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**Report on Burial Recovery Operations at 4773
Kāhala Avenue; State Site 50-80-14-6632**

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1 Introduction

Human skeletal remains were inadvertently exposed during excavations for a utility line at 4773 Kāhala Avenue, a 37,906 ft.² beachfront residential lot in the Kāhala neighborhood of Honolulu, TMK:3-5-6:6 (fig. 1). The property owner, Mr. Ned Weldon, contacted the State Historic Preservation Division, and reported the discovery. A site inspection by officials from that office was made by archaeologists Dr. Sara Collins and Ms. Muffet Jourdane, and Mr. Kai Markell of the Burial Sites Program from that same division. Following the site inspection it was determined that the remains of at least one individual had been exhumed during the utility line excavation, which removed approximately 10 m³ of sediment. Also noted at that time was a cultural deposit in calcareous sand. The state officials collected fragments of a human cranium and long bones in a paper bag and left these remains in a backdirt pile next to the main excavation pit. Mr. Weldon then agreed to hire an archaeologist to conduct recovery operations for any other remains that might have been disturbed during excavation. Mr. Weldon retained *T. S. Dye & Colleagues, Archaeologists, Inc.* to conduct recovery operations.

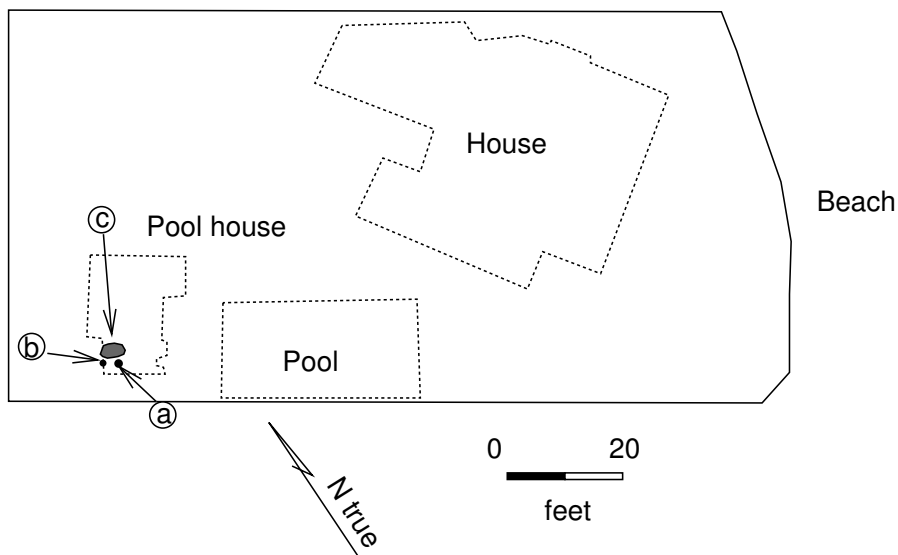


Figure 1. Plan of TMK:3-5-6:6 showing the location of major improvements and human burials: *a*, *in situ* burial; *b*, reinterment site; *c*, main excavation pit.

State officials verbally instructed the archaeologists to include the following tasks in the recovery operations:

- recover any remains still within the loose sediment inside the excavation;
- identify any *in situ* remains and/or burial feature(s);

- document with written records and drawn profiles the exposed walls and floor of the large excavation pit;
- recover the remains from the pile of redeposited sediment adjacent to the large excavation pit using 0.125 in. wire mesh screens;
- monitor excavation of the utility line to its destination, a main line located in the middle of the paved lane 5 meters west; and
- prepare an acceptable report of the recovery work.

These were the tasks that Mr. Weldon contracted *T. S. Dye & Colleagues, Archaeologists, Inc.* to perform.

The discovery of human remains and a cultural deposit was designated State site 50–80–14–6632 (fig. 2). The partial remains of four individuals were recovered from excavated sediments and one intact individual was identified *in situ* following a subsequent excavation. The remains are likely of Hawaiian ancestry, based on the presence of traditional Hawaiian artifacts and absence of historic-period materials associated with the remains. Gender was not determined on the fragmented remains, which were turned over to Mr. Weldon for reinterment.

Traditional Hawaiian artifacts recovered from the backdirt pile included a basalt abrader fragment, drilled *pipipi* marine shell beads, basalt flakes, and *kukui* nuts. One iron nail was also recovered from the backdirt pile. A distinct cultural layer was present in all except the western faces of the utility line excavation. Cultural pit features excavated through the cultural layer were identified in the same three faces, with one pit in the north wall exposed across the northwest corner and into the west face.

pipipi
kukui

2 Project Background

Mr. Weldon retained *T. S. Dye & Colleagues, Archaeologists, Inc.* on September 2, 2003 to conduct recovery operations at his Kāhala property. Jeffrey L. Putzi inspected the site on that date. Recovery operations were conducted between Wednesday, September 3 and Saturday, September 6, 2003. A post-field inspection was conducted by Mr. Putzi on Sunday, September 7, 2003.

