

SITE 50-80-10-1900

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INTRODUCTION

Site 50-80-10-1900 (50-Oa-G5-98) is in the *'ili* of Luluku in the southern portion of the Kāne'ōhe Interchange project area. The site is three surface rock features first reported during inventory survey investigations—a linear rock mound, a low rock dam in a modified gully, and a trail segment bounded by a cobble and boulder curbstone alignment (Allen et al. 1987). These features are in a preservation area, and construction of Interstate Route H-3 would affect Site 1900 only indirectly (Allen 1987). Therefore, only minimal data recovery work was proposed for this site, focusing on excavation of a portion of Feature 1, the rock mound. Feature 1 was interpreted during inventory survey as a possible planting mound, or *kuaiwi* (Allen et al. 1987:94).

ENVIRONMENT

The Ko'olau mountain range lies immediately upslope and west of the Kāne'ōhe Interchange project area, across Likelike Highway; Kāne'ōhe Bay is ca 4 km to the northeast. Site 1900 is at 107 masl (351 ft), on a broad slope between a long, low ridge to the south and Luluku Stream to the north (Figure 9.1). Unpaved banana farm roads border the site to the north and south (Figure 9.2). A narrow, curving ditch or gully cuts through the site, occasionally funneling runoff as it slopes down to the north. This ditch and the adjacent trail alignments form the eastern site boundary, and the western end of the rock mound marks the western extent of the site. The three features extend over an area ca 60 m long by 30 m wide.

Lolekaa silty clay forms the basis for soils at the site and is commonly found throughout the project area. There is medium runoff and moderate erosion on the 15–25% slope in this area (Foote et al. 1972:84, Sheet 60).

Site stratigraphy, as seen in the one excavated unit, consists of Layer I, a dark, silty, humic layer, and a thick, lighter colored silty clay subdivided into IIa, IIb, and IIc sections. This site appears to differ from surrounding areas in that no evidence of the commonly occurring Layer III was found.

The dominant vegetation in the site area is cultivated banana (*Musa*). Impatiens (*Impatiens wallerana*) grows as a self-seeding ground cover under the filtered shade of the banana trees, along with unidentified ferns. 'Ape (*Alocasia macrorrhiza*) and yellow ginger (*Hedychium flavescens*) grow in thick

