base and lower portion of the vessel (Figure 130). This object may represent an Asian-import ceramic, possibly the base of a Japanese teacup. No maker's marks are present on the cup fragment but concentric banding in green and blue are present on the body portion. This object was collected from the excavated spoils associated with Stratum Ib within Trench 14, the only trench excavated within the former plantation-era reservoir (SIHP Site 50-80-08-09385) within the project area.



**Figure 130. CN 5 (cup fragment).**

CNs 11, 31, 36, 47, 59, and 67 are glazed drainpipe fragments collected from multiple locations within SIHP Site 50-80-08-10020 (former plantation camp) (Figure 131). These objects were recovered from both surface and subsurface contexts and were collected from the upper strata in Trenches 7, 8, 9, 11, and 12. Both interior and exterior surfaces are glazed and likely represent sewer or drain lines associated with the structures once present within the camp.



**Figure 131. Glazed ceramic drainpipe fragments (CN 67 [lower left], CN 36 [lower center and right], and CN 11 [top row]).**

CN 12 are 13 tableware fragments that appear to originate from a single object, a small stoneware plate or saucer (Figure 132). The object is beige with brown concentric banding around its rim. A partial blue maker's mark stamped on the underside reads "onecrest® / n-Table-Freezer / che (in cursive) / LLECTION". This object appears to be a JI Stonecrest branded piece of tableware, which was produced in Korea in the 1970s.



**Figure 132. CN 12 (ceramic tableware fragments).**

CN 14 and 20 are two ceramic fragments collected from the surface prior to the excavation of Trench 7 within SIHP Site 50-80-08-10020 (former plantation camp). CN 14 has a tan glaze with one rounded and one straight margin which are also finished with glaze, indicating this object may represent a semicircular decorative wall or countertop tile (Figure 133). The underside has unfinished grooves to accommodate installation with grout. CN 20 is a particularly thick (0.5 inch) flat ceramic fragment that is glazed white on one side. No grooves are present that would indicate this object is a floor tile, so it may have originated from a household fixture such as a toilet tank or sink.



**Figure 133. CN 14 (tile fragment).**

CN 29 is a tube-style insulator fragment manufactured from porcelain (Figure 134). This object was collected from Stratum Ic (5 cmbs) during excavation of Trench 8 within SIHP Site 50-80-08-10020 (former plantation camp). This household insulator is likely associated with the structures once present within the plantation camp, indicating that at least some of the structures were electrified.



**Figure 134. Porcelain insulators (CN 29 [right] and CN 54 [left]).**

CN 44 is a pink-glazed tile fragment. The underside has grooves to accommodate installation with grout. This object was collected from within the upper layers of a push pile investigated during excavation of Trench 2.

CN 45 is a small (1 cm long) fragment of white improved earthenware. This object is glazed on both sides and likely represents a fragment of tableware. This object was collected from within the upper layers of a push pile investigated during excavation of Trench 2.

CN 49 is a fragment of red brick collected from the surface prior to excavation of Trench 9 within SIHP Site 50-80-08-10020 (former plantation camp).

CN 54 is a knob-style insulator fragment manufactured from porcelain (see Figure 134). This object was collected from the surface during vegetation clearance activities in the vicinity of Trench 9 within SIHP Site 50-80-08-10020 (former plantation camp). This household insulator is likely associated with the structures once present within the plantation camp, indicating that at least some of the structures were electrified.

CN 55 is a thin-walled terracotta fragment likely originating from a flowerpot. This object was collected from the surface during vegetation clearance activities in the vicinity of Trench 9 within SIHP Site 50-80-08-10020 (former plantation camp).

CN 64 is a small (2 cm long) fragment of white improved earthenware. This object is glazed on both sides and likely represents a fragment of tableware. This object was collected from within the upper layer (Stratum Ia) of a push pile investigated during excavation of Trench 8.

### **7.3 Metal Artifacts**

The metal assemblage comprises 13 CNs comprising 26 individual objects including hardware and construction materials (pipe, nails, bolts, wire, railroad spike), modern trash (license plate frame), currency (quarter-dollar coin), and unidentified ferrous metal fragments (possibly associated with agricultural or habitation activities). Few of the objects are temporally diagnostic but appear to represent the range of land use within the project area from the early to late nineteenth century.

CN 2 is a “Standing Liberty” quarter-dollar coin featuring the goddess of Liberty on one side and a flying eagle on the other. These coins, manufactured from an alloy containing 90% silver and 10% copper, were minted between 1916 and 1930 and include three distinct designs produced during this period (Type 1, Type 2, and Type 3). While the date has been worn off this particular coin (Figure 135), the centered positioning of the eagle on its obverse side indicates it is a Type 2 or Type 3 (Figure 136), which were produced from 1917 to 1930. This isolated object was found on the surface of a roadway within SIHP Site 50-80-08-10020 (former plantation camp).



Figure 135. Obverse side of CN 2 (“Standing Liberty” quarter-dollar coin) showing the goddess Liberty (production date stamp below the figure’s feet has been worn off).



Figure 136. Reverse side of CN 2 (“Standing Liberty” quarter-dollar coin).

CN 3 is an occupational badge produced for Civil Engineers of the U.S. Air Force. The design features a winged gear wheel and compass surrounded by a wreath beneath a star (Figure 137). The two pins on the back of the badge are missing. This badge is a modern object, designed in 1993 and first produced in 1995.



**Figure 137. CN 3 (occupational badge for Civil Engineers of the U.S. Air Force).**

CN 7 is a square-headed bolt or rivet fragment that is broken along its shaft (Figure 138). The bolt head is irregular as is the diameter of the shaft when viewed in profile. This appears to be a hand-made piece of hardware, possibly originating from agricultural equipment or railroad components, and dating from the earlier period of the plantation.



**Figure 138. CN 7 (bolt or rivet fragment).**

CN 9 is a ferrous metal water spigot attached to a short segment of broken pipe (Figure 139). The handle to control the valve is missing. The object is heavily corroded and was collected from the surface within SIHP Site 50-80-08-10020 (former plantation camp). This household-sized spigot likely originated from one of the structures once present within the camp.



**Figure 139. CN 9 (ferrous metal water spigot).**

CN 10 is a complete rail spike that was likely bent during its removal when the railroad was demolished (Figure 140). The spike is fairly slender compared to other common rail spikes, supporting the fact that the railroad segment once present within the project area was a narrow-gauge railroad, similar to others documented across O'ahu.



**Figure 140. CN 10 (rail spike).**

CN 15 is a stainless steel license plate frame fragment collected from the surface prior to excavation of Trench 7 within SIHP Site 50-80-08-10020 (former plantation camp). The object is represented by the upper right portion of the frame and is embossed “RIGHT HERE IN TOWN”. The phrase “Serves you right here in town” was a marketing slogan used in the 1990s by Pfleuger Honda.

CN 34 are three heavily corroded ferrous metal pipe fragments collected from a disturbed stratigraphic layer (Stratum Ia, 0–40 cmbs) within Trench 7 at SIHP Site 50-80-08-10020 (former plantation camp). This is the only metal object collected from a subsurface context and was likely related to irrigation or water supply infrastructure for the structures once present within the camp.

CN 37, 38, 39, and 40 were collected from a push pile investigated by Trench 2 within SIHP Site 50-80-08-10020 (former plantation camp). CN 37 is a pipe wall fragment, CN 38 are two wire fragments, CN 39 is a can seam fragment, and CN 40 are four wire nails of different sizes. These objects likely represent rubbish and construction debris associated with the demolition of the camp structures.

