SCS Project 455-2

ARCHAEOLOGICAL INVENTORY SURVEY OF THE NORTHERN PORTION OF THE KALOKO HEIGHTS PROJECT IN KOHANAIKI AND KALOKO AHUPUA‘A, NORTH KONA DISTRICT, HAWAI‘I ISLAND, HAWAI‘I:

SETTLEMENT PATTERN INVESTIGATIONS IN THE SOUTHERN KEKAHA MIDDLE ELEVATIONS

[TMK 3-7-3-09:32]

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Exhibit 39

ABSTRACT

Scientific Consultant Services, Inc. (SCS) has performed this Archaeological Inventory Survey for Stanford Carr Development, LLC. on approximately 213 acres of the Kaloko Heights project area (formerly refered to as the YO Project) in Kohanaiki and Kaloko Ahupua‘a, North Kona, Hawai‘i Island, Hawai‘i (TMK:3-7-3-09:32). Eighty-nine archaeological sites and a portion of the Kona Field System were identified and recorded. Site types present include water source caves, permanent and temporary habitations, *heiau*, trails, burials in caves and in surface structures, a historical road, agricultural sites, and historical homesteads.

All 89 sites are considered significant under Criterion D. In addition, seven sites (10691, 10692, 10695, 10709, 10718, 10725, 10746) are recommended for Criterion C, and 14 sites (10701, 10702, 10714, 10717, 10722, 10728, 10736, 10740, 10741, 10745, 10749, 10754, 10764 and 10778) are considered significant under Criterion E.

Preservation is recommended for 11 non-burial sites, seven burial sites, and one *heiau* with a burial site (10736). The non-burial preservation sites are: three of the Kohanaiki Homesteads (10741, 10745, and 10749), four water source caves (10692, 10718, 10725, and 10746), two permanent habitation sites (10691, and 10695), an *ahupua‘a* boundary wall (10709), and one *heiau* (10702 [plus the one *heiau* with a burial 10736]).

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INTRODUCTION

PROJECT SETTING

Stanford Carr Development, LLC proposes to develop approximately 213 acres into residential and light commercial occupancy in portions of the *ahupua'a* of Kohanaiki and Kaloko (Figure 1) in TMK: 3-7-3-09:32 (Figure 2). Scientific Consultant Services, Inc. (SCS) conducted archaeological inventory survey on this property (formerly know as the "Y-O" project area), hereafter referred to as the Kaloko Heights project, to identify and evaluate historic properties pursuant to state cultural resource management regulations (HAR § 275 and 276). The project area is an irregular polygon defined by Hina Lani Street on the south, an irregular line at the *makai* end of existing residential development on the east, the boundary between the *ahupua'a* of Kohanaiki and 'O'oma on the north, and a line perpendicular to the northern boundary at roughly the 720 ft. (220 meters) elevation on the west (Figure 3).

PHYSICAL SETTING

The lowest portion of the project area is at an elevation of approximately 720 feet; the highest is just under 1,100 feet (335 meters). This corresponds to the lower half of the Upland Zone and the upper portion of the Middle Zone (Table 1), within the set of environmental zones in Kaloko defined by Cordy *et al*. (1991:8). The characterization of the physical setting of Kaloko Ahupua'a by Cordy *et al*. (1991) is relevant to the Kaloko Heights project, and it is used here with only slight modifications based on Cuddihy and Stone (1990), Wolfe and Morris (1996), and what was observed during field investigations. The environmental zones created in Cordy *et al*. (1991) are based on the system of geological, soil, climatic, and biotic factors.

Table 1: Environmental Zones in Kaloko (Cordy *et al*. 1991:16).

Zone	Elevation (feet above sea level)	Soils	Rainfall (inches/year)	Vegetation
Coastal	0 to 15	Sand	< 10	Almost none
Middle	15 to 900	Minimal	10 to 30	Mostly grass
Upland	900 to 1,500	Up to 4 inches	40 to 50	Trees and shrubs
Upland Forest	1,500 to 6,000	> 5 inches	>70	Native forest

There are two main lava flows in the project area (Wolfe and Morris 1996), both originating from Hualalai. The division between the two flows is approximately 40 meters east of the boundary between Kaloko and Kohanaiki Ahupua'a. The flow in Kohanaiki is from 3,000 to 5,000 years ago. The younger flow, from 1,500 to 3,000 years ago, covers most of the Kaloko portion of the project area.

The lava is exposed to the surface in many places, but there is notably more soil throughout the project area than there is *makai* between the ocean and approximately the 600 ft. (183 meters) elevation mark (Middle Zone). Punaluu and Kaimu soil series cover most of the project area (Sato *et al*. 1972). The transition between treeless lava, and soil-covered forested lands corresponds with the elevation where rainfall changes from 10 inches annually to 30–40 inches annually.

Vegetation in the project area is dependent upon the available soils and rain, and is directly related to historic modifications. A variety of native and alien plant species were observed in the project area during the work conducted for this inventory survey (Table 2).

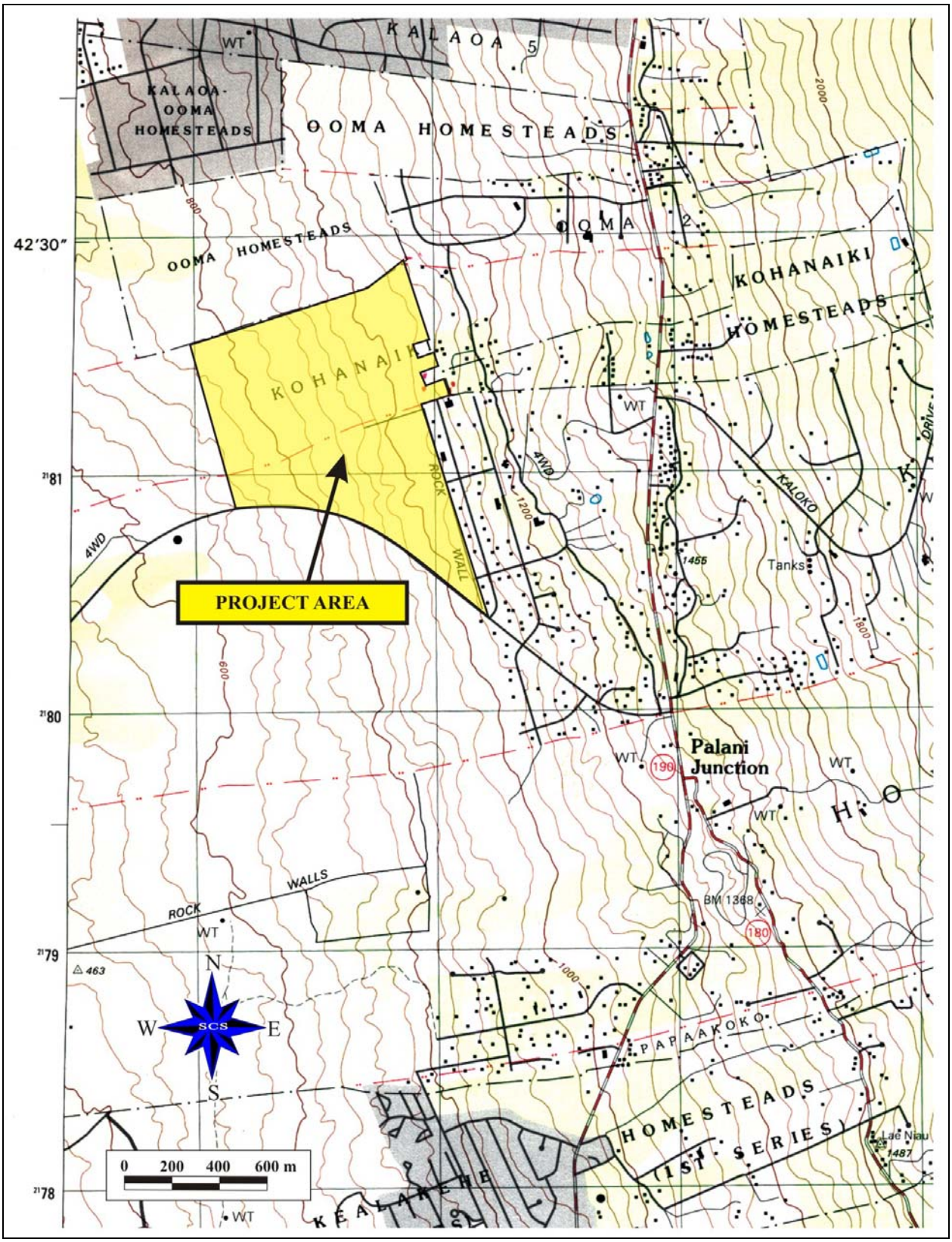

Figure 1: Project Location (USGS Kailua Quadrangle 1996).

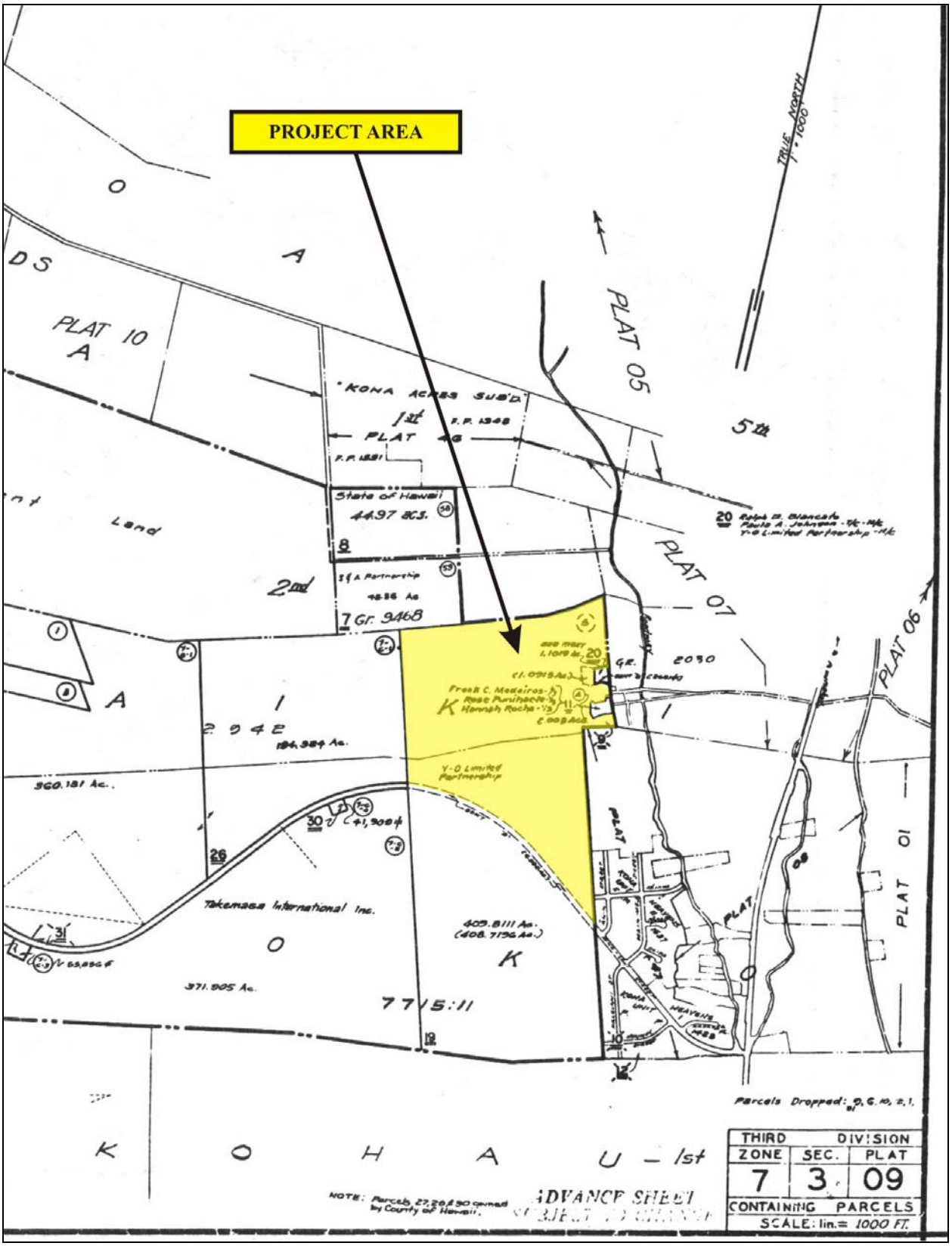

Figure 2: Project Area Tax Map Key [TMK] 7-3-09.

KALOKO HEIGHTS PROJECT AREA MAP

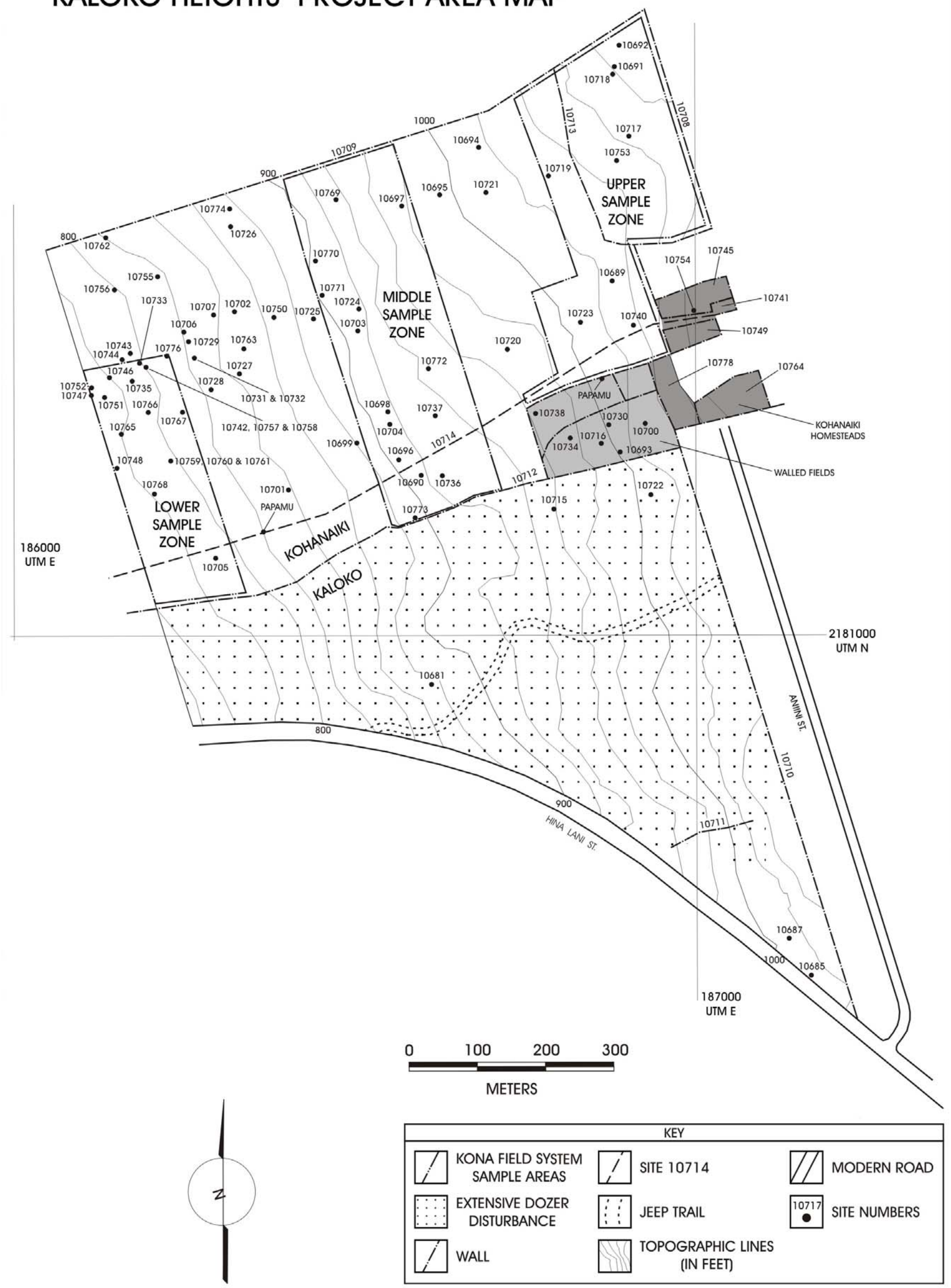

Figure 3: Planview Map of the Project Area.

Table 2: Native and alien vegetation in the project area in order from most prevalent (top) to fewest.

Plant	Status	Scientific name	Use	Distribution at Kaloko Heights
Alahe'e	Native	*Psydrax odorata*	Digging stick, dye	Plentiful beyond the homestead
Fern	Native	various		Scattered throughout
Grass	Native	various		Scattered throughout
Vines	Native	various		Scattered throughout
Christmasberry	Alien	*Schinus terebinthifolius*		Plentiful throughout
Fern	Alien	various		Scattered throughout
Grass	Alien	various		Scattered throughout
Vines	Alien	various		Scattered throughout
'Ilima	Native	*Sida fallax walp.*	Medicine, *hale* floor	Scattered about
Kukui	Native	*Aleurites moluccana*	Medicine, food, tattoo dye, light, building, decoration	NE corner, lower elevations
Lama	Native	*Diospyros sandwicensis*	Food	Scattered about
Laua'e	Native	*Phymatosorus scolopendria*		Scattered about
Māmane	Native	*Sophora chrysophylla*		Scattered about
Moa	Native	*Psilotum nudum (l.) Griseb.*	Tea, laundry	Scattered about
Noni	Native	*Morinda citrifolia*	Medicine	Scattered about
'Ūlei	Native	*Osteomeles anthyllidifolia.*	Fishnet hoops, digging sitcks, weapons, music, food	Scattered about
Air plant	Alien	*Kalanchoe pinnata*		More plentiful in lower elevations
Haole koa	Alien	*Leucaena leucocephala*	Grazing	Concentrations in lower elevations
Lantana	Alien	*Lantana camara*	Garden	Scattered about
Lilikoi	Alien	*Passiflora edulis*	Food	Scattered about
Mango	Alien	*Mangifera indica*	Food	Concentrations at trails and homestead
Silk/silver oak	Alien	*Grevillea robusta*		Scattered about
Strawberry guava	Alien	*Psidium cattleanum*	Food	Scattered about
Kī	Native	*Cordyline fruticosa*	Package, serving, dress, hale, ceremony, medicine, fishing	Only in cave sinks
Kulu'i	Native	*Nototrichium sandwicense*		Only on trails and homestead
Coffee	Alien	*Coffee arabica*	Drink	A few concentrations in wet areas
Loquat	Alien	*Eriobotrya japonica*		Only in homestead
Sourbush	Alien	*Pluchea carolinensis*		Unsure (may be *kulu'i*)
'Ākia	Native	*Wikstroemia monticola*		Very few
Ko'oko'olau	Native	*Bidens sandvicensis, and others*	Tea	Very few
Maiapilo	Native	*Capparis sandwichiana*		Unsure of identification
Cat's claw	Alien	*Caesalpinia decapetala*		Very few
'Ohe makai	Native	*Reynoldsia sandwicensis*		One in lower elevations
'Ōhi'a lehua	Native	*Metrosideros polymorpha*	Tools, weapons, images, *lei*	One in middle elevations

The southern half of the project area (marked by the boundary between Kohanahiki and Kaloko) was bulldozed during ranching times in the mid 20th century, and the vegetation in this area mostly consists of alien trees. Vegetation here is dense, making passage through the area somewhat difficult. The northern half (in Kohanaiki) has not been bulldozed, and the forest there retains many native plants (Figures 4 and 5).

Figure 4: Blooming *alahe`e* in Northern half (Kohanaiki Ahupua‘a) of project area, with dense overstory in background.

Figure 5: Example of the various plant species within the project area’s dense under-canopy.

This kind of native forest is referred to as a lowland dry or mesic forest. "Lowland leeward forests were considered by Rock (1913) to be the richest of all Hawaiian forest in terms of numbers of tree species and unique plants" (Cuddihy and Stone 1990). The Upland Zone begins east beyond the Kaloko Heights project area at an elevation of approximately 1,500 feet (457 meters) elevation. A wetter, denser forest dominated by *ʻōhiʻa* and *koa* grows there.

This 30 to 40 inch rainfall threshold is critical for sustaining native Hawaiian agriculture in Kona (Cordy 2000:131). The heavier rainfall line is lower in elevation further to the south in the typical Kona Field System areas of Kona (less than 2 miles from the coast), and is higher in elevation further north into Kekaha (over 3 miles from the coast). The 40-inch rainfall line is even further from the coast to the north of the project area.

Based on the work conducted for the Kaloko Heights project and a close read of Cordy *et al*.'s (1991:16) environmental zone discussion, it is appropriate to divide the middle zone (Table 3). A division of the Middle Zone (at 600 feet, or 183 meters) into two zones reflects the transition from the barren Middle Zone to the lush Upland Zone (or Lower Upland Zone, as sometimes referred to [Cordy *et al*. 1991:16]). It is also recommended that labels for these zones reflect the kind of environments that they represent (Figure 6).

Table 3: Environmental zones in Kohanaiki and Kaloko.

Old Zone Name	New Zone Name	Elevation (in feet)	Soils (inches)	Rainfall (inches/year)	Vegetation
Coastal	Coastal	0 to 15	Sand	< 10	Almost none
Middle	Lowland Grass and Shrubs	15 to 600	Minimal	10 to 30	Mostly grass
	Transitional Forest	600 to 900	Up to 4	30 to 40	Trees and shrubs
Upland	Lowland Mesic Forest	900 to 1,500	Up to 4	40 to 50	Denser forest
Upland Forest	Montane Dry Forest	1,500 to 6,000	> 5	>70	Dense forest

CULTURAL CONTEXT

ORAL TRADITION AND WRITTEN HISTORY

Traditional accounts of the population of the island of Hawaiʻi indicate that the windward portions of the island were the focus of early settlement (Fornander 1996; Kamakau 1992). First settlement of the island may have occurred as early as AD 0, or as late as AD 900 (Kirch 1985). The freshwater flowing into the shores of Waipiʻo and Hilo sustained agriculture, and these two areas became the focus of political authority for centuries to come.

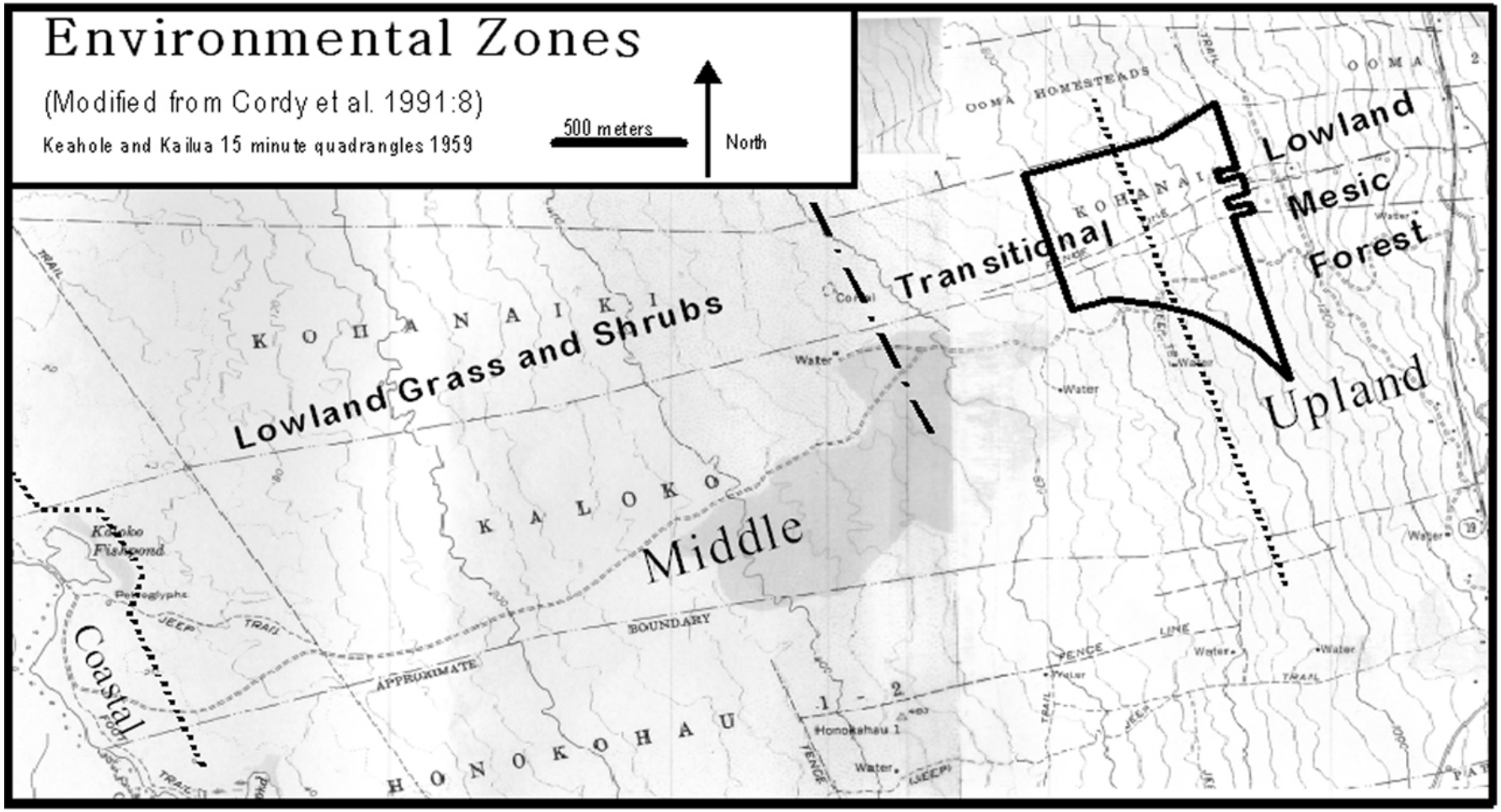

Figure 6: Environmental Zones in the Vicinity of the Project Area.

One island authority, ʻUmi, moved the seat of power from Waipiʻo to Kona during his reign (Fornander 1996). He did not make this move into an unoccupied frontier. Sometime in the first decades of AD 1600[1], during the reign of ʻUmi, the Kona landscape had been transformed into a immense checkerboard of agricultural fields now referred to as the Kona Field System (Newman 1970; Schilt 1984). ʻUmi was wise enough to move himself to where the center of power had shifted to.

The project area is at the northern fringe of the elaborate Kona Field System where the rainfall is just barely sufficient to sustain agricultural practices. Indeed, the name "Kohanaiki" means "small barrenness" (Pukui *et al*. 1974:115). The ancient stories associated with this area emphasize water. One story involves a little pool of water situated near the shore between ʻOʻoma and Kaloko (Maguire 1966:21). (Kohanaiki is the only *ahupuaʻa* that lies between ʻOʻoma and Kaloko.) A certain sea slug (*loli*) was a wizard that lived in the little pool of fresh water. This *loli* could turn himself into a man at will. One day Malumaluiki, the daughter of Kaluaʻōlapa, walked down from her upland home to gather *ʻopihi* and *limu* at the seashore. She stopped to drink of the fresh water in the little pool, and saw a handsome young man. The two fell in love and spent the entire day in expression of that love. She kept her affair secret from her parents, but they soon became suspicious, and Kaluaʻōlapa contrived the means to capture and kill the wizard *loli*. He caught the *loli* and took it to the *kahuna* Pāpaʻapoʻo who was staying at Hoʻohila (Maguire 1966:27)[2]. Pāpaʻapoʻo cooked the *loli* in an *imu*, and in this fashion the locals removed the charmer from their lands.

The story of the Cave of Mākālei (Maguire 1966) does not take place in the *ahupuaʻa* within the project area, but it does take place nearby, and is relevant to the kinds of resources that are found in the project area. A man named Koʻamokumokuoheʻeia moved into the area and lived near an upland cave near *ʻAkahipuʻu*. He began to grow a variety of crops, but the locals told him:

> ". . . the great drawback to this section was no water, except in celebrated caves which are *kapu* (forbidden). They told him that if he were to get water by stealth from a celebrated cave, and he was found out, he would be killed by the owner of that cave" (Maguire 1966:28).

Soon thereafter Koʻamokumokuoheʻeia discovered a little cave entrance that no one had known of before, and he showed it to his father. They had to crawl in the small entrance, which then opened up into large passages further in. Drops of water were dripping from the roof of the cave, and running down the sides (Maguire 1966:30). They carved up *ʻōhiʻa* and *wiliwili* trees to capture the water and "the interior of the cave was strewn with *wiliwili* troughs and *ʻōhiʻa* canoes" (Maguire 1966:30). This water sustained his family and crops through the dry periods, and the neighbors were perplexed as to how they did so. Koʻamokumokuoheʻeia and his family moved away, but even later he returned as a grown man. He asked for a drink of water, but was told that none was available in this dry season. Koʻamokumokuoheʻeia said that he could procure water, and the locals were astounded. In the fashion often portrayed in these kinds of

[1] There are various ways to estimate the chronology of the reigning rulers on the island (see Cordy 2000:84). This report applies the system used by Cordy (2000).

[2] Hoʻohila is not mentioned in *Place Names of Hawaiʻi* (Pukui *et al*. 1974), but it is mentioned in *ʻŌlelo Noʻeau* (Pukui 1983:247). The saying "Nanā ka leo o ke kai o Hoʻohila" translates to "Surly is the voice of the sea of Hoʻohilo", which is "Said of one who speaks harshly".

challenges, if Koʻamokumokuoheʻeia was able to find fresh water here "the landlord would give one of his beautiful daughters in marriage to him, but if he did not find any water, he would be put to death" (Maguire 1966:32). Koʻamokumokuoheʻeia succeeded, and married.

The Kaloko Heights project area is in portions of the *ahupuaʻa* of Kohanaiki, "the little barrenness" (Pukui and Elbert 1974: 115), and Kaloko, "the pond" (Pukui and Elbert 1974: 77-78). Kaloko was a well-known place during prehistory. It was even referred to by *aliʻi* from Maui during the reign of Kamalawalu as they planned their attack on the island of Hawaiʻi (Kamakau 1992:56). It is probably mentioned in chants and *mele*, but the *ahupuaʻa* of Kohanaiki and Kaloko are not, in contrast to other places on the island, mentioned in *Hawaiian Proverbs and Riddles* (Judd 1930) or *ʻŌlelo Noʻeau* (Pukui 1983). Attempts to find mythological references to Kohanaiki by Silva (1986), failed to identify any. No battles are recorded for these two *ahupuaʻa*, but one encounter between ʻUmi's two sons Keliiokalaoa-a-umi and Keawenui-a-umi struggling for island dominance took place two *ahupuaʻa* to the north at Kalaoa[3] (Kamakau 1992:35-36).

The special status of places with water is reinforced by the notion that local informants "declared the pond at Kaloko was *kapu* and that there was a 'spirit' (*moʻo*) of the pond which, if treated badly, would retaliate, bringing bad luck to those responsible, but if this spirit were properly cared for (*mālama*) she would be cooperative" (Kelly 1971:28).

Kameeiamoku and Kamanwa, the famous *aliʻi* twins featured on the Hawaiian crest today, had ties to Kaloko and were important allies of Kamehameha during his campaign to conquer the island chain (Kelly 1971:16). Manuhoa I was the stepfather of the twins, and his son, Manuhua II was the *konohiki* of Kaloko in the early 1800s.

The ponds of Kaloko and Honokohau are the largest fishponds closest to Kailua. This may in part explain their special connection to Kamehameha I in life and death. The pond becomes the center of attention, however, after the reign of Kamehameha I (Kelly 1971:24-27). His bones may have been placed in a cave at the pond's edge. Or in a cave further inland in the *ahupuaʻa* of Kaloko. And they may have been subsequently removed. Or they may have been placed somewhere else. It does seem certain that Kahekili, prominent *moʻi* over Maui, Oʻahu, Molokaʻi, and Lānaʻi, and a contemporary of Kamehameha that some say was Kamehameha's father, was laid to rest at or near the pond at Kaloko (Kelly 1971:24).

The confusion over who's *iwi* resides at the pond, and precisely where they are, is a direct result of the intent to place those remains in a secret place that only the caretakers know of.

> An item of additional interest is a letter written on February 16, 1887, to a person by the name of Kapalu. It is an appointment from the Interior Department of the Hawaiian Kingdom to Kapalu as the 'overseer and keeper of the Royal Burial Ground at Kaloko, Kailua' (Interior Dept. 1887 [28]:687, 692" (Kelly 1971:25).

[3] Kamakau refers to the place of battle as the Hill of Kaloa, but Judd (1930) indicates that Kaloa and Kalaoa were used interchangeably.

Kaloko passed from Ruth Keelikolani to her heir Bernice Pauahi Bishop in 1883. Ms. Bishop died the next year, and the land was sold by her executors Charles Bishop and Samuel Damon to C.H. Judd. John Maguire obtained the land from them in 1906 (Kelly 1971:29).

Kaʻanāʻanā was the first caretaker of Kaloko pond to be mentioned in the written record (Kelly 1971:29). Upon the death of Kaʻanāʻanā Mokuaikai took over care taking the pond, and formed a *hui* to assist in that task. Ahuna and his wife manage the pond in the early 1920s.

John Maguire obtained Kaloko from the estate of Kalakaua and Kapiolani in 1906, and put the upper elevations into ranch at that time. He died in 1919, and the land was then managed by Arthur Stillman. Then William Keanaʻaina, Sr. leased the pond from Stillman in the mid 1930s. His son, William Keanaʻaina, Jr. cared for the pond after that until he died in 1940. After that the pond was not officially managed by anyone. Frances Foo held a lease that included the pond from 1943 to 1961. He stocked it with *pua* (mullet), and raised the fish to sell at market in Kailua. He bulldozed a road from Kaloko pond to Kailua to facilitate that endeavor.

The project area within Kohanaiki was government lands that were sold to Hulikoa in 1855 (Cordy *et al*. 1991:403) in Grant 2942. The lands were surveyed by Fuller in 1855, and subsequently by Emerson in 1888 (Figures 7 and 7a). Fuller identifies the "public road makai" at that time indicating that the "Mamalahoa Trail" was built prior to that. Cordy *et al*. (1991:403) reasons that since "straight, curbed trails only began to be constructed in the 1830s, and first in Kealakekua and Kailua-Kona (Barrot 1978:8), the construction of this trail can be confidently placed between AD 1836-1855". During the 1855 survey, *ʻohe* trees were used to mark the border between Kaloko and Kohanaiki.

> Emerson's next inland station was called "Kumuohe", at 325 feet elevation (Emerson 1888a:75-78; 1888b). This station was a cairn (*ahu*) on an *ʻaʻa* flow. A mark (+) and cairn were placed here by Emerson (Emerson 1888a:75-78). Additionally, a trail, "road", was located just south of this station within Kaloko (Emerson 1888b). "This irregular path is a continuation of the road, located from Na wahi ahu [the next inland station]" (Emerson 1888a:76-78). Emerson's map of the entire Kaloko-Kohanaiki area shows this road leading from the Kohanaiki Homestead, inland at 1,100–1,200 feet and within Kohanaiki *ahupuaʻa*, down to Na Wahi Ahu (Nawahiahu), and then into Kaloko by the Kumuohe station and down to Kealiihelepo's house at Kaloko Fishpond in the D13–12 area (Emerson 1888b) [Cordy *et al*. 1991:404].

By 1888 when Emerson surveyed the area, the Mamalahoa Trail was referred to as "Lower Govt. Road - little used" (Cordy *et al*. 1991:405). Emerson also mapped in a *mauka-makai* road that connects the Kaloko pond with the Kohanaiki Homesteads (see Figure 7). No caves or man-made shelters were documented within the project area by Emerson. Emerson did not mention the Protestant church located in the Kohanaiki Homestead by approximately the mid-1870s (Kelly 1971:14).

All of the twelve *kuleana* awards for Kaloko were situated near the crossroads of two important trails at the time, the road that lead from the Kohanaiki Homesteads to the Kaloko pond, and the Upper Highway. These are the two "sites" that are identifiable in the historic record that are within the project area: 1) the Kohanaiki Homesteads, and 2) the road that connects those homesteads to Kaloko pond.