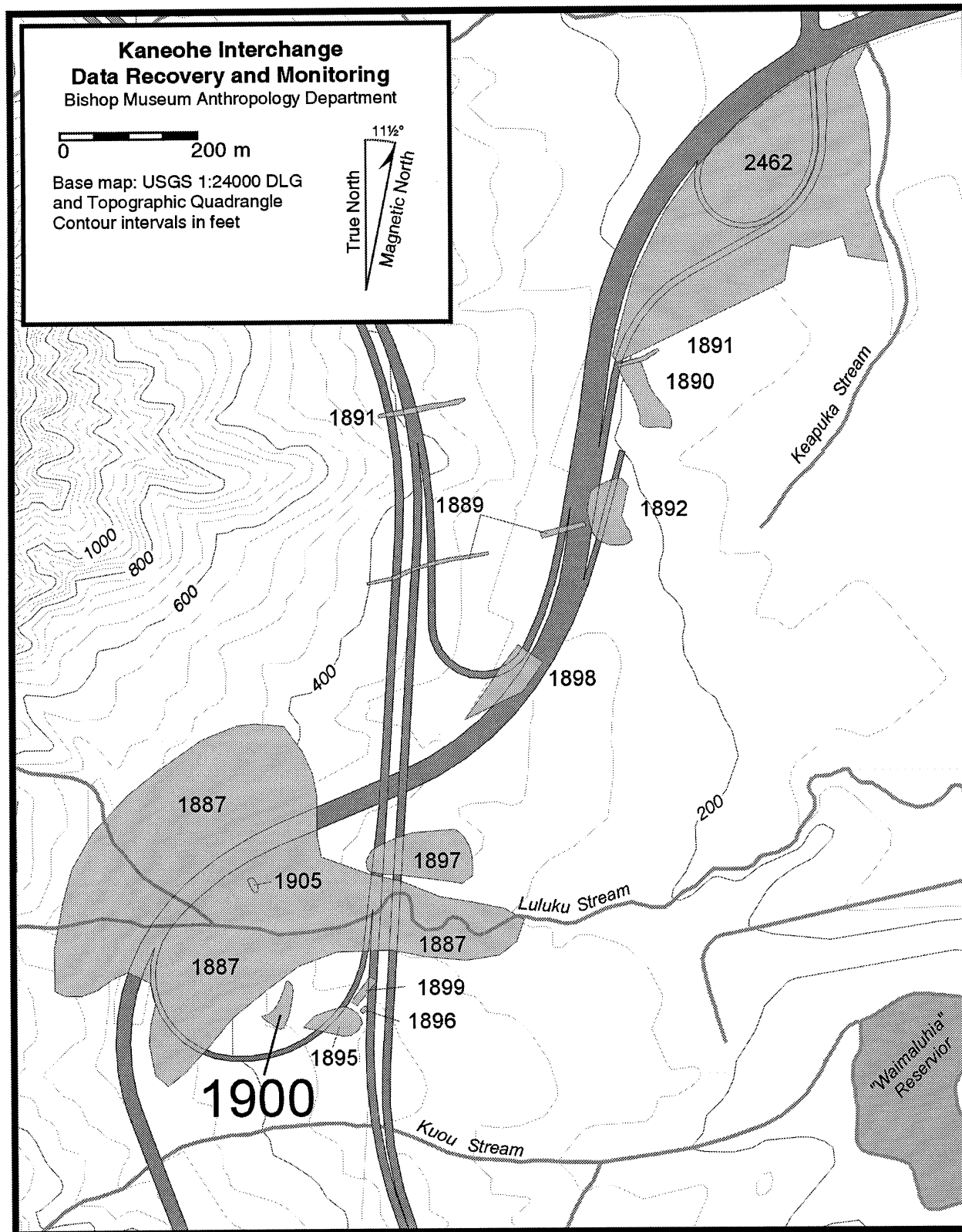


Figure 9.1. Kane'ohe Interchange project locator map.

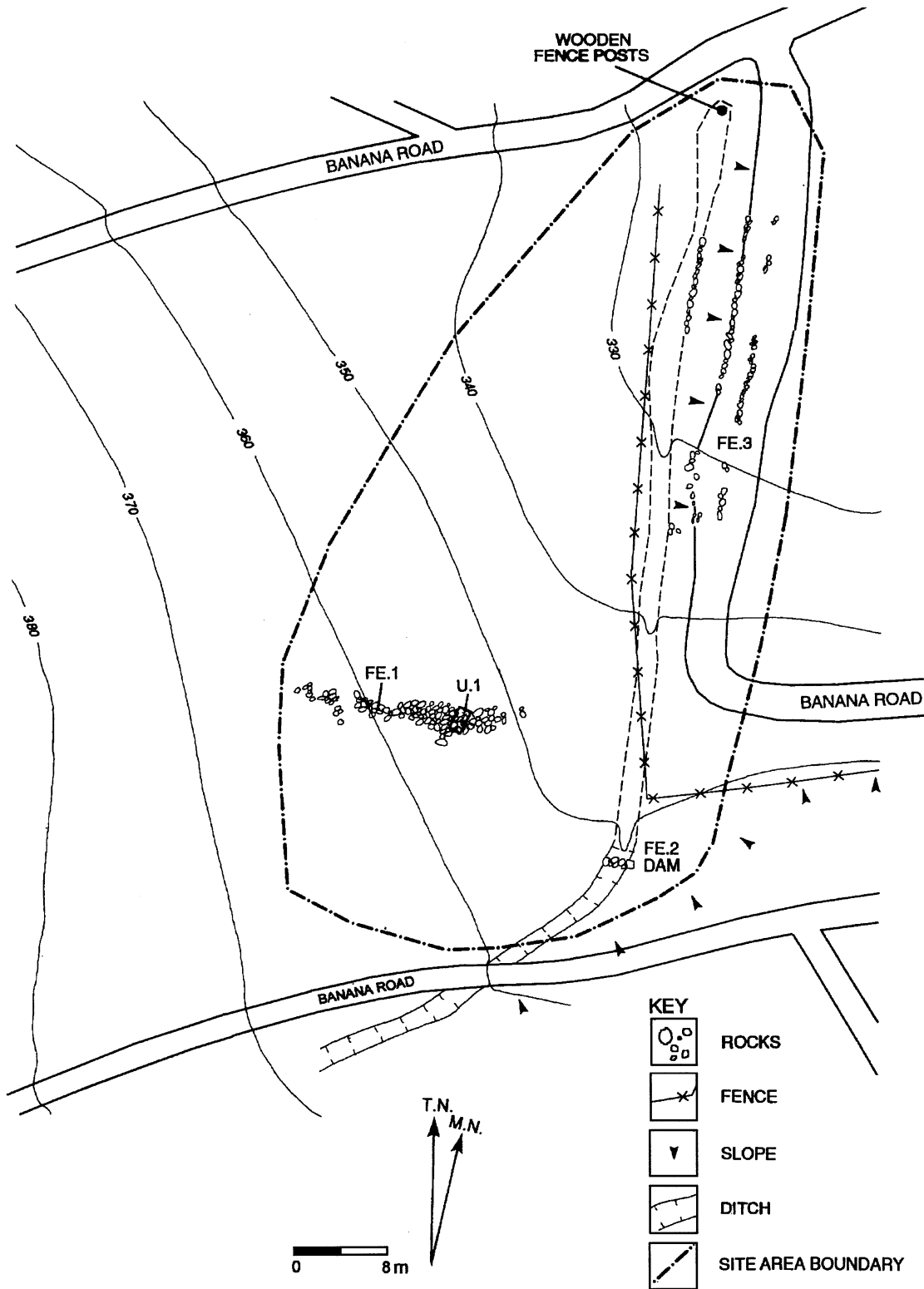


Figure 9.2. Map of Site 1900, illustrating surface features and site boundaries.

clumps in the wet margins along Luluku Stream north of the site and are occasionally within the site area as well. *Kalo* (taro, *Colocasia esculenta*), a Polynesian introduction, and coffee (*Coffea arabica*), a post-Contact period introduction, are two feral plant species noted at the site that were undoubtedly of some economic importance in the area at one time. Northwest of Site 1900, *kalo* thrives on several of the terraces south of Luluku Stream at Site 1887, and coffee is found on other terraces north of the stream (Allen et al. 1987:20, 21, 49, 58). The area supports a few feral pigs (*Sus scrofa*). During data recovery investigations, pigs were seen at Site 1887 to the north, and pig tracks were noted at Site 1900. The excavation at Site 1900 also produced evidence of disturbance caused by animal burrowing.