The utility line excavation resulted in a pit measuring 3.75 m east to west, 2.0 m north to south, and a maximum depth of 1.8 m below surface at the west end. Depth at the eastern end ranged between 0.8 and 1.0 m below surface. The water table was a 1.6 m below surface. As a result of this the western end of the large excavation pit was submerged.

Excavated sediments were redeposited in two locations. Loose sediment left in the large excavation pit formed a ramp that ascended to the top of the east wall. The bulk of the excavated sediments were redeposited in a pile to the north of the pit. This backdirt pile measured 5.0 m east to west, 3.0 m north to south, and was 1.5 m high. The sediments exposed in the walls of the large excavation pit consisted of thin layers of surface silt loam topsoil, cultural layers of silty sand, and intact natural sand layers.

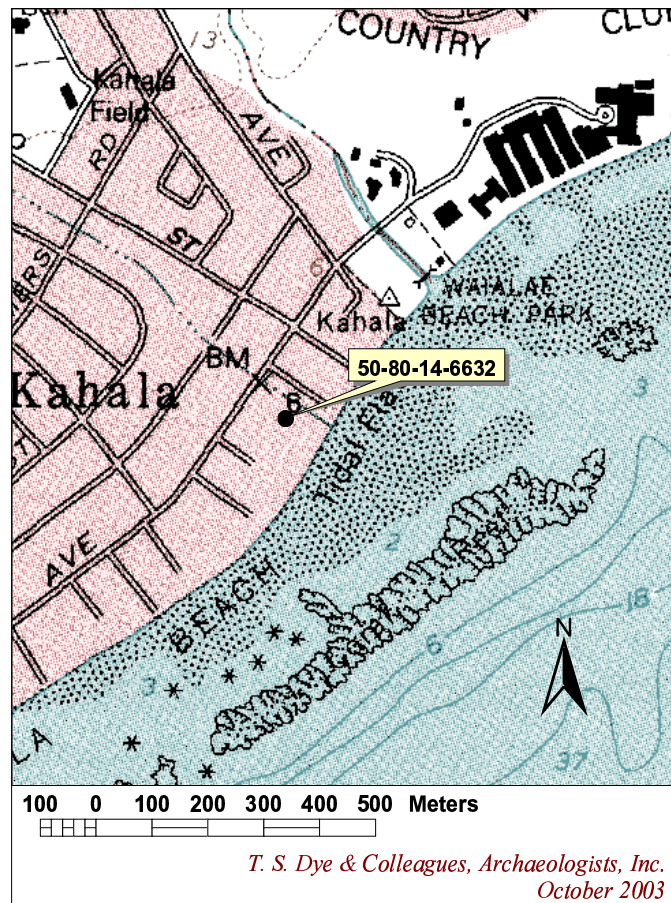


Figure 2. Location of site 50–80–14–6632 on a U.S.G.S. topographic map, Honolulu quadrangle.

3 Methodology

The loose sediment within the large excavation pit was put through a 0.125 in. wire mesh screen. The sieved material was used to fill in the submerged western end of the excavation and level the floor at 1.5 m below surface, within the sterile, intact, natural sand layer exposed at the base of excavation. Sediment from the backdirt pile was sieved through 0.125 in. mesh screen away from the pile so as not to mix screened and unscreened sediments. Recovered skeletal remains were placed within plain brown paper bags that were labeled with the date of recovery. Recovered artifacts were kept in a single paper bag. Stratigraphic profiles were drawn of all four walls of the large excavation pit. Written descriptions of the four walls were made in a standard “Rite

in the Rain” notebook. Field work was conducted during 10 hour work days between Wednesday, September 3 and Saturday, September 6, 2003. The field crew consisted of Putzi on September 3 and 4, who was joined by Kekapala Dye on September 5 and 6. Work conducted by Putzi on Sunday, September 7, consisted of determining the extent of an *in situ* burial that had been exposed by mechanical excavation of another utility line on Friday, September 5, 2003.

4 Project Area

State Site 50–80–14–6632 is located at 4773 Kāhala Avenue. This is a beach front house lot. It is bordered on the north by a cement-lined flood control channel, on the south by a narrow paved lane that provides access off of Kāhala Avenue, on the west by developed residential lots, and on the east by the Pacific Ocean. Wai‘alae Stream, which drains the combined flows from Wai‘alae Nui and Kapakahi gulches, enters the ocean in Wai‘alae State Park approximately three hundred meters to the north. Its course parallels the cement-lined flood control channel. Kūpikipiki‘ō Point, more commonly known today as Black Point, marks the southwestern end of Kāhala.

The area formerly consisted of aeolian dunes of coralline sand but has since been leveled and landscaped with imported topsoil. Offshore of the project area are tidal flats extending to a fringing reef.

5 Previous Archaeology

Previous archaeological investigations in Kāhala and the surrounding area have been limited in nature. McMahon (1988) conducted a reconnaissance survey of 19 acres at the base of Diamond Head within the Fort Ruger Military Reservation. She found only the remains of military activity related to the reservation which had been established in 1909. Kennedy (1991) surveyed a parcel of land on the *mauka* side of Kalaniana‘ole Highway, at the junction of Wai‘alae Nui and Kapakahi Streams. No evidence of traditional Hawaiian occupation was found.