CN 46 is an unidentified object comprised of a thick, rectangular fragment of ferrous metal and several dislodged fragments collected from the surface prior to excavation of Trench 9 within SIHP Site 50-80-08-10020 (former plantation camp). This object may be a machine or irrigation component associated with former plantation activities.

CN 66 are two identical 3.5-inch wire nails collected from a push pile investigated by Trench 8 within SIHP Site 50-80-08-10020 (former plantation camp).

## **7.4 Miscellaneous Materials**

Several objects manufactured from miscellaneous materials were collected for analysis including road base course/paving material (marine shell/“crushed coral”), fragments of tableware, a toy, and an unidentified object (plastic), construction debris (concrete), and roofing material and possible slag/coal (asphalt/tar). All of these objects were collected from trenches situated within SIHP Site 50-80-08-10020 (former plantation camp).

CN 16 is a McDonald’s Happy Meal toy collected from the surface prior to excavation of Trench 7 within SIHP Site 50-80-08-10020 (former plantation camp) (Figure 141). The object is in the shape of a radio and is made of molded purple plastic embossed with “Sound Machine” and the McDonald’s logo on the front and “© 1993 McDonalds Corp. / China WH 06” on the back. The toy also functioned as a whistle.



**Figure 141. CN 16 (McDonald's Happy Meal toy).**

CN 18 is a rim fragment from a children's plastic plate. The rim is printed with letters of the alphabet ("N O P Q R S T U V"). This object was collected from the surface prior to excavation of Trench 7 within SIHP Site 50-80-08-10020 (former plantation camp).

CN 22 are two irregularly shaped fragments of bituminous material, possibly representing slag or coal (Figure 142). It is unknown if metalwork was conducted locally on-site (e.g., during installation of the railroad that once trended through the project area, or for constructing and/or maintaining industrial agricultural equipment), but these may be by-products (slag) of the metalworking process. These objects could also represent remnants of fossil fuel (coal) that may have been used to power a locomotive, or to fuel furnaces or steam engines that may have been used during agricultural activities.



**Figure 142. CN 22 (coal or slag fragments).**

CN 23 is an unidentified object manufactured from a thin (0.05 inch) white piece of plastic collected from a screened (1/4-inch) sample excavated adjacent to Trench 7 within SIHP Site 50-80-08-10020 (former plantation camp). Along with other objects collected from the vicinity of this trench, this object is likely the result of more recent opportunistic dumping episode(s).

CN 28, 56, and 68 are four fragments of marine shell (Figure 143) which were originally collected as possible dietary shell; however during fieldwork, major segments of roadways within the project area were observed to be underlain with “crushed coral,” which had been used as construction fill and as base course/surfacing material during the construction/maintenance of the roads (Figure 144). Marine shell inclusions are often found in historic-era “crushed coral” fill material used throughout O‘ahu, which originated from dredging projects in Honolulu. These heavily weathered shell fragments were collected from surface and subsurface contexts in Trench 8 and Trench 9, which were both situated in the vicinity of roadways that had used crushed coral in their construction.



Figure 143. Marine shell fragments (CN 56 [left], CN 68 [lower right], and CN 28 [upper right]).



Figure 144. Crushed coral base course observed along Feature 4 (road) of SIHP Site 50-80-08-07671 (in background beyond photo scale) near Trench 8, view to the northwest.

CN 33 is a sample fragment of bituminous (asphalt/tar) roofing material interspersed with small gravels (Figure 145). This object was collected from the surface of Trench 5 prior to excavation within SIHP Site 50-80-08-10020 (former plantation camp). A moderate amount of similar roofing material was also present in a push pile investigated during excavation of Trench 8 but was not collected. This object likely represents remnant construction materials following the demolition of structures once present within the plantation camp.



**Figure 145. CN 33 (roofing material).**

CN 48 is a small (3-inch-long) fragment of concrete collected from the surface of Trench 9 prior to excavation within SIHP Site 50-80-08-10020 (former plantation camp). This object appears to be manufactured from a local mixture of cement which includes calcareous sand and small fragments of crushed shell in the matrix (Figure 146). Two sides exhibit finished surfaces which indicate the object is a portion of a 1.25-inch thick slab or pour, possibly representing a paved surface or a fragment of concrete lining from irrigation ditches and other plantation infrastructure.



Figure 146. CN 48 (concrete fragment).

## 7.5 Isolated Artifacts

Thirty-nine isolated artifacts were collected for analysis from the project area during pedestrian survey and vegetation clearance activities in the vicinity of excavated trenches (Figure 147 and Table 43). These objects were cataloged under 18 CNs. Nearly all of the isolated artifacts were collected from within the boundaries of SIHP Site 50-80-08-10020 (former plantation camp) although it is likely that these surface-collected artifacts were displaced from their original context. The artifacts collected from outside the boundary of SIHP Site 50-80-08-10020 (CNs 003, 004, 006, 007, and 010) appear to represent more recent opportunistic dumping episodes along roadways. Sparse isolated concrete debris, irrigation components, and historic-era to modern artifacts were also noted from surface and near-surface contexts within some trenches.

Table 43. Summary of Isolated Artifacts Collected for Analysis.

Catalog Number (CN)	Provenience	Description	Material	Count	Weight (g)
001	Isolate within SIHP Site 50-80-08-10020	Marble	Glass	1	5.67
002	Isolate within SIHP Site 50-80-08-10020	U.S. Coin, quarter-dollar	Silver/copper	1	5.67
003	Isolate	Military insignia	Non-ferrous metal	1	11.34
004	Isolate	Porcelain fragments	Fired clay	3	65.2
006	Isolate	Non-diagnostic bottle fragment	Glass	2	8.5

Catalog Number (CN)	Provenience	Description	Material	Count	Weight (g)
007	Isolate	Bolt fragment	Ferrous metal	1	72.29
008	Vicinity of Trench 3 within SIHP Site 50-80-08-10020	Bottle base fragment	Glass	1	49.61
009	Isolate within SIHP Site 50-80-08-10020	Water spigot	Ferrous metal	1	290.58
010	Isolate	Rail spike	Ferrous metal	1	77.96
011	Isolate within SIHP Site 50-80-08-10020	Ceramic drainpipe	Fired clay	7	275.73
012	Isolate within SIHP Site 50-80-08-10020	Decorated and undecorated white improved earthenware fragment	Fired clay	13	66.62
025	Vicinity of Trench 10 within SIHP Site 50-80-08-10020	Marble	Glass	1	4.25
026	Vicinity of Trench 6 within SIHP Site 50-80-08-10020	Bottle base fragment	Glass	1	36.85
052	Vicinity of Trench 9 within SIHP Site 50-80-08-10020	Tableware fragment	Milk glass	1	11.34
053	Vicinity of Trench 9 within SIHP Site 50-80-08-10020	Non-diagnostic bottle fragment	Glass	1	2.83
054	Vicinity of Trench 9 within SIHP Site 50-80-08-10020	Electrical insulator	Fired clay	1	14.2
055	Vicinity of Trench 9 within SIHP Site 50-80-08-10020	Terracotta fragment	Fired clay	1	24.1
056	Vicinity of Trench 9 within SIHP Site 50-80-08-10020	Road base course material	Marine shell	1	1.42



Figure 147. Isolated artifacts collected from the project area.

## 7.6 Faunal Analysis

One fragment of faunal bone (CN 60) was collected from Stratum Ia (0–40 cmbs) within Trench 7 at SIHP Site 50-80-08-10020 (former plantation camp). The bone is an ulna midsection fragment from a domestic chicken (*Gallus gallus*) and almost certainly originates from a more recent dumping episode within the immediate area. The bone is slightly polished and is nearly complete, missing both proximal and distal epiphyses (Figure 148).



Figure 148. CN 60 (chicken ulna fragment).