PREVIOUS INVESTIGATIONS

Archaeological work at Site 1900 began with an inventory survey of the Kāne‘ohe Interchange project area in 1984/85, which included description and mapping of Features 1, 2, and 3 (Allen et al. 1987:91–94, 159). Two surface artifacts were recorded for Site 1900—a large, modified basalt flake was recovered from the surface of the Feature 1 rock mound, and a large, unmodified basalt flake was noted but not collected near the Feature 2 gully. No inventory survey excavations were conducted. The site was deemed significant for its potential to provide information on several topics, including “agricultural practices, water management, landscape modification, transportation/communication, tool manufacture, and settlement patterns” (Allen et al. 1987:267). It is noteworthy that, although Feature 1 is the only rock mound recorded for this area south of Luluku Stream, there are many other rock mounds recorded in the Kāne‘ohe Interchange project area, with a variety of functional interpretations (see Interpretation below).

Agriculture continued to be important in Kāne‘ohe in the post-Contact period. During the Great Mahele of 1848–1853, a large number of *lo‘i* (irrigated pondfields) along Luluku Stream were awarded to various Native Hawaiian claimants. In the area surrounding Site 1900 to the west, north, and east, six LCAs were granted (Table 9.1, Figure 9.3) (Klieger n.d.). It is interesting that no LCA is recorded for the specific area of the three features making up Site 1900. Kapawa’s LCA 4223 lies just to the east of the Site 1900 area; it extended from Luluku Stream on the north to the ridge containing Sites 1895 and 1899 to the south. The 1.21 ha of LCA 4223 contained introduced citrus trees and *kula* (dry) land in addition to the irrigated agricultural land (Klieger n.d.). Allen et al. (1987:93) note that the Feature 3 trail at Site 1900 may have provided access to LCA 4223. Inventory survey and data recovery investigations uncovered no surface evidence of terrace features in the area corresponding to LCA 4223. It is possible that the *lo‘i* once claimed in this sloping, erosion-prone area have since been buried under colluvially transported sediments. The area of Site 1900 would have been included as part of LCA 4452, ‘*āpana* 13, which was awarded to Queen Kalama; this LCA encompassed all of the Kāne‘ohe *ahupua‘a* that was not awarded as *kuleana* to others (*Indices* 1929:220; see Devaney et al. 1982:25, 27; Kelly 1987a:289). The queen turned much of her Kāne‘ohe land into sugarcane cultivation after the Mahele (Klieger n.d.). There are no other specific historical or legendary references to any use of Site 1900 before commercial banana farming began, probably sometime after World War I (Kelly 1987a:296). Various banana farmers indicated to archaeologists during the initial inventory survey that they had not constructed any of the rock mounds found in the Kāne‘ohe Interchange project area.

