

8.2.8 SIHP #50-80-10-8234 (Honua 7), Traditional Terrace

FORMAL TYPE:	Traditional Terrace
FUNCTION:	Agriculture
TIME PERIOD:	Pre-Contact
# OF FEATURES:	3 Features (A-C) (A: terrace; B-C: natural terraces)
SITE DIMENSIONS:	6 m N/S by 12 m E/W
CONDITION:	Fair
UTM:	N 2366377, E 626043/ 21°23'42.8"N, -157°47'2.6"W (center point)

SIHP #50-80-10-8234 is a low stone terrace (Feature A) as well as two possibly natural terraces (Feature B1 and B2) located near a natural stream drainage ditch. The feature is located on a gently sloping, northwest tending hillside and is just east of where two drainage ditches merge. Vegetation in the vicinity includes Albizia trees, thick vines, and laua'e fern.

Feature A is a small terrace constructed of a relatively level concentration of basalt cobbles (Figure 175). Feature A is in fair condition, measures approximately 3 m N/S by 3 m E/W, and ranges from 13-30 cm in height. It is likely the terrace was used as an agricultural rock garden. Old pink flagging tape was found on the largest boulder of the feature, suggesting the feature had been found during a prior survey.

Features B and C include natural boulder terraces located just downslope from Feature A (Figure 177). Features B and C show no clear signs of modification, however, their proximity to Feature A and a natural drainage suggest potential past agricultural use (Figure 177, Figure 178).



Figure 175. Photo showing SIHP # -8234, Feature A (terrace), view to southeast

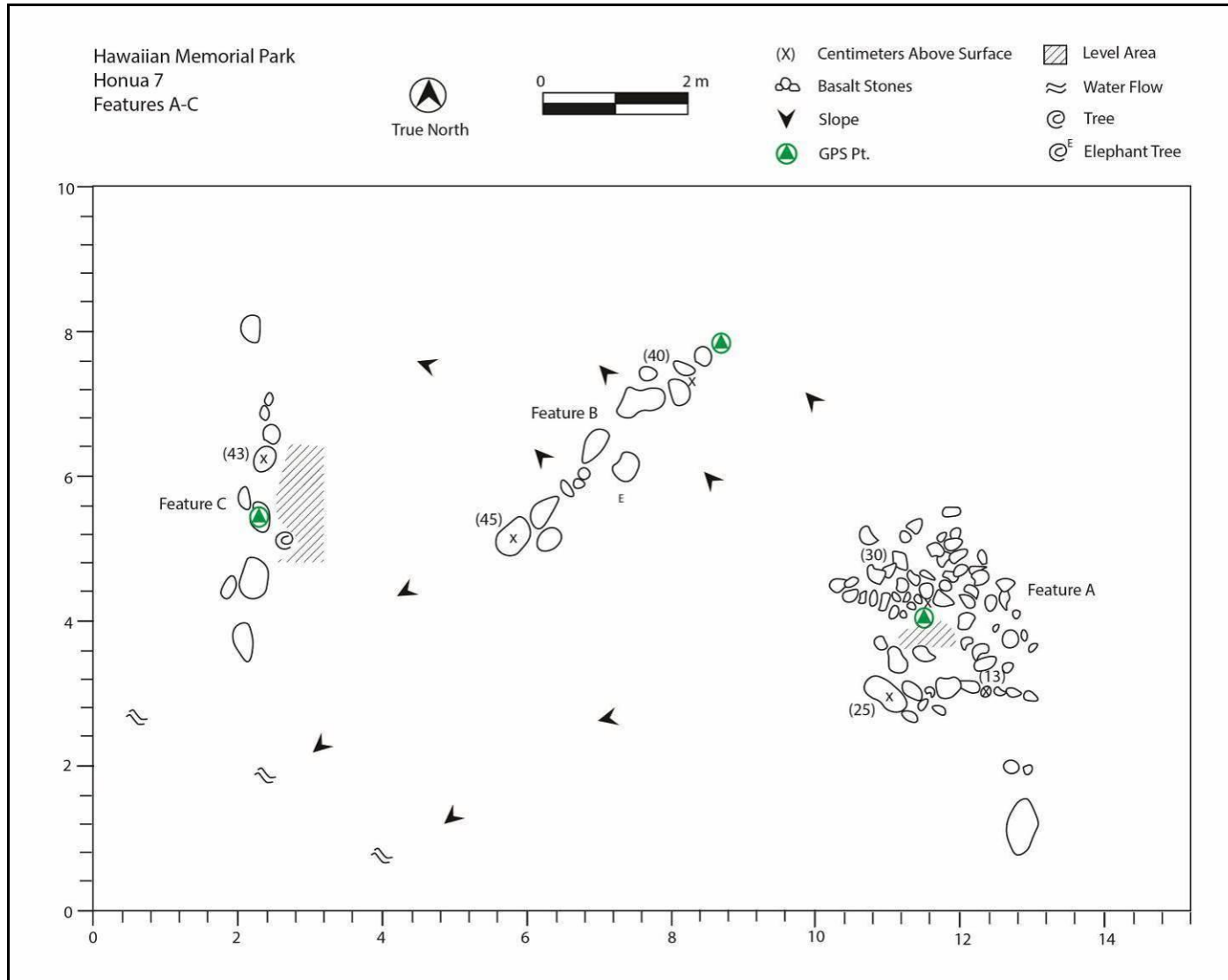


Figure 176. Plan Map of SIHP #50-80-10-8234 (traditional terrace)



Figure 177. Photo showing SIHP # -8234, Feature B (natural terrace, in foreground) just downslope from SIHP # -8234, Feature A (terrace, left background), view to south



Figure 178. Photo showing SIHP # -8234, Feature C (natural terrace), view to south

8.2.9 SIHP #50-80-10-8235 (Honua 8), Habitation Site

FORMAL TYPE:	Square Stone Alignment
FUNCTION:	Habitation
TIME PERIOD:	Possible early Post-Contact
# OF FEATURES:	1
SITE DIMENSIONS:	7 m N/S by 6 m E/W
CONDITION:	Fair
UTM:	N 2366242, E 626079/ 21°23'38.4"N, -157°47'1.4"W (center point)

SIHP #50-80-10-8235 is a possible traditional hale (house) foundation situated on the top of a level portion of a steeply sloping, east-tending hillside. The site consists of a single-course, square-shaped stone alignment approximately 4 m N/S by 3.5 m E/W and ranging from 20-28 cm tall (Figure 179 and Figure 180). The leveled area on which the site is located is approximately 7 m N/S by 6 m E/W, with a steep hillside sloping upward on the west side and steep slope downward to the north and east, which likely would have afforded a wide view over Kāne'ohe. A large mango tree is on the east side of the site. Other vegetation in the area consists of mountain grass, laua'e fern, octopus tree, and Christmas berry. An intermittent stream is located approximately 11 m to the east of the site.



Figure 179. Photo of **SIHP # -8235** (habitation site), view to west

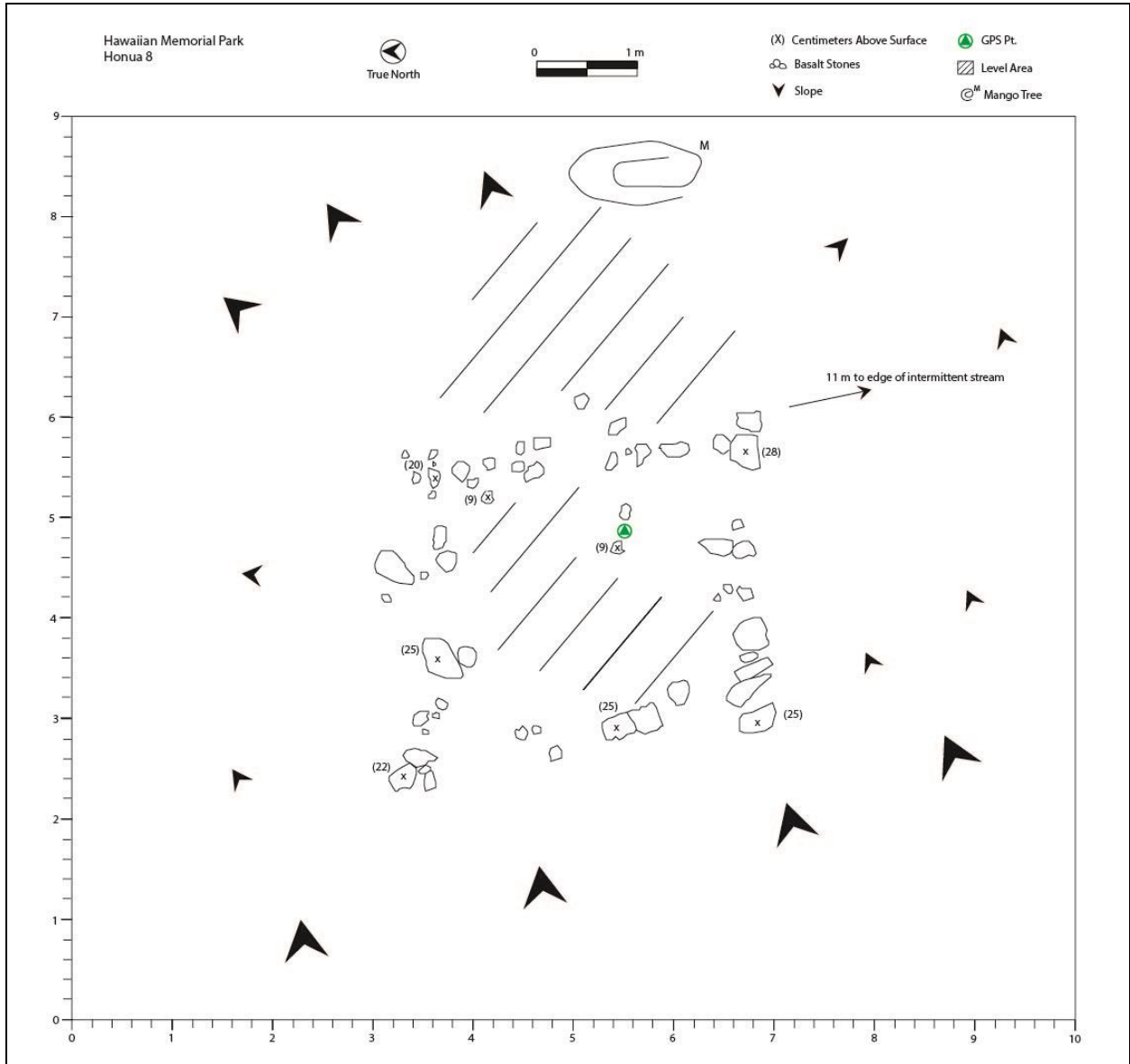


Figure 180. Plan Map of SIHP #50-80-10-8235 (habitation site)

8.2.10 SIHP #50-80-10-8236 (Honua 9), Historic Water Diversion

FORMAL TYPE:	Historic Terrace
FUNCTION:	Water Diversion
TIME PERIOD:	Historic
# OF FEATURES:	1
SITE DIMENSIONS:	6 m N/S by 6 m E/W
CONDITION:	Good
UTM:	N 2366450, E 625910/ 21°23'45.2"N, -157°47'7.2"W (center point)

SIHP #50-80-10-8236 is a basalt boulder and cobble concentration located on the steep slope of a large earthen drainage ditch (Figure 181 and Figure 182). The construction style is roughly stacked and appears to be historic-era. The placement of the site within a large ditch suggests it was used for water diversion. A smaller earthen drainage ditch on the northeast side of **SIHP # -8236** flows down into the large drainage ditch in which the site is situated. Accumulation of natural debris in the small drainage ditch causes a small overflow channel to divert water around the east side of **SIHP # -8236** and enter into the large drainage ditch on the southeast side of the feature as well. Vegetation in the area includes octopus trees, kukui trees, laua'e fern, and other ferns.