## 8 ARCHAEOLOGICAL RESOURCE DESCRIPTIONS

To date, SIHP Site 50-80-08-10020 (former plantation camp) is the only archaeological resource identified within the project area. No newly identified historic properties were identified during the AIS. One new feature, however, was documented within SIHP Site 50-80-08-10020 (former plantation camp) (see Section 6.1). This was a culvert wall likely associated with drainage infrastructure (Figure 149).

The site descriptions and significance evaluations of the architectural resources identified by Gerrish et al. (2021) within the project area are presented in the concomitant architectural reconnaissance level survey (Root and Gross 2024) conducted for the project.

### 8.1 SIHP Site 50-80-08-10020 (Former Plantation Camp)

Historical maps show the gradual expansion of SIHP Site 50-80-08-10020 (former plantation camp), possibly beginning as early as 1913 and continuing into the 1950s (Gerrish et al. 2021:25–31). At its greatest extent (see Figure 10 and Figure 11), the camp extended both north and south of the SIHP Site 50-80-08-07671, Feature 3 (road). The camp was subsequently completely demolished, probably sometime in the 1960s.

The SHPD review letter requested that “a more focused testing strategy needs to be developed here to determine the presence, boundaries, integrity, and significance of the former plantation camp (SWCA-65875-007).” SHPD later designated SWCA-65875-007 as SIHP Site 50-80-08-10020. SHPD also requested that information be collected on the remnant surface features of the plantation era camp site, which consist primarily of rubble piles containing structural materials (e.g., fragments of reinforced concrete foundation pads, painted/burned milled lumber fragments, and metal sheeting).

To confirm the boundary of SIHP Site 50-80-08-10020 (former plantation camp), 20 backhoe trenches were excavated within the maximum horizontal extent of the camp as it existed during the 1930s and 1940s (Figure 27). The locations of some of these trenches were moved from their originally planned position so as to investigate push piles and surface concentrations of artifacts. It was felt that these trenches might yield information on the age, function, and significance of the features and of the camp itself, as well as the relative integrity of the site.

The location of several rubble piles within SIHP Site 50-80-08-10020 (former plantation camp) were documented using GPS (Figure 149) and two piles were subjected to archaeological testing to determine the age, and possibly even the function, of the original structures (see Section 6.2.2 and 6.2.8). While the bulldozer push piles containing structural debris appear to represent the remnants of former camp structures, there is no indication that the locations of these piles represent the locations of former structures. More likely, the structures were bulldozed flat, possibly after being intentionally burned, and the debris was pushed aside into arbitrary piles as the work progressed.



Figure 149. SIHP Site 50-80-08-10020 site map showing locations of push piles and Feature 1 (culvert wall).

### **8.1.1 Analysis and Interpretation**

The cultural constituents collected from the project area during the AIS represent an assemblage associated with mid- to late-twentieth century commercial agricultural and residential activities, as well as more recent opportunistic dumping episodes. Few artifacts were collected that predate this period, but while sparse, these act to support the information already known regarding the land use history of the project area, which extends back to the early-nineteenth century. No traditional Hawaiian artifacts or features were identified, indicating that the area was probably not inhabited or cultivated prior to the Historic period.

The remnant features associated with SIHP Site 50-80-08-10020 (former plantation camp) include several rubble piles containing structural elements (e.g., reinforced concrete foundation pad rubble, painted/burned milled lumber fragments, metal sheeting, hardware, and other construction material). The distribution of these rubble piles does not appear to correspond to the locations of individual structures as depicted on historic-era maps, and these may have been intentionally burned prior to their subsequent demolition and removal (only sparse lumber was observed when compared to the abundance of foundation pad debris). These push piles are interspersed within a low density historic-era artifact scatter documented along road segments trending through the site.

The majority of artifacts correspond to the major use-period of the camp, representing a small range of residential refuse (e.g., fragmented glass bottles and ceramic tableware) and structural components including a water spigot, ceramic insulators and glazed ceramic drainpipe fragments, vehicle and electric household appliance components, colorless window glass fragments of different thicknesses, and ferrous metal fragments of unknown function). Few diagnostic artifacts were observed within SIHP Site 50-80-08-10020 (former plantation camp) including a “Standing Liberty” quarter-dollar coin, and a medicine bottle fragment.

The artifact patterning observed within the boundaries of SIHP Site 50-80-08-10020 (former plantation camp) indicates a grouping of well-built, slab-on-grade homes that were in use for several decades but have been completely demolished. The structures were electrified, had running water and plumbing, and may have been occupied by not only the predominately male workers of the camp, but also their families. This is supported by the presence of glass marbles, traditionally associated with children’s games, and a range of ceramic and glass tableware and residential refuse fragments such as the beauty cream jar (CN 52).

Male only worker camps of this period are typically represented by markedly different artifact types and features that may include a wide range of metal food cans/containers, an abundance of glass beverage (e.g., liquor and beer) bottles, and thermal features including cooking fires and refuse burn piles/pits. Further, structural features in these semi-permanent “man”/worker camps rarely feature the “creature comforts” of this period, including electrified homes with running water and plumbing constructed on well-built, reinforced concrete foundations. The camp may have been established initially in this fashion, but subsequently developed into a “modern neighborhood” typical of the 1940s and 1950s.

Artifacts were sparsely distributed throughout the project area, indicating that residential rubbish was likely transported regularly to external landfills during the occupation of SIHP Site 50-80-08-10020. Such landfills had been established on O‘ahu by this time.

### **8.1.2 Research Questions**

The subsurface testing component of the AIS was designed to address a specific set of research questions that were presented in the AIS testing strategy (Reeve 2023) that was approved by SHPD on

December 18, 2023. These research questions were developed based on the results of the Gerrish et al. (2021) study and are presented and discussed below.

1. Is there subsurface evidence of pre-Contact land use within the project area?

No evidence of pre-Contact land use was observed within any of the excavated archaeological test trenches or on the surface in the portions of the project area subjected to pedestrian surveys. Hawaiian agricultural sites are present within gulches to the east of the project area, and previous archaeological research (i.e., Riford and Cleghorn 1986; Hammatt et al. 1988) suggest that these sites avoided destruction due to their location in areas not disturbed by historic-era commercial agricultural activities. While pre-Contact activities may have certainly occurred in areas outside the confines of the gulch, including the project area, the large-scale disturbances to the project area and larger region have completely removed any evidence of said land use, if any was present.

2. Does the sediment profile within the dry gulch show evidence of the former plantation-era water reservoir?

The sediment profile of the solitary archaeological test trench excavated within the boundaries of SIHP Site 50-80-08-09385 (former reservoir) differed only slightly from most of the other test trenches excavated during the AIS. The main indication that this area was impounded with water was the presence of a plastic bag fragment which was embedded in the north wall of the excavated trench, which must have sunk and migrated through the silty clay sediments when the reservoir was filled. The only way this cultural constituent could have been buried at the observed depth would have been when the sediments were fully saturated.

3. Are there any surviving subsurface remnants of the plantation-era camp?

No subsurface remnants of the plantation camp were noted aside from sparse artifactual material, much of it representing the later use-period of the camp and/or dumping episodes that followed its demolition by 1967. One new surface feature (Feature 1, culvert wall) of SIHP Site 50-80-08-10020 was identified during the project, while the push piles investigated as potential features of the site are not archaeological features.

4. What do the artifacts recovered from the plantation-era camp say about its former inhabitants and the activities that went on there?

