APPENDIX J

Archaeological Inventory Survey for
Hawaiian Memorial Park,
Kāneʻohe Ahupuaʻa, Koʻolaupoko District,
Island of Oʻahu – March 2019

Prepared by: Honua Consulting

Draft
Archaeological Inventory Survey for Hawaiian Memorial Park, Kāneʻohe Ahupuaʻa, Koʻolaupoko District, Island of Oʻahu, TMK: [1] 4-5-033:001

Prepared for

Hawaiian Memorial Life Plan, Ltd.

Prepared by

Rosanna Thurman, M.A.,

Catharine Thetford, B.A.,

Arleen Garcia-Herbst, C. Phil, RPA,

Trisha Kehaulani Watson, J.D., Ph.D.

Honua Consulting

Honolulu, Hawaiʻi

March 2019

Management Summary

This Archaeological Inventory Survey (AIS) was prepared for Hawaiian Memorial Life Plan, Ltd. and focuses on the Hawaiian Memorial Park project located in Kāneʻohe Ahupuaʻa, Koʻolaupoko District, Island of Oʻahu, Tax Map Key (TMK): [1] 4-5-033:001. The property is privately owned by Hawaiian Memorial Life Plan, Ltd. The purpose of the project is to expand the existing Hawaiian Memorial Park Cemetery. The project area is approximately 53.45 acres (2,328,282 square feet [sq. ft.] or 216,304 square meters [sq. m.]). The area of potential effect (APE) is the same as the project area.

The proposed project includes specific construction activities within two distinct portions of the project area, a 14.5-acre (631,620 sq. ft. or 58,679 sq. m.) proposed Cultural Preserve (CP) in the northeast portion of the project area and the remaining 38.95-acre (1,696,662 sq. ft. or 157,625 sq. m) portion of the project area. Proposed project improvements within the CP include clearing of vegetation, creation of walking trails, and potential installation of interpretive signage. Proposed project construction outside the CP includes mass earth moving to level the existing hillside, creation of an access driveway, installation of a drainage system, and landscaping. There is also discussion of adding a Hawaiian burial interment area.

Currently, proposed project ground disturbance can only be approximated. Ground disturbance within the proposed CP would be relatively minimal, extending to approximatley 3 feet (0.9 m.) for removal of exisitng trees and vegetation, approximately 2 feet (0.6 m.) for pounding-in of posts for installation of signage, and shallow grading for creation of walking trails. Ground disturbance within portions of the project area outside of the CP will inlcude mass earth moving ranging from approximately 20 to 100 feet (6.1- 30.5 m) in depth at higher elevations of the hillside in order to level the area. The excavated soil will be redistributed within the project area, to the extent deemed necessary for the project. Drainage installation will utilize low areas of the project area and will likely be positioned within secondarily placed on-site soils.

This archaeological inventory survey (AIS) was written to support the proposed project's historic preservation review under Hawai'i Revised Statutes (HRS) Chapter 6E-42 and Hawai'i Administrative Rules (HAR) Chapter 13-284 (Rules Governing Procedures for Historic Preservation Review for 6E-42 Projects). This report was prepared in accordance with HAR 13-276 (Rules Governing Standards for Archaeological Inventory Surveys and Reports) and is intended for review and acceptance by the SHPD.

The project area has undergone several previous archaeological studies. McAllister (1933) documented Kawaʻewaʻe Heiau (SIHP #50-80-10-354, National Register [NR] Reference #72000427), located within the proposed CP. In 1989, an archaeological reconassaince survey documented two additional sites within the proposed CP, including a historic earthen charcoal kiln (SIHP # -4683) and a traditional Hawaiian habitation complex (-4684); as well as two sites outside the CP within the current project area, including a historic water diversion terrace (-4680) and a traditional habitation complex (-4681) (Szabian et al. 1989). An archaeological inventory survey (AIS) was conducted in 2006 for expansion of Hawaiian Memorial Park which documented one additional feature of Kawaʻewaʻe Heiau (SIHP # -354, Feature A [small enclosure]), re-visited and documented all previously recorded sites in detail, and documented five newly identified sites within the proposed CP (McCurdy and Hammatt 2009). Newly documented sites recorded by McCurdy and Hammatt (2009) included a traditional ceremonial stone enclosure (-6930), traditional stone alignments (-6931), a historic stone storage feature (-

6932), a historic earthen charcoal kiln (-6933), and a traditional grinding stone (-7079) (McCurdy and Hammatt 2009). The AIS recommended creation of the CP and archaeological monitoring during project construction. Large communities of laua‘e or maile-scented fern (*Phymatosorus grossus*) were also recommended for preservation.

During the current AIS investigation, all previously recorded sites within the project area were re-visited, including eight (8) sites within the CP (SIHP #50-80-10-354, 50-80-10-4683, 50-80-10-4684, 50-80-10-6930, 50-80-10-6931, 50-80-10-6932, 50-80-10-6933 and 50-80-10-7079) and two (2) sites outside the CP (SIHP #50-80-10-4680 and 50-80-10-4681), and an additional 14 sites were newly documented (SIHP #50-80-10-8228 to -8241 [Honua 1-14]). Within the CP, the current AIS recorded additional features of Kawa‘ewa‘e Heiau (SIHP # -354), expanded SIHP # -7079 to include several terrace remnants and a stone mound; and recorded SIHP # -8240, a terraced ‘auwai (drainage) where large ‘ekaha plants (*Asplenium nidus*) are growing. Two newly documented sites were recored on the southern border of the proposed CP, including a terraced ‘auwai (SIHP # -8231) and a historic charcoal kiln (SIHP # -8241). In coordination with the landowner, SIHP # -8231 and -8241 will be incorporated within the proposed CP. Newly recorded sites outside the CP include historic dairy roads (SIHP # -8228), a historic road segment (SIHP # -8229), a historic ‘auwai (SIHP # -8230), an ‘auwai with associated terraces (SIHP # -8232), agricultural terrace remnants (SIHP # -8233, -8234, and -8237, a historic water retention terrace (SIHP # -8236), possible habitation sites (SIHP # -8235 and -8238), and an earthen pit (SIHP # -8239).

Excavation was conducted at one site during this AIS investigation, SIHP # -8241, historic charcoal kiln). SIHP # -8241 was initially characterized as a walled pit feature (Features A-C), constructed of earth and dry-stacked basalt stones. Two test units (TU 1 and 2) and an exploratory excavation were dug to assess the type of feature, function, and associated time period. Excavations revealed the interior stone wall (SIHP # -8241, Feature C) observable on the ground surface, extended approximately 70 cm (2.3 ft.) deeper and was well-constructed of small to large-sized basalt cobbles and boulders. Concentrations of dense soot on the lower portions of the Feature C stone wall, the base of the site (Feature D), and adjacent to intentional voids or openings within the stone wall construction (Features E and F) provided indicators of how the site once functioned. SIHP # -8241 was identified as a historic guava (*Psidium* sp.) charcoal kiln in good condition, with constructed air vents and a chimney or flue to release smoke. Production of guava charcoal was a common activity in Windward O‘ahu in the latter half of the 19th century and then again in the 20th century. The lack of mortar or a concrete dome suggests SIHP # -8241 may have been built during the early period of guava charcoal production, 1825-1906.

Mitigation recommendations 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 at several documented sites to aid in interpretatoin of site funtion, time period, and use activities and would focus on sites which 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. Lastly, the proposed construction project should proceed under an archaeological monitoring program.

Table of Contents

List of Figures

List of Tables

Section 1 Introduction

This Archaeological Inventory Survey (AIS) was prepared for the Hawaiian Memorial Life Plan, Ltd. and focuses on the Hawaiian Memorial Park project located in Kāneʻohe Ahupuaʻa, Koʻolaupoko District, Island of Oʻahu, Tax Map Key (TMK): [1] 4-5-033:001. The property is privately owned by Hawaiian Memorial Life Plan, Ltd. The purpose of the project is to expand the existing Hawaiian Memorial Park Cemetery. The project area is approximately 53.45 acres (2,328,282 square feet [sq. ft.] or 216,304 square meters [sq. m.]). The area of potential effect (APE) is the same as the project area. The project area is shown in a 1998 USGS (Figure 1), 2011 aerial photograph (Figure 2), and Tax Map Key (TMK) (Figure 3).

The proposed project includes specific construction activities within two distinct portions of the project area, a 14.5-acre (631,620 sq. ft. or 58,679 sq. m.) proposed Cultural Preserve (CP) in the northeast portion of the project area and the remaining 38.95-acre (1,696,662 sq. ft. or 157,625 sq. m) portion of the project area. Proposed project improvements within the CP include clearing of vegetation, creation of walking trails, and potential installation of interpretive signage. Proposed project construction outside of the CP include mass earth moving to level the existing hillside, creation of an access driveway, installation of a drainage system, and landscaping. There is also discussion of adding a Hawaiian burial interment area. The conceptual plan for the project has been revised based on this projects findings, conceptual plans for 2017 and 2018 are shown in Figure 4 and Figure 5. Grading plans are provided in Figure 6 to Figure 8.

Currently, proposed project ground disturbance can only be approximated. Ground disturbance within the proposed CP would be relatively minimal, extending to approximatley 3 feet (0.9 m.) for removal of exisitng trees and vegetation, approximately 2 feet (0.6 m.) for pounding-in of posts for installation of signage, and shallow grading for creation of walking trails. Ground disturbance outside of the CP will inlcude mass earth moving ranging from approximately 20 to 100 feet (6.1- 30.5 m) in depth at higher elevations of the hillside in order to level the area. The excavated soil will be redistributed within the project area, to the extent deemed necessary for the project. Drainage installation will utilize low areas of the project area and will likely be positioned within secondarily placed on-site soils.

This archaeological inventory survey (AIS) was written to support the proposed project's historic preservation review under Hawai'i Revised Statutes (HRS) Chapter 6E-42 and Hawai'i Administrative Rules (HAR) Chapter 13-284 (Rules Governing Procedures for Historic Preservation Review for 6E-42 Projects). This report was prepared in accordance with HAR 13-276 (Rules Governing Standards for Archaeological Inventory Surveys and Reports) and is intended for review and acceptance by the SHPD.

The project area has undergone several previous archaeological studies (McAllister 1933, Szabian et al. 1989, McCurdy and Hammatt 2009). All sites documented within the project area are listed under State Inventory of Historic Places (SIHP) #50-80-10. Documented sites within the CP include Kawaʻewaʻe Heiau (SIHP #50-80-10-354, National Register [NR] Reference #72000427), historic earthen charcoal kilns (-4683 and -6933), a traditional Hawaiian habitation complex (-4684), a traditional ceremonial stone enclosure (-6930), traditional stone alignments (-6931), a historic stone storage feature (-6932), and a traditional grinding stone (-7079). Large communities of lauaʻe or maile-scented fern (*Phymatosorus grossus*) were also recommended

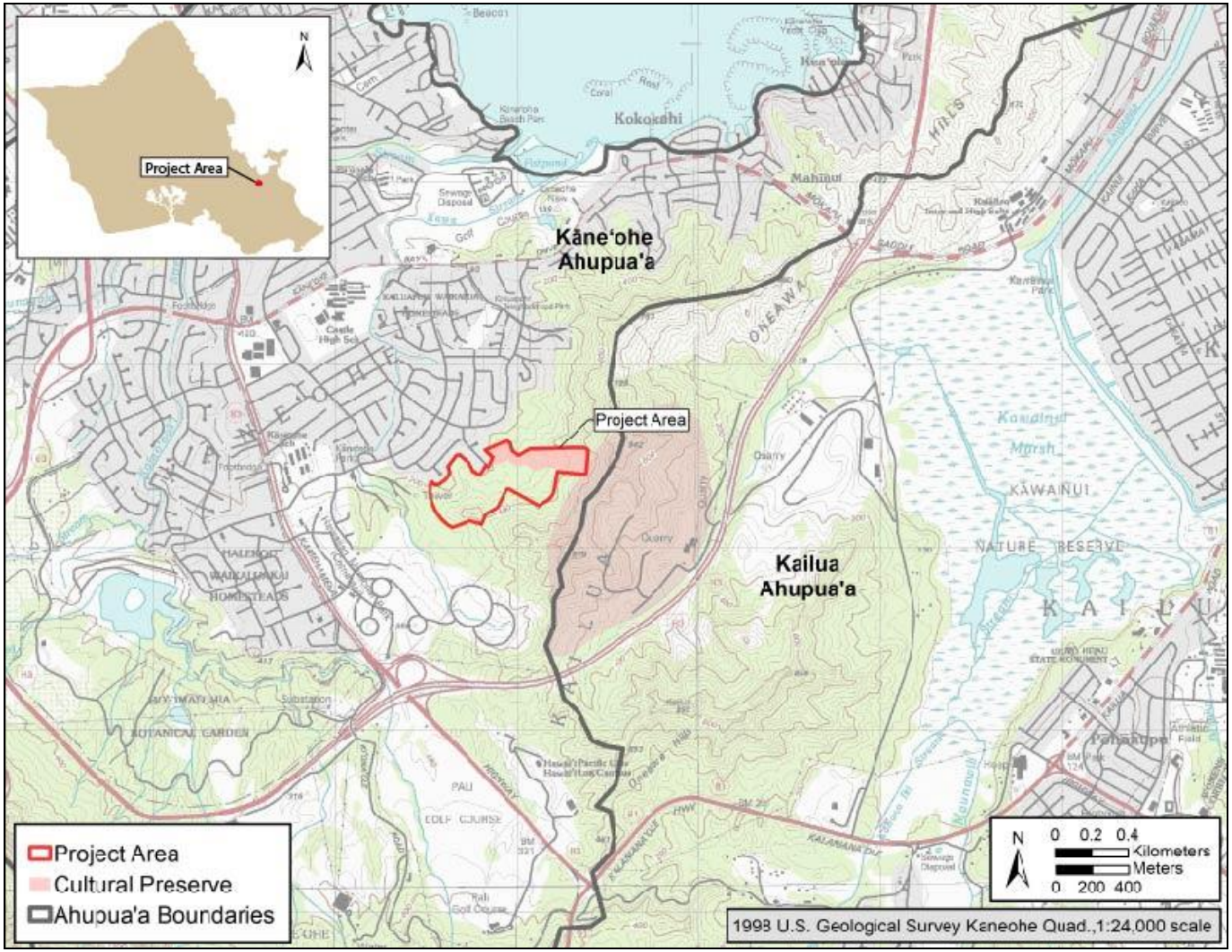

Figure 1. Portion of a 1998 Kāneʻohe U.S. Geological Survey (USGS) topographic quadrangle map showing the location of the project area (notice the Cultural Preserve [CP] in the northern portion of the project area and Kawaʻewaʻe Heiau)

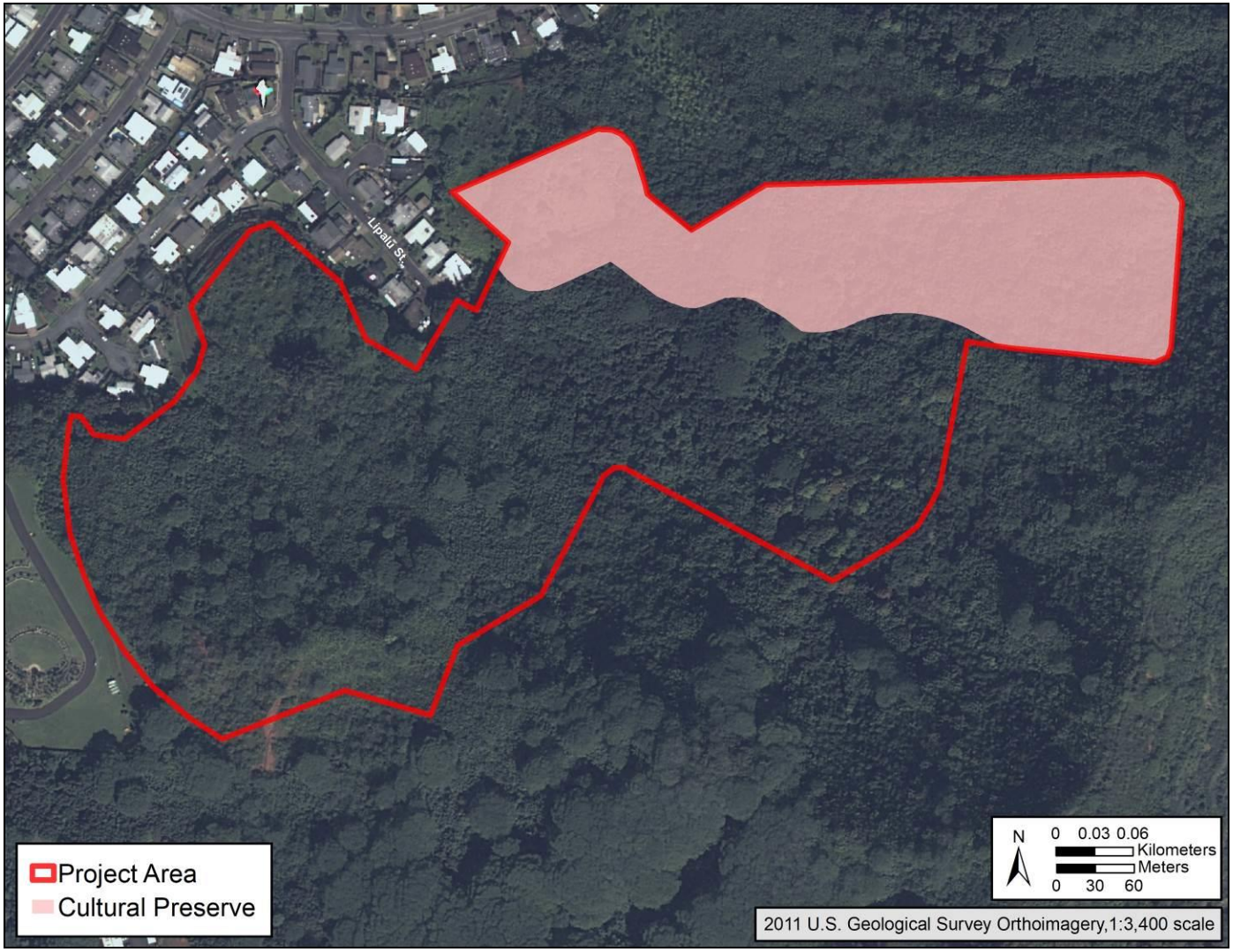

Figure 2. 2011 aerial photograph showing the project area (outlined in red), the proposed CP (shaded in pink), and the location of Kawa‘ewa‘e Heiau (shaded in pink with hatched outline) (USGS Orthophoto 2011)