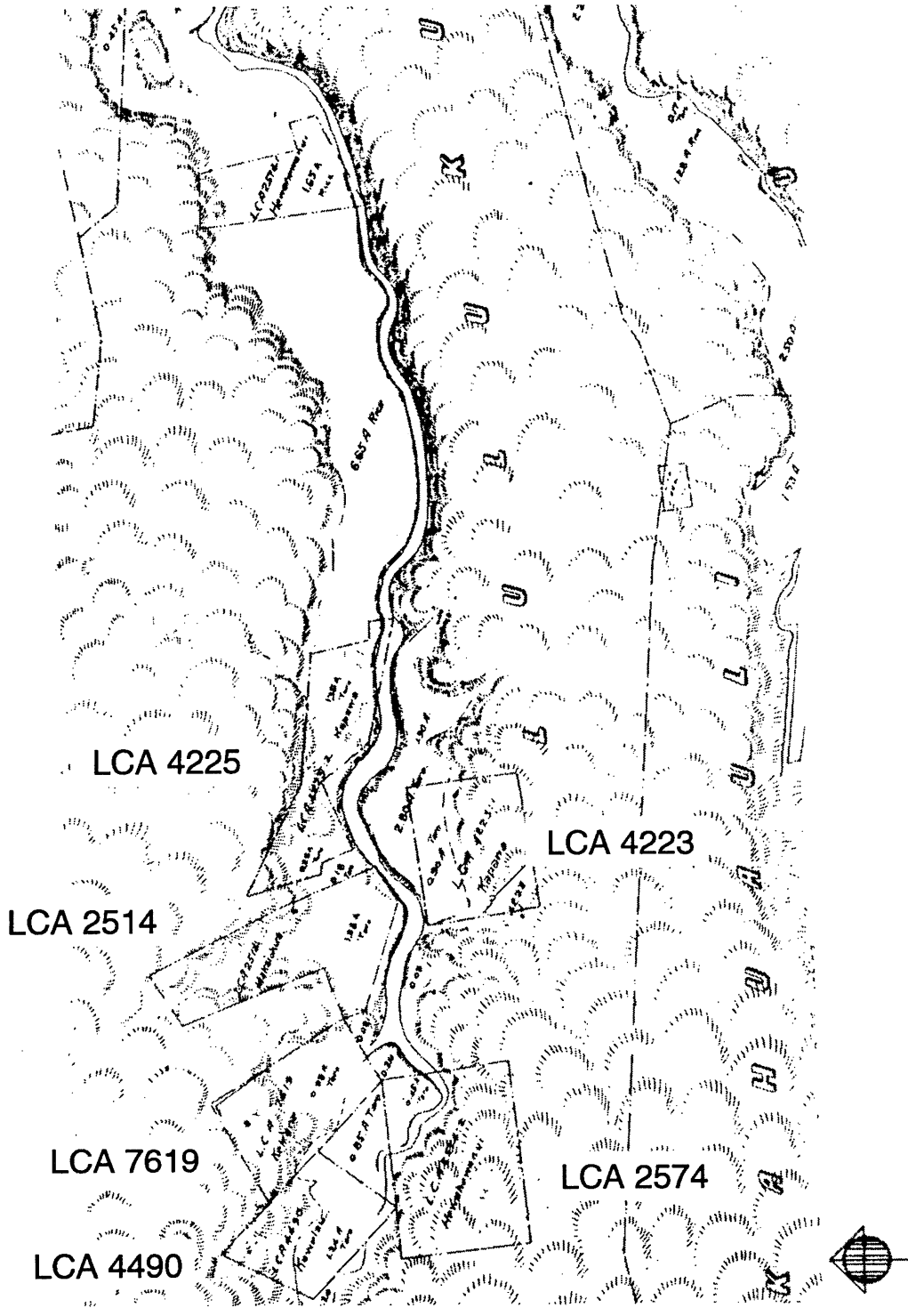


Figure 9.3. Detail of Wall (1910) map, showing LCA boundaries in Kane'ohe. The area of Site 1900 lies between LCA 4223 and LCA 2574.

Table 9.1. LCA Awards in the Vicinity of Site 1900

LCA	Claimant	Lo'i
2514	Makaiohua	34
2574	Hewahewanui	50
4223	Kapawa	26
4225	Kaneihoe	6
4490	Kawelau	18
7619	Kikane	7

RESEARCH METHODS

One 2 m² excavation unit was proposed for data recovery at Feature 1. One to two excavators spent 17 days in April and May 1991 investigating the feature. The limited excavation was proposed as part of an interpretive and management plan for sites within the Luluku Discontiguous Archaeological District, focusing on questions of feature function, chronology, and site relationships among others (Allen 1987).

Although Feature 1 had been interpreted as an agricultural mound during inventory survey, a review of similar features in the area suggested alternatives. A possible lithic tool work area was suggested by the two basalt flakes found on and near the Feature 1 mound. Lithic tools have been found on other mounds as well, for example, at Feature 2, Site 1893 (Allen et al. 1987:105–107). Other mounds in the project area have been suggested as burial markers, and post-Contact burials are known nearby at Sites 1895 and 1899 (although not marked by mounds). Alternatively, the length of the Feature 1 mound could indicate a boundary marker of some kind, perhaps the edge of an *'ili* or LCA. Evidence to evaluate the question of the feature as a boundary marker could come from a comparison with other boundary marker sites in the area as well as through comparison of this site location with documentary evidence of *'ili* and LCA boundaries. Evidence to support an agricultural function such as a planting mound might be provided by an identification of agricultural soils during excavation. A simple clearing mound would be harder to define, relying perhaps on comparison to other features that are similarly interpreted. As noted by Rosendahl (1994:37), clearing and planting mounds are not necessarily mutually exclusive functions; a rock mound created by clearing an area for planting may then have been used for supporting and protecting cultivated vegetative growth. Excavation at Site 1900 was also aimed at establishing whether the mound is of pre-Contact or post-Contact origin, or perhaps a structure that saw use in both periods. Dating evidence would potentially include collections of subsurface charcoal and artifacts. Functional and chronological interpretations based on the data recovery questions listed above could in turn be useful in answering questions of site relationships, whether to the nearby agricultural and ridge sites, such as Sites 1887 and 1895, or to other mound sites in the Kane'ohē area.

FEATURES AND EXCAVATIONS

Three features were recorded at Site 1900 during inventory survey: Feature 1, a rock mound, Feature 2, a retaining wall or dam, and Feature 3, a rock-lined trail (Table 9.2). A portion of the Feature 1 rock mound, described below, was excavated during the data recovery phase. A total volume of 1.93 m³ was excavated, equal to 0.1% of the total site area. No excavations were proposed for Features 2 or 3. No new features were recorded during the data recovery phase of archaeological investigations.

