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Office of Conservation and Coastal Lands
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HONOLULU, HAWAII 96809

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COMMISSION ON WATER RESOURCE MANAGEMENT

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LAND
STATE PARKS

REF:OCCL:MC

FILE COPY
MAY 08 2014

CDUA: HA-3709

APR 1 1 2014

MEMORANDUM

To: Jessica Wooley, Interim Director
Office of Environmental Quality Control

From: Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

Subject: Draft Environmental Assessment (DEA) for a Single Family Residence and Landscaping.

The Department of Land and Natural Resources has reviewed the draft EA for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Please publish notice of availability for this project in next available issue of the *Environmental Notice*. We have enclosed one hard copy of the draft EA document, as well as a disc with the draft EA, OEQC Bulletin Publication Form and Executive Summary. We will follow this with an electronic copy of the applicant's project summary and the OEQC Bulletin Publication Form.

We will be processing the associated Conservation District Use Permit at a later date. Please contact Michael Cain of our Office of Conservation and Coastal Lands staff at 587-0048 should you have any questions.

Attachments: *Draft EA, OEQC Pub Form, 1 disc*

APPLICANT ACTIONS
SECTION 343-5(C), HRS
PUBLICATION FORM (JULY 2012 REVISION)

Project Name: **Bundrant Single-Family Home, Landscaping and Well Repairs at Kahauloa**
Island: Hawai'i
District: South Kona
TMK: (3rd): 8-3-005:001, 020 & 021
Permits: County of Hawai'i: Special Management Area Permit or exemption; Plan Approval and Grubbing Grading and Building Permits. Department of Land and Natural Resources CDUP; Well Pump Installation Permit

Approving Agency:
Office of Coastal and Conservation Lands
Hawai'i State DLNR
P.O. Box 621
Honolulu HI 96809
Sam Lemmo: 808-587-0377

Applicant:
Charles and Diane Bundrant
83-544 Keawaiki Road
Captain Cook, Hawai'i 96704
Greg Mooers: 808-880-1455, gmooers@hawaii.rr.com

Consultant:
Geometrician Associates
PO Box 396
Hilo HI 96721
Ron Terry 808-969-7090, rterry@hawaii.rr.com

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Status (check one only):

_x_DEA-AFNSI — Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov; a 30-day comment period ensues upon publication in the periodic bulletin.

__FEA-FONSI — Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqchawaii@doh.hawaii.gov; no comment period ensues upon publication in the periodic bulletin.

__FEA-EISPN — Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov; a 30-day consultation period ensues upon publication in the periodic bulletin.

__Act 172-12 EISPN — Submit the approving agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqchawaii@doh.hawaii.gov. NO environmental assessment is required and a 30-day consultation period upon publication in the periodic bulletin.

__DEIS — The applicant simultaneously transmits to both the OEQC and the approving agency, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.

__FEIS — The applicant simultaneously transmits to both the OEQC and the approving agency, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.

__ Section 11-200-23 Determination — The approving agency simultaneous transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the applicant. No comment period ensues upon publication in the periodic bulletin.

__Statutory hammer Acceptance — The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it failed to timely make a determination on the acceptance or nonacceptance of the applicant's FEIS under Section 343-5(c), HRS, and that the applicant's FEIS is deemed accepted as a matter of law.

__Section 11-200-27

Determination	The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.
__Withdrawal (explain)	

Summary *(Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page):*

Charles and Diane Bundrant propose to build a single-family residence for a family caretaker, re-outfit an existing small irrigation well, and conduct landscaping activities on the already disturbed portions of a leased property in the Conservation District. The property is in a residential use area away from the shoreline. No actions would affect trails, sensitive viewplanes cultural uses, rare, threatened or endangered species or native ecosystems. Archaeological features have been inventoried and important features will be formally preserved. Pumping of minor volumes of brackish water for irrigating landscaping will not adversely affect the aquifer. Land clearing and construction activities would produce minor short-term impacts to noise, air and water quality, access and scenery. The contractor will be required to emplace best management practices (BMPs) to properly manage storm water runoff and prevent erosion. If during construction any previously unidentified sites or remains such as artifacts, shell, bone, charcoal deposits or human burials are encountered, work will stop immediately and SHPD will be consulted to determine the appropriate mitigation.

DRAFT ENVIRONMENTAL ASSESSMENT

Bundrant Single-Family Home, Landscaping and Well Repairs at Kahauloa

TMK (3rd): 8-3-005:001, 020 & 021
Kahauloa, South Kona, Island of Hawai‘i, State of Hawai‘i

April 2014

Prepared for:
State of Hawai‘i
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai‘i 96809

DRAFT ENVIRONMENTAL ASSESSMENT

Bundrant Single-Family Home, Landscaping and Well Repairs

TMK (3rd): 8-3-005:001, 020 & 021
Kahauloa, South Kona, Island of Hawai‘i, State of Hawai‘i

APPLICANT:

Charles and Diane Bundrant
83-544 Keawaiki Road
Captain Cook, Hawai‘i 96704

ACCEPTING AUTHORITY:

Hawai‘i State Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai‘i 96809

CONSULTANT:

Geometrician Associates
Ron Terry Ph.D.
PO Box 396
Hilo, Hawai‘i 96721

CLASS OF ACTION:

Use of Land in Conservation District
Use of Land in Kealakekua Bay Historic District

This document is prepared pursuant to:

The Hawai‘i Environmental Protection Act,
Chapter 343, Hawai`i Revised Statutes (HRS), and
Title 11, Chapter 200, Hawai‘i Department of Health Administrative Rules (HAR).

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SUMMARY OF PROJECT, ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Charles and Diane Bundrant propose to build a single-family residence for a family caretaker, re-outfit an existing small irrigation well, and conduct landscaping activities on the already disturbed portions of a leased property in the Conservation District. The property is in a residential use area away from the shoreline. No actions would affect trails, sensitive viewplanes cultural uses, rare, threatened or endangered species or native ecosystems. Archaeological features have been inventoried and important features will be formally preserved. Pumping of minor volumes of brackish water for irrigating landscaping will not adversely affect the aquifer. Land clearing and construction activities would produce minor short-term impacts to noise, air and water quality, access and scenery. The contractor will be required to emplace best management practices (BMPs) to properly manage storm water runoff and prevent erosion. If during construction any previously unidentified sites or remains such as artifacts, shell, bone, charcoal deposits or human burials are encountered, work will stop immediately and SHPD will be consulted to determine the appropriate mitigation.

PART 1: PROJECT DESCRIPTION AND E.A. PROCESS

1.1 Project Description and Location

Project Location and Background

The applicants, Charles and Diane Bundrant, propose to build a single-family residence for a family caretaker, re-outfit an existing small irrigation well, and conduct landscaping activities on property in the General subzone of the Conservation District at Kahauloa, South Kona, Hawai‘i Island (Figure 1). The property consists of three separate parcels totaling 25.5696 acres: TMK (3rd.) 8-3-005:001 (24.93 acres), which has for decades been partially landscaped and crossed by roads that provide access to various properties within Keawaiki Beach Lots; 8-3-005:021 (0.79 acres), which has been cleared and landscaped in the past; and 8-3-005:020 (0.2296 acres), which houses a water well and well house (Figures 2 and 3a). The property is adjacent to Pu‘uhonua Road, without shoreline access and a minimum of 200 feet from the shoreline (see Figure 3a). The current access road to the shoreline at Ke‘ei, called Ke‘ei Beach Access Road, cuts from Pu‘uhonua Road *makai* across TMK-3-005:001; an alternate access road that maintains access to Ke‘ei within the *ahupua’a* of Ke‘ei was recently improved by landowner Kamehameha Schools on the property immediately to the south.

The property is owned by Kamehameha Schools (KS) and is leased by Mr. and Mrs. Bundrant, who have a home on a directly adjacent property and currently utilize a small portion of the lease property for landscaping purposes. A number of sensitive archaeological resources are present on the undisturbed portions of the property, which both Kamehameha Schools and the Bundrants have endeavored to protect. In 2010, the Bundrants obtained a Conservation District Use Permit to erect two vehicular gates on two existing access roads to the lease property and other properties *makai*. The gates had been a condition of their lease with Kamehameha Schools and were meant to protect archaeological resources and prevent unauthorized vehicular access on the lease property roads, which do not provide access to any public resources such as the shoreline or parks. Pedestrian access continues to be allowed.

Proposed Project

The project consists of three related actions on the project site, which is defined to include the existing disturbed area of the properties as illustrated in Figure 3a:

- <u>Construction of a Single-Family Dwelling</u>. On TMK 8-3-005:001, the Bundrants plan to build a single-family home that would be a two-story structure with a “footprint” of 68 feet by 44 feet and a total developed area of 4,528 square feet (sf) (see Site Plans in Figure 3a-e). The single-family residence will utilize earth tones to blend in and will have features such as solar hot water, solar photovoltaic (if permissible), low-flow fixture, passive cooling, etc., that reduce energy use. Solar energy will be considered as a source for the well pump.

- Permitting and Pump Refitting of Existing Shallow Irrigation Well and Reconstruction of Well House. An irrigation well that was originally installed between 1928 and 1954 will have its pump refitted. The pump and pumping schedule will be designed to deliver approximately two thousand gallons per day of slightly brackish water for use in irrigation of the landscape. The existing well house will be reconstructed (see Figure 3e) and two 2,500-gallon water tanks will be emplaced adjacent. The project will require a Pump Installation Permit from the Department of Land and Natural Resources, Commission on Water Resources Management (CWRM).
- Landscaping. The Bundrants would continue the long-standing landscaping present on the property and would expand the landscaping along the access roads and adjacent to the home, with an emphasis on native and Polynesian plants (see Figure 3a).

All funding for the project is private, no public funds are involved. Work would begin as soon as permits were obtained and would take approximately 18 months to complete.

1.2 Environmental Assessment Process

This Environmental Assessment (EA) process is being conducted in accordance with Chapter 343 of the Hawai‘i Revised Statutes (HRS). This law, along with its implementing regulations, Title 11, Chapter 200, of the Hawai‘i Administrative Rules (HAR), is the basis for the environmental impact process in the State of Hawai‘i. An EA is necessary because the proposed project involves an action within the Conservation District.

According to Chapter 343, an EA is prepared to determine impacts associated with an action, to develop mitigation measures for adverse impacts, and to determine whether any of the impacts are significant according to thirteen specific criteria. If a study concludes that no significant impacts would occur from implementation of the proposed action, a Finding of No Significant Impact (FONSI) is prepared and an action is permitted to occur. If a study finds that significant impacts are expected to occur as a result of a proposed action, then an Environmental Impact Statement (EIS) is prepared with wider investigation of impacts and public involvement. Section 2 considers alternatives to the proposed project, and Section 3 discusses the existing environment, potential impacts and mitigation. Section 4 discusses the determination that will be made by Department of Land and Natural Resources (DLNR) for this project, and Section 5 lists the criteria and the findings made by the applicant in consultation with DLNR.

1.3 Public Involvement and Agency Coordination

The following agencies, organizations and individuals have been consulted during the Environmental Assessment Process:

County:

Planning Department
County Council
Department of Public Works Fire Department

Police Department
Department Water Supply

State:

Department of Land and Natural Resources, Land Division
Department of Land and Natural Resources, State Historic Preservation Division
Department of Health
Office of Hawaiian Affairs, Honolulu and West Hawai‘i

Private:

Sierra Club
Thirteen adjoining property owners/lessees
Kona Hawaiian Civic Club

Copies of communications received during early consultation are contained in Appendix 1a.

PART 2: ALTERNATIVES

2.1 Proposed Project

The proposed project is described in Section 1.1 above and its locations and features are illustrated in Figures 1-6.

2.2 No Action

Under the No Action Alternative, no single-family residence would be developed, the landscaping would remain in its current state with no changes, and the well would not be refitted or the well house repaired. Short-term and long-term impacts associated with implementation and use of the proposed facilities would not occur.

2.3 Other Alternatives

The lessee does not envision any other uses for the property that would suit his goals for the property and conform to the lease and the rules of the Conservation District; therefore, no other alternatives are considered in this EA.

Figure 1 General Location Map

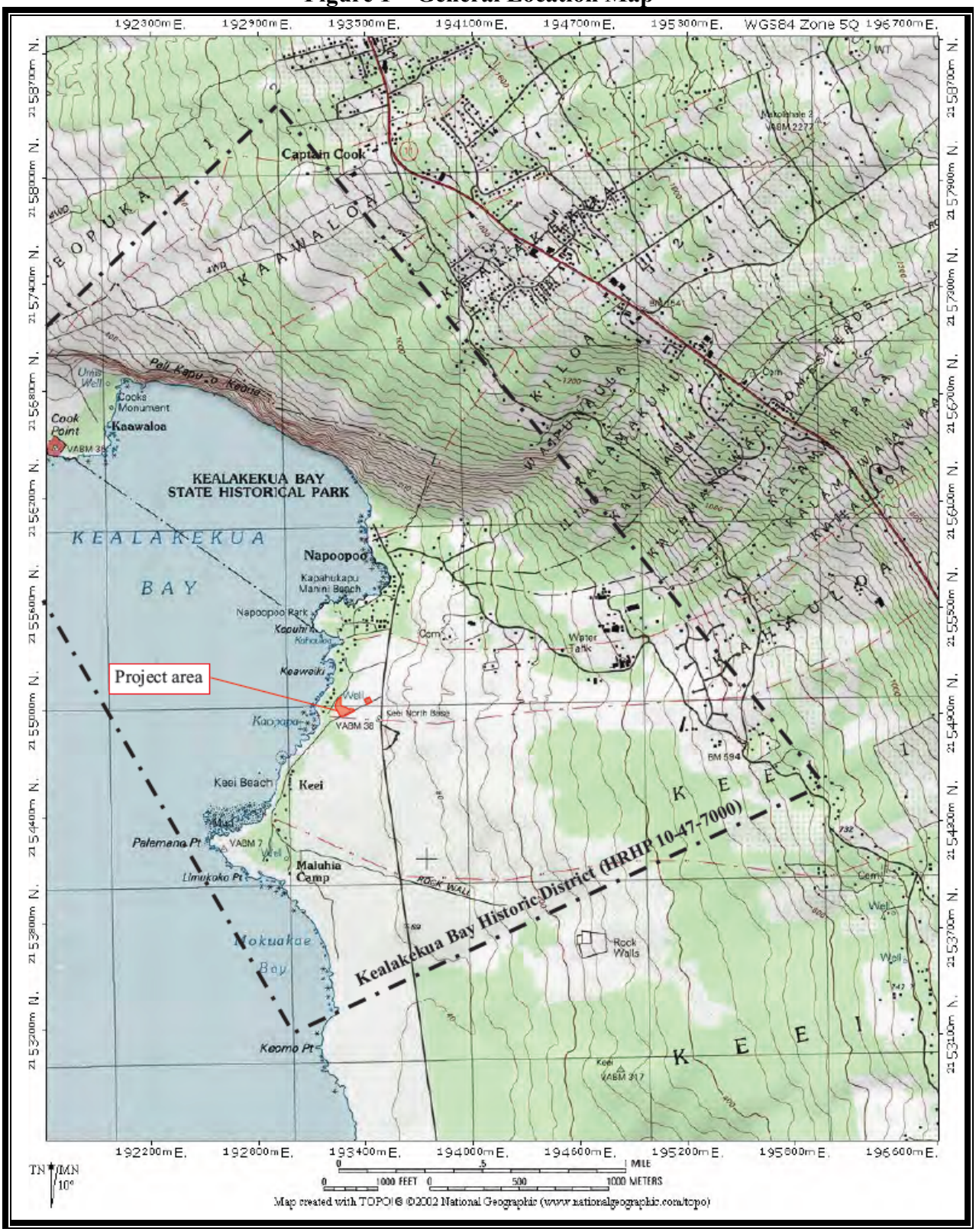
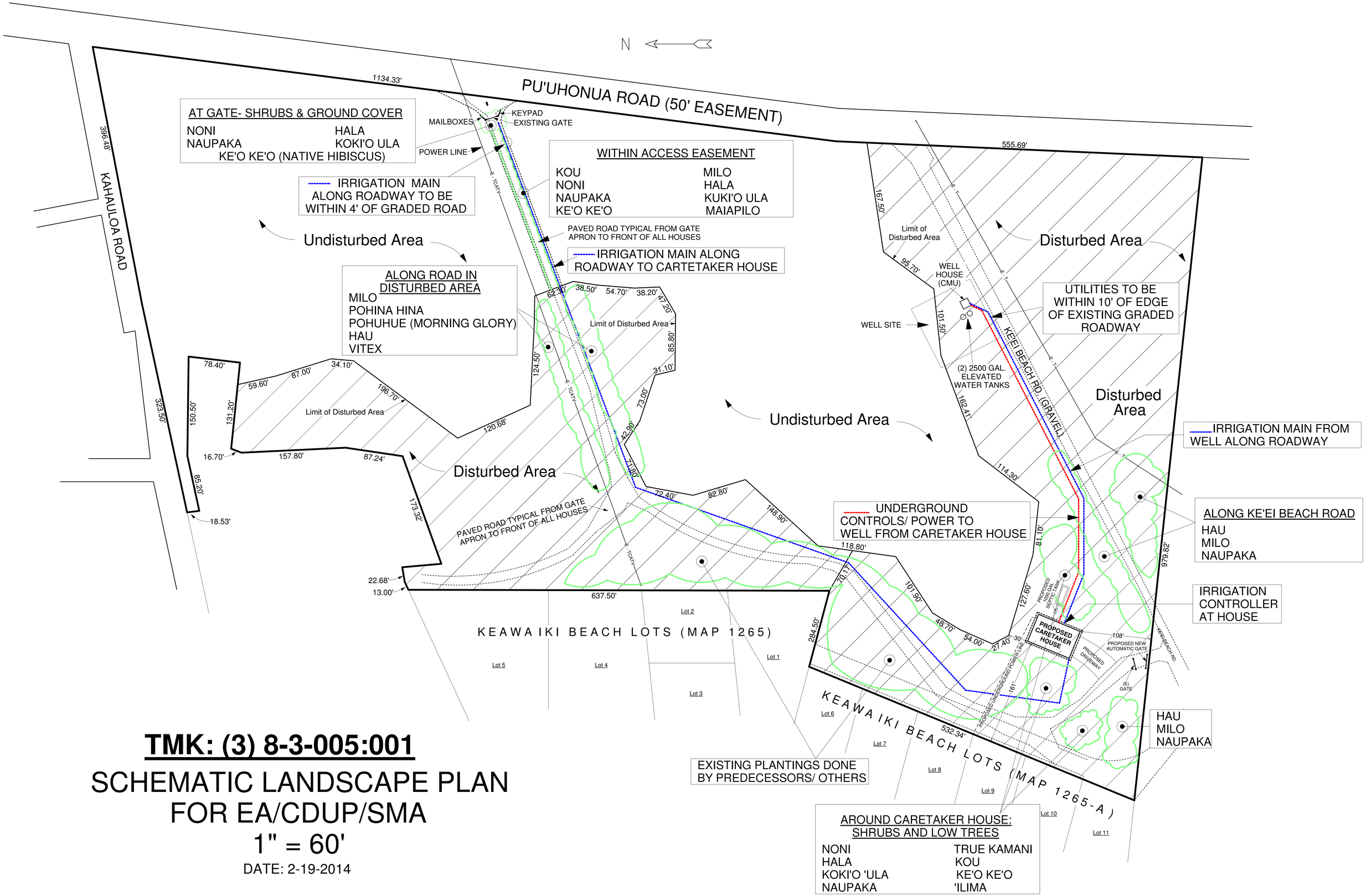


Figure 2 – Project Site Photos

2a Area Proposed for Residence ▲ ▼ 2b Well Site

Figure 2 – Project Site Photos

2c Ke‘ei Road ▲ ▼ 2d Undeveloped Portion of Property

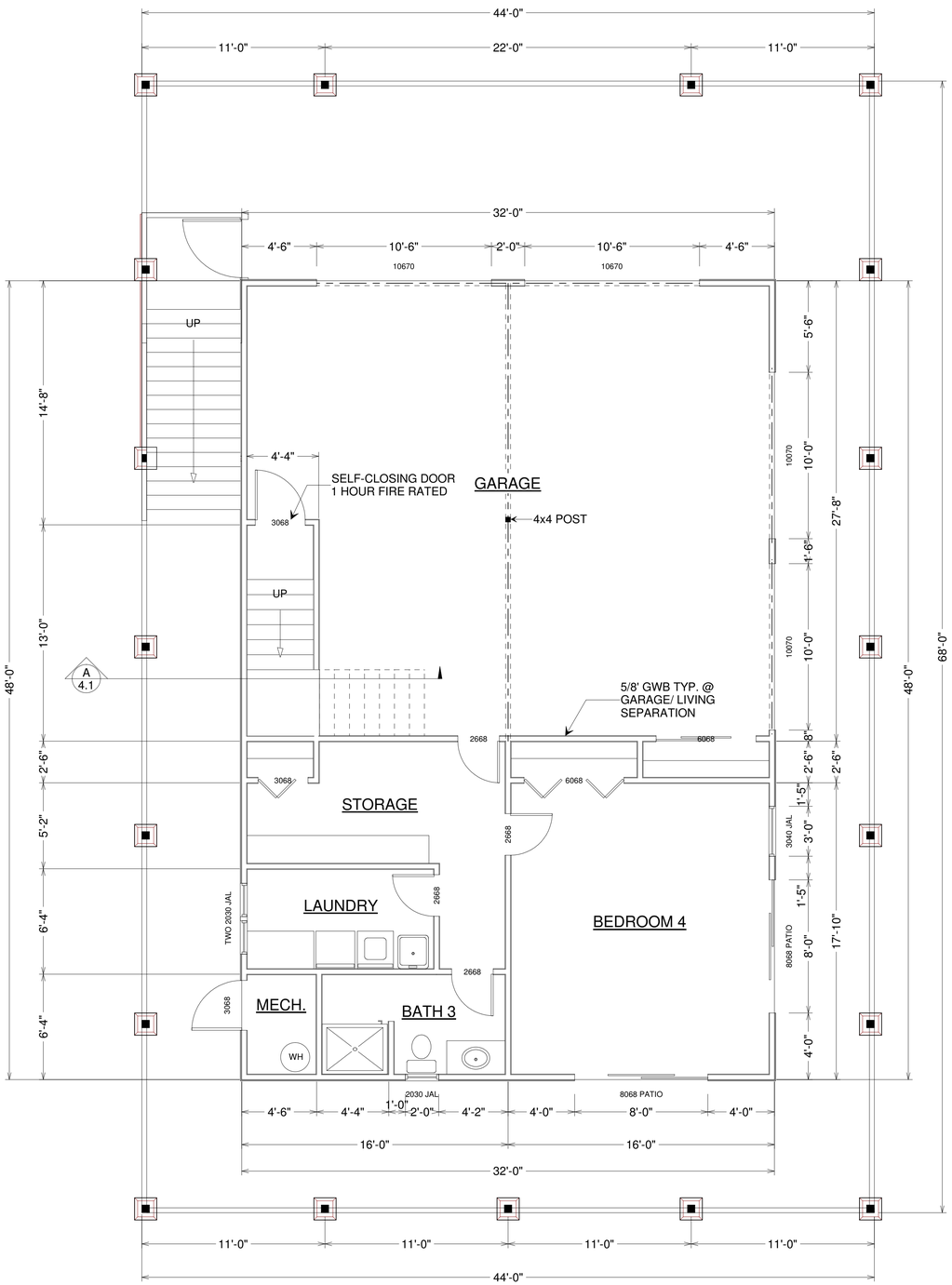


TMK: (3) 8-3-005:001

SCHEMATIC LANDSCAPE PLAN FOR EA/CDUP/SMA

1" = 60'

DATE: 2-19-2014



LOWER FLOOR PLAN

SCALE: 1/4" = 1' 0"

WINDOW SCHEDULE			
QTY	FLOOR	SIZE	DESCRIPTION
3	1	2030	JALOUSIE w/ SCREEN
1	1	3040	JALOUSIE w/ SCREEN

DOOR SCHEDULE			
QTY	FLOOR	SIZE	DESCRIPTION
4	1	2668	4 PANEL DOOR
1	1	3068	SOLID CORE DOOR
1	1	3068	BIFOLD 2 PANEL DOOR
1	1	3068	EXT. HINGED-PANEL
1	1	3668	WROUGHT IRON GATE- CUSTOM
1	1	6068	BIFOLD-LOUVERED
1	1	6068	SLIDER-PANEL
2	1	8068	EXT. SLIDER-GLASS w/ SCREEN

GENERAL NOTES

- ALL WORK TO BE IN CONFORMANCE WITH 1991 UBC
- MEASUREMENTS SHOWN ARE TO EDGES OF FRAMING
- VENT ALL EXHAUST FANS, DRYER VENTS, AND RANGES TO OUTSIDE
- VENT WATER HEATER PRESSURE RELIEF VALVES TO OUTSIDE
- PROVIDE FIRE BLOCKING AT ALL PLUMBING AND MECHANICAL PENETRATIONS
- ALL SHOWER WALLS TO BE WATER PROOF TO MINIMUM 70" ABOVE DRAIN INLET
- ALL GLAZING WITHIN 70" ABOVE DRAIN OUTLET TO BE SAFETY GLASS
- ALL GLAZING WITHIN 24" OF A DOOR OR WITHIN 18" OFF THE FLOOR TO BE SAFETY GLASS
- SMOKE DETECTORS SHALL BE 110 VOLT, INTERCONNECTED W/BATTERY BACK-UP

PLANS HAWAII LLC
P.O. BOX 377466, OCEAN VIEW, HI 96737
(808) 987-2424

NEW RESIDENCE for: B.P. BISHOP ESTATES TTEES (legal owner)
and CHARLES AND DIANE BUNDRANT (lessees)
TMK: (3) 8 - 3 - 005:001
SOUTH KONA, ISLAND OF HAWAII

Dr. William C. Fouik
Licensed Professional Architect
AR-9859
EXP- 4/30/2014
Hawaii USA

This work was prepared by me or under my supervision. Construction of this project will be under my observation.