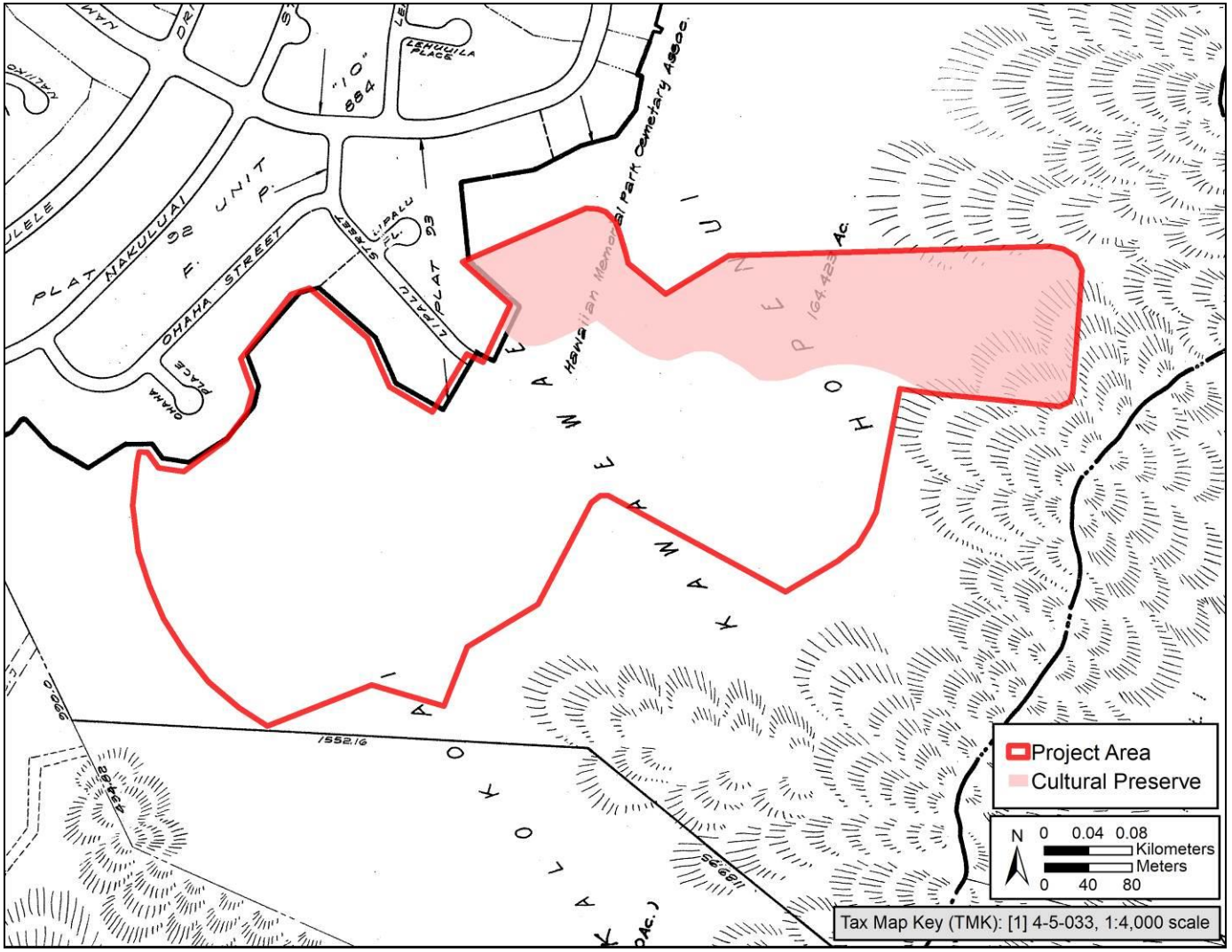

Figure 3. Tax Map Key (TMK): [1] 4-5-033 showing the project area (outlined in red), the proposed CP (shaded in pink), and the location of Kawa‘ewa‘e Heiau (shaded in pink with hatched outline) (Hawai‘i TMK Service)

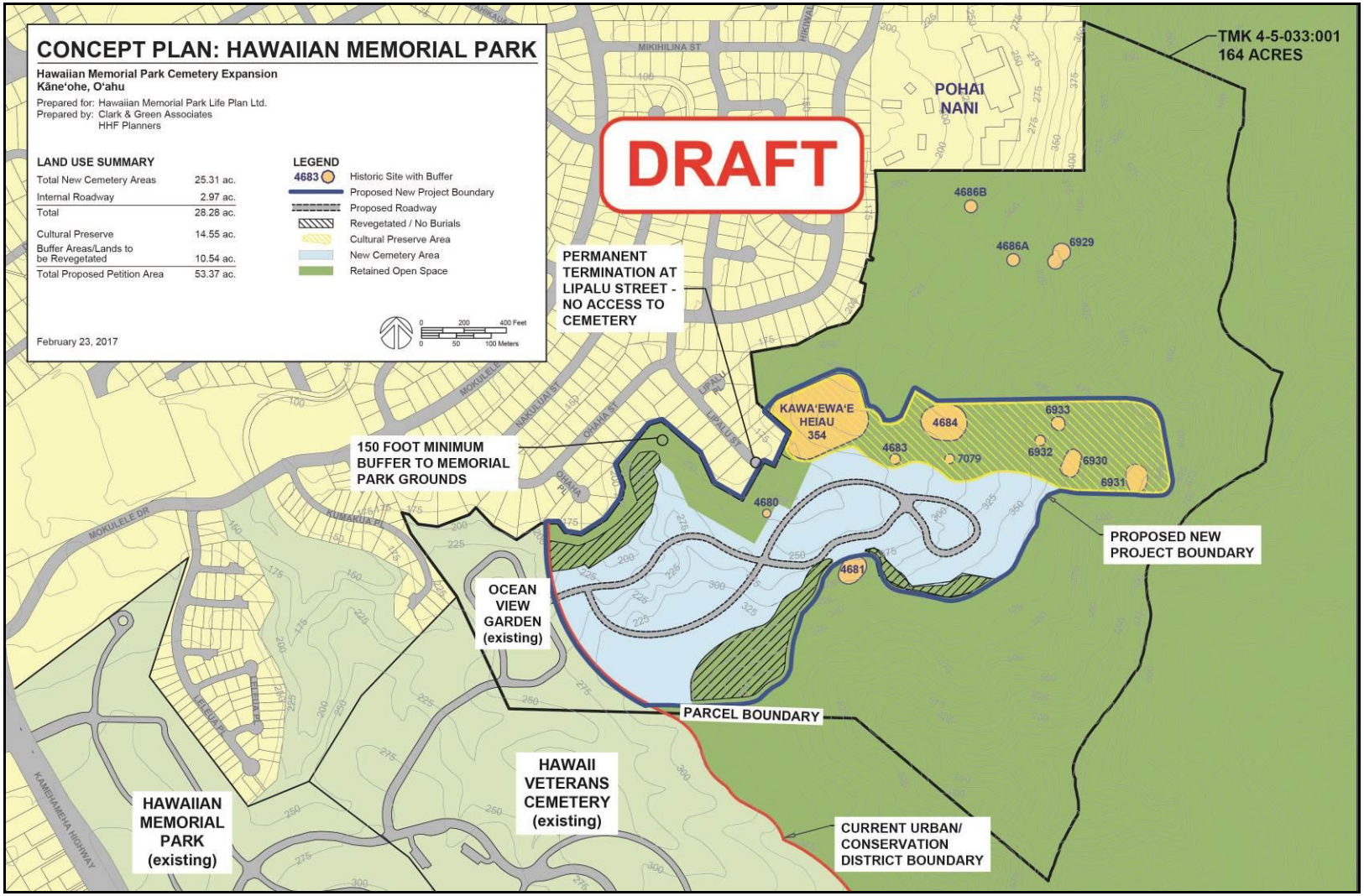

Figure 4. 2017 Conceptual Plan Showing the Project Area, proposed Cultural Preserve, Previously Documented Historic Properties, and Proposed Project Infrastructure (Clark & Green Associates, HHF Planners 2017)

Figure 5. 2018 Conceptual Plan Showing the Project Area (Petition Area), proposed Cultural Preserve, and Proposed Project Infrastructure (HHF Planners 2018)

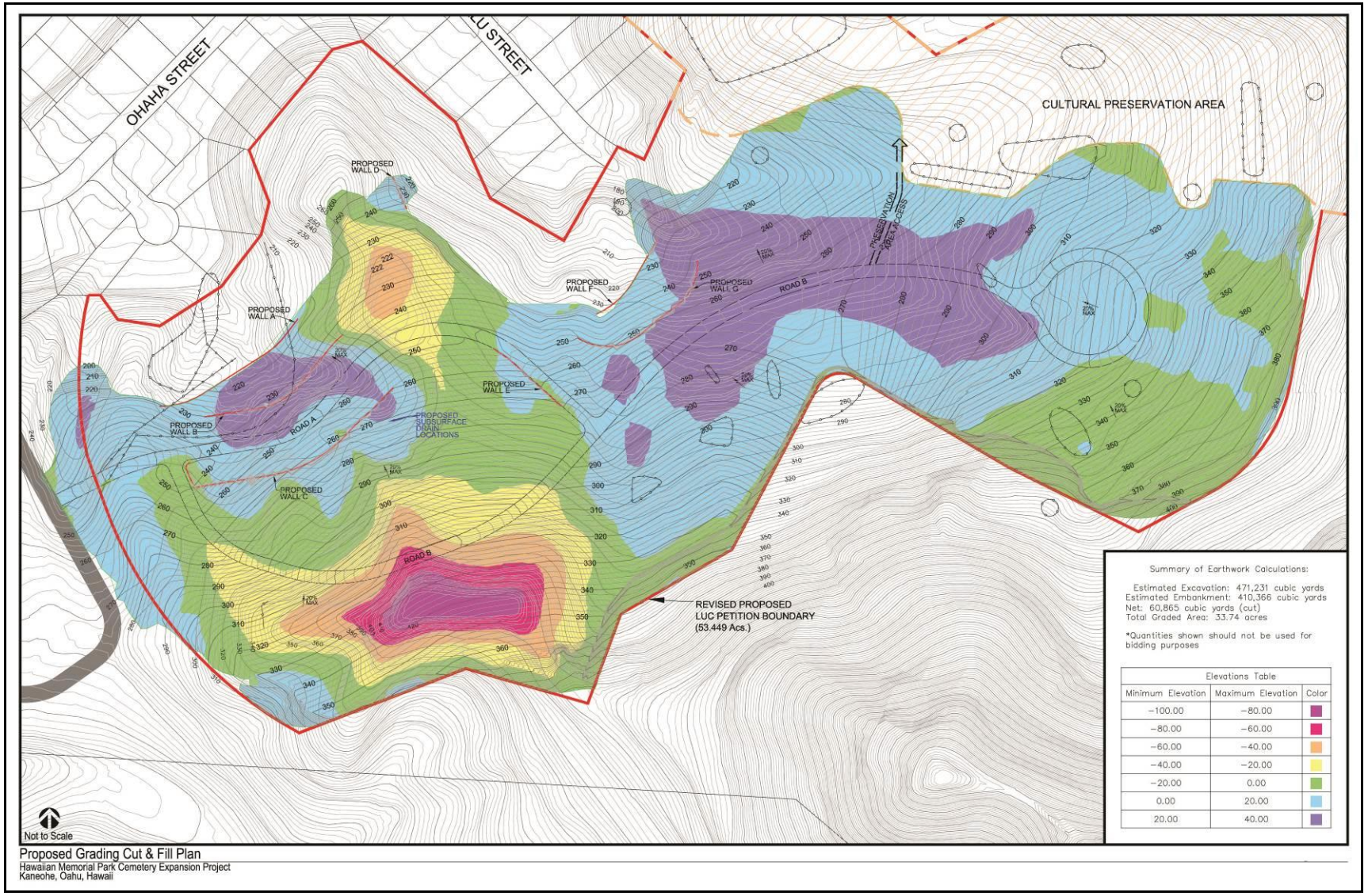

Figure 6. 2018 Proposed Grading Plan with color-coded elevations of earthwork (HHF Planners 2018)

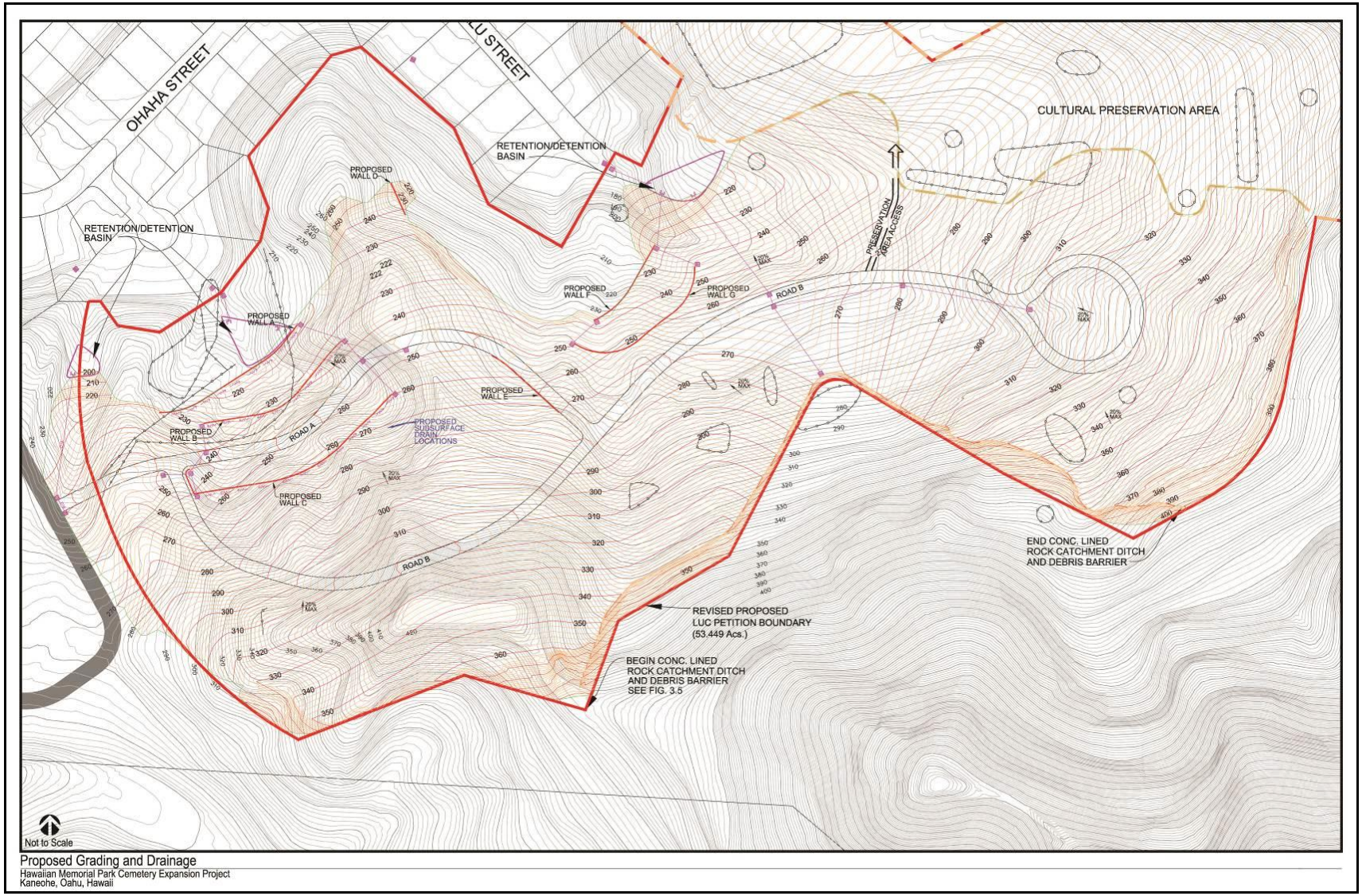

Figure 7. 2018 Proposed Grading Plan (HHF Planners 2018)