Figure 181. Photo of **SIHP # -8236** (historic water retention feature), view to east

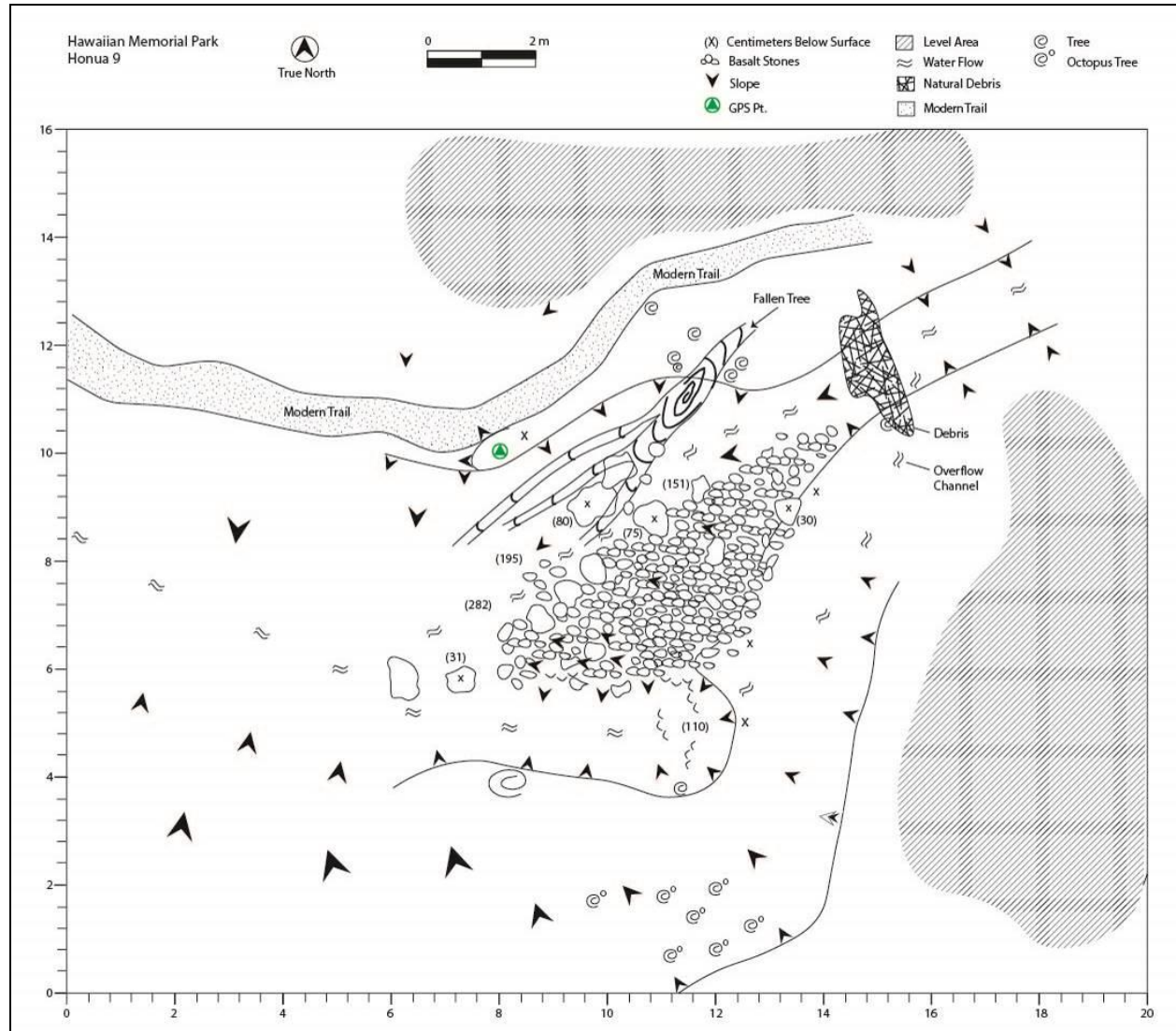


Figure 182. Plan Map of SIHP #50-80-10-823 (historic water retention terrace)

8.2.11 SIHP #50-80-10-8237 (Honua 10), Traditional Terrace Remnants

FORMAL TYPE:	Terrace Remnants
FUNCTION:	Agriculture
TIME PERIOD:	Pre-Contact
# OF FEATURES:	2 Features (A-B) (A1-A3: terrace remnants, B1-B2: terrace remnants)
SITE DIMENSIONS:	22 m N/S by 6 m E/W
CONDITION:	Poor/Remnant
UTM:	N 2366305, E 625920/ 21°23'40.5"N, -157°47'6.9"W (center point)

SIHP #50-80-10-8237 includes traditional terrace remnants (Features A and B) located on a moderately sloped, north-tending hillside (Figure 183). The terraces are placed perpendicular to the hillside slope and are watered by natural hillside runoff which has created a small waterway running through the site. SIHP # -8237 is in poor to remnant condition due to natural erosion and thick vegetation growth. Vegetation within the vicinity includes octopus tree, ti trees, and laua'e fern.

Feature A includes three small terraces in very remnant condition (A1-A3) (Figure 184). The lowest feature in elevation within the site is Feature A1, composed of a single-stone alignment approximately 1.5 m long E/W by 30 cm wide by 15 cm tall. Feature A2 includes two parallel remnant terraces composed of cobbles piled 2-3 courses high, approximately 1.5 m long E/W, and ranging from 15-18 cm tall. Feature A3 is approximately 2 m upslope from Feature A2 and consists of one large natural boulder with an attaching single-stone alignment running east-west and scattered cobble fill extending southward. Feature A3 measures approximately 2 m N/S by 2 m E/W and 30-35 cm tall.

Feature B includes two terraces, located approximately 10 m upslope from Feature A3. Feature B1 is a 2.5 m long E/W by 30 cm wide N/S terrace remnant composed of small basalt boulders and 3-4 courses of stacked cobbles, approximately 40 cm in height. Feature B2 is 1 m upslope from Feature B1 and consists of a terrace remnant, approximately 1 m long E/W by 38 cm wide N/S and 23 cm tall (Figure 185). Just south of Feature B2 are two boulders between which a natural drainage flows.

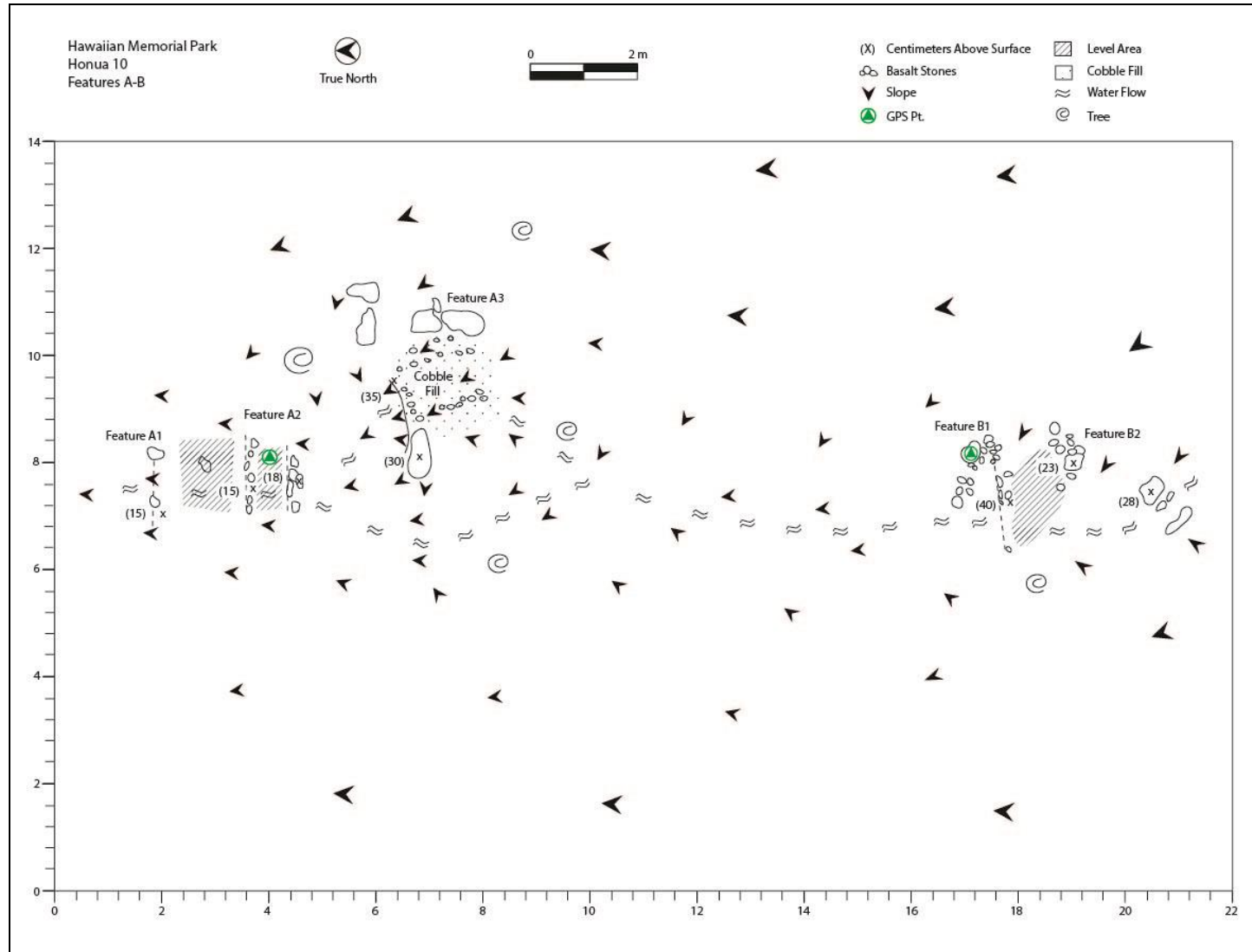


Figure 183. Plan Map of SIHP #50-80-10-8237 (traditional terrace remnants)



Figure 184. Photo showing **SIHP # -8237**, Feature A area (very remnant terraces), view to southeast



Figure 185. Photo of **SIHP # -8237**, Feature B1 (terrace remnant, in foreground) and Feature B2 (terrace remnant, in background), view to south

8.2.12 SIHP #50-80-10-8238 (Honua 11), Agricultural Terraces and Possible Habitation

FORMAL TYPE:	Terraced Hillside
FUNCTION:	Agriculture and Possible Habitation
TIME PERIOD:	Possibly early Post-Contact
# OF FEATURES:	6 Features (A-F) (A: terrace and level area. B-F: terraces)
SITE DIMENSIONS:	30 m N/S by 15 m E/W
CONDITION:	Fair to Poor
UTM:	N 2366282, E 626090/ 21°23'39.7"N, -157°47'1.0"W (center point)

SIHP #50-80-10-8238 includes a terraced north-tending hillside and level area atop the hillside (Figure 186). The shape of the site indicates the top portion may have served as a habitation site with six associated agricultural terraces below (Features A-F). An intermittent stream is located just east of the site, where there is currently a blue plastic bucket partially buried in the stream bed. An old remnant 'auwai appears to be present, running N/S, adjacent to the west side of the site. Rainfall and hillside runoff currently flow through the stream and potential 'auwai. Vegetation in the area include large mango trees, Java Plum, and laua'e fern. On two separate site visits, it was noted the site had been recently cleared by unknown persons.

Feature A includes a constructed terrace in fair condition with a level area atop. It is the highest feature in elevation within this site complex. Feature A is composed of a large basalt boulder, 110 cm tall, with small basalt boulders and cobbles extending in two directions. One arm runs N/S and measures approximately 4.8 m long by 1 m wide by 35 cm tall and the other arm runs E/W and measures 1.6 m long by 1.25 m wide by 30 cm tall (Figure 187 and Figure 188). The east side of Feature A slopes moderately down toward the intermittent stream. The west arm of Feature A ends adjacent to a small potential 'auwai. The feature creates a prominent corner of a relatively flat portion of the north-tending hillside. The surface of Feature A may have been previously used for habitation purposes or may have been constructed to retain soil and rain water for agricultural purposes.

Feature B is a terrace consisting of a 3 m long E/W by 1.5 m wide N/S alignment of large prominent boulders (Figure 191). The boulders range from 60-120 cm tall. The boulders are situated where two large voids (pukas) are apparent underneath. It is possible the pukas could have been used for storage and/or water catchment. The terrace would likely have helped to retain soil for agricultural purposes.

Features C-F are crescent-shaped terrace remnants, approximately 3-6 m long E/W and ranging between 20-30 cm tall. Each terrace creates a 1-2 m level surface on the upslope, south side (Figure 190 through Figure 192). In general, the terraces are in poor/remnant condition with only basalt boulders and a slight elevational change in topography to distinguish their presence.