The paucity of cultural materials collected from within the boundaries of SIHP Site 50-80-08-10020 (plantation camp) during the AIS indicate that it is likely that families, as opposed to just male plantation workers, were living within the structures at the Oahu Sugar Company's property. This is evidenced by the presence of children's toys (historic-era marbles), residential refuse, and construction materials that indicate the structures were well-built, electrified homes with running water and plumbing (e.g., a water spigot, drain pipes, and electrical insulators). Further, the green spaces within the camp that are depicted on historic-era maps of the project area may have served as recreational spaces or small-scale agricultural plots for the camp's residents. No evidence indicating that any specific ethnicities were represented among the camp's population over the course of several decades, although some ceramics of Asian origin were collected. More detailed archival research could potentially reveal more information about the camp, including its development and construction, expansion, and eventual demolition, along with possibly employment information, names, and/or ethnicities of its resident families.

## 9 SIGNIFICANCE ASSESSMENT

The architectural historic properties in the project area are evaluated by Root and Gross (2024) and the summary results of these evaluations are listed in Table 44. This section presents an assessment of significance for the only archaeological resource (SIHP Site 50-80-08-10020 [former plantation camp]) identified in the project area, which was conducted according to the criteria below.

HAR Chapter 13-275 (HAR §13-284), *Rules Governing Procedures for Historic Preservation Review to Comment on Section 6E-42, HRS, Projects*, states that, “To be significant, a historic property shall possess integrity of location, design, setting, materials, workmanship, feeling, and association.” While SIHP Site 50-80-08-10020 possesses integrity of location alone (see Table 44), the resource is assessed for significance in Section 9.1 below. Guidelines for significance evaluation provided by the National Park Service indicate that to possess integrity, a property must retain the essential physical features that enable it to convey its historic identity (National Park Service 1995:44).

SIHP Site 50-80-08-10020 (former plantation camp) was assessed as to its integrity (see Table 44) and significance under Hawai‘i State historic preservation regulations. The State of Hawai‘i has developed a system for evaluating significance of historic properties under HAR 13-275. This system is patterned after 36 Code of Federal Regulations 60.4 and is meant to provide a framework for the evaluation of significance and potential for nomination of historic properties to the Hawai‘i Register of Historic Places (HRHP). According to HAR 13-275-6, a historic property is considered to be “any building, structure, object, district, area, or site, including *heiau* and underwater site, which is over fifty years old.”

Determination of significance is based upon the criteria laid out in HAR 13-275-6(b) as follows.

To be significant, a historic property shall possess integrity of location, design, setting, materials, workmanship, feeling, and association and shall meet one or more of the following criteria:

- (1) Criterion “a”. Be associated with events that have made an important contribution to the broad patterns of our history;
- (2) Criterion “b”. Be associated with the lives of persons important in our past;
- (3) Criterion “c”. Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;
- (4) Criterion “d”. Have yielded, or is likely to yield, information important for research on prehistory or history; or
- (5) Criterion “e”. Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity.

### 9.1 Former Plantation Camp (SIHP Site 50-80-08-10020)

The historic-era artifact scatter, culvert wall feature, and site of the former plantation camp (SIHP Site 50-80-08-10020) do not meet the significance requirements of HAR §13-284-6 (b):

- Under HAR §13-284-6 (b)(1) Significance Criterion (a), the artifact scatter and culvert wall (Feature 1) in the location of the former plantation worker’s camp (SIHP Site 50-80-08-10020) were determined to be not significant, having no known association with events that have made

an important contribution to the broad patterns of our history. The O‘ahu Sugar Company’s sugar cane production within the project area was a relatively small operation compared to the numerous commercial sugar cane companies operating on O‘ahu and throughout Hawai‘i during the same time period.

- Under HAR §13-284-6 (b)(2) Significance Criterion (b), the artifact scatter and culvert wall (Feature 1) in the location of the former plantation worker’s camp (SIHP Site 50-80-08-10020) were deemed not significant, having no known association with the lives of persons important in our past.
- Under HAR §13-284-6 (b)(3) Significance Criterion (c), the artifact scatter and culvert wall (Feature 1) in the location of the former plantation worker’s camp (SIHP Site 50-80-08-10020) were assessed as not significant, as they lack distinct or exceptional architectural or engineering design.
- Under HAR §13-284-6 (b)(4)6 Significance Criterion (d), the artifact scatter and culvert wall (Feature 1) in the location of the former plantation worker’s camp (SIHP Site 50-80-08-10020) are not significant. While the current study and previous archival and field research has yielded some historical information (e.g., confirming the location of the camp and it’s occupation period), the site is unlikely to produce much more important information due to the prior removal of most of the site’s structural features.
- Under HAR 13-284-6 Significance Criterion (e), the artifact scatter and culvert wall (Feature 1) in the location of the former plantation worker’s camp (SIHP Site 50-80-08-10020) are not significant, as they do not have important value to the Hawaiian people or another ethnic group. Although plantation camps were often segregated by ethnic group, there is not enough current evidence to indicate which (if any specific) ethnic group may have occupied the camp.

While SIHP Site 50-80-08-10020 may have originally possessed significance under Criterion a, d, and e, due to its demolition in the 1960s, it currently lacks integrity, and therefore, significance.

**Table 44. Assessed Significance of Architectural and Archaeological Resources within the Project Area.**

SIHP / Temporary Number	Type	Significant?	Location	Aspects of Integrity					
				Design	Setting	Materials	Workmanship	Feeling	Association
50-80-09-02268	Features RK1 and RK2, irrigation ditches	No	Present	Present	Present	Present	Present	Absent	Absent
50-80-08-07671	Feature 4, causeway/dam	Yes	Present	Present	Present	Present	Present	Absent	Absent
50-80-08-07671	Feature 3, rail alignment/road	No	Present	Absent	Present	Absent	Absent	Absent	Absent
50-80-08-07758	Road	No	Present	Present	Present	Present	Present	Absent	Absent
50-80-08-09385	Former reservoir	No	Present	Present	Present	Present	Present	Absent	Absent
50-80-08-10020	Former plantation camp	No	Present	Absent	Absent	Absent	Absent	Absent	Absent

## 10 CONCLUSION AND RECOMMENDATIONS

At the request of Haseko, SWCA conducted an AIS for the Royal Kunia II Development project. The results of the AIS demonstrated that no significant archaeological historic properties are present within the project area that could be affected by the project.

### 10.1 Further Work

No further archaeological work is recommended for the project area. The AIS evaluated the only archaeological historic property identified within the project area (SIHP Site 50-80-08-10020 [former plantation camp]). This site was determined to be not significant due to it lacking several aspects of integrity. SIHP Site 50-80-08-10020 (former plantation camp) was investigated through the excavation of 12 archaeological test trenches to determine the site boundary; however, no subsurface evidence (e.g., archaeological features and/or cultural deposits) was noted. The boundary of the site has been delineated based on the horizontal extent of the camp as shown on historic-era maps. The sediment columns observed within the site did not differ much from the 20 trenches excavated outside of the site boundary, indicating that the camp consisted primarily of surface features, which were demolished after the camp was abandoned. One surviving surface feature (Feature 1, culvert wall) was identified during the AIS fieldwork; however all other structures have been demolished and removed, and no subsurface component to the site was identified during fieldwork.