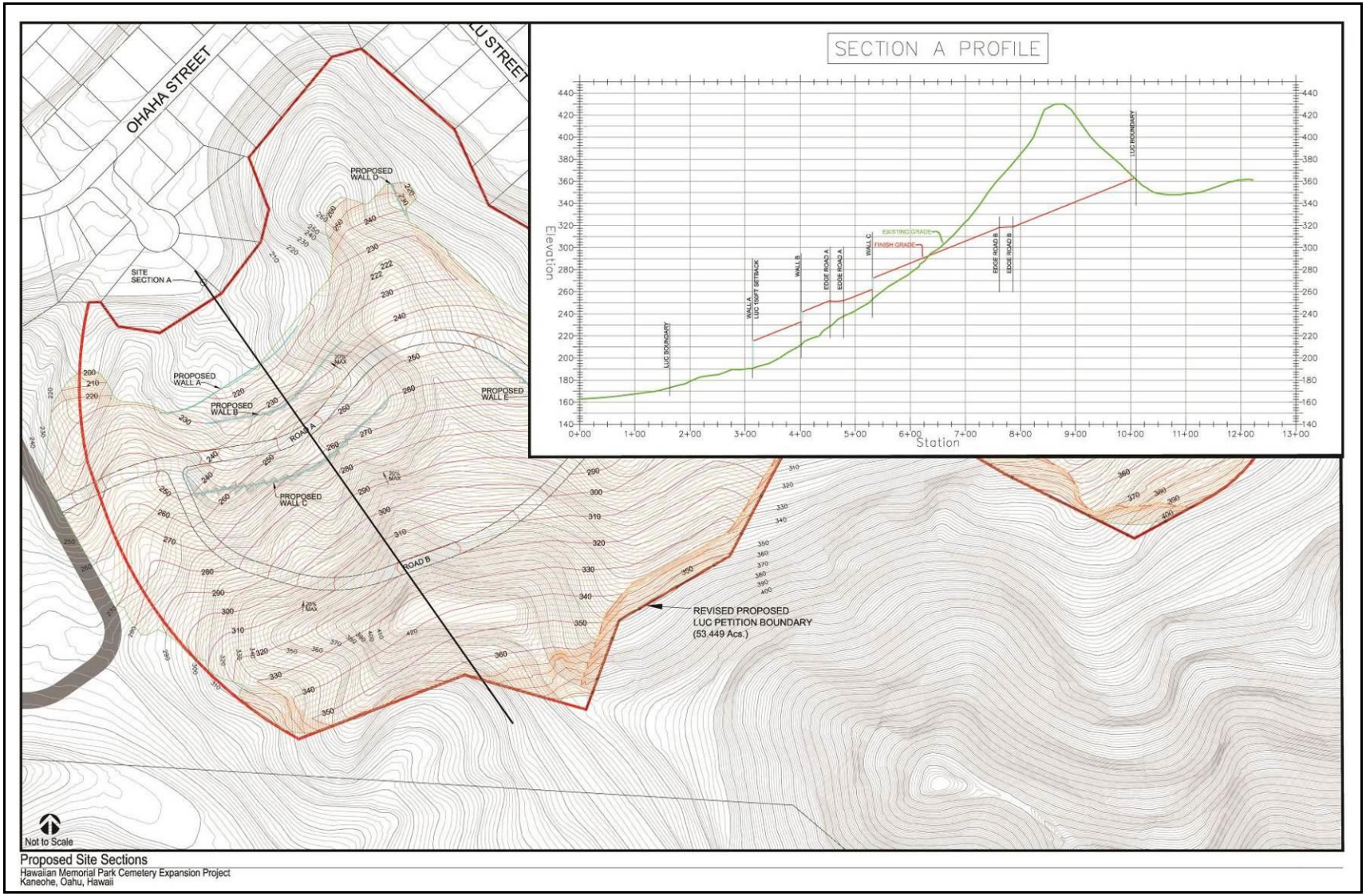

Figure 8. 2018 Proposed Grading Plan with cross-section inset (HHF Planners 2018)

for preservation. Previously documented sites outside of the CP include a historic water diversion terrace (-4680) and a traditional habitation complex (-4681).

Archaeological fieldwork for this project included a 100% surface pedestrian survey, GPS, site documentation and photography of all encountered historic properties, and excavation at one site (SIHP # -8241 [Honua 14]). Fieldwork was performed under the archaeological permit numbers 17-16 (2017) and 18-33 (2018) issued to Honua Consulting by the State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR) in accordance with Hawai‘i Administrative Rules (HAR) Chapter 13-282. This report was written to fulfill requirement of HAR 13-276 for Archaeological Inventory Surveys and is intended for review and approval by the SHPD.

1.1 Scope of Work

The following archaeological inventory scope of work was designed to satisfy the Hawai’i state requirements for archaeological inventory surveys (HAR chapter 13-276):

1.) Historic background information, including present findings on land use and site patterns, prehistoric and early historic times found in literature, mid-nineteenth century times as revealed by land commission awards, and post-1850s times, as found in later literature or through oral history. Summarize documents and materials reviewed during the research. Describe any land commission awards granted within the project and depict them on a map when possible.

2.) Archaeological background information shall include any relevant prior archaeological studies in the project area or other appropriate area as determined in consultation with SHPD. Previous archaeological summaries shall include the extent of the prior survey coverage indicated on a map, a synthesis and analysis of information on the project area and its related lands’ chronology, function and land use patterns, reconciling, as needed, the historical and archaeological information, and predictions as to types of sites expected to be encountered during field survey.

3.) The report shall contain a section on methods used in the archaeological field survey to include the names and qualifications of the principal investigator, the number of field personnel, dates when the survey was performed, and the duration of time for the survey as well as the extent of survey coverage. If the survey coverage was less than one hundred percent, the rationale for the sample must be presented in a careful discussion. Sampling designs which include analysis of possible subsurface sites under sand dunes, urban fill, and other areas must also be presented and include discussion of any factors which limited the survey effort, techniques used to identify archaeological properties

(transects, sweeps, test excavations, augering, etc.), the extent of historic property recording (mapping, measuring, photographing, text excavations) and the techniques used to plot site location and determine site boundaries.

4.) The report shall contain a section on its archaeological field survey and laboratory findings. Each archaeological property found should be individually described with a state inventory number, reference to previous studies if previously recorded, the formal site type, size, horizontal extent, shape, materials, methods of construction, area of the major feature or features with representative architectural heights and widths, description of remains, and description of subsurface deposits. Include stratigraphic information with standard U.S.D.A. soil descriptions and Munsell colors, stratigraphic profile drawings to scale, drafted plan maps to scale with north arrow and scale bar (indicate mapping method), and representative photographs and illustrations. Include a description of the site integrity, an assessment of site function or functions with reasonable and adequate supportive arguments, an assessment of site age with absolute dating results when available; and an evaluation of site significance. The report should also discuss previous land disturbances (e.g. bulldozing, sugarcane cultivation, etc.).

5.) The report shall include a summary of findings, to include, the total number of archaeological sites found, a map or maps locating all the archaeological properties found and boundaries when possible, with at least one site location map being a portion of the relevant USGS standard 1:24,000 topographic map. Include a table presenting the sites with their state number, formal type, and possible function with each type of site summarized. Re-evaluate ideas on the history of land use in the ahupua'a and the parcel.

6.) The report shall contain information on the consultation process with individuals knowledgeable about the project area's history, if discussions with the SHPD, background research or public input indicate a need to consult with knowledgeable individuals. Information shall include: personnel conducting the consultation process, with names and qualifications; methods of identifying and contacting knowledgeable persons; names of knowledgeable persons, consulted, or, if the person wishes to remain anonymous, a characterization of the person; and a summary as to whether additional archaeological historic properties were identified during the consultation process, and whether additional information on archaeological site function

was obtained during the consultation process to be presented in the site description portion of the report.

1.2 Environmental Setting

1.2.1 Natural Environment

The project area is located on the northeast (windward) side of Oʻahu, within the traditional district (*moku*) of Koʻolaupoko and the traditional land division (*ahupuaʻa*) of Kāneʻohe. Kāneʻohe Ahupuaʻa is bordered by Heʻeia Ahupuaʻa to the north and Kailua Ahupuaʻa to the south. Kāneʻohe Ahupuaʻa extends from the crest of the Koʻolau Mountain Range, over 2,600 feet (792 meters) in elevation, to the coast of Kāneʻohe Bay.

The climate of Kāneʻohe is moderate. Temperatures range from 69° Fahrenheit in January to 85° in September and rainfall averages 1,314 mm annually (U.S. Climate Data 2018, Giambulluca et al. 2013). Kāneʻohe is largely utilized for golf courses, urban land, commercial business, and residential areas. Vegetation in the upper slopes and valleys of Kāneʻohe includes Molucca albizia (*Paraserianthus falcataria*), mango (*Mangifera indica*), silky oak (*Grevillea robusta*), African tulip (*Spathodea campanulata*), octopus trees (*Schefflera actinophylla*), and guava (*Psidium guajava*). Native and Polynesian-introduced species can also be found including *kukui* (*Aleurites moluccana*), *niu* (coconut, *Cocos nucifera*), pandanus (*Pandanus tectorius*), `ohi`a (*Metrosideros polymorpha*), koa (*Acacia koa*), uluhe fern (*Dicranopteris linearis*), laua'e or maile-scented fern (*Phymatosorus grossus*), *ti* (*Cordyline fruticosa*), noni (*Morinda citrifolia*), and various other ferns, palms, and shrubs.

Geology of the area includes a large volcanic caldera that stretches for miles throughout the lowlands of Kailua and Kāneʻohe. The steep inland mountains are remnants of the Koʻolau Volcano that stood some 2.7 million years ago (Hazlett and Hyndman 1996). Mōkapu Peninsula, at the northern edge of Koʻolau caldera, is the result of eruptions produced approximately 850,000 years ago. Streams bring alluvium from higher elevations and deposit rich nutrients onto the wide coastal lowland. Kāneʻohe includes multiple perennial and intermittent streams. The closest stream to the project area is Kawa Stream, approximately 400 m (1,312 ft.) to the west. Traditionally, the streams fed extensive fields planted in taro, pandanus, wauke, bananas, and sweet potatoes. Fishponds were built along the shore. Historically, the land was cultivated in rice, pineapple, and sugarcane.

Soils within the project area include four typologies, consisting of Alaeloa Silty Clay and Kaneohe Silty Clay (Foote et al. 1972) (Figure 9). The east half of the project area largely contains Alaeloa Silty Clay with an 15-35% slope (AeE). Alaeloa Silty Clay with an 40-70% slope (ALF) is found within the far east and southwest portions of the project area. Kaneohe Silty Clay with an 8-15% slope (KgC) is found within the northern central tip and central portion of project area and with a 30-65% slope (KHOF) in the west and central portions of the project area.

The Alaeloa Series consists of well-drained soils that are developed from weathered igneous rock and are found on gently sloping to very steep hillsides. Natural vegetation on these soils include guava, Java plum (*Syzygium cumini*), Christmas berry (*Schinus terebinthifolius*),

Japanese tea (*Chamaecrista nictitans*), and hilo grass (*Ischaemum byrone*). Alaeloa Silty Clay with an 15-35% slope (AeE) occurs on smooth slopes and toes of hillsides where permeability is moderately rapid, runoff is medium, the erosion hazard is moderate, and the workability is difficult due to the slope (Foote et al. 1972:26). This soil can be used for pineapple, pasture, and homesites. Alaeloa Silty Clay with an 40-70% slope (ALF) has rapid to very rapid runoff, the erosion hazard is severe, and the soil is best suited for pasture and wildlife habitat (Foote et al. 1972:26-27).

The Kaneohe Series consists of well-drained soils on terraces and alluvial fans of windward O‘ahu. Natural vegetation on these soils include guava, Boston fern (*Nephrolepis exaltata*), sensitive plant (*Mimosa pudica*), glenwood grass (*Sacciolepis indica*), and hilo grass (Foote et al. 1972:59). Kaneohe Silty Clay with an 8-15% slope (KgC) has medium runoff, moderate soil erosion, and is used for pasture (Foote et al. 1972:60). Kaneohe Silty Clay with an 30-65% slope (KHOF) typically includes volcanic ash and cinder 20 inches (51 cm) below the ground surface. For this soil type runoff is medium to rapid, erosion hazard is moderate to severe, and it is most usable for pasture (Foote et al. 1972:60).

1.2.2 Built Environment

The project area is completely undeveloped. It is situated mauka (inland) of a large residential area and extends off the east side of Hawaiian Memorial Park Cemetery. Concrete drainage basins border the downslope, northwest and north-central portions of the project area, where several earthen drainage ditches from the property empty.

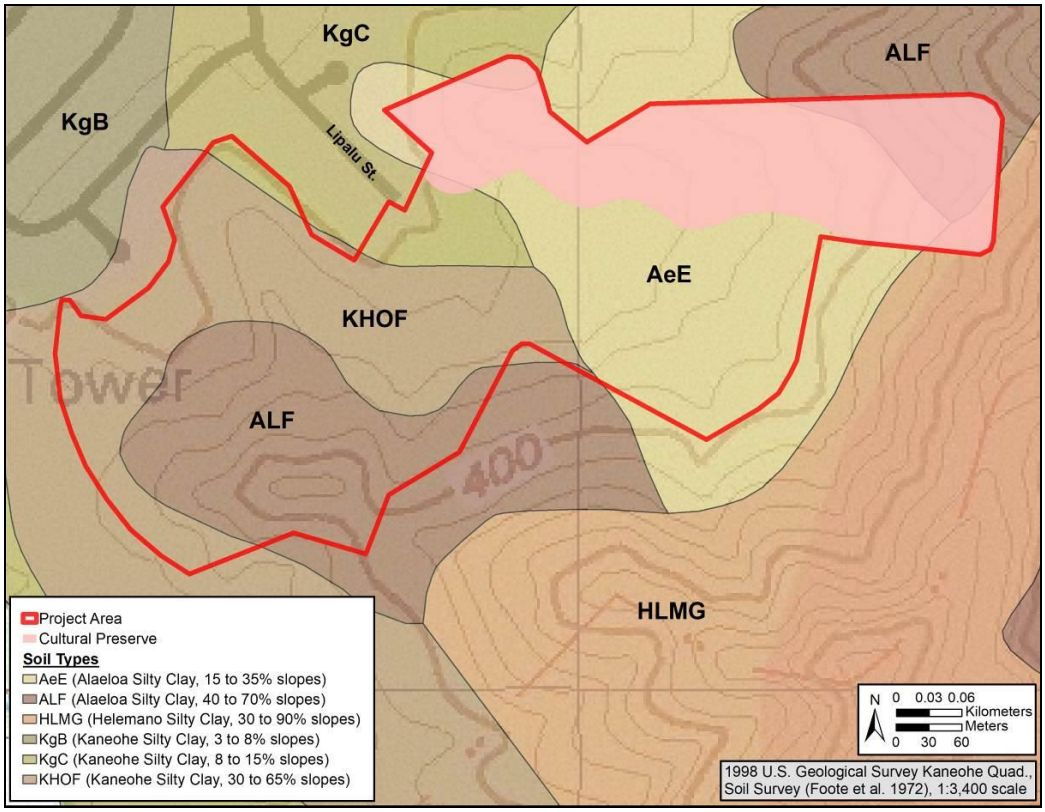

Figure 9. Portion of a 1998 Kāne‘ohe USGS with overlay of Soil Survey Data (Foote et al. 1972)

Section 2 Methods

Fieldwork for this project was conducted intermittently between September 21, 2017 and June 22, 2018. Fieldwork was completed by Arleen Garcia-Herbst, C. Phil, Catharine Thetford, B.A., Mark Paikuli-Stride, B.A., Matt Sproat, B.A., Kūpono Sproat, A.A., Deidra Moore, B.A., Kulani Boyne, B.S., Fredrick LaChance, B.A., Christopher Monahan, Ph.D., Douglas W. Thurman, B.A., and Rosanna Thurman, M.A. Fieldwork was carried out under permits 17-16 (2017) and 18-33 (2018) (in accordance with HRS 13-13-281).

There was no archaeological inventory survey plan for this project. In coordination with the SHPD, the AIS investigation was designed to include 100% surface survey, documentation of encountered historic properties, and excavation of select sites if deemed appropriate.

2.1 Pedestrian Survey

A 100% pedestrian surface survey of the 53.45-acre project area was conducted intermittently between September 21, 2017 and February 21, 2018. The project area was surveyed by 4-6 archaeologists walking transects throughout the parcel. Spacing between each archaeologist ranged between approximately 4-6 m (13-20 ft.) depending on ground visibility. A hand-held Garmin GPSmap 62 device was used to record survey tracks and plot potential archaeological sites and features. The handheld GPS device retained an average of approximately 30 feet (9 m) in accuracy due to the thick vegetation and overhead canopy. Appendix C, Figure 205 and Table 15 provide details on where GPS points were taken for each site. Survey field documentation included a GPS log with point descriptions, photo logs, and daily field notes. Following the pedestrian survey, all potential archaeological sites were re-visited, assessed, and documented if deemed to be culturally-significant or show evidence of cultural modification. Site documentation included site and feature forms, photo logs, GPS logs, and plan maps. Plan maps were made using tape and compass as well as use of a laser distance measurer. Photographs included a north arrow and photo scale. Multiple photo scales were often used to help denote specific features of a site.

Two previous archaeological surveys had been conducted within the project area which documented several sites (Szabian et al. 1989, McCurdy & Hammatt 2009). Therefore, these previously documented sites were re-visited, re-assessed, re-documented, and re-mapped as deemed appropriate. In general, previous site plan maps were updated or modified to include current conditions and additional details, photographs were taken, and site descriptions were amended. During this project, some sites were found to be significantly different than previously documented and/or contain significantly more features than previously recorded and were therefore re-mapped in full with each newly documented feature photographed and described in detail. GPS point data is presented with each site description in UTM and Latitude/Longitude format. In addition, a USGS is provided in Appendix C showing the locations of center GPS data points for each site.

2.2 Excavation

Excavation at one site, SIHP # -8241 (Honua 14, historic charcoal kiln) was conducted between June 6 and June 22, 2018. Two test units (TU 1 and TU 2) and an exploratory excavation were dug to assess the site type, function, and associated time period. Excavation of TU 1 was supervised by Dr. Christopher Monahan and excavation of TU 2 and the exploratory excavation was supervised by Rosanna Thurman, M.A.