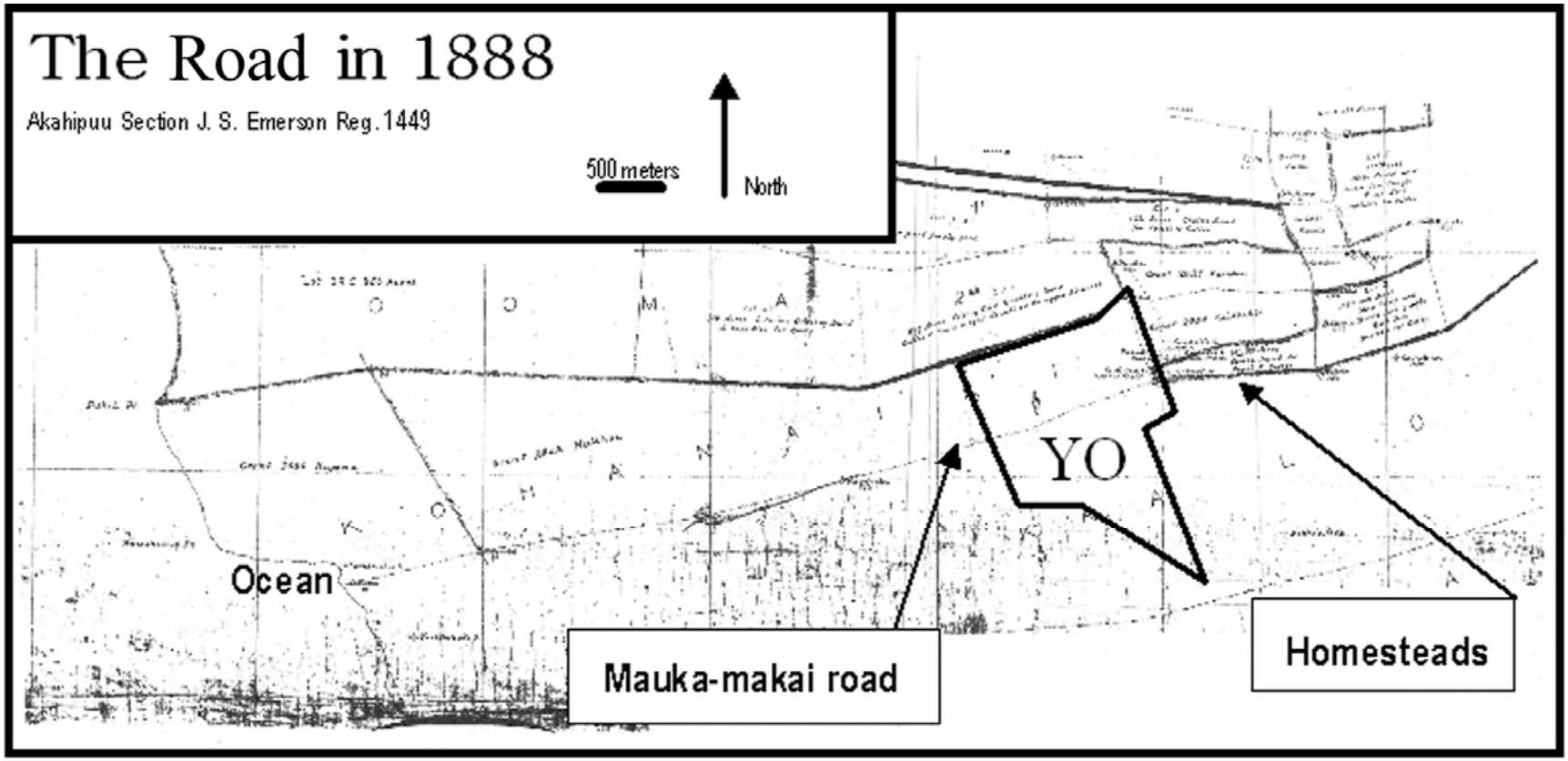

Figure 7. Map from 1888, J.S. Emerson Reg. 1449.

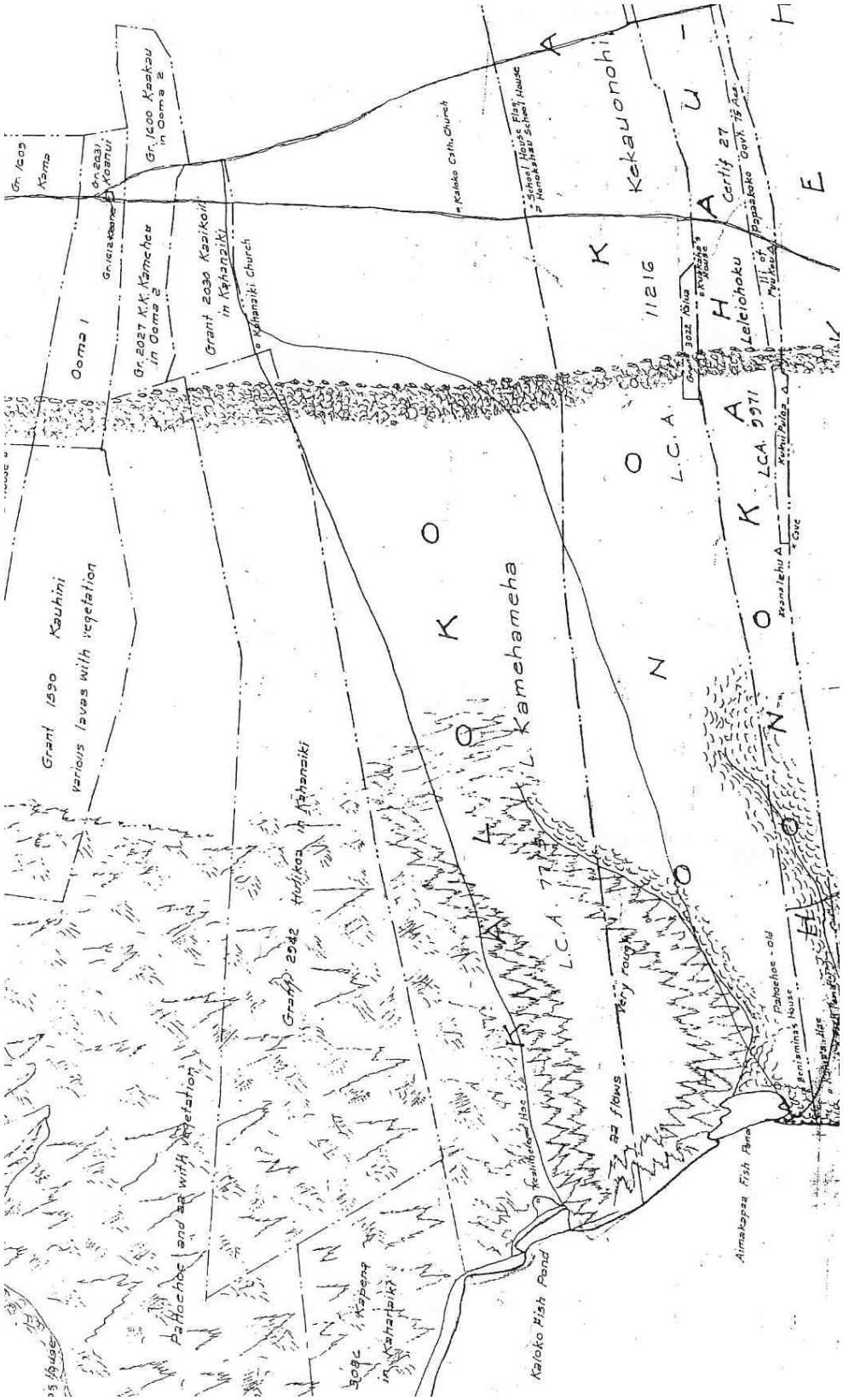

Figure 7a. Emerson map Registered Map Number 1280.

In Kohanaiki a set of about 16 stone house enclosures and a protestant church was collectively called the Konanaiki Homesteads (Figure 8). The church seems to be the one built in the 1870s (see previous section). Interestingly, none of these enclosures or the homesteads are mentioned in the Mahele records or the grant (Gr. 2030), suggesting a post-1854 date" (Cordy *et al*. 1991:418). Those homesteads, situated at 320-meter (1,050 ft.) elevation approximately 5.5 kilometers (3.5 miles) from sea, are intimately tied to the sea. "Kelly's (1971) information on the fishpond caretakers shows that several of them lived in the Kohanaiki Homesteads. Indeed, two of the *Mokuaikai hui* have house lots on the Emerson map, Mokuaikai and Keawehawaii Kininau" (Cordy *et al*. 1991:421).

The formal designation of the Kohanaiki Homesteads is a relatively late affair. They are not mentioned in the Mahele, suggesting that they postdate the mid-1800s, and an investigation into the Surveys Division of the State of Hawai‘i's Department of General Services indicates that the lots were purchased between 1895 and 1898 (Cordy *et al*. 1991:419). The road that connects the homesteads predates these purchases (it shows up on the 1888 map).

There are 19 names in the Kohanaiki Homestead (see Figure 8). Based on this figure it is possible that there are only 18, and that Kaiakoili and Kaiakaoili are two spellings of the same name/family. There are two names in the homesteads that may be associated with *ali‘i*: Ka‘iakoili and Punihaole (Kamakau 1992). Ka‘iakoili was the wife of Kapi‘ioho, and both were friends of Kuini Liliha, the Governor of O‘ahu in the 1830s (Kamakau 1992:297). They lived in O‘ahu at that time. When Liliha was ousted from his post, Ka‘iakoili was made land agent (similar to *konohiki*) of Ko‘olaupoko, the significant windward district on O‘ahu (Kamakau 1992:303). Punihaole was an *ali‘i* and Liliha's teacher, as well as the teacher of other chiefesses and their attendants (Kamakau 1992:297, 300). During the reign of Kamehameha III, Punihaole was a noted "minister of the gospel" (Kamakau 1992:426).

These notes address the two persons during their activities in 1830s, while the Kohanaiki Homesteads are a later phenomena. It is not certain that the Ka‘iakoili and Punihaole *ali‘i* of 1830s were indeed the Ka‘iakoili and Punihaole of Kohanaiki of the 1880s. Punihaole does have one of the largest of the homesteads, and that may reflect *ali‘i* ancestry and a connection to his status with the protestant church in the middle of these homesteads. Such a connection is speculative at this time, but could be examined with further research into genealogies of the area.

The homesteads and the Mauka-Makai Road connecting them to the ocean were still in use in 1924 (Figure 9). In addition, there is another pathway of some kind that connects the homesteads with a place in neighboring ‘O‘oma Ahupua‘a (Figure 10). Only six homesteads are noted at this time, but, based on the limitations of USGS mapping, that should not be considered as an absolute indication of the number of houses or homesteads in operation.

The population may have been reduced to one homestead in 1959 (Figure 11). Two empty squares on the map are USGS symbols for "ruins". The “*mauka-makai*” road

has been removed from the USGS map, and replaced, in part, with "fence line". (No fence or fence remnants were identified in the area noted by the map during the inventory survey. It is conceivable that the "fence line" was not correctly identified in USGS aerial topographic mapping for the 1959 map.) A jeep road was constructed between 1924 and 1959. That road was probably built to facilitate motor vehicle traffic from the Hu‘ehu‘e ranch to the ocean.

In contrast to the dry, barren, and almost uninhabited coastal regions of Kohanaiki and Kaloko, the Upland Zone was a vibrant place in the late 1800s.

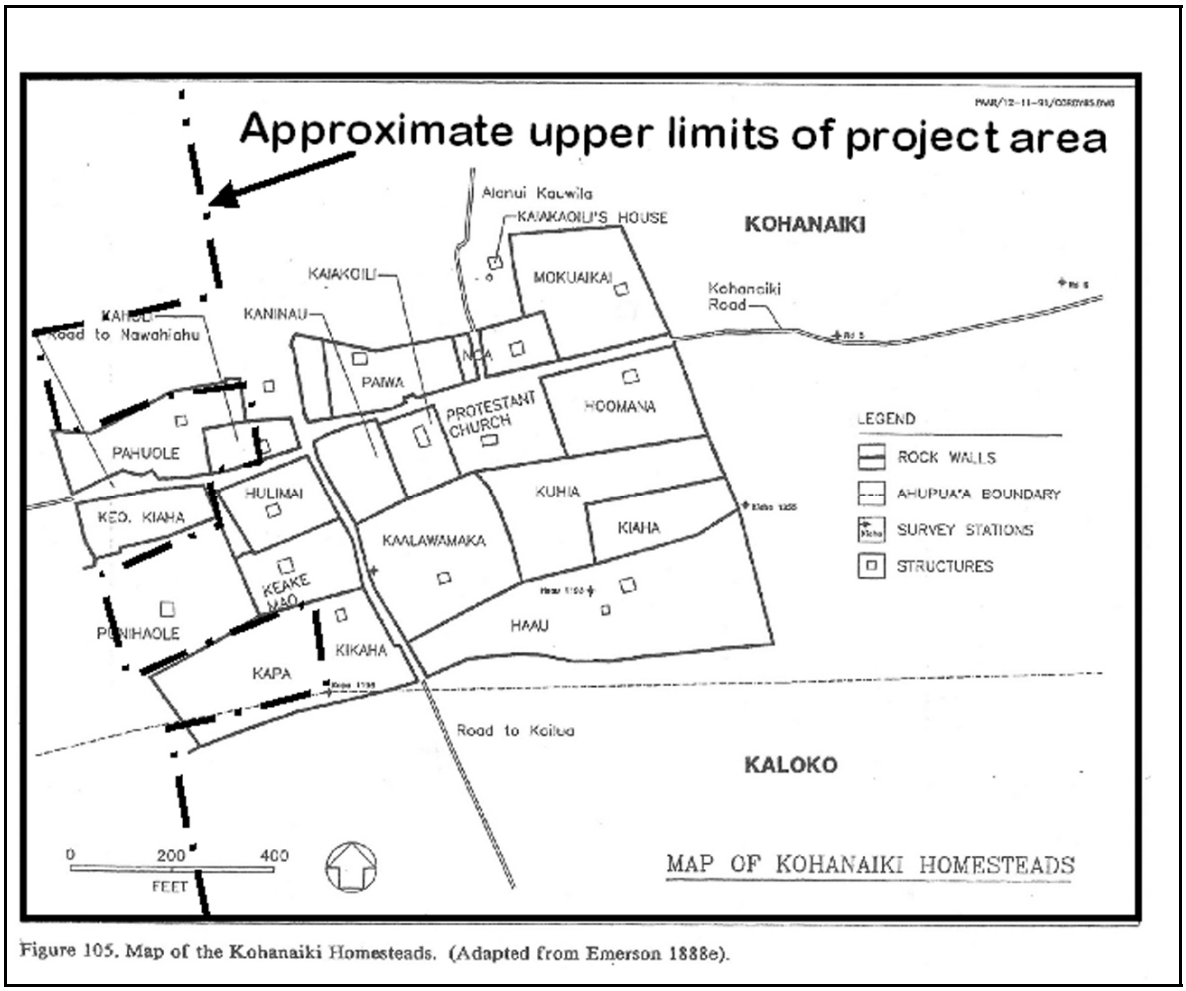

Figure 105. Map of the Kohanaiki Homesteads. (Adapted from Emerson 1888e).

Figure 8: Kohanaiki Homes. Kohanaiki Homesteads (Adapted from Cordy *et al.* 1991 adaptation of Emerson 1888).

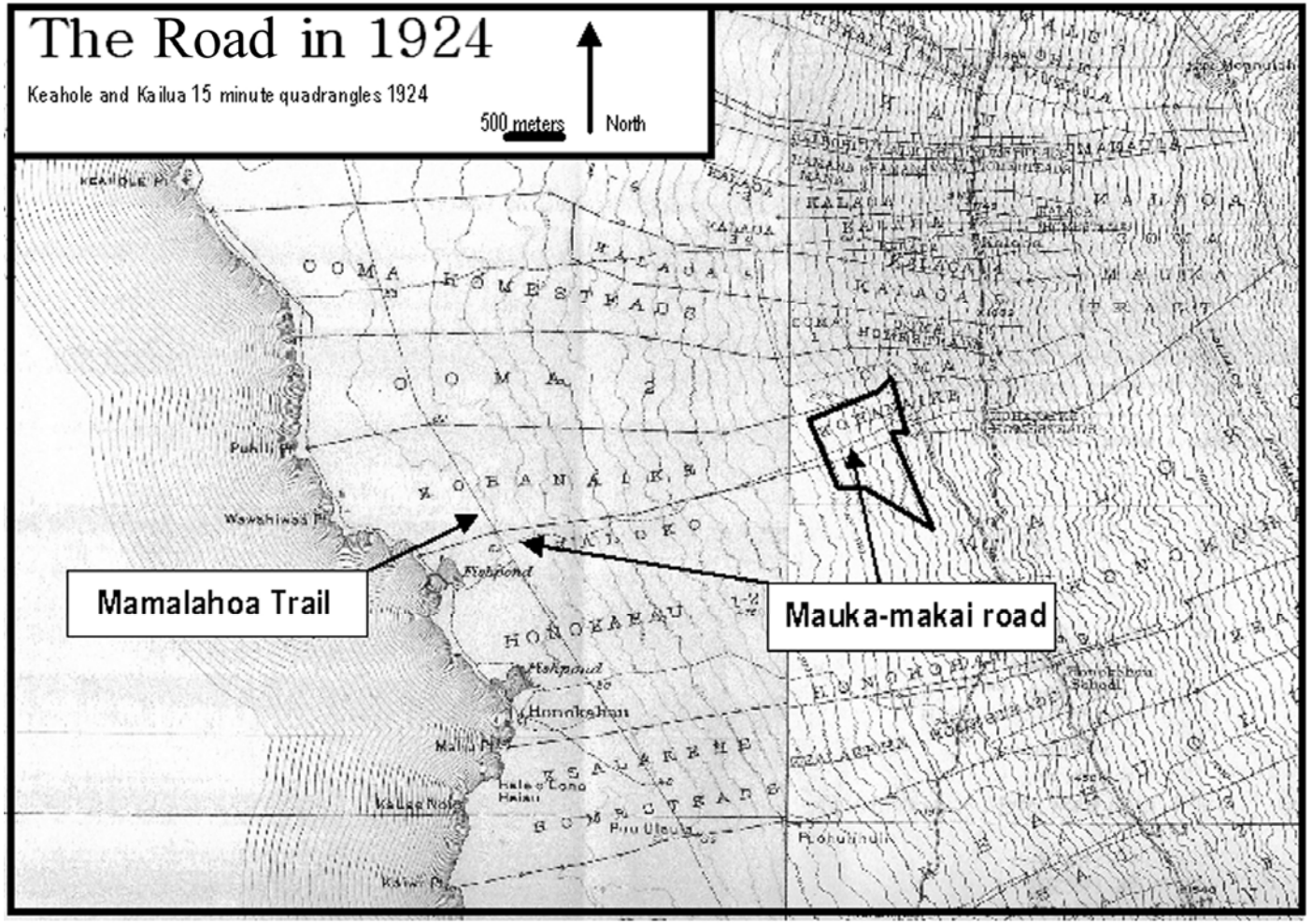

Figure 9: USGS Keahole and Kailua 15 Minute Quadrangles, 1924.

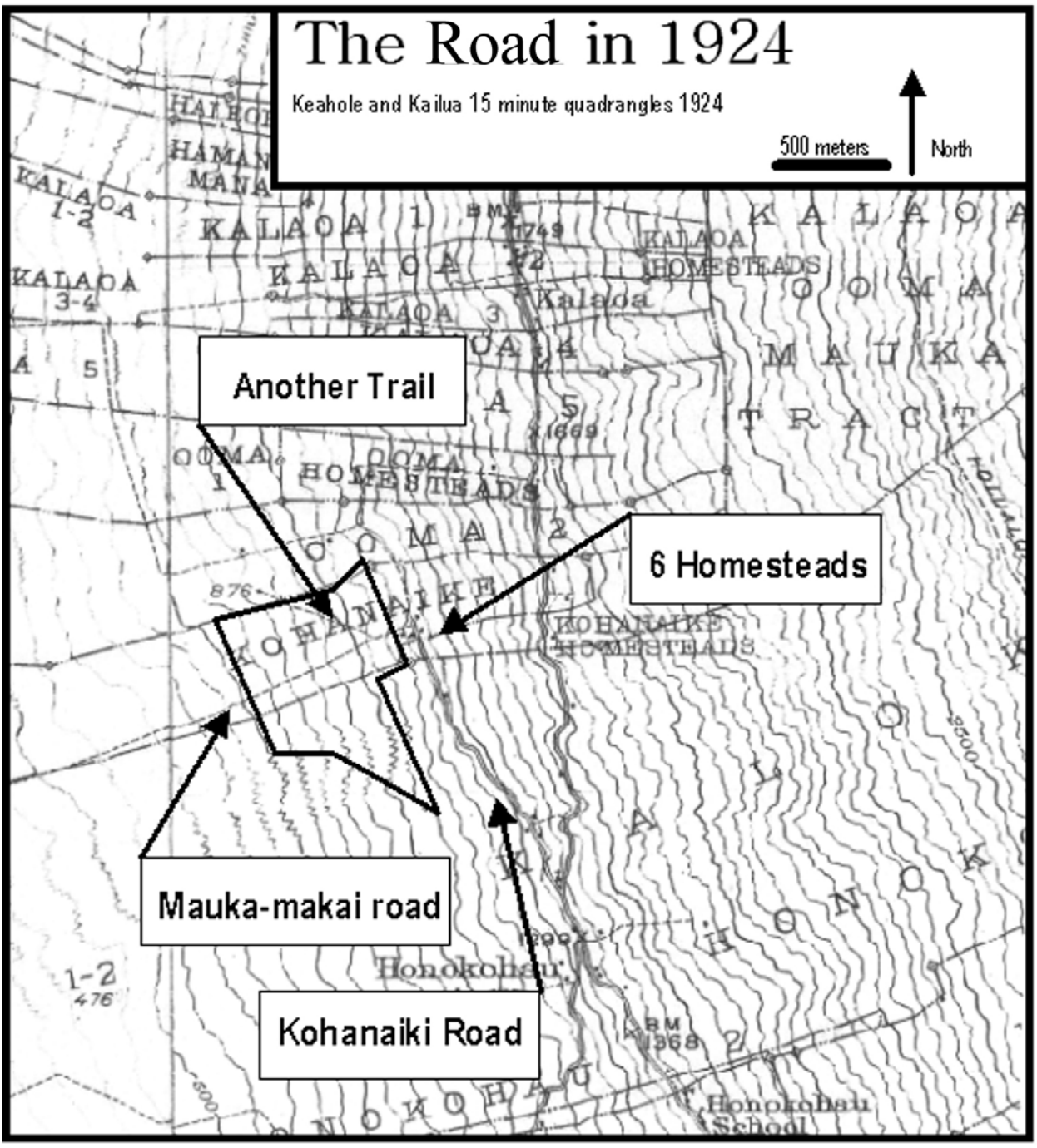

Figure 10: Close up of USGS Keahole and Kailua 15 Minute Quadrangless, 1924.

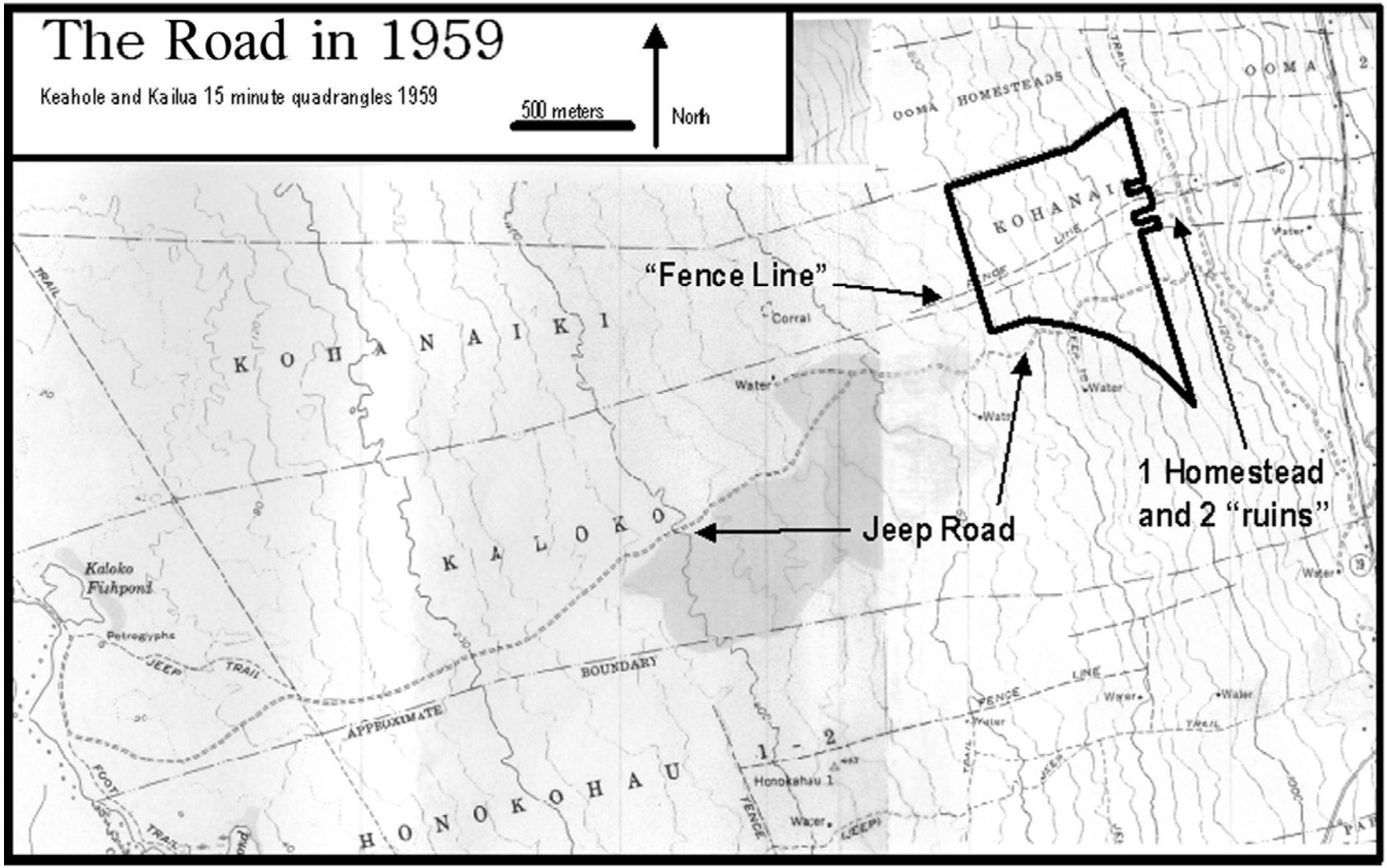

Figure 11: USGS Keahole and Kailua 15-Minute Quadrangles, 1959.

PREVIOUS ARCHAEOLOGY

This project area has an unusual history of archaeological investigations. One half of the project area, that portion within Kaloko Ahupua‘a, was included within a comprehensive study on *ahupua‘a*-wide settlement patterning entitled *An Ahupua‘a Study: the 1971 Archaeological Work at Kaloko Ahupua‘a North Kona Hawai‘i*, by R. Cordy, J. Tainter, R. Renger, and R. Hitchcock (1991). That examination was one of several seminal studies that sought to understand the relationship of settlements across the unit of social measurement in Hawai‘i, the *ahupua‘a*. Various portions of the *ahupua‘a* were sampled with surface survey, and some areas were excavated. Detailed historic documentary research also contributed to the investigation.

The other unusual development here is that several reports have been created for the project area (Barrera 1985, 1988, 1991; Hammatt 1980). None of these have been sufficient to comply with State Historic Preservation Division (SHPD) requirements for an inventory survey.

In the *Ahupua‘a*

The Kaloko Ahupua‘a study (Cordy *et al*. 1991) achieved notable results with regard to the larger relationship of people to the variety of landscapes and resources available to them across the elevations of the *ahupua‘a*. The Kaloko Heights project area (formerly, “Y-O”) was not included in the archaeological sample after a cursory reconnaissance through it determined that this portion of Kaloko had "been greatly altered by housing, modern agriculture and ranching activities. It was believed that these activities had destroyed the historic sites in the 1,100 - 1,600 ft. elevations, and beyond to the 2,000 ft. elevation" Cordy *et al*. (1991:409). Despite the lack of intact archaeological remains identified with Kaloko in this zone, it was recognized that "(f)ormer historic site patterns in the Upland Zone are extremely vital for understanding the history of Kaloko" (Cordy *et al*. 1991:409). The distribution of settlements in the different zones is described in some detail in the succeeding section on Expected Patterns.

Other archaeological investigations have been conducted in the two *ahupua‘a* (Table 4). In all cases, these investigations have elaborated upon the pattern articulated by Cordy *et al*. (1991). In general, that is settlement and burial concentrations along the coastal area, agricultural features in the elevations around the current Mamalahoa Highway, and few sites in elevations above that.

In the Project Area

The Kaloko Heights project was previously inspected by archaeologists (under the name “Y-O” project) for other clients in the 1980s (Barrera 1985, 1988, 1991; Hammatt 1980). The work conducted by Archaeological Research Center Hawaii (Hammatt 1980) was reported in a letter, and that letter has not been made available in this inspection.

The series of reports from Chiniago, Inc. (Barrera 1985, 1988, 1991) represents the evolution of archaeological investigations in the project area designed to comply with state historic preservation regulations. The portion in Kaloko was not walked systematically, because the area had been bulldozed during ranching days. Instead, archaeologists went to large trees to see if anything survived near them. To the north where there was no bulldozing, "the majority of Kohanaiki section was searched by walking parallel sweeps using a compass for direction"

(Barrera 1985:6). Fifty-six sites were reported on for the current project area in the initial report (Barrera 1985). The many features of the Kohanaiki Homesteads were lumped into one site, the many features just *makai* of the homesteads were separated into sites 7 through 54, and 7 other features were noted. All of the sites, except one, were within Kohanaiki.

Table 4: Previous archaeological studies in and near the project area.

Reference	Investigation	Location	Results
Renger (1970)	Reconnaissance	Kaloko coastal	Sites
Soehren (1979)	Reconnaissance	Kaloko lowland	0 sites
Soehren (1980a)	Reconnaissance	Kaloko lowland	0 sites
Soehren (1980b)	Reconnaissance	Kaloko lowland	6 sites
Hammatt (1980)	Reconnaissance	Y-O project area	Unknown
Kennedy (1983)	Reconnaissance	Kohanaiki lowland	39 sites
Kennedy (1984)	Reconnaissance	Kohanaiki lowland	39 sites
Barrera (1985)	Reconnaissance	Y-O project area	56 sites
Donham (1986)	Reconnaissance	Kohanaiki lowland	105 sites
Barrera (1988)	Excavations	Y-O project area	60 sites
Rosendahl (1989a)	Inventory Survey	Kaloko lowland	1 site
Rosendahl (1989b)	Reconnaissance	Kaloko montane forest	4 sites
Rosendahl (1989c)	Reconnaissance	Kaloko montane forest	0 sites
Rosendahl and Walker (1991)	Reconnaissance	Kaloko lowland	1 site
Barrera (1991)	Inventory survey	Y-O project area	Modified 1988 report
Cordy *et al*. (1991)	Ahupua‘a study	Kaloko ahupua‘a	Settlement pattern
Barrera (1993)	Inventory Survey	Kaloko montane forest	
Rosendahl (1993)	Reconnaissance	Kaloko montane forest	4 sites
Fager and Graves (1993)	Inventory Survey	Kaloko lowland	17 sites
Nees and Williams (1995)	Reconnaissance	Kaloko montane forest	0 sites
Walsh and Hammatt (1995)	Inventory Survey	Kaloko lowland	1 site
Colin *et al*. (1996)	Inventory Survey	Kohanaiki lowland	55 sites
Rosendahl (2000)	Reconnaissance	Kaloko montane forest	
Haun and Henry (2000)	Inventory Survey	Kaloko lowland	45 sites
Puette and Dye (2003)	Inventory Survey	Kaloko montane forest	0 sites
Rechtman (2003)	Reconnaissance	Kaloko montane forest	
Moore and Kennedy (2003)	Inventory Survey	Kaloko lowland	1 site

Test excavations were conducted at some of the sites in the project area (Barrera 1988). The excavation work focused on the complex of features just *makai* of the homestead area. Twenty-three hydration rind dates were generated. The dates range from A.D. 1465 to 1742.

The 1988 report was modified at the request of the SHPD. The Barrera (1991) report, labeled "Final Report", reflects an attempt to make those modifications. The report portrays the field methods somewhat differently than previously. The report laments that the vegetation in Kohanaiki was so dense that fieldworkers:

> were not able to conduct parallel sweeps across the entire area as would have been preferable in more open country. Instead we conducted three north-south sweeps, one each at the east and west sides of the property and one across the middle… This procedure was chosen on the assumption that it would reveal any site concentrations that might be present (Barrera 1991:4).

Not only is this depiction of field methods contrary to what the same author previously portrayed, the methods themselves were clearly inadequate. That process identified only seven sites in an area that was later found to have many more sites than that.

The modifications to the report are: a short discussion; the addition of many site numbers for walls and individual features within the homesteads, and; the removal of the tabulation of the material remains collected. Two burial sites were reported on (10736 and 10740). Site 10736 was also interpreted as a *mua*, or men's house. A "road to the sea" was identified, but not given any site number. Three "lava bubbles" were identified, one of which had no cultural debris in it. No caves were reported.

The assignment of SIHP to sites was done in a very haphazard way. Some large areas were given one site number with many feature numbers. Many features that were close together were given separate site numbers, when their spatial and functional aspects suggest that they should have been features of a single site. Thirty six walls from various places, and probably various times of construction, were all given one site number (15540) and assigned separate feature numbers. And one site, the historic road called the "road to the sea" was not assigned any SIHP. This confusing situation is not passed on to this report. Instead, a system that is based at least ostensibly on a logical grounding was used to assign, and reassign, site numbers. This is explained in detail in the section “Methodology”.

EXPECTED PATTERNS

An in depth model for the settlement pattern for the *ahupua‘a* of Kaloko has been generated based on research designed specifically to produce such a model (Cordy *et al*. 1991). Based on the similarity in natural environment, it can be assumed that the Kaloko model is applicable in all regards to Kohanaiki *ahupua‘a*, too. That spacio-temporal model is outlined below in an abbreviated form.

Earliest radiocarbon dates indicate people were using the area around A.D. 920 to 1290. Subsistence activities were probably focused on slash and burning of the virgin forest at higher elevations with good rainfall, and collection of marine resources at the coast. Permanent habitation probably spread across the shoreline by A.D. 1300. Agriculture probably intensified in the cleared upland fields with the creation of walled areas. Population increased through the next few centuries.

By A.D. 1600, groups of residential households clustered together in "local residential groups" along the Coastal Zone and lower Middle (Lowland Grass and Shrubs) Zone. The residential groups were made up mostly of commoners with "a high chief". A few permanent houses were scattered about in the inland areas.

Agricultural fields, sometimes referred to as "formal-walled fields" were present from the 900 to 2,300 ft. elevations. Other agricultural features occurred up to the 3,500 ft. elevation, and below to around the 600 ft. elevation (down through the Transitional Zone). Trails linked the various zones, and temporary shelters were located along the trails.

The limited water sources were linked to habitation areas by trails. One dripping water cave is identified at the 250 to 400 ft. elevation (site K-49). *Heiau* were located along the shoreline, and lesser *heiau* were present in the agricultural fields. There is a cemetery in the Coastal Zone.

The permanent habitation was focused in the Coastal Zone with 19 households identified in that area. Only one household was identified in the upland agricultural fields. The 19 households in the lower elevations may have been grouped into 4 "local residence groups", and these in turn make up the "community" in Kaloko. Assuming that these households were inhabited simultaneously, there may have been between 167 and 230 people living in Kaloko at any given time during this period (Cordy *et al*. 1991:555).

Direct observation of agricultural fields in Kaloko was lacking the *ahupua'a* study (Cordy *et al*. 1991:557). Consequently, the model is highly speculative in this regard, and is in large part dependent upon comparison to other well-documented Hawaiian agricultural models in Kohala, Kona, and Ka'ū. Also, the prehistoric model may rely too heavily on Mahele data. The Mahele mentions only one house in the Upland (Lowland Mesic Forest) Zone, and that is used to reinforce the idea that few people lived in the upland zone during prehistoric times. Consequently, the upland area is considered to be a place where agriculture was conducted, and people moved from their dwellings in the coastal area up to those fields to tend them, returning each day, or at most spending some short time in temporary upland shelters.

From 1800 to 1840, the number of residents declines drastically. The Kaloko community only has several households, and lacks a chief or *konohiki*. The coastal area is abandoned by 1840, while a few houses are present in the uplands.

Between 1840 and 1900 population increased, but this time it was situated in the uplands. There was only one residence in the coastal area. Ownership of the *ahupua'a* passed from chiefs to people that eventually ran the Hu'ehu'e Ranch. People living in the uplands used the shoreline for marine resources. The fishpond was used to generate cash produce. A Catholic school was started in Kaloko, and a Protestant church was built in the Kohanaiki Homesteads. The major walls were built after the 1888 Emerson survey, and probably after the beginning of ranching in 1906.