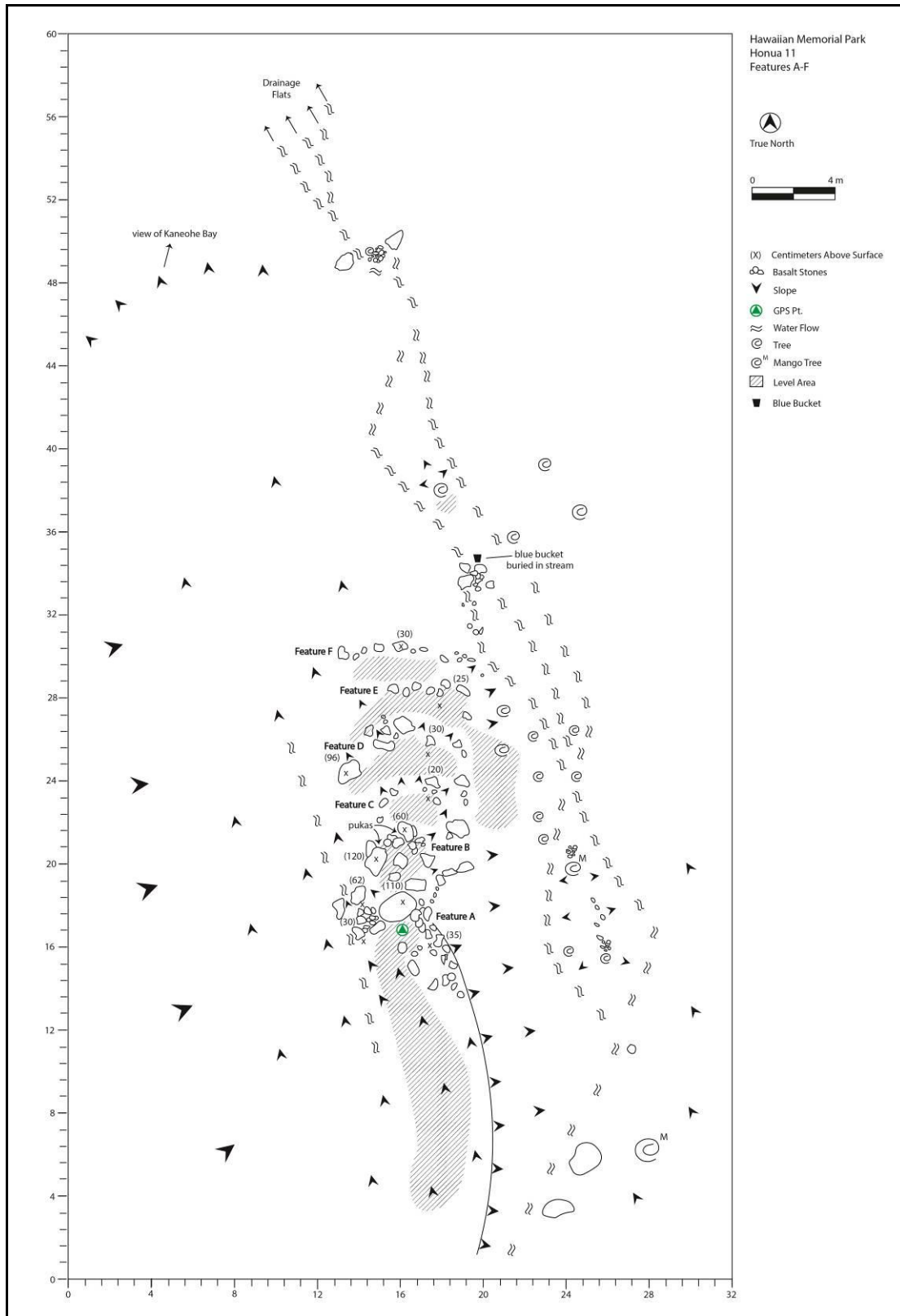


Figure 186. Plan Map of SIHP #50-80-10-8238 (terraced hillside)



Figure 187. Photo showing SIHP # -8238, west side of Feature A (terrace), view to west



Figure 188. Photo showing SIHP # -8238, east side of Feature A (terrace), view to south



Figure 189. Photo showing **SIHP # -8238**, Feature B (terrace, foreground) and Feature A (terrace, background), view to south



Figure 190. Photo showing **SIHP # -8238**, Feature C (terrace remnant), view to west



Figure 191. Photo showing **SIHP # -8238**, Feature D (terrace remnant, in foreground) and Feature B (terrace, in background), view to southeast



Figure 192. Photo showing **SIHP # -8238**, Feature F (terrace remnant, in foreground) and Feature E (terrace remnant, behind), view to south

8.2.13 SIHP #50-80-10-8239 (Honua 12), Earthen Pit

FORMAL TYPE:	Earthen Pit
FUNCTION:	Possible Charcoal Kiln or Signal Fire Pit
TIME PERIOD:	Unknown
# OF FEATURES:	1
SITE DIMENSIONS:	6 m N/S by 6 m E/W
CONDITION:	Good to Fair
UTM:	N 2366310, E 626124/ 21°23'40.6"N, -157°46'59.8"W (center point)

SIHP #50-80-10-8239 is an earthen pit located on the top of steep hillside. **SIHP # -8239** measures approximately 6 m in diameter with an interior height ranging from 80-95 cm and an exterior height from 48-56 cm (Figure 193 through Figure 195). The south side of the site is cut into the northwest tending hillside. The east and west sides of the site are formed by an approximately 1 m thick earthen berm with scattered basalt cobbles, created from soil excavated from the pit. The pit has an access opening on the northwest side. The interior south wall has a flat, large basalt boulder and black, hardened soil. The darkened, cemented soil indicates fires were burned within the site. The northwest exterior contains several small basalt boulders aligned adjacent to the edge of the feature. This site is very similar to two charcoal kilns documented within the CP of the project area (SIHP # -4683 and -6933). However, the vantage location and view from **SIHP # -8239**, being situated on top of a foothill, suggests that if the site is of the traditional Hawaiian, pre-contact era, it may be a signal fire pit. A modern black tarp and camouflage netting material covers the northwest interior of the site, indicating modern use for hunting or potential growing of illegal plants. Vegetation in and around the site includes laua'e fern, octopus, Albizia, and ti trees.



Figure 193. Photo of **SIHP # -8239** (earthen pit) showing the entrance and interior, view to east



Figure 194. Photo of **SIHP # -8239** (earthen pit), view to west

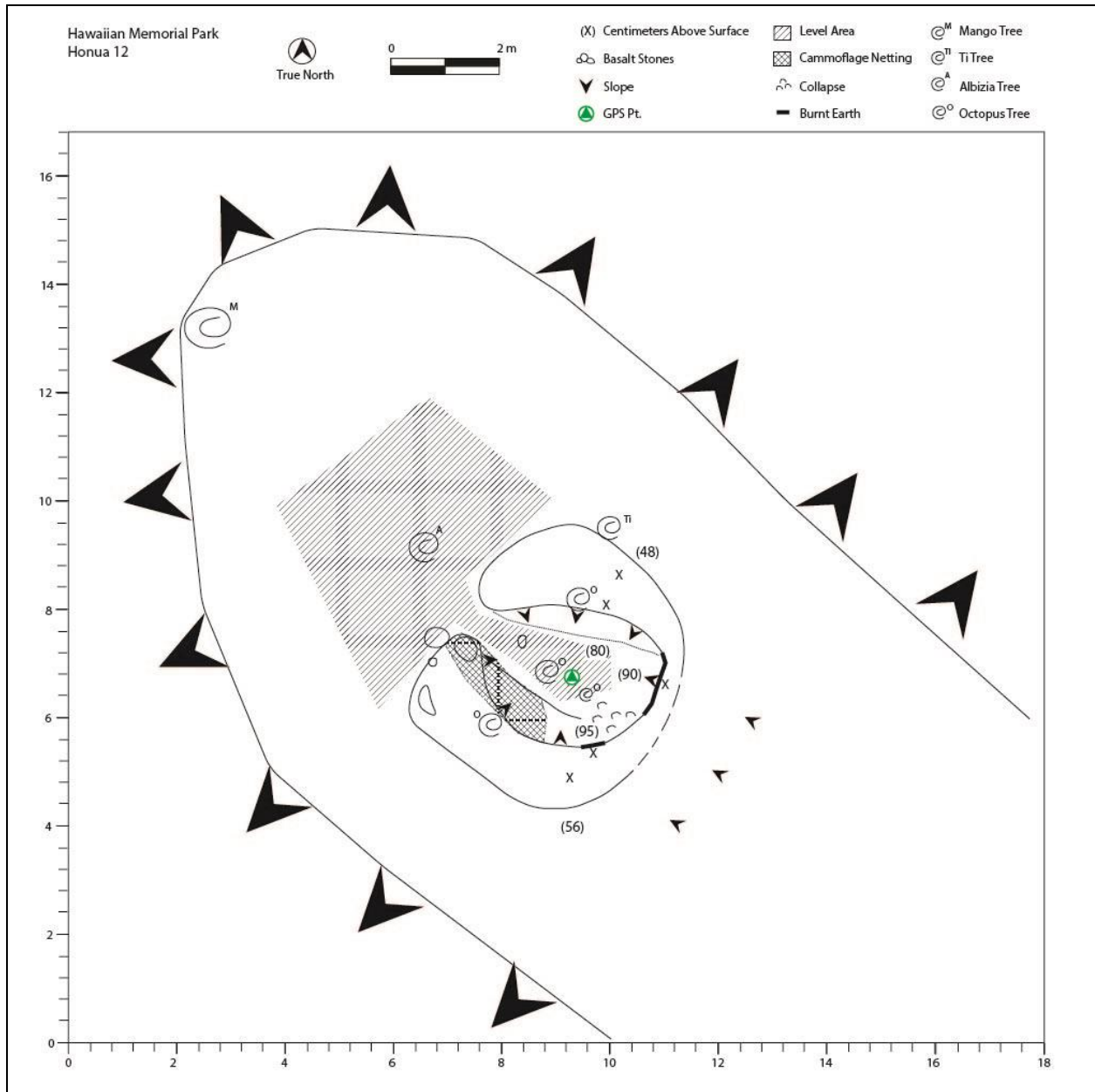


Figure 195. Plan Map of SIHP #50-80-10-8239 (earthen pit)

Section 9 Laboratory Analysis

Collected artifactual materials include a historic glass bottle (Acc. #1), found during surface survey, and materials recovered during excavation of **SIHP # -8241 (Honua 14)**, walled pit), including a piece of volcanic glass (Acc. #2), cow bones, and kukui nut shells. Additional historic to modern glass bottles were documented in the field but were not collected.

9.1 Glass Bottles

One historic bottle was collected during this investigation, however several modern to historic bottles were also documented in the field (refer to Figure 17). One milk bottle (Acc. #1) was collected from **SIHP # -8230 (Honua 3)** (Table 8 and Figure 196). The base of the bottle was embossed with an Owens-Illinois makers mark, with the numbers “23” to the left of the mark and “7” to the right. The Owens-Illinois Glass Company was known to emboss the manufacturer plant code to the left of the maker’s mark and the date code to the right. Therefore, the bottle was made at plant #23, based in Los Angeles, California (Lockhart and Hoenig 2015:7). Single-digit dates codes on milk bottles were used from 1929 to the late 1940s, therefore, the milk bottle was either made in 1937 or 1947 (Lockhart and Hoenig 2015:17).