The remainder of the archaeological investigations in Kāhala and coastal Wai‘alae Nui have been concerned with recovery operations for inadvertently exposed human burials. Construction excavations for the then Kāhala Hilton Hotel in 1963 exposed a burial. In 1966, during construction of condominiums between the hotel and Wai‘alae Beach Park, an unrecorded historic-era cemetery was exposed. Archaeologists from Bernice Pauahi Bishop Museum excavated twenty-four coffin burials. A mix of traditional Hawaiian and historically introduced materials were recovered from the burials: *pulu* fiber, used for pillow padding, a basalt adze, glass bottles, and metal fishhooks (Erkelens and Tomonari-Tuggle 1997:8).

Several individual burials have been found near the project area. Site 50–80–14–3725 is located at 4505 Kāhala Avenue in TMK:3–5-04:11 (Griffin 1987). This consisted of a single individual within a pit feature. This primary burial was slightly disturbed during excavation for a house site but was otherwise intact. It was identified as a traditional Hawaiian burial.

mauka

pulu

Site 50–80–14–3760 was located at 1013 Waiholo Street in TMK:3–5–43:6 (Bath and Griffin 1988). This site consisted of a single individual within a pit feature. This primary burial, discovered during excavation for a pool, was identified as a traditional Hawaiian burial.

Site 50–80–14–4065 was located at 4585 Kāhala Avenue in TMK:3–5–04:01 (Kawachi 1989). This site consisted of a single individual that had been heavily impacted during excavation for the foundation of a house. *In situ* remains indicated that this was a flexed burial but the upper third of the individual had been removed during excavation and the remains were not recovered. This was identified as a Hawaiian burial.

Site 50–80–14–4126 was located at 4745 Aukai Avenue (Bath 1989). This site consisted of at least one individual. The burial context had been destroyed by the excavation for a water main line. A pair of polished basalt flakes that may have been chipped off of an adze were recovered during this project. This was identified as a probable traditional Hawaiian burial.

Site 50–80–14–5320 was located at 4433 Kāhala Avenue near the intersection with Elepaio Street (Erkelens and Tomonari-Tuggle 1997; Jourdan 1995). The site consisted of three individual burials that had been impacted during excavation of an elevator shaft at the existing residence. The three individuals were identified as being of East Asian and/or mixed Hawaiian/East Asian ancestry. Associated artifacts indicate that these were nineteenth century burials.

6 Historical Background

The project area is located in the Kāhala neighborhood of Honolulu. Traditionally it was known as Kanewai Kāhala (Erkelens and Tomonari-Tuggle 1997:4–8). During the Great Mahele, the land of Kanewai Kāhala was awarded to Kalaiheana. Kalaiheana had been a war leader under Kamehameha and based his claim on having received the land from the king as *panalā'au* for services rendered during the Battle of Nu'uaniu. Kalaiheana was a *kahu* to Liholiho and participated in the 1824 invasion of Kaua'i (Kamakau 1992:220, 268). He died in 1855, leaving the land to his kinsman, John 'I'i, as foster father of Victoria Kamamalu. Kamamalu's lands were inherited by her father, Kekūana'oa. Later, Bernice Pauahi inherited these and other lands of the Kamehameha dynasty, becoming their sole proprietor. With her death in 1885, these holdings were designated the Bishop Estate. The Bishop Estate leased lands throughout this area for agriculture, pig farming, horse breeding, and dairy and cattle ranching. Title was also held for fisheries offshore. Not until the 1940s and early 1950s was this area developed for residential purposes (Erkelens and Tomonari-Tuggle 1997).

panalā'au
kahu

7 Results

A thorough inspection of all four walls and the floor of the utility line excavation was made prior to and following the sieving of the loose sediment within. Extensive cultural layers and deposits were readily evident in the northern, southern, and eastern faces,

but no *in situ* human remains were exposed within the confines of the initial utility line excavation.

All of the human remains disturbed by the construction excavations were collected. Most of these were recovered from the backdirt pile. Few skeletal remains were present in the loose sediments within the utility line excavation. Human remains were found throughout the backdirt pile. Remains were recovered from the first shovel full of sand to the last. Once recovery operations were begun on the backdirt pile it became apparent that more than one individual had been disinterred during the utility line excavation. By the conclusion of work on Saturday, September 6 it was estimated that portions of at least four individuals had been recovered.

Recovered remains consisted of fragments of four different crania, five patellae, three humeri of different sizes and more long bone fragments than could be accorded to a single individual. A single fragment of a scapula was identified, as was a single fragment of an ilium. Additionally, multiple hand, foot, and ankle bones were found, along with many unidentified fragments. Fewer than ten rib fragments and five vertebrae were present. Two of these, an atlas and an axis, were connected by fine plant roots. The number of skeletal remains bearing marks of fresh breaks was only slightly outnumbered by those bearing marks of older breaks.