MAY 21, 2011

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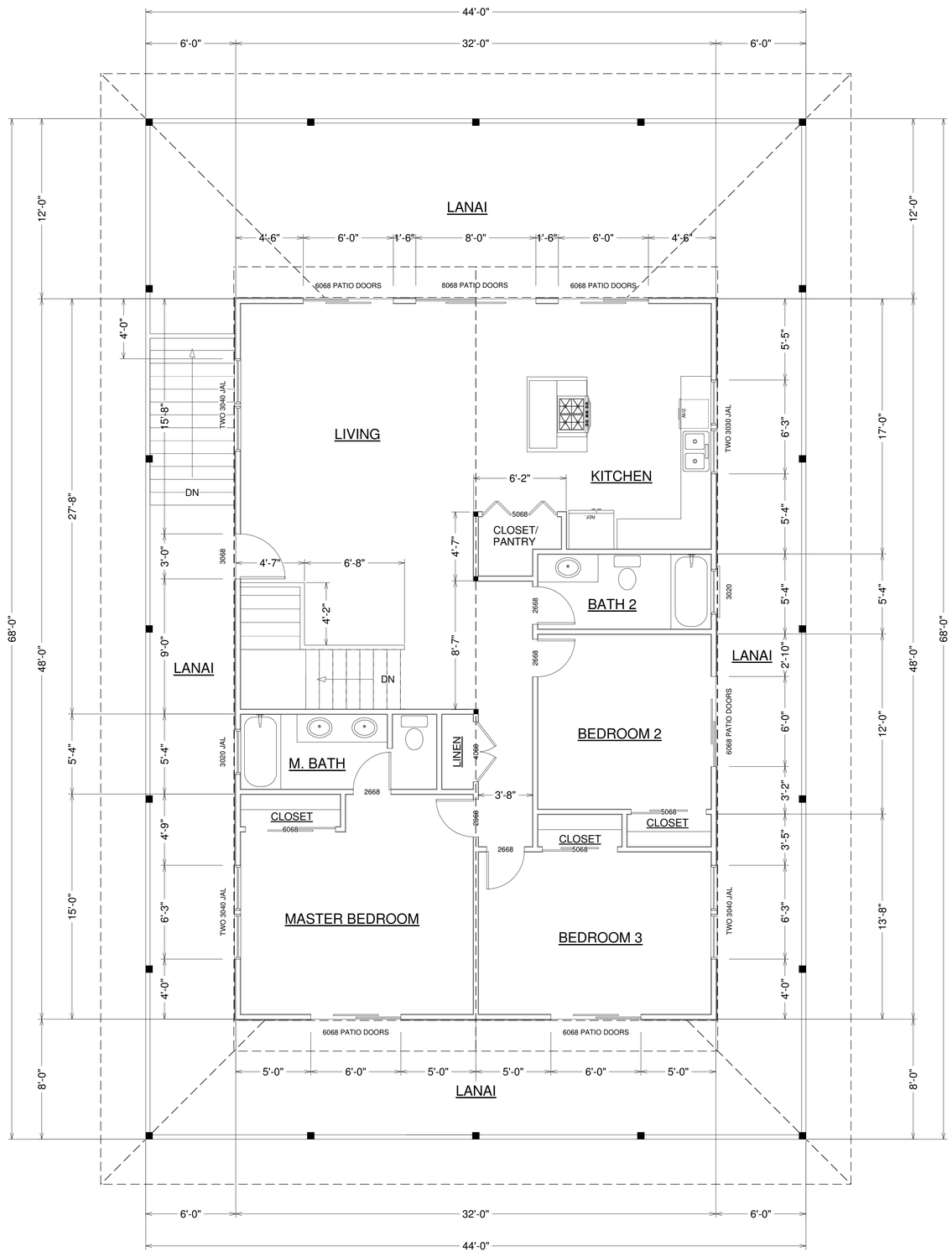

UPPER FLOOR

1/4" = 1'-0"

WINDOW SCHEDULE			
QTY	FLOOR	SIZE	DESCRIPTION
2	2	3020	JALOUSIE w/ SCREEN
2	2	3030	JALOUSIE w/ SCREEN
6	2	3040	JALOUSIE w/ SCREEN

DOOR SCHEDULE			
QTY	FLOOR	SIZE	DESCRIPTION
5	2	2668	4 PANEL DOOR
1	2	3068	EXT. 2 PANEL 2 GLASS
1	2	4068	HINGED-LOUVERED
1	2	5068	BIFOLD-LOUVERED
2	2	5068	SLIDER-LOUVERED
5	2	6068	EXT. SLIDER-GLASS w/ SCREEN
1	2	6068	SLIDER-LOUVERED
1	2	8068	EXT. SLIDER-GLASS w/ SCREEN

GENERAL NOTES

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MAY 21, 2011

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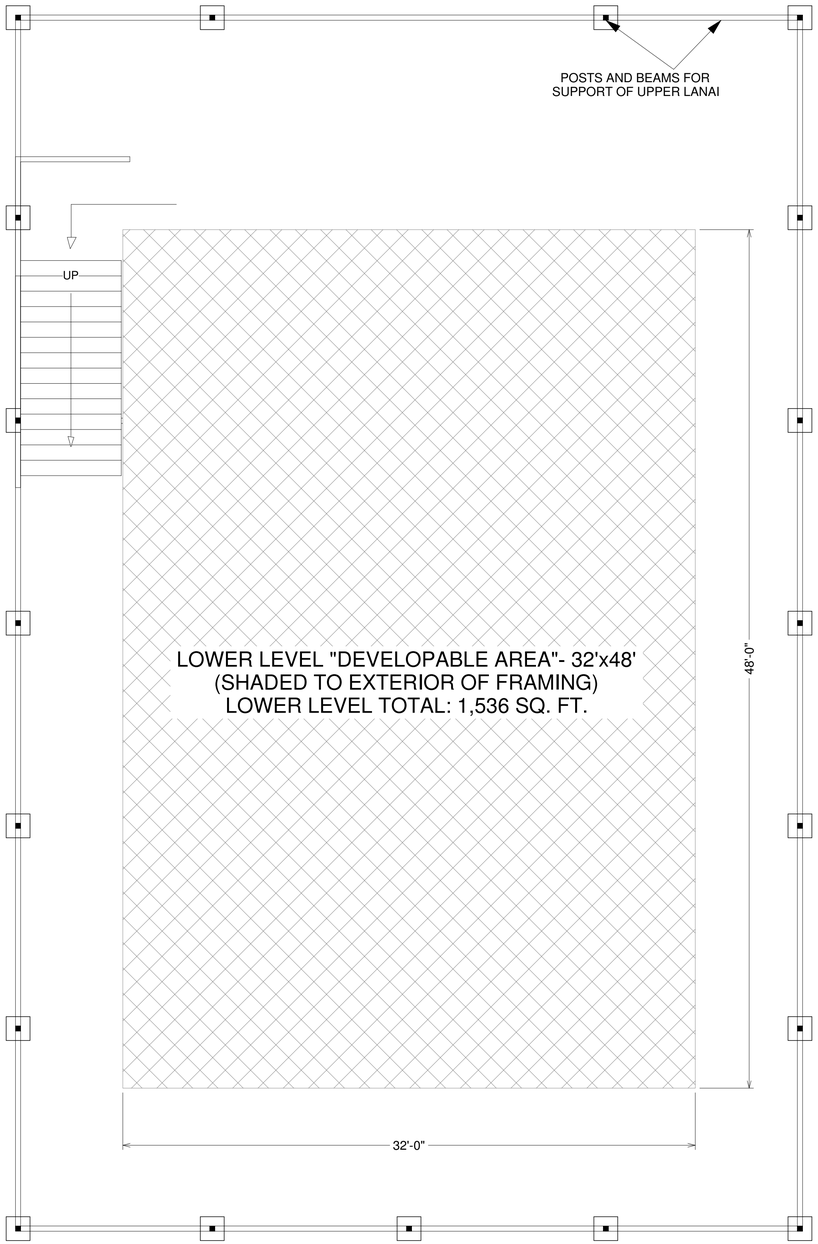

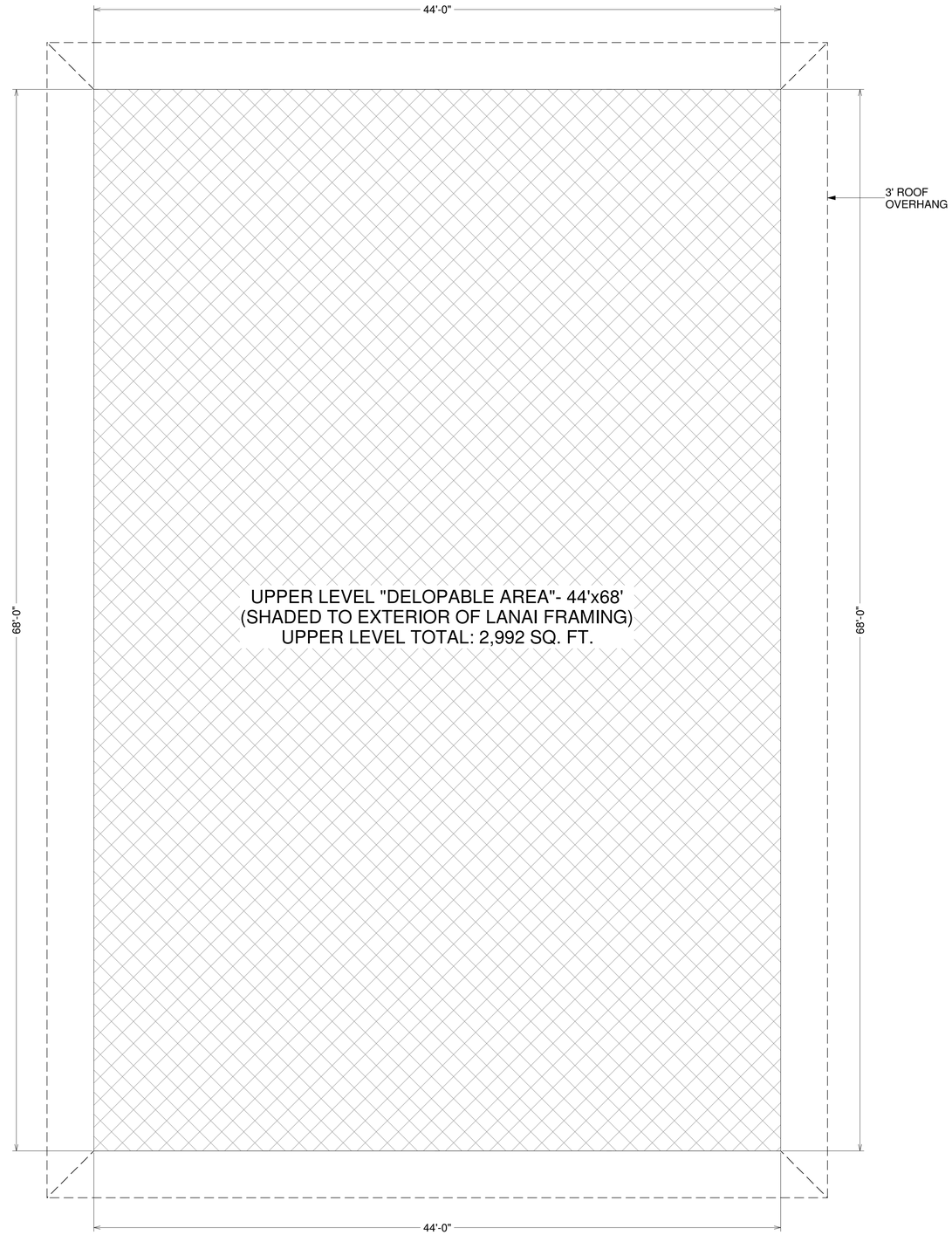

DEVELOPABLE AREA SUMMARY

LOWER LEVEL:	1,536 SQ. FT.
UPPER LEVEL:	2,992 SQ. FT.
TOTAL:	4,528 SQ. FT.

DEVELOPABLE AREAS

REDUCED PLAN- NOT TO SCALE

PLANS HAWAII LLC
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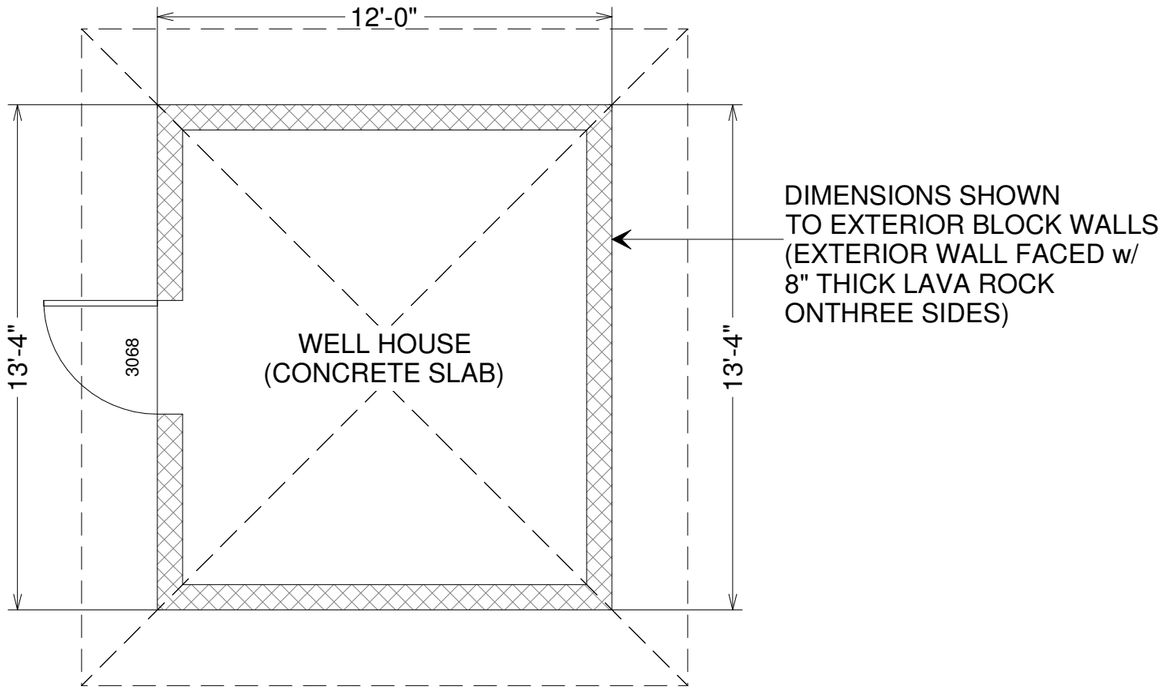
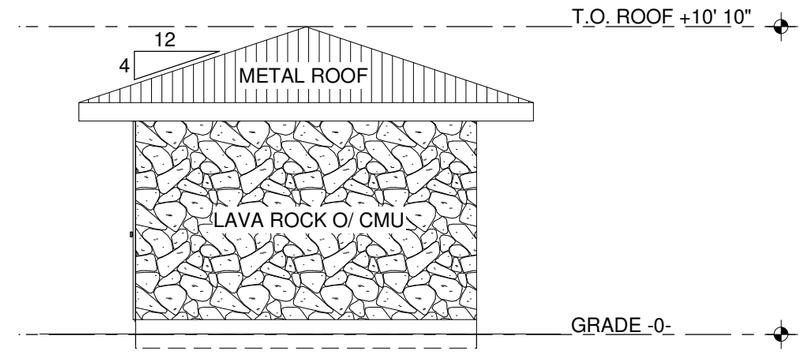
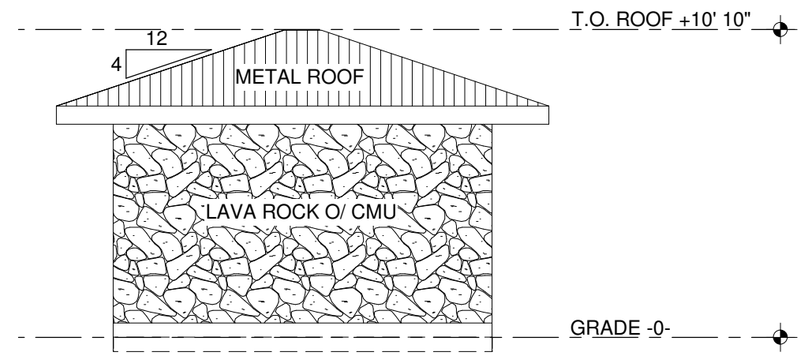


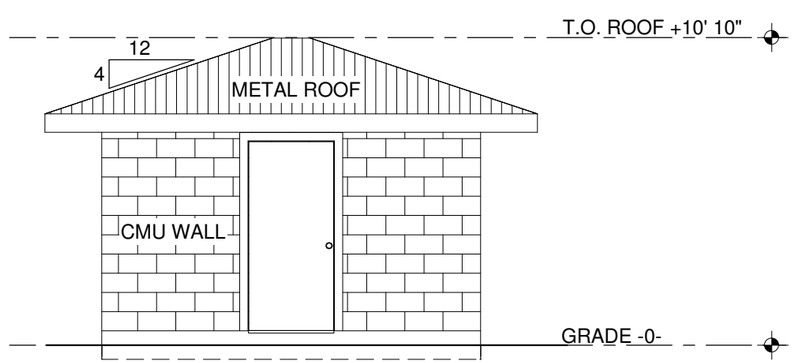
WELL HOUSE FLOOR PLAN
1/4" = 1'-0"



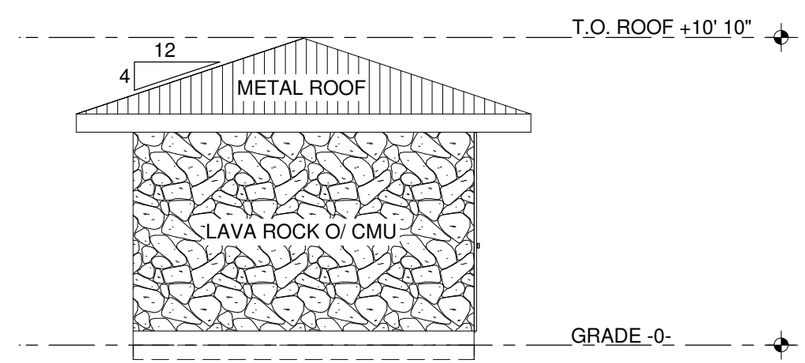
EAST ELEVATION
3/6" = 1'-0"



SOUTH ELEVATION
3/6" = 1'-0"



NORTH ELEVATION
3/6" = 1'-0"



WEST ELEVATION
3/6" = 1'-0"

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PART 3: ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION

3.1 Basic Geographic Setting

The subject TMKs in Kahauloa will be referred to in this EA as the project site. The project site is bounded on the west or *makai* side by the Keawaiki Beach Lots subdivision, on the north by Kahauloa Road, on the east or *mauka* side by Pu‘uhonua Road and on the south by the Ke‘ei properties of Kamehameha Schools. Aside from the unpaved roads, a roughly five-acre, irregular area is for landscaping and the irrigation well and shed, the project site is vacant and unused, with no structures and no farming or other active land uses. The *makai* edge of the project site is approximately 200 feet from the coastline. Elevations vary from about 50 feet above sea level at Pu‘uhonua Road on the *mauka* side to about 20 feet above sea level on the *makai* side. The climate in the area is mild and semi-arid, with annual rainfall averaging about 40 inches and average daily temperatures of approximately 75 degrees F (U.H. Hilo-Geography 1998:57).

3.2 Physical Environment

3.2.1 Geology and Geologic Hazards

Environmental Setting

The project site is located the western slope of Mauna Loa volcano. About 1,300 feet to the northeast is the base of a steep *pali* (cliff) that presents a dramatic backdrop. The surface of the project site consists of weathered basaltic soils and rock outcroppings derived from Holocene epoch (between 200 and 750 years old) lava flows from Mauna Loa (Wolfe and Morris, 1996). The U.S. Natural Resources Conservation Service (formerly Soil Conservation Service) classifies nearly the entire surface of the project site as ‘a‘a lava flows and the remainder, primarily along the makai portion, as Kainaliu very stony silty clay loam (KDD). This well-drained soil is typically found on slopes of 12 to 20 percent and has about 1 percent of its surface covered by cobbles or boulders. Its subclass is VIs; soils of that type have severe limitations which make them generally unsuited to cultivation and limit their use largely to pasture or similar uses. The subclass for the ‘a‘a lava is VIIIs, which denotes severe agricultural limitations.

The entire Big Island is subject to geologic hazards, especially lava flows and earthquakes. Volcanic hazard as assessed by the United States Geological Survey in this area of Kona is zone 3, on a scale of ascending risk from 9 to 1 (Heliker 1990:23). The high hazard risk is based on the fact that Mauna Loa is presently an active volcano. Volcanic hazard zone 3 areas have had 1 to 5 percent of their land area covered by lava or ash flows since the year 1800, but are at lower risk than zone 2 areas because of their greater distances from recently active vents and/or because the local topography makes it less likely that flows will cover these areas.

The entire Island of Hawai‘i is rated Zone 4 Seismic Hazard (*Uniform Building Code, 1997 Edition*, Figure 16-2). Zone 4 areas are at risk from major earthquake damage, especially to

structures that are poorly designed or built, as the 6.7-magnitude quake of October 15, 2006, demonstrated. The project site is not subject to landslides or other forms of mass wasting.

Impacts and Mitigation Measures

Geologic conditions impose no substantial constraints on the project. Although the action would occur in an area with both lava flow and seismic hazard, this is shared with all property in South Kona, and no additional public risk or imprudent development would occur.

3.2.2 Flood Zones, Water Bodies, and Water Quality

Environmental Setting

The project site has no streams, ponds, lakes, wetlands or other surface water bodies. The Flood Insurance Rate Maps (FIRM 1551661156C) show that the project site is in Flood Zone X, outside the 100-year floodplain. No known areas of local (non-stream related) flooding are present.

The State Commission on Water Resource Management (CWRM) classification of aquifers locates this part of Kona within the Kealakekua Aquifer System (80603) of the Southwest Mauna Loa Aquifer Sector. The overall sector has rainfall of less than 25 inches along some parts of the shoreline to about 125 inches in the mauka forests. The Southwest Mauna Loa Aquifer Sector has an estimated sustainable yield of 130 mgd, and the Kealakekua system accounts for 38 mg of that. Precipitation that is not lost through evapotranspiration or runoff into the ocean percolates into the ground to collect in the aquifers before slowly making its way to the sea. As streams in Hawai‘i are generally flashy or even ephemeral, underground water is the most reliable source of water supply, because there is less daily or seasonal change in water tables. Most water is maintained in the basal freshwater lens that “floats” on the salt-water permeated rock below, but in some locations, such as on the slopes of the Hualālai and Mauna Loa volcanoes, substantial quantities of “high-level” water are known to occur. As computed by the CWRM, groundwater recharge is limited to the contribution of rainfall. It does not include the contribution of fog drip, which studies have determined to be a considerable amount in this area.

No designated Principal or Sole-Source aquifers are located nearby or would be affected (Source: *Designated Sole Source Aquifers in EPA Region IX* (U.S. Environmental Protection Agency web page, http://www.epa.gov/safewater/sourcewater/pubs/qrg_ssamap_reg9.pdf , accessed January 2013).There are no State Wellhead Protection Plans in force in or near the well site.

CWRM maintains a database of wells that provides information on, among other aspects, the aquifer identity, user identity, installed capacity, chloride content and function. The database does not provide information on current pumpage, which instead is logged in a separate database and is derived from reports from individual well operators. Because not all well operators report their use in a timely manner, pumpage data may not be complete or up to date. Recent work conducted as part of the *Hawai‘i County Water Use and Development Plan* (HCWUDP)

(Hawai‘i County DWS 2010) contains relatively up-to-date information obtained from CWRM, the Hawai‘i County Department of Water Supply (DWS), well operators and hydrology consultants. The HCWUDP estimated total groundwater use within the Southwest Mauna Loa Aquifer Sector at 5.57 mgd, or about 4 percent the sustainable yield of 130 mgd.

Municipal (DWS) use in the South Kona water system accounts for 1.12 mgd of the groundwater in the Southwest Mauna Loa Aquifer System, where DWS has just one water system. The principal source is the Ke‘ei Well field, with all but one of the four wells used as backup only. In 1997, the Haleki‘i Well at Kealakekua was also brought into service. The water system extends south to Ho‘okena, a distance of 16 miles. Eight booster pump stations, nine storage tanks and over twenty pressure relief valves allow eleven operational zones to be serviced. A connection to the North Kona System exists on Mamalahoa Highway district boundary at Konawaena School. The normally closed valve may be opened in case of emergencies.

Agricultural and irrigation use 3.72 mgd of the groundwater in the aquifer. The HCWDUP suggested that consumption from private domestic wells accounts for an additional 0.73 mgd, a figure derived from multiplying average daily use for the 1,731 developed parcels serving approximately 4,700 people outside of the DWS service area. As there are only four domestic water wells registered in the CWRM database, none of which report pumpage, this seems highly unlikely. Instead, most of the 1,731 developed parcels without DWS water service probably rely on catchment and/or truck water in/obtain water from other metered users.

In order to determine if there was a threat to sustainable use of the aquifer, the HCWDUP calculated future water needs to the year 2025, both with and without agricultural demand. The “with agricultural demand” scenario assumed that most lands that are classified in the GP as agriculture will eventually be fully cultivated and irrigated with groundwater. Many of these lands are located at high elevations and have not been farmed for decades or centuries, with no known prospects for future farming. The scenario of all such lands being irrigated and farmed is highly unrealistic without virtually free energy or fully subsidized water, as noted by commenters on the Plan. There is no known crop so valuable as to be able to generate a profit if it relies on irrigation from basal well water pumped up thousands of feet. Discounting inflated demand for agricultural water, the Plan estimated that water use in the most settled area of the Southwest Mauna Loa Aquifer System, the Kealakekua Aquifer Sector, could be about 10.3 mgd by 2025, based on the densest land uses allowed in the General Plan, but only about 1.4 mgd based on zoning. These are both far short of the sustainable yield of 38 mgd. A realistic assessment of water demand by 2025 using medium growth scenarios, but also including some agricultural use growth, is presented as 8.4 mgd (Hawai’i County DWS: Table 806-15), or less than 25 percent of sustainable yield.