Despite the fact that the 12 trenches excavated within the boundary of SIHP Site 50-80-08-10020 during the current AIS did not identify and subsurface components at the site, the possibility still exists that intact and/or disturbed features such as trash pits may exist within the boundary of SIHP Site 50-80-08-10020 and the larger project area. SWCA therefore recommends that the following clause be added to construction design plans, which will provide Haseko with a clear path forward to meeting the historic-era preservation goals of the project in the event of an inadvertent discovery of archaeological or cultural features during project construction:

*“If potential archaeological resources are identified during project construction activities, all ground-disturbing work tasks shall cease in the immediate area and the Hawai‘i State Historic Preservation Division (SHPD) shall be immediately notified. Objects that may indicate the presence of an archaeological resource include structural remains, darkened soil stains, and concentrations of pre-Contact Hawaiian or historic artifacts made from stone, glass, bone, shell, metal, or ceramic. Further, project personnel shall not destroy, disturb, collect, remove, or alter any identified potential archaeological resources.”*

### 10.2 Disposition of Collections

The artifact assemblage collected and analyzed during the AIS offers little research potential for future study. All of the artifacts were recovered from disturbed contexts, and most of these are not temporally diagnostic or unique in any way. Upon acceptance of this AIS report by the SHPD, the assemblage will be transferred to Haseko. As a private landowner, Haseko may request the assemblage be archived in an appropriate archaeological curation facility, which should be determined in consultation with SHPD.

## 11 GLOSSARY OF HAWAIIAN WORDS USED IN THE TEXT

<i>ahupua‘a</i>	traditional land division usually extending from the mountains to the sea and encompassing a range of environmental zones that were known and used by the land’s early Hawaiian residents. It was “so called because the boundary was marked by a heap ( <i>ahu</i> ) of stones surmounted by an image of a pig ( <i>pua‘a</i> ), or because a pig or other tribute was laid on the altar as tax to the chief” (Pukui and Elbert 1971:8).
<i>‘āina</i>	land
<i>akua</i>	the gods
<i>ala hele</i>	trail, pathway, route, road, <i>ala</i> meaning trail, <i>hele</i> meaning to go or to walk, walking trail
<i>ala pi‘i</i>	inland trail, <i>mauka</i> to <i>makai</i> trail, <i>ala</i> meaning trail, <i>pi‘i</i> meaning to go inland. Also known as “ <i>ala pi‘i uka</i> ” or “ <i>ala pi‘i mauna</i> ” ( <i>uka</i> meaning “inland, upland, towards the mountain,” and <i>mauna</i> meaning “mountain”), these trails connected areas of coastal habitation with more inland settlements and planting areas
<i>ali‘i</i>	chief, individual of chiefly blood
<i>ali‘i nui</i>	high chief
<i>‘āpana</i>	piece or parcel of an awarded land division
<i>heiau</i>	traditional temple or shrine
<i>hehu</i>	number, referring to the number of a Land Commission Award parcel
<i>hōlua</i>	a wooden sled used for sport. Also the sledding course, usually a grassy slope or a created stone paved ramp
<i>‘iliahi</i>	sandalwood; <i>Santalum</i> sp.
<i>‘ilima</i>	<i>Sida fallax</i>
<i>ilina</i>	burials, burial grounds
<i>inoa</i>	name
<i>kahuna</i>	priest, expert in any profession
<i>kāi o ‘Ewa</i>	a rare variety of taro from the ‘Ewa District which grew in mounds in marshy locations
<i>kalo</i>	taro ( <i>Colocasia esculenta</i> )
<i>kōlea</i>	Pacific golden plover; <i>Pluvialis fulva</i>
<i>konohiki</i>	land stewards, sometimes minor ali‘i
<i>kula uka</i>	inland plain

<i>kuleana</i>	property claim as a result of the Māhele; right, privilege, concern, responsibility, title, business, property, estate, portion
<i>kūpuna</i>	elders
<i>lama</i>	<i>Diospyros sandwicensis</i>
<i>lei</i>	garland
<i>loko kuapa</i>	shoreline fishponds enclosed by rock walls
<i>Māhele 'Āina</i>	land division, also known as the Great Māhele or simply the Māhele
<i>maka 'āinana</i>	common people
<i>makai</i>	toward the sea
<i>mauka</i>	inland
<i>mele</i>	song, chant, poem of any kind
<i>mō 'ī</i>	paramount chief
<i>moku</i>	district, land section, or island
<i>mo 'o</i>	water spirit or lizard goddess
<i>mo 'olelo</i>	story, tradition, legend, history
<i>pili</i>	bunchgrass, <i>Heteropogon contortus</i>
<i>pōhaku</i>	stone
<i>pule</i>	prayer
<i>wahi inoa</i>	place names
<i>wahi pana</i>	storied place, those places about which there is a story or tradition
<i>wiliwili</i>	<i>Erythrina sandwicensis</i>

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## **APPENDIX A**

### **SHPD Correspondence**

JOSH GREEN, M.D.  
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAI'I  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
KA 'OIHANA KUMUWAIWAI 'ĀINA

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

DAWN N.S. CHANG  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

LAURA H.E. KAAKUA  
FIRST DEPUTY

M. KALEO MANUEL  
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

March 14, 2023

Dawn Takeuchi-Apuna, Director  
Attn: Permit Issuance Branch  
Department of Planning and Permitting  
City and County of Honolulu  
One Main Plaza Building  
650 South King Street, 7th Floor  
Honolulu, HI 96813  
c/o Perry Tamayo  
[ptamayo@honolulu.gov](mailto:ptamayo@honolulu.gov)

IN REPLY REFER TO:  
Project No. 2021PR01090  
Doc. No. 2303MA01  
Archaeology, Architecture

Malyne Simeon, TA  
Zoning Regulations and Permits Branch  
Department of Planning and Permitting  
City & County of Honolulu  
One Main Plaza Building  
650 South King Street, 7th Floor  
Honolulu, HI 96813  
[msimeon@honolulu.gov](mailto:msimeon@honolulu.gov)

Dear Ms. Takeuchi-Apuna and Ms. Simeon:

SUBJECT: **HRS Chapter 6E-42 Historic Preservation Review –  
Permit Application – Cluster Development 2022/CL-2  
Royal Kunia II Development Project  
Hō'ae'ae Ahupua'a, 'Ewa District, Island of O'ahu  
TMK(s): (1) 9-4-002:070, 071, and 078**

This letter provides the State Historic Preservation Division's (SHPD's) review of the subject permit and proposed project titled *Royal Kunia II Development Project*. The initial submission for this project was received via HICRIS on September 2, 2021, with a second submission made on June 22, 2022; see HICRIS Project No. 2021PR01090 for submission documents.

Haseko Royal Kunia, LLC proposes a 15-year Master Plan for the phased residential development of single and multifamily units covering the approximately 211-acre Royal Kunia II Development Project area on former sugar plantation land just north of Royal Kunia Country Club and the Royal Kunia I community. Ground-disturbing activities for this proposed Master Plan development will involve mass property grading, as well as excavations for infrastructure including underground drainage culverts, water mains, sewer lines, and telecommunication/electrical conduits. This phased work is scheduled to begin with Parcels D and A in 2026, followed by Parcel B in 2029, Parcel E in 2030, and Parcel C in 2032. To date, Haseko has only applied to the City and County of Honolulu Department of

Planning and Permitting for a Cluster Housing Permit (Cluster Development 2022/CL-2) that covers all three TMKs of the Master Plan project area [TMK: (1) 9-4-002:070, 071, 078]. However, this permit application only included detailed plan drawings (site, grading, roadway, etc.) for the 37.4-acre Parcel D [TMK: (1) 9-4-002:071 por.].

The Master Plan project area—currently owned by Haseko Royal Kunia, LLC, a Hawai‘i limited liability company by Haseko Development, Inc.—is situated north of the H-1 freeway on O‘ahu’s broad central plain, between Kunia Road and Waikele Stream. The project area has remained undeveloped since the Oahu Sugar Company ceased commercial sugar production in the area in 1995, despite development on adjacent properties and unrealized plans dating back to the early 1990s to develop these parcels as well. The area is currently covered in dense stands of California grass, tangled vines, and *koa haole*.