Table 8. Table Listing Collected, Analyzed Artifacts

Acc. #	Site (50-80-10)	Material, Color	Type	Weight (g)	Measurements (cm) L x W	Attributes	Manufacturer, Date, Reference
1	-8230	Colorless Glass	Milk Bottle	44	18.8 x 7.8 base diameter x 5.6 bore diameter	Internal cap seat, heel embossed “ONE PINT”, “4”, base embossed “23 (Owens-Illinois) 7”	Owens-Illinois; either 1937 or 1947 (Lockhart and Hoenig 2015)

Several early- through late-20th century glass bottles were observed during the surface survey and were documented in the field (Table 9). These bottles include a bottle observed on the surface of **SIHP # -8230**, Feature B with a “triple triangle” makers mark, indicative of the American National Can Company, dating from 1987-1995 (Lockhart et al. 2015) (Figure 197). The numbers “89” embossed on the bottle base likely indicates it was manufactured in 1989. Two other isolated bottles were also found in the western portion of the project area (GPS: “Jug” and “1-03-Bottle”). The Jug was stylized with embossed diamonds on the neck and base and was embossed California Wine Association, in operation from 1894-1936, and contained a maker’s mark indicative of W.J. Latchford Company from the 1930s (California Historical Society 2012, Lockhart et al. 2017) (Figure 198). Bottle 1-03 was an amber glass, Mrs. Butterworths syrup bottle with a Thatcher Manufacturing Company makers mark, dating from 1944-1985 (Lockhart et al. 2007) (Figure 199). The numbers “62” embossed on the bottle base likely indicates it was

manufactured in 1962. According to Lockhart et al. (2007), an “E” also embossed on the base is likely a plant code indicating the bottle was made in Elmira, New York between 1926-1965.

One isolated bottle, GPS “HIST BTL” was observed in the central project area. The bottle was a turn mold with a slight push up base (Figure 200). According to the Society for Historic Archaeology, Historic Glass Bottle Identification website (Lindsey 2018), turn molds were common from 1880 to the 1920s.

One bottle, GPS “HIST BTL 2”, was found near -6933 (historic charcoal kiln). The bottle is machine-made, likely dating from between 1908-1930 (Lindsey 2018) (Figure 201).

Table 9. Table Listing Bottles Observed and Documented in the Field

Provenience (Site, Feature, GPS)	Material, Color, Type	Attributes	Manufacturer, Date, Reference
SIHP # -8230, Feature B	Amber glass, beer bottle	Crown cap, base stippling, base embossed with a “triple triangle” makers mark and “07, 89, 22c”	American National Can Company, 1987-1995, (Lockhart et al. 2015) likely dates to 1989
GPS: JUG (West Portion of PA)	Colorless glass, wine jug	Continuous external thread finish, embossed diamond design on neck, heel embossed “1/2 gallon”, base embossed “California Wine Assoc, San Francisco, CA, Refilling Prohibited, 3665” and an “L (in circle)” makers mark	California Wine Association, 1894-1936 (California Historical Society 2012); Makers Mark: W.J. Latchford Co., Los Angeles, CA, 1930s (Lockhart et al. 2017)
GPS: 1-03- Bottle (West Portion of PA)	Amber color, syrup bottle	Continuous external thread finish, molded Mrs. Butterworth bottle shape, base embossed “4200, 62, E (over) 4” and a “TMC”	Thatcher Manufacturing Co, New York, 1944-1985 (Lockhart et al. 2007) Likely dates to 1962
GPS: HIST BTL (Central PA)	Olive glass, spirits bottle	Turn mold, slight push-up base	1880-1920s (Lindsey 2018)
Near -6933, GPS: HIST BTL 2 (East Portion PA)	Olive glass, bottle	Crown cap finish, body seam continues over finish lip, machine-made, base has a suction scar	1908-1930 (Lindsey 2018)



Figure 196. Photos of a collected milk bottle (Acc. #1) from **SIHP # -8230** (historic 'auwai)



Figure 197. Photo showing an amber glass bottle observed near **SIHP # -8230**, Feature B



Figure 198. Photo of GPS “Jug” found in the west portion of the project area



Figure 199. Photo of GPS “1-3-bottle” found in the west portion of the project area



Figure 200. Photo showing an isolated olive turn mold bottle found near the center of the project area (GPS: HST BTL)



Figure 201. Photo showing GPS "HIST BTL 2" from near -6933 (historic charcoal kiln)

9.2 Lithic Analysis

One piece of volcanic glass (Acc. #2) was recovered during excavation of **SIHP # -8241** (Honua 14, historic charcoal kiln). The artifact contained outer cortex on one side and did not exhibit obvious flake scars or worked edges. The volcanic glass artifact was found at 39 cmbd within Builders Trench A, adjacent to the Feature C (stone wall).

The piece of volcanic glass was sent to Dr. Lundblad at University of Hawai‘i-Hilo for Energy Dispersive X-Ray Fluorescence (EDXRF) analysis. EDXRF is a non-destructive method of identifying chemical composition of a material. The chemical composition of lithic materials can be compared with known source locations throughout the Hawaiian archipelago as well as the wider Pacific region in order to identify where the material likely originated. It was found that the recovered volcanic glass fragment (Acc. #2) is similar to dyke material found within the Ko‘olau Mountain Range, particularly on Mokolii Island in Kualoa Ahuupa‘a within the district of Ko‘olaupoko on the island of O‘ahu. The results were based off the mid-Zc trace elements, Rubidium (Rb), Strontium (Sr), Yttrium (Y), Zirconium (Zr), and Niobium (Nb). Due to the small size of the artifact other elemental compositions are be considered only qualitative. The EDXRF results are presented in Appendix D.

Table 10. Table Listing Analyzed Lithic Artifacts

Site (50-80-10)	Acc. #	TU	Feature	Depth (cmbd)	Material	# pcs.	Analyzation and Results
-8241	Acc. #2	2	Builders Trench A	39	Volcanic Glass	1	EDXRF; similar to Ko‘olau Basalts



Figure 202. Photo of volcanic glass (Acc. #2) recovered from **SIHP # -8241**, Builders Trench A

9.3 Faunal Analysis

Approximately 90 pieces of cow bone were collected from SIHP # -8241 (Honua 14, walled pit). The bones were found within TU 1, excavation level VI (50-60 cmbd/cmbs, Stratum II), ranging from 52-57 cmbd/cmbs, just above natural, sterile soil (Stratum III). The skeletal elements included an axis vertebrae, scapula, rib bones, and an articulated tibia, calcaneus, and foot bones (Table 11). The animal appeared to have been scavenged, as the bones were found largely in one concentration with a few fragments found in other portions of the test excavation. No cut marks were observed on the cow bones.



Figure 203. Photo of collected faunal bone from SIHP # -8241 TU 1, Stratum II

Table 11. Table Listing Collected Faunal Material from SIHP # -8241 Excavations

Bag #	TU	Excav. Level	Strat	Depth (cmbd/cmbs)	# peices	Weight (g)	Description
11	1	IV	II	55-57	88	3240	Scapula, ribs, tibia, calcaneus, foot bones
12	1	IV	II	52	2	105.24	Axis vertebrae

9.4 Charcoal Identification

Three samples of charcoal were sent to the International Archaeological Research Institute, Inc. (IARII) in Honolulu for plant species identification. One sample (Charcoal Sample1) was not able to be identified. The other two samples contained guava (*Psidium* sp.). Guava was introduced to Hawai'i in 1825 and the production of guava charcoal was a common industry in Windward O'ahu throughout the late 19th century and then again in the 20th century.

Table 12. Table Listing Identified Charcoal

Sample #	Bag #	Site (50-80-10)	TU	Feature	Strat	Depth (cmbd)	# pcs.	Results
Charcoal Sample 1	B10	-8241	2	Builders Trench A		78	1	Undetermined, no anatomical structure was visible
Charcoal Sample 2	B18	-8241	1	Base of Charcoal Kiln	V	TU 1: 80/ TU 2: 160	1	Guava (<i>Psidium</i> sp.)
Charcoal Sample 3	B20	-8241	1	Base of Charcoal Kiln	V	TU 1: 79-83/ TU 2: 159-163	Multiple	Guava (<i>Psidium</i> sp.)

9.5 Disposition of Materials

All collected materials from this investigation belong to the landowner. Collected materials are stored within the Honua Consulting secured curation facility. In consultation with the SHPD and the landowner, the materials may be housed at a different agreed-upon location.

Section 10 Summary and Interpretations

This AIS was prepared for the Hawaiian Memorial Life Plan, Ltd. and focuses on 58.53 acres of land within Hawaiian Memorial Park property, located in Kāneʻohe Ahupuaʻa, Koʻolaupoko District, Island of Oʻahu, Tax Map Key (TMK): [1] 4-5-033:001. The APE and project area are the same. The APE includes a 14.5-acre proposed Cultural Preserve (CP) encompassing the northeast portion of the project area. Two previous archaeological investigations have been conducted within the project area (Szabian et al. 1989, McCurdy and Hammatt 2009). Ten (10) sites were previously identified, eight (8) of which are located within the proposed CP.

A total of 24 sites were recorded during the current AIS. The investigation included a 100% pedestrian survey of the entire 53.45-acre project area. All 10 previously recorded sites were relocated and current conditions were documented. Three of the previously documented sites were expanded in size to include additional features (Kawaʻewaʻe Heiau [-354], -4681, and -7079). The Kawaʻewaʻe Heiau site description and site boundary was updated to account for eight features (Features 1-8) documented by McAllister (1933), one feature (Feature A) documented during the previous AIS (McCurdy and Hammatt 2009), and newly identified features, including exterior terraces (Features 2A, 2B, 6B, and 7A), an interior terrace (Feature 4A), stone-lined pits (Feature 6A1-6A4), and four exterior earthen pits (Features 8A-D). SIHP # -4681 was enlarged from five features (A-E) to eight features (A-H) to include a potential Hale o Papa (Feature F) and traditional agricultural terraces (Features G-H). SIHP # -7079 was enlarged from one isolated grinding stone (Feature A) to 11 features (A-K), including traditional agricultural terrace remnants, stone alignments, and a stone mound.

Fourteen (14) newly identified sites were documented during this study (SIHP # -8228 to -8241 [Honua 1-14]). Newly identified sites include historic dairy roads (SIHP # -8228), an old road segment (SIHP # -8229), a historic ʻauwai (SIHP # -8230), terraced ʻauwai (SIHP # -8231 and SIHP # -8240), an ʻauwai with associated terraces (SIHP # -8232), agricultural terrace remnants (SIHP # -8233, SIHP # -8234, and SIHP # -8237), possible habitation sites (SIHP # -8235 and SIHP # -8238), a historic water retention terrace (SIHP # -8236), an earthen pit (SIHP # -8239), and a walled pit (SIHP # -8241). Of the newly identified sites, one (SIHP # -8240) is located within the center of CP and two (SIHP # -8231 and SIHP # -8241) are located on the southern boundary of the CP. In coordination with the landowners, SIHP # -8231 and SIHP # -8241 will be incorporated into the proposed CP. A historic ʻauwai (SIHP # -8230) will be protected and avoided due to the presence of a colony of native damselflies. In addition, a potential habitation site (SIHP # -8235) and traditional habitation complex (SIHP # -4681) were found to be located on the current southern boundary or just outside the project area boundary and therefore it is recommended that the project be designed to avoid any impact those sites. All other newly identified sites are located within portions of the project area which will likely be affected by proposed project construction (SIHP # -8228, -8229, 8232 to -8234, and -8236 to -8239 [Honua 1, 2, 5-7, and 9-12]).

One site, SIHP # -8241 (walled pit) was excavated. It was found the site is a guava charcoal kiln, likely dating from the early to mid-19th century. Several structural components were identified, including two entrance walls (Features A and B), a well-constructed interior wall (Feature C), a thin black floor and gravelly foundation of the kiln (Feature D), an air vent

(Feature E), and a chimney (Feature F). Gauva was introduced to Hawai'i in 1825 and production of guava charcoal was common in Windward O'ahu until a ban was created against the cutting of guava in 1906 (Herd 1906:69, quoted in Meeker and Murakami 1995:96). Guava charcoal began again after Japanese immigrants came to settle in Homestead lots around 1917 (Kelly 1976 and Allen n.d., both quoted in Meeker and Murakami 1995:96). Domed kilns are associated with Japanese influence. Therefore, due to the lack of mortar or a dome, as is common on later kiln types, it is likely **SIHP # -8241** dates between AD 1825-1906.

Several historic bottles were recorded during this project. Historic bottles dated between 1880-1989, with the majority dating from the early- to mid-twentieth century. One historic dairy bottle (Acc. #1) was collected from the historic 'auwai (**SIHP # -8230**), dating to either 1937 or 1947.

The project area was found to contain traditional ceremonial, habitation, and agricultural complexes as well as historic water retention terraces, charcoal kilns, and a storage feature. This data indicates the project area has been utilized from the pre-Contact through historic time periods for multiple purposes. Throughout these time periods, the natural water runoff from the mountainside has been utilized to provide water to habitations and hillside terrace systems, diverted for agricultural use using 'auwai, and retained for water control.