The well on the project site was likely constructed between 1928 and 1954 in association with coffee milling and was never registered by CWRM. After inquiry with this agency, it was recognized as pre-existing because of its presence on historic US Geological Survey quad maps and was assigned Well No. 8-2755-002. No pumpage records exist but it likely produced a quantity of water in the low thousands of gallons per day, similar to the level currently planned.

Wells in the Kahauloa area within one mile of the subject well include Well No. 8-2855-001 0.28 miles north in in Napoʻopoʻo and Well No. 8-2755-001 0.63 miles south in Keʻei. Both tap basal water and there are no known data on the quantity of water they pump, although it is assumed to be small. Because of low pump volumes and distance, there would not be expected to be any interaction between these wells and the subject well. The County DWS Keʻei Well Field wells are located near Middle-Keʻei Road about 1.7 miles *mauka* of the project site. Because of distance and relative position, these DWS wells would have little to no interaction with the subject well.

Impacts and Mitigation Measures

No impact to floodplains will occur, as the project site is outside a FEMA designated floodplain. During any construction project, activities have the potential to produce uncontrolled excess sediment from soil erosion during and after excavation and construction that may impact natural watercourses, water quality and flooding. Contaminants associated with heavy equipment and other sources during construction have the potential to impact surface water and groundwater if not mitigated effectively, although such potential in this site is limited because of the small scale of the project.

In order to minimize the potential for sedimentation and erosion, the contractor shall perform all earthwork and grading in conformance with Chapter 10, Erosion and Sediment Control, Hawaiʻi County Code, and all specifications required by the Hawaiʻi Department of Land and Natural Resources. At a minimum, the contractor will implement the following best management practices (BMPs) for the project:

- Schedule construction to avoid periods of heavy rain;
- Apply protective covers to cleared areas, soil and material stockpiles, as necessary and appropriate;
- Store and use fuel storage in manner to prevent leaks, spills or fires;
- Use drip pans beneath heavy vehicles and construction equipment not in use in order to trap vehicle fluids;
- Conduct routine maintenance of BMPs by adequately trained personnel;
- Prevent construction materials, petroleum products, wastes, debris, and landscaping substances (herbicides, pesticides, and fertilizers) from blowing, falling, flowing, washing or leaching into the ocean; and
- Clean-up and dispose at an approved site of any significant leaks or spills, should they occur.

As stated above, the *Hawaiʻi County Water Use and Development Plan* calculated future water needs of the Kealakekua Aquifer Sector to the year 2025. The best estimate of future demand is about 8.4 mgd, or less than 25 percent of sustainable yield (Hawai'i County DWS: Table 806-15). The use of up to a few thousand gallons per day that would occur if the small irrigation well is re-outfitted would not, either directly or cumulatively, lead to an approach or exceedance of

the sustainable yield of this aquifer. There are no other wells, nor any springs, anchialine pools, streams or other natural hydrologic features nearby, that would be affected by this level of pumpage from the Bundrants' well.

3.2.3 Flora and Fauna

Environmental Setting

The natural vegetation of the area, covered as it is with barely weathered lava, is a very sparse dry herbland. The project site exclusively involves areas of the lease properties that have been previously disturbed by grading and other activities and then planted with or invaded by introduced species. The current flora consists mostly of introduced species, with a few indigenous plants that are common throughout Kona. Natives include pua kala (*Argemone glauca*), kou (*Cordia subcordata*),'ilima (*Sida fallax*),'ala'alawainui (*Peperomia af. leptostachya*),),'ala'alawainui (*Plectranthus parviflorus*), auhuhu (*Tephrosia purpurea*) and 'uhaloa (*Waltheria indica*). One endangered plant, the loulu palm (*Pritchardia maideniana*), which was planted from nursery stock as in many other locations in Kona, will not be affected by any proposed activities. The results of a botanical survey are shown in Table 1.

Although no formal zoological survey was conducted, the site is clearly dominated by the alien birds typical of residential areas in Kona, including such as Common Myna (*Acridotheres tristis*), Northern Cardinal (*Cardinalis cardinalis*), Yellow-billed Cardinal (*Paroaria capitata*), Yellow-fronted Canary (*Serinus mozambicus*), Spotted Dove (*Streptopelia chinensis*), Japanese White-eye (*Zosterops japonicus*) and House Finch (*Carpodacus mexicanus*). No native Hawaiian birds were identified during the survey, and it is unlikely that many native forest birds would be expected to use the project site due to its low elevation and lack of adequate forest resources.

In addition to cats and dogs, the mammalian fauna of this part of Kona is composed of mainly introduced species, including small Indian mongooses (*Herpestes a. auropunctatus*), roof rats (*Rattus r. rattus*), Norway rats (*Rattus norvegicus*), European house mice (*Mus domesticus*) and Polynesian rats (*Rattus exulans hawaiiensis*). None are of conservation concern and all are deleterious to native flora and fauna.

The only native Hawaiian land mammal, the Hawaiian Hoary Bat (*Lasiurus cinereus semotus*), may also be forage in the area, as it is present in many areas on the island of Hawai'i, but the lack of any significant shrub or tree cover reduces the value of the area for foraging and probably precludes roosting.

Table 1. Plant Species on Project Site

Scientific Name	Family	Common Name	Life Form	Status*
Acacia farnesiana	Fabaceae	Klu	Shrub	A
Agave sp.	Agavaceae	Agave	Tree	A
Aloe vera	Agavaceae	Aloe	Shrub	A
Amaranthus spinosa	Amaranthaceae	Spiny amaranth	Herb	A
Ananas comosus	Bromeliaceae	Pineapple	Shrub	A
Argemone glauca	Papaveraceae	Pua kala	Herb	I
Asparagus setaceus	Liliaceae	Asparagus fern	Shrub	A
Asystasia gangetica	Acanthaceae	Chinese violet	Vine	A
Boerhavia coccinea	Nyctaginaceae	Boerhavia	Herb	A
Bougainvillea sp.	Nyctaginaceae	Bougainvillea	Shrub	A
Calophyllum inophyllum	Clusiaceae	Kamani	Tree	A
Calotropis gigantea	Asclepidaceae	Crown flower	Shrub	A
Carica papaya	Caricaceae	Papaya	Shrub	A
Casuarina sp.	Casuarinaceae	Ironwood	Tree	A
Cenchrus setaceus	Poaceae	Fountain grass	Herb	A
Chamaecrista nictitans	Fabaceae	Partridge pea	Herb	A
Chamaesyce hirta	Euphorbiaceae	Hairy spurge	Herb	A
Chamaesyce hypericifolia	Euphorbiaceae	Graceful spurge	Herb	A
Citrus sp.	Rutaceae	Citrus	Tree	A
Cleome gynandra	Capparaceae	Spider wisp	Herb	A
Clusia rosea	Clusiaceae	Autograph tree	Tree	A
Coccinia grandis	Cucurbitaceae	Ivy gourd	Vine	A
Coccoloba uvifera	Polygonaceae	Sea grape	Tree	A
Cocos nucifera	Aracariaceae	Coconut	Tree	A
Cordia subcordata	Boraginaceae	Kou	Tree	I
Crinum asiaticum	Amaryllidaceae	Spider lily	Herbs	A
Delonix regia	Fabaceae	Royal poinciana	Tree	A
Desmodium tortuosum	Fabaceae	Desmodium	Herb	A
Eleusine indica	Poaceae	Wiregrass	Herb	A
Eragrostis sp.	Poaceae	Love grass	Herb	A
Eucalyptus sp.	Myrtaceae	Eucalyptus	Tree	A
Euphorbia sp.	Euphorbiaceae	Euphorbia	Shrub	A
Ficus microcarpa	Moraceae	Chinese banyan	Tree	A
Galinsoga sp.	Asteraceae	Galinsoga	Herb	A
Hedyotis corymbosa	Rubiaceae	Hedyotis	Herb	A
Hibiscus tiliaceus	Malvaceae	Hau	Shrub	A
Hibiscus sp.	Malvaceae	Ornamental hibiscus	Shrub	A
Hylocereus undatus	Cactaceae	Night blooming cereus	Shrub	A
Ipomoea hederfolia	Convolvulaceae	Star ipomoea	Vine	A
Jacaranda mimosifolia	Bignoniaceae	Jacaranda	Tree	A
Kalanchoe pinnata	Crassulaceae	Air plant	Herb	A
Kalanchoe tubiflora	Crassulaceae	Chandelier plant	Herb	A

Table 1, continued				
Scientific Name	**Family**	**Common Name**	**Life Form**	**Status***
Kyllinga nemoralis	Cyperaceae	Kyllinga	Herb	A
Lantana camara	Verbenaceae	Lantana	Shrub	A
Leucaena leucocephala	Fabaceae	Haole koa	Shrub	A
Mangifera indica	Anacardiaceae	Mango	Tree	A
Momordica charantia	Cucurbitaceae	Balsam pear	Vine	A
Morinda citrifolia	Rubiaceae	Noni	Shrub	A
Musa x paradisiaca	Musaceae	Banana	Shrub	A
Nephrolepis multiflora	Nephrolepidaceae	Sword fern	Fern	A
Panicum maximum	Poaceae	Guinea grass	Herb	A
Paspalum conjugatum	Poaceae	Hilo grass	Herb	A
Passiflora foetida	Passifloraceae	Love-in-a-mist	Vine	A
Passiflora suberosa	Passifloraceae	Huehue haole	Vine	A
Passiflora edulis	Passifloraceae	Lilikoi	Vine	A
Peperomia af. leptostachya	Piperaceae	Peperomia	Herb	I
Pithecellobium dulce	Fabaceae	Opiuma	Tree	
Pityrogramma calomelanos	Pteridaceae	Silver fern	Fern	A
Plectranthus parviflorus	Lamiaceae	Ilie‘e	Herb	I
Pluchea symphytifolia	Asteracae	Sourbush	Shrub	A
Plumeria sp.	Apocynaceae	Plumeria	Shrub	A
Portulaca pilosa	Portulacaceae	Portulaca	Herb	A
Pritchardia maideniana	Arecaceae	Loulu	Tree	End**
Prosopis pallida	Fabaceae	Kiawe	Tree	A
Psidium guajava	Myrtaceae	Guava	Tree	A
Rhynchelytrum repens	Poaceae	Natal redtop	Herb	A
Ricinus communis	Euphorbiaceae	Castor bean	Shrub	A
Samanea saman	Fabaceae	Monkey pod	Tree	A
Scaevola sericea	Goodeniaceae	Beach naupaka	Shrub	I
Schefflera actinophylla	Araliaceae	Octopus tree	Tree	A
Schinus terebinthifolius	Anacardiaceae	Christmas berry	Shrub	A
Sida fallax	Malvaceae	‘Ilima	Shrub	I
Spathodea campanulata	Bignoniaceae	African tulip	Tree	A
Strelitzia reginae	Strelitziaceae	Bird of paradise	Herb	A
Tephrosia purpurea	Fabaceae	Auhuhu	Shrub	A
Terminalia catappa	Combretaceae	Tropical almond	Tree	A
Thespesia populnea	Malvaceae	Milo	Tree	I
Thevetia peruviana	Apocynaceae	Be-still tree	Shrub	A
Tridax procumbens	Asteraceae	Coat buttons	Herb	A
Waltheria indica	Sterculiaceae	‘Uhaloa	Herb	I

* A = alien, E = endemic, I = indigenous, End = Federal and State listed Endangered Species
** Plant is in cultivation and will not be affected by proposed actions. ID provisional.

Impacts and Mitigation Measures

Because of the relatively minor nature of the project and the lack of native terrestrial ecosystems and threatened or endangered plant species, implementation of the project, including the single-family home, continuation of landscaping shifting to primarily native and Polynesian species, and re-outfitting of the well pump, is not likely to cause adverse biological impacts. The project site is situated about 200 feet from the shoreline, with a row of houses between it and the shoreline, and the construction and occupation of the residence and landscaping should have no effect on any coastal ecosystem is expected. As discussed in section 3.2.2, above, there are no springs, anchialine pools, streams or other natural hydrologic features with ecosystems that could be affected by changes in salinity or flow from pumpage from the Bundrants' small irrigation well.

3.2.4 Air Quality, Noise, and Scenic Resources

Environmental Setting

Air pollution in West Hawai‘i is mainly derived from volcanic emissions of sulfur dioxide, which convert into particulate sulfate and produce a volcanic haze (vog) that persistently blankets North and South Kona.

Noise on the project site is low to moderate, and is derived from natural sources (such as surf and wind) as well as road noise from Ke‘ei Road and Pu‘uhonua Road. Other permanent noise sources are residences and the Hawai‘i County solid waste convenience center several hundred feet southeast of the property; construction in the area is a temporary source of noise.

The viewplane from the Kahauloa area (TMK 8-3-03) is listed as a scenic resource in the Hawai‘i County General Plan, as is the viewpoint of Palemano Point (8-3-04:005) and Ke‘ei cove (8-3-04:1), white sand beach (8-3-04:4) and an unnamed viewpoint (8-3-03).

Impacts and Mitigation Measures

The project would not affect air quality or noise levels in any substantial way. Brief and minor adverse effects would occur during construction of the single-family home. However, there are few sensitive noise receptors in the vicinity, primarily the closest residences. Given the small scale of the project, noise mitigation will likely not be necessary.

All new features will be visible from Pu‘uhonua Road and Ke‘ei Beach Road, but in the context of the landscape, where there are numerous residences and stone walls, they would not pose any undue visual impacts. The new, two-story single-family home will be surrounded by landscaping, which will soften its appearance. Because of distance and intervening topography and vegetation, the shoreline is not visible from Pu‘uhonua Road, and no visual impact upon the shoreline is expected. Regarding General Plan scenic viewpoints, Palemano Point is located more than 3,000 feet to the south, making it considerably distant from the project and not a factor

in the scenic character or impacts of the project site. The other listed scenic sites are vantage points *mauka* of the project site. The proposed improvements are not of a scale to pose any scenic impacts from a distance.

3.2.5 Hazardous Substances, Toxic Waste and Hazardous Conditions

Based on onsite inspection, it appears that the site contains no hazardous or toxic substances and exhibits no other hazardous conditions. Other than the precautions listed in Section 3.2.2, above, no mitigation for such conditions is necessary.

3.3 Socioeconomic and Cultural

3.3.1 Land Ownership and Land Use, Designations and Controls

Existing Environment

The State Land Use District for the project site is Conservation, subzone General. The project site is therefore not zoned by Hawai‘i County. The project site is within the Special Management Area. The project site does not involve shoreline properties and no structures are proposed to be located within the Shoreline Setback Area.

Construction of all of the elements of the project – a single-family home and related well and landscape improvements – are allowed within these land use designations, conditional upon a Conservation District Use Permit (CDUP) and Special Management Area Permit. The Hawai‘i County Planning Department requires preparation of an SMA Assessment Application, through which SMA issues are expressly dealt. The consistency of the project with the regulations and policies of the Conservation District and the Special Management Area are discussed in Section 3.7.2 and 3.7.3.

3.3.2 Socioeconomic Characteristics and Recreation

Existing Environment

The project site lies within the *ahupua‘a* of Kahauloa 2nd in the South Kona District on the west side of the Island and County of Hawai‘i. Between 1970 and 2010, the County’s population almost tripled, from 63,468 to 185,079 (Hawai‘i State Data Book, Department of Business Economic Development and Tourism [DBEDT] population estimates, and U.S. Census of Population 2010). The population of Hawai‘i County, which is leading the state in percentage growth in the 21st century, is expected to expand by another 100,000+ residents by 2035 (DBEDT 2035 Series 2008). In 2008, visitors made up an additional 16% (28,011 individuals) of the County’s de facto population each day. In Captain Cook, the town closest to the project area, the population grew by over 30 percent from 1990 to 2010.

Hawai‘i’s economy, particularly that of West Hawai‘i, which includes the districts of Kona and Kohala, is based primarily on tourism. In 2008 there was a drastic nationwide economic slowdown that continued until 2012, when growing recovery became evident. The State DBEDT reckons that based on recent trends in the national and global economy, Hawai‘i’s tourism industry, employment, and State tax revenues, the State’s economy and particularly its visitor industry should continue to grow in 2014. (http://hawaii.gov/dbedt/info/economic/data_reports/qser/outlook-economy).

Although Hawai‘i County in general and Kona in particular have seen regular and rapid growth in recent decades, the southern part of Kona has retained a distinctly rural character, which is also true of the project site. While there are roughly a dozen residences nearby, and a number of other homes around the Napo‘opo‘o area, the nearest large population center is located at Captain Cook, approximately 1.5 miles away.

Napo‘opo‘o Beach Park, a small County facility located about a quarter-mile to the north, serves as the gateway to Kealakekua Bay State Historical Park, which is the site of the first extensive contact between Hawaiians and Westerners represented by Captain James Cook. The area includes Hikiau Heiau, located just above the shoreline near the beach park, and a monument to Cook located across Kealakekua Bay. The shoreline and nearshore waters at Kealakekua Bay are currently used by fishermen, divers, swimmers and kayakers. The Department of Land and Natural Resources (DLNR) recently imposed a temporary moratorium on January 2, 2013 on certain commercial and private activities and is taking action at Kealakekua Bay State Historical Park (http://hawaii.gov/dlnr/chair/pio/nr/2012/NR12-173.pdf - accessed March 2013). The purpose was to improve the management, quality and sustainability of this heavily visited and significant natural and cultural resource. This moratorium is gradually being lifted and adjusted as management measures are put into place.

Impacts and Mitigation Measures

No adverse socioeconomic impacts are expected to result from the project. There will be no restrictions on access to public property or resources. The addition of one single-family home will not increase impacts to resources in the Kealakekua Bay area to any noticeable degree.

In response to early consultation, neighboring residents Dorian and Joseph Vittek provided input regarding their views on the proposed home, landscaping and well. Their email is reproduced in whole in Appendix 1a. The portion of the email that expresses concerns about particular socioeconomic impacts is reproduced below.

> “…. our neighborhood of individually owned, built and landscaped houses. Of these 9 houses, 3 are full-time residences, including ours. The Bundrants’ is not one of the full-time residences. Since they bought their house about eight years ago, they have been a major influence in the neighborhood making changes affecting everyone without discussing these changes in advance with the rest of us on Keawaiki Road, except to the extent that, when fire hydrants were put in down the length of the road when the water

system was remodeled and after they had put a hydrant in the middle of our roadside landscaping which we objected to and had to have moved to a less intrusive location at our expense, Chuck Bundrant informed us that it was his road and "I can do anything I want with it." (We are unaware of other similar events but are definitely aware of other neighbors who are unhappy with the Bundrants' obvious over-control of things affecting the whole neighborhood but do not "want to make waves" or participate in an inevitably unpleasant and ineffective confrontation with the Bundrants. We hope these other neighbors will respond favorably to your letter and let their concerns be known to you as a third party who has requested knowledge of all of our concerns.

As an example of the history with the Bundrant's "projects", not liking the existing road, they graveled the surface which not only increased traffic but, in the words of a local teenager "made great wheelies" possible, a circumstance which the young man took considerable advantage of. So the Bundrants then put up an electric gate to control the increased flow of traffic caused by the graveling (reinforcing nearby area residents' negative opinions of Keawaiki Road and its residents, derogatorily known locally as "Millionaires Row").

This newest proposal seems to be in part that they are now talking about paving the road and driveways in an unspecified manner without having asked everyone if they wanted this or whether it would affect long-existing landscaping on other residents' properties. Apparently they are also planning to put in a second gate which makes both exits from the ends of Keawaiki Road controlled electrically and raises the question of residents and emergency vehicles exiting or entering in case of power failure or fire or other group or individual needs. We are also concerned that they may want to install sidewalks like the one they installed in front of their house which we definitely do not want and which would be almost impossible to put in along some areas of Keawaiki Road. The existing landscaping has been in place for many years and many owners and reflects our individual tastes from our next door neighbor's variety of majestic palms to our flowering trees and bushes and orchids with a redwood privacy fence to a shallow ravine with abundantly flowering native shrubs and vines.

What it comes down to is that the whole neighborhood should not be remade in the Bundrants' image, thereby imposing their personal preferences on the rest of the neighborhood. We are indeed pleased that you said there is no intent to put in street lights because, as we discussed with you, we would hate to see our Hawaiian neighborhood looking like a Seattle suburb.

In addition, as we also discussed, there will probably be an economic impact on the neighborhood, particularly on properties used for rentals and expected to generate income to pay expenses. The property values are likely to go up which initially sounds favorable but the taxes would most likely go up proportionately with values and the rental fees would probably not go up enough to cover the increased taxes. There is no way to predict this accurately but it seems likely and should be considered by all of us.

> We realistically do not expect the Bundrants' methods of affecting the neighborhood to change but we do respect the Kamehameha School's reputation for community consideration and beneficial involvement. We would be surprised if the proposal has not been put in writing at this time and request a copy of the portion of the agreement concerning "on the ground" specifics in addition to the plans sent with your letter (i.e. type of "paving" "to the front of all houses (not all of which have identical driveways and garages)", how "existing gravel driveways will be paved", how "their edges [will be] landscaped" and whether or not this will disturb current and long-existing landscaping and driveways that are NOT owned by the Bundrants but rather are possessed by the individual landowners. The Bundrants rent a right-of-way and the land within it. They do NOT own our personal properties which have a history of individual ownership and use by these owners for many years. Also, it is unclear what type of fencing will wander considerably throughout the leased acreage to protect undisturbed lands. For all of these reasons, we believe additional information should be sent to all of the Keawaiki neighbors in the interest of transparency, education and the knowledge necessary to express our concerns on vague things like "flora and fauna" which involve us personally, as we appreciate your letter asking us to do.
>
> Needless to say, this construction project will involve a great deal of noise, dust, construction vehicle traffic and the other negative impacts we have experienced throughout many other Bundrant projects."

Not all of the Vitteks' issues with Mr. and Mrs. Bundrant and their use of the leased property and their plans are relevant to an environmental analysis of the current proposal. Many of their concerns relate to paving of driveways, including their own and other neighbors. It is important to clarify that the proposed project will only involve paving for minor existing roads in the area near the caretaker home, completely within the leased property under the Bundrants' control. No driveways or landscaping on other residents' properties will be disturbed. The proposal to fence in the unused and undisturbed area of the property to provide it with an extra degree of protection has been dropped from the current project, removing concerns about the fence's appearance. The proposal consists of one single-family home and landscaping in an area of many homes that are much larger and more expensive, and the construction and occupation of the home will not affect property values or rentals. Concerning rentals, it should be noted that vacation rentals are illegal in the Conservation District, and thus economic effects related to such rentals, if they are occurring, do not merit consideration in an EA. It is true that home construction can involve noise, dust and traffic, but in the context of one single-family home, these are generally minor, are subject to reasonable mitigation conditions, and in any case are similar to those generated when the Vitteks' own home was constructed.

3.3.3 Archaeological Resources

An assessment of archaeological sites and other historic properties was conducted for the proposed action by Rechtman Consulting. The report is contained in Appendix 2 and is

summarized below. The reader is referred to this appendix for scholarly references, most of which are not included in the summary below.

Background

The inhabiting of Hawaiʻi took place in the context of settlement that resulted from voyages taken across the open ocean. For many years, researchers have proposed that early Polynesian settlement voyages between Kahiki (the ancestral homelands of the Hawaiian gods and people) and Hawaiʻi were underway by A.D. 300, with long distance voyages occurring fairly regularly through at least the thirteenth century. It has been generally reported that the sources of the early Hawaiian population – the Hawaiian Kahiki – were the Marquesas and Society Islands. Recent work summarized by Kirch (2012) indicates a later settlement date of about 1000 A.D.

For generations following initial settlement, communities were clustered along the watered, windward (*koʻolau*) shores of the Hawaiian Islands. Along the *koʻolau* shores, streams flowed and rainfall was abundant, and agricultural production became established. The *koʻolau* region also offered sheltered bays from which deep sea fisheries could be easily accessed, and near shore fisheries, enriched by nutrients carried in the fresh water, could be maintained in fishponds and coastal waters. It was around these bays that clusters of houses where families lived could be found. In these early times, Hawaiʻi's inhabitants were primarily engaged in subsistence level agriculture and fishing.

Over a period of several centuries, areas with the richest natural resources became populated and perhaps crowded, the population began expanding to the *kona* (leeward side) and more remote regions of the island (Cordy 2000:130: Kirch 2012). In Kona, communities were initially established along sheltered bays with access to fresh water and rich marine resources. The primary "chiefly" centers were established at several locations – the Kailua (Kaiakeakua) vicinity, Kahaluʻu-Keauhou, Kaʻawaloa-Kealakekua, and Hōnaunau. The communities shared extended familial relations, and there was an occupational focus on the collection of marine resources. By the fourteenth century, inland elevations to around the 3,000-foot level were being turned into a complex and rich system of dryland agricultural fields (today referred to as the Kona Field System). By the fifteenth century, residency in the uplands was becoming permanent, and there was an increasing separation of the chiefly class from the common people. In the sixteenth century the population stabilized and the *ahupuaʻa* land management system was established as a socioeconomic unit.

In Kona, where there were no regularly flowing streams to the coast, access to potable water (*wai*), was of great importance and played a role in determining the areas of settlement. The waters of Kona were found in springs and caves (found from shore to the mountain lands), or procured from rain catchments and dewfall. Traditional and historic narratives abound with descriptions and names of water sources, and also record that the forests were more extensive and extended much further seaward than they do today. These forests not only attracted rains from the clouds and provided shelter for cultivated crops, but also in dry times drew the *kēhau* and *kēwai* (mists and dew) from the upper mountain slopes to the lowlands.