Prior to excavation of SIHP # -8241, the site was cleared of vegetation, mapped in detail using tape and compass, and photographed using a photo scale and north arrow. Test units were situated to intentionally encounter artifactural materials within the site interior, to assess the stone-stacked walls, and to gather stratigraphic data to indicate when and how the site was created. Datums and level lines were established for TU 1 and TU2 for obtaining consistent elevational data. To establish each datum, a nail was set at the highest surface point of each test unit and a string with line level was tied around the nail at the ground surface (0 cm above surface). The difference between the TU 1 and TU 2 datums was 80 cm in height.

Test unit excavations proceeded by removing arbitrary 10 cm levels by hand with trowels, brushes, and shovels. Photographs and a hand-drawn plan maps were completed for each arbitrary level. Plan maps documented locations and elevations of encountered in-situ artifactual materials (faunal bone, kukui nut shells, charcoal, etc.), sub-surface deposits, and discrete stratigraphic changes. Bulk sediment samples were collected from intact sub-surface deposits when the sediment was thought to potentially contain more cultural material then could be easily assessed in the field, such as charcoal flecking and/or charred soils. Bulk samples and artifactural materials were collected in artifact bags which were labeled with all necessary provenience information (project, site name and number, test unit, level, depth, feature (if applicable), date, and fieldworkers initials). Photo logs and a bag list to keep track of all collected materials and associated provenience information were kept current in the field.

The test units were excavated to depths in which necessary important stratigraphic data was obtained and feature components could be easily assessed and documented. TU 1 was excavated to natural, sterile soil. TU 2 and the exploratory excavation were excavated until feature components and discrete deposits were clearly identified and understood. Profiles were drawn of test unit sidewalls and sediments were described using Munsell color designations and standard U.S. Department of Agriculture (USDA) soil descriptions.

2.3 Laboratory Analysis

2.3.1 Glass Bottles

Several historic (older than 50 years) and modern bottles were observed during project fieldwork. Bottle characteristics were photographed and recorded in the field. Only one bottle, a historic dairy milk bottle, was collected (Acc. #1). The bottle was cleaned, weighed, measured, and catalogued by material type, form, function, design, and manufacturing characteristics. The bottle was researched according to its manufacture mark and identified diagnostic characteristics such as finish type, form, and color. Standard references were used to research date ranges and place of manufacture (Toulouse 1971, Lindsey 2018, Lockhart and Hoenig 2015).

2.3.2 Lithic Material

Only one lithic artifact was recovered during this investigation. A small volcanic glass fragment (Acc. #2) was recovered during excavation of SIHP # -8241, historic charcoal kiln [TU 2]). The volcanic glass fragment was sent to Dr. Steven Lundblad at the University of Hawai'i-Hilo Geo-Archaeology Lab for Energy Dispersive X-Ray Flourescence (ESXRF) analysis. EDXRF is a non-destructive analysis which uses beams of infrared light rays to measure concentrations of trace elements within any 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. EDXRF analysis helps to develop data for interpreting Hawaiian lithic procurement, use, and exchange. EDXRF analysis results are presented in Appendix D.

2.3.3 Faunal Bone

Faunal bone fragments were recovered during excavation of SIHP # -8241 (historic charcoal kiln [TU 1]). Faunal bone was identified in the field by Dr. Christopher Monahan as cow bone. A faunal reference book was consulted to confirm accurate and detailed identification of specific skeletal elements (Schmid 1972). Faunal bone was collected in labeled brown paper bags.

2.3.4 Charcoal Identification

Several charcoal fragments were recovered during excavation of SIHP # -8241 (historic charcoal kiln [TU 1 and TU 2]). Provenience information and detailed elevations were recorded for collected charcoal. The charcoal was placed within labeled aluminum foil pouches and/or within labeled plastic bags.

Several collected charcoal samples were delivered to the International Archaeological Research Institute, Inc. (IARII) in Honolulu for plant species identification. Charcoal samples used for charcoal identification were selected due to their context within a discrete deposit which could answer questions on site use and date of construction. The analysis conducted by IARII viewed the charcoal samples under magnification of an epi-illuminating microscope and compared the samples with anatomical characteristics of known woods in the Pacific Islands Wood Collection at the Department of Botany, University of Hawai'i, and published descriptions. The results of the charcoal analysis are presented in Appendix E.

2.4 Background Research

Research was conducted at the Hamilton Library at the University of Hawai'i-Mānoa and the State Historic Preservation Division (SHPD) library in Kapolei. On-line references were also consulted including Ulukau Electronic Hawaiian Database (www.ulukau.com), Papakilo Database (www.papakilodatabase.com), the State Library on-line (http://www.librarieshawaii.org/Serials/databases.html), and Waihona 'Aina Mahele database (http://www.waihona.com). Hawaiian terms and place names were translated using the on-line Hawaiian Dictionary (Nā Puke Wehewehe 'Ōlelo Hawai'i (www.wehewehe.com) and Place Names of Hawaii (Pukui et al. 1974). Historic maps were obtained from the State of Hawai'i Land Survey Division website (http://ags.hawaii.gov/survey/map-search/). Maps were geo-referenced using ArcGIS 10.3.

Section 3 Consultation

Consultation with project proponents and interested community members has been on-going for this project since 2016 (Table 1). Multiple discussions, presentations, and meetings have been held and attended in order to consult on proposed plans for the Cultural Preserve (CP) and the overall project development. Consultation efforts have been conducted at the Koʻolaupoko Hawaiian Civic Club (KHCC), public meetings, and at Kāneʻohe Neighborhood Board meetings and a Cultural Advisory Group for the project has been formed. In addition, Honua Consulting is in the process of completing a companion Cultural Impact Assessment (CIA) for the Hawaiian Memorial Park project and has interviewed several lineal and cultural descendants, recognized cultural experts, and other knowledgeable individuals (Watson et al. 2018- in progress).

During an April 4, 2017 meeting at the Koʻolaupoko Hawaiian Civic Club, it was mentioned by cultural descendants of the area that two cultural sites known to exist in the project area were not documented during the previous AIS investigation (McCurdy and Hammatt 2009). The sites included: 1.) a circular arrangement of basalt boulders at the southwest base of the hillside below Kawaʻewaʻe Heiau, near the end of Lipalu Street; and 2.) a grouping of large basalt boulders thought to have been a Hale o Papa. The descendants request these cultural sites be preserved. It was mentioned the circular arrangement of boulders (#1 above) may have been recently disturbed and pushed around.

In response to discussions had at the April 4, 2017 meeting, on April 19, 2017 a site visit was conducted by Honua Consulting archaeologists. A potential circular concentration of natural boulders at the southwest base of the hillside below Kawaʻewaʻe Heiau, near the end of Lipalu Street, was located, photographed, and a GPS point was taken (Figure 10). No cultural modifications were observed on or in the near vicinity of the boulders. The only site encountered during the survey that is similar to that described as a Hale o Papa is SIHP # -4681 (traditional habitation complex) which was described in the previous CIA for the project (Hammatt 2008:55-57) as including a Hale o Papa with pōhaku kiaʻi (stone guardians). This potential Hale o Papa was mapped during the current study and designated as a feature of SIHP # -4681.

On September 27, 2017 an on-site meeting and tour was provided by a biologist, Maya LaGrande of LaGrande Biological Surveys, Inc. It was discussed that a native damselfly was present within a historic ʻauwai located in the northwest portion of the project area (SIHP # -8230 [Honua 3]). It was discussed that changes to proposed project plans would be needed in order to accommodate the native species habitat. The biologist showed the attending group several existing dirt trails throughout the project area. Of additional note, the biologist took the group to a potential archaeological site located in the southeast portion of the project area (SIHP # -8235 [Honua 8]), which was situated within an area containing multiple large mango trees.

Consultation with the SHPD in relation to excavation of SIHP # -8241 (Honua 14, historic charcoal kiln) was initiated in June of 2018. Proposed excavation plans were provided to the SHPD for their review and comment on June 4, 2018. Following excavation of TU 1, a field update was provided to SHPD. Following all excavations at SIHP # -8241, a site visit was conducted by SHPD staff Dr. Susan Lebo and Stephanie Hacker. The site was discussed as likely being an early to mid-19th century charcoal kiln in good condition, qualifying under Criterion c

and d of the State Register. If deemed possible to preserve, it could have great educational potential.

Several documented sites were deemed significant under Criterion e (SIHP # -354 [Kawa‘ewa‘a Heiau], -4681 [Habitation Complex], -6930 [Stone Enclosure], and -6931 [Stone Alignments], see Table 13). In accordance with HAR 13-284-8(2), consultation with the Office of Hawaiian Affairs (OHA) was conducted. OHA was reached in association with a companion Environmental Impact Assessment for the project. In addition, OHA was given the opportunity to review the draft AIS on March 30, 2019. Lauren Morawski (OHA Compliance Specialist) provided a verbal response that due to the involvement of cultural practitioners of the area who are in involved in assisting to maintain the property and provide assistance with important project decisions, OHA would defer further comments.

Figure 10. Potential circular arrangement of boulders near the base of the hillside below Kawa‘ewa‘e Heiau, view to north

Table 1. Table Listing Consultation Efforts

Date	Purpose	Discussion	Attendees
December 15, 2016	Consultation Meeting	Discussed Proposed Project Plans and Cultural Preserve	Koʻolaupoko Hawaiian Civic Club
February 17, 2017	Consultation Meeting	Discussed Proposed Project Plans and Cultural Preserve	Koʻolaupoko Hawaiian Civic Club
March 20, 2017	Site Visit	Discussed Preliminary Plans for Cultural Preserve Area	Jay Morford (Land Owner), Justin Soriano (Hawaiian Memorial Park), Kawika Burgess (Hawaiian Islands Land Trust), Trisha Watson (Honua Consulting), Matt Sproat (Honua Consulting), and Rosanna Thurman (Honua Consulting)
April 4, 2017	Consultation Meeting	Discussion of Plans for the Cultural Preserve, discussed two cultural sites that were not documented during the previous AIS	Koʻolaupoko Hawaiian Civic Club
June 6, 2017	Consultation Meeting	Discussed Proposed Project Plans and Cultural Preserve	Cultural Advisory Group
September 27, 2017	On-Site Meeting & Tour	Tour of project area; discussion of native damselfly habitat in NW portion of project area, potential house site identified in SE portion of project area	Maya LaGrande (LaGrande Biological Surveys), Ronald Sato (HHF Planners), Scott Ezer (HHF Planners), Jami Harota (Civil Engineer), Rosanna Thurman (Honua Consulting), Arleen Garcia-Herbst (Honua Consulting)
September 27, 2017	Coordination with SHPD	Discussion of proposed AIS project scope	Susan Lebo (SHPD Archaeology Branch Chief), Rosanna Thurman (Honua Consulting, Principal Investigator)
June 26, 2018	On-Site Visit with SHPD	View SIHP # -8241 (Honua 14) excavations and discuss significance	Susan Lebo (SHPD), Stephanie Hacker (SHPD), Trisha Watson (Honua), Kepā Maly (Honua), Rosanna Thurman (Honua)

Section 4 Background Research

4.1 Traditional and Mythological Background

Kāneʻohe, the ahupuaʻa (traditional land division) within which the project area is located, is translated as "bamboo husband" or "bamboo man" and was named for a woman's account of her husband's cruelty being comparable to the cutting edge of a bamboo knife (Pukui et al. 1974: 85). The word "Kāne" can mean "husband", "man", or serve as a reference to the god Kāne, the god of creation (Pukui and Elbert 1986: 128), and "ʻohe" means "bamboo" (Pukui and Elbert: 276). The project area is located within two ʻili (small land division) boundaries, Kawaʻewaʻe and Kalokoai. Kalokoai translates to "the food pond" (Pukui et al. 1974: 77-78). Kawaʻewaʻe is a heiau of great importance located within the current project area.

Kāneʻohe was a population center containing a fertile bay with a barrier reef, a multitude of coastal fishponds, a natural harbor, inland agricultural fields, and multiple streams (Heʻeia, Hooleinaiwa, Keaʻahala, Kamoʻoaliʻi, Kāneʻohe, Kāwā, Kuou, Luluku) flowing from the Koʻolau Range. The streams and natural hillside runoff fed loʻi (irrigated taro fields) as well as sweet potato, pandanus, wauke, and bananas. The coastal areas contained coconut groves and coastal fishponds, including Hanalua, Kalokohanahou, Kaluoa, Kanohuluiwi, Keaalau, Keana, Mahinui, Mikiola, Papaa (Panahaha 1 & 2), Punaluu, Waikalua Loko, and Waikaluawaho (Waikalaa) (Pukui et al. 1974, AVA Konohiki 2018). Several fishponds were also constructed on the shores of Mōkapu (Nuʻupia, Halekou, and Kaluapuhi). The inhabitants of Kāneʻohe lived near the coast, on the fringes of lowland fields, and in the inland valleys. The upland reaches consisting of inland forests (Wao akua or places of mystery) were thought to be sacred to the Spirits or Akua of Nature (Paki 1972).

Several Hawaiian place names are known for features of the Kāneʻohe landscape and environment. An 1876 map of Kāneʻohe shows many of the place names discussed in mythological and historic-period accounts of the area (Figure 11). Table 2 lists place names, their English translations, a description of the locations, and sources of information. Lanihuli is the highest mountain peak of the Koʻolau Range in Kāneʻohe. Pakui is an ʻili to the north of the project area as well as the central peak of three peaks of Mount Olomana. Kumukumu is a natural spring of Kāneʻohe.

The legend of the half man, half pig demigod Kamapuaʻa is a central moʻolelo (story, myth, or legend) of Kāneʻohe and is pertinent to the current project area. Kamapuaʻa was born to Hina and ʻOlopana. According to Thrum (1906:48) ʻOlopana was responsible for the erection of Kawaʻewaʻe Heiau in the beginning of the 12th century. The heiau is said to have been constructed by Menehune, a legendary race of people who worked at night (Fornander 1878). Kalākaua (1990) states that Hina formed a relationship with ʻOlopana's brother Kahikiula before Kamapuaʻa's birth, and ʻOlopana was convinced that Kahikiula was the true father of Kamapuaʻa, shaping his resentment for the hog-child from birth. After ʻOlopana exiled Kamapuaʻa from the district, Kamapuaʻa was joined by a large party of miscreants who aided him in exacting revenge against ʻOlopana. Kamapuaʻa stole and vandalized ʻOlopana's property, and eventually cut down his coconut trees and destroyed his crops, which could be regarded as "a declaration of war" (Kalākaua 1990:144). ʻOlopana repeatedly failed to dispose of Kamapuaʻa

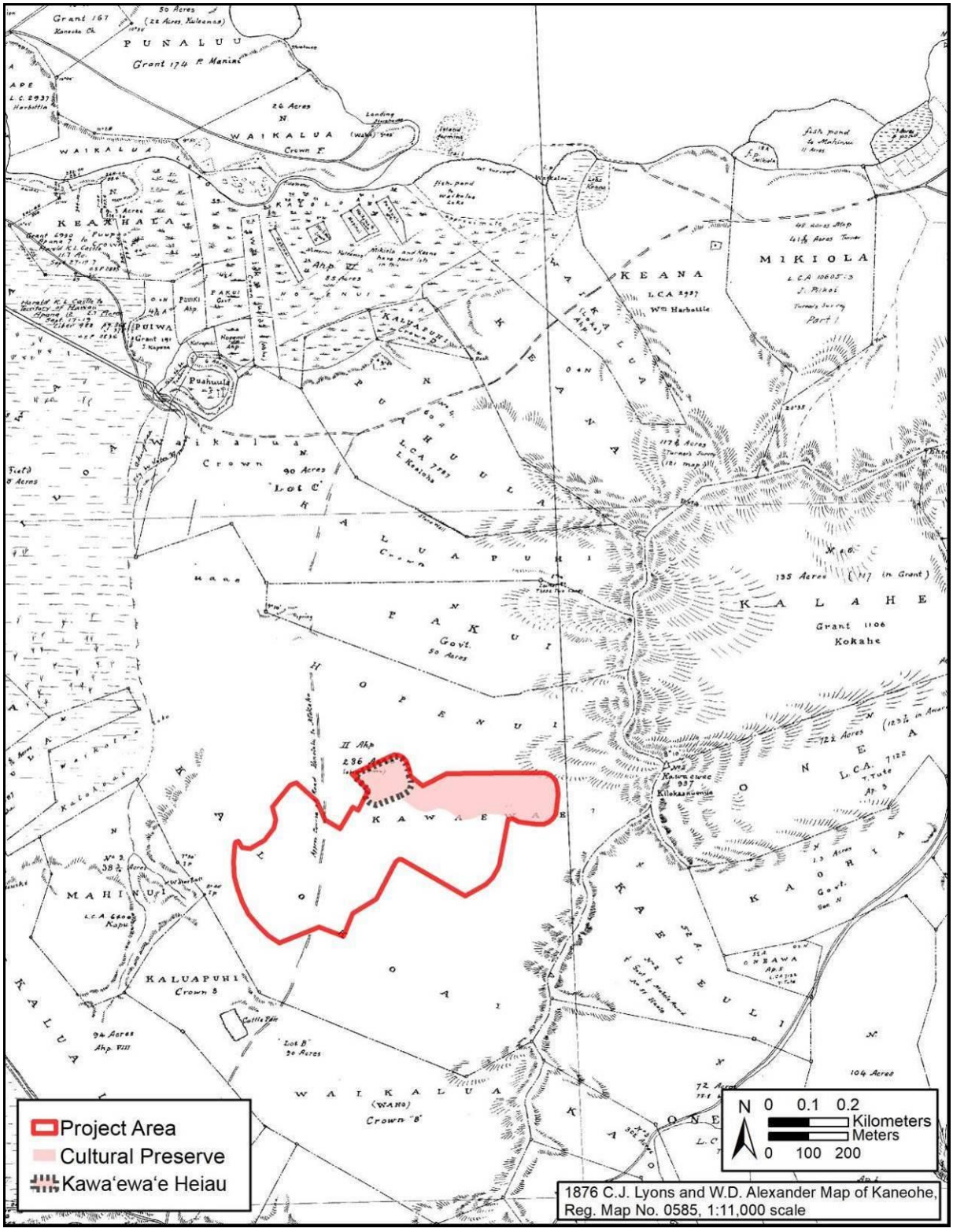

Figure 11. Portion of a 1876 C. J. Lyons and W.D. Alexander map of "Kaneohe, Oahu with West Kailua" showing the project area (Registered Map [RM] 585)