Recommended mitigation measures for this project are threefold, starting with a Data Recovery (DR) program, followed by creation of a Preservation Plan (PP), and an archaeological monitoring program. The DR program would focus on obtaining additional data to aid in interpretation of site function, time period, and use activities and would focus on sites that will be impacted by proposed project construction as well as sites which may not be impacted. A PP will need to be completed to address short-term and long-term mitigation measures for sites located within the proposed CP. Finally, the proposed construction project should proceed under an archaeological monitoring program.

Section 11 Significance Assessments and Recommendations

11.1 Significance Assessment

Historic properties are assessed based on age, integrity, and significance. Qualifying historic properties must typically be at least fifty years old. Integrity of a historic property is based on the location, design, setting, materials, workmanship, feeling, and association. As outlined in HAR 13-284-6 (Evaluation of significance), a historic property must meet one of five broad categories to be significant (Criteria a-e). The significance of each historic property is assessed for:

- a Historic property reflects major trends or events in the history of the state or nation.
- b Historic property is associated with the lives of persons significant in our past.
- c Historic property is an excellent example of a site type, period, method of construction, or work of a master.
- d Historic property has yielded or may be likely to yield information important in prehistory or history.
- e Historic property has cultural significance to an ethnic group, including, but not limited to, religious structures, burials, traditional cultural properties, cultural practices, and/or beliefs important to the groups history and cultural identity.

Table 13 lists all documented sites within the project area and includes integrity, significance assessments, and mitigation recommendations.

11.2 Project Effect Determination

The AIS results support a HRS 6E-42 project effect determination of “effect, with agreed upon mitigation commitments”, pursuant to HAR 13-284-7(a)(2).

11.3 Mitigation Recommendation

Proposed construction plans have the potential for causing damage to one or more of the documented sites. Therefore, mitigation recommendations for this project are threefold, to include data recovery, preservation, and a monitoring program. Figure 204 shows proposed grading plans and all documented site locations. Several documented sites are recommended for “no further work” (SIHP # -4680, -8228, -8229, -8232, -8233A, -8236, and -8237). This recommendation is due to their historic function and remnant condition, indicating a lack of excavation potential for finding significant data. No further work is recommended for SIHP # -8241 due to recent excavation activities and sufficient collected data from the current investigation, however, the site is recommended to be incorporated into the Cultural Preserve.

Table 13. Table Listing Documented Sites, Eligibility Recommendations, and Proposed Mitigation Measures

SIHP #50-80-10	Site Type	Possible Function	Age	Site Integrity (location, design, feeling, materials, setting, association, workmanship)	HAR 13-284-6 Significance (a-e)	Proposed Mitigation
-354	Heiau	Ceremonial	Pre-Contact	location, design, feeling, materials, setting, association, workmanship	Criteria a through e*	Preservation in Cultural Preserve
-4680	Terrace	Water Retention	Historic	materials, association	Criterion d	No Further Work
-4681	Habitation Complex	Habitation/ Agriculture/ Ceremonial	Pre-Contact	location, design, feeling, materials, setting, association, workmanship	Criteria c, d, and e*	Preservation
-4683	Pit Feature	Charcoal Kiln/ Agriculture	Historic	setting, association	Criterion d	Preservation in Cultural Preserve
-4684	Habitation Complex	Habitation	Pre-Contact	location, feeling, materials, setting, association	Criterion d	Preservation in Cultural Preserve
-6930	Stone Enclosure	Ceremonial	Pre-Contact	location, design, feeling, materials, setting, association, workmanship	Criteria c, d, and e*	Preservation in Cultural Preserve

SIHP #50-80-10	Site Type	Possible Function	Age	Site Integrity (location, design, feeling, materials, setting, association, workmanship)	HAR 13-284-6 Significance (a-e)	Proposed Mitigation
-6931	Stone Alignments	Ceremonial	Pre-Contact	location, feeling, materials, setting, association	Criteria d and e*	Preservation in Cultural Preserve
-6932	Storage Feature	Storage	Historic	design, setting, association	Criterion d	Preservation in Cultural Preserve
-6933	Pit Feature and Stone Wall	Charcoal Kiln	Historic	design, materials, setting, association	Criterion d	Preservation in Cultural Preserve
-7079	Agricultural Complex	Agriculture	Pre-Contact	location, feeling, materials, setting, association	Criterion d	Preservation in Cultural Preserve or Data Recovery
-8228 & -8229 (Honua 1-2)	Dirt Roadways	Dairy/Transportation	Historic	association	Criterion d	No Further Work
-8230 (Honua 3)	‘Auwai	Water Collection and Retention	Historic	design, feeling, materials, setting, association	Criterion d	Preservation
-8231 (Honua 4)	Terraced ‘Auwai	Agriculture	Pre-Contact	location, design, feeling, materials, setting, association, workmanship	Criterion d	Preservation in Cultural Preserve
-8232 (Honua 5)	Terrace Remnants	Agriculture	Pre-Contact	location, materials, setting, association	Criterion d	No Further Work

SIHP #50-80-10	Site Type	Possible Function	Age	Site Integrity (location, design, feeling, materials, setting, association, workmanship)	HAR 13-284-6 Significance (a-e)	Proposed Mitigation
-8233 (Honua 6)	Terrace Remnants (6A) & Modified Outcrop (6B)	6A: Agriculture; 6B: Possible Temporary Habitation	Pre-Contact	location, materials, setting, association	Criterion d	6A: No Further Work; 6B: Data Recovery
-8234 (Honua 7)	Terrace	Agriculture	Pre-Contact	location, materials, setting, association	Criterion d	Data Recovery
-8235 (Honua 8)	Habitation Site	Temporary Habitation	Possibly early Post-Contact	location, design, feeling, materials, setting, association	Criterion d	Data Recovery; Preservation
-8236 (Honua 9)	Terrace	Water Retention	Historic	materials, association	Criterion d	No Further Work
-8237 (Honua 10)	Terrace Remnants	Agriculture	Pre-Contact	location, materials, setting, association	Criterion d	No Further Work
-8238 (Honua 11)	Possible Habitation Site	Habitation and Agriculture	Possibly early Post-Contact	location, feeling, materials, setting, association	Criterion d	Data Recovery
-8239 (Honua 12)	Earthen Pit	Charcoal Kiln or Fire Pit	Unknown	location, design, setting, association	Criterion d	Data Recovery

SIHP #50-80-10	Site Type	Possible Function	Age	Site Integrity (location, design, feeling, materials, setting, association, workmanship)	HAR 13-284-6 Significance (a-e)	Proposed Mitigation
-8240 (Honua 13)	Terraces	Agriculture/ Horticulture	Pre-Contact	location, feeling, materials, setting, association	Criterion d	Preservation in Cultural Preserve
-8241 (Honua 14)	Walled Pit	Guava Charcoal Kiln	Historic, likely circa 1825-1906	design, materials, setting, association, workmanship	Criteria c and d	No Further Work, Preservation in Cultural Preserve
*Sites recommended significant under Criterion e are subject to HAR 13-284-8(2), OHA has been consulted with regarding these sites (see Consultation section [Section 3 of this report])						

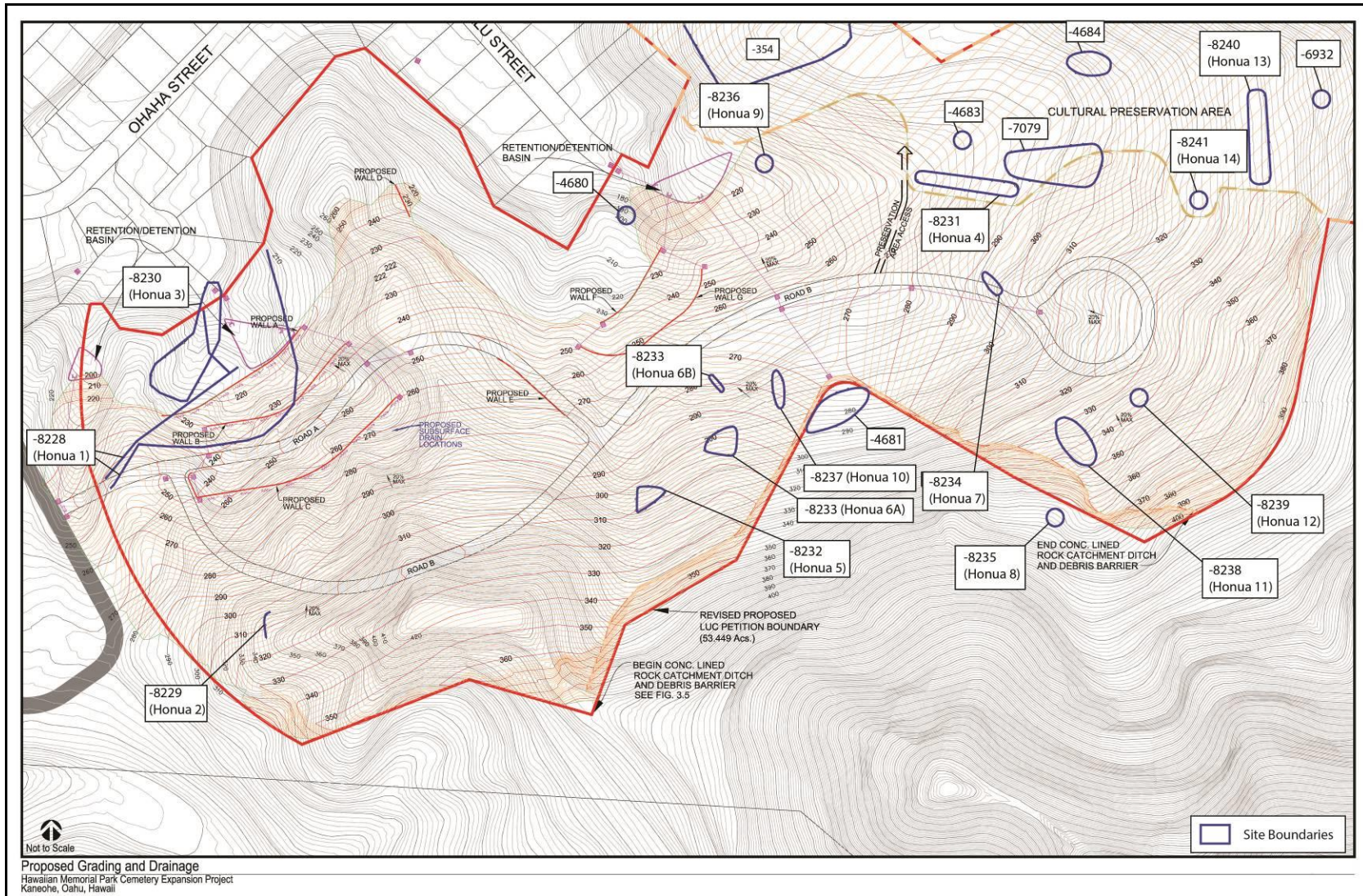


Figure 204. 2018 Grading Plan showing locations of documented sites (amended from HHF Planners 2018)

11.3.1 Data Recovery

The current AIS investigation included a 100% pedestrian survey with excavation only at one site (SIHP # -8241). In order to better understand and characterize certain documented sites within the project area a data recovery program is recommended. The data recovery program would begin with completion of a Data Recovery Plan which would outline the proposed testing strategy and research objectives. The data recovery plan would need to be reviewed and accepted by the SHPD prior to controlled excavation of select sites. Recommended sites for data recovery include SIHP # -8233B (possible temporary habitation), SIHP # -8234 (terraces), SIHP # -8235 (habitation site), SIHP # -8238 (habitation site), and SIHP # -8239 (earthen pit) (Table 14). It is also recommended that if all or portions of SIHP # -7079 will be impacted by the proposed project that Data Recovery be conducted on one or more of the features, particularly Feature D (mound), and that Feature A (grinding stone) either be preserved in place or relocated to an appropriate location in the Cultural Preserve. Data recovery efforts would attempt to establish function, use, and age of selected sites. Findings from the data recovery investigation will aid in determining further appropriate mitigation recommendations for those sites.