In the 1920s-1930s, Handy et al. (1972) conducted extensive research and field interviews with elder native Hawaiians. In lands of North and South Kona, they recorded native traditions describing agricultural practices and rituals associated with rains and water collection. Primary in these rituals and practices was the lore of Lono—a god of agriculture, fertility, and the rituals for inducing rainfall. Handy et al., observed:

> "The sweet potato and gourd were suitable for cultivation in the drier areas of the islands. The cult of Lono was important in those areas, particularly in Kona on Hawai'i . . . there were temples dedicated to Lono. The sweet potato was particularly the food of the common people. The festival in honor of Lono, preceding and during the rainy season, was essentially a festival for the whole people, in contrast to the war rite in honor of Ku which was a ritual identified with Ku as god of battle" (Handy et al. 1972:14) .

The worship of Lono was centered in Kona. Indeed, it was while Lono was dwelling at Keauhou, that he is said to have introduced taro, sweet potatoes, yams, sugarcane, bananas, and *'awa* to Hawaiian farmers (Handy et al. 1972:14). The rituals of Lono "the father of waters" and the annual Makahiki festival, which honored Lono and which began before the coming of the *kona* (southerly) storms and lasted through the rainy season (the summer months), were of great importance to the native residents of this region (Handy et al. 1972: 523). The significance of rituals and ceremonial observances in cultivation and indeed in all aspects of life was of great importance to the well being of the ancient Hawaiians, and cannot be overemphasized, or overlooked when viewing traditional sites of the cultural landscape.

Over the generations, the ancient Hawaiians developed a sophisticated system of land and resources management. By the time 'Umi-a-Līloa rose to rule the island of Hawai'i in ca. 1525, the island (*mokupuni*) was divided into six districts or *moku-o-loko*. On Hawai'i, the district of Kona is one of six major moku-o-loko within the island. The district of Kona itself, extends from the shore across the entire volcanic mountain of Hualālai, and continues to the summit of Mauna Loa, where Kona is joined by the districts of Ka'ū, Hilo, and Hāmākua.

Kona, like other large districts on Hawai'i, was subdivided into '*okana* or *kalana* (regions of land smaller than the *moku-o-loko*, yet comprising a number of smaller units of land). The lands of Kahauloa, situated in an area now known as Kona Hema (South Kona), are part of an ancient subregion generally known as "Ka-pali-lua" (The-two-cliffs; describing the topographic features of the *kula* or lands of the mountain slope). The *moku-o-loko* and '*okana* or *kalana* were further divided into manageable units of land, and were tended to by the *maka'āinana* (people of the land). Of all the land divisions, perhaps the most significant management unit was the *ahupua'a*. *Ahupua'a* are subdivisions of land that were usually marked by an altar with an image or representation of a pig placed upon it (thus the name *ahu-pua'a* or pig altar). In their configuration, the *ahupua'a* may be compared to wedge-shaped pieces of land that radiate out from the center of the island, extending to the ocean fisheries fronting the land unit.

The *ahupuaʻa* were also divided into smaller individual parcels of land (such as the *ʻili*, *kōʻele*, *māla*, and *kīhāpai,* etc.), generally oriented in a *mauka-makai* direction, and often marked by stone alignments (*kuaiwi*). In these smaller land parcels the native tenants tended fields and cultivated crops necessary to sustain their families, and the chiefly communities with which they were associated. As long as sufficient tribute was offered and kapu (restrictions) were observed, the common people who lived in a given *ahupuaʻa* had access to most of the resources from mountain slopes to the ocean. These access rights were almost uniformly tied to residency on a particular land, and earned as a result of taking responsibility for stewardship of the natural environment, and supplying the needs of the *aliʻi*.

Entire *ahupuaʻa*, or portions of the land were generally under the jurisdiction of appointed konohiki or lesser chief-landlords, who answered to an *aliʻi-ʻai-ahupuaʻa* (chief who controlled the *ahupuaʻa* resources). The *aliʻi-ʻai-ahupuaʻa* in turn answered to an *aliʻi ʻai moku* (chief who claimed the abundance of the entire district). Thus, *ahupuaʻa* resources supported not only the *makaʻāinana* and *ʻohana* who lived on the land, but also contributed to the support of the royal community of regional and/or island kingdoms. This form of district subdividing was integral to Hawaiian life and was the product of strictly adhered to resources management planning. In this system, the land provided fruits and vegetables and some meat in the diet, and the ocean provided a wealth of protein resources. Also, in communities with long-term royal residents (like Keʻei, Kaʻawaloa, and Kealakekua), divisions of labor (with specialists in various occupations on land and in procurement of marine resources) came to be strictly adhered to.

It is in the general cultural setting outlined above, that we find the *ahupuaʻa* of Kahauloa at the time of European contact. The ocean resources fronting Kahauloa were integral to life upon the land. On the *kula kahakai* or shoreward flats, were found potable water sources (caves, wells and springs), several village clusters and many residents, groves of coconut trees, and lowland agricultural fields. The *kula uka* or upland plains, extending up to an area above the *mauka* alaloa, Kealaʻehu (near present day Māmalahoa Highway), was highly valued for its fertile lands, which were extensively cultivated. The lands extending from around the 2,000 to 5,000 foot elevation were cultivated in bananas, and were a significant resource of woods, fibers, birds, and other materials of value and importance to native life.

The project site is located within Kahauloa 2nd near Kahauloa Bay along the southern shore of Kealakekua Bay, with a strip of land also located within the edge of Keʻei 1. This area played a well-documented and significant role in the history of the Hawaiian Islands. Kealakekua Bay is the former home of some of Hawaiʻi's most powerful *aliʻi* and feared warriors. One such warrior, named Kekūhaupiʻo, was born of royal blood (his father was Kohapiʻolani, a Keʻei chief, and his mother was from Nāpoʻopoʻo) at Keʻei, just south of Kahauloa 2nd. An article published in Ka Hōkū o Hawaiʻi on September 10, 1908 (translated by K. Maly) tells of Kekūhaupiʻo's loyalty to Kamehameha and his role at the battle of Mokuʻōhai, which also took place just south of Kahauloa, against the chief's cousin, Kiwalaʻō. Although a lower chief, Kekūhaupiʻo fought so well in this battle that he came to be known as "Ko Kamehameha koa a waele makaihe" (Kamehameha's warrior who weeds through men with a spear) and he became the most cherished companion of Kamehameha, outside of his own uncles. Kekūhaupiʻo

continued to live at Keʻei and serve Kamehameha for the remainder of his life, which he lost not in battle, but at the sport of spear fighting.

Kealakekua Bay (more precisely the flats of Kaʻawaloa north of the project site) is perhaps best known as the place where Captain Cook first made landfall on the island and then ultimately met his demise. The arrival of Europeans on Hawaiʻi Island began a long series of events that would eventually, but not immediately, alter the Hawaiian way of life. As Major writes, "From the moment Cook and his crew arrived, relations between Native Hawaiians and outsiders were heavily influenced by the sailors' need for supplies." Hawaiʻi's isolated position in the mid-Pacific made it an excellent way point for Europeans and Americans involved in the East Indian and northwest American trade networks. Kealakekua Bay, with its excellent anchorage and abundant supply of food, soon became the most frequented harbor by visitors to the island. Thus began the written history of Hawaiʻi.

Captain James Cook and members of his crew provided the first European accounts of the coastal region in 1779. The journals and diaries of the expedition noted the political and religious importance of the area. Descriptions provided by John Ledyard and Lieutenant James King of the expedition described the coastal area to approximately 3 miles inland as being cultivated primarily in sweet potatoes (ʻ*uala*). These were grown in small enclosures separated by low walls (Ching 1971). Also grown in this coastal zone were sugar cane, wauke, and banana trees. Breadfruit trees (*ulu*) were cultivated in the area situated inland of this coastal habitation and agrarian zone. Archibald Menzies, who was a member of Captain George Vancouver's 1792-1794 expeditions, provided descriptions of the coastal and upland areas and observed that the upper elevations were cultivated primarily in taro and ti.

Some of the first Europeans to reside permanently on the island, besides sailors who jumped ship, were Christian missionaries. In 1823, William Ellis visited this coastal area during his tour of the Island of Hawaiʻi. After leaving Keʻei village for Hōnauanu, he described passing the location of the decisive battle of Mokuʻōhai where Kamehameha defeated his cousin Kiwalaʻō for control of half of the island of Hawaiʻi. His description of the battlefield follows:

> "Since leaving Keʻei, we had seen several heaps of stones raised over the bones of the slain, but now became more numerous. As we passed along, our guide pointed out the place where Tairi, Tamehameha's [Kamehameha's] war-god, stood, surrounded by the priests, and, a little further on, he showed us the place where Tamehameha himself, his sisters, and friends, fought during the early part of the eighth day. A few minutes after we left it, we reached a large heap of stones overgrown with moss, which marks the spot where Kauikeouli [Kiwalao] was slain" (Ellis 1963:95).

In 1824, Reverend James Ely established the South Kona Mission Station on the flats of Kaʻawaloa (Maly and Maly 2002). The Mission set up not only churches in South Kona, but schools for formal education and the spread of the Christian word. Missionaries observed that about 2,000 Hawaiians lived on the south side of Kealakekua Bay.

The best source of documentation pertaining to native Hawaiian residency and land use practices – identifying specific residents, types of land use, crops cultivated, and features on the landscape – is found in the records of the *Māhele ʻĀina* (Land Division) which the King entered into with the chiefs and people in 1848. The "Land Division" gave native tenants an opportunity to acquire land (in fee-simple) that they lived on and actively cultivated.

In Pre-Western Contact Hawaiʻi, all land and natural resources were held in trust by the high chiefs (*aliʻi ʻai ahupuaʻa* or *aliʻi ʻai moku*). The use of lands and resources were given to the *hoaʻāina* (native tenants), at the prerogative of the *aliʻi* and their representatives or land agents (*konohik*i), who were generally lesser chiefs as well. In 1848, the Hawaiian system of land tenure was radically altered by the *Māhele ʻĀina*. This change in land tenure was promoted by the missionaries and the growing Western population and business interests in the island kingdom. Generally these individuals were hesitant to enter business deals on leasehold land.

The *Māhele* (division) defined the land interests of Kamehameha III (the King), the high-ranking chiefs, and the konohiki. As a result of the *Māhele*, all land in the Kingdom of Hawaiʻi came to be placed in one of three categories: (1) Crown Lands (for the occupant of the throne); (2) Government Lands; and (3) Konohiki Lands. The "Enabling" or "Kuleana Act" (December 21,1849) laid out the frame work by which native tenants could apply for, and be granted fee-simple interest in "*kuleana*" lands, and their rights to access and collection of resources necessary to their life upon the land in their given *ahupuaʻa*. The lands awarded to the *hoaʻāina* (native tenants) became known as "Kuleana Lands." All of the claims and awards (the Land Commission Awards or LCA) were numbered, and the LCA numbers remain in use today to identify the original owners of lands in Hawaiʻi.

The *ahupuaʻa* of Kahauloa 2nd was awarded as an *aliʻi* award to Kanele during the *Māhele*, LCAw. No. 32 (Royal Patent No. 1663). A review of the Waihona ʻĀina database indicates that at least nineteen k*uleana* were claimed in Kahauloa 2nd, three of which, all house lots, are situated adjacent to the northern boundary of the project site. All of these awardees also claimed agricultural lands distant from their house lots, in more *mauka* sections of the *ahupuaʻa*.

The population of South Kona declined during the early nineteenth century and Hawaiians maintained marginalized communities outside of the central population centers. These communities were located in the "out-of-the-way" places, like Kaʻawaloa Point, while the recently immigrated Asian and haole populations lived above the *pali*. In the aftermath of the *Māhele*, economic interests in the region swiftly changed from the traditional Hawaiian land tenure system of subsistence farming and regional trading networks to the more European based cash crops including coffee, tobacco, sugar, and pineapple, and emphasized dairy and cattle ranching. The earliest mention of a wharf at Kaʻawaloa Point was in 1853, and its construction insured the ability to effectively export these products and maintain a regional presence, as Kailua eventually became the primary political seat on the Hawaiʻi Island.

Previous Archaeological Studies

Various archaeological studies in the Kahauloa region have documented a number of sites, some of which appear to be on or near the project site. A statewide inventory conducted by the Hawai‘i State Office of Historic Preservation inspected and evaluated multiple sites in the general vicinity of Kahauloa. This effort, conducted between 1971 and 1975, contributed to defining the Kealakekua Bay Archaeological and Historical District and provided information on previously recorded sites south of the current project area as well as a summary of sites at Hōnaunau (McEldowney 1979). Other relevant studies were two conducted on portions of the project site by Rechtman (2008 and 2009); a recent reconnaissance survey of an adjacent property (Hammatt and Shideler 2013); and studies by Archaeological Research Center Hawaii (Ching 1971) of the Nāpo‘opo‘o-Hōnaunau Road Alignment (Alternate 2) for the County of Hawai‘i, Department of Public Works. In the 1971 study, the survey corridor ranged from coastal elevations to approximately one mile inland and extended laterally almost four miles. These survey efforts identified a total of 144 archaeological features which were placed into seven major categories: habitation structures, enclosures, agricultural features, burials, trails, ahu, and miscellaneous (27 independent walls and one cistern). Because of the linear nature of this study (coursing across multiple *ahupua‘a* at varying elevations), it offered a unique opportunity to observe settlement strategies used for this particular environment along the southern Kona coastline. Nine of Ching’s sites (SIHP Sites 6006, 6008, 6009, 6014, 6015, 6016, 6017, 6018, and 6020) were identified within the subject property, including two walls, an animal enclosure, an agricultural enclosure, two burial complexes, a C-shape, a trail, and a lava void.

Rechtman Consulting, LLC previously prepared requests for determination of “no historic properties affected” associated with the proposed consolidation and resubdivision of three parcels (TMKs (3) 8-3-05:001, 020, 021; Rechtman 2008), and the proposed construction of two gates on existing access roads within TMK: 3-8-3-05:001 (Rechtman 2009). As part of the Rechtman (2008) study, a systematic reconnaissance survey was performed of the entire area encompassed by TMK: 3-8-3-05:001, as well as two smaller parcels (020 and 021). Numerous archaeological features were encountered within Parcel 001 (and to a lesser extent on the other parcels), including features previously recorded by Ching (1971). During the reconnaissance survey Rechtman (2008) found that the limits of the distribution of the features within the project area were coterminous with the edges of the previously bulldozed areas. Based upon these findings a re-subdivision of the lease property was proposed that placed all of the extant archaeological features within two parcels, and created two additional parcels that had previously been graded for potential residential and agricultural development. SHPD issued a letter of concurrence with the determination of “no effect” associated with the proposed consolidation and re-subdivision of the parcels, but the consolidation and re-subdivision process was never completed. Subsequently, Rechtman (2009) re-examined the areas at either end of Keawaiki Road where the Bundrants were proposing to erect two gates and found that the specific areas where the gates were to be constructed were highly disturbed by prior mechanized activity. SHPD also issued a letter of concurrence with the determination of “no effect”

associated with the installation of the two access gates (DOC NO: 0907MD05), and the gates were built.

In 2013, Cultural Surveys Hawaii (Hammatt and Shideler 2013) conducted an archaeological reconnaissance and inventory survey for a Kamehameha Schools waterline improvements project within Kahauloa 2nd, Keʻei 1st, and Keʻei 2nd Ahupuaʻa. The purpose was to identify within a larger reconnaissance area a 30-foot wide waterline installation route that would cause minimal or no impact to cultural resources, and to inventory any resources within the corridor. During the course of their fieldwork, a 30-foot wide corridor with no historic properties was delineated, but a number of historic properties were identified within the reconnaissance survey area. Two of these historic properties are located within the one of the properties leased by Bundrant, but outside the project site (see Figure 18 of Appendix 2 for location). SIHP Site 6022 (an *ahupuaʻa* boundary wall and trail-initially identified by Reneicke (1930) and later revisited by Ching (1971) and McEldowney (1979), and a trail (SIHP Site 29233). Site 29233 was observed extending southeast from SIHP Site 6022 (*ahupuaʻa* boundary wall) for a distance of approximately 140 meters. Both the northwest and southeast ends of the trail have been cut by bulldozing. To the north of the *ahupuaʻa* boundary wall the trail is obliterated by an extensive graded and seemingly mined area on the south side of Keʻei Beach Road.

Methods

With knowledge of this historic property context, Rechtman Consulting conducted fieldwork for the inventory survey on March 18-21, 2013, with Matthew R. Clark, B.A., J. David Nelson, B.A., Ashton K. Dircks Ah Sam, B.A., and Lauryl K. Zenobi, B.A. under the direction of Robert B. Rechtman, Ph.D.

During the inventory survey fieldwork an effort was made to visually inspect the entire surface of the project site, which occupies about 2.2 acres and contains the proposed caretaker house location, as well as utility and landscape corridors along existing vehicle roadways within TMK:3-8-3-05:001 totaling roughly 1.95 acres, and a well parcel TMK:3-8-3-05:020 totaling 0.229 acres. The well parcel survey area was established by extrapolating the property boundaries from two corner property pins located in the field and the Tax Map Key. The caretaker house survey area boundaries were previously established by Rechtman (2008) as the edges of bulldozing in that area. The resulting project area boundaries were then plotted onto a scaled project area map using Garmin Vista HCx handheld GPS technology (set to the NAD 83 UTM projection) and the entire project area was surveyed utilizing pedestrian transects with fieldworkers spaced at 10-meter intervals. All previously recorded sites were relocated and re-examined, and all additional potential archaeological resources encountered during the pedestrian transects were plotted on the scaled project area map. Potential archaeological resources were assessed for formal architectural traits and cultural debris indicative of past human utilization. Each site was assigned a temporary site number and all of the sites within the project area were described using standardized site record forms. All of the sites and constituent features were photographed with a meter stick for scale, and scaled plan views of all non-linear sites were prepared using a measuring tape and compass. Each site was marked with a metal site

tag containing its SIHP or temporary site number. No subsurface testing was conducted during the fieldwork.

Findings

The inventory survey recorded three new sites (SIHP Sites 29799-29801) (Table 2 and Figure 4). The recorded sites include a Historic well-site (Site 29799), a series of pāhoehoe excavations (Site 29800), and a trail (Site 29801). The latter two sites appear to represent Precontact Period activities. The well location was already known to exist but the inventory survey helped document Historic Period development of the area and the importance of taping ground water for that development. The two Precontact sites, a bedrock quarry area (Site 29800) and a trail (Site 29801), are elements of the larger archaeological landscape and are clearly related to the former extensive coastal habitation that once occupied this general area. As anticipated, no agricultural features were observed, and no burial features were present in the current project area. All three sites are discussed and illustrated in detail in Appendix 2; below is a brief summary.

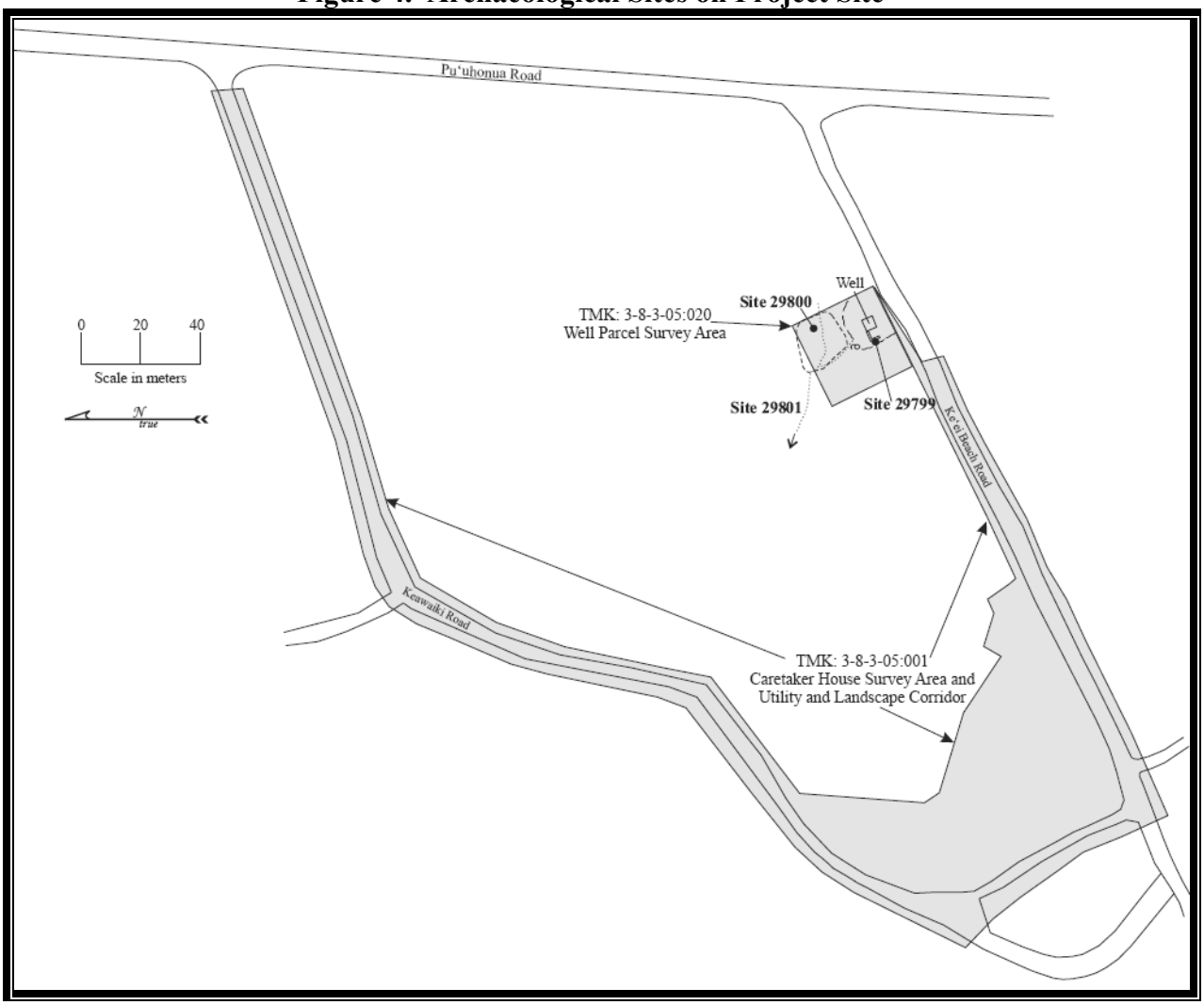
Table 2. Archaeological Sites on Project Site

SIHP No.	Formal Type	Functional Type	Temporal Association	Significance	Treatment
29799	Well site	Resource acquisition	Historic	D	No further work
29800	Pāhoehoe excavations	Quarry	Precontact/Historic	D	Preservation
29801	Trail	Transportation	Precontact	D	Preservation

Site 29799 is a Historic-era well site likely constructed between 1928 and 1954. It was covered at some point within the last few decades covered by a modern building. The new building replaced an older structure that is visible on a 1976 aerial photograph. Surrounding the building is a leveled area consisting of imported gravel and small cobbles, resulting from bulldozing and other construction activities associated the new well-house and the previous well-house. A foundation from the earlier structure consisting of an excavated pit at the well site with stacked cobbles that serve as a retaining edge is visible along the west edge of the existing building. The area north of the excavated pit is scattered with Historic and modern debris, including scrap metal, milled wood, a tire, concrete chunks, and bottle glass fragments.

Site 29800 is series of pāhoehoe excavations located partially within the well parcel (TMK:3-8-3-005:020), about 40 feet from the well and extending about 50 feet to the east/northeast. Cultural material at the site is limited to several large water-worn cobbles, and a scatter of Historic metal cans at the south extent of the excavations. Site 29800 appears to have been exploited as a pāhoehoe cobble source, serving as a quarry that may date to the Precontact Period, with some Historic utilization that is probably associated with the construction of the well in the 1900s.

Figure 4. Archaeological Sites on Project Site



Site 29801 is an isolated segment of a trail located in the northeast portion of the project area, partially within the well parcel. The segment of the trail within the project area measures about 65 feet and is roughly three feet wide. Outside of the project area the trail stretches for an additional 450 feet towards a Precontact habitation complex, intersecting with an extensive trail network associated with multiple features in the west portion of TMK 3-8-3-04:001. The trail consists of small cobble paving, with the occasional small slab stepping-stone. Larger cobbles seem to have been cleared to the side of the trail as it was constructed. The trail branches in several directions within Site 29800. A branch of the trail extends southeast towards Site 29799, while another branch extends from one of the excavations towards the corner property pin of the parcel. At its *mauka* extent the trail becomes untraceable, but may connect to another trail segment to the east. The context of the trail indicates it was constructed during the Precontact Period as an access route between this site and other nearby features that exist outside of the project site.

Impacts to Archaeological Sites and Mitigation Measures

All three sites are considered significant under Criterion D for their information content relative to Precontact and Historic Period use of the study area. The intact elements of SIHP Sites 29800 and 29801 can be avoided and preserved. Given the comprehensive data recordation during the current study, no further historic preservation work is the recommended treatment for SIHP Site 29799. For SIHP Sites 29800 and 29801, the archaeologist recommended that a preservation plan be prepared and submitted to Department of Land and Natural Resources, State Historic Preservation Division (DLNR-SHPD) for review and approval. This plan would address how these two sites will be protected during the water well upgrade activities and how they will be treated after the upgrade work has been completed.

In February 2014, Rechtman Consulting provided the AIS to SHPD and requested concurrence with the significance and treatment recommendations. The Final EA will report on the status of SHPD review.

If during construction any previously unidentified sites or remains such as artifacts, shell, bone, charcoal deposits or human burials are encountered, work will stop immediately and SHPD will be consulted to determine the appropriate mitigation.

3.3.4 Cultural Resources

A cultural impact assessment was prepared conducted for the proposed action by Rechtman Consulting. The report is contained in Appendix 3 and is summarized below. The reader is referred to this appendix for scholarly references, most of which are not included in the summary below. The cultural background is contained in Section 3.3.3, above.