Table 2. Table Listing Place Names in Kāneʻohe in the Vicinity of the Project Area

Place Name	Translation	Description	Source
Ahukini	altar [for] many [blessings]	Heiau in Kāneʻohe	AVA Konohiki 2018; Pukui et al 1974:6
Halekou, 92 acres in the 1940s to 36 acres in 1968	kou-wood house	Mōkapu fishpond	AVA Konohiki 2018; Pukui et al 1974:37
Hanalua		Fishpond in Kāneʻohe	AVA Konohiki 2018
Heʻeia	Land division and bay noted for surfing	Village, elementary school, playground, land divisions, stream and fishponds in Kāneʻohe and Mōkapu; Heʻeia is the name given by the goddess Haumea to her foster child, the grandson of ʻOlopana	Pukui et al 1974:43-44
Hooleinaiwa		Stream	
Hopenui	big behind	ʻili just north of the current project area	OHA 2018
Kalokoai	the food pond	ʻili within the current project area	Pukui et al. 1974:77-78
Kalokohanahou	the repaired pond	Fishpond in Kāneʻohe; the old name for this pond was Kahanahou	AVA Konohiki 2018; Pukui et al. 1974:78
Kaluapuhi 24 acres to 14 acres	the eel pit (in a cave was an eel-shaped rock)	Mōkapu fishpond	AVA Konohiki 2018; Pukui et al. 1974:79
Kaluoa		Fishpond in Kāneʻohe	AVA Konohiki 2018
Kamoʻoaliʻi (Kamohoaliʻi)	the chiefly chosen one	Stream; chief of the shark gods and brother of Pele	Pukui et al. 1974:82
Kāneʻohe	bamboo husband	Quadrangle, land section, playground, village, bay, beach park, harbor, school, ranch, stream, county park, Marine Air Corps	Pukui et al. 1974:85

Place Name	Translation	Description	Source
		station, and golf course	
Kanohuluiwi, 2.7 acres in 1968		Fishpond	AVA Konohiki 2018
Kawa	distance	Stream	Pukui et al. 1974:96
Kawaʻewaʻe		Heiau and ʻili within the current project area; according to Thrum (1906:48), it was built at the beginning of the 12th century (Sterling and Summers 5:194); ʻOlopana brought Kamapuaʻa here to be sacrificed, but he killed ʻOlopana instead	AVA Konohiki 2018; Pukui et al. 1974:97.
Keaʻahala	the pandanus root	Stream, land sections, and playground in Kāneʻohe	Pukui et al 1974:100
Keaalau	the many roots	Land division and fishpond in Kāneʻohe	AVA Konohiki 2018; Pukui et al. 1974:100
Keana	the cave	Land division and fishpond in Kāneʻohe; the old name for Koko-kahi	AVA Konohiki 2018; Pukui et al. 1974:103
Kekele	damp	Heiau in Kāneʻohe	AVA Konohiki 2018; Pukui et al. 1974:106
Kukuiokane (covered by the H-3)		Heiau in Kāneʻohe	AVA Konohiki 2018
Kumukumu	stubs	Spring	AVA Konohiki 2018; Pukui et al. 1974:124
Kūʻou		Stream; possible variant of kūlou, to bow the head, bend, to beckon with the head; also kūnou	Pukui and Elbert 1986:181,184

Place Name	Translation	Description	Source
Lanihuli, Highest Mountain Peak	turning royal chief	Peak above Nuʻuanu Pali	AVA Konohiki 2018; Pukui et al. 1974:128-129
Luluku	destruction	Land section and stream in Kāneʻohe	Pukui et al. 1974:136
Mahinui	great champion	Mountain, fishpond, and stream on Mōkapu; named for a legendary hero who was defeated by ʻOlomana and whose body was cast from Mount Olomana to the present location of the mountain	AVA Konohiki 2018; Pukui et al. 1974:138
Mikiola	active [and] alive	Subdivision in Kāneʻohe; named for filled-in fishpond once there	AVA Konohiki 2018; Pukui et al. 1974:151
Mōkapu	taboo district	Elementary school, point, quadrangle, and land division; originally named Mohu-kapu (sacred district) because Kamehameha I met his chiefs here; it was "the sacred land of Kamehameha"	Pukui et al. 1974:153-154
Nuʻupia (Kaluapuhi) 215 acres in the 1940s to 180 in 1968	arrowroot heap	Fishpond along Mōkapu	AVA Konohiki 2018; Pukui et al. 1974:167
Oneawa	milkfish sand	Land division and street; famous for great quantities of ʻōʻio (*Albula vulpes*) and perhaps also awa (*Chanos chanos*) fish; the ridge between Kailua and Kāneʻohe was named Oneawa Hills in 1971	Pukui et al. 1974:170

Place Name	Translation	Description	Source
Pakui	attached	Central peak of three peaks of Mount Olomana; named for the keeper of two Kailua fishponds, a swift runner	Pukui et al. 1974:176
Papaa (Panahaha 1 & 2)	secure enclosure	Fishpond in Kāneʻohe	AVA Konohiki 2018; Pukui et al. 1974:179
Punaluu	spring dived for, coral dived for	Fishpond in Kāneʻohe	AVA Konohiki 2018; Pukui et al. 1974:194
Puʻu Makani		Heiau in Kāneʻohe	AVA Konohiki 2018
Pu'u Pahu, near Kanohulu'iwi		Heiau in Kāneʻohe	AVA Konohiki 2018
Puʻu Waniania		Heiau in Kāneʻohe	AVA Konohiki 2018
Waikalua Loko		Fishpond in Kāneʻohe	AVA Konohiki 2018
Waikaluawaho (Waikalaa)		Fishpond in Kāneʻohe	AVA Konohiki 2018

and his followers, but Kamapuaʻa was eventually captured and delivered to ʻOlopana. The following passage by Kalākaua describes the events leading to and after Kamapuaʻa's capture:

> It is difficult to say just how long this desultory fighting continued, but in the end the rebels were surrounded and nearly destroyed, and Kamapuaa was captured unhurt and delivered over to Olopana, to the great joy and relief of the people of Koolau. Olopana had erected a heiau at Kaneohe, where Lonoaohi officiated as high-priest, and thither he resolved to take his rebellious son or nephew, and offer him as a sacrifice to the gods. Hina pleaded for the life of Kamapuaa, but Olopana could not be moved. Satisfied that he would listen to no appeals for mercy, she determined to save her son, even at the sacrifice of her husband, and to that end secured the assistance of the high-priest, through whose treachery to Olopana the life of Kamapuaa was saved.
>
> On the day fixed for the sacrifice Kamapuaa, carefully bound and strongly guarded, was taken to the heiau, followed by Olopana, who was anxious to witness the ghastly ceremonies, and

with his own eyes see that his troublesome enemy was duly slain and his body laid upon the altar. In offering human sacrifices the victim was taken without the walls of the heiau and slain with clubs by the assistants of the high-priest. The body was then brought in and placed upon the altar in front of the entrance to the inner court, or sanctuary, when the left eye was removed by the officiating priest, and handed, if he was present, to the chief who had ordered the sacrifice. This being done, the offering was then ceremoniously made, and the body was left upon the altar for the elements to deal with.

Standing, with three or four attendants, at the door of his tabued retreat, within forty or fifty paces of the altar, Olopana saw his victim preliminarily led to the place of sacrifice, and a few minutes after motioned for the ceremonies to begin. Kamapuaa was taken without the walls of the temple to be slain. He was in charge of three assistant priests, one of them leading him by a stout cord around his neck, another keeping closely behind him, and the third walking silently at his side with the club of execution in his hand. Passing beyond the outer wall, the party entered a small walled enclosure adjoining, and the executioner raised his club and brought it down upon the head of his victim. Kamapuaa smiled, but did not move. Twice, thrice with might sweep the club descended upon the head of Kamapuaa, but scarcely bent the bristly hairs upon his crown.

With a semblance of wonder the executioner, whose tender blows would have scarcely maimed a mouse, dropped his club and said:

“Three times have I tried and failed to slay him! The gods refuse the sacrifice!”

“It is so, it is so, it is so!” chimed his companions. “The gods indeed refuse the sacrifice! We have seen it!”

Therefore, instead of slaying Kampuaa, the assistants, as they had been secretly instructed to do by the high-priest, removed the cords from his limbs, smeared his hair, face and body with the fresh blood of a fowl, and on their shoulders bore him back and placed him upon the altar as if dead.

The high-priest approached the apparently lifeless body, and bent for a moment over the face, as if to remove the left eye; then placing on a wooden tray the eye of a large hog, which had been procured for that purpose, he sent an assistant with it to Olopana, at the same time retiring within the inner court, and leaving by the side of Kamapuaa, and near his right hand, as if by accident, the

sharp ivory pahoa, or dagger, with which he had, to all appearance been operating.

Giving but a single glance at the eye presented to him by the assistant of the high-priest, Olopana passed it to an attendant without the customary semblance of eating it, and approached the altar alone. Kamapuaa did not breathe. His face was streaked with blood, his eyelids closed, and not a single muscle moved to indicate life.

Olopana looked at the hated face for a moment, and then turned to leave the heiau, not caring to witness the ceremonies of formal offering. As he did so Kamapuaa clutched the dagger beside his hand, and, springing from the altar, drove the blade into the back of Olopana. Again and again he applied the weapon until the chief, with a groan of anguish, fell dead at the feet of his slayer.

Horrified at what they beheld, the attendants of Olopana sprang toward their fallen chief. But their movement, whatever their import, did not disturb Kamapuaa. He had been accustomed to meeting and accepting odds in battle, and when he had secured possession of the ihe and huge axe of stone conveniently placed for his use behind the altar, he boldly approached and invited an encounter.

But the challenge was not accepted. The attendants of the chief did not ordinarily lack courage, but they were unnerved at the sight of a victim, slain, mutilated and laid upon the altar by the priest, coming to life and springing to his feet full-armed before his enemies.

Appearing upon the scene, the high-priest expressed great surprise and horror at what had occurred, and his assistant wildly clamored at the sacrilege; but no hand was laid upon Kamapuaa, and the friends of Olopana finally left the heiau, taking his body with them.

This tragedy in the heiau of Kawaewae created a profound excitement in the district. Had Kamapuaa been at all popular with the masses the death of Olopana at his hands would have occasioned but little indignation; but as many beside the dead chief had suffered through his plundering visistations, and hundreds of lives had been sacrificed in his pursuit and final capture, the people rose almost in a body to hunt him down and destroy him (Kalākaua 1990: 145-147).

This legend of Kamapua‘a continues with the conclusion that he was able to escape from the outraged masses’ clutches and set sail with his small group to the windward islands in a fleet obtained from the people of ‘Ewa District.

In addition to Kawa‘ewa‘e Heiau, there is said to have been a hōlua slide adjacent to the heiau. Unfortunately, this hōlua slide was destroyed by the pineapple industry during an attempt to plant pineapples in this area (Devaney et al. 1982:62-63). Other heiau in Kāne‘ohe included Ahukini, Kekele, Kukuiokane, Pu‘umakani, Pu‘u Pahu, and Pu‘u Waniania. The number of heiau in Kāne‘ohe attest to its political importance and the abundance and value of its land.

4.2 Early to Mid- 1800s

Kāne‘ohe was a center of population in the 19th century. According to estimated population data in the Kāne‘ohe area, over twice as many individuals resided in Kāne‘ohe in 1779 compared to the next most populated ahupua‘a in the Kāne‘ohe Bay region, He‘eia. Estimates of roughly 15,000 to 17,000 people resided in the Bay region and Kāne‘ohe and He‘eia accounted for 55% of the population at this time (Devaney et al. 1982). Subsequent data estimates of 1835-36 found that the population of the nine ahupua‘a from Kualoa to Kāne‘ohe had dropped by approximately 48 people since 1831-32, while Kualoa and Kāne‘ohe had increased their populations (Devaney et al. 1982). An 1876 map of Kāne‘ohe (refer to Figure 11) shows the land covered in cane fields, swamp lands, streams, coastal fishponds, and scattered cattle pens.

In 1795, Kamehameha I divided O‘ahu among allegiant warrior chiefs and counsellors. Kamehameha retained the ahupua‘a of Kāne‘ohe as Crown Land, for his own personal property (‘Ī‘ī 1959). Upon his death, much of Kāne‘ohe continued to remain under Kamehameha I’s sons Liholiho (Kamehameha II) and Kauikeaouli (Kamehameha III) (Hawaii Land Commission 1929).

i. Māhele Documentation

The Great Māhele, also known simply as the Māhele, was enacted under the reign of Kamehameha III, and this event marked a dramatic shift in Hawai‘i’s traditional system of land use. Kamehameha III, through the guidance of foreign advisors, divided the lands that had been held and administered by chiefs and their konohiki (advisors). The result of these divisions, which became known as the Great Māhele, were approximately as follows: 23.8% (984,000 acres) of land in the islands were allocated to the king and were dubbed the Crown lands, 39.2% (1,619,000 acres) were the konohiki lands to be divided among 245 chiefs, and 37% (1,523,000 acres) were declared as government lands, which were awarded to commoners who worked the land as active tenants (Van Dyke 2008: 42). The land division was overseen by an appointed Land Commission and Court of Claims.

The Māhele was followed by the Kuleana Act of 1850, which allowed commoners to petition for the title to land on which they cultivated and lived and established a fee simple ownership of land. The land tenants were required to document their claims in order to gain the permanent title, and once granted, the kuleana land (as they would come to be known) was independent of the ahupua‘a in which it was situated and could be sold to parties with no ties to the area. Prior to the Kuleana Act, few commoners were awarded the kuleana land by the Board of Land

Commissioners; the awards issued by the five commissioners were called the Land Commission Awards (LCA) (Devaney et al. 1982). The commoners fared the worst from the Māhele, as approximately 8,000 individuals received about 2.5 acres each, which is less than one percent of the total lands (Van Dyke 2008).

Many of the Crown lands were sold and mortgaged during Kamehameha III and IV's reigns in order to settle debts to foreigners (Chinen 1958). In 1865, the Crown lands were declared inalienable, which "eliminated the power of the Mōʻī to sell or transfer ʻĀina that were part of the Crown Lands, dramatically changing the character of these lands and the power of the Mōʻī" (Van Dyke 2008: 89). This Legislature also declared that the lands "shall be henceforth inalienable, and shall descend to the heirs and successors the Hawaiian Crown forever" while prohibiting any lease of Crown Lands for a period longer than thirty years (Van Dyke 2008: 90).

The following table (Table 3), extracted from Van Dyke (2008) details the division of Crown Lands of Kāneʻohe as prepared in 1894.