Table 14. Table Listing Sites Recommended for Data Recovery

Site (50-80-10)	Type	Rationale
-8233B (Honua 6B)	Modified Outcrop	Feature creates a flat area on edge of hillside; excavation could answer if site was used for temporary habitation and associated time-period
-8234 (Honua 7)	Low Terrace	Terrace in Fair Condition located on level area by stream; could provide data on what plants were grown and associated time period
-8235 (Honua 8)	Habitation Site	Excavation would provide data on activities and use of the site as well as associated time period
-8238 (Honua 11)	Habitation Site	Excavation would provide data on activities and use of the site as well as associated time period
-8239 (Honua 12)	Earthen Pit	Excavation would provide data on function, use, and associated time period
-7079	Agricultural Complex	The function of Feature D (mound) is unknown; excavation would provide data on function and potential time period

11.3.2 Preservation

The landowner would like to preserve and protect (conserve) all features within the proposed Cultural Preserve (CP). However, if deemed necessary, some or all features of SIHP # -7079 (Agricultural Complex in poor to remnant condition) may be impacted by the proposed project. Therefore, preservation recommendations include:

- In the event SIHP # -7079 will be impacted by proposed construction, Feature A (grinding stone) should either be preserved in place or relocated to an appropriate location within the CP;
- the CP should include the site boundaries of SIHP # -8231 (Honua 4) and SIHP # -8241 (Honua 14) so the sites can be preserved;
- two sites not located within the CP, SIHP # -4681 and -8235 (Honua 8), found to be located just outside the project area boundary or on the boundary, should be avoided and protected;
- one site not located within the CP, SIHP # -8230 (Honua 3, historic 'auwai), is recommended for preservation due to it being the habitat of a native Hawaiian damselfly.

11.3.3 Archaeological Monitoring

Due to the potential of the project having an adverse effect on significant cultural features, an archaeological monitoring program is recommended. The archaeological monitoring program will be designed in coordination with the SHPD. An archaeological monitoring plan will be written and approved by the SHPD prior to commencement of project improvements, in accordance with HAR 13-279 (Rules Governing Standards for Archaeological Monitoring Studies and Reports).

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1971 National Register of Historic Places Inventory—Nomination Form for Kawaʻewaʻe Heiau. Obtained from the National Park Service through the Hawaiʻi State Historic Preservation Division.

Appendix A National Register Nomination Form (Watts 1971)

Form 10-300
(July 1969)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

**NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY - NOMINATION FORM**

(Type all entries - complete applicable sections)

PH005 5344

STATE: Hawaii
COUNTY: Honolulu

FOR NPS USE ONLY
ENTRY NUMBER: AUG 21 1972
DATE:

1. NAME
COMMON: Kawaewae Heiau
AND/OR HISTORIC:

2. LOCATION
STREET AND NUMBER: [REDACTED]
CITY OR TOWN: Kaneohe
STATE: Hawaii CODE: 15 COUNTY: Honolulu CODE: 003

3. CLASSIFICATION

CATEGORY (Check One)	OWNERSHIP	STATUS	ACCESSIBLE TO THE PUBLIC
<input type="checkbox"/> District <input type="checkbox"/> Site <input type="checkbox"/> Object <input type="checkbox"/> Building <input checked="" type="checkbox"/> Structure	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private <input type="checkbox"/> Both	Public Acquisition: <input type="checkbox"/> In Process <input type="checkbox"/> Being Considered <input type="checkbox"/> Occupied <input checked="" type="checkbox"/> Unoccupied <input type="checkbox"/> Preservation work in progress	Yes: <input checked="" type="checkbox"/> Restricted <input type="checkbox"/> Unrestricted <input type="checkbox"/> No

PRESENT USE (Check One or More as Appropriate)

<input type="checkbox"/> Agricultural	<input type="checkbox"/> Government	<input type="checkbox"/> Park	<input type="checkbox"/> Transportation	<input type="checkbox"/> Comments
<input type="checkbox"/> Commercial	<input type="checkbox"/> Industrial	<input type="checkbox"/> Private Residence	<input checked="" type="checkbox"/> Other (Specify) Unused	
<input type="checkbox"/> Educational	<input type="checkbox"/> Military	<input type="checkbox"/> Religious		
<input type="checkbox"/> Entertainment	<input type="checkbox"/> Museum	<input type="checkbox"/> Scientific		

4. OWNER OF PROPERTY
OWNER'S NAME: Harold K. L. Castle Estate
STREET AND NUMBER: Castle Junction
CITY OR TOWN: Kailua STATE: Hawaii CODE: 15

5. LOCATION OF LEGAL DESCRIPTION
COURTHOUSE, REGISTRY OF DEEDS, ETC.: Bureau of Conveyances, Department of Land and Natural Resources
STREET AND NUMBER: 465 S. King Street
CITY OR TOWN: Honolulu STATE: Hawaii CODE: 15

6. REPRESENTATION IN EXISTING SURVEYS
TITLE OF SURVEY: Statewide Inventory by the Hawaii Register of Historic Places
DATE OF SURVEY: ongoing Federal State County Local
DEPOSITORY FOR SURVEY RECORDS: Hawaii Register of Historic Places
STREET AND NUMBER: 465 S. King Street
CITY OR TOWN: Honolulu STATE: Hawaii CODE: 15

SEE INSTRUCTIONS

RECEIVED
MAR 16 1972
NATIONAL REGISTER

STATE: Hawaii
COUNTY: Honolulu
FOR NPS USE ONLY
ENTRY NUMBER: AUG 21 1972
DATE:

SEE INSTRUCTIONS

SIGNIFICANCE			
PERIOD (Check One or More as Appropriate)			
<input type="checkbox"/> Pre-Columbian	<input type="checkbox"/> 16th Century	<input type="checkbox"/> 18th Century	<input type="checkbox"/> 20th Century
<input type="checkbox"/> 15th Century	<input checked="" type="checkbox"/> 17th Century	<input type="checkbox"/> 19th Century	<input checked="" type="checkbox"/> pre-contact
SPECIFIC DATE(S) (If Applicable and Known)			
AREAS OF SIGNIFICANCE (Check One or More as Appropriate)			
<input type="checkbox"/> Aboriginal	<input type="checkbox"/> Education	<input type="checkbox"/> Political	<input type="checkbox"/> Urban Planning
<input checked="" type="checkbox"/> Prehistoric	<input type="checkbox"/> Engineering	<input checked="" type="checkbox"/> Religion/Philosophy	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Historic	<input type="checkbox"/> Industry	<input type="checkbox"/> Science	_____
<input type="checkbox"/> Agriculture	<input type="checkbox"/> Invention	<input type="checkbox"/> Sculpture	_____
<input checked="" type="checkbox"/> Architecture	<input type="checkbox"/> Landscape Architecture	<input type="checkbox"/> Social/Humanitarian	_____
<input type="checkbox"/> Art	<input type="checkbox"/> Literature	<input type="checkbox"/> Theater	_____
<input type="checkbox"/> Commerce	<input type="checkbox"/> Military	<input type="checkbox"/> Transportation	_____
<input type="checkbox"/> Communications	<input type="checkbox"/> Music		
<input type="checkbox"/> Conservation			
STATEMENT OF SIGNIFICANCE:			
<p>Kawaewae heiau derives its great significance from its role in Hawaii's legends and from its excellent potential for development as an interpreted heiau. <u>Kawaewae is said by legend to have been constructed by the powerful Oahu king, Olopana, early in the 12th century, A.D. It later became the scene of Olopana's death when he tried to sacrifice the demi-god Kamapuaa there. Kamapuaa is a central figure of many Hawaiian legends, particularly on Oahu, and is best known, perhaps, for his ability to change his form from that of a man to that of a giant pig. It was at Kawaewae heiau that Kamapuaa, through treachery, turned his own sacrifice by Olopana into Olopana's death and then escaped.</u></p> <p>Kawaewae heiau is also of significance for it lies [redacted] and is in such good condition and of such dignified massiveness, that it would lend itself admirably to development as a small historical park.</p>			



9. MAJOR BIBLIOGRAPHICAL REFERENCES

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10. GEOGRAPHICAL DATA

LATITUDE AND LONGITUDE COORDINATES DEFINING A RECTANGLE LOCATING THE PROPERTY			O R	LATITUDE AND LONGITUDE COORDINATES DEFINING THE CENTER POINT OF A PROPERTY OF LESS THAN TEN ACRES		
CORNER	LATITUDE	LONGITUDE		LATITUDE	LONGITUDE	
	Degrees Minutes Seconds	Degrees Minutes Seconds		Degrees Minutes Seconds	Degrees Minutes Seconds	
NW	0 . . "	0 . . "				
NE	0 . . "	0 . . "				
SE	0 . . "	0 . . "				
SW	0 . . "	0 . . "				

APPROXIMATE ACREAGE OF NOMINATED PROPERTY

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE:	CODE	COUNTY	CODE



11. FORM PREPARED BY

NAME AND TITLE:
Jennifer Hunt Watts, Research Assistant

ORGANIZATION: Hawaii Register of Historic Places DATE: 10/8/71

STREET AND NUMBER:
465 S. King Street

CITY OR TOWN: Honolulu STATE: Hawaii CODE: 15

12. STATE LIAISON OFFICER CERTIFICATION NATIONAL REGISTER VERIFICATION

As the designated State Liaison Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service. The recommended level of significance of this nomination is:

National State Local

Name: *Suenao Kido*
Title: Chairman and Member
Date: March 3, 1972

I hereby certify that this property is included in the National Register.

Robert M. Utley
Chief, Office of Archeology and Historic Preservation

Date: 8/21/72

ATTEST:
William H. Bennett
Keeper of The National Register

Date: _____

HB No 1711

SEE INSTRUCTIONS

Appendix B Hawai'i Register

TMK# 4-5-33-1
 Harold K.C. Castle Tr. E.
 50-10-0354

COVER SHEET

HAWAII REGISTER OF HISTORIC PLACES

50 - 60-10-354 SITE NAME/TYPE KAWAEWAE HEIAU
T 2 3 4 5 6 7 8 9 DISTRICT KOOLAUPAKO
 SITE IDENTIFICATION NUMBER AREA 2700 square METER⁵

2 1 PRE-1778 CATEGORY Single Feature Complex Place
TO II T2 T3 T4 T5 T6 T7 T8 T9 20 OWNERSHIP Public Private
 CARD NO DATE/PERIOD KNOWN PRESSURES ON SITE URBAN DEVELOPMENT

PRESENT LAND USE(S) UNUSED
 DESTRUCTION No Known Future Danger Possible Future Danger Future Danger Certain
 Present Danger Presently Being Destroyed

STATUS Occupied Unoccupied CONDITION Excellent Good Fair Deteriorated
 INTEGRITY Unaltered, Orig Loc Unaltered, Moved Altered, Orig Loc Altered, Moved
 ACCESSIBILITY Unrestricted Restricted Inaccessible
 LEGENDARY MATERIALS KNOWN Yes NO WRITTEN HISTORICAL MATERIALS Yes No
 SUSCEPTIBILITY TO INTERPRETATION Good Moderate Poor
 IMPORTANCE AS EXAMPLE OF TYPE SITE Good Moderate Poor
 RESEARCH POTENTIAL Good Moderate Poor
 LOCAL ATTITUDES ABOUT SITE Valuable Moderate Value Low Value Ambivalent
 Unknown

BRIEF DESCRIPTION OF SITE (Columns 21-80) Large heiau; probably most massive on
Waiawa side; in excellent condition.