Based on the archaeological, oral, and historic data, Cordy *et al*. (1991) suggest:

> Kaloko was an *ahupua'a* belonging to Kame'eiamoku in the late 1700s, and to his father (Keawepoepoe) and his grandfather (Lonokaha'upu) (Barrere 1957) before him (see pp. 627-629). We further suggest that Kaloko was a periodic residence of this family into the time of Kame'eiamoku, with site 42 being the specific residence. Kaloko's fishpond, larger population, vast inland field systems, and inland *koa* rights again all fit the pattern of association with a high chief (Cordy *et al*. 1991:577).

Based on the model presented above, the Kaloko Heights project area is situated within the Transitional Forest and Lowland Mesic Forest Zones. Agricultural features typical of the formal-walled fields (*kua'iwi*, mounds, terraces) are expected here, and these should dominate

the archaeological record. Temporary habitations, in the form of C-shapes and small terraces are also expected. Trails and caves may be present. Perhaps a lesser *heiau* may occur, too.

With the increased population in the 1800s, we expect to find historic habitation in the project area. Indeed, it has already been established that a portion of the Kohanaiki Homesteads are within the project area. Ranching activities also are expected to be manifest in the form of historic walls, corals, and surface alteration through bulldozing.

METHODOLOGY

The methods conducted for this project were selected to address the particular physical and archaeological situation, and to articulate with the previous investigations as appropriate. All documents were recorded on standard SCS forms and metric graph paper. All field notes, photographs, and other documents or materials related to this project are being curated at the SCS Honolulu office. Laboratory anaylsis was undertaken at the SCS Honolulu office under the supervision of Lab Director, Guerin Tome. Radiocarbon dates were processed by Beta Analytic, Inc. The appendices of this report contain all of the laboratory information. Appendix A is the radiocarbon inventory, Appendix B is the coral inventory, Appendix C is the botanical inventory, Appendix D is the vertebrate inventory, Appendix E is the invertebrate inventory, and Appendix F is the traditional artifacts.

SURFACE SURVEY

The surface survey was conducted in a variety of ways. The Kaloko *ahupua'a* portion of the project area was surveyed at 20 meter intervals. The Kohanaiki portion was surveyed at 15 to 20 meter intervals making sure that the archaeologists could see one another during this process. The Kohanaiki Homesteads were closely inspected at random transects that fully covered the ground, the equivalent of about 5 meter intervals. SCS inspected the Walled Fields area to look for caves, and to compare the previous map (Barrera 1985, 1988, 1991) with surface features. No caves were found, and the map accurately represents the configuration of features in this area. Many cave openings were identified during surface survey, all of those were checked as indicated in cave methods below. Few sites were noted in Kaloko, but archaeological features, mostly agricultural, are ubiquitous throughout undisturbed Kohanaiki.

Excavations at selected sites included detailed tape and compass mapping, digital photography, and the excavation of test units (TUs) and/or stratigraphic trenches (STs). Test units were usually 1.0 x 1.0 m and were excavated in natural layers, with either all or a representative sample of these layers screened through $1/8^{th}$ inch mesh screen. All were either hand excavated to bedrock or culturally sterile soil, photographed, and had at least one profile drawn (most had two). Test units were primarily placed in areas where it was assumed that midden and artifacts would be recovered. Stratigraphic trenches were either excavated to locate human remains, or to better understand feature architecture. Although they were theoretically to be excavated without regard to stratigraphy, and not screened (visible artifacts and midden collected as "grab" samples), in some instances this density was judged high enough to screen the matrix. In at least one instance, a stratigraphic trench was converted to a test unit after excavation had begun. While most STs were photographed and had at least one wall profiled, a few small trenches (≥ 0.5 by 0.5 m) were not. These were excavated to quickly assess depth of

soil and the presence of cultural material. All features that were suspected of containing a burial, and some features that were identified as habitation, were test excavated.

BURIALS

The only way to ensure that all burials within any project area are found and identified is to excavate fully every feature. This is not possible, nor is it desirable. The only way to ensure that no undiscovered burial is damaged in construction is to not conduct any construction anywhere. Barring the implementation of that practice, an overt research design can be used to guide the archaeological work to maximize the opportunity to find burials in the project area. This project was guided by the design outlined below.

The identification of burial locations is an extremely difficult task in Hawaiian archaeology. This is due in large part to the great variety of ways that people were traditionally laid to rest. People were laid out in caves, buried in the ground without markers, buried deep in sand dunes, cremated, placed in the floor of the family residence, had portions of their bodies distributed to loved ones, tossed in a volcano, had portions used to make fishhooks, placed in crevices and had stone features built over them, buried singly and in groups (Ellis 1969; Fornander 1996; Kamakau 1992, Malo 1951; Handy and Pukui 1958). Consequently, "(b)urials are one of the easiest site types to functionally identify" (Cordy *et al*. 1991) only when the bones of a person are actually observed. They are perhaps the hardest type of site to identify when no test excavations have been conducted to inspect for the presence of human remains.

Faced with this situation, the field methods were designed to maximize the opportunity to observe burial areas in the project area. The lack of sand dunes and the lack of fssignificant areas of soil make it highly unlikely that burials were placed into the ground without stone features. In contrast, the likeliest places for burials in this part of the *ahupua'a* would be within caves, habitation features, and stone features made especially for the placement of burials. All identified caves were fully explored using the methods detailed in the methods section. Many habitation sites were tested, and many stone platforms that were large enough for a burial, but seemingly too small for habitation were tested.

We used a specific kind of test when we were checking to see if a particular stone feature might contain a burial: a stratigraphic trench. Because the goal of the stratigraphic trench was to determine whether a burial was in the feature or not, it was more important to expose a larger area, than it was to collect every little fragment of artifact and midden. Consequently, the stratigraphic trenches were not screened, and they cover larger areas than other test excavations.

Excavation was conducted at 30 features that were suspected of containing human *iwi* in a burial context. Human *iwi* were encountered in only one of these.

KONA FIELD SYSTEM

The Kona Field System extends north at least to Kaʻū Ahupuaʻa (approximately 3 kilometers north of the Kaloko Heights project area) and south to Honaunau, west from the coastline and east to the forested slopes of Hualalai (Cordy *et al*. 1991; Newman 1970; Schilt 1984). A large portion of this area is designated in the Hawaii SIHP (State Inventory of Historic Places) as Site 50-10-28, 37, 47, 56-6601 and has been determined eligible for inclusion in the

National Register of Historic Places. The basic characteristics and general locations of the zones within the system as presented in Newman (1970) have been confirmed and elaborated on by more intensive and extensive ethnohistoric investigations (Kelly 1983).

The Kaloko Heights project area is within the larger area designated as Site 6601. Consequently, the agricultural fields present within the project area are designated SIHP: 6601. SCS consulted with SHPD and devised a sampling strategy to record a large portion of the Kona Field System within the project area. Three zones were created in Kohanaiki; one in the lower elevations, one in the middle, and one in the higher elevations. All of the features within these three zones were mapped. This process provides a look at the way the Kona Field System is organized, and how it might reflect differences in elevations and terrain.

CAVES

It would seem that caves are easily identified as caves, but in many cases they are not always easy to get into, or fully explore. Man-made constricted entrances limit, but do not preclude, access. It is very likely that some cave entrances were completely filled in, and consequently, difficult to find and identify as cave openings. All cave openings that were identified as such were inspected. In only one case was it necessary to remove some stones at the entrance to make it large enough to enter. No burial was found in that cave. There are also passages inside caves that have been fully blocked with stone. In every case where we encountered internal fillings, we moved a few rocks to assess the intensity of the filling. In cases where there were few inhibiting rocks, we moved those and pressed on within the cave. In several instances using this technique, we did find burials after moving rocks. Those rocks were replaced when we left the cave. In other instances, we determined that many rocks filled the chamber, and it would take a great deal of effort to move those. We did not proceed in those cases.

The physical end of passages in caves cannot be determined in many instances. That is because passages often become very small yet they continue, and curve beyond sight. SCS field archaeologists move through passages until they become 30 cm (12 inches) high or wide (roughly the size of a computer screen and its casing). At that constricted point an assessment is made regarding the continuation of the passage. If the passage continues at that small size, or gets even smaller, then that point is interpreted as the "cultural end". If the passage opens up to a larger passage past the constriction, then the field archaeologist will attempt to squeeze through the 30 cm, or sometimes even smaller, constriction. This method has proven to be effective in applications at this and other projects, and we have learned that native Hawaiians had squeezed through very small passages in the past.

The primary goal for each cave inspection was to determine whether any *iwi* were present. To achieve that, every accessible chamber was thoroughly inspected. Every small side tube, overhead tube, and lower connecting tube identified was inspected. These methods provide a very high degree of certainty that all *iwi* within all of the caves inspected have been discovered and identified.

Cave mapping was a lesser priority. Detailed cave mapping takes a substantial amount of time. SCS has developed a method of mapping caves that involves professional surveyors

establishing distance and bearing data, and placement of turning and mapping points within the cave. Field archaeologists then use that data to measure internal elements and contents of the cave. This time-consuming method was not used in this project. Instead, field archaeologists used a compass to establish bearings, and estimated lengths. This method facilitates a relatively rapid movement through the many caves, provides accurate bearing data, but is inaccurate in length data.

It is difficult to estimate lengths within a cave, especially when travel is often conducted by crawling and stooping. Based on experience comparing maps made through estimation with maps made using professional surveyor assistance, estimation is routinely results in lengths that are smaller than actual. The maps generated from estimation, after their scale has been considered, are still from 50% to 80% of the actual measured size. While the estimated mapping does not provide precision, it does capture the actual orientation and direction of the cave, identifies the form of the cave, shows how the cultural modifications are distributed within the cave, and illustrates where the "cultural" end of the cave is. This provides data sufficient to interpret the function of the activities that were conducted in the cave.

Most of the material remains that were observed in the caves were left *in situ*. The location of charred material, *kukui* nut, marine shell, and other items associated with cultural activity are located on the cave figures. A group of adzes and other artifacts were removed from Site 10756. Material was also removed in a test excavation within cave Site 10692. There is one key for all cave figures (Figure 12).

Non Cultural Caves

There are several caves that do not display any evidence of use (Table 5).

Table 5: Location of non-cultural caves.

SCS #	Ahupua‘a	E UTM	N UTM	Length (m)
20	Kaloko	186755	2181160	15
32	Kohanaiki	186858	2181464	4
33	Kohanaiki	186858	2181543	13
48	Kohanaiki	186678	2181462	2
81	Kohanaiki	186569	2181631	1
84	Kohanaiki	186528	2181506	5
89	Kohanaiki	186436	2181513	9
116	Kohanaiki	186172	2181386	2
122	Kohanaiki	186170	2181491	5
702	Kohanaiki	186696	2181316	1
809	Kohanaiki	186468	2181379	2

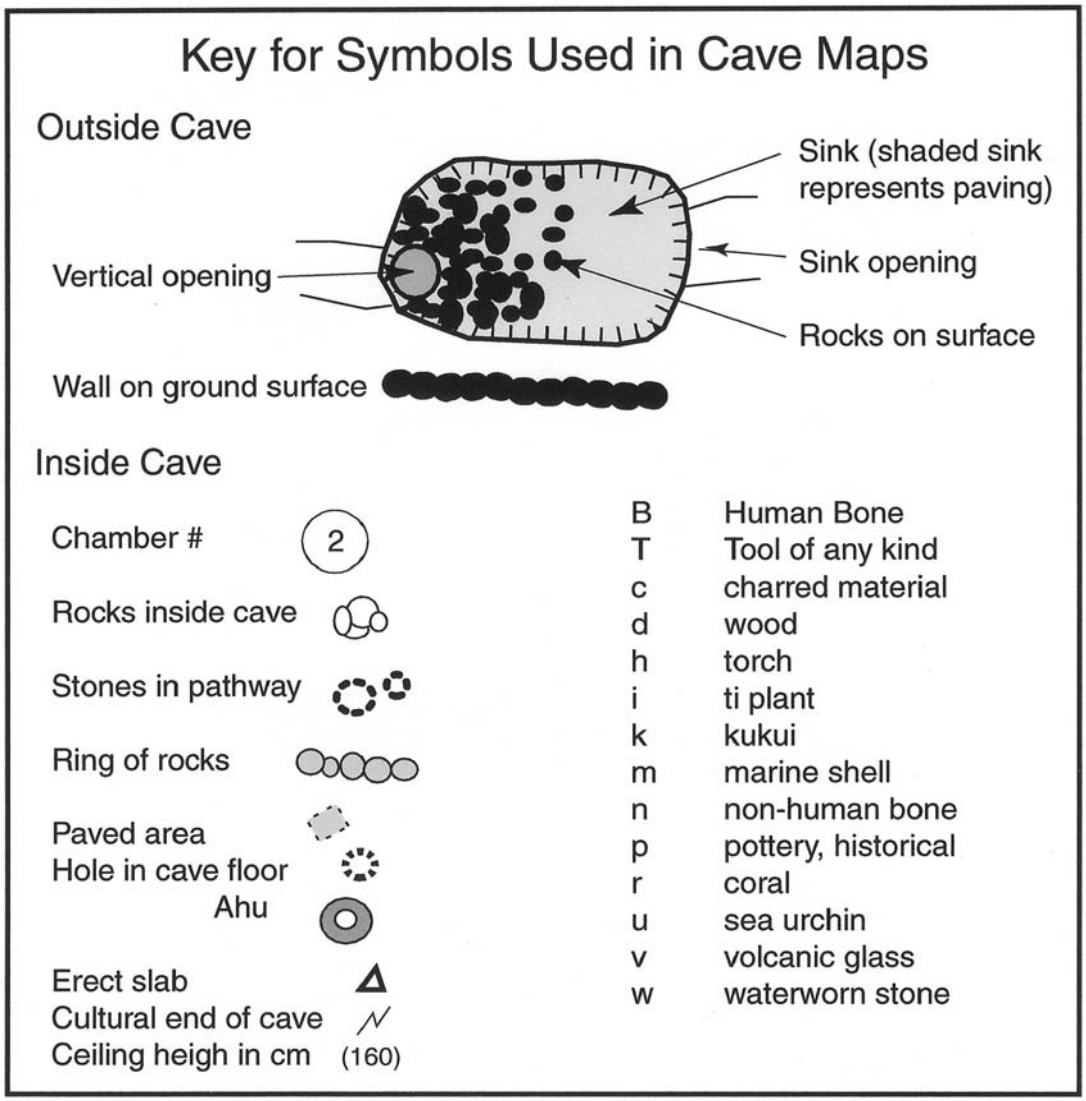

Figure 12: Key for symbols used in cave figures.

It is assumed that each was explored at some time in the past, but there are no artifacts, subsistence remains, or modifications to the cave interior or exterior to indicate that any other activity took place there. These are considered non-cultural caves, and are not archaeological sites

MAUKA-MAKAI ROAD

Cordy *et al*. (1991) do not describe the Mauka-Makai Road that connects Kaloko pond to Kohanaiki Homesteads, but do pass on the description in Emerson's notes (referenced in the Cultural Context above). The road was not observed or reported on in the first and second inventory survey reports for the Y-O project (Barrera 1985; 1988). It is mentioned in the third inventory survey report (Barrera 1991), but there is no description of the Trail's characteristics.

The entire road within the project area was walked. Information was recorded at 19 locations: width, character of the pathway (paved, soil-filled, etc.), presence of curb and special construction (ramp, causeway, etc.), artifacts present, and condition (Figure 13). Photographs were taken at most spots. The average distance between observation spots is approximately 50 meters.

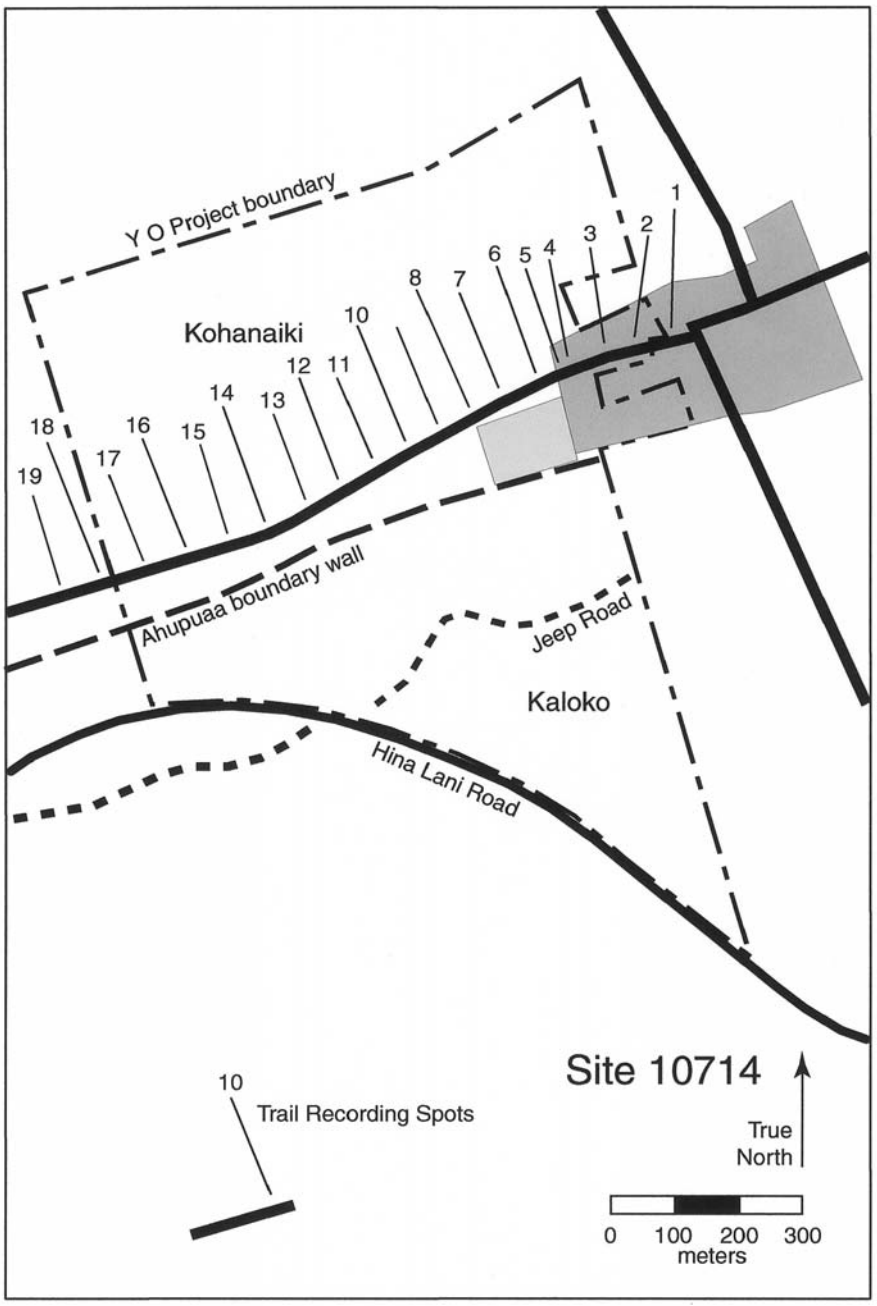

Figure 13: Location of recording spots along the Mauka-Makai Road.

INCORPORATING PREVIOUS WORK

Some fieldwork was conducted previously (Barrera 1985, 1988, 1991). That work focused on agricultural fields with habitations located just west of the Kohanaiki Homesteads (and referred to as Walled Fields), and at two large ceremonial structures (Sites 10736 and 10737). Those areas were mapped, and portions were test excavated. SCS fieldwork was designed to cover the remaining 180 acres that were not covered previously. SCS fieldwork and analysis was not structured to critically review those results. Instead, the results of previous work have been reorganized from the previous reports into a format compatible with this current report.

LOCAL KNOWLEDGE

Information on the history and cultural activities of the project area was sought in two ways: through interviews with knowledgeable local residents, and by reviewing transcripts of other interviews associated with nearby projects.

Interviews were initiated with the Public Notice for burial treatment that appeared in Honolulu Advertiser, West Hawai‘i Today, and Hawai‘i Tribune-Herald newspapers on March 20 through 23, and again on April 3, 5, and 6. Next, there was a meeting with Ms. Ruby McDonald, Office of Hawaiian Affairs Kona representative, on March 24, 2005. Subsequent to that, meetings were arranged with 16 other people (Table 6). Visits to the project area were made with eight people.

Table 6. Consultation.

Last Name	First Name	Related Family in Homestead	First call	Latest call	Met 1	Met 2	Site visit
Kanuha	Junior	Kapa	4/5	6/25			
Reeves	Hannah		4/4	4/4			
Rapoza	Clarence	Ranch	6/22	7/6			
Cobb-Adams	Alexis	Hulikoa	4/12	4/15	4/22		
Arakaki	Iwalani	Paiwa	6/25	7/12	6/5	7/13	7/13
McDonald	Ruby	Ha‘au, Kapa	3/22	3/22	3/24		
Lee	Robert	Levi, Puli	6/8	6/28	7/7		
Malu‘ihi Ako	Elizabeth	Levi, Puli			7/7		
Ching	Keala				7/13		7/13
Springer	Hannah	Ranch	6/17	7/25	7/14	8/1	8/1
Mahi	Arthur	Homestead	7/15	7/18	7/19		7/19
Cottrell	Curt		6/25	7/25	*7/25**		
Kanuhi	Kawehi	Kaholi	7/12	7/25	7/27		7/27
Mahi‘ai	Del Thia				7/27		7/27
Flying Hawk	Sheri				7/27		7/27
Ka‘iwi	Ed				7/27		7/27
Punihaole	Cindy	Punihaole	6/8	9/23	9/22		
Punihaole	Robert Ka‘iwi Jr.	Punihaole			9/22		
Coelho	Annie Kalani‘i‘ini	Punihaole			9/22		
Kahananui	George Kinoulu Sr.	Ranch	7/18	7/18	9/22		

* phone interview

The people that participated in the interview process represent a variety of associations with the project area. There are people that live near the project area, and have for many years. There are folks associated with the ranch that used to work that land. There are several people that are from elsewhere, but have family ties to the homesteads.

Kumu Pono Associates Kepā and Onaona Maly have conducted many interviews with people that live, or have lived, in and around the Kaloko Heights project area. Those interviews have been transcribed in Maly and Maly (2002, 2003). While the interviews were conducted in association with projects in the lowlands of Kohanaiki, Kaloko, and neighboring *ahupua'a*, they contain much discussion of activities that took place in the higher elevations in and around the Kaloko Heights project area.

INFORMANT RESULTS

Information obtained with discussions with knowledgeable local residents and from the transcripts of other related interviews (Maly and Maly 2002, 2003) pertained almost entirely to the Mauka-Makai road, and the Kohanaiki Homesteads. Regarding other issues, informants did not identify any specific caves, *heaiu*, or burials within the project area.

MAUKA-MAKAI ROAD

Three people talked about traveling on the Mauka-Makai road. In addition, four people that were interviewed for another project talked about that pathway.

Informant Knowledge From Current Interviews

Mr. Arthur Mahi, Ms. Elizabeth Malu'ihi Ako, and Mr. George Kinoulu Punihaole, Jr had traveled on the Mauka-Makai road over 40 years ago.

Mr. Mahi mentioned that he had used the Mauka-Makai road to travel from Kohanaiki Homesteads to the ocean, and he called it the Kohanaiki Road. He initiated the field inspection by driving us *makai* along that route from the upper Belt Road. The intersection of the Kohanaiki Road with the upper road is near the Kona Church, and the pathway is paved at the intersection area (well above the project area). Above the project area the Kohanaiki Road is a one lane, semi-paved road for a short distance, until it terminates at uncleared vegetation that prohibits passage. Mr. Mahi drove down that road fully expecting to arrive at the Kohanaiki Homesteads, but that was not possible due to the vegetation. Eventually we made it to the project area via another route, and we walked the pathway. While on the pathway, Mr. Mahi mentioned that the old Kohanaiki Road was along the border between Kaloko and Kohanaiki.

Mr. Kahanui mentioned that he had traveled the Mauka-Makai pathway, but all of his travels along that route were via motorized vehicles.

Ms. Ako lived in the next *ahupua'a* to the north of the project area, 'O'oma, as early as the late 1930s. As kids they used to use the "Kohanaiki Road" (the Mauka-Makai road) to go down to the ocean. At that time, that road was also referred to as "Church of God Road", but

Ms. Ako emphasized that she preferred to use the label "Kohanaiki Road" to acknowledge its "original name".

They would take a trail from 'O'oma over to the homesteads, then go down to the ocean from there. She recalled with some delight how donkeys and horses (they rode donkey and horses, which she considered the Cadillacs of the day) would "take their sweet time" going downhill, but moved rapidly uphill on their way home. They would carry fresh water and food down to the ocean, and would fish and drink brackish water down there when the fresh water ran out.

The trail prior to World War II was marked by *ahu* (cairns); there was no stone paving or stone kerbing along the pathway at that time. The pathway was worn slightly into the exposed surface rock. Also, the land had much fewer trees on it then. She recalls that there were some guava and large mango trees, but no Christmas berry or other trees then. The few trees that were there, were small (except for the mango). The vegetation was so sparse that they could use the trail at night. In fact, traveling in the evening and at night was preferred, because it was much cooler traveling at that time. They started their journeys at dusk.

During travels along the Kohanaiki Road, Ms. Lee did not investigate stone features alongside the route. She does not know about specific stone features along the route, or know the functions of activities associated with them. That is because the trail was used to get from home to ocean to home; there were no other destinations along the pathway, and because the things associated with the past were meant to be left alone. Their time of use and activity had passed, and it was no business of the travelers. This was Ms. Lee's expression of abiding by the Hawaiian "tapu".

She remembered that the Kohanaiki Road was also used by ranch cowboys. In addition, during WWII soldiers were stationed at the church yard within the Kohanaiki Homesteads. The soldiers decided to build up the pathway, and started to do so at the camp and working their way downhill from there. But they stopped building it "about ¼ mile down", because it was too much effort for the little return that they got from it[4].

Ms. Lee characterized the pathway to the ocean as "old trails", because of the *ahu* and slightly worn shine on the ground surface. She felt that they should be protected, because of her found memories of traveling to and from the ocean as a youth, and because of its association with old Hawaiian ways.

Informant Knowledge From Preivous Interviews

Several people interviewed remembered traveling up and down the Kohanaiki Road. Agnes Puakalehua Nihi-Harp and Violet Leimomi Nihi-Quiddaoen recall walking up that route from the ocean before 1940. Their older sisters took that path up the slope to school in Kalaoa (Maly and Maly 2002: 27-29). Malaea Agnes Keanaaina-Tolentino recalls that back in the 1930's when her grandfather leased Kaloko Pond, they would "go down the old trail from Kohanaiki to Kaloko, to work on the pond" (Maly and Maly 2002: 139). Peter Keka, who was born in 1940, remembers traveling that route, also, and picking yams and mangoes along the way

[4] Interviewees in Maly and Maly (2002, 2003) speak of gun pill boxes near the shoreline in Kohanaiki.

(Maly and Maly 2002: 207). When asked if there were resting places along the route, Mr. Keka replied, "well, not really" (Maly and Maly 2002:208).

George Kinoulu Kahananui, Sr. discussed how trails were modified during the 20th century "(b)ecause the war came up and the army opened up all the trails. Even that old Kohanaiki-Kaloko trail coming down, they made road for the jeep, coming down" (Maly and Maly 2003: A-166). The interviewer followed that with, "So they improved them because they were *ala hele wāwae* before", and Mr. Kahananui responded, "Yes".

HOMESTEADS

Many of the informants knew about the Kohanaiki Homesteads, and many had family ties to the names that are associated with the Homesteads (see Figure 8). There are only five individual homesteads that are either partially or entirely within the project area. These are: Kiaha, Kapa, Punihaole, Pahuole, and Kaholi.

Many informants stressed that the correct pronunciation of the place name Kohanaiki is: Ko-ha-nai-ki. This in contrast to the commonly mispronounced Ko-hana-iki[5].

During the lifetimes of the informants, the Kohanaiki Homesteads were almost completely abandoned. The Protestant Church in the center of the Homesteads was also abandoned. It was Mr. Punihaole's recollection that the church at the Kohanaiki Homesteads was abandoned sometime around 1918. Mr. Punihaole and Mr. Kahananui spoke about how the congregation then moved to Kekaha church. Wood was taken from the old Kohanaiki Church and used in the building of the newer Kekaha Church. A brief inspection of the Mauna Ziona Church Cemetery (the older church next to Kekaha Church) by the senior author indicates that burials began to be interred there in 1925. Family names associated with the Kohanaiki Homesteads that are in the Mauna Ziona Church Cemetery include Punihaole, Kapa, and Kiaha.

Few families lived in the Kohanaiki Homesteads during the time of recollection of the interviewees. Ms. Ako remembers that one elderly woman had a home there in the mid-1900s. Mr. Punihaole and Mr. Kahananui recall that several families lived around the Homestead area including members of the Kahananuʻu, Poʻoholoholo, ʻEhu (the individual recalled by Ms. Ako), Kiaha, Kohaiki, and Koʻele families. The 1924 USGS topograph map shows 6 houses near the center of Kohanaiki Homesteads (see Figure 10), and the 1959 USGS topographic map (see Figure 11) shows 1 house at the Homesteads, and several others further *mauka* along the road. Mr. Robert Lee, moved to the vicinity of the Homesteads in 1979 and remembers that only a few people lived there then.

Prior to the time of direct recollection of the interviewees, Punihaole family members and Ms. Coelho shared that their relative John Kuluwaimaka was the traveling minister in the area in the 1840s. This is the man identified and described by Kamakau (1992) as Punihaole that taught Liliha to read and write, and was a minister during the time of Kaʻahumanu (see references above in Cultural Context chapter).

[5] See Pukui, Elbert and Moʻokini (1974:115).

Mr. Punihaole recalls that the area *makai* of the Homesteads was void of vegetation. There was nothing there, not even guava back in the middle 1900s. Mr. Kahananui and Mr. Punihaole recall hunting *pipi* around the Homestead area. Ms. Springer remembered being included with her uncles in one of their operations to extirpate poachers from the Kaloko ranch lands. Ms. Punihaole recalled traveled along the road *mauka* of the Kohanaiki Homesteads and being frightened by floating lights along that lane.

ARCHAEOLOGICAL RESULTS

A total of 89 sites were recorded within the project area as well as examples of the Kona Field System (Table 7). There are 37 caves with cultural modifications. All sites are prefaced by the SIHP site code 50-10-28- (State of Hawai‘i-Island of Hawai‘i-Kailua USGS Quadrangle).

Table 7: Site Type, UTM, and Temporary Field Numbers.

Site #	Site Type	Function	UTM N	UTM E	SCS#
10681	Complex	Agricultural	2180934	186607	10681
10687	Complex	Agricultural			4
10689	Complex	Permanent habitation	2181524	186876	24
10690	Complex	Permanent habitation	2181238	186594	52
10691	Complex	Permanent habitation	2181835	186879	67
10692	Cave	Water source/habit.	2181866	186888	69
10693	Walled fields	Habitation and garden			10693
10694	Complex	Permanent habitation	2181717	186679	73
10695	Complex	Permanent habitation	2181648	186622	74
10696	Mound	Agricultural	2181260	186565	77
10697	Complex	Permanent habitation	2181631	186569	81
10698	Mounds	Agricultural	2181329	186547	82
10699	Complex	Agricultural	2181284	186503	86
10700	Walled fields	Habitation and garden			10700
10701	Platform	Burial	2181214	186400	91
10702	Complex	*Heiau*	2181475	186324	94
10703	Complex	Habit./ceremonial	2181449	186505	98
10704	Platform	Agricultural	2181313	186547	99
10705	Complex	Permanent habitation	2181117	186294	101
10706	Enclosure	Permanent habitation/ ceremonial	2181448	186246	107
10707	Paved area	Agricultural	2181473	186288	108
10708	Wall	Boundary			
10709	Wall	Boundary			
10710	Wall	Boundary			
10711	Wall	Boundary	2180689	186960	9
10712	Wall	*Ahupua‘a* boundary	2181261	186094	13
10713	Wall	Boundary	2181617	186854	28
10714	Historic road	Pathway	2181173	186447	30
10715	Cave	Temporary habitation	2181185	186788	21
10716	Walled fields	Agricultural			10716
10717	Cave	Burial/habitation	2181733	186901	26

Table 7. Continued.

Site #	Site Type	Function	UTM N	UTM E	SCS#
10718	Cave	Water source	2181823	186875	36
10719	Cave	Temporary habitation	2181675	186784	40
10720	Cave	Temporary habitation	2181420	186722	44
10721	Cave	Water source	2181650	186691	47
10722	Cave	Burial/habitation	2181209	186930	56
10723	Cave	Temporary habitation	2181460	186829	70
10724	Cave	Temporary habitation	2181481	186506	85
10725	Cave	Water source	2181466	186437	90
10726	Cave	Temporary habitation	2181601	186316	93
10727	Cave	Temporary habitation	2181385	186330	95
10728	Cave	Burial/water source/ habitation	2181364	186285	104
10729	Cave	Water source/ ceremonial/habitation	2181434	186254	105
10730	Walled fields	Habitation and garden			10730
10731	Cave in terrace	Temporary habitation	2181407	186263	106
10732	Cave	Temporary habitation	2181407	186263	
10733	Cave	Temporary habitation	2181402	186183	115
10734	Walled fields	Habitation and garden			10734
10735	Complex	Permanent habitation	2181386	186172	116
10736	Enclosure	Burial and *heiau*	2181237	186625	10736
10737	Complex	Permanent habitation	2181325	186615	10737
10738	Complex	Agricultural			10738
10740	Cave	Burial/habitation	2181456	186905	10740
10741	Homestead, Kaholi	Historic homestead			10741
10742	Cave	Permanent habitation	2181396	186192	117
10743	Cave and petroglyphs	Temporary habitation	2181417	186169	123
10744	Cave	Temporary habitation	2181408	186157	126
10745	Homestead, Pahuole	Historic homestead			10745
10746	Cave	Water source	2181380	186138	127
10747	Cave	Temporary habitation	2181354	186111	802
10748	Cave	Temporary habitation	2181249	186149	803
10749	Homestead, Kiaha	Historic homestead			10749
10750	Cave	Temporary habitation	2181468	186379	804
10751	Cave	Water source	2181354	186129	806
10752	Cave	Temporary habitation	2181365	186112	807
10753	Cave	Water source	2181697	186881	808
10754	Cave	Burial/habitation			
10755	Cave	Water source/ ceremonial	2181529	186209	111
10756	Cave	Water source/storage	2181510	186146	113
10757	Cave	Permanent habitation	2181396	186192	10757
10758	Cave	Permanent habitation	2181396	186192	10758
10759	Cave	Temporary habitation	2181256	186229	118
10760	Cave	Temporary habitation	2181256	186229	
10761	Cave	Temporary habitation	2181256	186229	

Table 7. Continued

Site #	Site Type	Function	UTM N	UTM E	SCS#
10762	Modified outcrop	Temporary habitation	2181585	186135	112
10763	Trail with petroglyph	Pathway	2181422	186335	811
10764	Homestead, Kapa	Historic homestead			10764
10765	Terrace	Temporary habitation	2181300	186155	
10766	C-shape	Temporary habitation	2181330	186195	
10767	Trail with petroglyph	Pathway	2181330	186245	
10768	Walled field	Habitation and garden	2181211	186233	119
10769	Terrace	Temporary habitation	2181640	186470	
10770	Trail	Pathway	2181550	186440	
10771	Trail	Pathway	2181500	186450	10771
10772	Terrace w/ paved area	Temporary habitation	2181393	186606	75
10773	Terrace	Temporary habitation	2181175	186585	
10774	Terrace	Temporary habitation	2181627	186315	300
10776	Trail	Pathway	2181412	186222	810
10778	Homestead, Punihaole	Historic homestead			x

The Emerson map data from the late 1880s indicates that there are two pathways that may be associated with the project area (see Figures 7 and 7a). The northernmost of the two pathways was identified in during the surface survey conducted for this report, and is discussed at length as Site 10714. The southern of the two pathways has only a very slight potential overlap with the project area. That area was thoroughly surveyed, and no indication of a pathway was found there. There are at least two reasons why that route was not observed: that route is either 1) beyond the project area, or 2) within the fully bulldozed portion of the project.