Table 9.2. Features and Associated Excavation Units, Site 1900

Feature	Dimensions (L x W x H) (m)	Originating Layer	Description	Function	Unit
1	17.00 x 2.50 x 0.15–0.30	I	alignment, linear rock	agriculture	1
2	2.80 x ca 0.2 x 0.75	surface	wall, stacked rock, in modified natural gully	dam, water diversion	
3	30.0 x 1.45 x ca 0.10	surface	alignment, rock	agriculture/trail	

Feature 1 is a low, linear rock mound, of informal construction, with no visible facing. The rock forming the mound is mainly cobble-sized vesicular basalt in angular, subangular, and subrounded forms; a few small boulders also are present. Excavators noticed that a large number of cobbles were moss-covered. The mound is discontinuous along its ca 17 m length (oriented upslope–downslope), with four main loci recorded. Some differences in mound layout were observed between the inventory survey and data recovery investigations, suggesting that some erosion had taken place. Although the steep slope at Site 1900 is part of a colluvial regime, and rock concentrations washed down from the Ko'olaus can be expected, Feature 1 is the only structure of such size on the slope, suggesting that it is not a natural formation. No cultural materials were observed on the surface of Feature 1 during data recovery.

Unit 1 (2.0 m by 1.0 m) was placed across the eastern end of the mound, in the area where a modified basalt flake had been collected during inventory survey (Figures 9.4, 9.5). Excavation and screening procedures were as described in Chapter 1, with one exception: lower stratigraphic layers, which contained no cultural materials, were excavated in 30 cm rather than 10 cm levels.

The cobbles and small boulders of Feature 1 were contained within Layer I, which was composed of dark, silty, humic material. Layer I appeared thickest at the center of the mound, tapering off to the sides and on the downslope edges, indicating perhaps that sedimentation and soil development were occurring within the relatively protected areas between the rocks. A metal nail and a piece of bottle glass were recovered from the upper 2 cm of Layer I. Layer IIa was a lighter colored silty clay, containing a small number of subangular cobbles and decaying pebbles. Charcoal appeared sparsely scattered throughout the layer; collections were insufficient for conventional radiocarbon dating. A basalt flake and a volcanic glass fragment were collected from the upper section of this layer. Layer IIb differed only slightly from the layer above. Evidence of animal burrowing was observed. At the base of Layer IIb/top of Layer IIc, between 75 and 80 cmbs, excavation continued in the southern half of the unit only. Again, only slight differences marked Layer IIc from preceding layers. Layers IIa, IIb, and IIc were labeled as such because they lacked characteristics that were common in the basal Layer III seen at surrounding ridge sites (Allen et al. 2002). Excavation was halted at a maximum depth of 115 cmbs. Three auger bores revealed similar Layer IIc material for an additional 19–32 cm below the base of excavation. All three bores stopped when they encountered compact rock. After the completion of data recovery tasks, the unit was backfilled and the excavated portion of the mound was reconstructed.

Unit 1 Cultural Materials

Surface	no cultural material
Layer I	historic glass, metal
Layer IIa	basalt, charcoal, volcanic glass
Layer IIb–IIc	no cultural material

Feature 1 does not extend below Layer I. Only post-Contact period artifacts were found within the mound itself. Layer IIa, below the mound, contained a minimal amount of cultural material and no

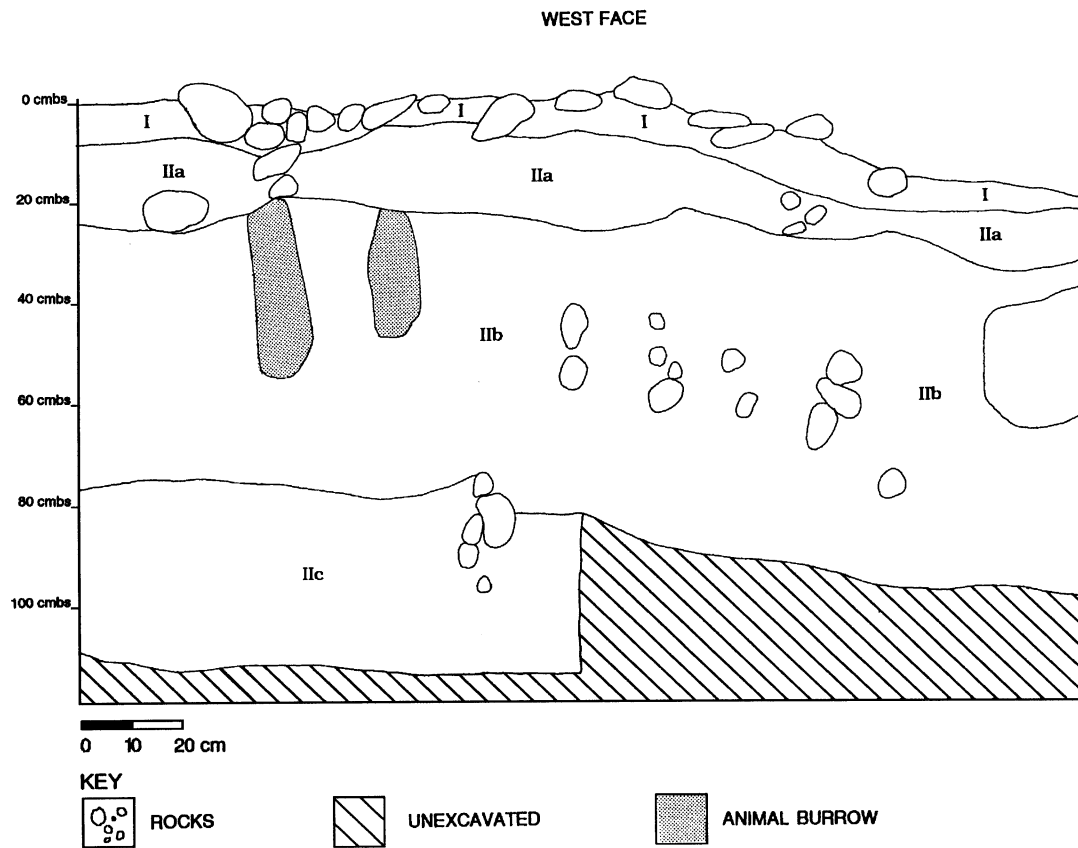


Figure 9.4. Profile of Unit 1, Site 1900.