Table 3. Table Listing Crown Lands of Kāneʻohe Ahupuaʻa (Van Dyke 2008)

Name of Tract	Area (Acres)	No. of Lease	Lease Expires	Annual Rental	Estimated Value	Remarks
Kaluapuhi Waikalua Halekou Kanohouluiwi	1,486	––	––	$1,987	$16,000	In 14 sections, covered by sundry leases
Keaahala	379	183	May 1913	$300	$5,000	Cane land
Kahalekauila	––	––	––	––	––	Sold to Parker
Kuou	––	––	––	––	––	Sold
Kahaluu	––	––	––	––	––	Sold to Stewart
Maluaka	––	––	––	––	––	Sold to Parker
Makawai Hopekea	1,261	––	––	$780	$10,000	Rice land and grazing Covered by sundry leases
Kualoa 1 & 2	––	––	––	––	––	Sold to Judd

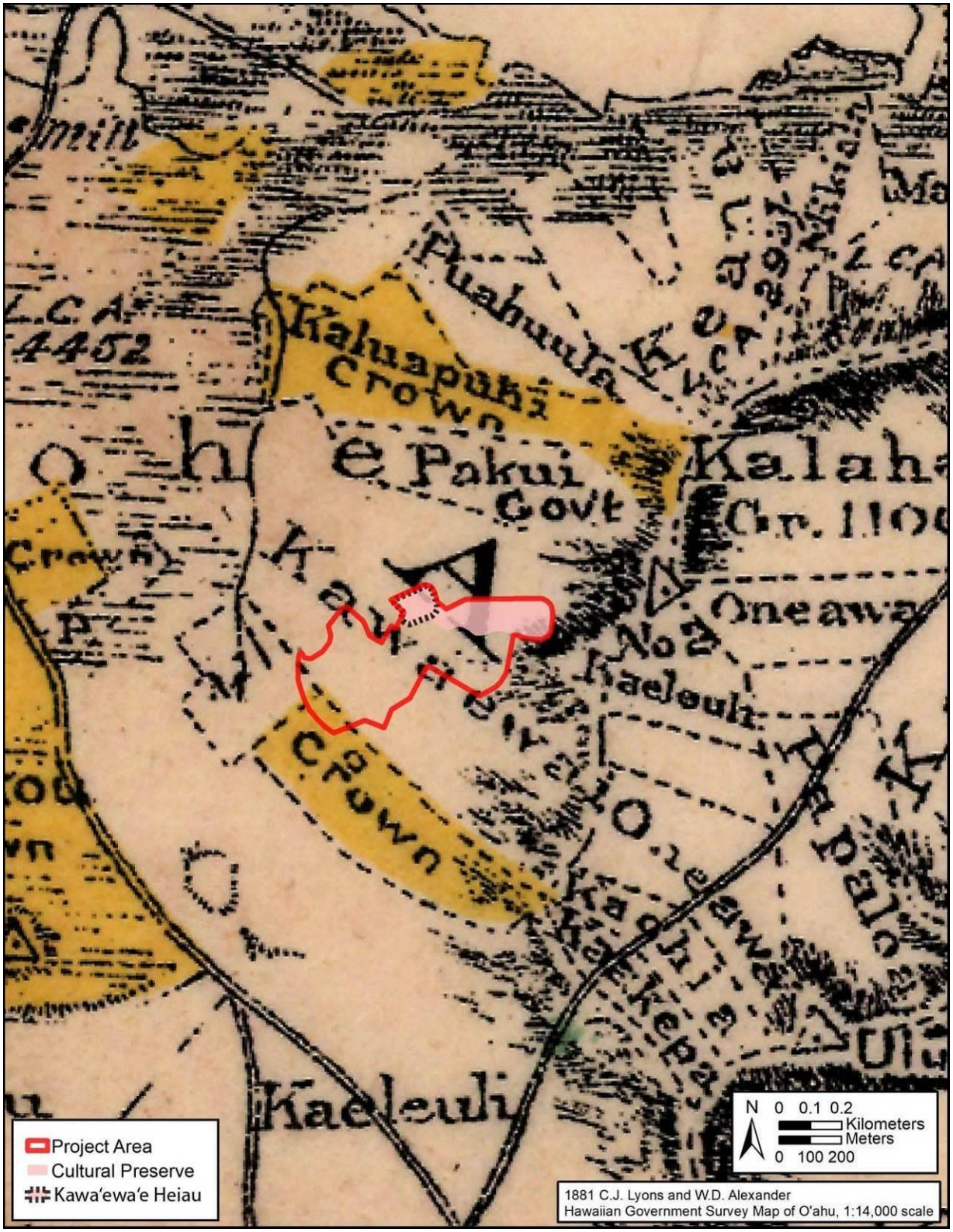

Figure 12. Portion of an 1881 Hawaiian Government Survey Map showing the project area

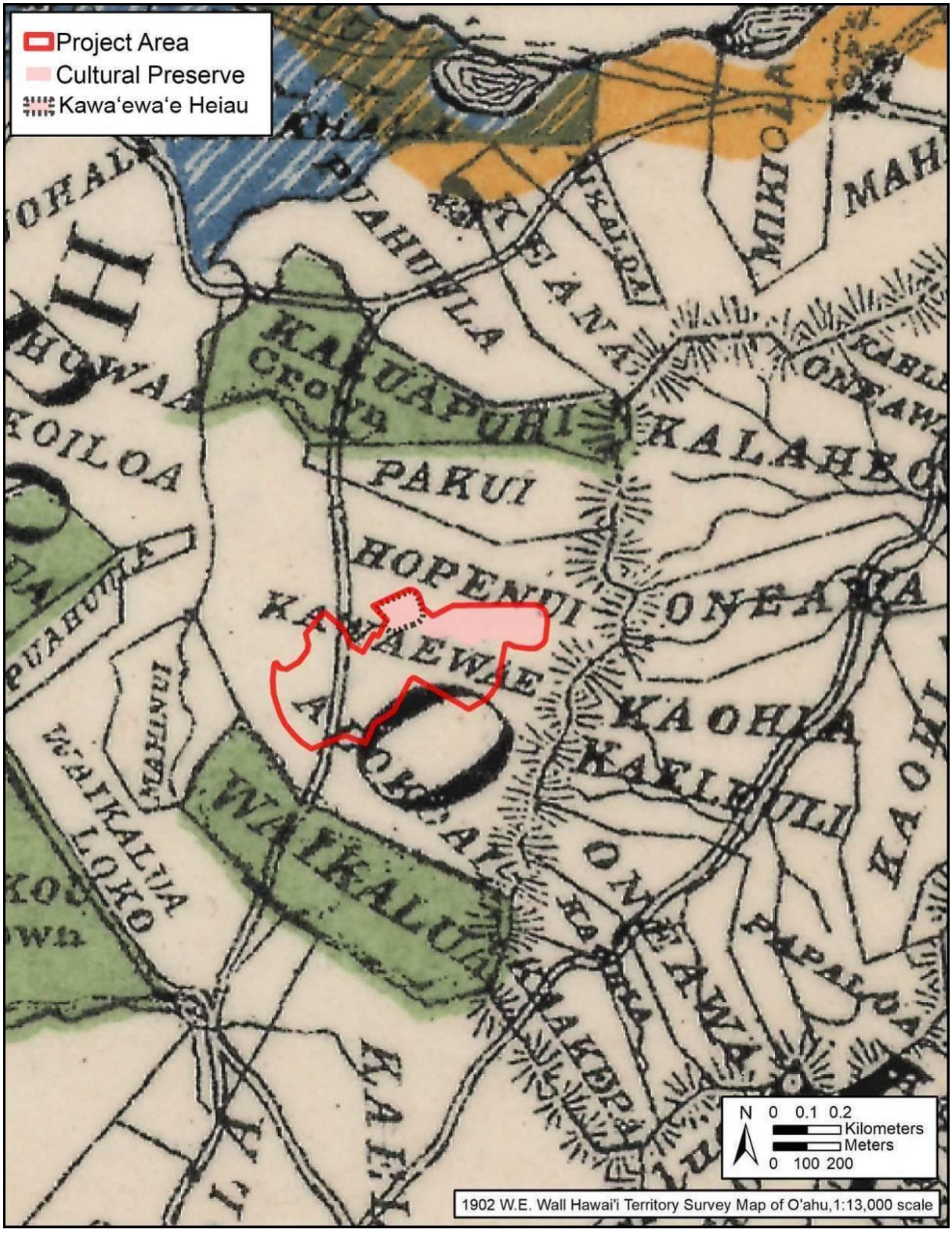

Figure 13. Portion of a 1902 W.E. Wall map showing the project area

Following the Kuleana Act, 242 land claims were made within Kāneʻohe ahupuaʻa, but only a little more than half of these were awarded by the Land Commission. Queen Hakaleleponi Kalama, 11 konohiki, and three (3) non-konohiki were eventually awarded the bulk of the ahupuaʻa of Kāneʻohe (Kelly 1976). Taro land, fishponds, and dryland for crops were the types of land claimed in Kāneʻohe, with taro land being the most predominant. The project area is situated within the ʻili of Kalokoai and Kawaʻewaʻe. No LCAs were issued within Kawaʻewaʻe, however, two were granted within Kalokoai (LCA 2444 and 2806) (Table 4).

Table 4. Table Listing LCA in the Kalokoai and the Near Vicinity of the Project Area

LCA #	ʻIli	Claimant	Land Use	Awarded
2444	Kalokoai	Keawekukahi	2 loʻi; 1 house lot; 3 fish ponds	3 ʻāpana; 1.808 acres
2806	Kalokoai	Kahilikoolani	2 loʻi	1 ʻāpana; 0.839 acres

4.3 Mid 1800s to Present

This section discusses major cash crops of Kāneʻohe that dominated the landscape throughout the mid-19th through mid-twentieth centuries.

4.3.1 Sugar

Sugarcane was present in the Hawaiian Islands prior to European contact, but the height of its cultivation did not begin until the 1860s. During this time period, Parker Sugar Co. and Kaneohe Sugar Plantation were the two predominant sugar plantations in operation in Kāneʻohe. The Parker Sugar Co. cultivated 75 acres of land in Kāneʻohe with an estimated yield of 120 tons, but their lack of a mill and scarce employees made them less successful than the Kaneohe Sugar Plantation (Devaney et al. 1982).

Kaneohe Sugar Plantation remained operational from 1865 to 1885. Unlike Parker Sugar Co., Kaneohe Sugar Plantation constructed a mill and brought equipment in from Liverpool to maximize their yield. McAllister (1933: 178), notes that Kalaoa Heiau which once stood in Waikalua, Kāneʻohe had its stones removed in the construction of the sugar mill. The plantation cultivated 500 acres of its 7,000 acres in 1880 and had an estimated yield of 500 tons (Devaney et al. 1982). Bowser states that approximately 100 men were employed and there were 70 yoke of oxen, in addition to 50 mules and horses (1880: 407). In 1884, the plantation utilized 50 acres of their 500 acres of land for planting, but were able to yield 572 tons (The Planters' Monthly 1884). The Kaneohe Sugar Plantation remained operational until 1885.

Sugarcane cultivation was not as successful in Kāneʻohe as other parts of the island due to the land being "too uneven in the irregular valleys for the problems of the systematic watering of the cane as it is generally practiced in these Islands" (Pope 1911: 542). The peak of sugarcane

cultivation in Kāneʻohe was in 1880 and the years surrounding it, but the last plantation of the Kāneʻohe Bay region in the ahupuaʻa of Heʻeia closed in 1902-03 due to the unprofitable nature of the business (Devaney et al. 1982).

4.3.2 Rice

With the increase in agriculture on the Islands, there needed to also be an increase in workers to cultivate the fields. Oriental workers, mostly Chinese, were brought to the Islands in the 1800s for this purpose. The influx of Oriental immigrant workers brought about the need to increase rice cultivation to the commercial crop status to satisfy demand. The rice industry in Hawaiʻi was profitable from 1880 until its decline in the early 1920s, and its influence was felt in the Kāneʻohe Bay region. The tracts of land once used in the cultivation of taro were modified and increased to make way for rice cultivation in Kāneʻohe. According to Devaney et al. (1982: 49), "vast networks of irrigation ditches were constructed, and the windward valleys of Oahu, near the sea and extending into mauka regions along favorable waterways, were used for rice growing".

Rice acreage in 1892 for the Kāneʻohe Bay region was as follows: Waikane, 200 acres; Kahaluʻu and Kaʻalaea, 300 acres; Heʻeia and Kāneʻohe, 200 acres (Devaney et al. 1982). The shift to rice production in Kāneʻohe was not as successful as farmers and businesses hoped, as the industry steadily declined over a ten-year period. Devaney et al. (1982) details the various reasons behind the decline of the rice industry in Hawaiʻi:

> The annexation of Hawaii by the United States in 1898 resulted in restrictions on the number of Chinese laborers arriving from the Far East. In addition, the increase of rice production in California destroyed one of Hawaii's major export markets. Rice birds were also a major pest and, in the Kaneohe area, Pratt (1965: 71) recalled the Chinese planters shooting them in the fields. The rice borer insect, appearing around 1927, struck a final devastating blow to the local rice industry. (Coulter and Chun 1937: 72, Devaney et al. 1982: 52-53)

By 1963, the only remnant of the rice industry in Kāneʻohe were abandoned shacks in Waiahole Valley and remaining pondfields and terraces (Miyagi 1963).

4.3.3 Ranching

The presence of livestock was a feature of the Kāneʻohe Bay region from the time of settlement with the early Polynesians, and these animals included domesticated pigs, dogs and jungle fowls. The number of introduced animal species increased after European contact, which brought about more livestock, including cattle. Thrum (1905) notes that George W. Rowan headed a cattle ranch in Heʻeia, while George J. Campbell owned a sheep and stock ranch in Kāneʻohe. The livestock began to alter the landscape of Kāneʻohe as early as the mid-1860s, where the plains at the foot of the Nuʻuanu Pali were described as "a rich land a while ago but now there are not many plants there because animals are permitted there" (Sterling and Summers 1978: 207).

The Kaneohe Ranch lands were originally a part of the 20,000 acres belonging to Queen Kalama, the Queen Consort of Kamehameha III and later Queen Dowager of the Kingdom of Hawai‘i. This land passed to Judge C. C. Harris upon her death, and his daughter, Nannie R. Rice subsequently inherited the land from him (Devaney et al. 1982). J.P. Mendonca leased 15,000 acres from Mrs. Rice in 1894 for cattle raising, and the beginning of the ranch was marked by the import of angus cattle by J. I. Dowsett. James B. Castle bought stock in the ranch in 1907, and his son, Harold K. Castle, then purchased the property from Mrs. Rice in 1917. The portion of the ranch in the Kāne‘ohe Bay region was then confined to the southern section (Devaney et al. 1982). At its peak, the Kaneohe Ranch included 2,000 head of cattle and 12,000 acres extending from the ocean in Kailua to the Pali (Henke 1929).

The construction of features for the Kaneohe Ranch Company were detrimental to important religious sites for Native Hawaiians. Pu‘umakani Heiau, once located on the ridge facing the Nu‘uanu Pali, was dismantled and its stones were used in the construction of a cattle corral (McAllister 1933: 181). In addition, Kawa‘ewa‘e Heiau, located within the current project area, was degraded by the cattle when “the structure was used as a cattle pen for many years [and] any traces of heiau features [were] obliterated, and it is not known where the opening to the heiau was situated” (McAllister 1933: 179).

4.3.4 Guava Charcoal Production

Prior to electricity many families heated their homes and cooked with homemade charcoal. Guava (Psidium sp.) was introduced to Hawai‘i in 1825 and quickly spread, making way for the cottage industry. Guava (*Psidium* sp.) charcoal kilns are recorded throughout the Kāne‘ohe-Kailua uplands (Meeker and Murakami 1995, Allen et al. 2002, Dockall et al. 2003). In 1999, a comprehensive study of 31 charcoal kilns within the region was completed (Meeker and Murakami 1995). The kilns were found within the Minami Golf Course, Ho‘omaluhia Botanical Gardens, Maunawili, Luluku, Punalu‘u Mauka, Pa‘u, and footprints of windward highways. The Meeker and Murakami (1995) study divides charcoal kilns into two types, earth mounds and covered pit kilns. Earth mounds include minimum surface modification and consist of a stack of wood mounded with earth and fired. Covered pit kilns are typically “stone-lined circular pits dug into the side of a moderately steep hillside and capped by a dome-shaped roof of baked clay or concrete, in Hawai‘i, the concrete was often made with burnt coral lime called *puna kameki* (Pukui and Elbert 1965:117,327); it was also used as a mortar or plaster” (Meeker and Murakami 1995:89). Covered pit kilns can use a simple earthen covering or a formal dome. Dome-covered pits are attributed to early 1920s Japanese charcoal makers (Meeker and Murakami 1995:99).

Guava kilns have been found to be built for temporary or semi-permanent use. Once available guava was cut from an area, the kiln was abandoned and a new kiln was constructed where guava was more plentiful. The Meeker and Murakami (1995:94) study found kilns were distributed within easy access of suitably sized guava patches and on slopes exposed to the prevailing trade winds. Most all studied kilns were situated near unimproved roads built to serve the kilns. Kilns were not found in areas that were first utilized by pineapple cultivation, ranching, or truck farming, likely because those industries would have removed the guava forests.

An early twentieth-century report of the District Forester of Maunawili Ranch, Waimānalo, notes:

> It was formerly the custom in this section to lease out to Chinese and others areas of land covered with Guava trees for the purpose of making charcoal from the same. The result of this system was temporarily of financial benefit to the owner of the land, but it eventually resulting in causing the roots of the Guava trees so cut to increase in enormous quantities through the suckers produced from the roots, and thereby makes the land absolutely impossible to the rancher in caring for the cattle roaming over the same. (Herd 1906:68, quoted in Meeker and Murakami 1995:96)

The common sprouting of the guava roots caused a ban on guava cutting in the late nineteenth and early twentieth centuries (Herd 1906:69, quoted in Meeker and Murakami 1995:96). However, the cessation of the guava charcoal industry did not last long. When the Homesteads were opened in 1917 it became common for Japanese families to make guava charcoal, particularly in the Luluku area (Kelly 1976 and Allen n.d., both quoted in Meeker and Murakami 1995:96).

4.3.5 Pineapple

The introduction of pineapple occurred in the early 1800s, but this crop did not begin cultivation at commercial levels until the 1890s and early 1900s. Kāneʻohe, with its rich soils and ideal climate, greatly contributed to the pineapple industry and this crop became the leading agricultural industry in the area from approximately 1910 to 1925 (Harper 1972). Kaneohe Ranch Company and Heʻeia Agriculture Co., Ltd. agreed to lease to Libby, McNeill & Libby 1,000 acres of land in Heʻeia, Kāneʻohe, and Kailua in 1912 for a term of 17 years (Devaney et al. 1982). Pineapple cultivation on Windward Oʻahu reached 2,500 acres at its peak, stretching from Kāneʻohe to Kahaluʻu; much of the acreage was contained within the Kāneʻohe Bay region (Harper 1972).

According to Devaney et al (1982: 62-63) and other historians, the pineapple industry was directly responsible for the degradation and destruction of many ancient Hawaiian sites:

> At least five ancient Hawaiian sites were damaged or destroyed during the pineapple era in the Kaneohe Bay area. In Kaneohe, the Kukuiokane Heiau at Luluku, inland at the foot of a ride about the banana fields, considered the largest and most important in the region, was destroyed by Libby, McNeill & Libby operations. According to the old Hawaiians of the district, the destruction of this heiau caused a disease to attack their pineapples, with the ultimate result that the undertaking was a failure (McAllister 1933: 177, site 340). John Bell reported that he saw the famous holua slide in Kaneohe destroyed "when an attempt was made to plant pineapples in this section" (ibid.: 181, site 355). In Heeia, the Kaualauki Heiau was mostly destroyed by the pineapple growers in their attempt to cultivate the region (ibid.: 173, site 328). Even the site of the Libby, McNeill & Libby cannery was considered to have been at the location of the Haluakaiamoana Heiau, and the

> eventual failure of the cannery was credited to the destruction of this temple (ibid.: 170, site 320). Finally, at Hakipuu, the lower terrace of the Puakea Heiau was planted in pineapple (ibid.: 170, site 315).