Artifacts collected during the recovery operations included two drilled *pipipi* beads (fig. 3, *d*), a basalt abrader fragment (fig. 3, *f*), a possible marine shell fish hook blank (fig. 3, *e*), several basalt flakes (fig. 3, *a*, *b*), and at least 20 *kukui* nuts and nut shell fragments. An iron nail was the only historic artifact recovered from the backdirt pile (fig. 3, *g*). One basalt flake was recovered from layer IIc in the south face of the utility line excavation (fig. 3, *a*).

7.1 North Face Profile

The north face of the utility line excavation measured 3.75 m east to west, and ranged in depth from 1.8 m below surface at the western end to 1.5 m below surface at the eastern end (fig. 4). As stated earlier, the western end was leveled off to 1.5 m below surface using material screened within the excavation.

The topsoil of the north face was designated layer Ia (table 1). This was a yellowish red silty loam that extended to 10 cm below surface. It was deposited on layer Ib, a brown sandy silt that extended from 5 to 15 cm below surface. Layer Ib is deposited on top of layers IIa and IIb, both cultural layers. Layer IIa is a dark greyish brown silty sand that began 25 cm east of the northwest corner of the utility line excavation and extends into the northeast corner. This layer is present in the eastern and southern faces as well. Layer IIb is a pit excavated at and through the western most end of layer IIa. Layer IIb extends east from the northwest corner to layer IIa. Layer IIb is also exposed in the western face where it extends from the northwest corner.

The two cultural layers are deposited on layer IIIa, an intact, natural layer of pale yellow sand. The interface between layer IIa and IIIa is marked by fine roots extending down into the culturally sterile layer. Contained within layer IIIa are three parallel, clearly defined layers of coarse sand. Designated IIIb, IIIc, and IIId from top to bottom, these layers are exposed beginning at the middle of the north face and ascend toward the northwest corner. All three of these layers were exposed in the western face, while

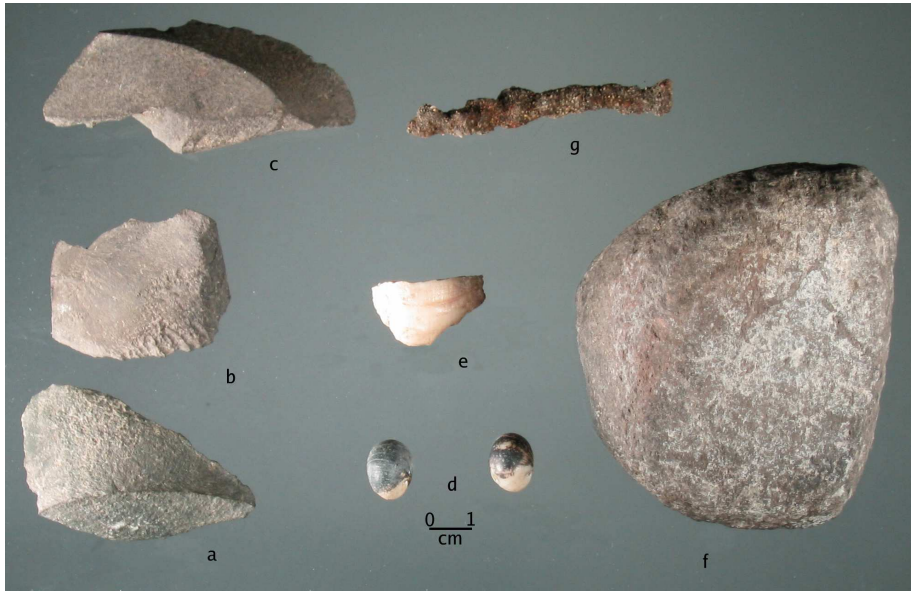


Figure 3. State site 50-80-14-6632 artifacts. *a*, basalt flake, layer IIc; *b*, basalt flake, backdirt; *c*, basalt flake, backdirt; *d*, pipipi beads, backdirt; *e*, marine shell fish-hook blank, backdirt; *f*, basalt abrader, backdirt; *g*, iron nail, backdirt.

IIIc and IIId were exposed in the southern face. They appear to be a high energy depositional sequence. The eastern edge of these layers did not appear to be truncated. The lowest of these, layer IIId was deposited on layer IIIe. Layer IIIe was a light yellowish brown sand extending into the base of excavation. Layer IIIe was exposed in the western and southern faces as well.

7.2 South Face Profile

The southern face of the utility line excavation measured 3.75 m east to west and ranged in depth from 1.8 m below surface in the west and 0.8 m below surface in the east (fig. 5). The topsoil of the south face was designated layer Ib, a brown sandy silt (table 1). Beneath it was layer Ic, a deposit of basalt gravel also exposed in the western face and mixed with layer Ib in the eastern face. The gravel was deposited on a compact layer of brown sand designated layer Id. Each of these layers was approximately 5 cm thick. An iron water pipe in the gravel of layer Ic was impacted during the excavation activities. Layer Id was also present in the eastern face of the excavation. Layer Id is deposited on cultural layer IIa.