Unit 1 Layer Descriptions

Layer I (1–10 cm thick)

Dark brown (10 YR 3/3, m.) silty clay; moderate, subangular structure; slightly friable when moist; nonsticky and slightly plastic when wet; few fine roots; 20% pebbles, subangular cobbles; abrupt smooth boundary.

Layer IIa (9–27 cm thick)

Dark yellowish brown (10 YR 3/4, m.) silty clay; moderate, subangular blocky structure; firm when moist, slightly sticky and slightly plastic when wet; few, fine to medium roots; 5% pebbles, subangular cobbles, saprolitic boulders; abrupt smooth boundary.

Layer IIb (25–67 cm thick)

Dark brown (10 YR 3/3, m.) silty clay; strong, subangular blocky structure; firm when moist, slightly sticky and slightly plastic when wet; very few fine to medium roots; 5% pebbles and subangular cobbles; abrupt smooth boundary.

Layer IIc (>45 cm thick)

Dark brown (10 YR 3/3, m.) silty clay, weak, subangular, blocky structure; friable when moist, slightly sticky and nonplastic when wet; very few medium size roots; 10–20% saprolitic pebbles and subangular cobbles.

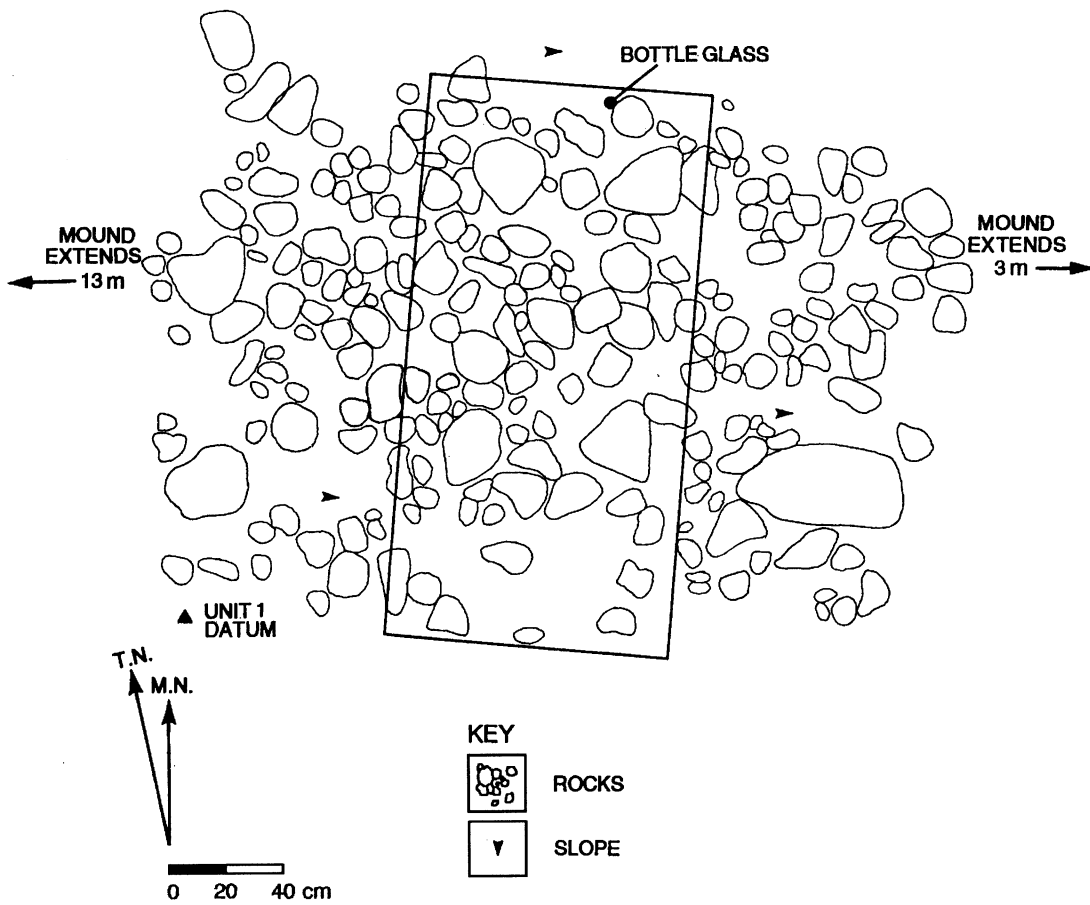


Figure 9.5. Plan view of Unit 1 in southern portion of Feature 1 rock mound, Site 1900.

subsurface features. These findings eliminate some possible mound functions, such as a lithic tool production area or a burial marker. Agricultural use remains the most likely function of the mound.