SITE 10681

Site 10681 is located in Koloko Ahupua'a, in the central part of the project area, near its southern margin. It lies between the 880 and 900 ft. elevation contours, on the most recent of the project areas two Hualalai flows, and has an overstory dominated by coffee and *haole koa*. Additional plants include *kukui*, air plant and tall grass. Site 10681 consists of five features on a gentle southwest slope covering an area of 50.0 by 25.0 m. The orientation is on a rough northwest-southeast axis (Figure 14). The area surrounding the site has been heavily impacted by bulldozer activity, but an ephemeral northeast-southwest drainage channel, which the site appears to be oriented around, has survived. All five features of the site are thought to be agricultural in function, which includes features related to water diversion (Table 8).

Table 8. Site 10681 Features.

Fe. #	Type	L (m)	W (m)	H (m)	Excavation Units
1	Wall	7.00	1.00	1.00	None
2	Terrace	18.00	11.00	1.25	One 1.00 x 3.00 m (TU-1); One 1.00 x 2.75 m (TU-3)
3	Terrace	13.00	1.50	1.25	None
4	Terrace	7.00	2.00	0.35	One 1.00 x 1.00 m (TU-2)
5	Wall	2.75	1.00	0.80	None

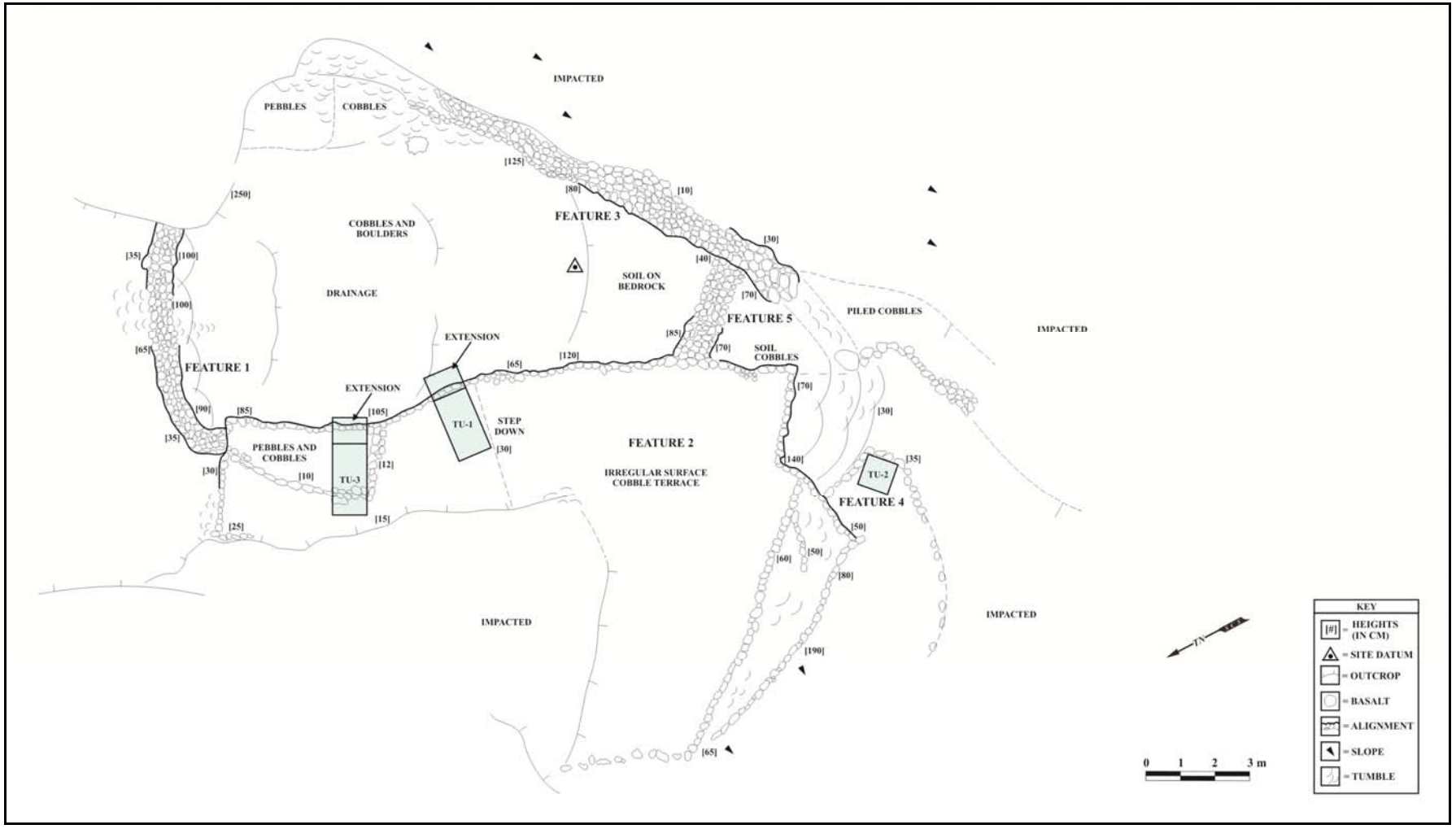

Figure 14 Site 10681, Plan View.

Although Site 10681 was originally interpreted as a historic corral (Barrera 1991: 8), current investigations indicate that features at the site might were constructed to channel water and/or to retain moisture. A natural drainage is a central feature of the site, and the features appear to be oriented around it. This may be coincidental, however, as the surrounding landscape (both natural and cultural) has been substantially altered by modern machinery, eliminating a better understanding of the site's context.

Three TUs totaling 6.75 m^2 were excavated at Site 10681. Cultural materials recovered in excavation included charcoal and a single marine shell. A horseshoe was located on the ground surface at Feature 4 (TU-2). One radiocarbon date was obtained, suggesting the site was occupied sometime between the late 15th century and the middle 17th century (see below).

FEATURE 2

Feature 2 is a three sided "L" shaped terrace located on the northwest side of the drainage, with its long axis facing the drainage, to the southeast. It is constructed of *ʻaʻā* cobbles and boulders, with little facing, and has an irregular rock surface which does not exceed 5 m in width. A possible "step" to a lower, southern elevation occurs in the northern third of the feature, and an ephemeral construction that may reflect the top portion of Feature 2 extending underneath Feature 1, also occurs in this area.Two test units (TU-1 and TU-3) were excavated in Feature 2, in order to understand architecture, feature function, and temporal affiliation. TU-1 was a 1.0 by 3.0 m unit placed on an east-west axis, just above the possible "step", so that the eastern end of the unit crossed the eastern side of the feature. Excavation revealed a boulder and large cobble-retaining element toward the eastern end of the unit, retaining a sloping cobble and pebble pavement with few boulders. Foundation stones of the retaining element were shown to extend about 40 cm west and underneath this pavement, beyond the element's visible boulders. Underneath the pavement, two soil layers were encountered.

Layer I was a black (10YR 2/1) loose humic soil up to 10 cm thick, having a pebble and cobble content of around 70 percent. Layer II was similar to Layer I, with the exception of being a little lighter in color and less humic. Layer II was a very dark brown (10YR 2/2) rocky silt up to 18 cm thick. Layer II rested on the highly pocketed bedrock in all but the western extreme of the unit, where an unexcavated, dark yellowish-brown (10YR 3/4) silt, Layer III, was encountered (Figures 15 and 16). In a small area of the unit, at its eastern extreme and beyond the retaining element, what appears to be a pebble and cobble fill containing much charcoal was encountered.

Charcoal was recovered in Layer I (98.9 g) and in Layer II (18.2 g). Other than the charcoal, the only other cultural material collected in TU-1 was a single marine shell (*Cypraea* sp.) in Layer I, immediately below the pavement.

One conventional radiocarbon determination of 320 ± 60 BP (Beta No. 197067) was obtained from Layer II, TU-1, Feature 2, at Site 10681. Calibrated dates (OxCal v.3.5) are (1 sigma) A.D. 1480–1650 (1.00); at 2 sigma, A.D. 1440–1670 (0.98) and A.D. 1780–1800 (0.02) A full listing of Radiocarbon Informataion can be found in Appendix A.

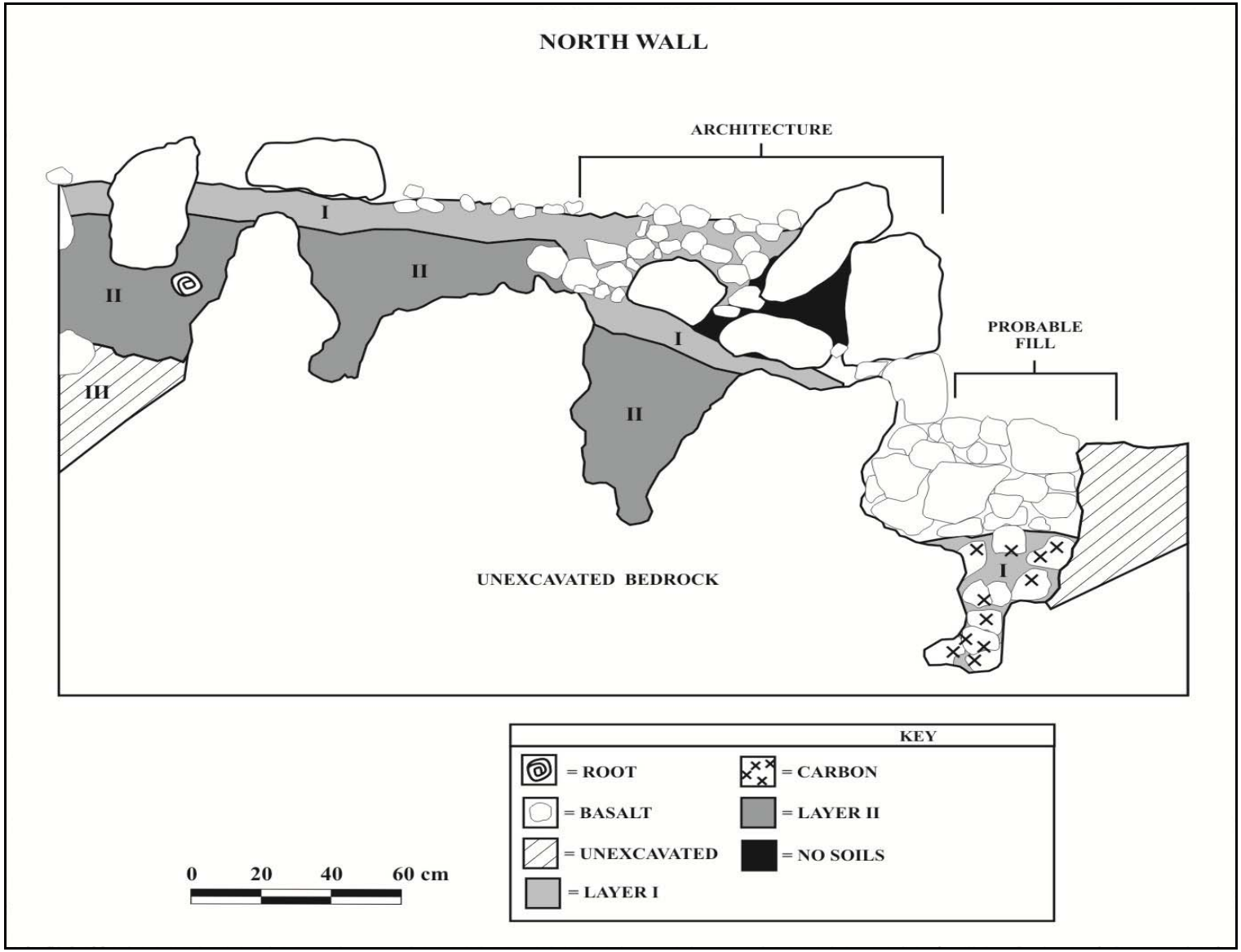

Figure 15: Site 10681, Feature 2, TU-1, Profile: North Wall.

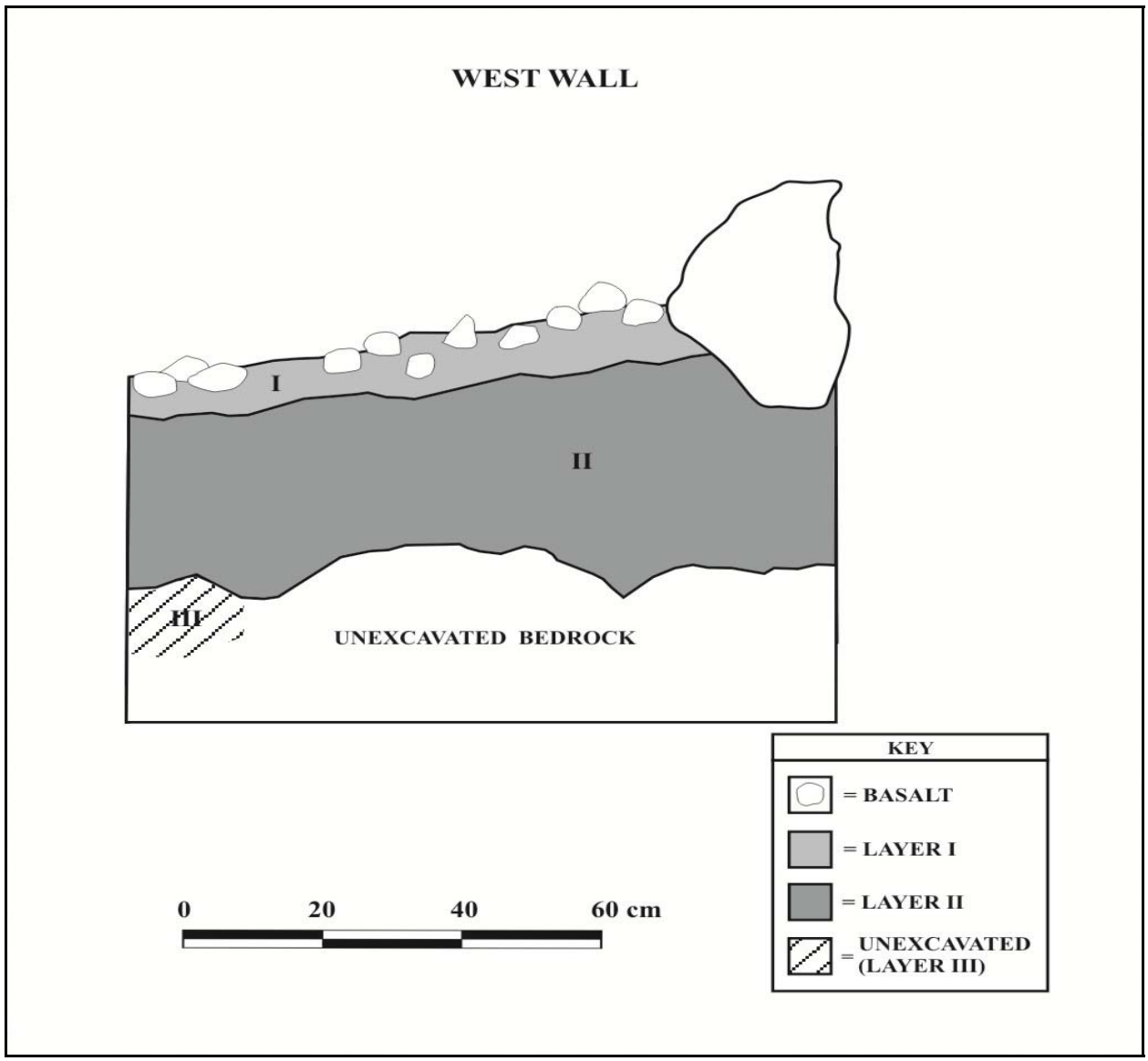

Figure 16: Site 10681, Feature 2, TU-1, Profile: West Wall.

TU-3, the second unit excavated at Feature 2, was positioned similarly to TU-1, but about 2 m to the north. TU-3 exposed over a meter-wide retaining element, primarily of cobbles, but faced with small boulders, lying directly on bedrock. Behind this retaining element were three additional elements. The first element was a fill of mostly pebbles, up to 60 cm thick and 120 cm wide, located directly behind the retaining element, and also lying on bedrock. The only soil observed in this element was a thin duff layer at its top (which also extended a bit onto the retaining element). The second element was what appeared to be a boulder alignment that may have been an earlier retaining element, or may also have been an earlier extension of Feature 2 underneath the terrace. The last element was an *ʻaʻā* pebble fill, 30 cm thick by 100 cm wide, behind the boulder alignment. This element also extended to bedrock, but not only had a thin soil layer overlying it, but included interstitial soil in the fill. The overlying soil layer was slightly lighter than the soil in the first element, but also had a lot of duff. The soil mixed in with the pebble fill, however, was a black (10YR 2/1silt (Figure 17). The only cultural item found in this unit was an iron horseshoe located on the ground surface, to the east of the buried alignment. The horseshoe, which may have been hand wrought, had 8 nail holes and measured 10.1 cm (length) by 10.6 cm (width).

FEATURE 4

Feature 4 is an ephemeral terrace, delineated by a single-course boulder alignment extending off of the southwest side of Feature 2. It is irregular in shape and primarily retains soil with a few cobbles and large pebbles.

TU-2 was placed on this feature in order to understand feature function, and was located on its eastern corner, directly adjacent west of the drainage that bisects the site. This 1.00 by 1.00 m unit revealed a single soil layer up to 40 cm thick of black (10YR 2/1) rocky silt, with the terrace's retaining element penetrating this soil by a maximum of 30 cm. While much of the retaining element is free standing (an alignment), behind it lays a definite fill of soil mixed with cobbles and pebbles. This fill averaged about 20 cm in thickness and rested on bedrock (Figure 18). No cultural material was recovered in this excavation.

FEATURES 1, 3, AND 5

Features 1, 3 and 5 were not excavated. Feature 1 is an east-west wall crossing the drainage at its deepest point, in the sites northern end. It is constructed of *ʻaʻā* boulders and cobbles, faced on both sides, and may have functioned as a check dam, diverting water to Feature 2. Feature 3 is a narrow terrace located on the southeast side of the drainage constructed of *ʻaʻā* boulders and cobbles and quite tumbled. It retains no soil, and may have also functioned to channel water through the drainage. Feature 5 is a second east-west wall, which crosses the drainage at its narrowest portion, toward the southern end of the site. It is short, constructed of *ʻaʻā* boulders and cobbles, and attaches to Feature 2 on its west end, and to Feature 3 on its east end.

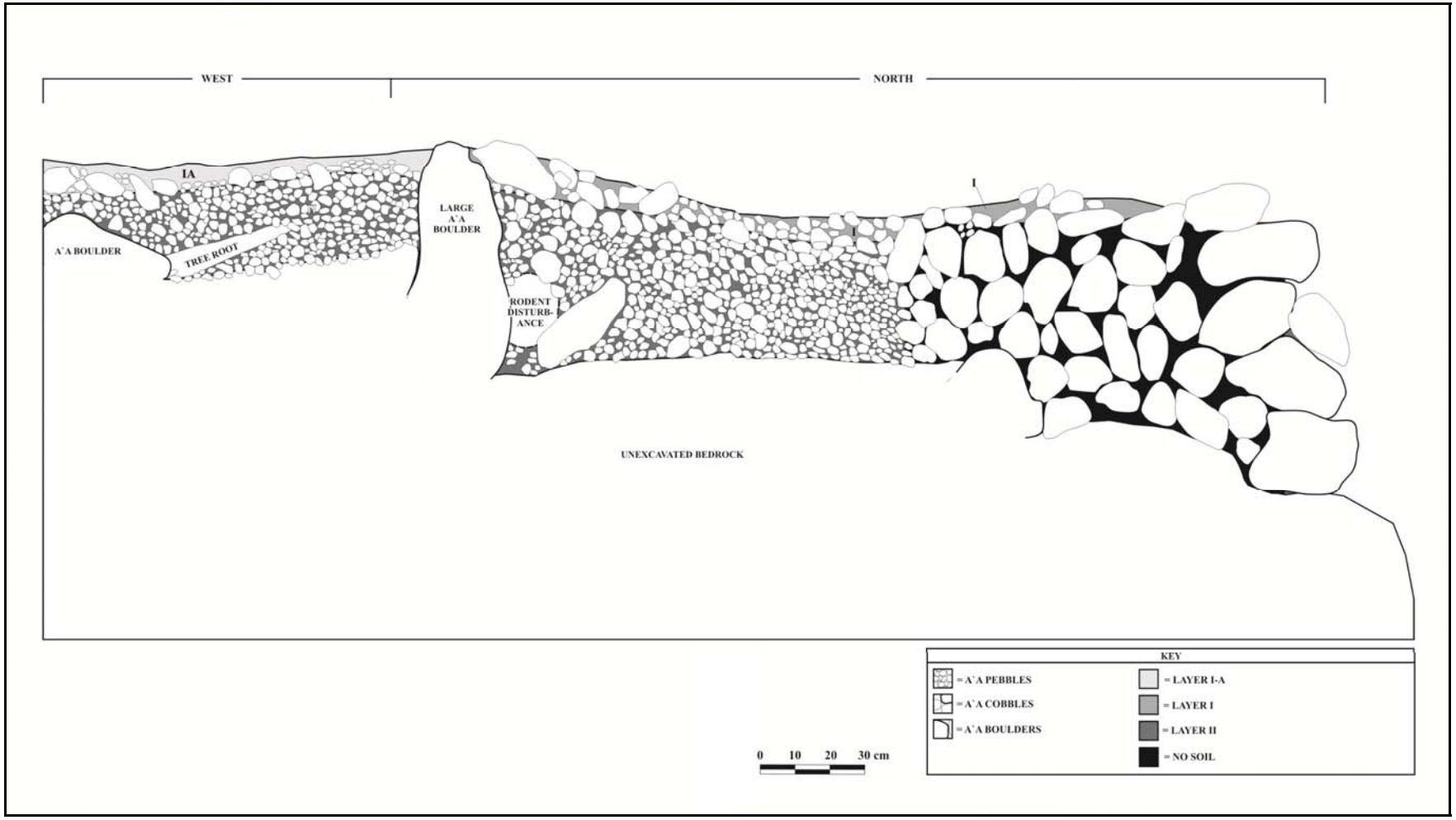

Figure 17: Site 10681, Feature 2, TU-3, Profile: West and North Walls.

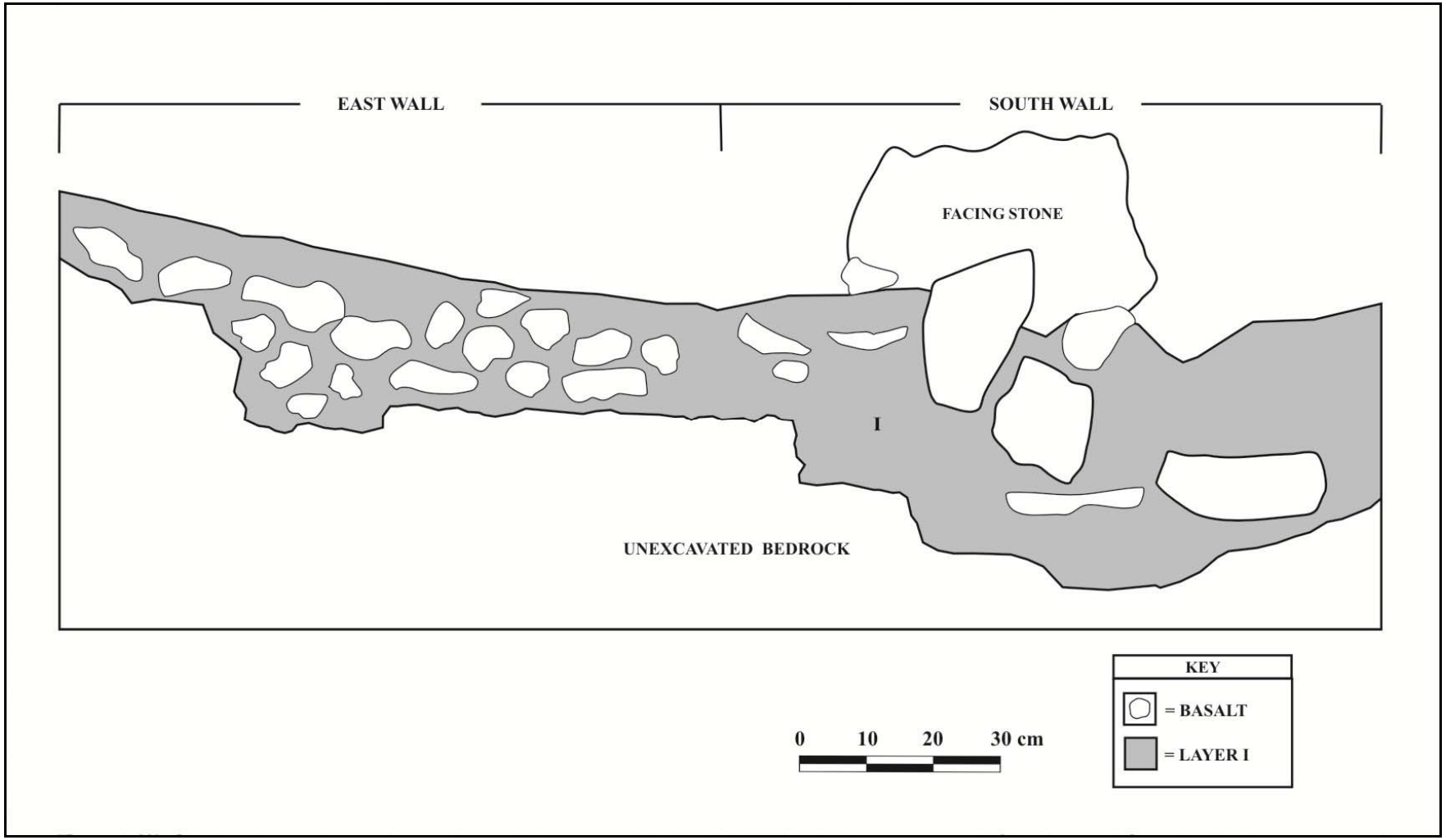

Figure 18: Site 10681, Feature 4, TU-2, Profile: East and South Walls.

SITE 10687

Site 10687 is located in Koloko Ahupua'a, in the southern portion of the project area. It lies between the 1,000 and 1,020 ft. elevation contour lines, on the most recent of the project area's Hualalai flows. Dominant plant species is christmasberry.

10687 consists of three terraces (Table 9) on a gentle, west-facing slope with the entire site covering an area roughly 14.0 m north-south by 5.0 m east-west (Figure 19). A large *pāhoehoe* outcrop occurs immediately upslope, to the east of the three features, and wraps around the southernmost feature, on its south side. Investigation of these features was primarily aimed at determining whether or not they were traditional habitations.

The only artifact observed at the site was a (recently deposited) metal pot on the ground surface just downslope of Feature 1. Inspection of the features and subsurface testing showed that Site 10687 is a traditional agricultural complex. In particular, the functional (as opposed to aesthetic) quality of the rock architecture (*e.g.,* lack of attention to size sorting, to fitting of rocks) as well as the lack of cultural finds support this hypothesis.

Four TUs totaling 4.0 m^2 were excavated at Site 10685. No cultural materials were recovered in excavation. No radiocarbon dates were obtained.

Table 9. Site 10687 Features.

Fe. #	Type	L (m)	W (m)	H (m)	Excavation Units
1	Rectilinear Terrace	4.0	3.5	.50	Two 1.00 x 1.00 m (TU-1, TU-3)
2	Rectilinear Terrace	3.0	2.5	-	One 1.00 x 1.00 m TU (TU-2)
3	Rectilinear Terrace	4.0	2.0	.10	One 1.00 x 1.00 m TU (TU-4)

FEATURE 1

Feature 1, a rectilinear terrace, is the central feature of Site 10685. The terrace is constructed of piled cobbles and pebbles, with a few small boulders; possible facing is present on its south side. A small pocket of level soil lies between the feature and the *pāhoehoe* outcrop, and TU-1 was placed so that half of it was in this pocket with the other half in the architecture. TU-1 demonstrated two relatively thin layers of soil, collectively ~30 cm in thickness, each with about a 30 percent natural pebble content, lying above bedrock (*i.e.*, base of excavation). Layer I was a 10 cm-thick, black (10YR 2/1) silt; and Layer II was an 18 cm-thick, very dark brown (10YR 2/2) silt. Architecture penetrated both of these layers (Figure 20), and no cultural material was recovered.

TU-3 was placed on the west edge of the feature and was only a little deeper than TU-1. Excavation revealed foundation boulders, resting on bedrock, along the feature's west margin, foundation boulders defining a possible south edge of the feature, and two layers. Layer I was a 10 cm-thick black (7.5YR 2.5/1 silt. Layer II was a 15 cm-thick dark brown (7.5YR 3/2) silt. Architectural fill in the interstices of these foundation boulders consisted primarily of cobbles and pebbles and only penetrated the Layer I (Figure 21). With the possible exception of one unburnt *kukui* shell, this unit did not yield any cultural material.

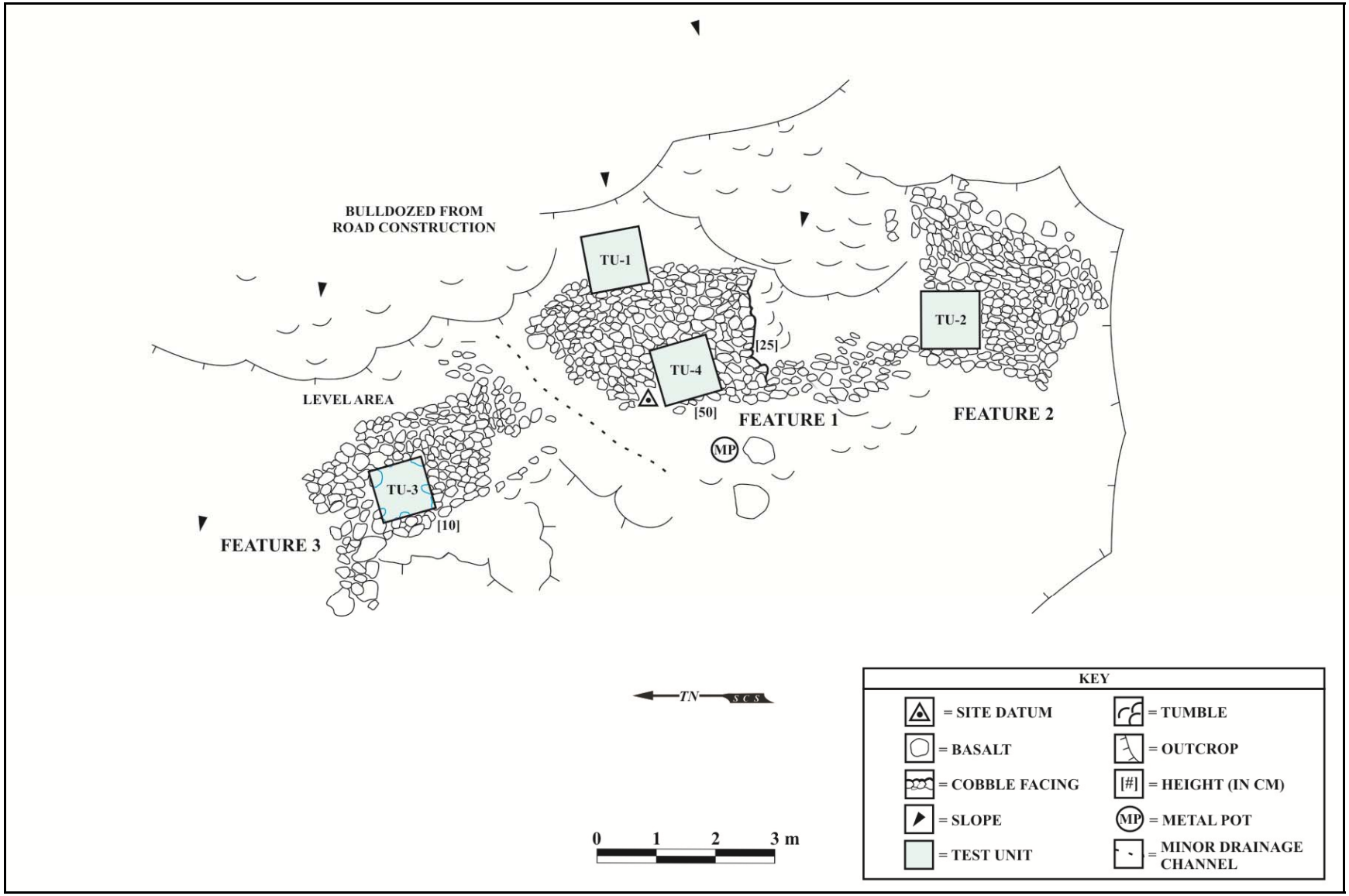

Figure 19: Site 10687, Plan View.

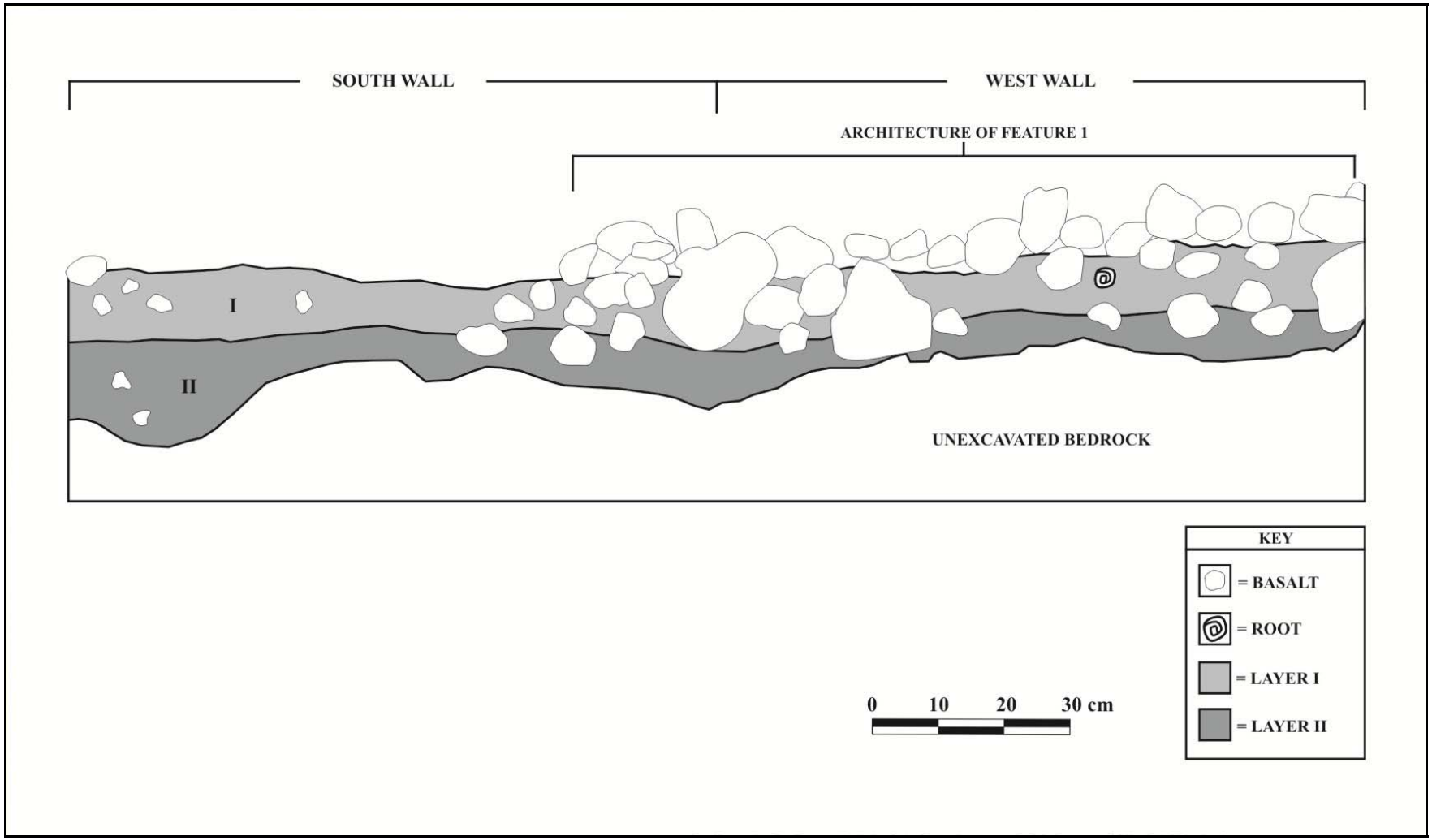

Figure 20: Site 10687, Feature 1, TU-1, Profile: South and West Walls.