Cultural layer IIa extends across the length of the south face. It increased in thickness from the southwestern corner where it is thin, to the southeastern corner where it extended from 16 to 75 cm below surface. Layer IIc, a pit excavated from layer IIa,

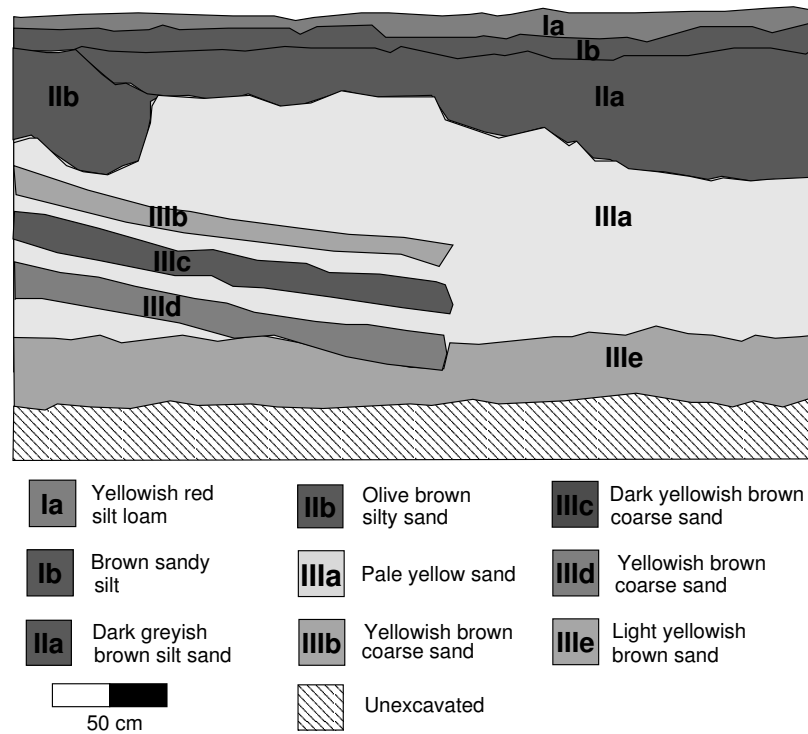


Figure 4. Stratigraphic profile of the north face.

extended into the base of excavation at 80 cm below surface. In plan view on the floor of the excavation pit, Layer IIc extends 50 cm northward from the southern face. Layer IIc was exposed in this fashion during the mechanical excavation of the pit. Layer IIc was further impacted by the excavation activities undertaken on Friday, September 5, which exposed layer IIc extending into that base of excavation at 1.0 m below surface. A basalt flake was recovered from the western edge of layer IIc at 75 cm below surface. Abundant charcoal flecking was present throughout layers IIa and IIc here in the southern face of the excavation.

7.3 East Face Profile

The eastern face of the utility line excavation measured 1.5 m north to south and ranged in depth between 1.0 m below surface for most of its length to 80 cm below surface at the southern end (fig 6). The southern end is partially made up of layer IIc extending northward out of the southern face of the excavation. The topsoil of the eastern face appeared to be a mixture of layers Ib and Ic (table 1). It was a brown sandy silt with basalt gravel that extended to a depth of 16 cm below surface. This was deposited on

Table 1. Sediment descriptions

Layer	Depth	Color	Description	Interpretation
Ia	0–5	5YR 5/8	Yellowish red silty loam; slightly sticky, non plastic; smooth, abrupt boundary	Fill topsoil, north face
Ib	0–10	10YR 4/3	Brown sandy silt; slightly sticky, non plastic; smooth, abrupt boundary	Fill material north face, topsoil south and west faces
Ic	4–12	10YR 4/3	Brown gravel; non sticky, non plastic; wavy, clear boundary	Fill material, west, south and east faces
Id	12–24	10YR 4/3	Brown sand; non sticky, non plastic; smooth, abrupt boundary	Fill material, south, west and east faces
IIa	15–65	10YR 4/2	Dark greyish brown silty sand; Slightly sticky, slightly plastic; wavy, clear boundary	Cultural deposit
IIb	15–60	2.5YR 4/4	Olive brown silty sand; slightly sticky, slightly plastic; irregular abrupt boundary	Cultural pit deposit
IIc	60–100 +	2.5YR 4/4	Olive brown silty sand; slightly sticky, slightly plastic; base of excavation in south face	Cultural pit deposit
IId	20–80 +	10YR 4/4	Yellowish brown silty sand; slightly sticky, slightly plastic; base of excavation in east face	Cultural deposit, pit for <i>in situ</i> burial
IIIa	20–125	2.5YR 7/4	Pale yellow sand; non sticky, non plastic; wavy, gradual boundary	Culturally sterile subsoil
IIIb	75–85	10YR 5/8	Yellowish brown coarse sand; non sticky, non plastic; smooth, abrupt boundary	Culturally sterile subsoil
IIIc	90–100	10YR 4/4	Dark yellowish brown coarse sand; non sticky, non plastic; smooth, abrupt boundary	Culturally sterile subsoil
IIId	110–120	10YR 5/4	Yellowish brown coarse sand; non sticky, non plastic; smooth, abrupt boundary	Culturally sterile subsoil
IIIe	100–150 +	2.5 YR 6/4	Light yellowish brown sand; non sticky, non plastic; base of excavation	Culturally sterile subsoil

layer Id, a compact brown sand that extended to 30 cm below surface. Layer Id was exposed in the southern face of the excavation but the deposit was thicker here in the eastern face.