In support of the project, Haseko contracted SWCA Environmental Consultants to produce a Literature Review and Field Inspection (LRFI) report titled *Archival Research and Field Inspection for the Royal Kunia II Residential Development Property, Ahupua‘a of Hō‘ae‘ae, ‘Ewa District, Island of O‘ahu, City and County Tax Map Key Parcels (1) 9-4-002:070, (1) 9-4-002:071, and (1) 9-4-002:078* (Gerrish et al. 2021). SWCA conducted field inspections for this LRFI, involving staff archaeologists and architectural historians, in May and June 2021 to determine the current condition of the project area and locate potential historic properties identified through archival research. Densely overgrown vegetation (California grass and vines) covering most of the project area reduced ground visibility to nearly zero and precluded 100% coverage of the area with pedestrian transects. Existing roadways within the project area were instead used to access and document possible historic properties. An unmanned aerial vehicle (UAV) conducted a 100% photographic survey along predetermined transects at a 150-foot elevation that was processed into a georeferenced orthomosaic with 0.5-inch resolution. This was supplemented with the use of publically-available Hawai‘i State-wide LiDAR imagery that provided a Digital Surface Model (DSM) of the area stripped of vegetation. The UAV was also used to document identified historic properties in a more targeted way.

Background research for the LRFI (Gerrish et al. 2021) concluded that the project area, as part of O‘ahu’s arid inland plain, was likely not intensively inhabited or cultivated in the pre-Contact period. Important traditional Hawaiian resources were likely harvested from this plain, which an extensive network of pre-Contact trails crisscrossed, however. In the post-Contact era, the area was first used for cattle grazing, with sugar cane cultivation taking over in the final decade of the 19<sup>th</sup> century. Grubbing and chain dragging to prepare fields for sugar cane planting likely destroyed any surface traces of pre-Contact activity in the area outside of protective gulches. Previous archaeological studies in the vicinity of the current project area identified remnant historic properties related to the plantation era, however. Field inspections and remote sensing data collected for the LRFI confirmed these expectations, encountering no traditional Hawaiian sites or materials during the inspection, but identifying a number of plantation-era features, including some associated with previously identified historic properties.

SWCA documented further sections of a railway line/road and a stone-faced causeway/dam that tied into the former railway line/road to the north (SIHP # 50-80-08-07671); a cane haul road associated with assorted plantation period features to the northwest (SIHP # 50-80-08-07758); and two ditches that were part of the Waiāhole Ditch Irrigation System (SIHP #50-80-09-02268). They also identified two previously unrecorded historic properties: a historic reservoir (SWCA-65875-006) and a sugar plantation worker’s camp (SWCA-65875-007). Both were identified through archival research, with only scant surface evidence indicating their presence on the ground due to low surface visibility and impassible vegetation. The LRFI presents no assessments of integrity or significance for any of these historic properties but does note that such work would need to be done in the future. Due to field conditions precluding full pedestrian survey coverage of the project area, SWCA recommends that the data collected for the LRFI be used to identify areas requiring additional identification and documentation efforts ahead of development. They specifically recommend subsurface testing of the worker’s camp area (Gerrish et al. 2021). Haseko indicates, in their letter requesting SHPD consultation, a willingness to possibly preserve significant historic properties within the project area by modifying development designs.

The **SHPD agrees** that potentially significant historic properties were identified and preliminarily recorded within the Royal Kunia II Development Project area during research and fieldwork for this LRFI. The **SHPD further agrees** that additional identification and documentation efforts are needed across this project area in advance of the proposed development, to more fully identify, document, and assess these historic properties and the impact the proposed project will have on them. Based on the information provided, the **SHPD has insufficient information** to determine the potential impacts of the project on significant historic properties.

Therefore, the **SHPD requests** a Reconnaissance Level Survey (RLS) report be completed for the full Royal Kunia II Development Project area, given the presence of landscape-engineering historic properties within that project area. The information needed for completing an RLS report may be found at [https://dlnr.hawaii.gov/shpd/files/2020/11/02-2018\\_SHPD\\_ARCHITECTURE-SURVEY-GUIDELINES.pdf](https://dlnr.hawaii.gov/shpd/files/2020/11/02-2018_SHPD_ARCHITECTURE-SURVEY-GUIDELINES.pdf) on page 8. The RLS Report must be completed by a Secretary of the Interior (SOI) qualified architect, architectural historian, or historic architect. Additionally, the report must include an assessment of the seven aspects of integrity and site significance each historic property in accordance with Criteria a-e, as specified in HAR §13-284-6. The RLS is considered an architectural survey report and thus subject to filing fees (\$450) per HAR §13-284-4(3). The survey must be accompanied by a completed SIHP Requests for each architectural historic property, to generate new files or modify the existing file with new information on each.

In addition to this, the **SHPD requests** that an Archaeological Inventory Survey (AIS) be conducted for the entirety of the Master Plan project area. For all parcels this will entail incorporating the research and results of the LRFI (Gerrish et al. 2021) into an AIS that meets the standards set forth in HAR §13-276, including: consultation with knowledgeable individuals, significance assessments, and recommendations. The findings of this AIS and the requested RLS should correspond. The AIS will need to involve limited subsurface testing across the entire project area, to record baseline soils. General subsurface testing to record soils will extend into Parcel E, while a more focused testing strategy needs to be developed here to determine the presence, boundaries, integrity, and significance of the former plantation camp (SWCA-65875-007). The dry gulch in this parcel also needs to be subject to a 100% pedestrian survey with limited testing. The AIS report is subject to filing fees (\$450) per HAR §13-284-4(3). SIHP Request(s) will need to be submitted for any archaeological historic properties identified or further documented in this AIS report.

The **SHPD requests** that an AIS Testing Strategy be submitted for both the general and more targeted subsurface testing described in this letter. Once this AIS testing strategy is approved by SHPD, the AIS will need to be conducted and a report produced and accepted by SHPD.

**The SHPD looks forward to receiving** a draft RLS, SIHP Requests, and AIS Testing Strategy in order to move forward the HRS 6E-42 Historic Preservation Review for Royal Kunia II Development Project. Please submit any forthcoming information and correspondence related to the subject project to SHPD via HICRIS to Project No. 2021PR01090 using the Project Supplement option.

**Note:** U.S. Army Corps of Engineers (USACE) has yet to determine whether the subject project will require federal permitting under the Clean Water Act Section 404. Should such permitting be required, USACE will need to initiate the NHPA Section 106 Historic Preservation Review process with SHPD for the project.

Please contact Jessica Puff, Architecture Branch Chief, at [Jessica.Puff@hawaii.gov](mailto:Jessica.Puff@hawaii.gov) for matters regarding architectural resources and Megan E. Alvarez, O'ahu Island Lead Archaeologist, at [megan.alvarez@hawaii.gov](mailto:megan.alvarez@hawaii.gov) for any matters concerning archaeological resources.