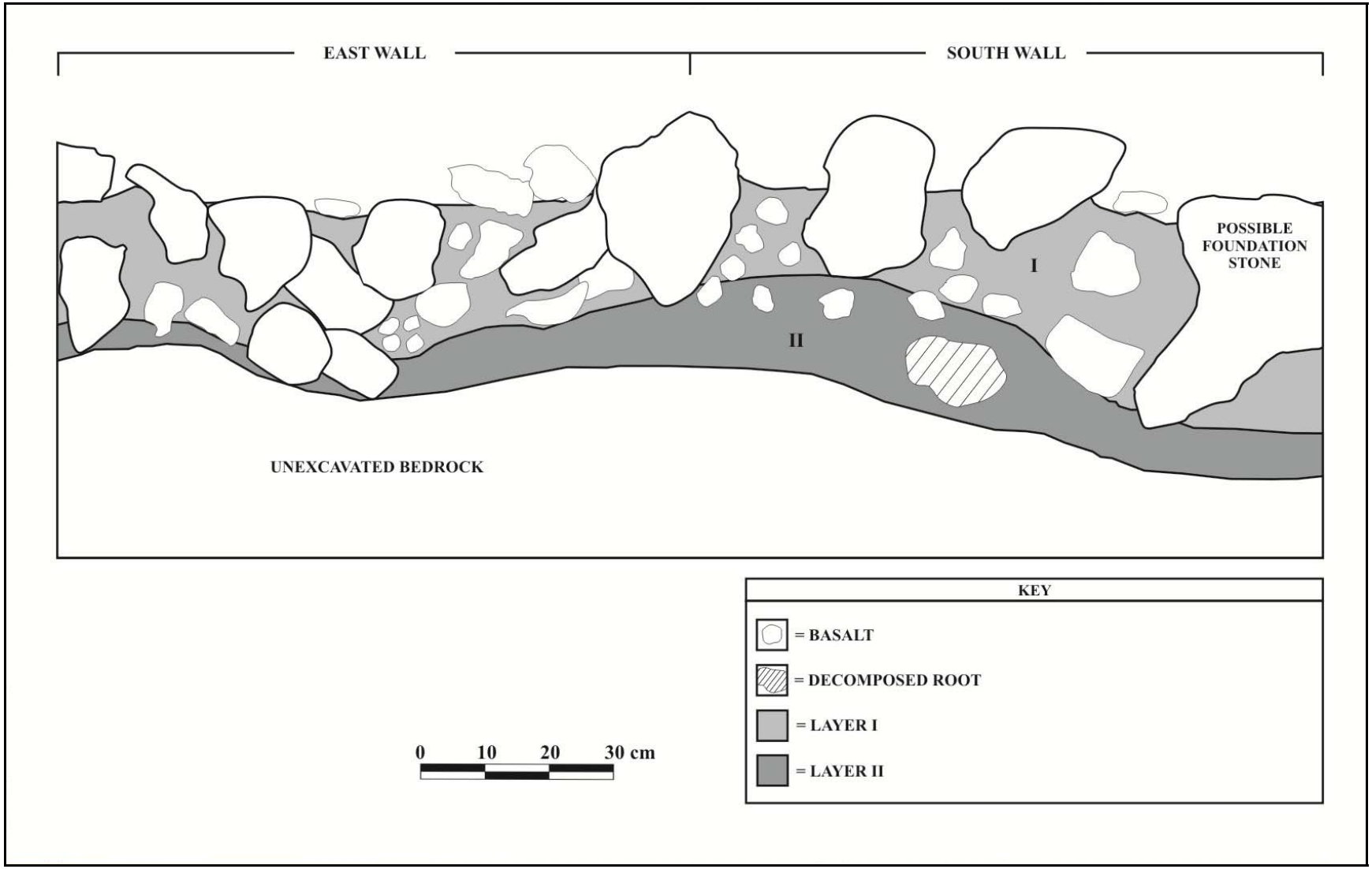

Figure 21: Site 10687, Feature 1, TU-3, Profile: East and South Walls.

FEATURE 2

Feature 2, a rectilinear terrace, is the southernmost feature of the site. The terrace is constructed of piled pebbles and cobbles, and has an irregular surface. A single excavation unit (TU-2) was placed in the northwest corner of the feature, and was excavated in two layers, reaching a maximum depth of 42 cmbs. Layer I was a very dark grayish brown (10YR 3/2) silt with architecture. Layer II was a very dark grayish brown (10YR 3/2) silt. This unit yielded no cultural material other than the pebble-cobble architecture, which was based in the deepest areas of Layer I (Figure 22).

FEATURE 3

Feature 3, a rectilinear terrace, is the northernmost feature of the site. The terrace is constructed of piled boulders and cobbles with a few pebbles, and has an irregular surface. A single excavation unit (TU-4) was located in the northwest corner, and was excavated to bedrock through two soil layers (maximum depth of 45 cmbs). Excavation revealed that the architecture was based in lower Layer I, which averaged 25 cm in thickness. Layer I was a very dark grayish brown (10YR 3/2) silt. Subsurface architecture was shown to be the same as the surface, with the exception of foundation boulders defining the western edge of the feature, which were the only architectural rocks to penetrate Layer II (Figure 23). Layer II was a very dark gray (10YR 3/1) rocky silt. No additional cultural material was recovered.

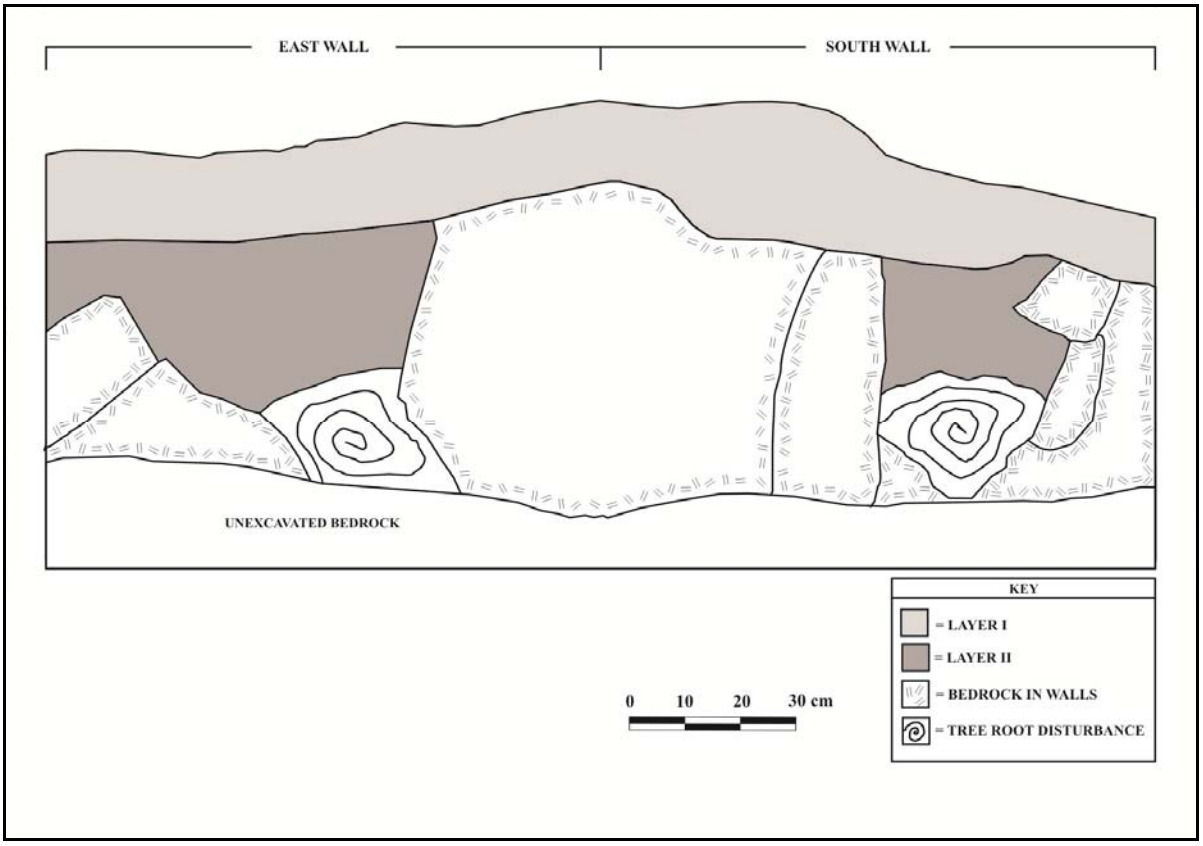

Figure 22: Site 10687, Feature 2, TU-2, Profile: East and South Walls.

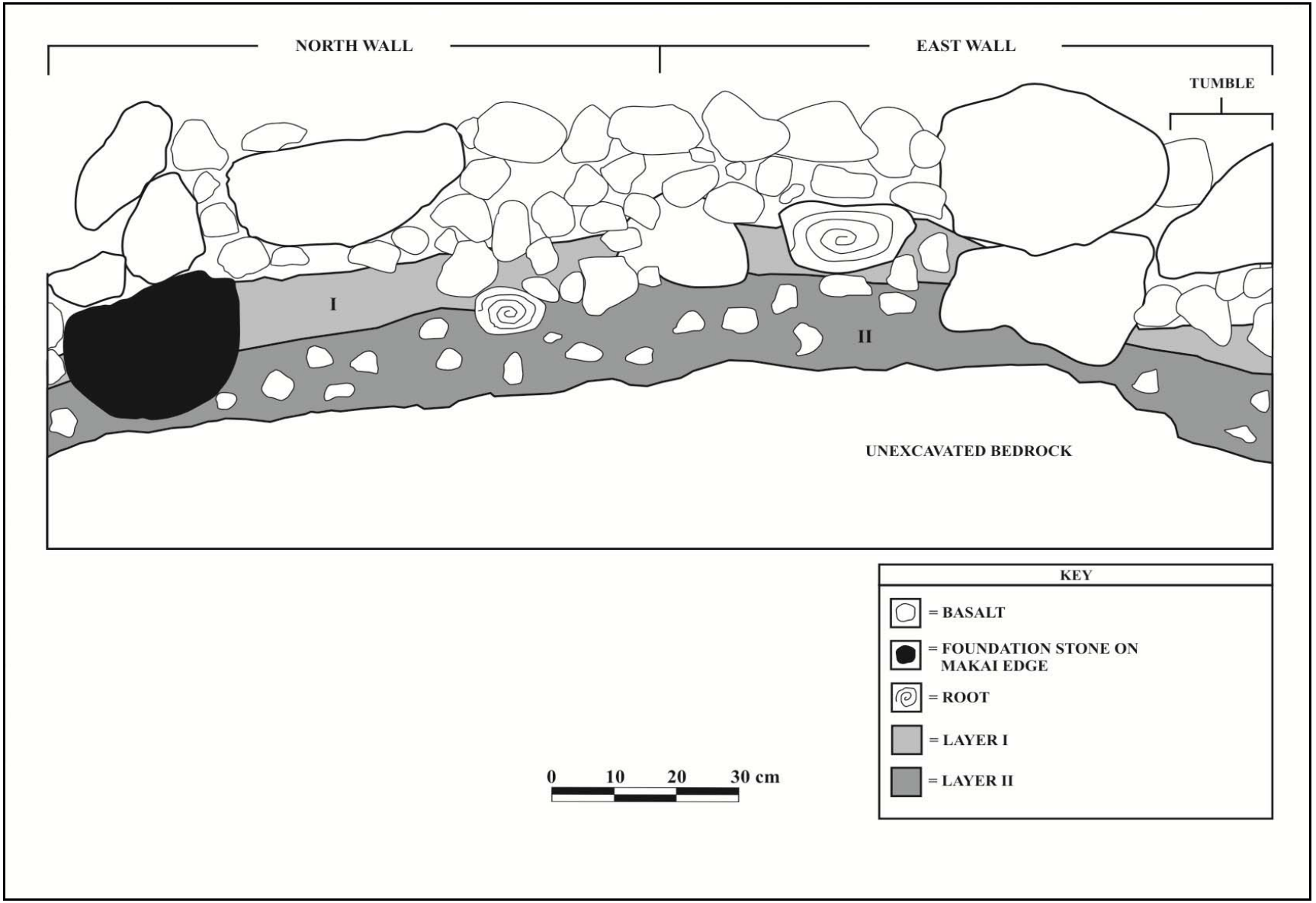

Figure 23: Site 10687, Feature 3, TU-4, Profile: North and East Walls.

SITE 10689

Site 10689 is located in Kohanaiki Ahupua'a, about 50.0 m northwest of the northwest corner of the Pahuole Homestead, on the older of the Hualalai flows. The site is located between the 1,020 and 1,040 ft. elevation contours, with a dominant overstory of christmasberry.

Site 10689 consists of five features: one mound, two massive enclosures, and two caves (Figures 24 and 24a; Table 10), occupying an area of 35 m by 26 m. The features are on a moderate west-facing slope; the two enclosures are partially attached to each other. Several more caves are located just north of the two enclosures.

Table 10. Site 10689 Features.

Fe. #	Type	L (m)	W (m)	H (m)	Excavation Unit
1	Mound	2.0	2.0	0.62	One 1.0 x 2.0 m (ST-1)
2	Enclosure	26.0	17.0	1.60	None
3	Enclosure	16.0	10.0	1.90	None
4	Cave				None
5	Cave				None

Investigation of this site was primarily aimed at determining the presence or absence of human remains. A single stratigraphic trench (ST-1) totaling 2.0 m^2 was excavated into the mound, revealing no human remains. Cultural material recovered in excavation at Site 10689 consisted of at least 11 disarticulated animal bones (probably pig). No other finds were made. No radiocarbon dates were obtained. By process of elimination, the site is provisionally interpreted as a traditional habitation of some type.

FEATURE 1

Feature 1 is a well-constructed mound, irregularly-shaped in plan view, situated at the southwest corner of Feature 2, the lower and larger of the enclosures.

A single 1.0 x 2.0 m stratigraphic trench (ST-1) was excavated into Feature 1, primarily to test for the possible presence of human remains (Figure 25). ST-1 demonstrated that the feature was constructed of piled small to medium cobbles, mixed with a dark silt, and lying on a bedrock outcrop (Layer I). Excavation of the entire trench did not exceed 15 cm in depth (*i.e.,* bedrock), and no formal facing and/or foundation was observed (Figure 26). Layer I was a very dark brown (10YR 2/2) silt. Cultural material recovered in ST-1 consisted of several (≥11) disarticulated animal bones (probably pig); these were confined to the western half of the trench, but were distributed in both the architecture and soil.

FEATURES 2 AND 3

Features 2 and 3 are a pair of partially attached enclosures, encompassing the mound designated Feature 1. The function of this walled area is unclear, but a small cave (Feature 4) is located within its bounds. The enclosure walls vary in width from 10 to 17 m, reflecting a significant input of time and energy spent gathering and stacking these rocks. No subsurface testing (excavation) was conducted at Features 2 and 3 (Figure 24).

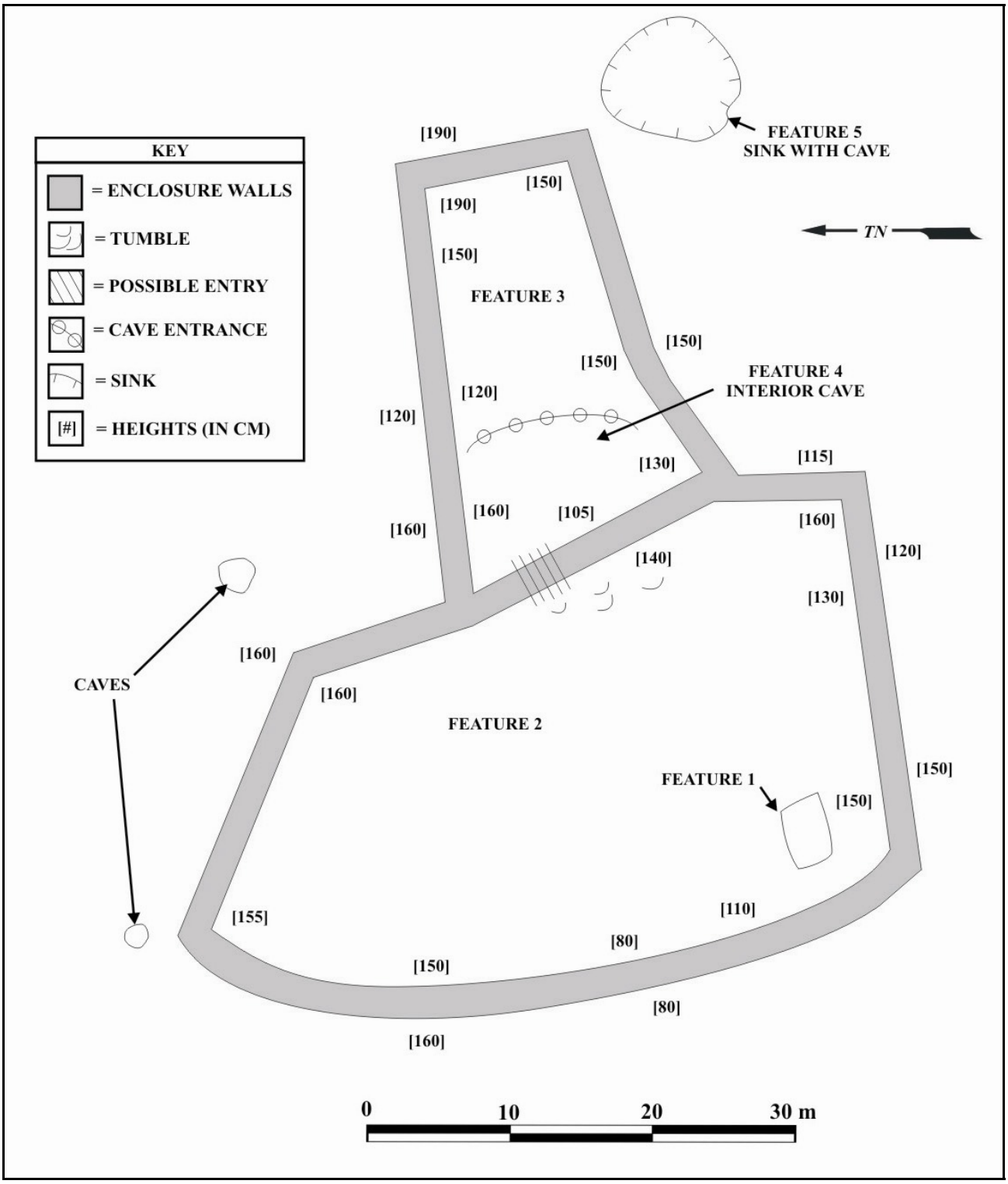

Figure 24: Site 10689, Plan View.

FEATURES 4 AND 5

Feature 4 is a cave located within the enclosed area defined by Feature 3, the upper, smaller enclosure. Feature 5, is a second cave located in a sink, just outside the southeast corner of the upper enclosure (see Figure 24a). No subsurface testing (excavation) was conducted at Features 4 and 5.

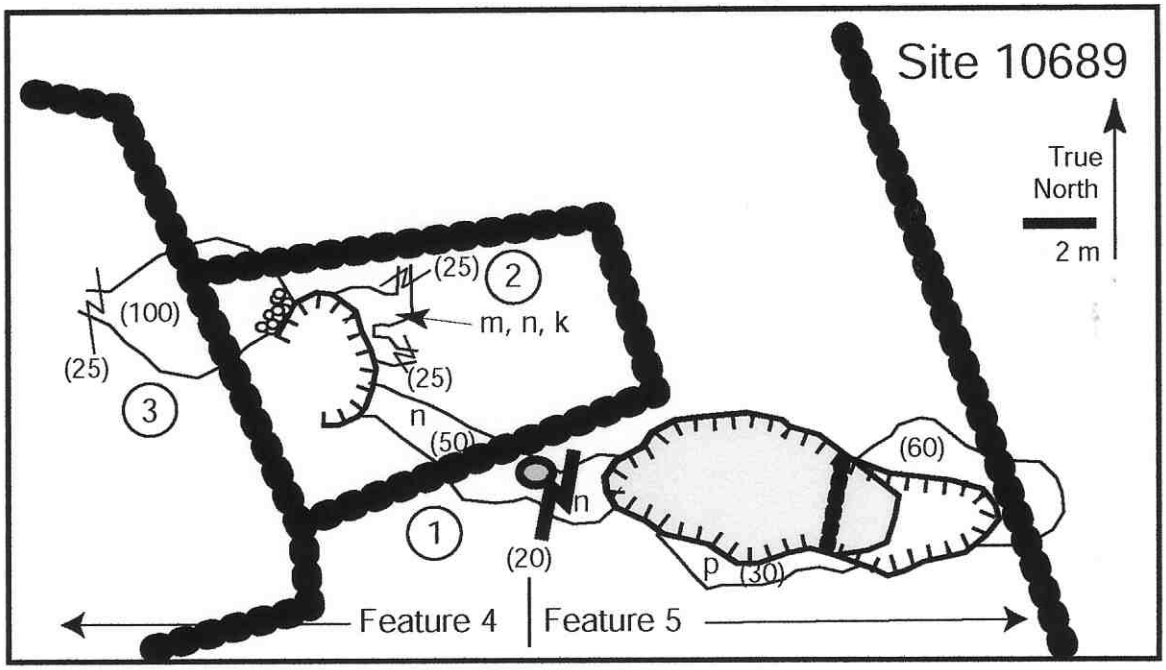

Figure 24a. Site 10689 Caves.

Feature 4 has a soil and *ʻaʻā* floor, and a 50-cm maximum ceiling height. There is a small opening to the ground surface just beyond the enclosure wall, but this opening is too small for people to pass through. The chamber constricts to 20 cm to the southeast of this small opening, making this the cultural end of the feature. Non-human bone is present at the ground surface in this feature.

Feature 5 has a cowrie shell, *kukui*, and non-human mammal bones resting on the ground surface. Rocks in the chamber may have been placed there purposefully to block further passage. An opening to the chamber was partially filled with small cobbles, constricting the entrance to the cave interior. The chamber continues beyond the 25-cm cultural end.

One possible interpretation of Site 10689, that the enclosure walls around the caves served as ranching walls for livestock protection (*i.e.,* built to keep animals from falling in), is unlikely given the large number of cave openings in the project area that do not have any wall around them, including a larger cave sink just outside the enclosure walls to the east, and several smaller, yet deeper and potentially more dangerous, openings just to the north of the enclosure wall. The caves at Site 10689 do not appear to be typical refuge caves, given their relatively small size and lack of internal modifications. The constricted chamber opening, however, is intriguing, as it suggests human modification of the cave designed to limit access to its interior.

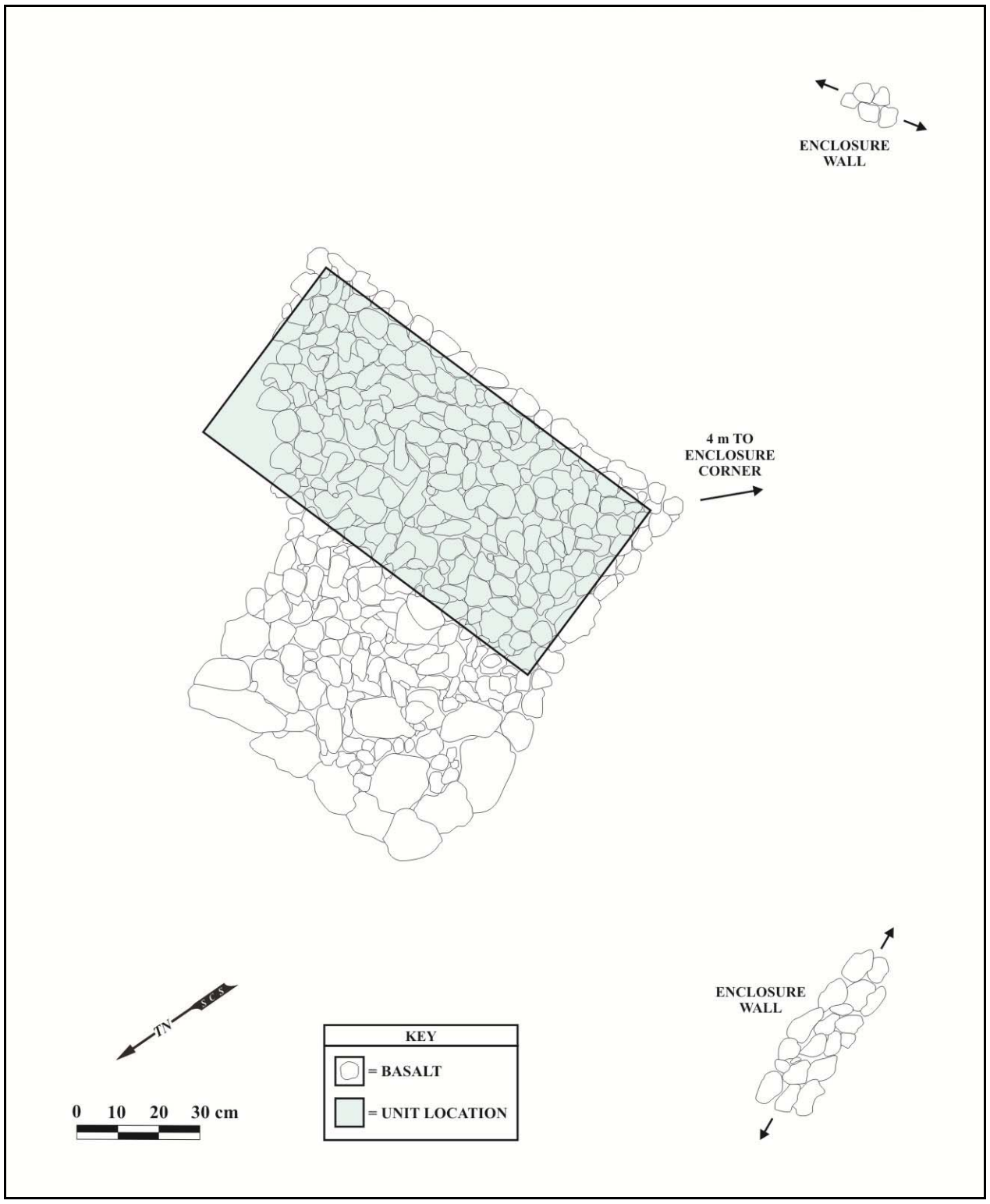

Figure 25: Site 10689, Feature 1, Plan View.

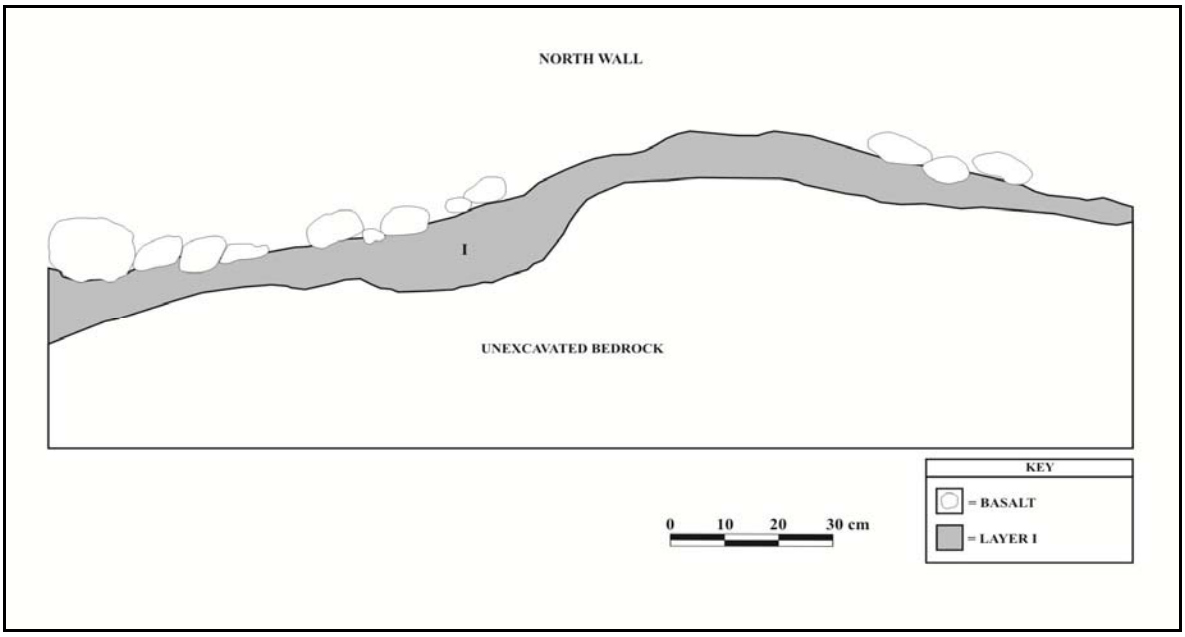

Figure 26: Site 10689, Feature 1, ST-1, Profile: North Wall.

SITE 10690

Site 10690 is located in Kohanaiki Ahupua'a at an elevation of 920 ft. It lies on the older of the two Hualalai flows and its dominant overstory species are christmasberry and *alahe'e*. Additional plants noted on site include *noni*, guava, and mango.

Site 10690 consists of six features occupying an area of about 45 m by 25 m (Figure 27). The features include an irregular-shaped enclosure, four terraces, and a trail (Table 11). These lie on a moderate, southwest-facing slope directly south of Site 10714, the historic Mauka-Makai road. With the exception of the trail, subsurface testing (excavation) was conducted at all features. The primary objectives were to determine whether or not the features were traditional habitations, and to understand their architecture. The stratigraphic trench in the terrace designated Feature 6, however, was placed to determine if this feature contained human remains.

Table 11. Site 10690 Features.

Fe. #	Type	L (m)	W (m)	H (m)	Excavation Units
1	Enclosure	14.0	10.0	0.80	One 1.0 x 1.0 m (TU-1)
2	Terrace	5.50	5.50	0.85	One 1.0 x 1.0 m (TU-2)
3	Terrace	5.50	3.0	0.75	One 1.0 x 2.0 m (ST-2)
4	Terrace	13.50	5.0	0.35	One 1.0 x 1.0 m (TU-3)
5	Trail	10.0	1.0		None
6	Terrace	6.0	5.0	0.85	One 1.0 x 5.0 m (ST-1)

A total of 10 m^2 (3 TUs, 2 STs) was excavated at Site 10690. Cultural materials recovered in excavation consisted exclusively of traditional artifacts, including several adze fragments and/or performs, a coral abrader, and several volcanic glass cores. No historic artifacts were observed at the ground surface or recovered in excavation. Midden included

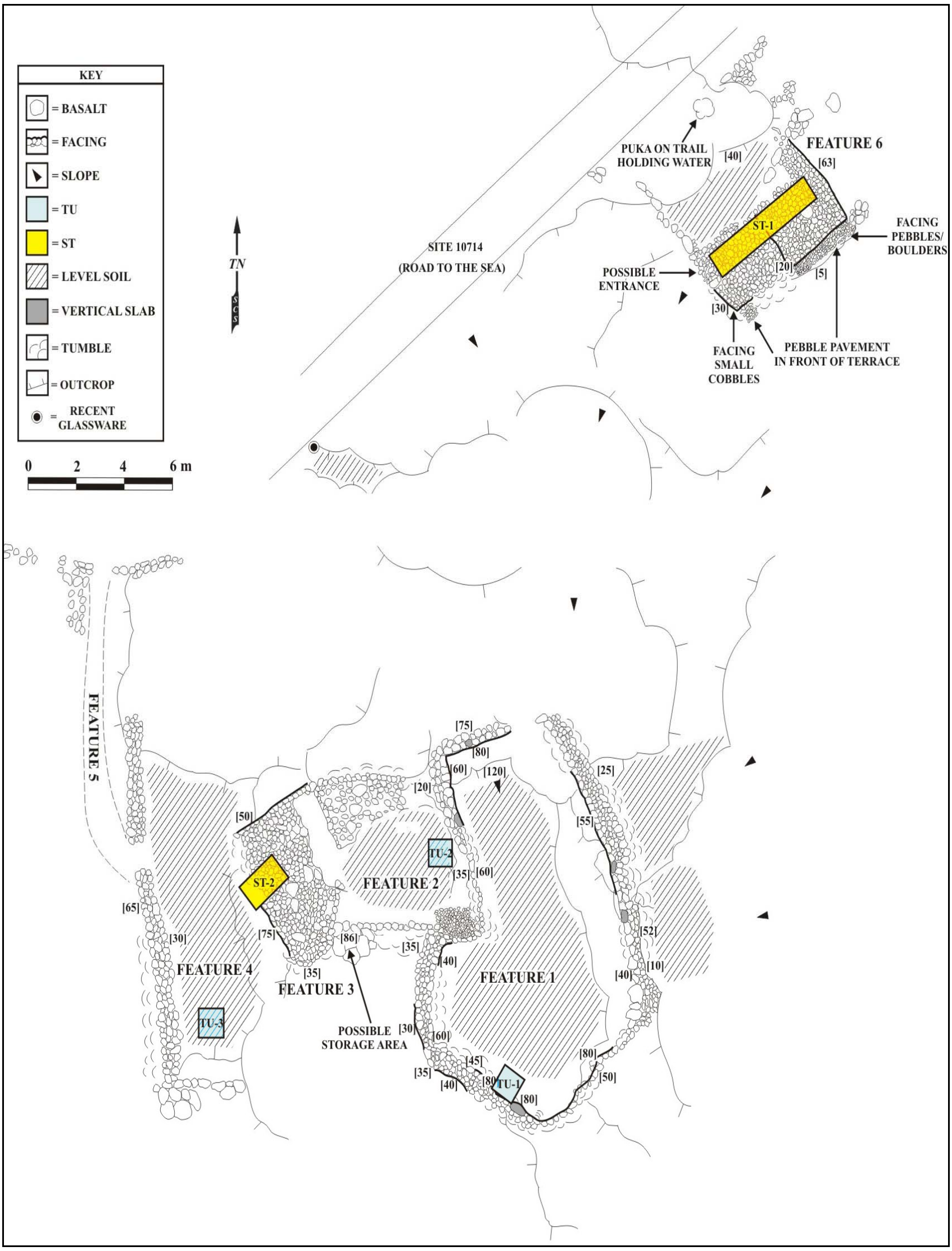

Figure 27: Site 10690, Plan View.

Invertebrates (including at least 17 taxa of shell), Vertebrates (including fish and dog), charcoal, *kukui* nut shell, and coral.

The site is interpreted as a traditional habitation with associated work areas. Features 1 through 4 are interpreted as ancillary features to Feature 6. The terrace (Feature 6), which was more complex architecturally than the other features and which yielded the bulk of the cultural materials, may also document an earlier (an more permanent) phase of site occupation. Two radiocarbon dates were obtained for this site, indicating a late pre-Contact date of occupation.

FEATURE 1

Feature 1 is an enclosure on a *pāhoehoe* outcrop, with some level or slightly south-sloping soil. The majority of all interior walls are well-faced with large cobbles, boulders, and at least five vertical slabs. The exterior of these walls are faced only in a small area on its southwest side, and wall thickness ranged from 1.0 meter to a single course of cobbles. A three-sided terrace (Feature 2) is attached to the northern portion of the west side of this feature. A single 1.0 by 1.0 m test unit (TU-1) was excavated in Feature 1, directly off of its southwest wall. TU-1 revealed two layers and a total depth of 27 cm. Layer I was a 7 cm-thick, very dark grayish brown (10YR 3/2) rocky silt. Layer II was a 20 cm-thick, black (10YR 2/1) silt. TU-1 demonstrated that the wall was constructed directly atop the bedrock, and the interior soil is quite shallow. No artifacts were recovered in TU-1 (Figure 28). Feature 1, while somewhat small, is not outside of the size range for a traditional Hawaiian house compound.