The pineapple industry of Kāneʻohe could not sustain cultivation as efficiently as other areas around Oʻahu, such as Kalihi, as well as the other Hawaiian Islands. The cannery officially closed in 1923, and the land dedicated to pineapple cultivation grew out, and some were used to graze cattle while others returned to rice cultivation (Kelly 1976, Dorrance 1998).

4.3.6 Dairy

Following the conclusion of World War II, Kāneʻohe became a major residential center. The construction of the Wilson Tunnel and expansion of the Pali Highway in the 1950s and 1960s made Kāneʻohe easily accessible from Honolulu, which led to a developmental boom on the windward side of Oʻahu. Farming and ranching became unprofitable, therefore, Kaneohe Ranch converted operations to focusing on leasing land. The Kaneohe Ranch Company leased their vast acreage to over 5,000 single family residential lots in Kailua and Kāneʻohe, and many of the leaseholds were sold to the lessees (Hammatt 2008).

In the 1950s, the dairy district of Honolulu was forced to relocate so Kailua and Kāneʻohe became an important dairy district of Oʻahu (Durand Jr. 1959). According to Durand Jr. (1959: 235), dairy farming had been a Caucasian dominated field, which soon changed, as he described "among the names of island dairymen, illustrating the Portuguese-Spanish-Mainland importance…are…Brazil, Carlos, Campos, Costa, Ferreria, Foster, Freitas, Knowles, Medeiros, Moniz, Ornellas, Rapoza, Santos, Toledo, Vause and White". Three dairies opened in the Kāneʻohe area, Texeira, Moniz, and the Souza Brothers Dairy. Nearest to the current project area, the Souza Brothers Dairy opened in the 1950s and was short-lived. The dairy was operated by two brothers, Alfred and Blase Souza, whose mother had come to Oʻahu from Peñuelas, Puerto Rico in 1901 (Souza and Souza 1985). The dairy industry quickly declined due to high prices of land in Honolulu, the urbanization of Kailua and Kāneʻohe, and the landowners realization that developing land for housing was more profitable than farming (Durand Jr. 1959: 244-245). The current project area is thought to have been used as grazing land by the Souza Brothers Dairy. The location of the dairy can be seen on a 1954 Kāneʻohe USGS map, to the northwest of the project area, just south of Castle High School (see Figure 14). The old diary is now the Kaluapuhi Neighborhood Park, also referred to as Souza Dairy Park.

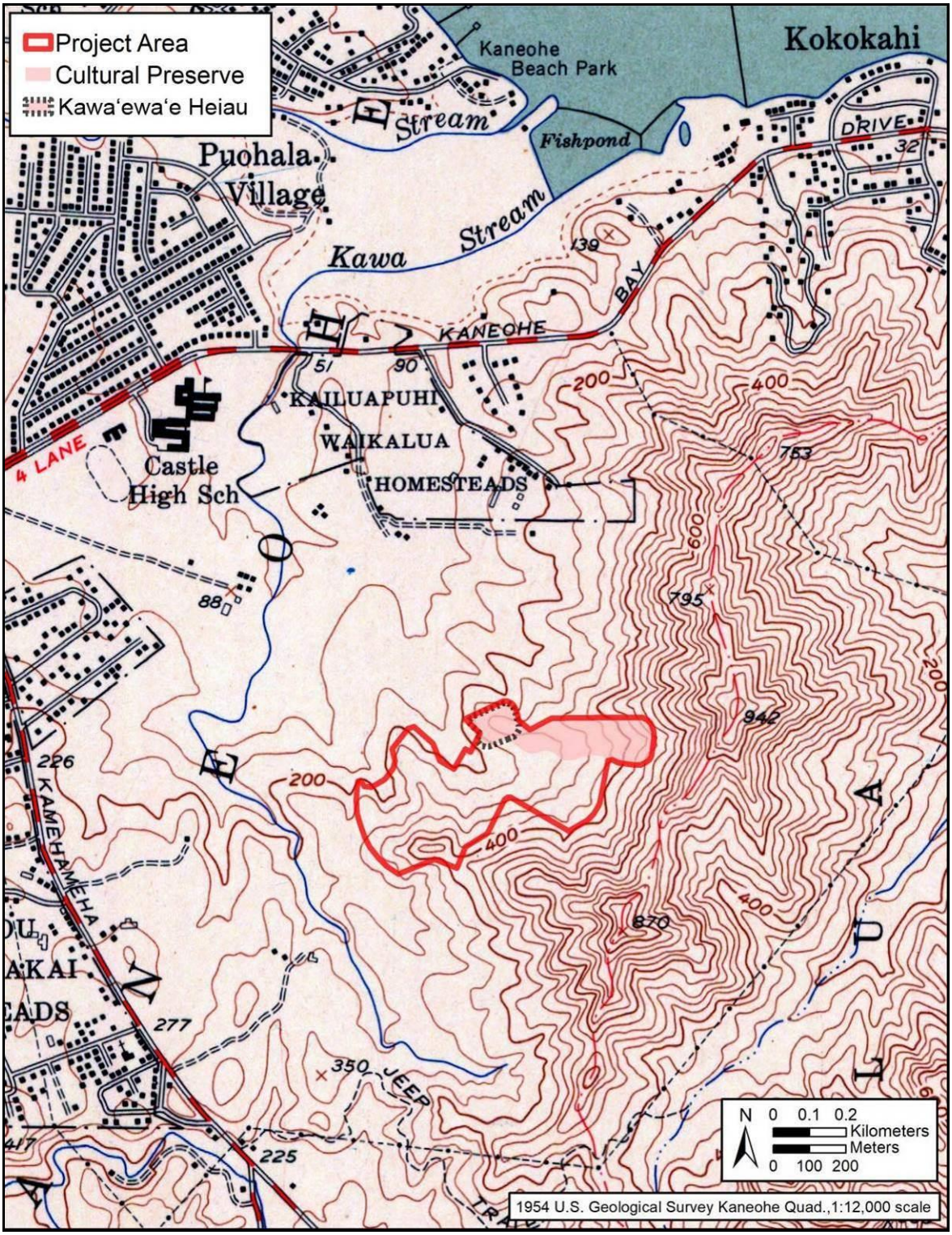

Figure 14. Portion of a 1954 Kāne'ohe USGS topographic quadrangle map showing the project area; notice a road and grouping of structures to the northwest of the project area, just south of Castle High School, marking the Souza Brothers Dairy

Section 5 Previous Archaeological Research

Several previous archaeological studies have been conducted within and in the vicinity of the current project area. Figure 15 and Figure 16 show the locations of previous archaeological studies and documented sites in the area and Table 5 provides additional details on each study.

5.1 Previous Archaeological Studies in the Vicinity of the Project Area

5.1.1 McAllister 1933

The earliest archaeological survey of Oʻahu by J.G. McAllister (1933) recorded several sites within and in the near vicinity of the project area. Sites in the vicinity include multiple fishponds (Site 349-351), a spring (Site 353), heiau (Site 352, 354, 356), and a hōlua slide (Site 355). McAllister's (1933) map showing the locations of these sites indicates Kawaʻewaʻe Heiau (Site 354), the hōlua slide (Site 355), and Puʻumakani Heiau (Site 356) are close to or within the current project area. Kawaʻewaʻe Heiau (Site 354) has been documented within the current project area and is discussed in detail within Section 8.1.1 of this report. Sites 355 and 356 were recorded as follows:

> **Site 355.** Small round hill, the name of which is not remembered, near the mountain side of Kawaʻewaʻe Heiau (Site 354). Said by John Bell to have been the location of a *holua* slide. This he saw destroyed when an attempt was made to plant pineapples in this section. Without doubt this is the site of the slide described by Bates in 1853 (pp. 106-107):
>
> Before reaching the mission station at Kaneohe, the road leads through a narrow but fertile ravine, tenanted by a few natives. In leaving the ravine, a low round hill, to the right of the path, is rather conspicuous from a long, narrow depression or channel on its side. It was an indication that one of the favorite games of the old Hawaiians had been played there. This game was called the *holua*, and was one of their favorite games of chance. Both chiefs and common people freely mingled in it. No particular spot monopolized it…A trench was dug from the top of the hill to the bottom, and carried out some distance over the adjoining plain. This was made quite smooth, and spread over with grass to aid in the velocity of the descending sled. It is said that the sliders would frequently get carried nearly a mile along the trench. This amusement was attended with great hazard of life, and great skill and courage were required to properly to fit a man for such an enterprise. Many of these sloped were on an angle of forty-five degrees; and woe to the man who rolled from his sled, or whose sled got out of the trench! Death was the penalty, or the unlucky slider maimed for life. If the players escaped unhurt, many of them lost their all in betting.

> This same site was seen by Briggs (p. 38) in 1881: 'Dewight pointed out to me a long narrow depression on some of the hills to be seen from our path, where old Hawaiians used to play one of their favorite games of chance.'
>
> **Site 356.** Puumakani Heiau, Kalapuhi, Waikalua, Kaneohe. This heiau was on the ridge facing the Nuuanu Pali, but the stones were removed and used for building a cattle corral farther down the slope. The heiau is said to have been built by Olopana. (McAllister 1933: 181, also quoted in Sterling and Summers 1978: 219-220)

The locations of the hōlua slide (Site 355) and Puʻumakani Heiau (Site 356) have not been relocated.

5.1.2 Hammatt and Shideler 1989

In 1989, Cultural Surveys Hawaiʻi (CSH) conducted an archaeological survey of a 90-acre parcel for the proposed Hawaiʻi State Veterans Cemetery, located approximately 0.8 km south of current project area (Hammatt and Shideler 1989). The field survey did not encounter any archaeological features. The report recommended that no archaeological monitoring would be necessary for proposed construction of the veterans cemetery.

5.1.3 McIntosh and Cleghorn 2013

In 2013, Pacific Legacy, Inc. conducted an AIS of a 56-acre parcel, located approximately 0.7 km north of the current project area (McIntosh and Cleghorn 2013). One previously documented site, Ahukini Heiau (SIHP # 50-80-10-352) was relocated. The heiau appeared to have been impacted by previous construction activities. No additional sites were recorded.

5.1.4 Medrano and Spear 2015

In 2015, Scientific Consultant Services, Inc. conducted an AIS and Cultural Impact Assessment (CIA) for the Kawa Stream and Ditch Improvements Project (Medrano and Spear 2015, Dagher and Spear 2015). The project was located along Kawa Stream, south of Kāneʻohe Bay Drive and northwest of Kamehameha Highway; approximately 0.6 km northwest of the current project area. The archaeological inventory survey documented one newly identified site, Kawa Stream Bridge (SIHP #50-80-10-7766) (Medrano and Spear 2015). The cultural impact assessment found that the Kawa Stream and Ditch Improvements Project would not hinder any cultural practices or have an adverse effect on the cultural significance of the area (Dagher and Spear 2015).

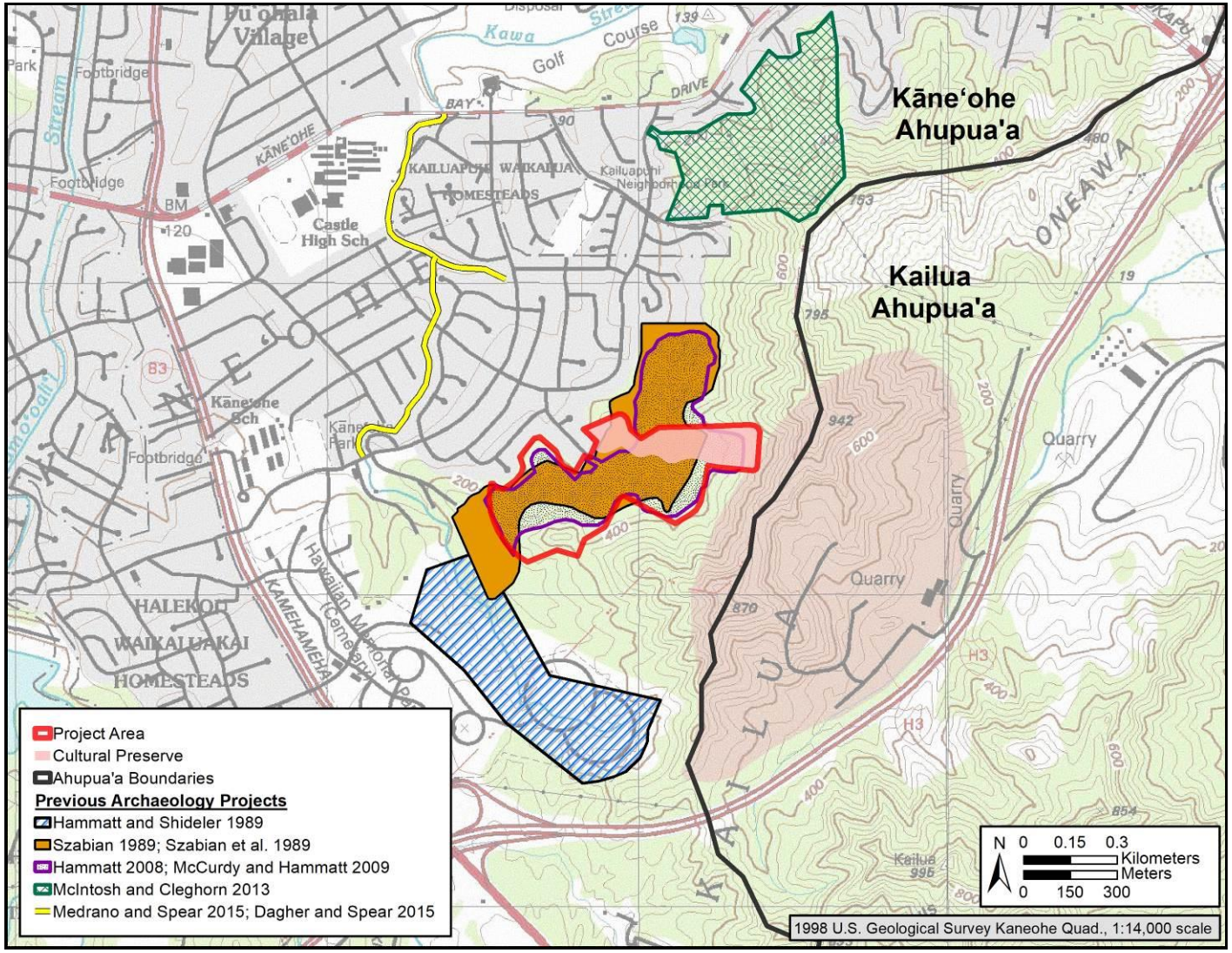

Figure 15. Portion of a 1998 Kāne'ohe USGS topographic map showing the locations of previous archaeological projects within and in the vicinity of the project area

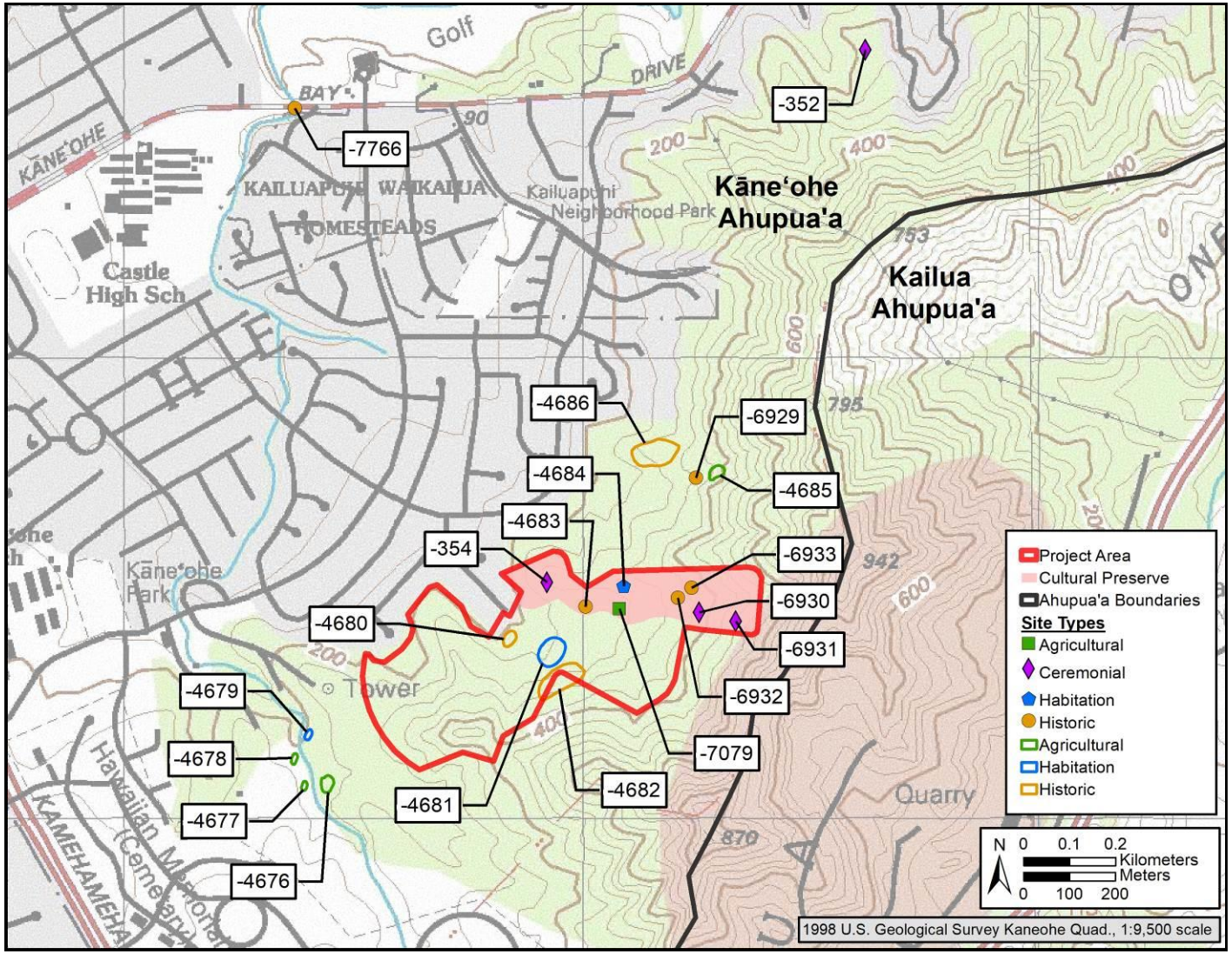

Figure 16. Portion of a 1998 Kāne'ohe USGS topographic map showing the locations of previously documented sites within and in the vicinity of the project area