Layer Id was deposited on layer IIa, the cultural deposit also found in the northern and southern face, and layer IId. Layer IIa was exposed in the northern two-thirds of the eastern face and layer IId was exposed in the southern third. Layer IId is a pit excavated through layer IIa and into the culturally sterile sand of layer IIIa. Despite its presence at the southeastern corner of the utility line excavation, layer IId was not present in the southern face. Layer IId extended into the base of excavation at 80 cm below surface.

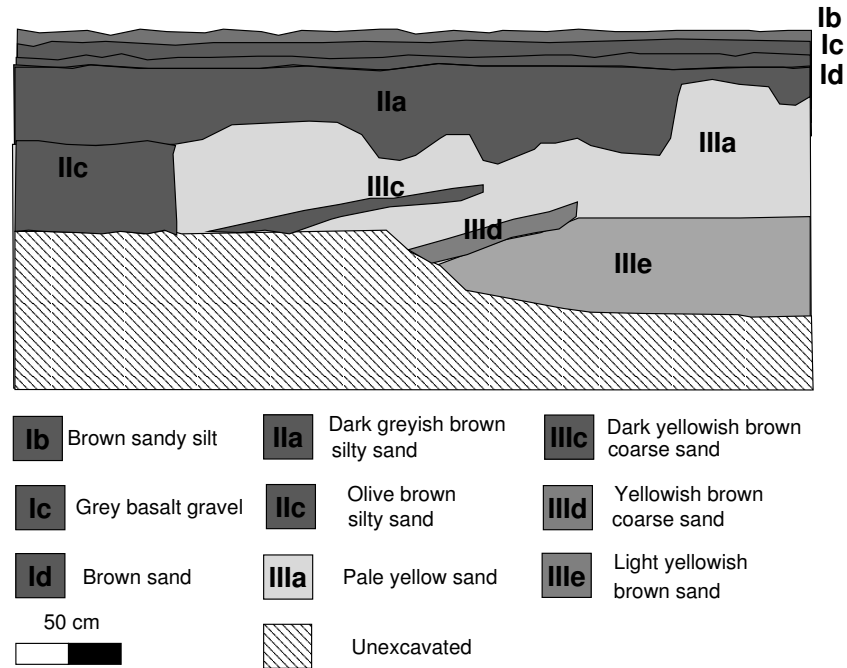


Figure 5. Stratigraphic profile of the south face.

Layer IIIa was exposed beneath layer IIa and alongside IIc, where the latter was excavated into layer IIIa. Layer IIIa extended to 1.0 m below surface and was the base of excavation for the northern two-thirds of the eastern face. Layers IIIb, IIIc, IIIe, and IIIe were not exposed in the eastern face of the utility line excavation.

Mechanical excavations for another utility line trench were conducted on Friday, September 5th, and much of layer IIc was removed.

7.4 West Face Profile

The western face of the utility line excavation measured 2 m north to south and was 1.8 m deep (fig 7). The topsoil exposed along the western face of the utility line excavation was a combination of the topsoils exposed along the northern and southern faces. Layer Ia, a yellowish red silty loam, extended 50 cm south from the northwest corner (table 1). Layer Ib, a brown sandy silt, extended from the southwest corner to layer Ia. Both layers were 5 cm thick. Layer Ia overlay a deposit of layer Ib that extended from 5 to 15 cm below surface. This in turn was deposited on Layer IIb, the pit feature detailed in the description of the northern face of the utility line excavation. Layer IIb was