LABORATORY ANALYSIS

LITHIC ANALYSIS

Two small lithic artifacts, a volcanic glass fragment and a complete basalt flake, were collected during the data recovery phase from Unit 1 at Site 1900. Both are from Layer IIa. The volcanic glass fragment weighs 2.6 g. The fragment is blocky and has no cortex. The basalt flake weighs 1.5 g and measures 21 mm in length. Flake attributes include a unidirectional flake scar on the dorsal surface aligned with the length, cortex on the platform, and a feather termination. Both artifacts exhibit weathering rind, suggesting that they are not recent.

In addition to these excavated materials, a large modified basalt flake tool (Artifact No. 50-Oa-G5-98-2) was recovered during the inventory survey phase from the surface near the downslope end of Feature 1 (Allen 1987:91, 159). This flake weighs 363.9 g and measures 107 mm in length. It is of a different, finer-grained material than the small flake collected from Unit 1.

NONTRADITIONAL ARTIFACT ANALYSIS

Two post-Contact period artifacts—an intact wire nail and a glass bottle fragment—were recovered from upper Layer I in Unit 1. The nail is modern. The aqua glass fragment comes from a rectangular, embossed medicine bottle with a date of manufacture between ca. 1880 and the early twentieth century. These pieces were probably deposited on the surface of the feature after the mound was constructed.

BOTANICAL ANALYSIS

The archaeobotanical finds recorded are 0.6 g of wood charcoal; species identification was not attempted.

INTERPRETATION

DISCUSSION

As discussed in Chapter 1, agriculture was of prime importance in Kāne‘ohe *ahupua‘a* in pre-Contact times. Just to the north of Site 1900, the large irrigated terrace complex along Luluku Stream, Site 1887, is an example of the more prominent agricultural features in the project area. Allen et al. (1987:49) suggest that the mounds at Site 1902, or possibly the rocks of the mounds, were originally part of the larger agricultural system at Site 1887; the same could be said of the Feature 1 mound at Site 1900. The Feature 3 trail at Site

1900 is similar to other trail features at Site 1887 (Allen et al. 1987:64), suggesting another possible relationship between the two sites. Two very different sites are located on top of the ridge to the south of Site 1900 (Allen et al. 1987). Sites 1895 and 1899 exhibit surface scatters of post-Contact period glass, ceramic, and metal artifacts; marked and unmarked post-Contact period burials; and subsurface lithic deposits of basalt and volcanic glass flakes. There appears to be a difference in land use patterns for ridge and non-ridge sites in the Kāne‘ohe Interchange project area.

Within the upland Kāne‘ohe area, many mounds have been recently described as part of ongoing archaeological work associated with construction of the Interstate Route H-3. For example, mounds were noted and described at Site 1902 in Luluku *‘ili*, on a ridge north of Luluku Stream (Allen et al. 1987:48–49; Cleghorn and Rogers-Jourdane 1976; Dye 1977:6). These mounds are interpreted as modern constructions, most likely related to clearing the area for pineapple cultivation in the late nineteenth or early twentieth century. Farther north, another mound on a Luluku ridge—Feature 1 at Site 1898—was initially thought to be a burial marker (Allen et al. 1987:131), but data recovery excavation revealed that this is not the case (see Chapter 7). Recent supplemental inventory investigations in Luluku *‘ili*, north of the stream, revealed another rock mound on a ridge, Feature 38 at Site 4483. Excavations there revealed no cultural materials; the feature is interpreted as a clearing mound (Allen et al. 2002). In Punalu‘u Mauka *‘ili*, several small concentrations at Site 1892, located on a slope next to the highway, were interpreted as naturally formed features (see Chapter 3). Multiple mounds were recorded at Site 1901, in Pau *‘ili*, and at Site 1893, in Kea‘ahala *‘ili* (Allen et al. 1987). These features are in broad gullies and are oriented upslope–downslope, like Feature 1 at Site 1900. They were interpreted as agriculture-related, perhaps clearing or planting mounds. Feature 2 at Site 1893 was excavated, revealing fragments of two grinding stones from within the rock mound and from the surface of the gully. No cultural deposits were uncovered below the excavated feature, and no datable materials were recovered from the site (Allen 1987:4–5; Allen et al. 1987:105–107). Outside the Kāne‘ohe Interchange project area, farther to the northwest in Kea‘ahala *‘ili*, Site 1903 contains numerous mounds scattered over a large area in a gully between two ridges (Dye 1977). These were initially interpreted as clearing mounds related to ranching activities. Excavations in 1977 and 1988 revealed little or no cultural material associated with these mounds. This brief summary suggests that rock mounds, although fairly common throughout the upland Kane‘ohe area, are difficult to interpret conclusively. Most are assigned an agricultural function based on lack of any other defining evidence.

Data recovery investigation of the Feature 1 rock mound at Site 1900, although hampered somewhat by the lack of substantial cultural remains from the Unit 1 excavation, did produce some evidence useful in addressing the research questions related to site function. The two small lithic items recovered from Unit 1 are not suggestive of a lithic tool production area. They were found in Layer IIa, apparently preceding construction of the mound. The modified basalt flake found on the surface of the mound during inventory survey suggests that minimal lithic tool use occurred at this location. Use of the mound as a nonlithic work area, involving items of a perishable nature that are not preserved as part of the archaeological record, cannot be ruled out.