STAFF EVALUATION High Value Valuable Reserve Marginal
 SUGGESTED THEME(S) RELIGION
 DATE SUBMITTED TO REVIEW BOARD 5/25/71

REVIEWER'S RECORD AND EVALUATION

NAME _____ Date Reviewed _____
 CATEGORY High Value Valuable Reserve Marginal
 SIGNIFICANCE National State Local
 RECOMMENDED DISPOSITION Nominate National Register State Register Staff Files
 RECOMMENDED THEMES:
 REVIEWER'S COMMENTS:

REVIEW BOARD EVALUATION RECORD

DATE REVIEWED 6/1/71 RECORDER _____
 OFFICIAL CATEGORY High Value Valuable Reserve Marginal
 OFFICIAL SIGNIFICANCE National State Local
 OFFICIAL THEMES Religion
 OFFICIAL DISPOSITION National Register Nomination State Register Staff Files
 REVIEW BOARD COMMENTS:

VOTING RECORD: Cliver _____ Daws _____ Hormann _____ Jackson _____
 Kikuchi _____ Lind _____ Nagata _____ Paglinawan _____
 Roche _____ Tuggle _____

Scanned by CamScanner

FEATURE DESCRIPTION FORM

DESCRIPTION OF ANY PERTINENT DATA NOT ELSEWHERE RECORDED: 1-bearings and sources used to locate feature; 2-size; 3-shape; 4-construction technique; 5-materials used; 6-terrain features; 7-condition; 8-surface artifacts; 9-midden; 10-unusual or important characteristics; 11-evaluation of its importance as a representative of its particular class; 12-probable function and 13-how certain this function is for the feature

1. on hill behind 45-162 Namoku; trail leads up to heiau.
- 2.-3. see McAllister--more internal features than he shows on sketch.
4. stacked stone, carefully done; two tiered wall noted several places.
5. stone
6. on knoll; vegetation: christmas berry, Java plum, guava;
along x-x' base, stones as though low wall or terrace marker
7. good
8. bottle glass bottom used as scraper
9. none visible
10. most massive heiau in good condition on windward side; nearly as large as puu-o-Mahuka.
11. good to excellent
12. heiau
13. certain

COMMENTS: This heiau is in excellent condition and is easily accessible to the public. It is one of the best heiau so located in all of Windward Oahu and would be a good heiau to open to the public by simply clearing the brush and constructing trails to it. It might be of interest not to reconstruct the heiau, but leave it in its present condition.

RECOMMENDATION: High value

non-ferrous marker left in "front" wall near trail.

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Appendix C GPS Data

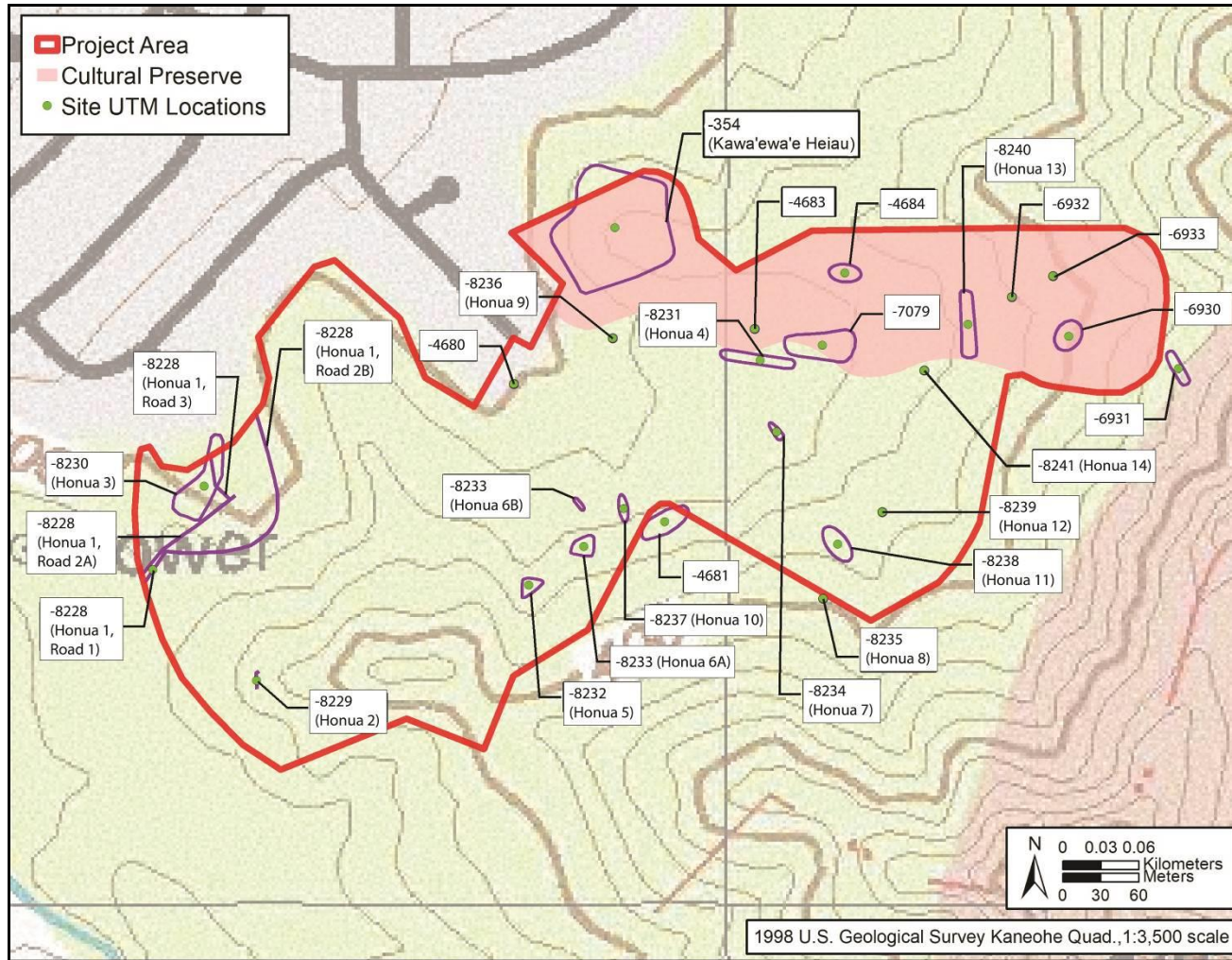


Figure 205. Portion of a 1998 Kāneʻohe USGS showing central GPS locations used for all documented site locations

Table 15. Table Listing GPS Data Obtained During the Current Investigation

Site	Type	Features	UTM	Central Site Point
-354	Kawa'ewa'e Heiau	Four Corners of Heiau: NE NW SE SW Feature 1 (entrance) Feature 4A (interior terrace, at intersection of N wall [Fea 7]) Feature 4A (interior terrace, at intersection of E wall [Fea 3]) Feature 5 (interior of wall) Feature 8D (earthen pit)	N 2366553, E 625929; N 2366528, E 625866; N 2366514, E 625945; N 2366492, E 625887; N 2366520, E 625948; N 2366534, E 625927; N 2366532, E 625938; N 2366508, E 625911; N 2366572, E 625920	UTM: N 2366514, E 625915; Lat/Long: 21°23'47.3"N, -157°47'7.0"W
-4680	Historic Water Retention Terrace	Feature A (terrace)	N 2366412, E 625835	UTM: N 2366412, E 625835; Lat/Long: 21°23'44.0"N, -157°47'9.8"W
-4681	Traditional Habitation Complex	Feature A (c-shape); Feature A Isolated Boulder; Feature B1 (hearth); Feature C1 (terrace); Feature D (terrace); Feature E (c-shape);	N 2366296, E 625951; N 2366300, E 625957; N 2366308, E 625961; N 2366313, E 625951; N 2366308, E 625950; N 2366305, E 625939;	UTM: N 2366306, E 625954; Lat/Long: 21°23'40.5"N, -157°47'5.7"W

Site	Type	Features	UTM	Central Site Point
		Feature F1 (terrace) Feature F2 (terrace) Feature G1 (terrace) Feature H (terrace, west side)	N 2366294, E 625941; N 2366292, E 625935; N 2366313, E 625968; N 2366316, E 625965	
-4683	Historic Charcoal Kiln	Center of Site	N 2366457, E 626022	UTM: N 2366457, E 626022; Lat/Long: 21°23'45.4"N, -157°47'3.3"W
-4684	Traditional Habitation Complex	Feature A (enclosure) Feature B (terrace) Feature C (terrace, SW corner) Feature C (terrace, NW end)	N 2366504, E 626105; N 2366498, E 626104; N 2366497, E 626086; N 2366506, E 626083	UTM: N 2366503, E 626091; Lat/Long: 21°23'46.9"N, -157°47'0.9"W
-6930	Traditional Stone Enclosure	North side of enclosure Center of enclosure South Wall West edge of enclosure	N 2366454, E 626277; N 2366463, E 626275; N 2366443, E 626273; N 2366452, E 626261	UTM: N 2366443, E 626273; Lat/Long: 21°23'44.9"N, -157°46'54.6"W
-6931	Traditional Stone Alignments	Feature D (stone alignment)	N 2366431, E 626351	UTM: N 2366426, E 626359; Lat/Long: 21°23'44.3"N, -157°46'51.6"W
-6932	Historic Stone Storage	Center of Site	N 2366480, E 626227	UTM: N 2366480, E 626227; Lat/Long: 21°23'46.1"N,

Site	Type	Features	UTM	Central Site Point
				-157°46'56.2"W
-6933	Historic Charcoal Kiln	Feature A (earthen pit)	N 2366499, E 626261	UTM: N 2366499, E 626261; Lat/Long: 21°23'46.7"N, -157°46'55.0"W
-7079	Traditional Agricultural Complex	Feature A (grinding stone) Feature B (terrace) Feature C (terrace) Feature D (mound) Feature E (terrace) Feature F (terrace) Feature G (terrace) Feature H (alignments) Feature I (alignments) Feature J (terrace) Feature K (terrace)	N 2366451, E 626098; N 2366440, E 626082; N 2366436, E 626087; N 2366432, E 626090; N 2366449, E 626092; N 2366456, E 626094; N 2366441, E 626081; N 2366439, E 626058; N 2366437, E 626053; N 2366425, E 626041; N 2366449, E 626048	UTM: N 2366442, E 626091; Lat/Long: 21°23'44.9"N, -157°47'0.9"W
-8228 (Honua 1)	Historic Dairy Roads	Road 1 Road 2 Intersection of Rd 1 and Rd 2 Rd 2B North End Rd 2 Split Toward Honua 3 Road 3	N 2366245, E 625537; N 2366255, E 625529; N 2366284, E 625554; N 2366395, E 625629; N 2366323, E 625606; N 2366334, E 625595;	UTM: N 2366321, E 625606; Lat/Long: 21°23'41.1"N, -157°47'17.8"W

Site	Type	Features	UTM	Central Site Point
		Rd 3 Intersects with Honua 3	N 2366347, E 625593	
-8229 (Honua 2)	Historic Road	Historic Rd, Start Pt. End Pt.	N 2366185, E 625627; N 2366177, E 625628	UTM: N 2366032, E 625588; Lat/Long: 21°23'31.7"N, -157°47'18.5"W
-8230 (Honua 3)	Historic 'Auwai	Feature A1 (capped spring) Feature A2 (terrace) Feature A4 (metal pipe) Auwai, Just N of Fea A5 Feature A5 (water hole) Feature A6 (historic road crossing 'auwai) Auwai Just S Concrete Drainage Feature B (terrace) Feature C (terrace)	N 2366318, E 625567; N 2366321, E 625568; N 2366326, E 625571; N 2366330, E 625585; N 2366330, E 625586; N 2366343, E 625592; N 2366371, E 625595; N 2366320, E 625572; N 2366313, E 625581	UTM: N 2366333, E 625588; Lat/Long: 21°23'41.5"N, -157°47'18.4"W
-8231 (Honua 4)	Traditional Terraced 'Auwai	Feature A (terrace) Feature B (terrace) Feature C (terrace) Feature D1 (mound) Feature E (mound) Feature F (mound)	N 2366438, E 625998; N 2366444, E 626045; N 2366435, E 626029; N 2366434, E 626030; N 2366429, E 626032; N 2366426, E 626046;	UTM: N 2366438, E 626037; Lat/Long: 21°23'44.8"N, -157°47'2.8"W