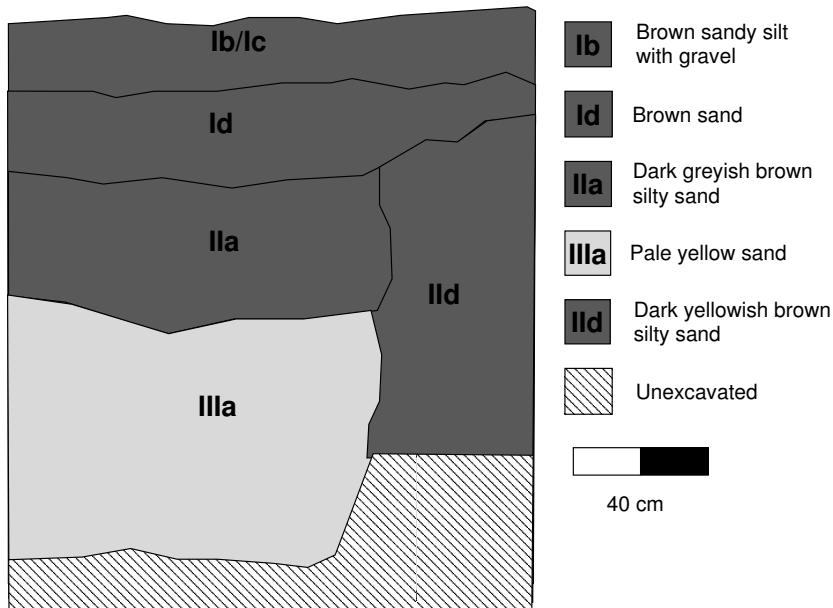


Figure 6. Stratigraphic profile of the east face.

excavated into the culturally sterile sand of layer IIIa.

Where layer Ib was the topsoil, it was deposited on the basalt gravel of layer Ic. Layer Ic extended from 5 to 15 cm below surface and was in turn deposited on the compact grey sand of layer Id. Layer Id extended 15–25 cm below surface and was in turn deposited on layer IIIa. Layer IIIa was a pale yellow sand, a culturally-sterile, intact, natural sand deposit.

Layers IIIb, IIIc, and IIId were present and clearly defined in the western face of the utility line excavation. Each layer matched up with its counterpart exposed in the northern and southern faces. Beneath the lowest of these was layer IIIe. Layer IIIe, a light yellowish brown sand extended into the base of excavation. Due to the near absence of the cultural layers, the western face most clearly showed the stratigraphy of the naturally deposited sediments.

8 Monitoring of Construction Excavations

Excavations to connect the initial utility line excavation with an existing main utility line located to the west were monitored on Thursday, September 4, 2003. This undertaking consisted of excavating with a backhoe from the southwest corner of the large excavation pit to the existing line approximately 5 meters to the west. The length of this excavation exposed sediments that had been previously disturbed, most likely by excavations for the existing main utility line and for pilings for a chain link fence that

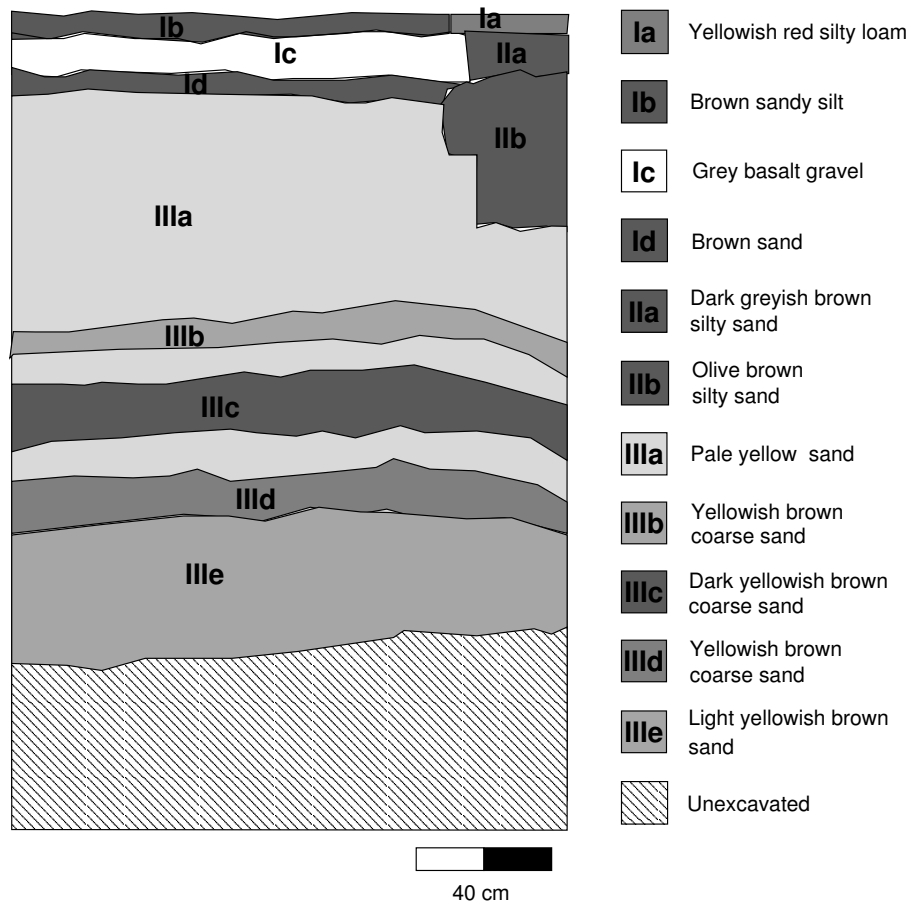


Figure 7. Stratigraphic profile of the west face.

lined the paved lane. No cultural remains or features were found in this excavation.