Aloha,  
*Susan A. Lebo*  
Signed For  
Alan S. Downer, PhD  
Administrator, State Historic Preservation Division  
Deputy State Historic Preservation Officer

cc:

Rowland Reeve, SWCA, [Rowland.Reeve@swca.com](mailto:Rowland.Reeve@swca.com)  
Lisa Enanoria Widrlechner, Haseko Royal Kunia, LLC, [lenanoria@haseko.com](mailto:lenanoria@haseko.com)  
Wainani Traub, SWCA, [Wainani.Traub@swca.com](mailto:Wainani.Traub@swca.com)

**APPENDIX B**  
**Artifact Catalog**

SIHP Site No.	Catalog No.	Unit No.	Stratum	Other Provenience	Level	Depth (cm)	Artifact Class	Artifact Type	Description	Material	Condition	Count	Weight (g)	Description/Notes	Collection C	Collector
50-80-08-10020	001	-	-	Isolate	Surface	0	Historic Artifact	Toy	Marble	Glass	Complete	1	5.67	Black color		RG
50-80-08-10020	002	-	-	Isolate	Surface	0	Historic Artifact	Coin	Quarter Dollar	Silver	Complete	1	5.67	Standing Liberty quarter dollar, year worn away but produced from 1916-1930		RG
N/A	003	-	-	Isolate	Surface	0	Modern Object	Military Insignia	Airforce Civil Engineer Badge	Non-ferrous metal	Complete	1	11.34	produced beginning in 1995	1/16/2024	RW
N/A	004	-	-	Isolate	Surface	0	Historic Artifact	Ceramic	Non-diagnostic fragment	Fired Clay	Incomplete	3	65.2	undecorated white improved earthenware fragments fom same object		RW
50-80-08-09385	005	Trench 14	lb	Excavated spoils	Subsurface	0-75	Historic Artifact	Ceramic	Cup fragment	Fired Clay	Incomplete	1	31.18	Base fragment, celadon glaze	1/22/2024	RG
N/A	006	-	-	Isolate	Surface	0	Historic Artifact	Bottle	Non-diagnostic fragment	Glass	Incomplete	2	8.5	one colorless and one aqua fragment	1/26/2024	RG
N/A	007	-	-	Isolate	Surface	0	Historic Artifact	Hardware	Bolt	Ferrous metal	Incomplete	1	72.29	head portion, square head	1/26/2024	RW
50-80-08-10020	008	-	-	Trench 3 Vicinity	Surface	0	Historic Artifact	Bottle	Base fragment	Glass	Incomplete	1	49.61	square base, no embossing	1/31/2024	RG
50-80-08-10020	009	-	-	Isolate	Surface	0	Historic Artifact	Hardware	Water spigot	Ferrous metal	Incomplete	1	290.58		2/1/2024	RG
50-80-08-10020	010	-	-	Isolate	Surface	0	Historic Artifact	Hardware	Rail spike	Ferrous metal	Complete	1	77.96		2/1/2024	RG
50-80-08-10020	011	-	-	Isolate	Surface	0	Historic Artifact	Ceramic	Drain pipe	Fired Clay	Incomplete	7	275.73		2/1/2024	RG
50-80-08-10020	012	-	-	Isolate	Surface	0	Historic Artifact	Ceramic	Plate fragment	Fired Clay	Incomplete	13	66.62	multiple objects represented, decorated and undecorate white improved earthenware, "	2/1/2024	RG
50-80-08-10020	013	Trench 7	-	238N, 137W	Surface	0	Modern Object	Bottle	Non-diagnostic fragment	Glass	Incomplete	1	8.5	green fragment, slightly solarized	2/2/2024	RG
50-80-08-10020	014	Trench 7	-	40N, 38W	Surface	0	Historic Artifact	Ceramic	Tile	Fired Clay	Incomplete	1	8.5		2/2/2024	RG
50-80-08-10020	015	Trench 7	-	108N, 118W	Surface	0	Modern Object	Hardware	License plate frame	Non-ferrous metal	Incomplete	2	35.44	molded, "RIGHT HERE IN TOWN"	2/2/2024	RG
50-80-08-10020	016	Trench 7	-	375N, 70W	Surface	0	Modern Object	Toy	McDonald's happy meal toy	Plastic	Complete	1	62.37	toy radio, "Sound Machine" , "1993 McDonald's Corp./ China WH 06"	2/2/2024	RG
50-80-08-10020	017	Trench 7	-	381N, 20W	Surface	0	Historic Artifact	Household	Mirror	Glass	Incomplete	2	119.07		2/2/2024	RG
50-80-08-10020	018	Trench 7	-	370N, 28W	Surface	0	Modern Object	Household	Plate fragment	Plastic	Incomplete	1	5.67	Child's plate rim fragment, partial alphabet printed on rim "N O P Q R S T U"	2/2/2024	RG
50-80-08-10020	019	Trench 7	-	140N, 130W	Surface	0	Modern Object	Bottle	Non-diagnostic fragment	Glass	Incomplete	3	15.59	amber fragment	2/2/2024	RG
50-80-08-10020	020	Trench 7	-	120N, 154W	Surface	0	Modern Object	Ceramic	Tile	Fired Clay	Incomplete	1	274.99	thick fragment, possible floor tile	2/2/2024	RG
50-80-08-10020	021	Trench 7	I	Screened sample	Subsurface	0-15	Modern Object	Bottle	Non-diagnostic fragment	Glass	Incomplete	16	11.34	14 amber and two green fragments	2/2/2024	RG
50-80-08-10020	022	Trench 7	I	Screened sample	Subsurface	0-15	Historic Artifact	Slag	Fragment	Coal	Complete	2	15.59		2/2/2024	RG
50-80-08-10020	023	Trench 7	I	Screened sample	Subsurface	0-15	Modern Object	Synthetic material	Non-diagnostic fragment	Plastic	Incomplete	1	2.83		2/2/2024	RG
50-80-08-10020	024	Trench 7	I	Screened sample	Subsurface	0-15	Modern Object	Window	Fragment	Glass	Complete	2	1.42	two objects represented, different thicknesses	2/2/2024	RG
50-80-08-10020	025	-	-	Trench 10 Vicinity	Surface	0	Historic Artifact	Toy	Marble	Glass	Complete	1	4.25	blue color	2/7/2024	RG
50-80-08-10020	026	-	-	Trench 6 Vicinity	Surface	0	Historic Artifact	Bottle	Base fragment	Glass	Incomplete	1	36.85	colorless partial base, machine made, "3762"	2/6/2024	RG
50-80-08-10020	027	Trench 8	lc	Below push pile	Subsurface	0-25	Historic Artifact	Bottle	Non-diagnostic fragment	Glass	Incomplete	2	9.92	one aqua and one colorless fragment	2/7/2024	RG
50-80-08-10020	028	Trench 8	lc	Below push pile	Subsurface	0-25	Historic Artifact	Construction materia	Base course	Marine shell	Incomplete	2	11.34	one complete bivalve and one hinge fragment	2/7/2024	RG
50-80-08-10020	029	Trench 8	lc	150S, 55W	Subsurface	5	Historic Artifact	Hardware	Insulator	Fired Clay	Incomplete	1	15.59	tube-type insulator fragment	2/7/2024	RG
50-80-08-10020	030	Trench 12	-	-	Surface	0	Modern Object	Bottle	Non-diagnostic fragment	Glass	Incomplete	2	11.34	amber color, one body and one base fragment, "1-" or "-1"	2/8/2024	RG
50-80-08-10020	031	Trench 12	la	-	Subsurface	0-10	Historic Artifact	Ceramic	Drain pipe	Fired Clay	Incomplete	1	26.93		2/8/2024	RG
50-80-08-10020	032	Trench 5	la	Excavated spoils	Subsurface	0-50	Historic Artifact	Toy	Marble	Glass	Complete	1	5.67	white with blue swirl	2/1/2024	RG
50-80-08-10020	033	Trench 5	-	-	Surface	0	Historic Artifact	Construction materia	Roofing	Coal tar pitch	Incomplete	1	72.29		2/1/2024	RG