Site	Type	Features	UTM	Central Site Point
		Feature G (terrace)	N 2366427, E 626052	
-8232 (Honua 5)	Traditional Agricultural Terrace Remnants	Feature A1 (mound) Feature B1/B2 (terraces) Feature C2 (terrace) Feature D1 (terrace) Feature E2 (terrace)	N 2366259, E 625846; N 2366259, E 625839; N 2366258, E 625854; N 2366249, E 625843; N 2366246, E 625838	UTM: N 2366226, E 622390; Lat/Long: 21°23'38.8"N, -157°49'9.5"W
-8233 (Honua 6A)	Traditional Agricultural Terrace Remnants	Feature A (terrace) Feature B (terrace) Feature C1 (terrace) Feature C2 (terrace) Feature C3 (mound) Feature D (terrace) Feature E (terrace)	N 2366289, E 625881; N 2366285, E 625886; N 2366286, E 625883; N 2366286, E 625880; N 2366281, E 625877; N 2366287, E 625890; N 2366278, E 625893	UTM: N 2366284, E 625891; Lat/Long: 21°23'39.8"N, -157°47'7.9"W
-8233 (Honua 6B)	Modified Outcrop	Modified outcrop Large Boulder to NW	N 2366315, E 625886; N 2366322, E 625880	UTM: N 2366317, E 625885; Lat/Long: 21°23'40.9"N, -157°47'8.1"W
-8234 (Honua 7)	Traditional Agricultural Terrace	Feature A (terrace) Feature B (natural terrace) Feature C (natural terrace)	N 2366373, E 626044; N 2366375, E 626040; N 2366382, E 626035	UTM: N 2366377, E 626043; Lat/Long: 21°23'42.8"N, -157°47'2.6"W
-8235 (Honua 8)	Habitation Structure	Center of Site	N 2366242, E 626079	UTM: N 2366242, E 626079; Lat/Long: 21°23'38.4"N,

Site	Type	Features	UTM	Central Site Point
				-157°47'1.4"W
-8236 (Honua 9)	Historic Terrace	Taken between existing trail and site	N 2366450, E 625910	UTM: N 2366450, E 625910; Lat/Long: 21°23'45.2"N, -157°47'7.2"W
-8237 (Honua 10)	Traditional Agricultural Terrace Remnants	Feature B1 (terrace)	N 2366307, E 625919	UTM: N 2366305, E 625920; Lat/Long: 21°23'40.5"N, -157°47'6.9"W
-8238 (Honua 11)	Possible Habitation and Agricultural Terraces	Feature A (terrace)	N 2366282, E 626090	UTM: N 2366282, E 626090; Lat/Long: 21°23'39.7"N, -157°47'1.0"W
-8239 (Honua 12)	Earthen Pit	Center of Site	N 2366310, E 626124	UTM: N 2366310, E 626124; Lat/Long: 21°23'40.6"N, -157°46'59.8"W
-8240 (Honua 13)	Traditional Terraced 'Auwai	Feature A (terrace) Feature B (terrace) Feature C (terrace)	N 2366438, E 626189; N 2366454, E 626195; N 2366484, E 626187	UTM: N 2366458, E 626192; Lat/Long: 21°23'45.4"N, -157°46'57.4"W
-8241 (Honua 14)	Walled Pit	Center of Site	N 2366424, E 626157	UTM: N 2366424, E 626157; Lat/Long: 21°23'44.3"N, 157°46'58.63"W

Appendix D EDXRF Analysis

Table 16. Table Listing EDXRF Results for Volcanic Glass (Acc. #2) found within SIHP # -8241 (Honua 14), TU 1, Builders Trench A (sample results are highlighted in gray, the control BHVO is below for comparison)

	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	V	Cr	MnO	Fe
	%	%	%	%	%	%	%	ppm	ppm	ppm	%
50-80-10-8241 Honua 14 Acc 2 vg 0.2g small	0.475	2.448	4.179	39.816	0.542	9.565	2.103	329.469	270.997	1570.851	8.085
BHVO-2 5-18 7-3-18.1	1.928	6.338	12.549	53.959	0.549	11.924	2.77	402.357	296.158	1705.716	8.957
Average	1.202	4.393	8.364	46.887	0.546	10.744	2.436	365.913	283.577	1638.284	8.521
1-Sigma	1.027	2.751	5.918	10	0.006	1.668	0.472	51.54	17.791	95.364	0.616
% RSD	85.48	62.61	70.76	21.33	1.01	15.52	19.38	14.09	6.27	5.82	7.24
Minimum	0.475	2.448	4.179	39.816	0.542	9.565	2.103	329.469	270.997	1570.851	8.085
Maximum	1.928	6.338	12.549	53.959	0.549	11.924	2.77	402.357	296.158	1705.716	8.957

Ni	Cu	Zn	Rb	Sr	Y	Zr	Nb	Mo	Ba	La	Ce	Pb
ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
111.307	135.807	164.25	9.254	396.002	23.391	135.231	9.315	0	150.738	25.343	47.016	1.953
112.158	124.874	113.679	12.945	401.934	28.101	175.997	18.085	3.792	195.117	11.121	44.326	1.892
111.732	130.34	138.965	11.099	398.968	25.746	155.614	13.7	1.896	172.927	18.232	45.671	1.922
0.601	7.731	35.759	2.61	4.194	3.331	28.826	6.201	2.681	31.381	10.056	1.902	0.043
0.54	5.93	25.73	23.51	1.05	12.94	18.52	45.26	141.42	18.15	55.16	4.17	2.25
111.307	124.874	113.679	9.254	396.002	23.391	135.231	9.315	0	150.738	11.121	44.326	1.892
112.158	135.807	164.25	12.945	401.934	28.101	175.997	18.085	3.792	195.117	25.343	47.016	1.953

Appendix E Charcoal Identification Results


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WIDL1817

ANALYSIS OF CHARCOAL SAMPLES FROM HAWAIIAN MEMORIAL PARK, HONUA 14, SIHP #50-80-10-8241, O'AHU ISLAND

Jennifer Huebert, IARII

METHODS

The freshly fractured transverse, tangential, and radial facets of selected charcoal fragments were examined with an epi-illuminated microscope at magnifications of 50–500X. Taxonomic identifications were made by comparing observed anatomical characteristics with those of woods in the IARII reference collection. Vouchers associated with this collection have been verified and archived at the Department of Botany, University of Hawai'i at Mānoa. Other published references, including books, journal articles, technical documents, and wood atlases, were also consulted.

RESULTS

Note: * = preferred short-lived material for RC dating

WIDL No.	Taxon	Plant Part & State of Preservation	Weight (g)	Comment
Sample 1, Bag B10, TU2 Builders trench A				
1817-1	Not charcoal	wood charcoal	-	
Sample 2, Bag B18, TU1 Base of charcoal kiln				
* 1817-2	cf. <i>Psidium</i> sp. (guava)	wood charcoal	2.04	Small diameter branch 3 cm x 11 mm dia., with central core and thin bark
Sample 3, Bag B20, TU1 Base of charcoal kiln				
1817-3	<i>Psidium</i> sp. (guava)	wood charcoal	1.04	
1817-4	Indeterminate hardwood	wood charcoal	.23	Most is probably degraded guava wood

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All charcoal pieces in samples were examined. The wood of a tree introduced in the historic period, guava, was the only material identified. Sample 2 (Bag B18) is probably also guava; it has some simpler anatomical characteristics that are typical of juvenile woods, which at times can be challenging to identify with certainty. A systematic review of the identified taxon is presented at the end of this report.

The small-diameter branch from Sample 2 is the best choice for dating in this assemblage, as faint growth rings are visible and suggest there are no more than a few years of inbuilt age. For other considerations regarding the selection of material for radiocarbon dating in Pacific Island contexts, please see (Allen and Huebert 2014, Athens and Rieth 2013). Copies of both papers are available upon request.

Please note the following:

- ☒ Indeterminate material was too fragile or warped for taxonomic identification, or derives from small woody herb or fern stems which are rarely diagnostic. I have noted whether material was wood, herbaceous stems, grass stems, etc., whenever possible.
- ☒ It is best to choose one fragment for radiocarbon dating to eliminate the chance of dating more than one event (Ashmore 1999; also see Higham and Petchey 2000:Table 4).

TAXA REVIEW

MYRTACEAE (MYRTLE FAMILY)

Psidium sp. (guava, strawberry guava, *kuawa*)

These shrubs and small trees are 2-10 m tall. Native to the New World, they were introduced to Hawai'i in the 1800s and have since become serious pests, sometimes forming dense stands in areas where vegetation has been disturbed (Wagner et al. 1990:971-2). Jams, jellies, and juice are prepared commercially from the fruits, and the hard wood is a preferred barbeque fuel.

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Wagner, Warren L., Derral R. Herbst, and S. H. Sohmer

1990 *Manual of the Flowering Plants of Hawai'i*. University of Hawaii and Bishop Museum Presses, Honolulu.

Appendix F Catalogue of Collected Material

Bag #	Acc. #	TU	Feature	Level	Depth (cmbd)	Stratum	Material	# pcs.	Weight (g)	Description
SIHP #50-80-10-8230 (Honua 3, historic 'auwai)										
1	1	N/A		surface	0	I	colorless glass milk bottle	1	44	Owens-Illinois; either 1937 or 1947 (Lockhart and Hoenig 2015)
SIHP #50-80-10-8241 (Honua 14, historic guava charcoal kiln)										
A1		1		III	20-30	I-II	Land Snail	1	0.6	white in color, type unknown
A2		1		IV	30-40	I-II	Basalt Cobble	1	103.3	non-cultural
A3		1		I	0-10	I-II	Charred Kukui Nutshell	2	11.3	
A4		1		II	10-20.	I-II	Charred Kukui Nutshell	3	18.2	
A5		1		III	20-30	I-II	Charred Kukui Nutshell	8.5	50.3	
A6		1		IV	30-40	I-II	Charred Kukui Nutshell	7	64.6	
A7		1		III	20-30	I-II	Charcoal	7	3	
A8		1		IV	30-40	I-II	Charcoal	4	4	
A9		1	Pit Fea. 1	V	40-50	II	Charcoal	approx. 40	36	
A10		1	Pit Fea. 1	VI	50-60	II	Charcoal	21	433	
A11		1		VI	50-60	II	Cow Bone	88	3,240	scapula, ribs, tibia, calcaneous, foot bones
A12		1		VI	50-60	II	Cow Bone	2	105.24	axis vertebrae
B1		2		I	0-8	I	Charred Kukui Nutshell	1	3.5	broken open, no gnaw marks
B2		2		II	30	II	Charcoal	1	<0.1	medium-size peice
B3		2		II	22	II	Charcoal	2	0.9	large pieces
B4	2	2	Bld Trench A	IV	39		Volcanic Glass	1	0.2	contains cortex, no flake scars; EDXRF Sample 1
B5		2	Bld Trench A	IV	39-40		Charcoal	5	<0.1	small pieces

Bag #	Acc. #	TU	Feature	Level	Depth (cmbd)	Stratum	Material	# pcs.	Weight (g)	Description
SIHP #50-80-10-8241 (Honua 14, historic guava charcoal kiln)										
B6		2		VI	50-60	VI	Bulk Sample of Exposed West Face of Fea C	7	<0.1	Bag 1 of 2
B7		2		VI	56	VI	Charcoal and Bulk Sediment Sample of Exposed West Face of Fea C	flecking	<0.1	Bag 2 of 2
B8		2	Bld Trench A	VII	65-67		Charcoal	10	4.2	
B9		2	Bld Trench A	VIII	74-76		Bulk Sediment Sample	12	23.8	
B10		2	Bld Trench A	VIII	78		Charcoal	1	0.3	medium sized piece, Charcoal ID Sample 1 (unidentified)
B11		2		VIII	76-78	Bld Trnch A/ Str. VI	Charcoal from screen	1	<0.1	context not secure
B12		2		IX	80-90	Bld Trnch A/ Str. VI	Charcoal from screen	2	1.2	context not secure
B13		2		IX	80-90	IV	Charcoal/Soot from screen, Black Lens	0	0	
B14		2		IX	78-88	IV	Bulk Sample of Black Lens	9	2.3	
B15		2		X	90-100	VII	Charcoal from screen	4	2.3	West Face of TU 2
B16		2		XI	100-110	V	Charcoal from screen	35	9.7	
B17		2		XII	110-120	V	Bulk Sample of Black Lens	5	<0.1	water floated, fleckings only
B18		1	Fea. D	XIII	TU 1: 80/ TU 2: 160	V	Charcoal	1	2	large piece; Charcoal ID Sample 2 (guava)
B19		1	Fea. D		TU 1: 79/ TU 2: 159	V	Bulk Sample of Black Lens	27	9.9	charcoal & charred soil
B20		1	Fea. D	XIII	TU 1: 79-81/ TU 2: 159-161	V	Charcoal from screen	10+	1.2	multiple medium sized pieces, Charcoal ID Sample 3 (guava)