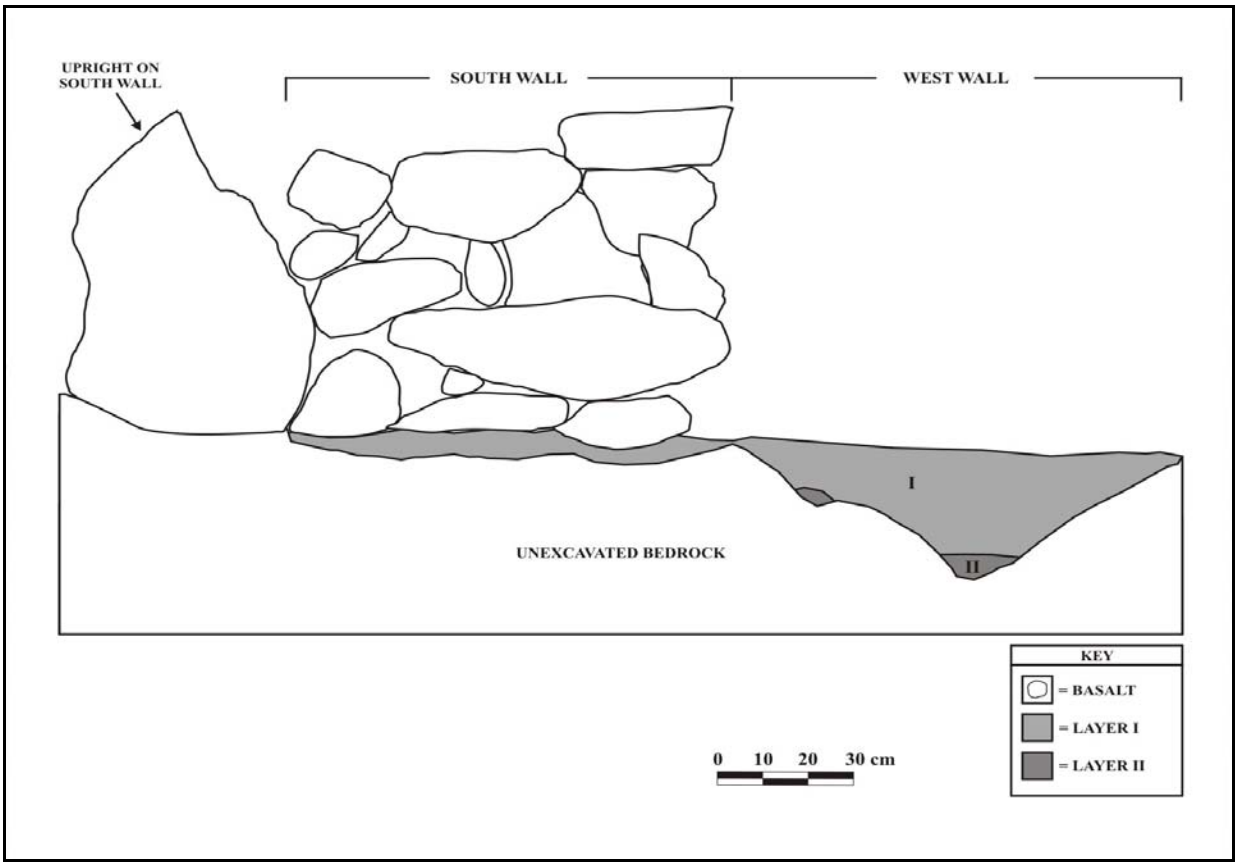

Figure 28: Site 10690, Feature 1, TU-1, Profile: South and West Walls.

FEATURE 2

Feature 2 is a square, three-sided terrace abutting the enclosure designated Feature 1 and extending to the west. Most of this terrace is soil-filled, but its sides are well-defined by boulders and cobbles on *pāhoehoe* . A 1.0 by 1.5 m pebble pavement occurs in the southeast corner of the terrace, and a small, 0.80-m deep possible storage area of *pāhoehoe* boulders is attached to the exterior of the feature's southwest corner.

A single 1.0 by 1.0 m test unit (TU-2) was excavated in Feature 2 near its eastern margin, where it attaches to the enclosure designated Feature 1. TU-2 exhibited two soil layers and extended to nearly 30 cmbs. Layer I was a 10 cm-thick, very dark grayish brown (10YR 3/2) silt. It yielded 9 marine shell fragments and at its base exposed a possible hearth. This subsurface feature, which lacked formal structure, rested directly on the bedrock and contained large quantities of charcoal (Figure 29). Layer II was an 18 cm-thick, very dark gray (10YR 3/1) silt. It also yielded an adze fragment and 6 marine shell fragments (Tables 12, 14, and 15). Feature 2 is consistent with the characteristics of a traditional work area, associated with the enclosure (Feature 1).

One conventional radiocarbon determination of 150 ± 50 BP (Beta No. –197058) was obtained from Layer II (15–33 cmbs), TU-2, Feature 2, at Site 10690. Calibrated dates (Oxcal v. 3.5) are (1 sigma) A.D. 1660–1890 (0.83), and A.D. 1910–1950 (0.17); and (2 sigma) A.D. 1650–1960 (1.00) (see Appendix A).

Table 12. Site 10690, Feature 2, TU-2, Midden.

Layer	Collected Material	Weight (grams)	Count	Remarks
I	Invertebrates	13.5	-	Taxa: *Theodoxus* sp., *Cypraea* sp., *Conus* sp., non-diagnostic marine shell
	Charcoal	12.7	-	-
	Kukui	0.3	-	-
II (SSF 2.21)	Invertebrates	6.9	-	Taxa: *Cellana* sp., *Cypraea* sp.
	Coral	0.9	2	Non-Branch
	Charcoal	44.4	-	-
	Charcoal	0.1	-	-
	Kukui	1.0	-	-

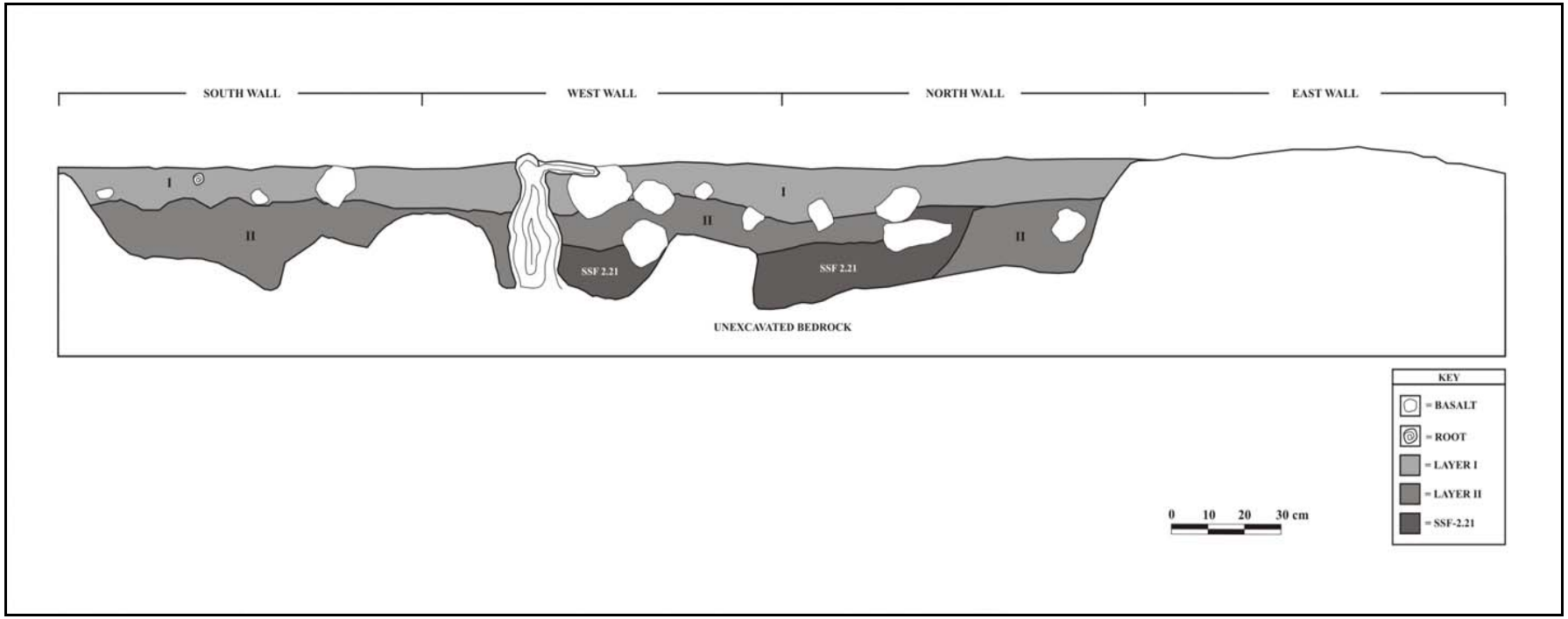

Figure 29: Site 10690, Feature 2, TU-2, Profile: North, South, East and West Walls.

FEATURE 3

Feature 3 is a rectilinear terrace, with an interior surface primarily of cobbles, but with some boulders also. The terrace abuts a *pāhoehoe* outcrop, which extends from underneath the west side of the terrace designated Feature 2, and has facing on several sides.

Feature 3 indicates a work area associated with the enclosure (Feature 1).

A single 2.0 by 1.0 m stratigraphic trench (ST-2) was excavated in this feature, positioned so as to cross its west face. This excavation revealed a single course of foundation boulders with an interior fill of mixed boulders and cobbles. The mainly cobble surface of this feature was a pavement (Figure 30). No artifacts were recovered in excavation at this feature.

FEATURE 4

Feature 4, the lowermost terrace, is a soil-filled structure with piled cobbles and boulders defining its long, west face, and piled boulders defining its short, east face. The east edge of this feature rests on *pāhoehoe* , extending from underneath it, and its north edge is also defined by *pāhoehoe* . A gap in the architecture of the west face appears to be an entryway from which Feature 5, a trail, extends.

Feature 4 indicates a work area associated with the enclosure (Feature 1).

A single 1.0 by 1.0 m test unit (TU-3) was excavated in the soil-filled interior of this feature, toward its south end. This excavation revealed a single, shallow soil layer resting upon bedrock, with no cultural material recovered (Figure 31). Layer I was a 20 cm-thick, very dark grayish brown (10YR 3/2) silt.

FEATURE 5

Feature 5, a short trail, extends from a gap in the west face of Feature 4, paralleling it in a northern direction for about 10.0 m before joining the historic Mauka-Makai Road (Site 10714). No excavation was conducted at Feature 5.

FEATURE 6

Feature 6 is a terrace located about 16 m northeast of the enclosure designated Feature 1, and separated from the south side of the historic Mauka-Makai Road (Site 10714) by a 3.0 m-wide *pāhoehoe* outcrop with a deep, possibly utilized, *puka* in it. It is a complex structure located on a southwest-facing slope, with a soil-filled northwest half. The architecture, which defines the southeast half of the feature, is stepped along a northwest-southeast axis, with this step represented by a 10 to 20 cm rise in the northeast half. Facing occurs on all but the upslope side of the feature, and a 75 cm-wide pebble pavement occurs directly underneath its southeast face, extending its entire length.

A single 1.0 by 4.0 m stratigraphic trench (ST-1) was placed in the architecture of this feature, parallel with its long axis. ST-1 was excavated in two halves with differences in both architecture and cultural material noted between the two halves. The lower, southwest half of the architecture appears to be an addition to the northeast half. Construction exhibits a cobble and pebble pavement (portions of which are now buried by tumble from the northeast half), with a large cobble fill occurring underneath it. Boulders in this half only occur at its contact with bedrock and its southwest face.

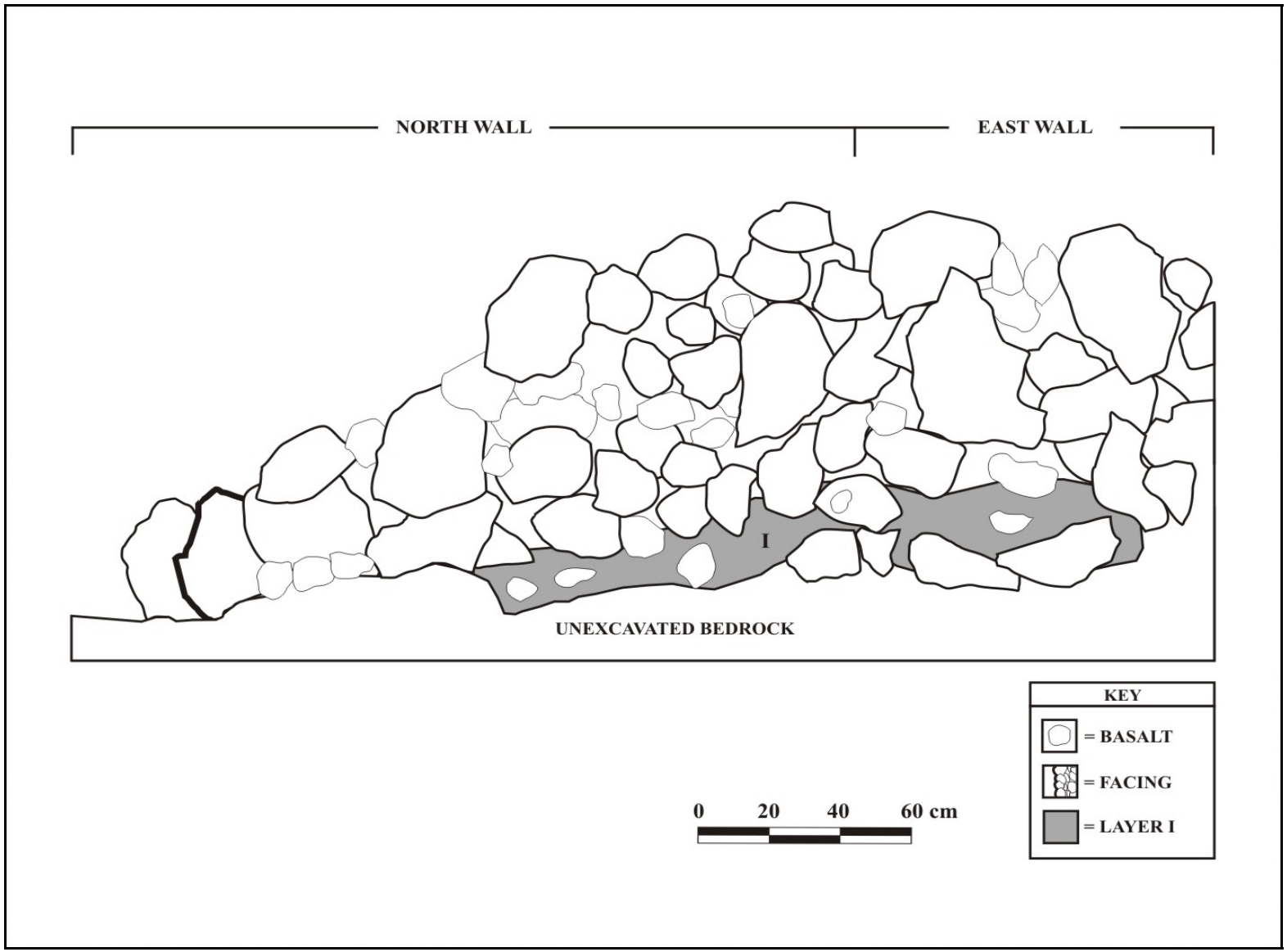

Figure 30: Site 10690, Feature 3, ST-2, Profile: North and East Walls.

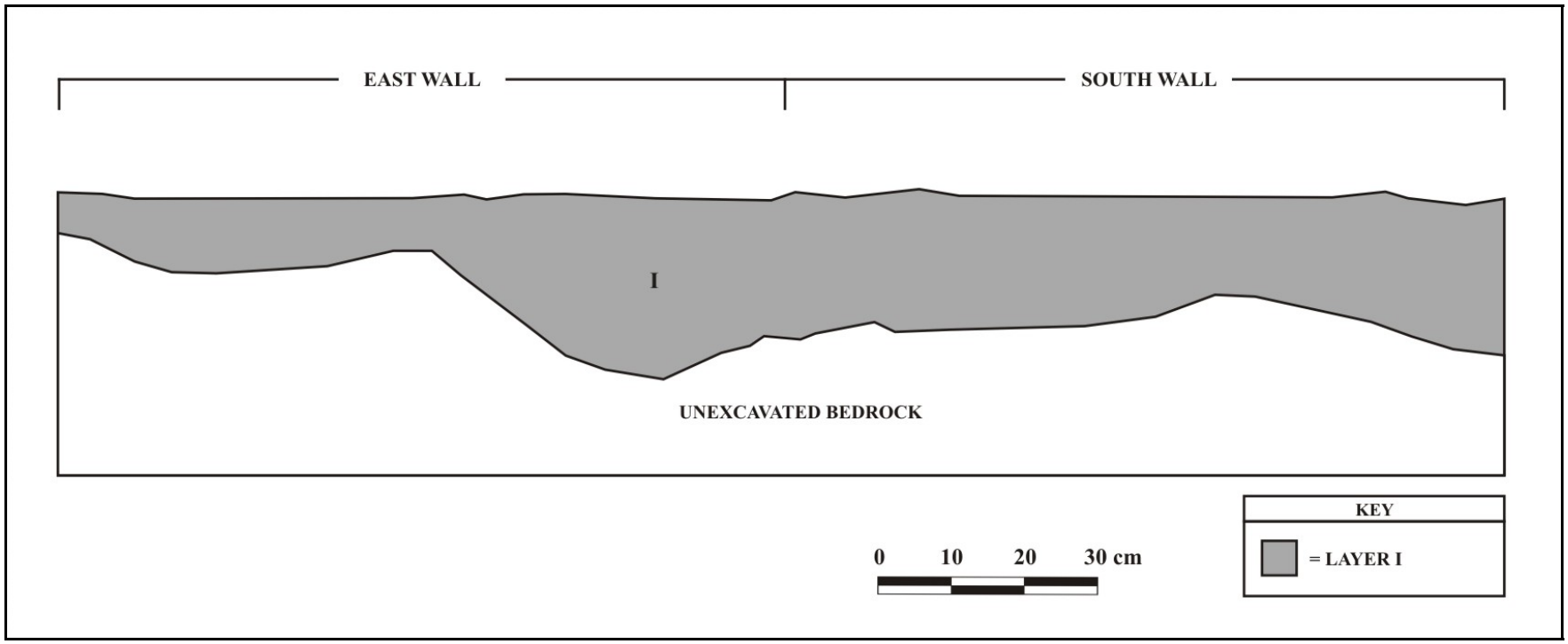

Figure 31: Site 10690, Feature 4, TU-3, Profile: East and South Walls.

By contrast, the northeast half has a continuous boulder and cobble fill from its surface to bedrock, and exhibits a buried facing, which the pebble and cobble pavement of the southwest half abuts. Two soil layers occurred in the trench with Layer I being thin, and almost immediately under the surface architecture of the southwest half, then being deeper and thicker in the northeast half. Layer II was the thickest soil layer, and contained the majority of the cultural material. Layer II rests directly atop the bedrock, and while the feature's architecture penetrated it, it also exhibited substantial areas that appeared to lack architecture (Figure 32).

Cultural material occurred in both layers of ST-1 (Table 13). Although not screened, ST-1 yielded relatively large quantities of traditional artifacts and midden, including several adze fragments and/or performs, a coral abrader, and several volcanic glass cores. No historic artifacts were observed at the ground surface or recovered in excavation. Midden included Invertebrates (including at least 17 taxa of shell), Vertebrates (including fish and dog), charcoal, *kukui* nut shell, and coral.

Table 13. Site 10690, Feature 6, ST-1, Midden.

Layer	Collected Material	Weight (grams)	Count	Remarks
Arch	Invertebrates	3.2	-	Taxa: *Nerita* sp., *Cypraea* sp.
	Coral	54.1	3	2 pieces poss. Branch 49.1 g
I and II	Invertebrates	115.4	-	Taxa: *Cellana* sp., *Nerita* sp., *Theodoxus* sp., *Strombus* sp., *Cypraea* sp., *Cassis cornuta, Drupa* sp., *Purpura aperta, Conus* sp., *Brachidontes* sp., *Isognomon* sp., non-diagnostic marine shell, Echinoidea
	Vertebrates	0.4	-	Fish
	Coral	12.1	25	18 pieces poss. Branch 6.8 g
	Kukui	4.1	-	
	Charcoal	6.5	-	-
	Bulk Cultural Material	14.7	-	1/8" screen
II	Invertebrates	215.8	-	Taxa: *Cellana* sp., *Nerita* sp., *Theodoxus* sp., *Cypraea* sp., *Drupa* sp., *Conus* sp., Zonitoidae, *Brachidontes* sp., *Isognomon* sp., *Chama* sp., *Tellina* sp., non-diagnostic marine shell, Echinoidea
	Vertebrates	1.2	-	Taxa: Fish, *Canis familiaris*
	Coral	39.2	1	Non-Branch
	Bulk Cultural Material	11.5	-	1/8" screen

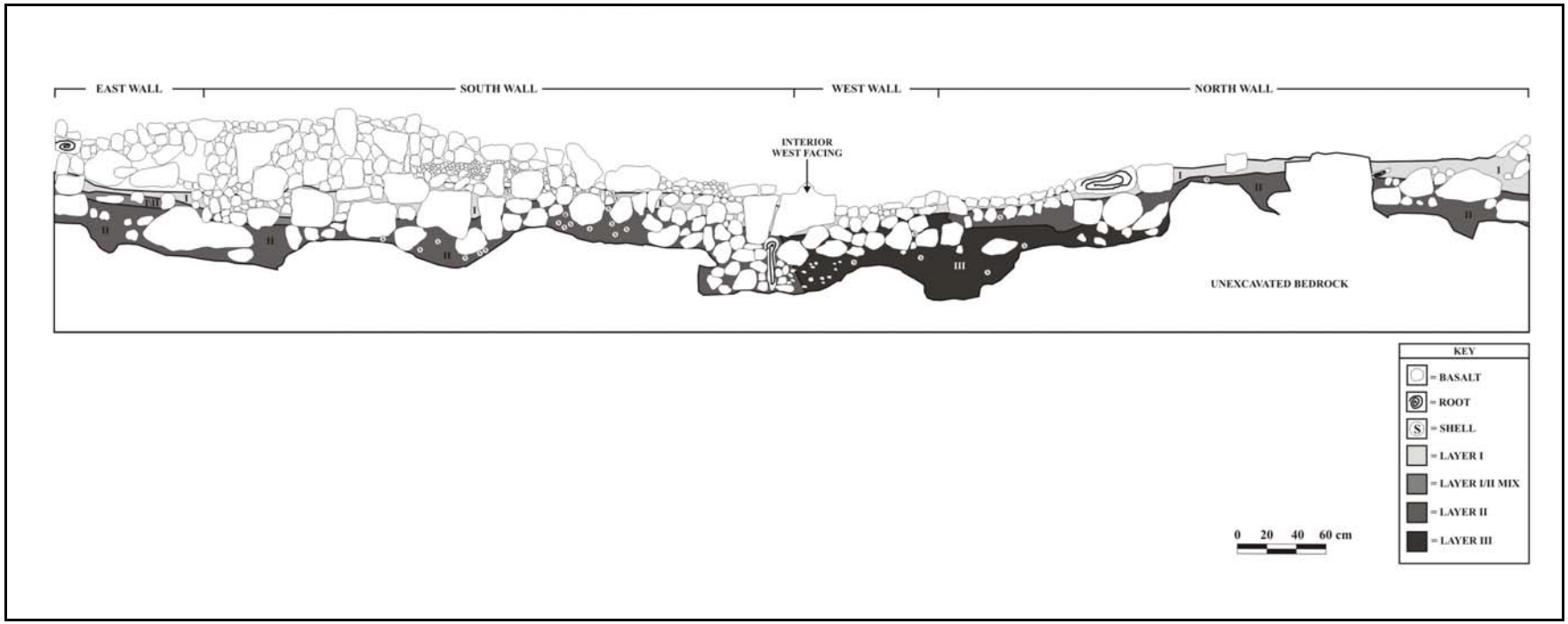

Figure 32: Site 10690, Feature 6, ST-1, Profile: East, South, West and North Walls.

Table 14. Site 10690 Invertebrate Remains.

Feature	6	6	6	2	2	
Subsurface Feature	-	-	-	-	2.21	Total
Unit	ST-1	ST-1	ST-1	TU-2	TU-2	(grams)
Layer	Arch	I and II	II	I	II	
GASTROPODA						
Cellana sp.	-	9.2	0.9	-	1.9	12.0
C. exarata	-	0.4	-	-	-	0.4
C. sandwicensis	-	1.7	-	-	-	1.7
Nerita picea	0.4	1.3	0.8	-	-	2.5
Theodoxus neglectus	-	10.2	20.1	0.2	-	30.5
Strombus sp.	-	0.5	-	-	-	0.5
Cypraea sp.	2.8	31.5	50.1	7.6	4.8	96.9
C. caputserpentis	-	-	10.0	-	-	10.0
Cassis cornuta	-	5.8	-	-	-	5.8
Drupa sp.	-	2.4	2.8	-	-	5.2
D. ricina	-	3.1	1.6	-	-	4.7
Purpura aperta	-	1.8	-	-	-	1.8
Drupa morum	-	5.2	10.2	-	-	15.4
Conus sp.	-	3.2	-	-	-	3.2
Conus catus	-	-	3.8	-	-	3.8
Conus chaldaeus	-	-	-	5.5	-	5.5
Zonitidae	-	-	0.2	-	-	0.2
Non-Diagnostic Gastropoda	-	0.7	1.4	0.2	-	2.3
TOTAL GASTROPODA	3.2	77.1	101.9	13.5	6.7	202.4
BIVALVIA						
Brachidontes crebristriatus	-	16.6	99.7	-	-	116.3
Isognomon californicum	-	10.0	8.3	-	-	18.3
Isognomon perna	-	-	1.8	-	-	1.8
TOTAL BIVALVIA	0	26.6	109.8	0	0	136.4
ECHINOIDEA						
Heterocentrotus mammillatus	-	11.4	1.2	-	-	11.4
Non-Diagnostic Echinoidea	-	-	1.0	-	-	1.0
TOTAL ECHINOIDEA	0	11.4	2.2	0	0	12.4

Table 15. Site 10690 Traditional Artifacts.

Feature	Unit	Layer	Artifact Type	Length (cm)	Width (cm)	Thick. (cm)	Count	Remarks
6	ST-1	Arch.	Volcanic Glass Core Fragment	2.30	2.24	1.37	1	Thick flake struck off a larger core; single prepared platform
		I	Basalt Adze Fragment	3.69	1.73	0.75	1	Overall dimensions intact; large fragment removed from adze bit; polish on 4 surfaces
			Basalt Adze Fragment	-	3.30	1.46	1	Fragment is of the bit end of the tool; piece medially fractured and large fragment is missing from the bevel
		I and II	Volcanic Glass Debitage	-	-	-	18	9 IF; 4 SF; 2 PF; 3 NDF
			Volcanic Glass Core	1.66	1.34	0.98	1	Multiple, prepared striking platforms
		II	Worked Basalt Pebble	3.83	3.61	2.18	1	Most of the pebbles surface is smooth (possibly water-worn) the entire circumference of the stone has been lightly battered
			Coral Abrader Fragment	-	-	1.30	1	Fragment is tabular with 3 worked facets
			Basalt Adze Preform	13.2	11.40	4.00	1	Highly vesicular basalt roughed out to an oval shape
			Basalt Debitage	-	-	-	1	One IF
			Volcanic Glass Debitage	-	-	-	11	Eight IF; 1 SF; 2 NDF
			Volcanic Glass Core	2.91	2.22	1.68	1	Chill glass core; based on thick flake
			Volcanic Glass Core	-	-	-	1	Fragment; single, prepared striking platform
			Volcanic Glass Core	-	-	-	1	Fragment; single, prepared striking platform
2	TU-2	II	Basalt Adze Fragment	-	-	-	1	Adze fragment; 1 polished surface

IF = Interior Flake; SF = Secondary Flake; NDF = Non-Diagnostic Flake

SITE 10691

Site 10691 is located in Kohanaiki Ahupua'a, in the extreme northeastern corner of the project area, slightly above the 1,080 ft. elevation contour. It is located on the older of the project area's Hualalai flows and has an overstory dominated by christmasberry. Additional plants at the site include *noni*, *alahe'e*, *mamame*, guava, coffee, silver oak, and lantana.

Site 10691 consists of nine features covering an area approximately 50 m north-south by 40.0 m east-west, and surrounded by the agricultural features of the Kona Field System (Figure 33). The features at Site 10691 stretch across a west- by southwest-facing slope, with a large modified cave (Site 10692) lying immediately to the north. The nine features include: three terraces, one mound, two platforms, two walls, and one trail (Table 16). Based on formal construction attributes and subsurface testing, eight of these (Features 1 through 8) are interpreted as habitation features, while the last (Feature 9) is an agricultural terrace.

A total of 8 m^2 (4 TUs, 3 STs) was excavated at Site 10691. Features 1 through 4, and 9, were excavated. Features 5 through 8 were not excavated. Cultural materials recovered in excavation consisted nearly exclusively of traditional artifacts, with only one historic artifact (glass button). Traditional finds included: two basalt abraders, two basalt pebble manuports, two utilized flakes (basalt), a worked marine shell, and several pieces of volcanic glass debitage. Midden included Invertebrates (including several taxa of shell), Vertebrates (mammals, fish and bird), charcoal, *kukui* nut shell, and coral.

Site 10691 is a traditional habitation, surrounded by numerous agricultural features. Based on architectural details and excavated finds, parts of the site may have been permanently occupied in traditional times. At the least, Site 10691 was a temporary habitation. Its proximity to at least two major caves (Sites 10692 and 10718) has undoubtedly influenced its development, and several features, such as the well-constructed walls (Features 6 and 8), point toward a historic veneer (*i.e.,* remodeling of the site).

One radiocarbon date was obtained from the platform designated Feature 3, suggesting a terminal pre-Contact and/or early historic era occupation of Site 10691.

Table 16. Site 10691 Features.

Fe. #	Type	L (m)	W (m)	H (m)	Excavated Units
1	Terrace	24.0	5.0	0.80	Two 1.0 x 1.0 m (TU-1, TU-2); One 1.0 x 2.0 m (ST-3)
2	Terrace	9.0	6.5	1.10	One 1.0 x 1.0 m (TU-3)
3	Platform	4.0	3.0	1.30	One 1.0 x 1.0 m (ST-1)
4	Mound	4.0	3.5	1.15	One 1.0 x 1.0 m (ST-2)
5	Trail	20.0	1.0		None
6	Wall	25.0	1.0	0.75	None
7	Platform	4.0	3.5	0.80	None
8	Wall	?	1.0	1.20	None
9	Terrace	17.0	8.0	1.10	One 1.0 x 1.0 m (TU-4)

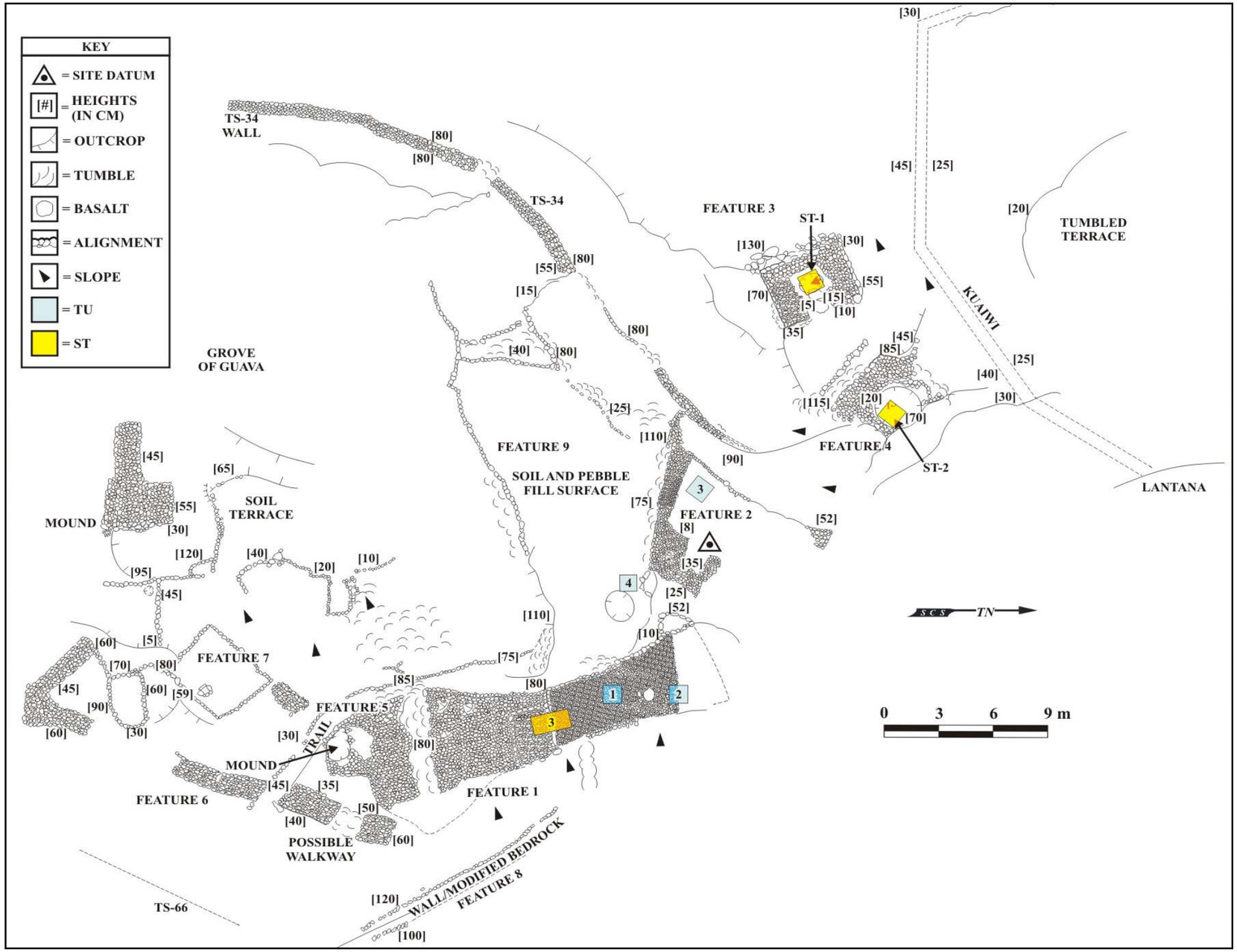

Figure 33: Site 10691, Plan View.

FEATURE 1

Feature 1 is a three-tiered terrace with its long axis in a north-south direction. The northernmost tier (Feature 1-A) is the highest, and measures 8.0 by 4.0 m. It exhibits a slab-lined feature (possible hearth) at its center, and is faced on its west side. Surface artifacts at Feature 1-A were a *papamū* (stone board game), a water-worn cobble, and a large cowrie shell, none of which were collected. There is a drop of 15 to 30 cm from the northernmost (upper) tier to the central tier (Feature 1-B), which measures 8.0 by 4.5 m. This central tier has a relatively level surface constructed primarily of cobbles and pebbles, with a pebble paved area measuring 3.0 by 3.0 m in its northeast corner; it is faced on its west side with a ground stone slab located on the pavement. The southernmost tier (Feature 1-C), measuring 5.0 m by 4.0 m, has an uneven surface of *ʻaʼā* cobbles and pebbles, and is not faced. This (lowermost) tier is up to 80 cm lower than the central tier, and is separated from it by about a meter-wide area of tumble.

Three excavation units were placed at Feature 1 in order to determine its function, to understand its internal construction, and to test for the presence of human remains. No human remains were recovered at Feature 1. TU-1 was placed over the possible hearth in the northernmost (upper) tier (Feature 1-A) and measured 1.0 by 1.0 m (Figure 34). TU-1 started at the base of the possible hearth (*i.e.,* 18 cm below the upper surface at Feature 1-A), and continued another 22 cm to bedrock (thus, base of excavation was 40 cm below the upper surface at Feature 1-A). The possible hearth exhibited a single soil layer containing no cultural material.

A second 1.0 by 1.0 m excavation unit (TU-2) was placed on the northernmost (upper) tier (Feature 1-A), straddling its northern edge. This northern half demonstrated a thin layer of soil lying on bedrock, while the southern half demonstrated two layers of mixed soil and *ʻaʼā* pebbles extending to a maximum depth of 63 cmbs (Figure 35). Layer I averaged 50 cm thick and was a very dark brown (10YR 2/2), rocky silt. Layer II averaged 20 cm thick and was a very dark grayish-brown (10YR 3/2), rocky silt. No cultural material was recovered in this excavation, and its soil and pebble mixture led the excavator to believe that much of this tier was a natural *ʻaʼā* flow.

The final excavation in this feature (ST-3) straddled the step between the northernmost tier and the central tier (*i.e.,* Features 1-A and 1-B, respectively) and measured 2.0 by 1.0 m. The southern half of ST-3 sampled the pebble pavement of the central tier; the northern half of ST-3 sampled the pebble pavement of the northernmost tier. ST-3 showed that both tiers were probably constructed at the same time, given the lack of a clear stratigraphic/architectural break between them (Figure 36). Bedrock was encountered at a maximum depth of 90 cmbs. The only artifact recovered in ST-3 was a glass button (historic) in the central tier between 0 to 30 cmbs. Non-human bones (5.2 g of medium-to-large mammal) and a trace amount of *Cellana* sp. (0.4 g) were also recovered.