Cultural Resources and Consultation

When assessing potential cultural impacts to resources, practices, and beliefs; input gathered from community members with genealogical ties and/or long-standing residency relationships to the study area is vital. It is precisely these individuals who ascribe meaning and value to traditional resources and practices. Community members may also retain traditional knowledge and beliefs no found elsewhere in the historical or cultural record of a place. As part of the earlier assessment study (Rechtman 2009) several individuals were consulted; during those consultations other potential interested parties were identified that were also contacted. The information obtained during the earlier study (Rechtman 2009) was for the same project area as the current study, thus a summary of the earlier consultation is present here along with a follow-up consultation with one of the earlier participants (Gordon Leslie) who possesses a wealth of cultural and historical knowledge of the Kealakekua Bay area.

Steven Wilcox was contacted by telephone on June 22, 2009. His family (a *kamaʻāina* family with genealogical ties to Kauaʻi) has owned and resided on five parcels at Kahauloa Bay

adjacent to the Keawaiki Beach Lots for over 30 years. Steven's father Allen C. Wilcox, Jr. first moved to the area in the early 1970s and lived there until his passing in 2003. Steven related that from his experience the only traditional and customary use of the area has been fishing that occurs along the rocky shoreline fronting his family's properties and the Keawaiki Beach Lots. On July 7, 2009, an informal consultation was conducted at the Kahauloa Bay extended family residence of Maxiedel "Uncle Del" Navas and Lawrence Alu (Uncle Del's nephew). These individuals have strong genealogical ties to the area having descended from Hawaiians resident in Kahauloa dating from pre Māhele times, and likely Precontact times. Uncle Del's personal recollection of the area extends back to 1956, when he was a small boy walking the trails and roads and collecting water from the formerly several (now only one) *punawai* in and around Kahauloa Bay. He explained that before the houses along Keawaiki Beach were built, foot traffic for travel to Ke'ei was along the old coastal trail where the houses are now or for subsistence activities directly along the shoreline; and that people also used the roadway that is *mauka* of the houses for vehicular travel. His nephew Lawrence added that now the actual shoreline is impassible due to excessive vegetation planting, and that the lateral vehicle road has also been blocked in the vicinity of the Wilcox parcels.

In a 2002 legal proceeding, the Office of Environmental Quality Control recognized the organization Mālama Pono Kealakekua as an affected citizens group that must be consulted in the EIS process relative to development of the State Park at Kealakekua Bay. Mr. Matsukawa, a principal in that group, was contacted by telephone on July 9, 2009 and he related that as far as he knew the group Mālama Pono Kealakekua, of which he is a member, has been idle for several years. On June 22, 2009, Gordon Leslie was consulted by telephone. Gordon's genealogy ties him to South Kona and he is a resident at Manini Beach along the southern shore of Kealakekua Bay, situated just to the north of the current study area. He is culturally active in the community and has served as the chair of the cultural committee of Mālama Pono Kealakekua. Gordon related that his family once own land in the immediate vicinity of the study area. A follow-up phone call was made with Mr. Leslie on December 1, 2013 to discuss the current development plans. He explained that the well was formerly used in association with coffee milling. He said the water was not potable if untreated, but it was suitable for agricultural uses. The current proposed caretaker house and well development plans were described to Mr. Leslie and he stated that he had no concerns or objections.

Cultural Impacts and Mitigation Measures

The archaeological inventory survey contained in Appendix 2 and discussed in Section 3.3.3, above, identified significant archaeological resources that were are recommended for preservation. No archaeological sites other than the 19th century existing well will be impacted by the current proposed development activities. During the earlier consultation with community members (Rechtman 2009) and in the follow-up interviews done as a part of the current study there were no cultural resources or traditional practices identified that would be directly impacted by the current proposed construction of a caretaker house and water well. It was the assessment of the cultural impact assessment that the addition of another residential structure and an improved irrigation water supply within the already developed Keawaiki Beach lots would

not have a direct or cumulative effect on this particular landscape.

To confirm this finding and determine whether there may be additional concerns, the Draft EA was distributed to a number of Native Hawaiian organizations including the Office of Hawaiian Affairs (OHA), Mr. Gordon Leslie and the Kona Hawaiian Civic Club for their input.

3.4 Public Utilities, Facilities and Services

Environmental Setting, Impacts and Mitigation Measures

As the area already contains a number of homes, electricity from the Hawai‘i Electric Light Company is already available on the project site. Power would be supplied to the home via an underground power line from the Keawaiki Beach Lots area. Power to the well would come via a buried conduit from the single family residence (see Site Plan).

According to the County Department of Water Supply (DWS – see Appendix 1a), although service to the lot has not yet been established, DWS supplies potable water to the area via a 4-inch waterline fronting the property. Water can be made available for the residence subject to standard fees and conditions. is supplied to the area by Hawai‘i County Department of Water Supply.

Wastewater disposal for the residence would be through an Individual Wastewater Treatment System in conformance with the requirements of the Hawai‘i State Department of Health.

No public facilities or services are required for the project, and none will be affected. Other than Napo‘opo‘o Beach Park and the Kealakekua Bay Historical Park about a half mile north, no parks or schools or other facilities are present nearby.

Impacts and Mitigation Measures

No adverse impact to public facilities or utilities would occur.

3.5 Secondary and Cumulative Impacts

Due to its small scale, the proposed project would not produce any major secondary impacts, such as population changes or effects on public facilities.

Cumulative impacts result when implementation of several projects that individually have limited impacts combine to produce more severe impacts or conflicts in mitigation measures. Various single-family homes are in construction in the Napo’opo’o area, but few in the immediate vicinity of the project site. Cumulatively, the in-filling of residential areas along this coastline will gradually lessen the rural character, although most lots suitable for construction in this area have already been built upon, and the subject property is one of very few vacant but buildable lots.

As discussed above, Napoʻopoʻo Beach Park is a popular destination for both residents and visitors, and the coastal area around Napoʻopoʻo, a distance of less than a mile, has seen greater recreational use of the bay in large part as a result of increased number of purveyors of watercraft such as kayaks, to the point that DLNR in 2012 closed the bay to personal watercraft. Settlement is scattered, with concentrations in small subdivisions such as Keawaiki Beach Lots. However, the proposed action will not interact in any substantive way with the ongoing situation at Kealakekua Bay. No adverse socioeconomic impacts are expected to result from the project. There will be no restrictions on access to public property or resources. The addition of one single-family home will not increase impacts to resources in the Kealakekua Bay area to any noticeable degree.

Kamehameha Schools (KS) is currently drafting a Management Plan for approximately 195 acres of its holdings near Keʻei for residential and conservation assets and aligning the plan with its mission, vision and strategic goals. The plan is viewed by KS as an opportunity to considerably increase the cultural, environmental, educational and community returns of these assets and to improve the region as a whole. At this point, no specific plans are available.

The adverse effects of building the single-family residence, re-outfitted well and landscaping are negligible and temporary disturbance to noise and visual quality during construction. Other than the precautions for preventing any effects to water quality during construction listed above in Section 3.2.1, no special mitigation measures should be required to counteract the small adverse cumulative effect.

3.6 Required Permits and Approvals

County of Hawaiʻi:

Special Management Area Permit or Exemption
Plan Approval and Grubbing, Grading, Building Permits

State of Hawaiʻi:

Conservation District Use Permit
Well Pump Installation Permit

3.7 Consistency With Government Plans and Policies

3.7.1 Hawaiʻi County General Plan

The *General Plan* for the County of Hawaiʻi is a policy document expressing the broad goals and policies for the long-range development of the Island of Hawaiʻi. The plan was adopted by ordinance in 1989 and revised in 2005 (Hawaiʻi County Department of Planning 2005). The *General Plan* itself is organized into thirteen elements, with policies, objectives, standards, and principles for each. There are also discussions of the specific applicability of each element to the

nine judicial districts comprising the County of Hawai‘i. Most relevant to the proposed project are the following Goal and Policies, and Courses of Action:

ECONOMIC GOALS

Provide residents with opportunities to improve their quality of life through economic development that enhances the County's natural and social environments.

Economic development and improvement shall be in balance with the physical, social, and cultural environments of the island of Hawaii.

Strive for diversity and stability in the economic system.

Provide an economic environment that allows new, expanded, or improved economic opportunities that are compatible with the County's cultural, natural and social environment.

Discussion: The proposed action is in balance with the natural, cultural and social environment of the County, and it would create temporary construction jobs for local residents and indirectly affect the economy through construction industry purchases from local suppliers. A multiplier effect takes place when these employees spend their income for food, housing, and other living expenses in the retail sector of the economy. Such activities are in keeping with the overall economic development of the island.

ENVIRONMENTAL QUALITY GOALS

Define the most desirable use of land within the County that achieves an ecological balance providing residents and visitors the quality of life and an environment in which the natural resources of the island are viable and sustainable.

Maintain and, if feasible, improve the existing environmental quality of the island.

ENVIRONMENTAL QUALITY POLICIES

Take positive action to further maintain the quality of the environment.

ENVIRONMENTAL QUALITY STANDARDS

Pollution shall be prevented, abated, and controlled at levels that will protect and preserve the public health and well being, through the enforcement of appropriate Federal, State and County standards.

Incorporate environmental quality controls [are to be incorporated] either as standards in appropriate ordinances or as conditions of approval.

Discussion: The proposed action would not have a substantial adverse effect on the environment and would not diminish the valuable natural resources of the region. The home, well refitting and landscaping relocation would be compatible with the preservation of and appropriate access to recreational and historic site uses in the area.

HISTORIC SITES GOALS

Protect, restore, and enhance the sites, buildings, and objects of significant historical and cultural importance to Hawaii.

Appropriate access to significant historic sites, buildings**,** and objects of public interest should be made available.

HISTORIC SITES POLICIES

Agencies and organizations, either public or private, pursuing knowledge about historic sites should keep the public apprised of projects.

Require both public and private developers of land to provide historical and archaeological surveys and cultural assessments, where appropriate, prior to the clearing or development of land when there are indications that the land under consideration has historical significance.

Public access to significant historic sites and objects shall be acquired, where appropriate.

Discussion: Historic sites have been properly inventoried and planned for mitigation as part of the project. No adverse effects to historic sites would occur as a result of the proposed action.

FLOOD CONTROL AND DRAINAGE GOALS

Conserve scenic and natural resources.

Protect human life.

Prevent damage to man-made improvements.

Control pollution.

Prevent damage from inundation.

Reduce surface water and sediment runoff.

FLOOD CONTROL AND DRAINAGE POLICIES

Enact restrictive land use and building structure regulations in areas vulnerable to severe damage due to the impact of wave action. Only uses that cannot be located elsewhere due to public necessity and character, such as maritime activities and the necessary public facilities and utilities, shall be allowed in these areas.

Development-generated runoff shall be disposed of in a manner acceptable to the Department of Public Works in compliance with all State and Federal laws.

FLOOD CONTROL AND DRAINAGE STANDARDS

Applicable standards and regulations of Chapter 27, "Flood Control," of the Hawaii County Code.

Applicable standards and regulations of the Federal Emergency Management Agency (FEMA).

Applicable standards and regulations of Chapter 10, "Erosion and Sedimentation Control" of the Hawaii County Code.

Applicable standards and regulations of the Natural Resources Conservation Service and the Soil and Water Conservation Districts.

Discussion: The property is within the Zone X, or areas outside the 100-year floodplain, according to the Flood Insurance Rate Maps (FIRM). The improvements are subject to review by the Hawai‘i County Department of Public Works to ensure that all relevant standards of Chapter 27 and Chapter 10 are addressed.

NATURAL BEAUTY GOALS

Protect, preserve and enhance the quality of areas endowed with natural beauty, including the quality of coastal scenic resources.

Protect scenic vistas and view planes from becoming obstructed.

Maximize opportunities for present and future generations to appreciate and enjoy natural and scenic beauty.

NATURAL BEAUTY POLICIES

Increase public pedestrian access opportunities to scenic places and vistas.

Protect the views of areas endowed with natural beauty by carefully considering the effects of proposed construction during all land use reviews.

Do not allow incompatible construction in areas of natural beauty.

Discussion: The construction of almost all project features would occur in areas that have existing disturbance, in an area with existing residences and the structures will not be incongruous with their surroundings. Because of distance and intervening topography and vegetation, the shoreline is not visible from Pu‘uhonua Road, and no visual impact upon the shoreline is expected.

NATURAL RESOURCES AND SHORELINES GOALS

Protect and conserve the natural resources of the County of Hawaii from undue exploitation, encroachment and damage.

Provide opportunities for the public to fulfill recreational, economic, and educational needs without despoiling or endangering natural resources.

Protect and promote the prudent use of Hawaii's unique, fragile, and significant environmental and natural resources.

Ensure that alterations to existing landforms and vegetation, except crops, and construction of structures cause minimum adverse effect to water resources, and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation, or failure in the event of earthquake.

NATURAL RESOURCES AND SHORELINES POLICIES

The County of Hawaii should require users of natural resources to conduct their activities in a manner that avoids or minimizes adverse effects on the environment.

Encourage the use of native plants for screening and landscaping

Discussion: The proposed action would not occur near the shoreline. Impacts to existing natural landforms and vegetation are few, because of existing disturbance. Permit-regulated Best Management Practices will avoid any impacts related to flooding, landslides, sedimentation or other similar impacts.

LAND USE GOALS

Designate and allocate land uses in appropriate proportions and mix and in keeping with the social, cultural, and physical environments of the County.

LAND USE POLICIES

Allocate appropriate requested zoning in accordance with the existing or projected needs of neighborhood, community, region and County.

LAND USE, OPEN SPACE GOALS

Provide and protect open space for the social, environmental, and economic well-being of the County of Hawaii and its residents.

Protect designated natural areas.

LAND USE, OPEN SPACE POLICIES

Open space shall reflect and be in keeping with the goals, policies, and standards set forth in the other elements of the General Plan.

Discussion: The proposed project features would detract only minimally from the open space in the area, and would be placed in a context of existing disturbed land directly adjacent to a residential area.

3.7.2 Special Management Area

The proposed land use complies with provisions and guidelines contained in Chapter 205A, Hawai‘i Revised Statutes (HRS), entitled *Coastal Zone Management*. The proposed use would be consistent with Chapter 205A because it would not affect public access to recreational areas, historic resources, scenic and open space resources, coastal ecosystems, economic uses or coastal hazards.

The proposed improvements are not likely to result in any substantial adverse impact on the surrounding environment. They are not located on the shoreline and will not restrict any shoreline uses such as hiking, fishing or water sports. Lateral pedestrian use of the shoreline area will not be impacted and there will be no effect on the public’s access to or enjoyment of this shoreline area.

Furthermore, the viewplanes towards the property will not be adversely impacted, as the proposed home and well are relatively distant from the highway, with tall vegetation between the highway and the project site. The improvements will not be unduly visually imposing or out of character. Historic sites and cultural uses have been properly assessed. It is expected that the project will not result in any impact on the biological or economic aspects of the coastal ecosystem. The project site is not situated over any major natural drainage system or water feature that would flow into the nearby coastal system. The property contains few native plants and none that are not extremely common. Areas with native plants will not be affected by the proposed project. Flood Insurance Rate Maps (FIRM) delineate the areas of the property in which construction would occur as Zone X, outside the floodplain. In terms of beach protection, construction is approximately 250 feet mauka of the shoreline and would not affect any beaches

nor adversely affect public use and recreation of the shoreline in this area. No effects on marine or groundwater will occur, and no impacts to marine resources are expected.

3.7.3 Conservation District

The property is in the State Land Use Conservation District, in the General subzone. Any proposed use must undergo an examination for its consistency with the goals and rules of this district and subzone. The applicant has concurrently prepared a Conservation District Use Application (CDUA), to which this EA is an Appendix.

The CDUA includes a detailed evaluation of the consistency of the project with the criteria of the Conservation District permit process. Briefly, the following individual consistency criteria should be noted:

1. The proposed land use is consistent with the purpose of the Conservation District;

The construction of a caretaker residence and re-outfitting of the well will assist in maintenance of the landscaping and upkeep on the leased KS property. The project avoids disturbance to areas that have not already been bulldozed, and does not detract from open space or natural environment values of the Conservation District. The proposed actions are identified land uses within the General subzone and are consistent with the purpose of the district as defined in Chapter 13-5, HAR. The proposed action will positively impact the natural resources of the State and it will not be detrimental to the public health, safety or welfare. Subdivision of land will not be utilized to increase the intensity of land uses in the Conservation District. The proposed action will not subdivide the property and will not lead to any increase in intensity of use beyond currently permitted uses.

2. The proposed land use is consistent with the objectives of the subzone of the land on which the use will occur;

The objective of the General subzone is to designate open space where specific conservation uses may not be defined, but where urban use would be premature. These lands encompass lands with topography, soils, climate, or other related environmental factors that may not be normally adaptable or presently needed for urban, rural or agricultural use.

The single-family dwelling is an identified land use under Section 13-5-24 R-7, Single Family Residence. The re-outfitting of the existing well is an identified use under Sections 13-5-22 P-8 and P-9, Structures and Land Uses, Existing: Landscaping is an identified use under Section 13-5-23 L-2: Landscaping. These uses will not create any hazards for the public. In the past the Board of Land and Natural Resource approved several applications for single-family residences in the Keawaiki Beach Lots, which is essentially a residential subdivision. The approval of this permit and proposed action to allow a single-family home, landscaping with native and Polynesian plants and the re-outfitting of a small irrigation well to support these activities will not add any additional urban uses to this area.

3. The proposed land use complies with provisions and guidelines contained in Chapter 205A, Hawaii Revised Statutes (HRS), entitled "Coastal Zone Management," where applicable;

The purpose of Chapter 205A, HRS, and the Special Management Area (SMA) Rules and Regulations of the County of Hawaiʻi are to preserve, protect and to restore the natural resources of the coastal zone areas. Special controls on development in the coastal zone area are needed to avoid permanent loss of resources. The proposed land use complies with Chapter 205A and SMA rules and regulations. The re-outfitting of the well may be considered accessory to the existing single-family residences in the area and may be determined along with the single-family home to be an exempt action under the County's Special Management Area (SMA) guidelines, Planning Commission, Rule 9.

The proposed use would be consistent with Chapter 205A because it would not affect public access to recreational areas, historic resources, scenic and open space resources, coastal ecosystems, economic uses, or coastal hazards. The Hawaiʻi County Planning Department has previously confirmed that single family dwellings in this subdivision were exempt from SMA Rules for previous CDUPs. They will be asked to make that same determination for this proposed action.

4. The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community or region;

The construction and use of the proposed single-family home and re-outfitting the small irrigation well will not have any adverse impact on the natural resources of the area, community or region. The lots are located immediately adjacent and mauka of a residential neighborhood, Keawaiki Beach Lots, developed in 1968, with single family residences already present. While currently vacant, the lots have suffered trespassing, camping and disturbance of historic features.

Due to the lack of native ecosystems and threatened and endangered plant species, no adverse impacts are expected to occur. Construction activities will generate temporary, intermittent, short-term impacts affecting air quality and noise levels. This will be mitigated with established construction practices that will limit the construction activities to day time hours. There will be no development generated runoff directed toward adjacent properties. All construction activities will be conducted in conformance with applicable requirements in the Hawaiʻi County Code and the Uniform Building Code. The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved. The construction activities will be confined to the Bundrants' leased lot and will not have any adverse impact on the natural resources of the area, community or region. The physical beauty of the lot will not be affected materially by the home construction and landscaping along the roads, and open space will be preserved.

5. The proposed land use, including buildings, structures and facilities, shall be compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels;

These lots are immediately adjacent and mauka of the Keawaiki Beach Lots which were developed as a residential subdivision in 1968. The design of the proposed single-family home is similar to compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific property. The native and Polynesian plants that will be used for landscaping are appropriate to the area.

6. The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon, whichever is applicable;

Air quality and noise levels will not be affected, except for minor temporary effects during the construction period. No significant impact to the visual scenery is expected as the home is designed to blend into the surrounding area, which includes many residences. The site is not described in any State or County plan that identifies important views for the area.

7. Subdivision of land will not be utilized to increase the intensity of land uses in the Conservation District;

The property will not be subdivided and there will be no increase to the intensity of land uses.

8. The proposed land use will not be materially detrimental to the public health, safety and welfare.

The proposed action will not be materially detrimental to the public health, safety and welfare. In general, geologic and drainage conditions impose no substantial constraints on the project. All structures would conform to the Uniform Building Code. Although the project is located in an area exposed to a certain amount of hazard from lava flows and earthquake, the project presents no additional hazard to the public. Landowners and residents of high-hazard lava inundation areas have been made aware of the potential and accept the risk when they purchase and/or inhabit such areas.

The project site is designated "X", defined as areas outside the 500 year flood plain, on the Flood Insurance Rate maps (FIRM). Maps printed by the Hawaii County Civil Defense Agency locate the parcel in the area that should be evacuated during a tsunami warning.

The entire Big Island is subject to geologic hazards, especially lava flows and earthquakes. The project site is located in Lava Flow Hazard Zone 3 (on a scale of ascending risk 9 to 1). Zone 3 consists of areas on both sides of the northeast and southwest rift zones of Mauna Loa (Heliker 1990). About 15-20 percent of Zone 3 areas have been covered by lava flows in the last 750 years. The nearest lava flow is the northern branch of the 1950 lava flow, about 7 miles south. As such, there is some risk of lava inundation over relatively short time scales.

In terms of seismic risk, the entire Island of Hawai‘i is rated Zone 4 Seismic Hazard (Uniform Building Code, Appendix Chapter 25, Section 2518). Zone 4 areas are at risk from major earthquake damage, especially to structures that are poorly designed or built.

3.7.4 Kona Community Development Plan

The Kona Community Development Plan (Kona CDP) was adopted by the County Council on September 25, 2008 under Ordinance 08-131. The Kona CDP translates the broad goals and policies of the *County of Hawai‘i General Plan* into specific actions and priorities for specific geographic areas in the districts of North Kona, reaching nearly to Waikoloa Village, and South Kona, including the community of Miloli‘i. The Kona CDP deals with all the elements included in the General Plan such as the economy, energy, environmental quality, flooding and other natural hazards, historic sites, natural beauty, natural resources and shoreline, housing, public facilities, recreation, transportation, and land use. The *General Plan* requires Community Development Plans be adopted by the County Council as an “ordinance”, giving the plans force of law. This is in contrast to plans of the past that were adopted by resolution, and therefore, served only as guidelines or reference documents for decision-makers. Community Development Plans are to be long-term plans with a planning horizon to year 2020, consistent with the *General Plan*.

The purposes of the Kona CDP are to:

- Articulate Kona’s residents’ vision for the planning area.
- Guide regional development in accordance with that vision, accommodating future growth while preserving valued assets.
- Provide a feasible infrastructure financing plan to improve existing deficiencies and proactively support the needs of future growth.
- Direct growth in appropriate areas.
- Create a plan of action where government and the people work in partnership to improve the quality of life in Kona to live, work, and visit.
- Provide a framework to monitor the progress and effectiveness of the plan and to make changes and update, if necessary.

The draft CDP states that:

> “Outside of the Urban Area, the character of the rural areas should prevail. This means that limited future growth should be directed to the existing rural towns and villages in a way that revitalizes and enhances the existing rural lifestyle and culture of those communities. Outside of these towns and villages, the protection of important agricultural land is a priority objective. Protecting these lands requires regulations and incentives that will keep these lands available for agricultural use. Any development outside of the rural towns and villages should be directed to suitable areas that are not important for agriculture, in clustered patterns that will optimize the preservation of rural open space.”

The proposed project features, including the single-family home, re-outfitted small irrigation well and landscaping road are minor and would not affect viewplanes, agricultural uses, or open space, and would not affect the rural ambience of this part of Kona.

PART 4: DETERMINATION, FINDINGS AND REASONS

4.1 Determination

Based on evaluation of the environmental setting and impacts as discussed in the findings and reasons below, the applicant expects that the Hawai‘i State Department of Land and Natural Resources will determine that that the proposed action will not have a significant effect upon the environment and is therefore expected to issue a Finding of No Significant Impact (FONSI). The determination will be made upon review of the comments letters to the Draft EA and will be reported on in the Final Environmental Assessment.

4.2 Findings and Reasons

Chapter 11-200-12, Hawai‘i Administrative Rules, outlines those factors agencies must consider when determining whether a project has significant effects:

1. *The proposed project will not involve an irrevocable commitment or loss or destruction of any natural or cultural resources.* Native plant communities are not present and historic sites would be given more protection by the action. Consultation with community members did not identify any specific resources such as gathering practices, ceremonial sites, or traditional cultural properties that would be impacted by the project.

2. *The proposed project will not curtail the range of beneficial uses of the environment.* No restriction of beneficial uses would occur.

3. *The proposed project will not conflict with the State's long-term environmental* policies. The State’s long-term environmental policies are set forth in Chapter 344, HRS. The broad goals of this policy are to conserve natural resources and enhance the quality of life. The project is minor and environmentally benign and positive, and it is thus consistent with all elements of the State’s long-term environmental policies.

4. *The proposed project will not substantially affect the economic or social welfare of the community or State.* The project will not have any substantial effect on the economic or social welfare of the South Kona community or the State of Hawai‘i.

5. *The proposed project does not substantially affect public health in any detrimental way.* The project will not affect public health and safety in any way.

6. *The proposed project will not involve substantial secondary impacts, such as population*

changes or effects on public facilities. The small scale of the proposed project will not produce any major secondary impacts, such as population changes or effects on public facilities. The rural character of the project area would not be affected by any aspect of the proposed project.

7. *The proposed project will not involve a substantial degradation of environmental quality*. The project is minor and environmentally benign and positive, and thus would not contribute to environmental degradation.

8. *The proposed project will not substantially affect any rare, threatened or endangered species of flora or fauna or habitat.* The site supports mostly alien vegetation and represents poor habitat for native animals. No rare, threatened or endangered species of flora or fauna are known to exist on the project site other than a planted palm that will not be affected.