Feature 1 is not a grave site. The feature is rather long to be considered a burial marker, and Unit 1 produced no evidence of burial pit fill. Elsewhere within the Kane‘ohe Interchange project area, burials have been found on ridgetops, but not in the lower, sloping areas between the ridges.

Feature 1 lacks several of the physical and locational characteristics that mark three possible *‘ili* boundary markers in the Kane‘ohe Interchange project area. Sites 1889, 1891, and 1894 are interpreted as boundaries between Luluku and Punalu‘u Mauka, between Punalu‘u Mauka and Kapalai, and between Pau and Kea‘ahala (Allen et al. 1987:42–47). Each is generally higher, narrower, and longer (well over 100 m)

than Feature 1 at Site 1900, and each follows the mapped location of the *'ili* boundary fairly closely. At Site 1900, the nearest mapped *'ili* boundary is between Lulukū and Kahuauli, ca 125 m to the south, making it unlikely that Feature 1 functioned as an *'ili* boundary marker. It also is unlikely that the mound represents an LCA boundary, since the western edge of the closest known LCA (LCA 4223) lies at least 50 m to the east of the east end of Feature 1.

Although no clearly agricultural soils were seen in the Unit 1 excavation, scattered charcoal below the mound and a possibility of soil development within the mound could suggest, on a small scale, a progression of vegetation clearing, erosion, and increased sedimentation that is consistent with an agricultural sequence (see Allen et al. 1987:257). Comparisons with ethnographic and archaeological descriptions of clearing and planting mounds in Hawai'i provide further evidence that the Feature 1 mound at Site 1900 could be considered agricultural in nature. For example, Rosendahl (1994:34–37), describing the dryland agricultural system at Lapakahi, lists several minor features often seen in association with larger, well-defined agricultural fields and gardens. Stone mounds, generally informal piles of small cobbles to small boulders, are the most common minor agricultural feature. They include a variety of shapes and sizes, with linear mounds often constructed either directly on the ground surface or over a built-up soil mound. Such mounds, originally formed by clearing fields of rock, could have served a further function by providing protected areas for planting. Feature 1 also closely resembles descriptions given by Handy and Handy (1972:48), who note that “the strips (*mo'o*) of dry arable land planted in dry taro or sweet potato were generally bounded by little ridges (*iwi*) of stone thrown up out of the fields.” They go on to say that

iwi (bone) or *iwi kuamo'o* (backbone) was the term applied to the line of rocks and refuse thrown up along the side of *mo'o aina*, or *kihapai* [arable land sections] in clearing. These *iwi* or *iwi'aina* demarked the boundaries of plantations and arable holdings, and hence were also called *palena*, or bounds. They were not mere rubbish heaps, but, for example on Hawaii, served for planting sugar cane round about the field of dry taro in upland Kona, Ka'u, and Kohala.... In upland Kona they may be seen today buried in woods or occasionally bounding taro plantations still utilized. On windward Oahu, and on Maunaloa hillsides on Molokai, *iwi'aina* separating one-time sweet-potato patches may still be seen, dry lines of stones descending with the slope. (1972:51)

It has already been suggested that the Feature 3 trail at Site 1900 could have provided access to nearby LCA 4223, which probably incorporates Site 1895. Agricultural features at Site 1900, suggested by the presence of Feature 1, may have been tended by people living at this site or elsewhere within the LCA. The physical and spatial characteristics of the Feature 1 mound indicate that it is much like several other mound sites throughout upland Kāne'ohe. The proposed function of Feature 1 as either a clearing mound, planting mound, agricultural field boundary feature, or some combination of the three suggests that Site 1900 is a minor component of the larger agricultural system found in the Kane'ohe Interchange project area. As such, it could be considered related to Site 1887, the irrigated agricultural terrace complex directly north of Site 1900.

Unfortunately, no evidence was recovered to ascertain when Feature 1 was constructed and used. Wood charcoal collections from beneath the mound were insufficient for dating purposes. The late post-Contact period artifacts near the surface of the mound suggest only that the mound was built before the early twentieth century. The fact that the mound does not extend below Layer I could also suggest that the mound is relatively recent.

SITE SUMMARY

Data recovery work at the Feature 1 rock mound at Site 1900 investigated and rejected several possible functional interpretations. The mound gives no signs of being a lithic tool production activity area, a grave site, an *'ili* boundary marker, or a boundary marker for an LCA. Excavation of a portion of the feature, coupled with comparative information from ethnographic and archaeological sources, suggests that the mound is an agricultural element of unknown age. Agricultural features are common throughout Kāne'ōhe *ahupua'a*, underscoring the importance of cultivated crops in the Hawaiian economy. In the Kāne'ōhe Interchange project area in particular, irrigated agricultural features are prominent. In contrast, mounds such as the one found at Site 1900 are rather nondescript, uninformative features, especially when viewed individually. However, when seen as a series or group of features, they potentially represent a dryland component that has been somewhat overlooked in discussions of agriculture in this area. These features, as a group, should be included in future considerations of the broad range of farming practices revealed through archaeological features in upland Kāne'ōhe.