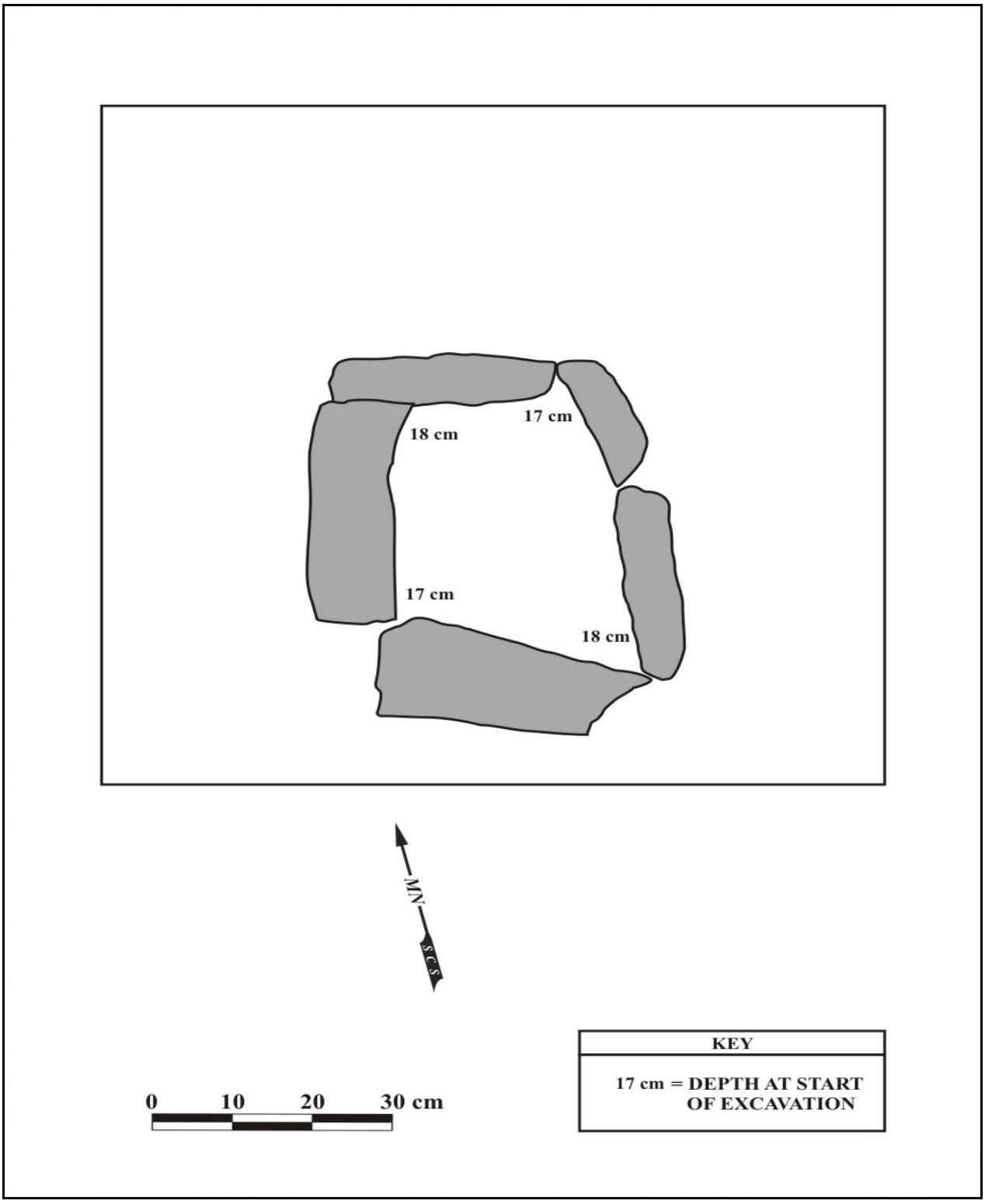

Figure 34: Site 10691, Feature 1, TU-1, Plan View.

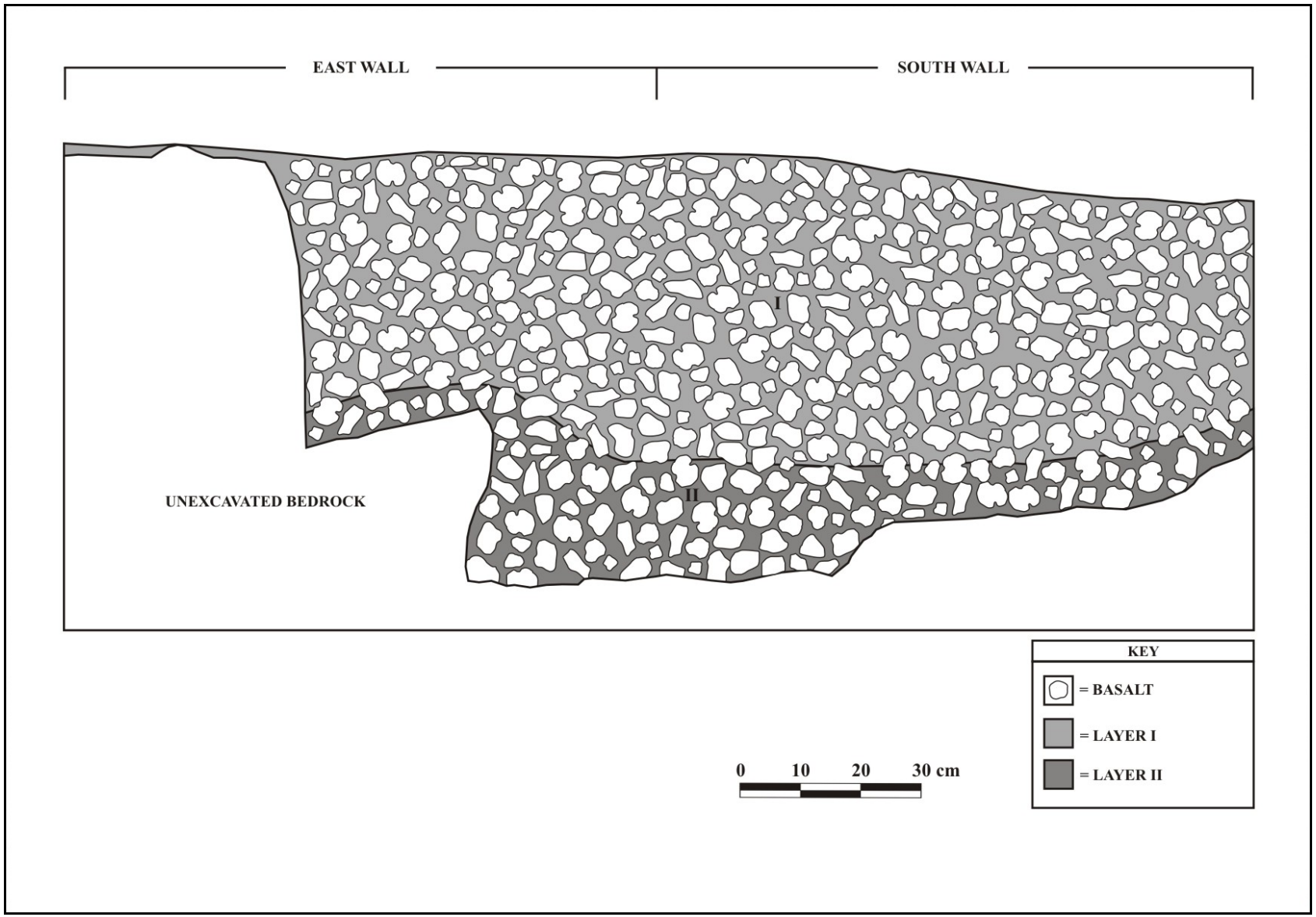

Figure 35: Site 10691, Feature 1, TU-2, Profile: East and South Walls..

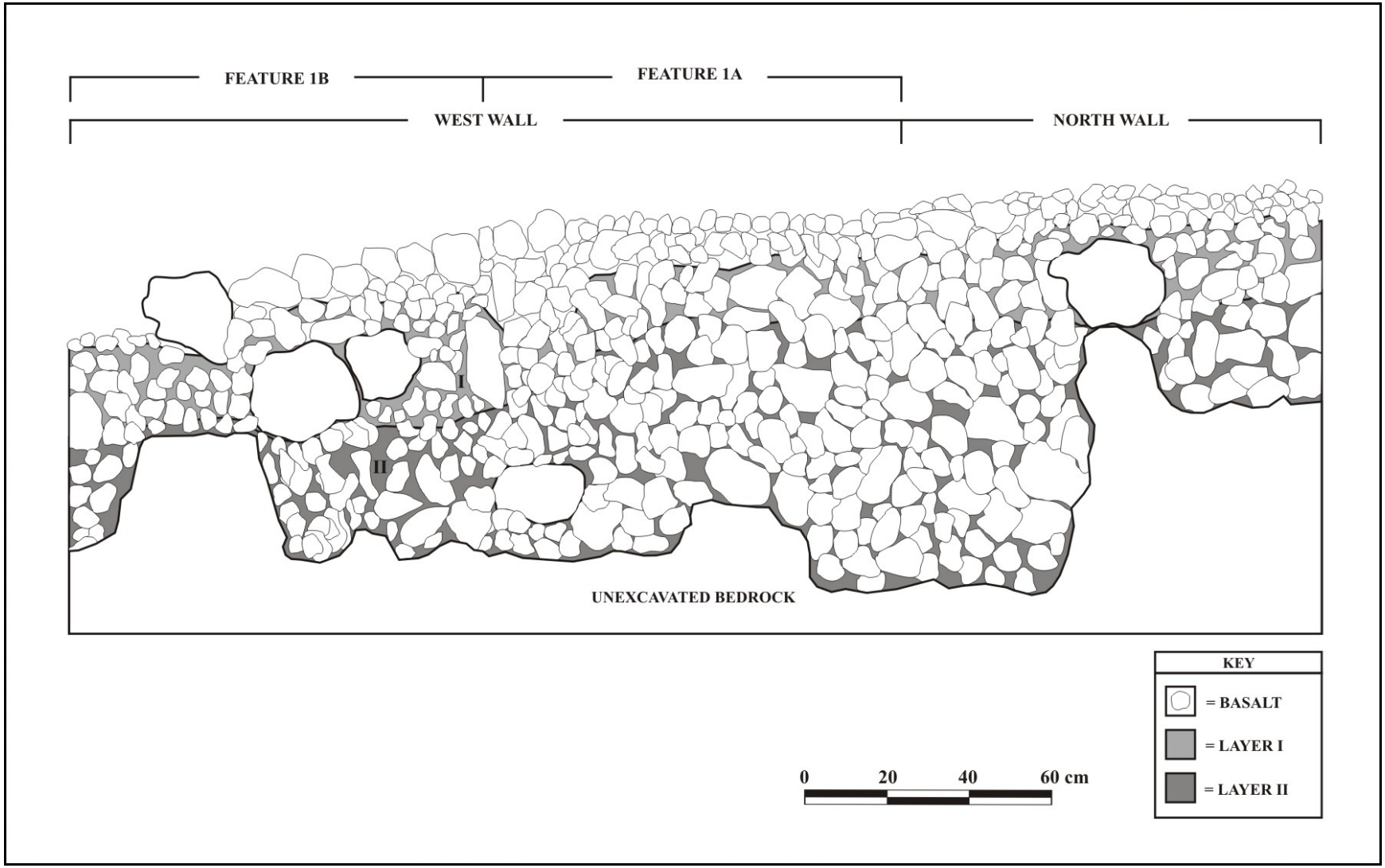

Figure 36: Site 10691, Feature 1, ST-3, Profile: West and North Walls.

FEATURE 2

Feature 2 is another three-sided terrace with its east side situated about 3.0 m west of the northernmost tier of Feature 1. Architecture is mostly visible on its south and east sides, with a large portion of the feature being level soil; bedrock outcrops are located to the northeast of the architecture. The south face of the terrace is about 9.0 m long, exhibits no facing, and consists of sloping cobbles. The east side of the terrace is short, and incorporates a 2.0 by 3.0 m mound. The west side of the terrace is defined by a single course cobble alignment, stretching about 9.0 m along bedrock, although some architecture, off of the feature's south side, continues 2.0 m downslope to contact the northeastern end of a nicely built wall. Cultural material observed on the surface of Feature 2 included a large quantity of large *opihi* shells, located on the mound its southeast corner, and a stone anvil. The *opihi* shell was probably deposited in a single dumping event, and is most likely historic. None of these items were collected.

A single 1.0 by 1.0 m test unit (TU-3) was excavated in a level soil area, toward the southwest corner of Feature 2. TU-3 was excavated primarily to determine if the feature was a habitation. TU-3 was excavated to bedrock (~25 cmbs), and yielded 2 pieces of volcanic glass, 1 piece of polished basalt, 2 pieces of coral, 6 marine shell fragments, 2 basalt manuports, and 1 burnt *kukui* nut shell. Two soil layers were observed, with the majority of material derived from the uppermost layer, Layer I (Figure 37; Tables 17 and 19). Layer I was a 10 cm-thick, dark brown (10YR 3/3) silt. Layer II was a 15 cm-thick, black (10YR 2/1) silt.

Table 17. Site 10691, Feature 2, TU-3, Midden.

Layer	Collected Material	Weight (grams)	Count	Remarks
I	Invertebrates	1.3	-	Taxa: *Cellana* sp., *Cypraea* sp., non-diagnostic marine shell
	Coral	3.9	2	Non-Branch
II	Invertebrates	0.4	-	Non-diagnostic marine shell
	Kukui	0.1		
	Basalt Pebbles	4.9	2	Manuport

FEATURE 3

Feature 3 is a small, square platform with a soil-filled interior located toward the northwestern end of Site 10691. The platform is faced on all four sides, although its west face is somewhat tumbled. The central portion of its east face is comprised of large, horizontally-stacked *pāhoehoe* slabs, which appear to be an entryway. No cultural material was noted on its surface. A 10-cm deep depression occurred in the central, soil filled area.

A single 1.0 by 1.0 m stratigraphic trench (ST-1) was excavated over the 10-cm deep depression in order to determine the presence or absence of human remains. ST-1 was excavated to bedrock, which was encountered at *c.* 70 cmbs. Three soil layers and two possible construction phases were documented. Subsurface observations suggest that the feature was originally a small enclosure, with its central portion filled in at a later time (Figure 38). Layer I averaged 27 cm thick and was a dark brown (10YR 2/3) mixture of silt and architecture. Layer II averaged 25 cm thick and was a black (10YR 2/1) mixture of silt and architecture. Layer III averaged 10 cm thick and was a dark yellowish-brown (10YR 3/4) silt. Although not screened, ST-1 yielded a modest amount of cultural material and midden, mostly deriving from Layer II,

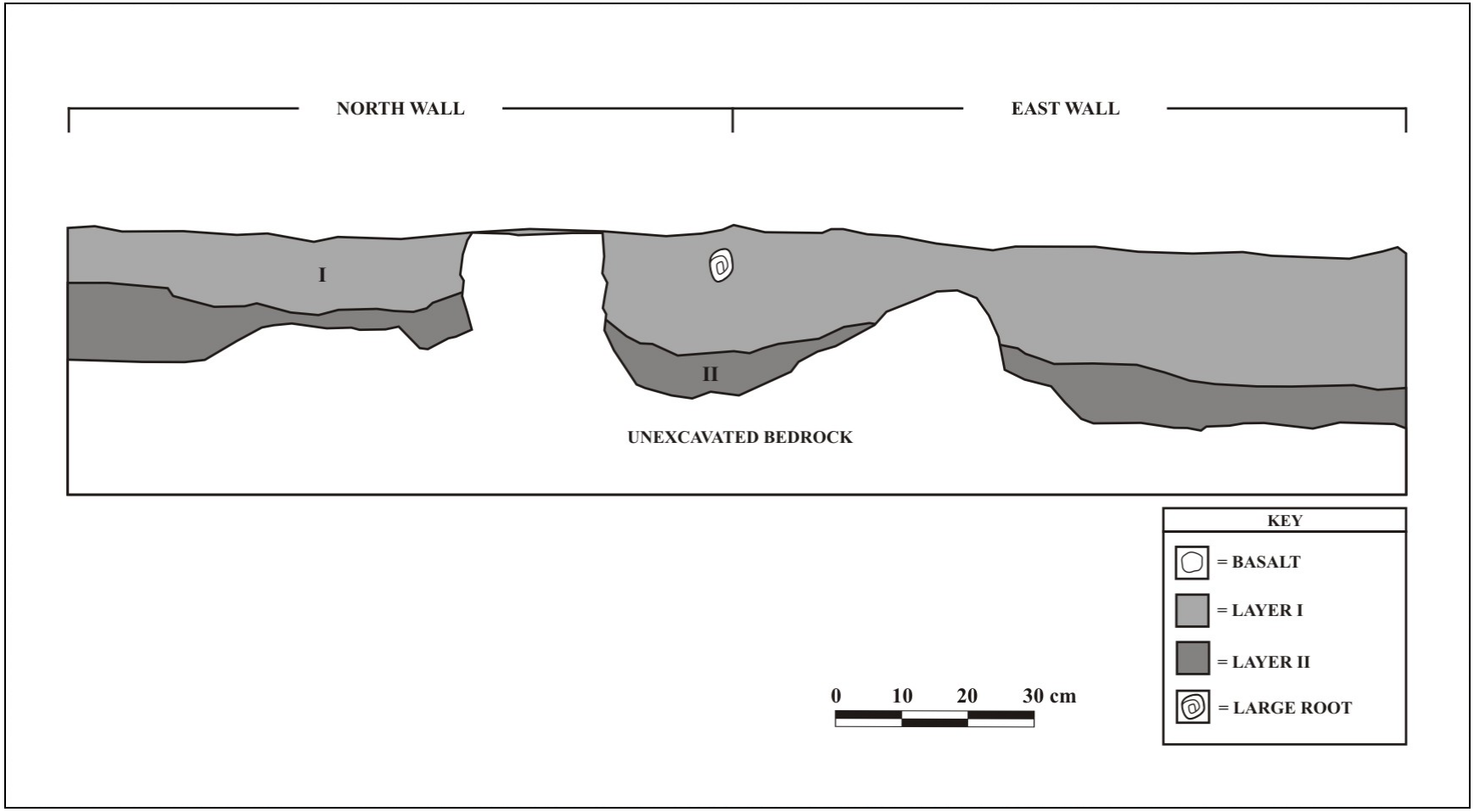

Figure 37: Site 10691, Feature 2, TU-3, Profile: North and East Walls.

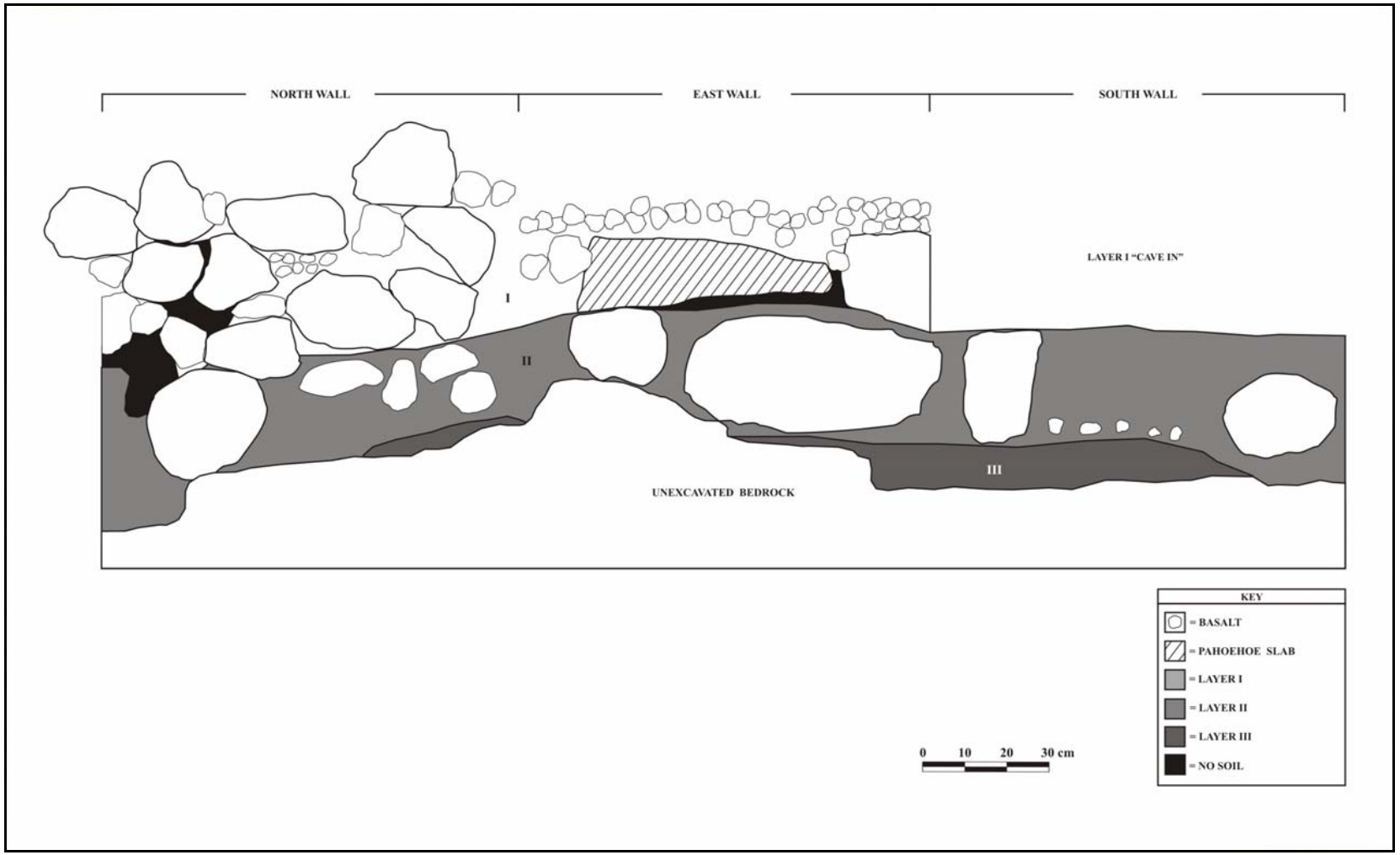

Figure 38: Site 10691, Feature 3, ST-1, Profile: North, East and South Walls.

including: volcanic glass debitage, two basalt abraders, a utilized flake (basalt), fish, bird, and non-diagnostic vertebrate bone, *kukui*, and charcoal (Tables 19 and 20).

One conventional radiocarbon determination of 150 ± 50 BP (Beta No. 197059) was obtained from Layer II, ST-1, Feature 3, at Site 10691. Calibrated dates (Oxcal v. 3.5) are (1 sigma) A.D. 1660–1960 (1.00) and (2 sigma) A.D. 1640-1960 (1.00) (see Appendix A).

Table 18. Site 10691, Feature 3, Midden.

Layer	Collected Material	Weight (grams)	Count	Remarks
I	Invertebrates	6.7	-	Taxa: *Cypraea* sp., *Drupa* sp.
	Coral	3.4	1	Non-Branch
II	Invertebrates	17.0	-	Taxa: *Cypraea* sp., non-diagnostic marine shell, Echinoidea
	Vertebrates	5.0	-	Taxa: Fish, small-to-medium bird, small-to-medium vertebrate
	Charcoal	24.1	-	-
	Kukui	0.9	-	-

FEATURE 4

Feature 4 is a moderately-sized, square-shaped mound, located about 3 m northeast of Feature 3. Feature 4 exhibits facing on both its southwest and northwest sides, on its western corner, and is constructed of piled *ʻaʼā* cobbles and boulders. A large 30-cm deep depression occurs on its surface.

A 1.0 by 1.0 m stratigraphic trench (ST-2) was excavated at Feature 4 in order to determine the presence or absence of human remains. No human remains were recovered. ST-2 proved to be relatively shallow, had two soil layers, and yielded no cultural material. Layer I averaged 9 cm thick and was a very dark brown (7.5YR 2.5/2), rocky silt. Layer II averaged 15 cm thick and was a dark brown (7.5YR 3/2), rocky silt (Figure 39).

FEATURES 5 THROUGH 8

Feature 5 is a nicely constructed trail extending south from the terrace designated Feature 9, immediately below the large terrace designated Feature 1, and crossing the wall designated Feature 6. This wall is up to 75 cm in height, extending southwest from its severely collapsed junction with Feature 8, the second wall, which appears to extend along the majority of the southeastern margin of the site. Feature 7 is a low-lying platform with a possible *ʻaʼā* slab pit in its east section. No exvavation was conducted at Features 5 through 8.

FEATURE 9

Feature 9, a large, soil-filled terrace, was thought to be purely agricultural in function, and was tested to verify this hypothesis.

A single 1.0 by 1.0 m test unit (TU-4) was excavated to a depth of 24 cmbs, revealing a single soil layer and one piece of volcanic glass (Table 19). TU-4 was located immediately below the contact between Feature 9 and Feature 2. No other finds were recovered in TU-4.

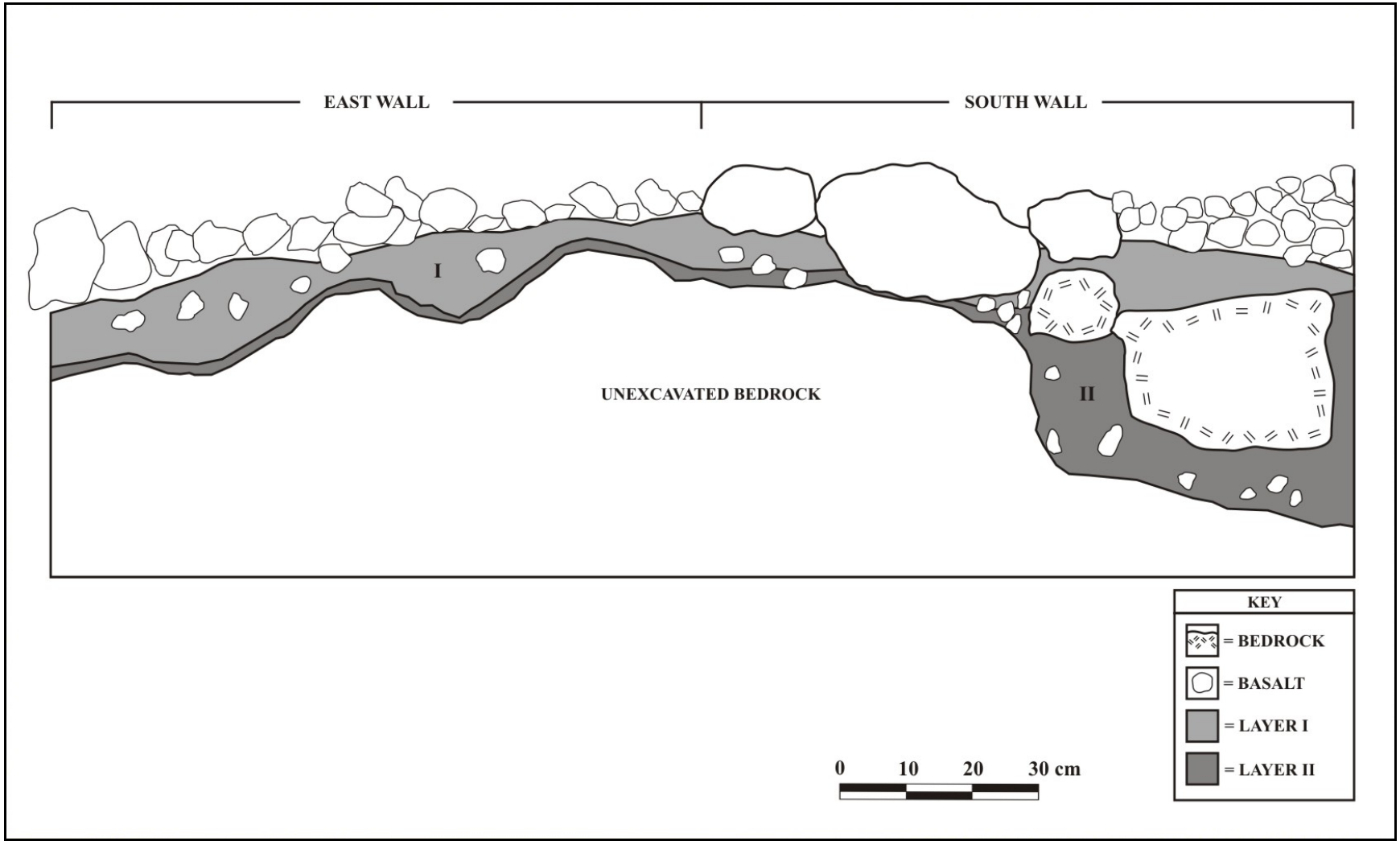

Figure 39: Site 10691, Feature 4, ST-2, Profile: East and South Walls.

Table 19. Site 10691 Traditional Artifacts.

Feature	Unit	Layer	Artifact Type	L (cm)	W (cm)	T (cm)	N	Comments
3	ST-1	I	Volcanic Glass Debitage	-	-	-	3	One IF; 2 NDF
			Basalt Abrader	3.65	2.09	1.33	1	One worked facet
		II	Volcanic Glass Debitage	-	-	-	1	One IF
			Basalt Flake with Polish	1.01	1.30	0.30	1	One polished facet
			Worked Marine Shell	-	-	-	1	Fragment of *Pinctada radiata*
			Basalt Abrader	3.94	2.50	1.46	1	One worked facet of this piece of vesicular basalt
			Volcanic Glass Debitage	-	-	-	4	One IF; 1 SF; 2 NDF
2	TU-3	I	Volcanic Glass Debitage	-	-	-	2	Two IF
			Basalt Flake with Polish	-	-	-	1	One NDF; 1 polished surface
9	TU-4	I	Volcanic Glass Debitage	-	-	-	1	One SF

IF = Interior Flake; SF = Secondary Flake; NDF = Non-Diagnostic Flake

SITE 10692

Site 10692 is in Kohanaiki Ahupua‘a at 1090 ft. elevation. This sink is modified with paved terraces on the east (3.5 by 2 m) and west (3.8 by 2.8 m) sides (Figure 40). There is a wall (3.5 m long and 0.7 m high) that spans the entrance to the cave at the south end of the sink. A paved terrace (5 by 4 m) is near the entrance. Beyond that there is a cleared pathway with stones in intermittent alignment on the path sides. There are six rock circles in various places in the cave. A few pieces of vegetable matter (probably gourd) were found alongside the pathway. The full length of the cave is approximately 50 meters.

The rock circles are from 0.5 to 1.0 meter in diameter, and are made up of cobbles (5 to 15 cm) placed alongside one another in a circle or oval. Organic material is often situated within the rock circle. The organic material is black, greasy, and it is difficult to discern any particular particle from the mass of material. It does not appear to be burned. In contrast, the organic material appears to be decomposed vegetal matter. The rock circles correlate directly with the presence of dripping water from the cave ceiling. Water drips from the ceiling into the area delineated by the rock circle. The organic material within the rock circles are damp, and within those rock circles lacking organic material the cave floors are damp.

The principal functions of this cave are for water collection and for habitation/shelter. The semi-walled entrance and paved area near the entrance suggest some kind of regulation of passage into the cave.

Excavations were conducted in the paved terrace just inside the entrance (Figure 40). Small pebbles pave the surface of the terrace. Pig bone, one marine shell, and a coral abrader were collected from the terrace surface (Tables 21 and 22). A variety of materials reflecting tools, ornamentation, cooking or light production, and food consumption were recovered from the 62 cm deep unit (Figure 41). One conventional radiocarbon determination of 190 ± 50 BP (Beta No. 197060) was obtained from Layer I, TU-1, Feature 1, at Site 10692. Calibrated dates (Oxcal v. 3.5) are (1 sigma) A.D. 1730–1810 (0.62), A.D. 1650-1690 (0.22), and A.D. 1920-1950 (0.16); (2 sigma) A.D. 1640-1960 (1.00) (see Appendix A).

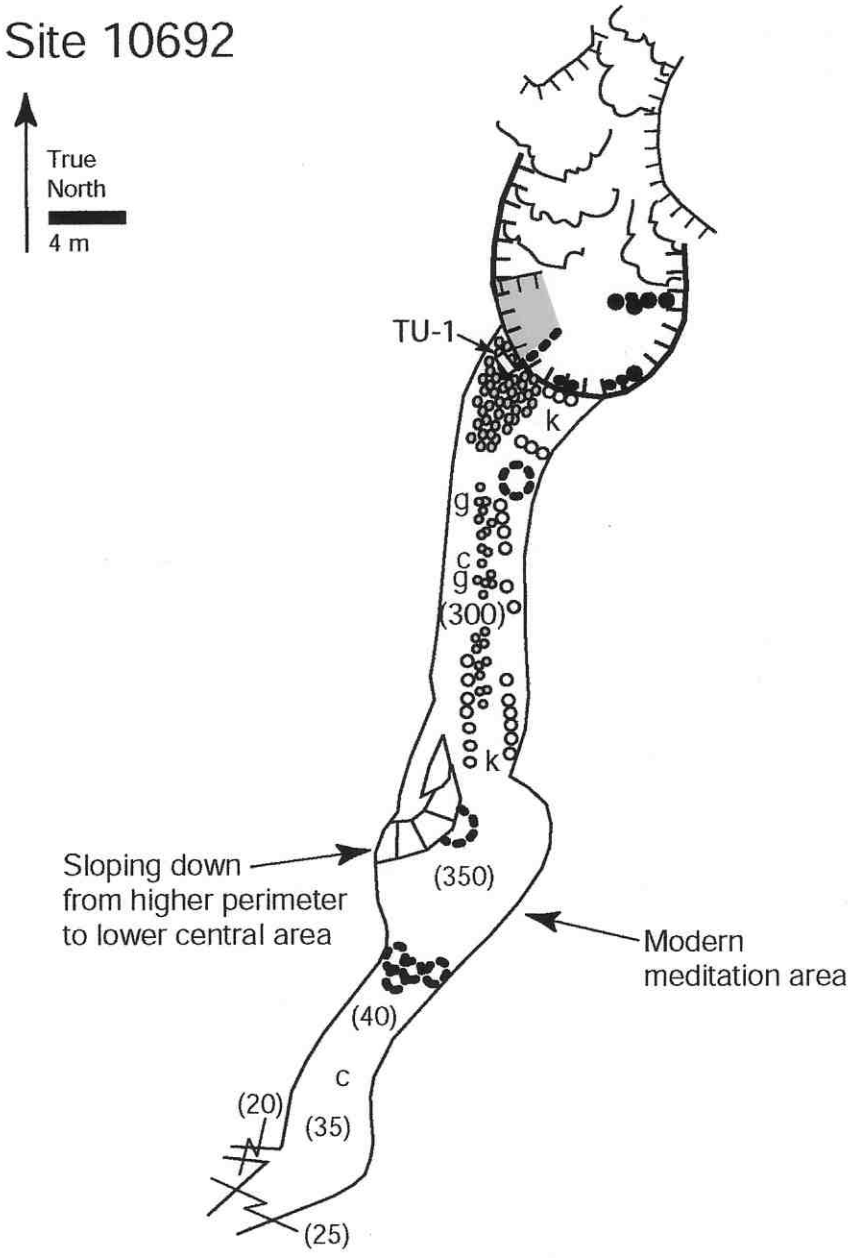

Figure 40: Site 10692 plan view.

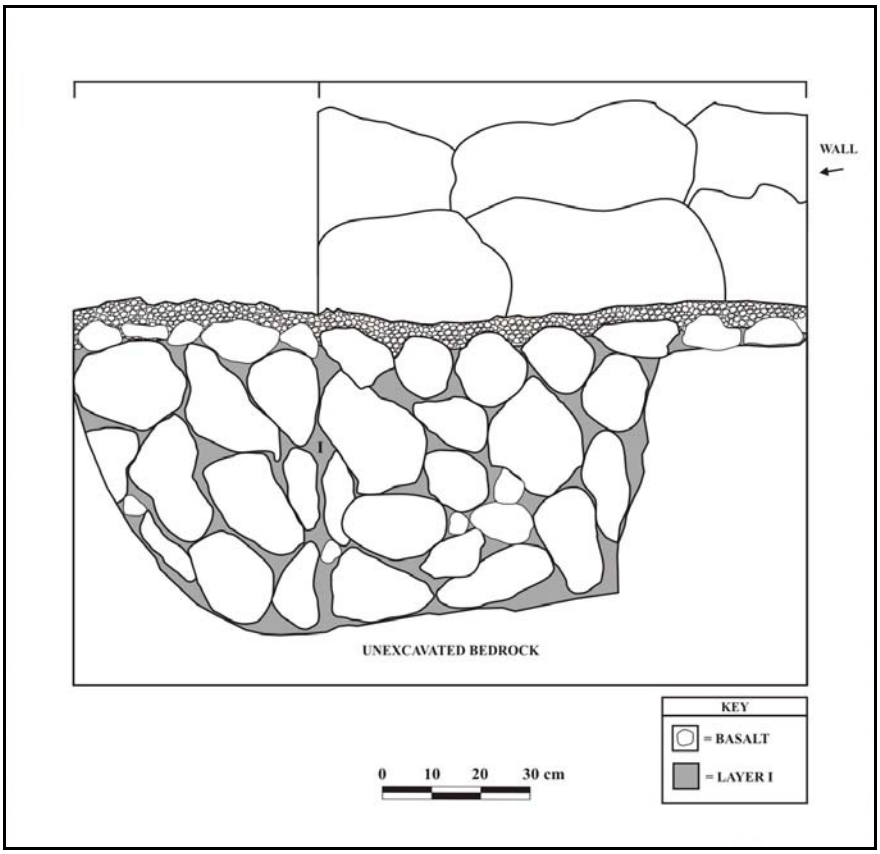

Figure 41: Site 10692 Excavation. Site 10692 excavation.