9. *The proposed project is not one which is individually limited but cumulatively may have considerable effect upon the environment or involves a commitment for larger actions.* The adverse effects of building the single-family residence, re-outfitted well and landscaping are negligible and temporary disturbance to noise and visual quality during construction. Other than the precautions for preventing any effects to water quality during construction listed above, no special mitigation measures should be required to counteract the small adverse cumulative effect.

10. *The proposed project will not detrimentally affect air or water quality or ambient noise levels.* No substantial effects to air, water, or ambient noise would occur. Brief, temporary effects would occur during construction and will be mitigated.

11. *The project does not affect nor would it likely to be damaged as a result of being located in environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal area.* The project site is not located within a flood zone or other area with hazards that preclude such the proposed uses.

12. *The project will not substantially affect scenic vistas and viewplanes identified in county or state plans or studies.* The project involves alteration of any already disturbed area adjacent to a subdivision of residences and the improvements it will be compatible with local views. Because of distance and intervening topography and vegetation, no impact upon views of or from coastal areas is expected.

13. *The project will not require substantial energy consumption*. A minor amount of energy input will be required for construction and operation of the project features. The single-family residence will have features such as solar hot water, solar photovoltaic (if permissible), low-flow fixture, passive cooling, etc., that reduce energy use. Solar energy will be considered as a source for the well pump.

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___. 2009.Chapter 6E-42 Historic Preservation Review- Request for “No Effect” for Fencing to be Installed by Lessee on KS Lands, Kahauloa 2nd Ahupua’a, South Kona District, Island of Hawai’i, TMK:(3) 8-3-005:001, 020 & 021. Rechtman Consulting Letter RC-0454. Prepared for Chuck and Diane Bundrant, Seattle, Washington.

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ENVIRONMENTAL ASSESSMENT

Bundrant Single-Family Home, Landscaping and Well Repairs at Kahauloa

APPENDIX 1a
Early Consultation Comment Letters

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NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:

13-176
Kahauloa SFD

September 18, 2013

Mr. Ron Terry
Geometrician Associates, LLC
P.O. Box 396
Hilo, Hawai`i 96721

Dear Mr. Terry:

SUBJECT: Early Consultation for Environmental Assessment for Construction of Single-Family Dwelling and Well Repairs at TMK: (3) 8-3-005: 001, 020 and 021, Kahauloa, South Kona District, Island of Hawai`i

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your letter dated September 13, 2013. Thank you for allowing us to review and comment on the subject document. EPO recommends that you review the Standard Comments found on our website: http://health.hawaii.gov/epo/home/landuse-planning-review-program/. You are required to adhere to all Standard Comments specifically applicable to this application.

EPO suggests that you examine the many sources available on strategies to support the sustainable design of communities, including the:

- U.S. Environmental Protection Agency's report, "Creating Equitable, Health and Sustainable Communities: Strategies for Advancing Smart Grants, Environmental Justice, and Equitable Development" (Feb. 2013), http://www.epa.gov/smartgrowth/pdf/equitable-dev/equitable-development-report-508-011713b.pdf;
- U.S. Environmental Protection Agency's sustainability programs: www.epa.gov/sustainability;
- U.S. Green Building Council's LEED program: www.new.usgbc.org/leed; and
- World Health Organization, www.who.int/hia.

The DOH encourages everyone to apply these sustainability strategies and principles early in the planning and review of projects. We also request that for future projects you consider conducting a Health Impact Assessment (HIA). More information is available at www.cdc.gov/healthyplaces/hia.htm. We request you share all of this information with others to increase community awareness on sustainable, innovative, inspirational, and healthy community design.

We wish to receive notice of the environmental assessment's availability when it is completed. We request a written response confirming receipt of this letter and any other letters you receive from DOH in regards to this submission. You may mail your response to: 919 Ala Moana Blvd., Ste. 312, Honolulu, Hawaii 96814. However, we would prefer an email submission to epo@doh.hawaii.gov. We anticipate that our letter(s) and your response(s) will be included in the final document. If you have any questions, please contact me at (808) 586-4337.

Mahalo,

Laura Leialoha Phillips McIntyre, AICP
Manager, Environmental Planning Office

William P. Kenoi
Mayor

Darren J. Rosario
Fire Chief

Renwick J. Victorino
Deputy Fire Chief

County of Hawai'i

HAWAI'I FIRE DEPARTMENT
25 Aupuni Street • Room 2501 • Hilo, Hawai'i 96720
(808) 932-2900 • Fax (808) 932-2928

October 1, 2013

Mr. Ron Terry
Geometrician Associates
PO Box 396
Hilo, HI 96721

Dear Mr. Terry,

SUBJECT: EARLY CONSULTATION ON ENVIRONMENTAL ASSESSMENT FOR CONSTRUCTION OF SINGLE-FAMILY DWELLING AND WELL REPAIRS AT TMK 8-3-005:001, 020, and 021, KAHAULOA, SOUTH KONA DISTRICT, ISLAND OF HAWAI'I

The Hawai'i Fire Department does not have any comments to offer at this time regarding the above-referenced early consultation on Environmental Assessment.

Thank you for the opportunity to comment. A copy or Notice of Availability of Environmental Assessment is not needed when completed.

Sincerely,

DARREN J. ROSARIO
Fire Chief

KT:lc

William P. Kenoi
Mayor

Walter K. M. Lau
Managing Director

Warren H. W. Lee
Director

Brandon A. K. Gonzalez
Deputy Director

County of Hawai'i
DEPARTMENT OF PUBLIC WORKS
Aupuni Center
101 Pauahi Street, Suite 7 · Hilo, Hawai'i 96720-4224
(808) 961-8321 · Fax (808) 961-8630
www.co.hawaii.hi.us

September 23, 2013

Ron Terry, Principal
Geometrician Associates, LLC.
P.O. Box 396
Hilo, HI. 96720

SUBJECT: Early Consultation for Environmental Assessment for Construction of a Single Family Dwelling and Well Repairs
Sorth Kona, Island of Hawaii
TMKs: (3rd) 8-3-005: 001, 020 & 021

We reviewed the Early Consultation for Environmental Assessment dated September 09, 2013 and have the following comments:

In 2008, the Federal Emergency Management Agency (FEMA) issued a Hurricane Study for Hawai'i County. In terms of potential risk to life and property, the more protective Base Flood Elevations and Special Flood Hazard Areas from FEMA's hurricane study, were incorporated onto FEMA's July 2011, Preliminary Digital Flood Insurance Rate Maps (Preliminary DFIRMs). Until FEMA's Preliminary DFIRMs become effective, the County will continue using FEMA's current effective Flood Insurance Rate Maps and Flood Insurance Study for Hawai'i County. We advise all coastal property owners to review FEMA's Preliminary DFIRMs and design/construct as appropriate. The Preliminary DFIRMs can be reviewed at the State of Hawai'i, Department of Land and Natural Resources' website: http://gis.hawaiinfip.org/fhat/.

If you have any questions, please contact Kiran Emler of our Kona office at (808)323-4851.

Ben Ishii, Division Chief
Engineering Division

KE
Copy:--ENG-HILO/KONA

William P. Kenoi
Mayor

Harry S. Kubojiri
Police Chief

Paul K. Ferreira
Deputy Police Chief

County of Hawai'i

POLICE DEPARTMENT
349 Kapi'olani Street • Hilo, Hawai'i 96720-3998
(808) 935-3311 • Fax (808) 961-2389

September 25, 2013

Mr. Ron Terry, Principal
Geometrician Associates LLC
P.O. Box 396
Hilo, Hawai'i 96721

RE: EARLY CONSULTATION ON ENVIRONMENTAL ASSESSMENT FOR CONSTRUCTION OF SINGLE-FAMILY DWELLING AND WELL REPAIRS AT TMK 8-3-005: 001, 020 AND 021, KAHAULOA, SOUTH KONA DISTRICT, ISLAND OF HAWAI'I

Dear Mr. Terry:

This is in response to your letter dated September 13, 2013, regarding a request for comments on the above-referenced early consultation environmental assessment.

We have no comments or objections to offer at this time.

Should you have any questions or concerns, please contact Captain Randal M. Ishii, Commander of our Kona District, at 326-4646, extension 299.

Sincerely,

HARRY S. KUBOJIRI
POLICE CHIEF

PAUL H. KEALOHA JR.
ASSISTANT CHIEF
AREA II OPERATIONS

RMI/dmv
RS130635

From: Dorian L. Vittek [mailto:dvittek@aim.com]
Sent: Sunday, October 06, 2013 1:26 PM
To: rterry@hawaii.rr.com
Cc: melrosek001@hawaii.rr.com; gmooers@hawaii.rr.com
Subject: Bundrant Keawaiki Proposal

Aloha, Ron,

Thank you for taking the time to discuss the Bundrant proposal with both of us. We appreciate your information and understanding of our concerns as well as the referrals to Greg Mooers and Ken Melrose.

We have no concern that neither the Kamehameha School nor the Bundrants have anything but the best of intentions preparing this proposal and, in fact, are pleased that you sent us your letter inviting comments since this is the first that we have heard of the proposal other than a vague reference to a "future plan" made in passing a few years ago. We presume that all owners of property adjacent to the Bundrants' three parcels they have leased from the Kamehameha School received your letter.

To summarize our conversation with you, we talked about the history of the Bundrants' influence on our neighborhood of individually owned, built and landscaped houses. Of these 9 houses, 3 are full-time residences, including ours. The Bundrants' is not one of the full-time residences. Since they bought their house about eight years ago, they have been a major influence in the neighborhood making changes affecting everyone without discussing these changes in advance with the rest of us on Keawaiki Road, except to the extent that, when fire hydrants were put in down the length of the road when the water system was remodeled and after they had put a hydrant in the middle of our roadside landscaping which we objected to and had to have moved to a less intrusive location at our expense, Chuck Bundrant informed us that it was his road and "I can do anything I want with it." (We are unaware of other similar events but are definitely aware of other neighbors who are unhappy with the Bundrants' obvious over-control of things affecting the whole neighborhood but do not "want to make waves" or participate in an inevitably unpleasant and ineffective confrontation with the Bundrants. We hope these other neighbors will respond favorably to your letter and let their concerns be known to you as a third party who has requested knowledge of all of our concerns.

As an example of the history with the Bundrant's "projects", not liking the existing road, they graveled the surface which not only increased traffic but, in the words of a local teenager "made great wheelies" possible, a circumstance which the young man took considerable advantage of. So the Bundrants then put up an electric gate to control the increased flow of traffic caused by the graveling (reinforcing nearby area residents' negative opinions of Keawaiki Road and its residents, derogatorily known locally as "Millionaires Row").

This newest proposal seems to be in part that they are now talking about paving the road and driveways in an unspecified manner without having asked everyone if they wanted this or whether it would affect long-existing landscaping on other residents' properties. Apparently they are also planning to put in a second gate which makes both exits from the ends of Keawaiki Road controlled electrically and raises the question of residents and emergency vehicles exiting or entering in case of power failure or fire or other group or individual needs. We are also concerned that they may want to install sidewalks like the one they installed in front of their house which we definitely do not want and which would be almost impossible to put in along some areas of Keawaiki Road. The existing landscaping has been in place for many years and many owners and reflects our individual tastes from our next door neighbor's variety of majestic palms to our flowering trees and bushes and orchids with a redwood privacy fence to a shallow ravine with abundantly flowering native shrubs and vines.

What it comes down to is that the whole neighborhood should not be remade in the Bundrants' image, thereby imposing their personal preferences on the rest of the neighborhood. We are indeed pleased that

you said there is no intent to put in street lights because, as we discussed with you, we would hate to see our Hawaiian neighborhood looking like a Seattle suburb.

In addition, as we also discussed, there will probably be an economic impact on the neighborhood, particularly on properties used for rentals and expected to generate income to pay expenses. The property values are likely to go up which initially sounds favorable but the taxes would most likely go up proportionately with values and the rental fees would probably not go up enough to cover the increased taxes. There is no way to predict this accurately but it seems likely and should be considered by all of us.

We realistically do not expect the Bundrants' methods of affecting the neighborhood to change but we do respect the Kamehameha School's reputation for community consideration and beneficial involvement. We would be surprised if the proposal has not been put in writing at this time and request a copy of the portion of the agreement concerning "on the ground" specifics in addition to the plans sent with your letter (i.e. type of "paving" "to the front of all houses (not all of which have identical driveways and garages)", how "existing gravel driveways will be paved", how "their edges [will be] landscaped" and whether or not this will disturb current and long-existing landscaping and driveways that are NOT owned by the Bundrants but rather are possessed by the individual landowners. The Bundrants rent a right-of-way and the land within it. They do NOT own our personal properties which have a history of individual ownership and use by these owners for many years. Also, it is unclear what type of fencing will wander considerably throughout the leased acreage to protect undisturbed lands. For all of these reasons, we believe additional information should be sent to all of the Keawaiki neighbors in the interest of transparency, education and the knowledge necessary to express our concerns on vague things like "flora and fauna" which involve us personally, as we appreciate your letter asking us to do.

Needless to say, this construction project will involve a great deal of noise, dust, construction vehicle traffic and the other negative impacts we have experienced throughout many other Bundrant projects. during which they have usually made it a point not to be present on-island. In fact, even the single-family Durst house and the Wilcox construction took many months to complete and they were far simpler than the Bundrant proposal indicates it will be.

Mahalo for your reaching out to all of our neighborhood in your letter. It was a quite refreshing contrast! This is clearly a major project and we are sure the neighbors would like to see it become as much of a success as the Bundrants want it to be.

Sincerely,
Dorian and Joseph Vittek

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

October 9, 2013

Geometrician Associates
Attention: Mr. Ron Terry
P.O. Box 396
Hilo, Hawaii 96721

via email: rterry@hawaii.rr.com

Dear Mr. Terry:

SUBJECT: Early Consultation for Environmental Assessment for Construction of Single-Family Dwelling and Well Repairs, Geometrician Associates, LLC for Charles and Diane Bundrant, Kahauloa, South Kona, Hawaii, TMK: (3) 8-3-005:001, 020 & 021

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comments.

At this time, enclosed are comments from the (i) Engineering Division, (ii) Hawaii District Land Office, (iii) Office of Conservation and Coastal Lands, and (iv) Division of State Parks on the subject matter. Should you have any questions, please feel free to call Kevin Moore at (808) 587-0426. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure(s)

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 17, 2013

MEMORANDUM

TO: FR

DLNR Agencies:
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
__Div. of Forestry & Wildlife
X Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Hawaii District
X Historic Preservation

RECEIVED 2013 SEP 26 AM 10: 29 DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

RECEIVED LAND DIVISION 2013 SEP 17 PM 02:40 ENGINEERING

TO:

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Early Consultation for Environmental Assessment for Construction of Single-Family Dwelling and Well Repairs
LOCATION: Kahauloa, South Kona, Hawaii, TMK: (3) 8-3-005:001, 020 & 021
APPLICANT: Geometrician Associates, LLC for Charles and Diane Bundrant

Transmitted for your review and comment is information on the above referenced document. We would appreciate your comments on this document. Please submit any comments by October 8, 2013.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Kevin Moore at 587-0426. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed: [signature]

Print name: Carty S. Chang, Chief Engineer
Date: 9/24/13

cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/KevinMoore
RE:KahauloaSingleDwellingWellEarlyConsultEA
Hawaii.624

COMMENTS

( ) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ___.

(X) **Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The National Flood Insurance Program does not have any regulations for developments within Zone X.**

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

( ) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

( ) Mr. Mario Siu Li at (808) 768-8098 or Ms. Ardis Shaw-Kim at (808) 768-8296 of t he City and County of Honolulu, Department of Planning and Permitting.

( ) Mr. Frank DeMarco at (808) 961-8042 of the County of Hawaii, Department of Public Works.

( ) Ms. Carolyn Cortez at (808) 270-7813 of the County of Maui, Department of Planning.

( ) Mr. Stanford Iwamoto at (808) 241-4884 of the County of Kauai, Department of Public Works.

( ) The applicant should include water demands and infrastructure required to meet project needs. Please note that projects within State lands requiring water service from the Honolulu Board of Water Supply system will be required to pay a resource development charge, in addition to Water Facilities Charges for transmission and daily storage.

( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional Comments: _____

( ) Other: _____

Should you have any questions, please call Ms. Suzie S. Agraan of the Planning Branch at 587-0258.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: 9/24/13

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

2013 SEP 18 P 1:17

RECEIVED
LAND DIVISION
HILO, HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 17, 2013

MEMORANDUM

2013 OCT -4 AM 10: 13

RECEIVED
LAND DIVISION

DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

TO: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
__Div. of Forestry & Wildlife
X Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Hawaii District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Early Consultation for Environmental Assessment for Construction of Single-Family Dwelling and Well Repairs
LOCATION: Kahauloa, South Kona, Hawaii, TMK: (3) 8-3-005:001, 020 & 021
APPLICANT: Geometrician Associates, LLC for Charles and Diane Bundrant

Transmitted for your review and comment is information on the above referenced document. We would appreciate your comments on this document. Please submit any comments by October 8, 2013.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Kevin Moore at 587-0426. Thank you.

Attachments

( ) We have no objections.
(✓) We have no comments.
( ) Comments are attached.

Signed: _____

Print name: GORDON C. HEIT
Date: 10/2/13

cc: Central Files

TM

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RECEIVED
OFFICE OF CONSERVATION
& COASTAL LANDS

2013 SEP 17 P 3: 05

HA-14-43
Correspondence

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 17, 2013

MEMORANDUM

RECEIVED
LAND DIVISION
2013 OCT -3 AM 11: 55
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

TO: **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
X Engineering Division
___Div. of Forestry & Wildlife
X Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Hawaii District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Early Consultation for Environmental Assessment for Construction of Single-Family Dwelling and Well Repairs
LOCATION: Kahauloa, South Kona, Hawaii, TMK: (3) 8-3-005:001, 020 & 021
APPLICANT: Geometrician Associates, LLC for Charles and Diane Bundrant

Transmitted for your review and comment is information on the above referenced document. We would appreciate your comments on this document. Please submit any comments by October 8, 2013.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Kevin Moore at 587-0426. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed: K. Mills
Print name: K. Tiger Mills
Date: Oct. 3 2013

cc: Central Files

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ESTHER KIA'AINA
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAI'I 96809

REF:OCCL:TM

Correspondence: HA 14-43

MEMORANDUM

OCT - 3 2013

TO: Russ Y. Tsuji, Administrator
Land Division

FROM: Sam J. Lemmo, Administrator
Office of Conservation and Coastal Lands (OCCL)

SUBJECT: Pre-Environmental Assessment Consultation for the Construction of a Single Family Residence and Well Repairs Located at Kahauloa, South Kona, Hawai'i, TMK: (3) 8-3-005:001; 020; & 021

The OCCL has reviewed the subject matter and note the indicated parcels lie within the Conservation District, General Subzone. A Single Family Residence (SFR) is a land use that could be applied for through the filing of a Conservation District Use Application (CDUA). The proposed SFR shall conform to design standards as outlined in the Hawai'i Administrative Rules, Chapter 13-5, Exhibit 4. To allow, modify or deny the use would be at the Board of Land and Natural Resources discretion.

Please also consult with the Commission on Water Resource Management (CWRM) regarding the repair of the well.

All existing and proposed land uses must be sited and discussed in detail by each TMK parcel in the environmental document. Please include a landscaping plan. The OCCL prefers native plants be utilized in the landscaping plan. Historic and archeological sites shall be reviewed by the State Historic Preservation Division for a determination on site protection.

Should you have any questions regarding this memorandum, contact Tiger Mills of our Office at (808) 587-0382.

5583(

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RECEIVED
STATE PARKS

'13 SEP 18 PM 2:20

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 17, 2013

MEMORANDUM

TO: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
X Engineering Division
__Div. of Forestry & Wildlife
X Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Hawaii District
X Historic Preservation

RECEIVED
LAND DIVISION
2013 OCT -4 PM 2:32
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Early Consultation for Environmental Assessment for Construction of Single-Family Dwelling and Well Repairs
LOCATION: Kahauloa, South Kona, Hawaii, TMK: (3) 8-3-005:001, 020 & 021
APPLICANT: Geometrician Associates, LLC for Charles and Diane Bundrant

Transmitted for your review and comment is information on the above referenced document. We would appreciate your comments on this document. Please submit any comments by October 8, 2013.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Kevin Moore at 587-0426. Thank you.

Attachments

( ) We have no objections.
(✓) We have no comments.
( ) Comments are attached.

Signed: [signature]

Print name: Daniel S. Quiri
Date: 10/8/13

cc: Central Files

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAI'I
345 KEKŪANAŌ'A STREET, SUITE 20 • HILO, HAWAI'I 96720
TELEPHONE (808) 961-8050 • FAX (808) 961-8657

October 8, 2013

Ron Terry
Geometrician Associates, LLC
P.O. Box 396
Hilo, HI 96720

PRE-ENVIRONMENTAL ASSESSMENT CONSULTATION FOR SINGLE-FAMILY DWELLING AND WELL REPAIRS TAX MAP KEY (3) 8-3-005:001, 020 AND 021

This is in response to your letter dated September 13, 2013.

Please be informed that the subject parcel does not have an existing water service with the Department. There is an existing 8-inch waterline along Kahauloa Road, which reduces in size to a 4-inch, fronting parcel 1. Water can be made available to the proposed single-family dwelling. We have no comments regarding any environmental issues within the subject parcels.

Should there be any questions, please contact Mr. Ryan Quitoriano of our Water Resources and Planning Branch at 961-8070, extension 256.

Sincerely yours,

Quirino Antonio, Jr., P.E.
Manager-Chief Engineer

RQ:dfg

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ESTHER KIA'AINA
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

October 11, 2013

MEMORANDUM

TO: Russell Tsuji
Land Division
PO Box 621
Honolulu, HI 96809

LOG NO: 2013.5440
DOC NO: 1310MV01
Archaeology

FROM: Theresa Donham, Archaeology Branch Chief

SUBJECT: **Chapter 6E-42 Historic Preservation Review–**
Early Consultation on Environmental Assessment for a
Single Family Dwelling and Well Improvements
Kahauloa Ahupua'a, South Kona District, Island of Hawai'i
TMK: (3) 8-3-005:001, 020 and 021

Thank you for the effort to consult with our office early in the process. The letter was received by our office on September 18, 2013. According to the letter, the proposed project involves the construction of a single family dwelling and well repairs on the subject parcels. A review of our records indicates that this project area is located within the Kealakekua Bay Historic District (50-10-47-7000). Our records also indicate that no archeological inventory survey has been prepared for this project area. However, during a previous SHPD review of a proposed project on this parcel a field inspection by Dr. Robert Rechtman confirmed the presence of historic properties in the project area (SHPD Log 2009.0019, Doc 0902MD35). In recent conversations with Dr. Rechtman our office has been informed that an archaeological inventory survey (AIS) has been conducted on the current project area. However, to date the AIS report has not been submitted to SHPD for review. Therefore, **we request the opportunity to review the AIS report for this project area**. We request that the AIS report be submitted prior to EA publication so that our office has an opportunity to review and comment on the findings and recommendations.

Please contact Mike Vitousek at (808) 652-1510 or Michael.Vitousek@Hawaii.gov if you have any questions or concerns regarding this letter.

cc:

Ron Terry
Geometrician Associates
PO Box 396
Hilo, HI 96721

bob@rechtmanconsulting.com

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County of Hawai'i
PLANNING DEPARTMENT

East Hawai'i Office
101 Pauahi Street, Suite 3
Hilo, Hawai'i 96720
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October 24, 2013

Mr. Ron Terry
Geometrician Associates, LLC
P.O. Box 396
Hilo, HI 96721

Dear Mr. Terry:

SUBJECT: Pre-Environmental Assessment Consultation
Landowners: Charles and Diane Bundrant
Project: Single-Family Dwelling and Well Repairs
Tax Map Key: 8-3-005:001, 20 and 21 South Kona, Hawai'i

This is in response to your September 13, 2013 request for comments on an Environmental Assessment on the above referenced project.

Proposed is the construction of a single-family dwelling with improvements that include an Individual Wastewater System, a driveway and landscaping on Parcel 1 and the refurbishing of an existing water well on Parcel 20. There will also be fencing across portions of the three parcels to protect undisturbed land that contain archaeological sites.

We note the following for these three parcels:

1. According to the Real Property Tax Office records, B.P. Bishop Estates Trustees and Sunset Coffee Milling Company, Inc. are listed as the owners of Parcel 20. B.P. Bishop Estates Trustees and Charles H. and Diane Bundrant are listed as owners of Parcels 1 and 21.

2. According to Real Property Tax Office Records, Parcel 1 consists of 24.55 acres, Parcel 20 consists of 0.2296 acre, and Parcel 21 consists of 0.79 acre.

3. The General Plan Land Use Pattern Allocation Guide (LUPAG) Map's designation for all parcels is Open.

4. All parcels are designated Conservation by the State Land Use Commission.

5. For parcels that are designated Conservation by the State Land Use Commission, there is no County zoning per se.

6. The subject parcels are located within the Kealakekua Bay Historical District. Since the proposed use is a use within a Historic site or District as designated in the National or Hawaii Register of Historic Sites, this is another "trigger" that requires the preparation of an environmental assessment.

7. Although it is located within the County's Special Management Area, none of the parcels have frontage along the coastline.

8. Include discussion on the impact of the fencing on the Keawaiki Road and the residents of the Keawaiki Beach Lots subdivision.

9. Due to the presence of trails within the Kahauloa area, we recommend that you contact Na Ala Hele and the Ala Kahakai National Historic Trail Program for their comments.

10. Valued cultural resources which include traditional and customary native Hawaiian rights that are exercised in the area should be discussed.

11. Please contact the Hawai'i Commission on Water Resource Management for permits that may be required to refurbish the existing pit well. In addition, please indicate what infrastructures would be required to provide water service from the well to the dwelling.

12. The Department of Land and Natural Resources, State Historic Preservation Division should be contacted regarding the pit well as it may be considered a potentially significant historic structure.