50-80-08-10020	034	Trench 11	la	20S, 30W	Subsurface	30	Historic Artifact	Hardware	Pipe	Ferrous metal	Incomplete	3	102.06	heavily corroded in three fragments	2/9/2024	RG
50-80-08-10020	035	Trench 11	la	180S, 50W	Subsurface	20	Historic Artifact	Bottle	Non-diagnostic fragment	Glass	Incomplete	1	2.83	colorless partial body fragment, embossed "R"	2/9/2024	RG
50-80-08-10020	036	Trench 11	la	40S, 80W	Subsurface	25	Historic Artifact	Ceramic	Drain pipe	Fired Clay	Incomplete	2	133.24		2/9/2024	RG
50-80-08-10020	037	Trench 2	I-II	Push Pile	-	+35 to +110	Historic Artifact	Construction materia	Pipe	Ferrous metal	Incomplete	1	126.16	pipe wall fragment	2/5/2024	RG
50-80-08-10020	038	Trench 2	I-II	Push Pile	-	+35 to +110	Historic Artifact	Construction materia	Wire	Ferrous metal	Incomplete	2	25.51		2/5/2024	RG
50-80-08-10020	039	Trench 2	I-II	Push Pile	-	+35 to +110	Historic Artifact	Can	Seam fragment	Ferrous metal	Incomplete	1	5.67		2/5/2024	RG
50-80-08-10020	040	Trench 2	I-II	Push Pile	-	+35 to +110	Historic Artifact	Construction materia	Nail	Ferrous metal	Complete	4	21.26	4 nails, all different lengths and widths	2/5/2024	RG
50-80-08-10020	041	Trench 2	I-II	Push Pile	-	+35 to +110	Historic Artifact	Household	Mirror	Glass	Incomplete	1	8.5		2/5/2024	RG
50-80-08-10020	042	Trench 2	I-II	Push Pile	-	+35 to +110	Historic Artifact	Construction materia	Window	Glass	Incomplete	5	26.93	at least two types represented, one stippled	2/5/2024	RG
50-80-08-10020	043	Trench 2	I-II	Push Pile	-	+35 to +110	Historic Artifact	Bottle	Non-diagnostic fragment	Glass	Incomplete	2	36.85	colorless base with possible embossed "L" and non-diagnostic body fragment, two bottle	2/5/2024	RG
50-80-08-10020	044	Trench 2	I-II	Push Pile	-	+35 to +110	Historic Artifact	Ceramic	Tile	Fired Clay	Incomplete	1	8.5	pink color, "S" and "P" cast in unfinished side	2/5/2024	RG
50-80-08-10020	045	Trench 2	I-II	Push Pile	-	+35 to +110	Historic Artifact	Ceramic	Non-diagnostic fragment	Fired Clay	Incomplete	1	1.42	undecorated white improved earthenware fragments fom same object	2/5/2024	RG
50-80-08-10020	046	Trench 9	-	45S, 340E	Surface	0	Historic Artifact	Hardware	Non-diagnostic fragment	Ferrous metal	Incomplete	6	371.38		2/6/2024	RG
50-80-08-10020	047	Trench 9	-	120S, 70E	Surface	0	Historic Artifact	Ceramic	Drain pipe	Fired Clay	Incomplete	1	155.92		2/6/2024	RG
50-80-08-10020	048	Trench 9	-	220S, 260E	Surface	0	Historic Artifact	Construction materia	Concrete fragment	Concrete	Incomplete	1	228.21	possibly locally made, calcareous material	2/6/2024	RG
50-80-08-10020	049	Trench 9	-	270S, 105E	Surface	0	Historic Artifact	Construction materia	Brick	Fired Clay	Incomplete	1	239.55		2/6/2024	RG
50-80-08-10020	050	Trench 9	lb	From north wall	Subsurface	28	Historic Artifact	Bottle	Non-diagnostic fragment	Glass	Incomplete	1	8.5	colorless body fragment	2/6/2024	RG
50-80-08-10020	051	Trench 9	la-lb	Excavated spoils	Subsurface	0-75	Historic Artifact	Bottle	Base fragment	Glass	Incomplete	2	12.76	Cobalt Vicks Vaporub bottle ,Type 2, "RUB 17" on base, pieces refit	2/6/2024	RG
50-80-08-10020	052	-	-	Trench 9 Vicinity	Surface	0	Historic Artifact	Household	Tableware	Milk glass	Incomplete	1	11.34	geometric pattern in band	2/6/2024	RG
50-80-08-10020	053	-	-	Trench 9 Vicinity	Surface	0	Historic Artifact	Bottle	Non-diagnostic fragment	Glass	Incomplete	1	2.83	amber fragment	2/6/2024	RG
50-80-08-10020	054	-	-	Trench 9 Vicinity	Surface	0	Historic Artifact	Hardware	Insulator	Fired Clay	Incomplete	1	14.2	knob type insultaor fragment	2/6/2024	RG
50-80-08-10020	055	-	-	Trench 9 Vicinity	Surface	0	Historic Artifact	Ceramic	Terra cotta fragment	Fired Clay	Incomplete	1	24.1		2/6/2024	RG
50-80-08-10020	056	-	-	Trench 9 Vicinity	Surface	0	Historic Artifact	Construction materia	Base course	Marine shell	Incomplete	1	1.42		2/6/2024	RG
50-80-08-10020	057	Trench 7	la	-	Subsurface	0-40	Modern Object	Bottle	Non-diagnostic fragment	Glass	Incomplete	23	392.64	7 amber fragments (2 base, 5 body), 14 light green fragments (1 base, 13 body), 1 colorle	2/2/2024	RG
50-80-08-10020	058	Trench 7	la	-	Subsurface	0-40	Historic Artifact	Household	Mirror	Glass	Incomplete	9	146	2 objects represented, 7 thick and 2 thin shards	2/2/2024	RG
50-80-08-10020	059	Trench 7	la	-	Subsurface	0-40	Historic Artifact	Ceramic	Drain pipe	Fired Clay	Incomplete	1	19.84		2/2/2024	RG
50-80-08-10020	060	Trench 7	la	-	Subsurface	0-40	Ecofact	Vertebrate Faunal Re	Chicken bone	Bone	Incomplete	1	0.57	Gallus gallus domesticus, ulna midshaft fragment	2/2/2024	RG
50-80-08-10020	061	Trench 7	la	-	Subsurface	0-40	Modern Object	Bottle	Finish fragment with screw cap	Glass	Incomplete	2	28.3		2/2/2024	RG
50-80-08-10020	062	Trench 8	la	Push Pile	-	+10 to +140	Modern Object	Bottle	Base, body, shoulder, neck and finish fr	Glass	Incomplete	21	110.56	Tsingtao? 2 base, 2 finish/neck, 2 shoulder/neck, and 16 body fragments	2/8/2024	RG
50-80-08-10020	063	Trench 8	la	Push Pile	-	+10 to +140	Historic Artifact	Construction materia	Window	Glass	Incomplete	1	9.92		2/8/2024	RG
50-80-08-10020	064	Trench 8	la	Push Pile	-	+10 to +140	Historic Artifact	Ceramic	Non-diagnostic fragment	Fired Clay	Incomplete	1	4.25	undecorated WIE fragment	2/8/2024	RG
50-80-08-10020	065	Trench 8	la	Push Pile	-	+10 to +140	Historic Artifact	Bottle	Base fragment	Glass	Incomplete	1	8.5	amber base fragment, concentric circles with "11" in center	2/8/2024	RG
50-80-08-10020	066	Trench 8	la	Push Pile	-	+10 to +140	Modern Object	Construction materia	Nail	Ferrous metal	Complete	2	21.26		2/8/2024	RG
50-80-08-10020	067	Trench 8	la	Push Pile	-	+10 to +140	Historic Artifact	Ceramic	Drain pipe	Fired Clay	Incomplete	1	9.92		2/8/2024	RG
50-80-08-10020	068	Trench 8	la	Push Pile	-	+10 to +140	Historic Artifact	Construction materia	Base course	Marine shell	Incomplete	1	2.83		2/8/2024	RG