Table 5. Table Listing Previous Archaeological Studies Within and in the Vicinity of the Current Project Area

Reference	Type of Study	Location & Distance from PA	Documented Sites (SIHP #50-80-10)
McAllister 1933	Island-wide Study	Oʻahu	Three sites close to or within project area, Kawaʻewaʻe Heiau (Site 354, SIHP # -354), a hōlua slide (Site 355, destroyed), and Puʻumakani Heiau (Site 356, not relocated, possibly destroyed)
Hammatt and Shideler 1989	Archaeological Survey	Hawaiʻi State Veterans Cemetery, TMK [1] 4-5-023: 002 (approx. 0.8 km south of PA)	No sites recorded
Szabian et al. 1989, Szabian 1989	Archaeological Reconnaissance Survey and Post-Field Summary Report	Pikoiloa Cemetery (current Hawaiian Memorial Park Cemetery), TMK [1] 4-5-032:001-002 (includes current PA)	One previously recorded site, Kawaʻewaʻe Heiau (SIHP # -354), and 11 newly identified sites: SIHP # -4676 (traditional habitation complex), -4677 (historic wall remnant, earthen mound), -4678 (historic wall remnant, earthen mound), -4679 (historic wall remnant), -4680 (historic terrace), -4681 (traditional habitation complex), -4682 (a platform and series of terraces), -4683 (historic pit feature), -4684 (traditional habitation complex), -4685 (historic wall remnants, terracing), and -4686 (historic stone alignments)
Hammatt 2008	Cultural Impact Assessment	Hawaiian Memorial Park, TMK [1] 4-5-033:001 (includes current PA)	Described concerns for preservation of Kawaʻewaʻe Heiau (SIHP # -354), understanding of surrounding sites as a cultural complex associated with Kawaʻewaʻe Heiau, and on-going cultural practices associated with gathering of plants for *hula* and *lei*

Reference	Type of Study	Location & Distance from PA	Documented Sites (SIHP #50-80-10)
McCurdy and Hammatt 2009	Archaeological Inventory Survey	Hawaiian Memorial Park, TMK [1] 4-5-033:001 (includes current PA)	Seven previously recorded sites, Kawa‘ewa‘e Heiau (SIHP # -354), -4680 (historic terrace), -4681 (traditional habitation complex), -4682 (platform and terraces determined to be natural, non-cultural), -4683 (historic pit feature [charcoal kiln]), -4684 (traditional habitation complex) and -4686 (historic stone alignments); and 6 newly identified sites, SIHP # -6929 (2 concentrations of lithic debitage), -6930 (traditional ceremonial stone enclosure), -6931 (traditional ceremonial stone alignments), -6932 (historic stone storage feature), -6933 (historic pit feature [charcoal kiln] with associated stone terrace), and -7079 (traditional grinding stone)
McIntosh and Cleghorn 2013	Archaeological Inventory Survey	Kāne‘ohe Ahupua‘a, TMK [1] 4-5-032:001 (0.7 km north of PA)	One previously recorded site, SIHP # 50-80-10-352 (Ahukini Heiau)
Medrano and Spear 2015, Dagher and Spear 2015	Archaeological Inventory Survey, and Cultural Impact Assessment	Kawa Stream and Ditch, TMK [1] 4-5 various (0.6 km NW of PA)	One newly identified site, SIHP #50-80-10-7766 (Kawa Stream Bridge)

5.2 Previous Archaeological Studies Within the Current Project Area

5.2.1 Szabian et al. 1989, Szabian 1989

In June of 1989, the applied research group of Bishop Museum conducted a 59.8-acre reconnaissance survey of the proposed Pikoiloa Cemetery (Szabian et al. 1989). The project area overlaps a portion of the current project area and extends approximately another 0.4 km north and 0.7 km to the southwest. Originally their project area was 92-acres and extended all the way to Kawa Stream. One previously recorded site, Kawaʻewaʻe Heiau (SIHP # 50-80-10-354), was encountered as well as 11 newly identified sites, containing 25 associated features. The 11 newly documented sites included: four sites adjacent to Kawa Stream south of the current project area, SIHP # -4676 (traditional habitation complex), -4677 (historic wall remnant, earthen mound), -4678 (historic wall remnant, earthen mound), and -4679 (possible historic wall remnant); two sites to the north of the current project area, -4685 (historic wall remnants, terracing), and -4686 (historic stone alignments); and five sites within the current project area, -4680 (historic terrace), -4681 (traditional habitation complex), -4682 (a platform and series of terraces), -4683 (historic pit feature, natural terracing), -4684 (traditional habitation complex) (Szabian et al. 1989). A post-field summary of the archaeological reconnaissance was composed with recommendations for the newly recorded sites (Szabian 1989). The newly recorded sites were seen as being likely associated with Kawaʻewaʻe Heiau and religious ritual, habitation and agricultural use of the land. Szabian (1989) recommended future fieldwork within the project area which would include intensive clearing and mapping with subsurface testing.

5.2.2 Hammatt 2008, McCurdy and Hammatt 2009

In 2008, a Cultural Impact Assessment (CIA) for the Hawaiian Memorial Park Expansion project (formerly referred to as Pikoiloa Cemetery) was conducted by CSH (Hammatt 2008). The CIA involved the examination of historical documents and maps, review of existing recorded archaeological sites within the project area, and consultation with community members. The CIA described two primary cultural concerns; the preservation of previously recorded Kawaʻewaʻe Heiau (SIHP # 50-80-10-354) and on-going cultural practices associated with gathering of plants for *hula* and *lei* (Hammatt 2008). It was noted that Kawaʻewaʻe Heiau (SIHP # -354) should be recognized as not just one isolated site but a complex of associated sites throughout the surrounding area. Consultation and site visits with community members suggested the potential for burials in or around Kawaʻewaʻe Heiau, the potential of a Hale o Papa (women's heiau) at SIHP # -4681 (Hammatt 2008). CIA recommendations included the preservation and maintenance of Kawaʻewaʻe Heiau in addition to awareness of cultural gathering practices within the project area (Hammatt 2008).

In 2009, CSH conducted an AIS for the Hawaiian Memorial Park Expansion project (McCurdy and Hammatt 2009). The AIS included a complete surface survey, documentation of encountered archaeological sites, and subsurface testing of select features to determine if subsurface deposits existed within the project area. During fieldwork a total of 12 sites were identified, six were previously recorded by Szabian et al. (1989) and six were newly recorded. Of the six previously recorded sites, five sites were relocated within the current project area including SIHP # 50-80-10-354 (Kawaʻewaʻe Heiau), -4680 (historic terrace), -4681 (traditional

habitation complex), -4683 (historic pit feature [charcoal kiln]), and -4684 (traditional habitation complex), and one relocated site was located north of the current project area (-4686 [historic wall remnants, terracing]). Of the six newly recorded sites, five were found within the current project area including -6930 (traditional ceremonial stone enclosure), -6931 (traditional ceremonial stone alignments), -6932 (historic stone storage feature), -6933 (historic pit feature [charcoal kiln] with associated stone terrace), and -7079 (traditional grinding stone). One newly recorded site was found north of the current project area (SIHP # -6929 [2 concentrations of lithic debitage]) (McCurdy and Hammatt 2009). Subsurface testing produced very limited findings. Project results indicated traditional Hawaiian and historic utilization of the project area. The study recommended a Cultural Preserve (CP) be established to protect a large portion of the documented sites within the project area boundary.

During the McCurdy and Hammatt (2009) AIS, two sites that were previously recorded by Szabian et al. (1989) were relocated well north of what project maps had indicated. SIHP # -4683 and -4684 were shown on the Szabian et al. (1989) map to be located near the center of the project area, however, McCurdy and Hammatt (2009) relocated the sites within the CP in the northeast portion of the project area.

Also of note, SIHP # -4682, a platform and series of terraces previously recorded by Szabian et al. (1989) was found to contain only natural features of the landscape and was therefore determined to be non-cultural. Based off McCurdy and Hammatt (2009) site maps, SIHP # -4682 could be located within the south-central portion of the current project area.

Section 6 Background Summary and Predictive Model

This project is located in Kāneʻohe Ahupuaʻa, Koʻolaupoko District, within the ʻili of Kawaʻewaʻe and Kalokoai. Traditionally, Kāneʻohe was a population center consisting of a fertile bay with a barrier reef, a multitude of coastal fishponds, a natural harbor, inland agricultural fields, and multiple streams flowing from the Koʻolau Range which fed loʻi, sweet potato, pandanus, wauke, bananas, and other crops.

The legend of Kamapuaʻa is a central moʻolelo of Kāneʻohe and is pertinent to the current project area. The legend discusses how ʻOlopana intended to sacrifice Kamapuaʻa at Kawaʻewaʻe Heiau, within the current project area, however instead ʻOlopana was slain by the mischievous pig god.

During the Māhele, Kāneʻohe was divided into LCAs and Crown lands. LCAs document taro land, fishponds, and dryland for crops, with taro land being the most predominant. No LCAs were issued within the ʻili of Kawaʻewaʻe, however, two were granted within Kalokoai (LCA 2444 and 2806). The LCA record loʻi, a house lot, and several fish ponds.

Several previous archaeological studies have been conducted within and in the vicinity of the project area. Documented sites within the current project area include traditional habitation, ceremonial, and agricultural sites as well as several historic sites.

Based on historic maps, background research, and previous archaeological studies in the vicinity it is likely that traditional Hawaiian habitation, ceremonial, and agricultural sites and features, traditional artifacts, and traditional cultural deposits exist within the project area. The site types may include c-shapes, terraces, stone alignments, mounds, walls, platforms, berms, and ʻauwai. It is also very likely historic sites and features, artifacts, and cultural deposits exist within the project area. Historic sites may include charcoal kilns, water retention/diversion terraces, ditches, and drainage basins, and sites related to commercial agriculture and dairy use.

Section 7 AIS Results

Archaeological fieldwork for this project consisted of a 100% pedestrian archaeological survey, documentation of encountered surface sites and features, and excavation at one site location (SIHP # -8241 [Honua 14], walled pit).

7.1 Pedestrian Survey

A 100% pedestrian archaeological survey was conducted intermittently between September 21, 2017 to February 21, 2018 by between two and six archaeologists from Honua Consulting. The 53.45-acre project area was surveyed by walking transects, oriented roughly N/S and E/W. GPS tracks were recorded as the parcel was surveyed (Figure 17). Spacing between each archaeologist ranged from between approximately 4-6 m (13-20 ft.) depending on ground visibility. Vegetation ranged from extremely thick with 0% ground visibility to a moderately open understory with approximately 90% ground visibility (Figure 18 through Figure 20).

A hand-held GPS was used to mark potential archaeological features and historic artifacts. Ten (10) previously documented sites (SIHP # -354, -4680, -4681, -4683, -4684, -6930, -6931, -6932, -6933 and -7079) and fourteen (14) newly identified sites (SIHP # -8228 to -8241 [Honua 1-14]) were recorded. In addition, one historic dairy bottle was collected (Acc. #1) and five historic to modern glass bottles were recorded and plotted with GPS. Modern trash was observed scattered within the southwest portion of the project area. No traditional Hawaiian artifacts were encountered during the pedestrian survey.

During the current survey two natural features were observed and noted, including a possible ‘ili boundary stone and a natural spring (refer to Figure 17). A very large boulder was observed approximately 40 meters south of the project area boundary and a GPS point was taken (PossIliBoundMrkr). The boulder was approximately 3 meters in diameter and several additional large boulders were nearby, all of which were within a circle of ti trees (Figure 21). It is proposed that the large boulder may be an ‘ili boundary marker, separating the ili of Kawa'ewa'e (to the north) and Kalokoai (to the south). A commanding view of Kāne‘ohe can be seen from the boulder (Figure 22). In addition, during the current survey a natural spring seep was observed within the eastern end of the Cultural Preserve (CP) and a GPS point was taken (12-28-SpringSeep). Spring water was observed seeping from a large natural basalt outcrop (Figure 23). The drainage area adjacent to the spring seep contained trickling water which appeared to be flowing from a separate spring further upslope. This spring water helps supply the watershed within the current project area, particularly within the CP, and likely feeds several of the ‘auwai and terraces documented during this study.

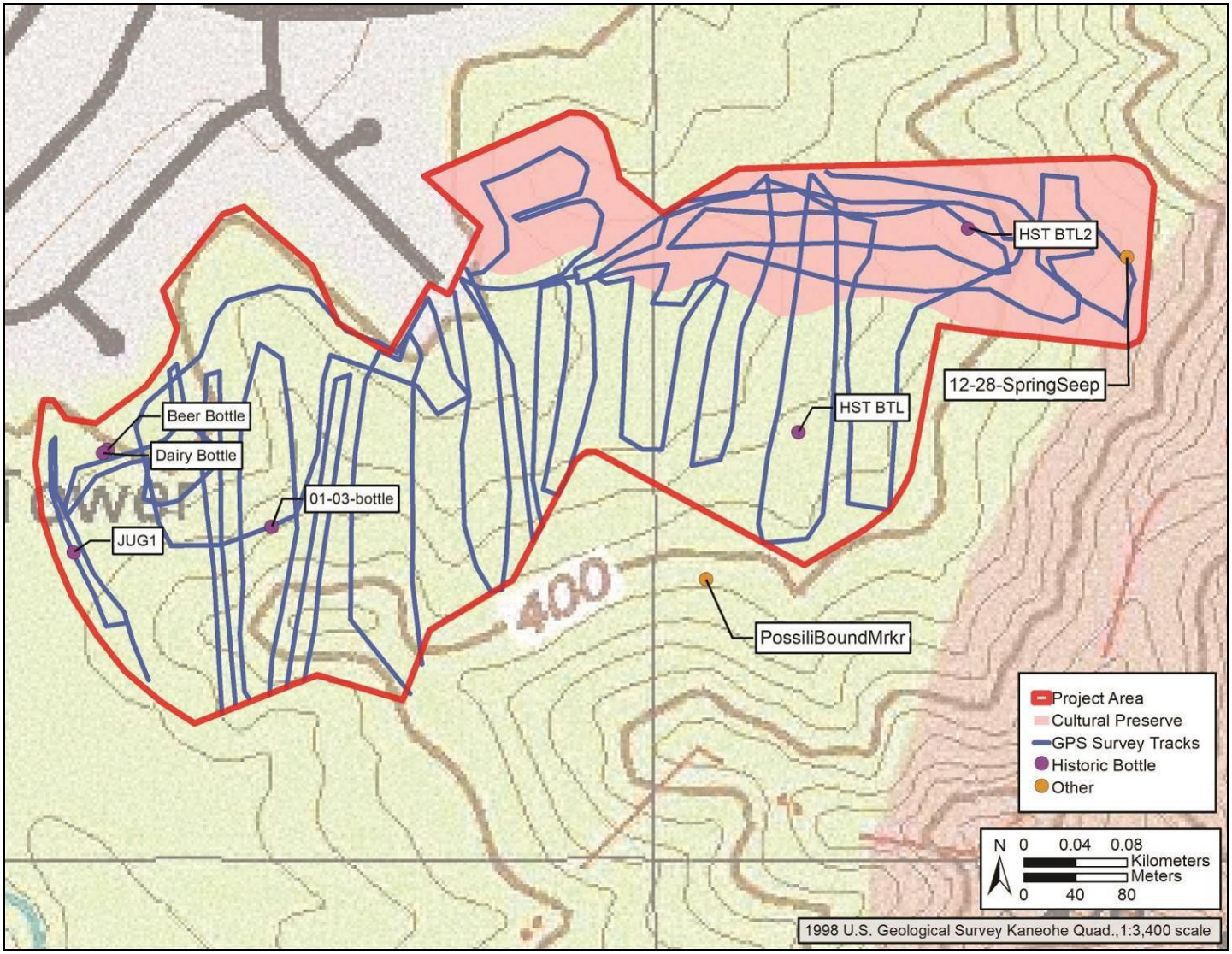

Figure 17. Portion of a 1998 Kāneʻohe USGS showing survey tracks and miscellaneous findings

Figure 18. Photo showing representative vegetation in lower elevations with moderate ground visibility, view to east

Figure 19. Photo showing representative vegetation near streams, showing poor ground visibility, view to northeast

Figure 20. Photo showing representative vegetation in inland portions of the project area, with moderate to poor ground visibility, view to east

Figure 21. Photo showing a possible ‘ili boundary stone located outside the project area (GPS: PossIliBoundMrkr), view to southeast

Figure 22. Photo showing a view to Kāne‘ohe Bay from the possible ‘ili boundary stone, view to east

Figure 23. Photo showing a natural seeping spring located within the eastern end of the Cultural Preserve (GPS: 12-28-SpringSeep), view to northeast