Table 20. Site 10692, Feature 1, material remains.

Layer	Depth (cmbs)	Collected Material	Weight (grams)	Count	Remarks
I	-	Polished Basalt	94.3	1	-
I	-	Invertebrates	11.7	-	Taxa: Cellana sp., Cypraea sp., Drupa sp., Conus sp., Periglypta reticulata, non-diagnostic marine shell, Echinoidea
I	-	Marine Shell Bead	0.2	1	Conus sp.
I	-	Basalt Debitage	1.7	3	-
I	-	Vertebrates	1.6	-	Taxa: Fish, Sus scrofa
I	-	Volcanic Glass	1.7	2	-
I	-	Charcoal	43.4	-	-
I	-	Kukui	4.4	-	-
-	Surface	Invertebrates	25.6	-	Cellana sp.
-	Surface	Vertebrates	64.3	-	Sus scrofa
-	Surface	Coral Abrader	22.9	1	-

Table 21. Site 10692, Feature 1 artifact data.

UNIT	LAYER	ARTIFACT NUMBER	ARTIFACT TYPE	LENGTH (cm)	WIDTH (cm)	THICK. (cm)	COUNT	REMARKS
TU-1	I	1	Basalt Polishing Stone	-	-	0.61	1	Fragment; 1 surface highly polished through use
TU-1	I	2	Perforated Marine Shell	0.75	0.65	0.30	1	Top of Conus sp. shell
TU-1	I	-	Basalt Debitage	-	-	-	3	Three NDF; affected by fire
TU-1	I	-	Volcanic Glass Debitage	-	-	-	2	One IF; 1 SF
Surface	-	3	Coral Abrader	5.30	3.11	2.44	1	One worked facet
IF = Interior Flake; SF = Secondary Flake; NDF = Non-Diagnostic Flake								

.

SITE 10693

This site was recorded and excavated by Barrera (1988, 1991). The information from his work is summarized here.

Site 10693 consists of 17 features within an approximately 1.0-acre area bounded to the east, south, and west by portions of the historic wall network encircling the Walled Fields area, and bounded to the north by part of the *kuaiwi* network designated Site 10716 (Figure 42). Barrera (1988) originally interpreted several features in the upper portion of Site 10693 as a possible habitation complex, but later, on the basis of the paucity of finds recovered in excavation, no longer supported this initial interpretation. In any case, this habitation complex is centered on a terrace and a mound (Features 1 and 2), which are closely bounded by two major cross-slope terraces and by the longest, continuous *kuaiwi* in the Walled Fields area (see Figure 42). Additional remnants of cross-slope terraces and a mound (Feature 3) are located immediately to the east (upslope) of the possible habitation features. The remaining features (4 through 17), all mounds, are located to the west-southwest (downslope). It is worth noting that Feature 1 (the terrace) is the only real viable candidate for a possible habitation site (*i.e.*, people do not live on mounds).

All 17 of the features at Site 10693 are formally described below, including results of limited subsurface testing and analysis of material finds, where applicable. Two trenches, totaling 17.0 m in length, were excavated at Features 1 and 2. A small amount of charcoal and marine shell was recovered in excavation. No artifacts were recovered in excavation or from the ground surface at Site 10693. No hydration rind dates were obtained for Site 10693.

FEATURE 1

Feature 1 is a mound measuring 7.2 by 2.5 m, with a maximum height range of 60 to 90 cm above the ground surface. The mound is located approximately 2.0 m southwest of one of the major cross-slope terraces. Feature 1 is constructed of dry-stacked, angular, basalt cobbles and small boulders resting on a shallow soil; it is oriented roughly east-northeast to west-southwest (Figure 43).

Figure 42: Sites and Features of the Walled Fields Portion of the Project Area (adapted from Barrera 1991:5).

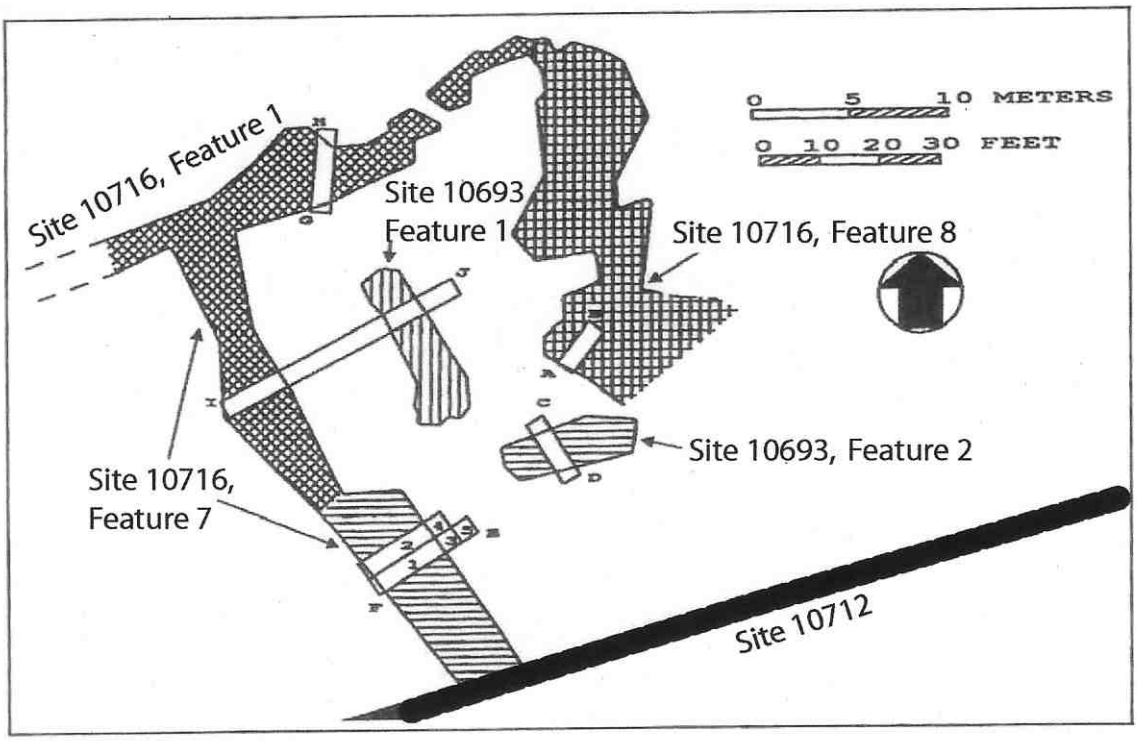

Figure 43: Partial Plan Views of Site 10693 (Features 1 and 2) and Site 10716 (Features 1, 7, and 8), Showing Locations of Trench Excavations (from Barrera 1991:10).

The mound was bisected by a 4.0-m trench, which demonstrated that the stacked rock architecture comprising the feature rested on a 25-cm thick soil horizon, underlain by bedrock (Figure 44).

No artifacts were recovered in the trench. A small amount of charcoal (14.2 g) and marine shell (10.9 g, including *Cypraea caputserpentis* and *Cypraea* sp.) was recovered.

FEATURE 2

Feature 2 is a terrace measuring 9.0 by 2.7 m, with a maximum height of 40 cm on the northeast (upslope) side and 80 cm on the southwest (downslope) side. The terrace is located 5.0 m northwest of the mound designated Feature 1. Feature 2 is constructed of dry-stacked, angular, basalt cobbles and small boulders; it is oriented roughly north-northwest to south-southeast.

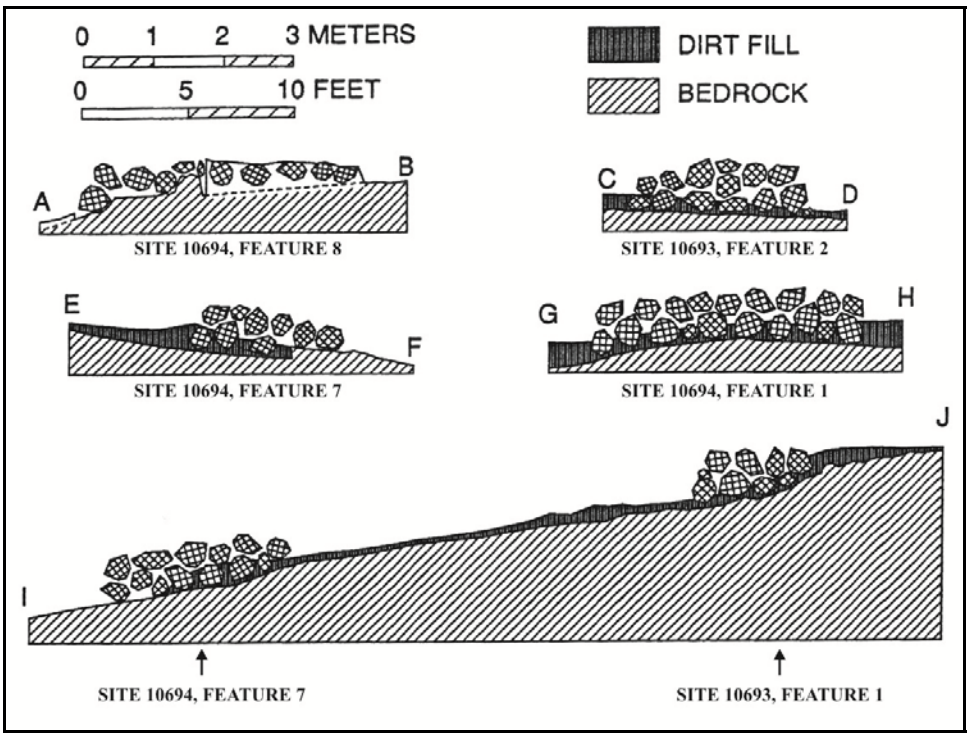

Figure 44: Section Views (Trench Excavations) of Site 10693 (Features 1 and 2) and Site – 10716 (Features 1, 7, and 8) (from Barrera 1991:13).

The terrace was bisected by a 13.0-m trench, which demonstrated that the stacked rock architecture comprising the terrace rested directly on *pāhoehoe* bedrock (Figure 44). A 25-cm thick soil matrix, interpreted as feature fill by the excavator, was located at the base of the feature.

No artifacts or midden were recovered in the trench, which also continued into the cross-slope terrace to the west-southwest.

FEATURE 3

Feature 3 is a mound measuring 4.0 by 1.8 m, with a maximum height of 80 cm. The mound is located east-northeast (upslope) of Features 1 and 2, 3 m due south of a section of *kuaiwi* and approximately 10 m northeast of two remnants of cross-slope terrace. No excavations were conducted at Feature 3.

FEATURES 4 THROUGH 7

A cluster of four mounds, designated Features 4 through 7, is located 12.0 to 13.0 m west-southwest of the major cross-slope terrace associated with Features 1 and 2 (see Figure 42). Collectively, the four features occupy an area of 15.0 (north to south) by 5.0 m (east to west). Feature 4 is a mound measuring 1.9 by 3.0 m, with a maximum height range of 50 to 80 cm above the ground surface. Feature 5 is a mound measuring 2.0 by 2.2 m, with a maximum height range of 60 to 90 cm above the ground surface. Feature 6 is a circular mound with a diameter of 1.7 m, and a maximum height of 50 cm above the ground surface. Feature 7 is a circular mound with a diameter of 1.8 m, and a maximum height of 40 cm above the ground surface. No excavations were conducted at Features 4 through 7.

FEATURES 8 THROUGH 17

A second, larger cluster of 10 mounds, designated Features 8 through 17, is located further downslope, west-southwest of Features 4 through 7 (see Figure 42). Collectively, the 10 mounds occupy an area of approximately 10.0 (north to south) by 30.0 m (east to west). Feature 8 is a mound measuring 1.8 m by 4.1 m, with a maximum height range of 50–90 cm above the ground surface. Feature 9 is a mound measuring 1.6 m by 1.8 m, with a maximum height of 90 cm above the ground surface. Feature 10 is an L-shaped mound measuring 2.5 m along the northeast-to-southwest oriented arm and 5.8 m along the northwest-to-southeast oriented arm. The mound is 1.6 m wide, with a maximum height of 40 cm above the ground surface.

Feature 11 is a mound measuring 1.6 by 5.6 m, with a maximum height of 90 cm above the ground surface. Feature 12 is a mound measuring 2.3 by 2.9 m, with a maximum height range of 60 to 90 cm above the ground surface. Feature 13 is a mound measuring 1.1 by 1.3 m, with a maximum height range of 40 to 80 cm above the ground surface. Feature 14 is a circular mound with a diameter of 1.3 m, and a maximum height range of 20 to 50 cm above the ground surface. Feature 15 is a circular mound with a diameter of 1.1 m, and a maximum height range of 20 to 40 cm above the ground surface. Feature 16 is an L-shaped mound measuring 2.6 m along the northeast-to-southwest oriented arm and 2.1 m along the northwest-to-southeast oriented arm. The mound is 1.6 m wide, with a maximum height range of 20 to 40 cm above the ground surface. Feature 17 is a mound measuring 1.7 by 2.7 m, with a maximum height range of 50 to 90 cm above the ground surface. No excavations were conducted at Features 8 through 17.

SITE 10694

Site 10694 is located in Kohanaiki Ahupua'a, in the northeastern portion of the project area, toward its northern margin. It is situated between the 1,000 and 1,100 ft. elevation contours on the older of the area's Hualalai flows, and has an overstory dominated by christmasberry and *alahe'e*. Additional plants include guava, *noni*, and silver oak.

This site consists of eight features and covers an area of about 40 by 40 m square. It lies on a west-facing slope with the project area's northern boundary, in the form of a ranch wall, about 40 m northwest. Features of the Kona Field system lie within and surrounding the site, while Site 10695 lies between 70.0 to 100.0 m south (Figure 45). Fairly recent dozing occurs to the north. The features, described below (Table 22), are grouped into non-agricultural features and agricultural features primarily based on feature form and obvious time and care spent on construction. Identified features include: two mounds; two enclosures; one terrace; one paved area; one terrace/paved area; and one alignment/*puka*.

Table 22. Site 10694 Features.

Fe. #	Type	L (m)	W (m)	H (m)	Units
1	Enclosure	5.50	4.50	0.50	Three 1 x 1 m TUs (TU-1,TU-2 and TU-3); One 1 x 2 m ST (ST-1)
2	Alignment/Puka	4.00	3.50	0.45	One 1 x 2 m ST (ST-5)
3	Enclosure	8.00	8.00	0.65	
4	Paved Area	10.00	2.00		
5	Terrace/Paved Area	4.50	3.50	0.35	
6	Terrace	7.00	3.00	0.30	One 0.25 x 0.25 m ST (ST-4)
7	Mound	2.50	2.50	0.60	One 1 x 3 m ST (ST-3)
8	Mound	4.00	2.00	1.10	One 1 x 2.5 m ST (ST-2)

Of the non-agricultural features at the site, the most important is Feature 1, a small enclosure. This feature yielded a moderate amount of subsistence refuse, and the lack of a larger associated complex points toward a permanent habitation with associated work areas (Features 2, 3, 4, 5 and 6). That there is cultural deposition underneath this feature's architecture, however, points toward a relatively extended period of use. A radiocarbon date, taken from Layer II of TU-1 indicates a deposition between the middle 15th to middle 17th century.

FEATURE 1

Feature 1, the primary non-agricultural feature investigated, is a rectangular enclosure with a soil filled interior lying at the sites southwest corner. Its north wall has a nicely faced exterior with a large pebble core fill, while the majority of its other walls are in various states of deterioration due to christmasberry growth. What remains of the south and east walls are quite low constructions, and the west wall is nearly completely destroyed. Much of the feature is constructed on bedrock. Four units were excavated in this feature.

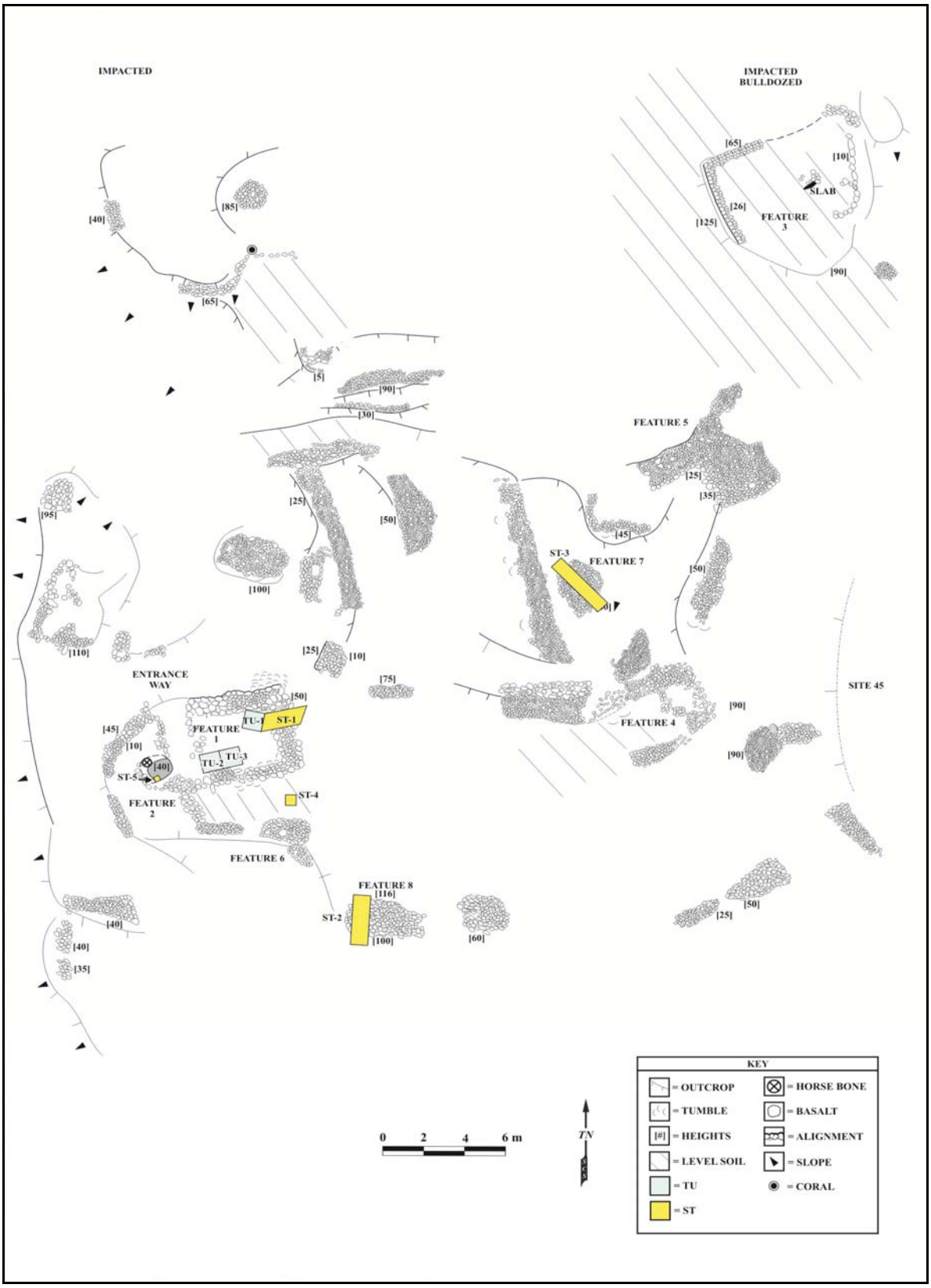

Figure 45: Site 10694, Plan View.

TU-1, a 1.0 by 1.0 m unit, was the first unit excavated in the feature, excavated in order to understand feature function, and placed in its northeast corner. It revealed a relatively shallow stratigraphy consisting of two layers. Layer I averaged 20 cm thick and was a dark brown (10YR 3/3) silt with architecture. Layer II averaged 30 cm thick and was a black (10YR 2/1) rocky silt. Of note was that architecture did not extend into Layer II. While some cultural material was recovered from Layer I, most was derived from Layer II (Table 23).

One conventional radiocarbon determination of 350 ± 50 BP (Beta No. 197061) was obtained from Layer II, TU-1, Feature 1, at Site 10694. Calibrated dates (Oxcal v. 3.5) are (1 sigma) A.D. 1460–1660 (1.00) and (2 sigma) A.D. 1440-1660 (1.00) (see Appendix A).

Table 23. Site 10694, Feature 1, Midden.

Unit	Layer	Collected Material	Weight (grams)	Count	Remarks
TU-1	I	Invertebrates	5.2	-	*Cypraea* sp.
		Coral	0.4	1	Non-Branch
TU-1	II	Invertebrates	36.3	-	Taxa: *Cellana* sp., *Cypraea* sp., *Brachidontes* sp., *Isognomon* sp., Echinoidea
		Vertebrates	0.2	-	Acanthuridae
		Coral	0.2	2	Non-Branch
		Charcoal	45.6	-	-
		Kukui	2.7	-	
ST-1	II	Invertebrates	7.6	-	Taxa: *Nerita picea*, *Cypraea* sp., *Isognomon* sp, non-diagnostic marine shell, Echinoidea
		Charcoal	51.0	-	-
		Kukui	3.4	-	-
TU-2	I	Invertebrates	1.2	-	*Cypraea* sp.,
	II	Invertebrates	2.0	-	*Cypraea* sp.
TU-3	II	Invertebrates	1.7	-	*Cypraea* sp.
		Kukui	<0.1	-	-

TU-2 was a 1.0 by 1.0 m unit placed in the feature's southwest corner, and proved to be very shallow. Although exhibiting two soil layers similar to TU-1, much of the unit lay only a few centimeters above bedrock. Layer I averaged 16 cm thick and was a dark yellowish-brown (10YR 3/4) silt. Layer II averaged 12 cm thick and was a black (10YR 2/1) rocky silt.

TU-3 was a 1.0 by 1.0 m unit placed adjacent to TU-2, further inside the feature to the east. This unit had a similar stratigraphy and cultural recovery to TU-2, but had greater depth (Figure 46). Again, architecture was above Layer II.

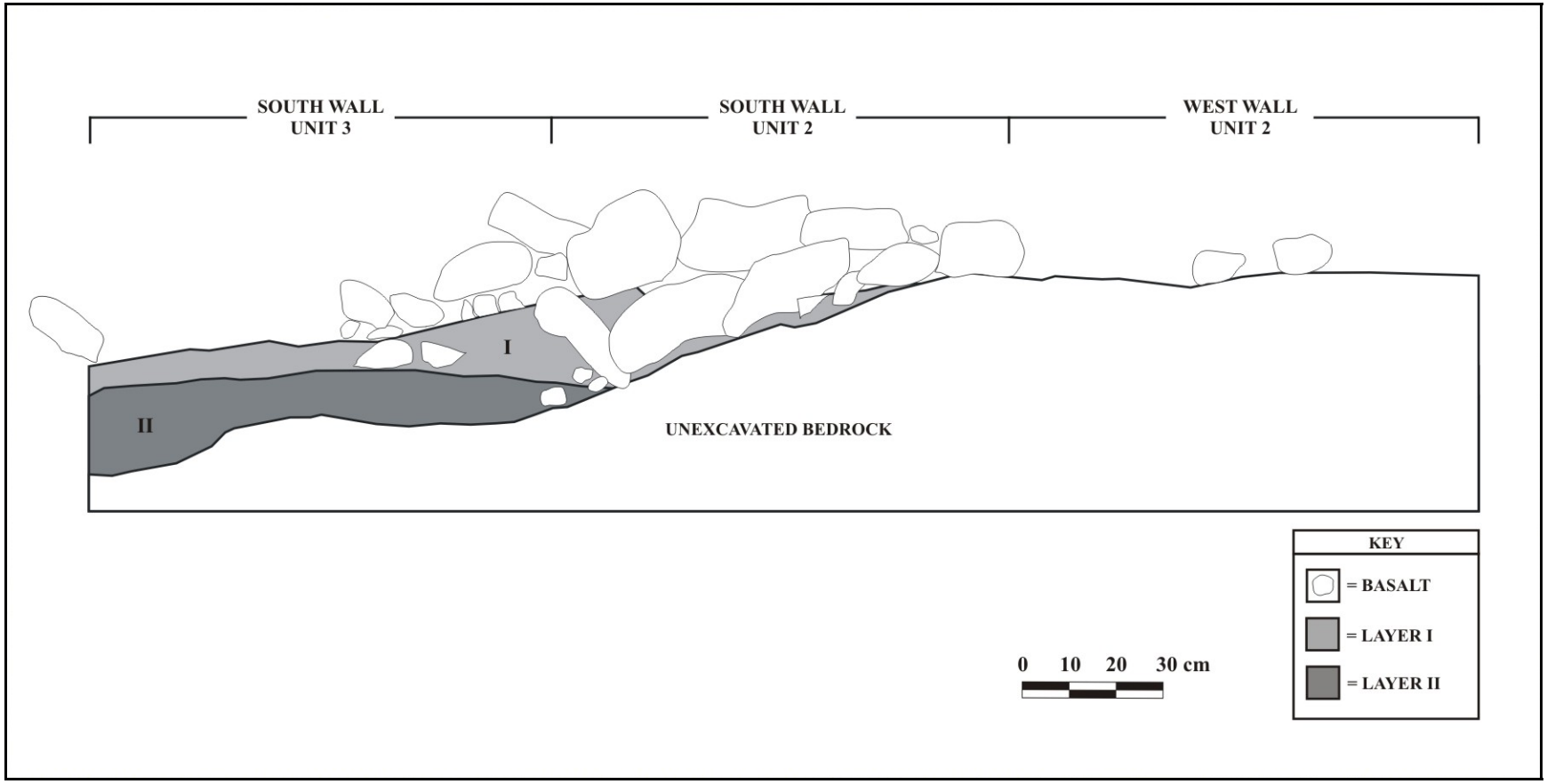

Figure 46: Site 10694, Feature 1, TU-2 and TU-3, Profile: South and West Walls.

The final excavation in Feature 1 was ST-1, a 2.0 by 1.0 m trench extending south of TU-1 and breaching the feature's south wall in order to understand its architecture (Figure 47). Layer I averaged 16 cm thick and was a dark yellowish-brown (10YR 3/4) silt. Layer II averaged 12 cm thick and was a black (10YR 2/1) rocky silt. In this excavation it was noted that Layer II also extended underneath the architecture and continued to yield cultural material (although it was the only layer screened).

FEATURE 2

Feature 2 is a possible activity area associated with Feature 1. It consists of a small, collapsed lava blister with three cobble and boulder alignments located just south and west, on the same *pāhoehoe* outcrop that Feature 1 lies upon. The first alignment extends west a meter from the southwest corner of Feature 1, encounters the blister and then curves to parallel the west wall of Feature 1, creating a 1.0 by 3.0 m alcove on its north side. The second alignment begins at the north end of the first alignment and curves southwest around the edge of the outcrop. The third alignment is attached to the south side of the first alignment and curves southeast creating a 2.0 by 2.0 m alcove on the south side of Feature 1. The greatest height for this feature is recorded on the exterior of the second alignment.

ST-5, a 0.5 by 0.5 m trench was placed in the blister to see if it was utilized. After the removal of some interior collapse, excavation revealed a thin layer of soil over bedrock with no cultural material. One horse bone (*Equus caballus*) was located on the feature's surface, near the first alignment. No profile was drawn for this excavation.

FEATURES 3 THROUGH 5

Features 3, 4 and 5 were the only features thought to be non-agricultural that were not tested. Feature 3 is located in the sites northeast corner and appears to be a moderately sized enclosure with discontinuous architecture, its west half located on a *pāhoehoe* outcrop. Well constructed, faced, north and west walls occur in the feature's northwest corner, but its northeastern portion has been impacted by dozer activity. Although there is presently no architecture extending the west wall south, if one follows the edge of the *pāhoehoe* outcrop south and east, a cobble and boulder alignment can be observed apparently forming the feature's south and east boundaries. A possible cobble and slab lined hearth was observed in the feature's interior. Feature 4, which has a 1.5 by 4.0 m pebble pavement lying directly south of its primary boulder and cobble architecture, may have functioned as a work area, and Feature 5, another paved area at the base of a *pāhoehoe* outcrop, may have functioned as a work area also.

Two mound features, deemed agricultural, were tested to see if they contained human remains. Feature 7 had ST-3 (3.0 by 1.0 m) placed in it and yielded nothing (no profile drawn), while Feature 8 had ST-2 (2.5 by 1.0 m) placed in it and yielded a single layer with one basalt core (Table 24). ST-2 proved Feature 8 to be constructed of small cobbles placed on bedrock with a surface of cobbles and small boulders. A single thin soil layer, Layer I, apparently filtered down through the architecture, was associated with the small cobbles. Layer I averaged 9 cm thick and was a dark brown (10YR 3/3), rocky silt (Figure 48).

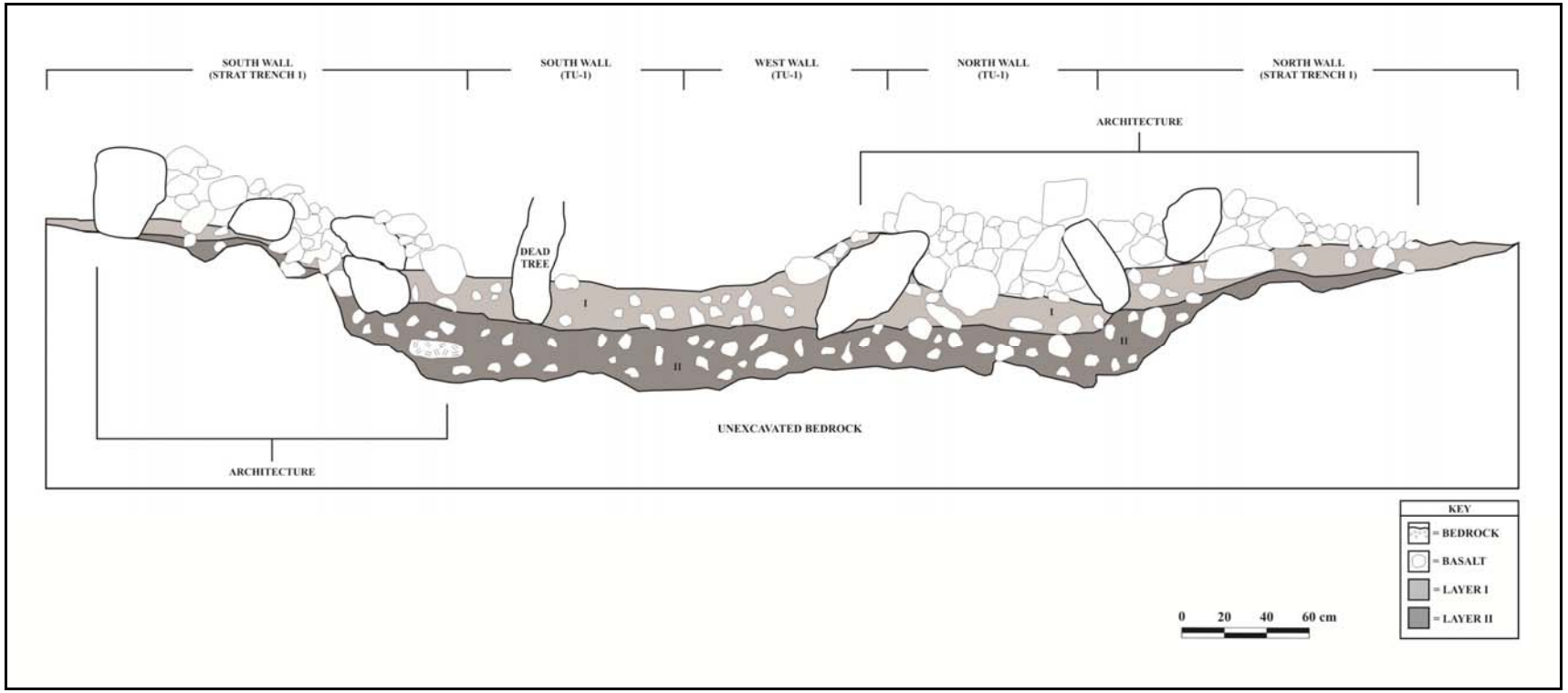

Figure 47: Site 10694, Feature 1, TU-1 and ST-1, Profile: South, West and North Walls.

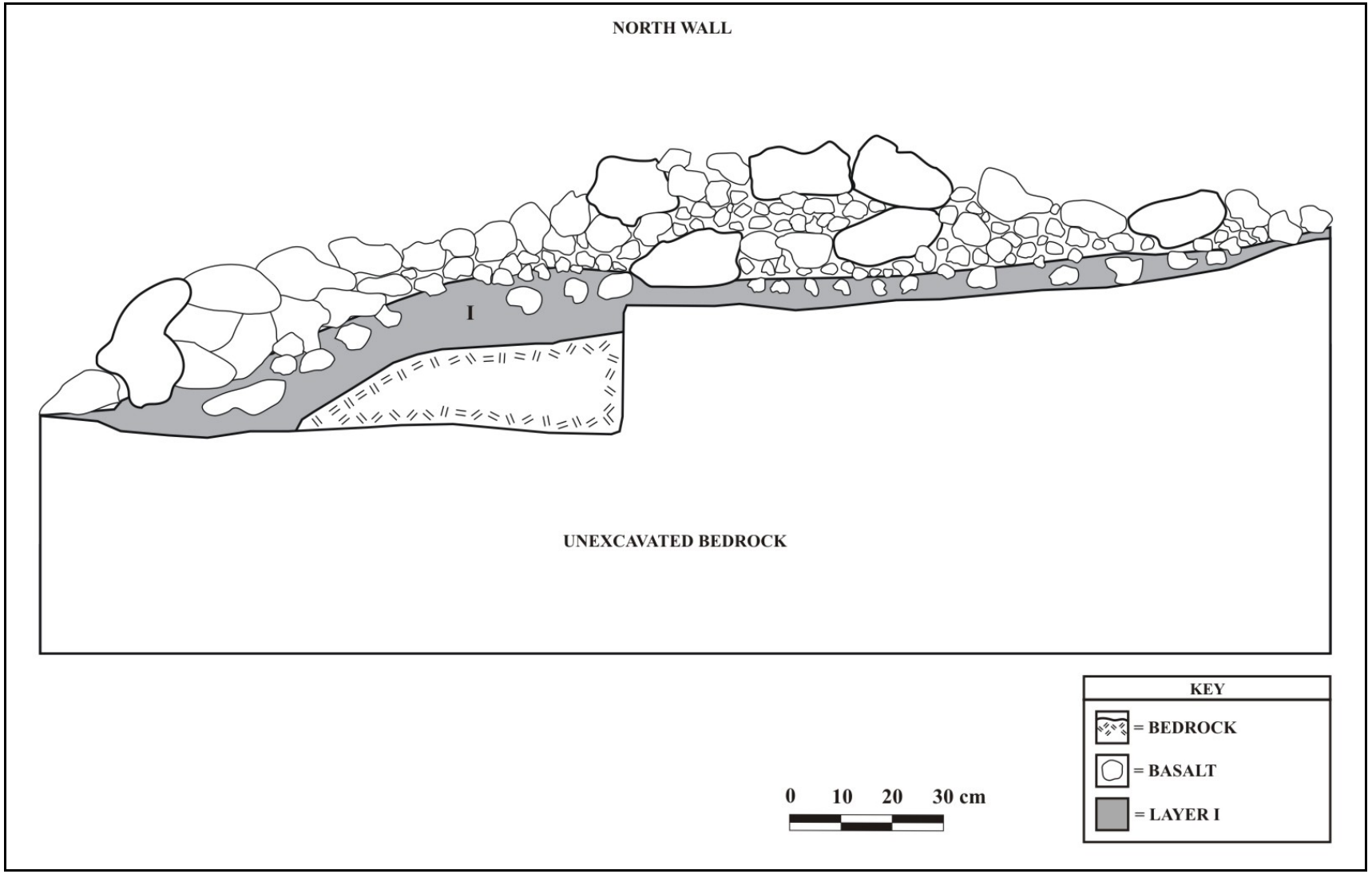

Figure 48: Site 10694, Feature 8, ST-2, Profile: North Wall.