9 Construction Excavations Outside the Scope of Work

During the recovery operations, on Friday, September 5, a utility line was excavated with a backhoe by the plumbing contractor from the southwest corner of the house pad of the dwelling under construction to the large excavation pit. The monitoring of this trench was not one of the tasks assigned to the recovery operations. The length of the trench was approximately 50 meters east to west, and it was 50 cm wide and 85 cm deep. Excavation of this trench entered the large excavation pit through the east wall at its southeast corner. This excavation collapsed the eastern face of layer IIId in the large excavation pit, and much of layer IIId was removed by backhoe to a depth of 85 cm

below surface. The bottom of the trench was brought to grade at 90 cm below surface with a shovel. It was during these shovel excavations that an *in situ* human burial was exposed at 90 cm below surface. Human skeletal remains were exposed both in the floor and in the north face of the new trench, and in the newly exposed portion of the eastern face of the large excavation pit. A portion of the outline of the burial feature was clearly defined in plan view and it appeared that approximately half of the feature remained in the unexcavated north wall of the trench. Layer IIa was exposed in the north face of the newly excavated trench, clearly showing layer IIc as having been excavated through layer IIa. Layer IIa extended 3 meters from the eastern face of the initial utility line excavation along the northern face of the newly excavated trench. Mechanical excavation of this new trench also impacted that portion of layer IIc that extended north from the southern face of the base of excavation of the initial utility line excavation.

The discovery of *in situ* remains was reported to SHPD, and on Saturday, September 6, Mr. Kai Markell again visited the site. He instructed Putzi to determine the extent of the new burial feature and to identify the exposed remains. This was done on Sunday, September 7, with the long bones of the legs being identified in a flexed position in the trench floor, the majority of a foot being identified in the north face of the new trench, and part of a pelvis being identified in the newly exposed eastern face of the initial excavation. The majority of the burial feature remained in unexcavated sediment. Based on this, the individual was identified as an adult, traditional Hawaiian burial. The majority of the human remains were not exposed but, those that were exposed, indicated that the individual had been interred in a flexed position. The exposed remains were covered by a light layer of sand and then with *kī* leaves that had been placed in the trench by the plumbing contractor who found the burial.

Excavations to connect this new trench with the main utility line took place after the archaeological recovery operations were complete. These excavations passed south of the large excavation pit and were not monitored by an archaeologist.

10 Summary and Conclusions

Recovery operations were conducted following the discovery of human remains and a cultural deposit during the mechanical excavation of a utility line at a beach front house lot at 4773 Kāhala Avenue. The human burials and cultural deposit were designated State site 50-80-14-6632. The extent of the cultural layer was not defined by the excavations described in this report. Traditional Hawaiian artifacts were collected from the backdirt during the recovery operation, including drilled *pipipi* marine shell beads, a basalt abrader fragment, basalt flakes, and a possible marine shell fish hook blank. A single historic artifact, an iron nail, and whole *kukui* nuts were also recovered from the backdirt pile. A traditional Hawaiian artifact was recovered from one of the cultural features in the southern face of the initial utility line excavation.

Site 50-80-14-6632 is significant for the information on Hawaiian history and prehistory that it has yielded and is likely to yield, and for its traditional cultural importance to Hawaiians for the burials that it contains.

The remains of at least four individuals were collected during the recovery operations. Most of the human remains, including all of the long bones, were fragmented. There was an almost equal proportion of remains evincing marks of old breaks as there were those with marks of new breaks. While there were an abundance of fragmented long bones, there were almost no identifiable rib fragments or vertebrae. Portions of four different crania were recovered. Taking into account the paucity of rib bones and vertebrae, it is probable that these individuals were interred as secondary bundle burials. Of all the other sites in the Kāhala area, only State site 50-80-14-4126, located one block *mauka*, contained skeletal remains that were both broken and missing vertebrae.

A single individual was identified *in situ* within a burial feature that was exposed during a later utility line excavation that impacted the large excavation pit. This individual was tentatively identified as an adult in a flexed position within a traditional Hawaiian burial feature. The burial feature extended into unexcavated sediment and the extent of the feature was not determined.

Glossary

Entries for Hawaiian words are excerpted or paraphrased, where possible, from the *Hawaiian Dictionary* (Pukui and Elbert 1971), or from Lucas (1995). Geological and geographical terms are from American Geological Institute (1976) and Clark (1998). Archaeological terms are from Bray and Trump (1982) and Mignon (1993).

kahu Honored attendant, guardian, nurse, keeper of *'unihipili* bones, regent, keeper, administrator.

kukui The candlenut, *Aleurites moluccana*.

mauka Inland, upland, toward the mountain.

panalā'au Colony, dependency, territory, province.

pipipi A marine shell, *Nerita picea*, common in the intertidal zone.

pulu A soft, glossy, yellow wool on the base of tree-fern leaf stalks. It was used to stuff mattresses and pillows and at one time was exported to California. Hawaiians stuffed bodies of their dead with it after removing vital organs.

kī A woody plant in the lily family, native to tropical Asia and Australia. The leaves were put to many uses by the Hawaiians, as for house thatch, food wrappers, hula skirts, and sandals.

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