13. County permits and approvals required:
    a. A Special Management Area Use Permit Assessment Application will be required for any construction activity or improvements on the subject parcels.
    b. Plan Approval is required for all new structures and additions to existing structures.

Thank you for the opportunity to provide these comments.

Please forward a copy of the Environmental Assessment for our review and file.

If you have questions, please feel free to contact Esther Imamura of this office at 961-8139.

Sincerely,

for DUANE KANUHA
Planning Director

ETI:cs
P:\Wpwin60\ETI\Eadraftpre-Consul\Terry Bundrant 8-3-5-1,20,21.Rtf

cc: Planning Department – Kona

Mr. Rick Gmirkin
Ala Kahakai National Historic Trail
73-4786 Kanalani Street, #14
Kailua-Kona, HI 96740

ENVIRONMENTAL ASSESSMENT

Bundrant Single-Family Home, Landscaping and Well Repairs at Kahauloa

APPENDIX 2
Archaeological Report

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RC-0838

An Archaeological Inventory Survey of TMKs: 3-8-3-05:001 (por.) and 3-8-3-05:020

Kahauloa 2nd Ahupua‘a
South Kona District
Island of Hawai‘i

DRAFT VERSION

PREPARED BY:

Lauryl K. Zenobi, B.A.,
Ashton K. Dircks Ah Sam, B.A.,
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Robert B. Rechtman, Ph.D.

PREPARED FOR:

Chuck and Diane Bundrant
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November 2013

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ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL STUDIES

RC-0838

An Archaeological Inventory Survey of TMKs: 3-8-3-05:001 (por.) and 020

Kahauloa 2nd Ahupua‘a
South Kona District
Island of Hawai‘i

RECHTMAN CONSULTING

EXECUTIVE SUMMARY

At the request of Chuck and Diane Bundrant, lessees under Kamehameha Schools (landowner), Rechtman Consulting, LLC conducted an archaeological inventory survey of an area within TMK:3-8-3-05:001 for a proposed caretaker house and a designated well parcel (TMK:3-8-3-05:020), in Kahauloa 2nd Ahupuaʻa, South Kona District, Island of Hawaiʻi (Figures 1 and 2). The Bundrant's intend to construct a caretaker house within an existing disturbed area on TMK: 3-8-3-05:001 and further develop the water well on TMK:3-8-3-05:020. The current project was undertaken in compliance with both the historic preservation review process requirements (HAR 13§13-284-5) of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD) and the County of Hawaiʻi Planning Department; and is intended to accompany an Environmental Assessment and Conservation District Use Application that are being prepared pursuant to HRS Chapter 343. Fieldwork for the current inventory survey was conducted on March 18-21, 2013 by Matthew R. Clark, B.A., J. David Nelson, B.A., Ashton K. Dircks Ah Sam, B.A., and Lauryl K. Zenobi, B.A. under the direction of Robert B. Rechtman, Ph.D. As a result of the current inventory survey three newly recorded sites (SIHP Sites 29799-29801) were documented within the project area. The recorded sites include a Historic well-site (Site 29799), a series of *pāhoehoe* excavations (Site 29800), and a trail (Site 29801). The latter two sites appear to represent Precontact Period activities. All three sites are considered significant under Criterion D for their information content relative to Precontact and Historic Period use of the study area. The intact elements of SIHP Sites 29800 and 29801 can be avoided and preserved. Given the comprehensive data recordation during the current study, no further historic preservation work is the recommended treatment for SIHP Sites 29799. For SIHP Sites 29800 and 29801 a preservation plan should be prepared and submitted to DLNR-SHPD for review and approval. This plan should address how these two sites will be protected during the water well upgrade activities and how they will be treated after the upgrade work has been completed

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INTRODUCTION

At the request of Chuck and Diane Bundrant, lessees under Kamehameha Schools (landowner), Rechtman Consulting, LLC conducted an archaeological inventory survey of an area within TMK:3-8-3-05:001 for a proposed caretaker house and a designated well parcel (TMK:3-8-3-05:020), in Kahauloa 2nd Ahupuaʻa, South Kona District, Island of Hawaiʻi (Figures 1 and 2). The Bundrant's intend to construct a caretaker house within an existing disturbed area on TMK: 3-8-3-005:001 and further develop an existing water well on TMK:3-8-3-05:020. The limits of the study area for this current inventory survey was discussed with and approved by DLNR-SHPD prior to commencement of the fieldwork. The current project was undertaken in compliance with both the historic preservation review process requirements (HAR 13§13-284-5) of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD) and the County of Hawaiʻi Planning Department; and is intended to accompany an Environmental Assessment (EA) and Conservation District Use Application (CDUA) that are being prepared pursuant to HRS Chapter 343.

This report contains background information outlining the project area's physical and cultural contexts, a presentation of previous archaeological work in the vicinity of the study area, and current survey expectations based on that previous work. Also presented is an explanation of the project's methods, a detailed description of the archaeological sites encountered, interpretation and evaluation of those resources, and treatment recommendations for all the documented sites.

Project Area Description

The current project area consists of roughly 2.2 acres located in Kahauloa 2nd Ahupuaʻa, South Kona District, Island of Hawaiʻi (Figure 3 and Figure 4). The project area contains a proposed caretaker house location and utility and landscape corridors along existing vehicle roadways within TMK:3-8-3-05:001 totaling roughly 1.95 acres, and a well parcel TMK:3-8-3-05:020 totaling 0.229 acres. The parcels are situated within the southwest corner of the Kealakekua Bay Historic District (HRHP 10-47-7000) which is listed in both the National Register of Historic Places (NRHP) and the Hawaiʻi Register of Historic Places (HRHP). The project area also falls within the coastal zone of the Kona Field System (SIHP Site 4150), a complex of dryland agricultural and habitation features covering minimally 60 square miles between Kailua (to the north) and Hoʻokena (to the south). The Kona Field System has also been determined eligible for listing in the National Register of Historic Places.

Soil within the project area is classified as "Lava flows" (rLV; Sato et. al. 1973). The flows are primarily *ʻaʻā* from Mauna Loa Volcano (k4, Kau Basalt) that are 200 to 750 years old (Wolfe and Morris 1996). No soil pockets were present within the project area, although soil has recently developed in the vicinity of Keawaiki Beach Lots, where a garden area is currently cultivated (Figure 5). Two tarp structures used for storage are located in that area (Figure 6). The entire property is situated below the 40-foot contour line and rainfall ranges from 20–50 inches per year. Kahauloa, like much of South Kona, is protected from the prevailing trade winds by Mauna Loa and, as a result, rainfall is heavier in the summer months with common late afternoon or early evening showers (McEldowney 1979). No perennial streams are present in the vicinity of the project area. Given its lack of soil development, the current project area was not suitable for agriculture of any kind.

Uncultivated plant species growing within the current study area include: autograph tree (*Clusia rosea*), *opiuma* (*Pithecellobium dulce*), *koa haole* (*Leucaena leucocephala*), Christmas-berry (*Schinus terebinthifolius*), *naupaka* (*Scaevola sp.*), octopus tree (*Schefflera actinophylla*), tree heliotrope (*Tournefortia argentea*), fountain grass (*Pennisetum setaceum*), air plant (*Kalanchoe pinnata*), molasses grass (*Melinis minutiflora*), *noni* (*Morinda* sp.), African tulip (*Spathodea campanulata*), along with various other non-native grasses, vines, and weeds. The majority of plants are growing in previously disturbed areas near Keʻei Beach Road, Puʻuhonua Road, and adjacent to the Keawaiki Beach Lots. Cultivated plants used for landscaping and planted in gardens are also common in the vicinity of the Keawaiki Beach Lots.

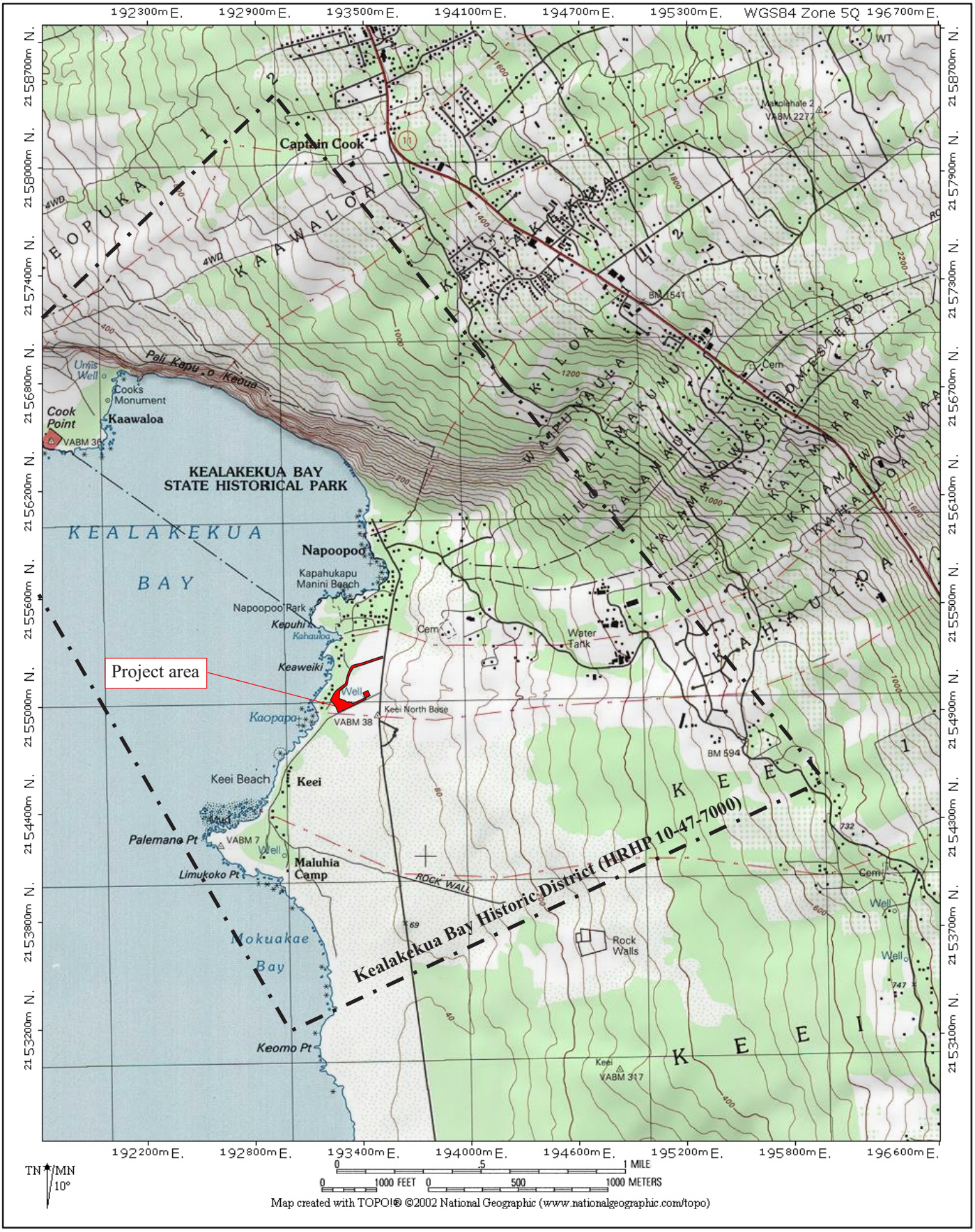

Figure 1. Project area location.

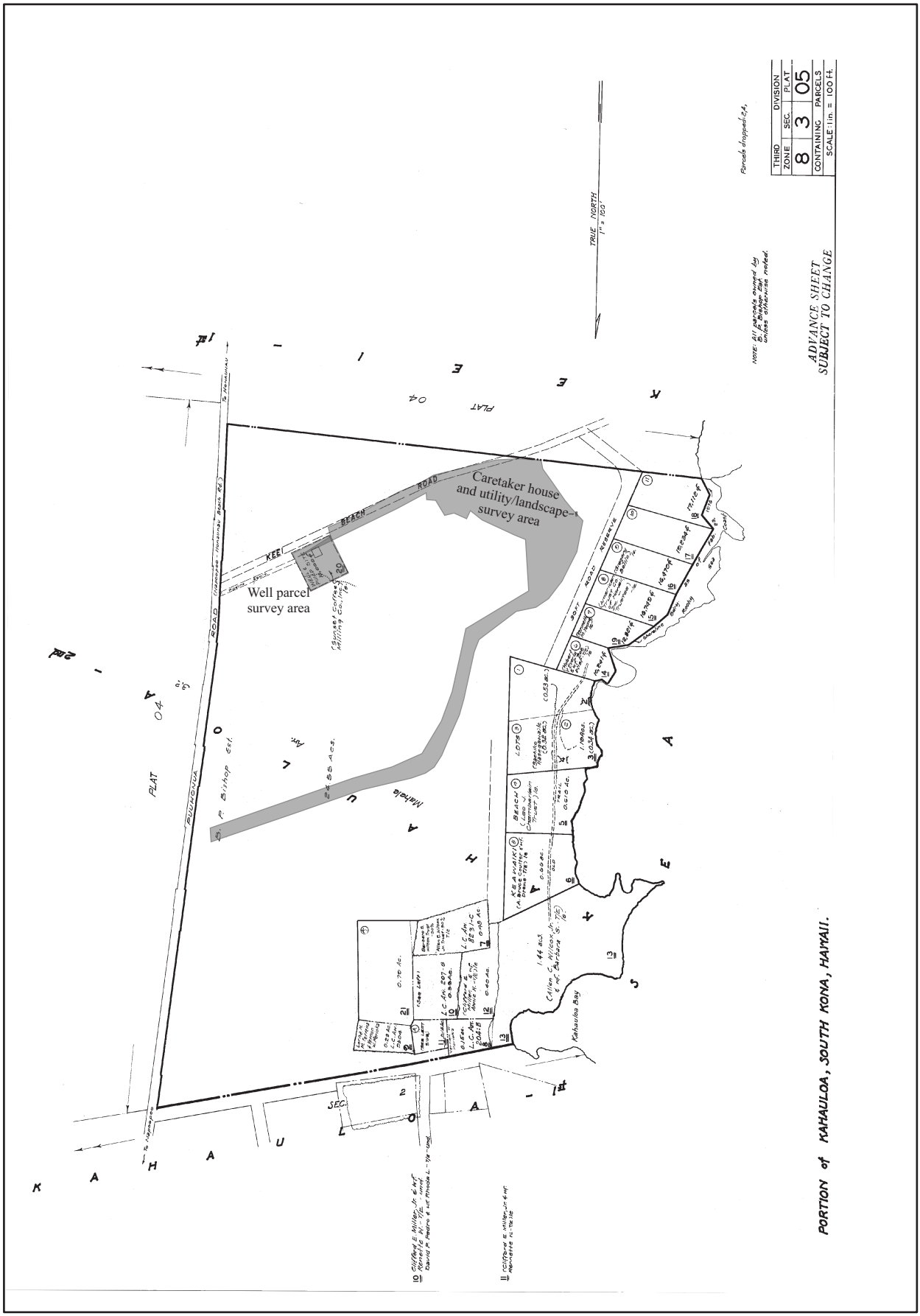

Figure 2. Tax Map Key 3-8-3-05 showing the current study area.

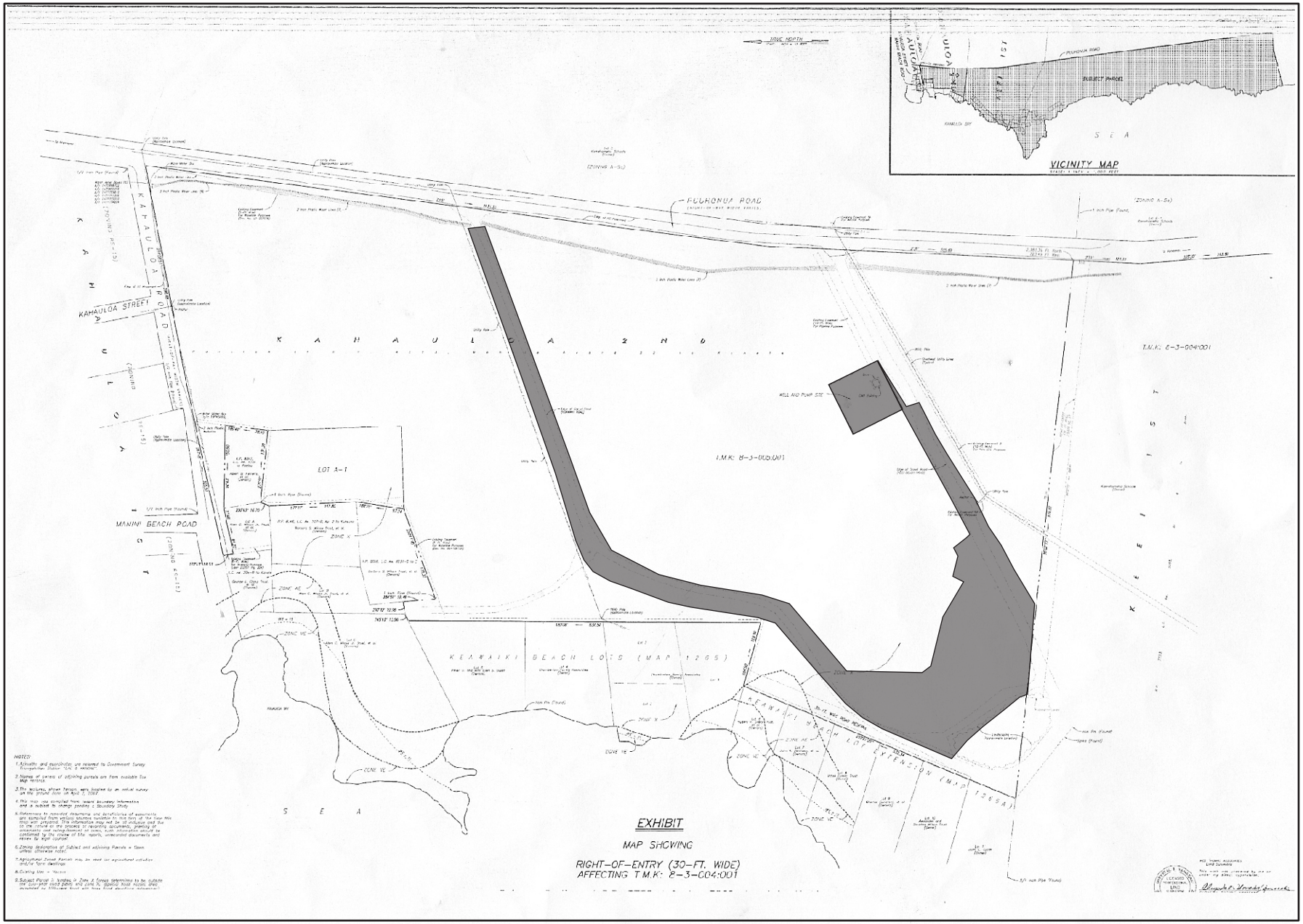

Figure 3. Land survey map prepared by Wes Thomas Associates showing current study area location (shaded).

Figure 4. Google Earth image showing current study area location.

Figure 5. Garden area near Keawaiki Beach Lots, view to the west.

Figure 6. Tarp structures, view to the northeast.

Portions of the two survey areas have been altered by mechanical land clearing activities. The entire proposed caretaker house location area and utility and landscape corridors within TMK:3-8-3-05:001 have been previously graded by a bulldozer in their entirety (Figures 7, 8, and 9). Similarly, the southern portion of the well parcel (TMK:3-8-3-05:020), in which a well was constructed sometime between 1928 and 1954 and a modern well-house structure that replaced an older building are located, has been subjected to bulldozing activities associated with its original and subsequent construction episodes (Figure 10).

There are several unpaved roadways that traverse the Kamehameha Schools-owned, and Bundrant-leased properties. Keʻei Beach Road (Figure 11), considered a public right-of-way, extends southwest from Puʻuhonua Road across TMK: 3-8-3-05:001 adjacent to the well parcel and the proposed caretaker house location areas (one of the proposed utility and landscape corridors extend adjacent to this road). A gated private road (Keawaiki Road) t extends north from Keʻei Beach Road along the *makai* edge of the proposed caretaker house location area and turns east across TMK: 3-8-3-05:001 to Puuhonua Road (the other proposed utility and landscape corridors extend adjacent to this Keawaiki Road). The Keawaiki access road gate is located near the caretaker house location survey (Figure 12). The aforementioned roadways are visible on a 2013 Google ™ Earth image (see Figure 4).

Figure 7. Bulldozed house pad survey area, view to the west.

Figure 8. The disturbed Ke‘ei Beach Road utility and landscape corridor, view to the west.

Figure 9. The disturbed Keawaiki Road utility and landscape corridor, view to the west.

Figure 10. Well parcel and modern well-house structure, view to the northeast.

Figure 11. Ke‘ei Beach Road, view to the east.

Figure 12. Keawaiki Beach Lots access road gate, view to the northwest.

BACKGROUND

To generate a set of expectations regarding the nature of archaeological resources that might be encountered on the study parcel, and to establish an environment within which to assess the significance of any such resources, a general culture-historical context for the region relative to the project area and a review of previous archaeological studies in the vicinity of the current project area are presented.

Culture-Historical Context

Archaeologists and historians describe the inhabiting of the Hawaiian Islands in the context of settlement that resulted from voyages taken across the open ocean. For many years, researchers have proposed that early Polynesian settlement voyages between Kahiki (the ancestral homelands of the Hawaiian gods and people) and Hawai‘i were underway by A.D. 300, with long distance voyages occurring fairly regularly through at least the thirteenth century (Rechtman and Maly 2003). More recently, however, Kirch (2011) has convincingly argued that Polynesians may not have arrived in the Hawaiian Islands until at least A.D. 1000, but expanded rapidly thereafter. It has been generally reported that the sources of the early Hawaiian population—the Hawaiian Kahiki—were the Marquesas and Society Islands (Cordy 2000; Emory in Tatar 1982:16-18).

For generations following initial settlement, communities were clustered along the watered, windward (*ko‘olau*) shores of the Hawaiian Islands. Along the *ko‘olau* shores, streams flowed and rainfall was abundant, and agricultural production became established (Rechtman and Maly 2003). The *ko‘olau* region also offered sheltered bays from which deep sea fisheries could be easily accessed, and near shore fisheries, enriched by nutrients carried in the fresh water, could be maintained in fishponds and coastal waters. It was around these bays that clusters of houses where families lived could be found (McEldowney 1979:15). In these early times, Hawai‘i’s inhabitants were primarily engaged in subsistence level agriculture and fishing (Handy et al. 1991:287). There is no archaeological evidence for occupation of the Kona region during this initial stage of island occupation.

Over a period of several centuries, areas with the richest natural resources became populated and perhaps even crowded, and the population began expanding to the *kona* (leeward side) of the island (Cordy 2000:130). In Kona, communities were initially established along sheltered bays with access to fresh water and rich marine resources. The primary "chiefly" centers were established at several locations—the Kailua (Kai-a-ke-akua) vicinity, Kahaluʻu-Keauhou, Kaʻawaloa-Kealakekua, and Hōnaunau (Rechtman and Maly 2003). The communities shared extended familial relations, and there was an occupational focus on the collection of marine resources. By the fourteenth century, inland elevations to around the 3,000-foot level were being turned into a complex and rich system of dryland agricultural fields (today referred to as the Kona Field System). This area extends north at least to Ka'u Ahupua'a and south to Honaunau, west from the coastline and east to the forested slopes of Hualalai (Cordy 1995). By the fifteenth century, residency in the uplands was becoming permanent, and there was an increasing separation of the chiefly class from the common people. In the sixteenth century the population stabilized and the *ahupuaʻa* land management system was established as a socioeconomic unit (see Ellis 1963; Handy et al. 1991; Kamakau 1992; Kelly 1983; and Tomonari-Tuggle 1985).

In Kona, where there were no regularly flowing streams to the coast, access to potable water (*wai*), was of great importance and played a role in determining the areas of settlement. The waters of Kona were found in springs and caves (found from shore to the mountain lands), or procured from rain catchments and dewfall (Rechtman and Maly 2003). Traditional and historic narratives abound with descriptions and names of water sources, and also record that the forests were more extensive and extended much further seaward than they do today. These forests not only attracted rains from the clouds and provided shelter for cultivated crops, but also in dry times drew the *kēhau* and *kēwai* (mists and dew) from the upper mountain slopes to the low lands (Rechtman et al. 2001).

In the 1920s-1930s, Handy et al. (1991) conducted extensive research and field interviews with elder native Hawaiians. In lands of North and South Kona, they recorded native traditions describing agricultural practices and rituals associated with rain and water collection. Primary in these rituals and practices was the lore of Lono—a god of agriculture, fertility, and the rituals for inducing rainfall. Handy et al., observed:

> The sweet potato and gourd were suitable for cultivation in the drier areas of the islands. The cult of Lono was important in those areas, particularly in Kona on Hawaiʻi . . . there were temples dedicated to Lono. The sweet potato was particularly the food of the common people. The festival in honor of Lono, preceding and during the rainy season, was essentially a festival for the whole people, in contrast to the war rite in honor of Ku which was a ritual identified with Ku as god of battle (Handy et al. 1991:14).

Handy et al. (1991) noted that the worship of Lono was centered in Kona. Indeed, it was while Lono was dwelling at Keauhou, that he is said to have introduced taro, sweet potatoes, yams, sugarcane, bananas, and *ʻawa* to Hawaiian farmers (Handy et al. 1991:523). The rituals of Lono—"The father of waters"—and the annual *Makahiki* festival (honoring Lono) preceding and during the rainy season, were of great importance to the native residents of this region (Handy et al. 1991:14). The significance of rituals and ceremonial observances in cultivation and indeed in all aspects of life was of great importance to the well being of the ancient Hawaiians, and cannot be overemphasized, or overlooked when viewing traditional sites of the cultural landscape (Rechtman and Maly 2003).

Over the generations, the ancient Hawaiians developed a sophisticated system of land and resources management. By the time ʻUmi-a-Līloa rose to rule the island of Hawaiʻi in ca. 1525, the island (*moku-puni*) was divided into six districts or *moku-o-loko* (Fornander 1996–Vol. II:100-102). The district of Kona is one of six major *moku-o-loko* of the island. The district itself, extends from the shore across the entire volcanic mountain of Hualālai, and continues to the summit of Mauna Loa, where Kona is joined by the districts of Kaʻū, Hilo, and Hāmākua. One traditional reference to the northern and southern-most coastal boundaries of Kona tells us of the district's extent:

> *Mai Ke-ahu-a-Lono i ke ʻā o Kani-kū, a hōʻea i ka ʻūlei kolo o Manukā i Kaulanamauna e pili aku i Kaʻū!*—From Keahualono [the Kona-Kohala boundary] on the rocky flats of Kanikū, to Kaulanamauna next to the crawling (tangled growth of) ʻūlei bushes at Manukā, where Kona clings to Kaʻū! (*Kaʻao Hoʻoniua Puʻuwai no Ka-Miki in Ka Hōkū o Hawaiʻi*, September 13, 1917; Translated by K. Maly)

The traditional district of Kona is divided today into two districts, North Kona and South Kona, and like other large districts on Hawai‘i, was further subdivided into *‘okana* or *kalana* (regions of land smaller than the *moku-o-loko*, yet comprising a number of smaller units of land). Of all the land divisions, perhaps the most significant management unit was the *ahupua‘a* (Rechtman and Maly 2003). *Ahupua‘a* are subdivisions of land that were usually marked by an altar with an image or representation of a pig placed upon it (thus the name *ahu-pua‘a* or pig altar). In their configuration, the *ahupua‘a* may be compared to wedge-shaped pieces of land that radiate out from the center of the island, extending to the ocean fisheries fronting the land unit. Their boundaries are generally defined by topography and geological features such as *pu‘u* (hills), ridges, gullies, valleys, craters, or areas of a particular vegetation growth (Lyons 1875).

The *ahupua‘a* were also divided into smaller individual parcels of land (such as the *‘ili, kō‘ele, māla*, and *kīhāpai*, etc.), generally oriented in a *mauka-makai* direction, and often marked by stone alignments (*kuaiwi*). In these smaller land parcels the native tenants tended fields and cultivated crops necessary to sustain their families, and the chiefly communities with which they were associated. As long as sufficient tribute was offered and *kapu* (restrictions) were observed, the common people, who lived in a given *ahupua‘a* had access to most of the resources from mountain slopes to the ocean (Rechtman and Maly 2003). These access rights were almost uniformly tied to residency on a particular land, and earned as a result of taking responsibility for stewardship of the natural environment, and supplying the needs of the *ali‘i* (see Kamakau 1992:372-377 and Malo 1951:63-67).

Entire *ahupua‘a*, or portions of the land were generally under the jurisdiction of appointed *konohiki* or lesser chief-landlords, who answered to an *ali‘i-‘ai-ahupua‘a* (chief who controlled the *ahupua‘a* resources). The *ali‘i-‘ai-ahupua‘a* in turn answered to an *ali‘i ‘ai moku* (chief who claimed the abundance of the entire district). Thus, *ahupua‘a* resources supported not only the *maka‘āinana* and *‘ohana* who lived on the land, but also contributed to the support of the royal community of regional and/or island kingdoms (Rechtman and Maly 2003). This form of district subdividing was integral to Hawaiian life and was the product of strictly adhered to resources management planning. In this system, the land provided fruits and vegetables and some meat in the diet, and the ocean provided a wealth of protein resources. The following passage summarizes the degree to which each section of an *ahupua’a* was utilized:

> The ocean resources fronting Ke’ei were integral to life upon the land. On the *kula kahakai* or shoreward flats, were found potable water sources (caves, wells and springs), several village clusters and many residents, groves of coconut trees, and low land agricultural fields. The *kula uka* or upland plains, extending up to an area above the *mauka Alaloa*, Keala‘ehu (near present day Māmalahoa Highway), was highly valued for its fertile lands, which were extensively cultivated. The lands extending from around the 2,000 to 5,000 foot elevation were cultivated in bananas, and were a significant resource of woods, fibers, birds, and other materials of value and importance to native life (Maly and Maly 2002:1).

Trails (*alahele*) and thoroughfares (*alaloa*) were integral to resource access within and between *ahupua’a*, and continue to serve as important features of the cultural landscape. A coastal trail connected Kealakekua and Hōnaunau, passing along the shoreline at Kahauloa. These *alahele* and *alaloa* were by the 1840s modified into a system of roads referred to as “Ala Nui Aupuni”, or Government roads (Maly and Maly 2002:84). The location of the Upper and Lower Government Roads in the vicinity of the current project area are shown on a Hawaii Registered Map No. 1796 prepared by W.A. Wall in 1885 (Figure 13).

The current project area is located within the *ahupua’a* of Kahauloa 2nd, along the southern shore of Kealakekua Bay. This area played a well-documented and significant role in the history of the Hawaiian Islands. Kealakekua Bay is the former home of some of Hawai‘i’s most powerful *ali‘i* and feared warriors, as well as notable battles. One such warrior, named Kekūhaupi‘o, was born of royal blood (his father was Kohapi‘olani, a Ke‘ei chief, and his mother was from Nāpo‘opo‘o) at Ke‘ei, just south of the project area. An article published in *Ka Hōkū o Hawai‘i* on September 10, 1908 (translated by K. Maly) tells of Kekūhaupi‘o’s loyalty to Kamehameha and his role at the battle of Moku‘ōhai, which also took place just south of the project area, against the chief’s cousin, Kiwala‘ō. Although a lower chief, Kekūhaupi‘o fought so well in this battle that he came to be known as “*Ko Kamehameha koa a waele makaihe*” (Kamehameha’s warrior who weeds through men with a spear) and he became the most cherished companion of Kamehameha, outside of his own uncles.

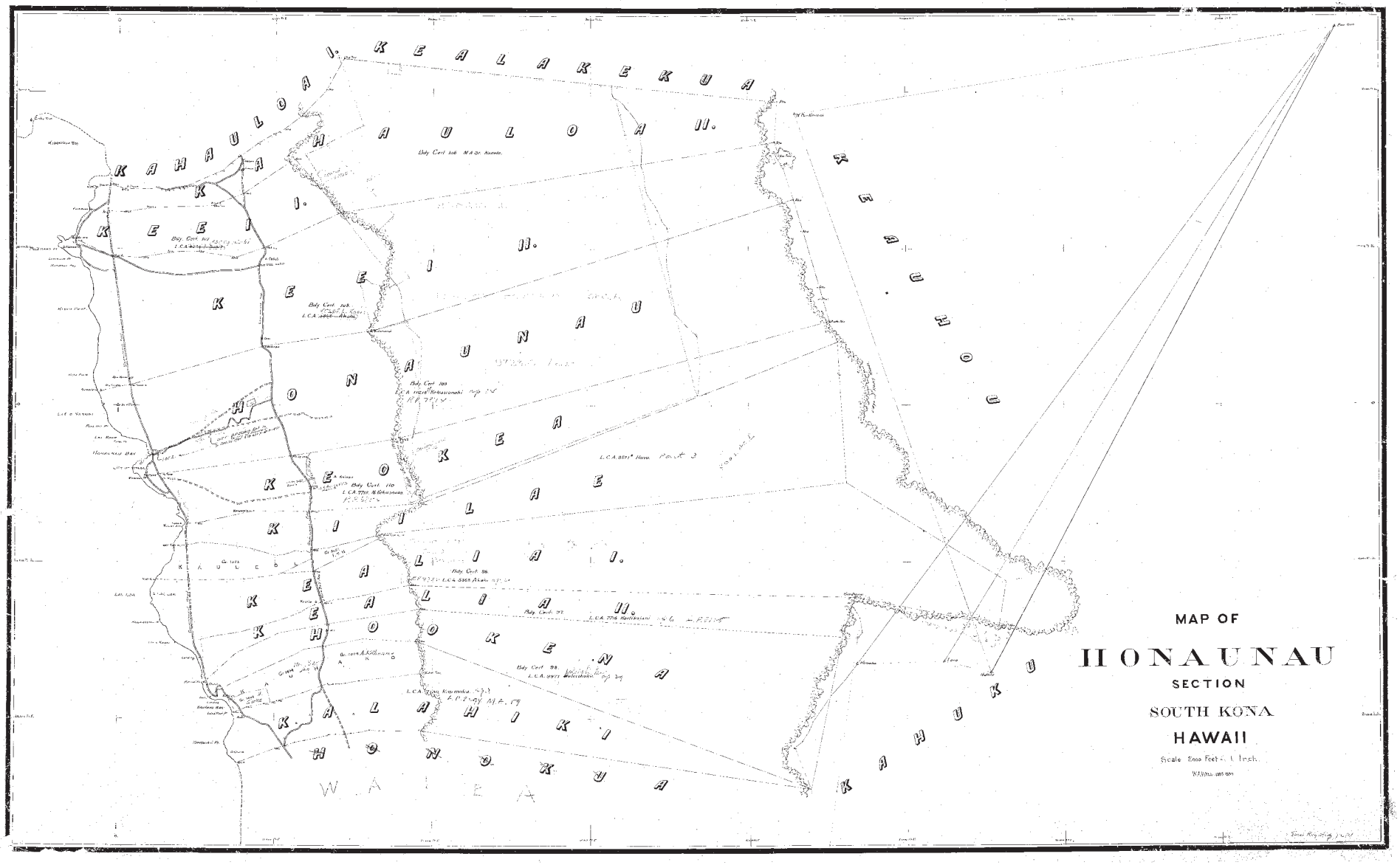

Figure 13. Hawaii Registered Map No. 1796 showing ahupua'a borders between Kahauloa 2nd, Ke'ei 1st and Ke'ei 2nd.

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Kekūhaupiʻo continued to live at Keʻei and serve Kamehameha for the remainder of his life, which he lost not in battle, but at the sport of spear fighting. The fierce battle of Mokuʻōhai established the Kamehameha dynasty by reuniting Hawaiʻi Island, and continues to be a defining event for the region. In 1913 M.W. Kinney described the area in which the battle was fought:

> ….KEEI village is a pretty spot on the beach, about a mile south of Napoopoo. Here are several papa konane (chess boards), but most of them are poorly preserved. Directly south thereof, on the lava, between this village and Kepu [Kipu], where there is a cocoanut [*sic*] grove, was the great battle of MOKUOHAI, in about 1782, where a chief, named Kiwalao, was killed after a great fight. His remains were taken to Napoopoo and baked (a last indignity) at Paokalani, where the oven is still shown. (Maly and Maly 2002:120).

Kealakekua Bay (more precisely the flats of Kaʻawaloa north of the current project area) is perhaps best known as the place where Captain Cook first made landfall on the island and then ultimately met his demise. The arrival of Europeans on Hawaiʻi Island began a long series of events that would eventually, but not immediately, alter the Hawaiian way of life. As Major writes, "From the moment Cook and his crew arrived, relations between Native Hawaiians and outsiders were heavily influenced by the sailors' need for supplies" (Major 2001). Because of Hawaiʻi's isolation in the mid-Pacific it made an excellent way point for Europeans and Americans involved in the East Indian and northwest American trade networks (Sahlins 1992). Kealakekua Bay, with its excellent anchorage and abundant supply of food soon became the most frequented harbor by visitors to the island. Thus began the written history of Hawaiʻi.

Captain James Cook and members of his crew provided the first European accounts of this coastal region in 1779. The journals and diaries of the expedition noted the political and religious importance of the area. Descriptions provided by John Ledyard and Lieutenant James King of the expedition described the coastal area (Figure 14) to approximately 3 miles inland as being cultivated primarily in sweet potatoes *(ʻuala*). These were grown in small enclosures separated by low walls (Ching 1971). Of the general coastal area of Kealakekua Bay King writes:

> I was never myself above 3 miles into the body of the Country, for [page520] the first 2 ½ miles it is compos'd of burnt loose stones, & yet almost the whole surface beginning a little at the back of the town, is made to yield Sweet potatoes & the Cloth plant. One then comes to breadfruit trees which flourish amazingly. The ground was very uneven & although there was a tolerable Soil about the trees, yet there was constant breaks in the land & large bare, burnt rocks; in the bottoms that these made were planted the Sweet Potatoe roots with earth collected about them;… (Maly and Maly 2002:109).

Also grown in this coastal zone were sugar cane, *wauke*, and banana trees. Breadfruit trees (*ulu*) were cultivated in the area situated inland of this coastal habitation and agrarian zone. Archibald Menzies, who was a member of Captain George Vancouver's 1792-1794 expeditions, provided descriptions of the coastal and upland areas and observed that the upper elevations were cultivated primarily in taro and ti.

Demographic trends during this period indicate population reduction in some areas, due to war and disease, yet increases in others, with relatively little change in material culture. However, there was a continued trend toward craft and status specialization, intensification of agriculture, *aliʻi* controlled aquaculture, upland residential sites, and the enhancement of traditional oral history (Rechtman and Maly 2003). The Kū cult, *luakini heiau*, and the *kapu* system were at their peaks, although western influence was already altering the cultural fabric of the Islands (Kirch 1985; Kent 1983). Foreigners had introduced the concept of trade for profit, and by the time Kamehameha I had conquered Oʻahu, Maui and Molokaʻi, in 1795, Hawaiʻi saw the beginnings of a market system economy (Kent 1983). This marked the end of the Proto-Historic Period and the end of an era of uniquely Hawaiian culture.

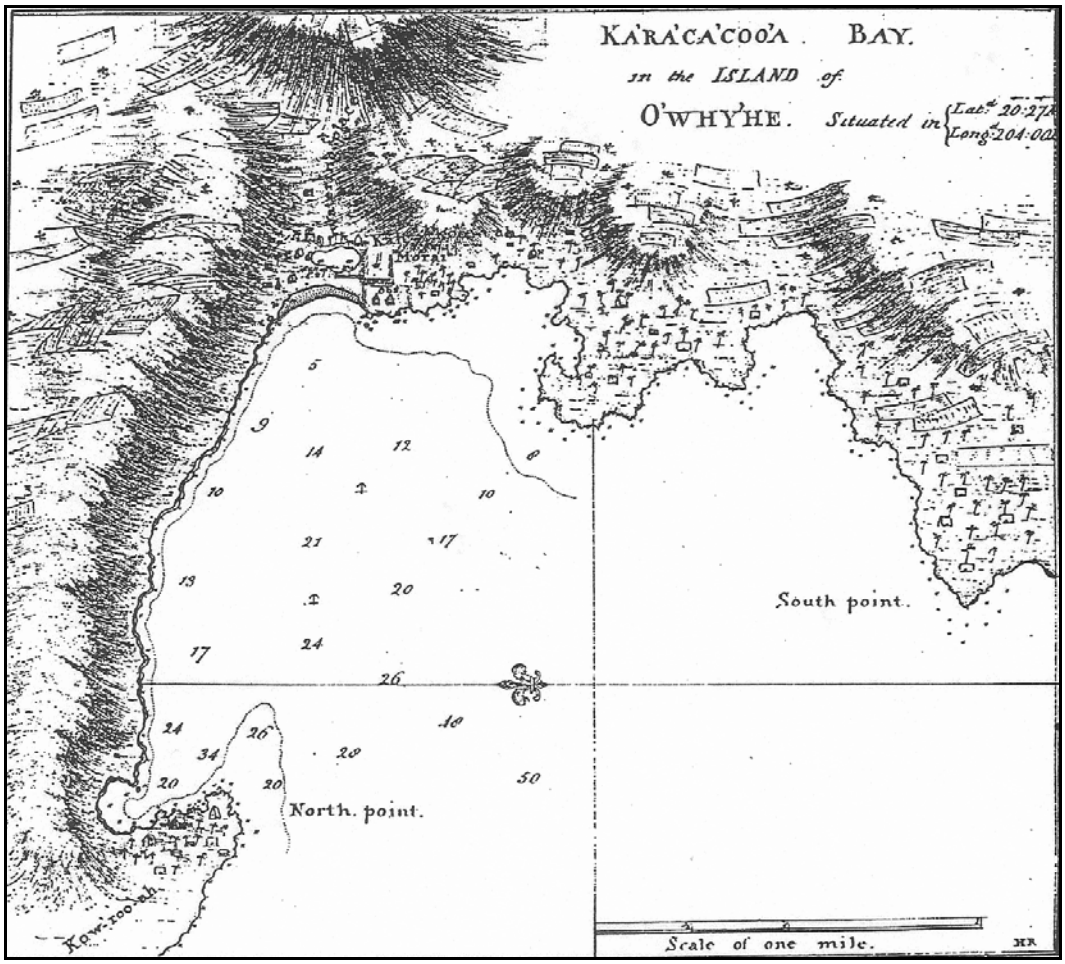

Figure 14. Map of Kealakekua Bay depicting villages and agricultural fields extending to the uplands above Kealekekua Pali; Henry Roberts Survey (1779) (Fitzpatrick 1986).

In the twelve years following the arrival of Captain Cook, sixteen foreign ships (all British and American) called in Hawaiian waters, many of them anchoring in Kealakekua Bay (Restarick 1927). In 1792, Captain George Vancouver, who had sailed with Cook, arrived in Kealakekua Bay with a small fleet of British ships and met with Kamehameha, who he recognized from his previous voyage. Vancouver stayed only a few days on this fist visit, but returned again in 1793 to take on supplies. Vancouver found the water of this area too brackish for drinking, however, so Kamehameha sent a fleet of canoes to bring fresh water from elsewhere along the coast, for which Vancouver made gifts of sheep, cattle, and orange seeds (Restarick 1927). While anchored in the bay, Archibald Menzies, a surgeon and naturalist on board Vancouver's ship, journeyed inland where he encountered extensive plantations. Menzies wrote:

> We soon lost sight of the vessel, and entered their breadfruit plantations, the trees of which were a good distance apart, so as to give room to their bows to spread out vigorously on all sides, which was not the case in the crowded groves of Tahiti, where we found them always planted on the plains along the seaside. But here the size of the trees, the luxuriances of their crop and foliage, sufficiently show that they thrive equally well on an elevated situation. The space between these trees did not lay idle. It was chiefly planted with sweet potatoes and rows of cloth plant.
>
> As we advanced beyond the bread-fruit plantations, the country became more and more fertile, being in a high state of cultivation. For several miles round us there was not a spot that would admit of it but what was with great labor and industry cleared of the

> loose stones and planted with esculent [taro] roots or some useful vegetables or other. In clearing the ground, the stones are heaped up in ridges between the little fields and planted on each side, either with a row of sugar cane or the sweet root [ti] of these islands . . . where they afterwards continue to grow in a wild state, so that even these stony, uncultivated banks are by this means made useful to the proprietors, as well as ornamental to the fields they intersect (1920:75-76).

Hawai‘i’s culture and economy continued to change drastically as capitalism and industry established a firm foothold in the islands. The sandalwood (*Santalum ellipticum*) trade, established by Euro-Americans in 1790 and turned into a viable commercial enterprise by 1805 (Oliver 1961), was flourishing by 1810. Kamehameha, who resided on the island of O‘ahu during this time, did manage to maintain some control over the trade (Kuykendall and Day 1976; Kent 1983).

Upon returning to Kailua in 1812, Kamehameha ordered men into the mountains of Kona to cut sandalwood and carry it to the coast, paying them in cloth, *tapa* material, food and fish (Kamakau 1992). This new burden added to the breakdown of the traditional subsistence system. Farmers and fishermen were ordered to spend most of their time logging, resulting in food shortages and famine that led to population decline. Kamakau wrote that, “this rush of labor to the mountains brought about a scarcity of cultivated food . . . The people were forced to eat herbs and tree ferns, thus the famine [was] called Hi-laulele, Haha-pilau, Laulele, Pualele, ‘Ama‘u, or Hapu‘u, from the wild plants resorted to” (1992:204). Once Kamehemeha realized that his people were suffering, he “declared all the sandalwood the property of the kingdom and ordered the people to devote only part of their time to its cutting and return to the cultivation of the land” (ibid.:204). In the uplands of Kailua a vast plantation named Kuahewa was established where Kamehameha himself worked as a farmer. Kamehameha enacted the law that anyone who took one taro or one stalk of sugarcane must plant one cutting of the same in its place (Handy et al. 1991).

Kamehameha died in 1819 at Kamakahonu in Kailua-Kona. With the passing of Kamehameha, his heir Liholiho was given the name of Kamehameha II. Ka‘ahumanu, the favorite wife of Kamehameha, announced his last commands:

> O heavenly one! I speak to you the commands of your grandfather. Here are the chiefs; here are the people of your ancestors; here are your guns; here are your lands. But we two shall share the rule over the land. Liholiho consented and became ruling chief over the government (Kamakau 1992:220):

Following the death of a prominent chief, it was customary to remove all of the regular *kapu* that maintained social order and the separation of men and women and elite and commoner. Thus, following Kamehameha’s death, a period of *‘ai noa* (free eating) was observed along with the relaxation of other traditional *kapu*. It was for the new ruler and *kahuna* to re-establish *kapu* and restore social order, but at this point in history traditional customs saw a change:

> The death of Kamehameha was the first step in the ending of the tabus; the second was the modifying of the mourning ceremonies; the third, the ending of the tabu of the chief; the fourth, the ending of carrying the tabu chiefs in the arms and feeding them; the fifth, the ruling chief's decision to introduce free eating (*‘ainoa*) after the death of Kamehameha; the sixth, the cooperation of his aunts, Ka-ahu-manu and Ka-heihei-malie; the seventh, the joint action of the chiefs in eating together at the suggestion of the ruling chief, so that free eating became an established fact and the credit of establishing the custom went to the ruling chief. This custom was not so much of an innovation as might be supposed. In old days the period of mourning at the death of a ruling chief who had been greatly beloved was a time of license. The women were allowed to enter the heiau, to eat bananas, coconuts, and pork, and to climb over the sacred places. You will find record of this in the history of Ka-ula-hea-nui-o-ka-moku, in that of Ku-ali‘i, and in most of the histories of ancient rulers. Free eating followed the death of the ruling chief; after the period of mourning was over the new ruler placed the land under a new tabu following old lines. (Kamakau 1992:222)

Immediately upon the death of Kamehameha I, Liholiho was sent away to Kawaihae to keep him safe from the impurities of Kamakahonu brought about from the death of Kamehameha. After purification ceremonies Liholiho returned to Kamakahonu:

> Then Liholiho on this first night of his arrival ate some of the tabu dog meat free only to the chiefesses; he entered the *lauhala* house free only to them; whatever he desired he reached out for; everything was supplied, even those things generally to be found only in a tabu house. The people saw the men drinking rum with the women *kahu* and smoking tobacco, and thought it was to mark the ending of the tabu of a chief. The chiefs saw with satisfaction the ending of the chief's tabu and the freeing of the eating tabu. The *kahu* said to the chief, "Make eating free over the whole kingdom from Hawaii to Oahu and let it be extended to Kauai!" and Liholiho consented. Then pork to be eaten free was taken to the country districts and given to commoners, both men and women, and free eating was introduced all over the group. Messengers were sent to Maui, Molokai, Oahu and all the way to Kauai, Ka-umu-aliʻi consented to the free eating and it was accepted on Kauai. (Kamakau 1992:225)

The indefinite period of free-eating and the lack of the reinstatement of other *kapu* by Liholiho spelled the end of the traditional religion before the end of the year that saw the death of Kamehameha I and the defeat of Kekuaokalani. By December of 1819 Kamehameha II had sent edicts throughout the kingdom, from Hawaiʻi to Kauaʻi, renouncing the ancient state religion, ordering the destruction of the *heiau* images, and ordering that the *heiau* structures be destroyed or abandoned and left to deteriorate. He did, however, allow the personal family religion, the ʻ*aumakua* worship, to continue (Oliver 1961; Kamakau 1992). With the end of the *kapu* system changes in the social and economic patterns began to affect the lives of the common people. Liholiho moved his court to Oʻahu, lessening the burden of resource procurement for the chiefly class on the residents of Hawaiʻi Island. Some of the work of the commoners shifted from subsistence agriculture to the production of foods and goods that they could trade with early Western visitors. Introduced foods often grown for trade with Westerners included yams, coffee, melons, Irish potatoes, Indian corn, beans, figs, oranges, guavas, and grapes (Wilkes 1845).

In October of 1819, seventeen Protestant missionaries had set sail from Boston to Hawaiʻi. They arrived in Kailua-Kona on March 30, 1820 to a society with a religious void to fill. Many of the *aliʻi,* who were already exposed to western material culture, welcomed the opportunity to become educated in a western style and adopt their dress and religion. Soon they were rewarding their teachers with land and positions in the Hawaiian government. These Christian missionaries were some of the first Europeans to reside permanently on the island, besides sailors who jumped ship. In 1823, William Ellis visited this coastal area during his tour of the Island of Hawaiʻi. After leaving Keʻei village for Hōnauanu, he described passing the location of the decisive battle of Mokuʻōhai where Kamehameha defeated his cousin Kiwalaʻō for control of half of the island of Hawaiʻi. His description of the battlefield follows:

> Since leaving Keʻei, we had seen several heaps of stones raised over the bones of the slain, but now became more numerous. As we passed along, our guide pointed out the place where Tairi, Tamehameha's [Kamehameha's] war-god, stood, surrounded by the priests, and, a little further on, he showed us the place where Tamehameha himself, his sisters, and friends, fought during the early part of the eighth day. A few minutes after we left it, we reached a large heap of stones overgrown with moss, which marks the spot where Kauikeouli [Kiwalao] was slain. (Ellis 1963:95)

In 1824, Reverend James Ely established the South Kona Mission Station on the Flats of Kaʻawaloa (Maly and Maly 2002). The Mission set up not only churches in South Kona, but schools as well (for formal education and the spread of the Christian word). In 1847, the area between Keauhou and Kealekekua supported eleven schools, with one school each at Ka'awaloa and at Kealekekua (Maly and Maly 2001:213). Maly and Maly describe a schoolhouse at Ke'ei, "as a 'Hale Pohaku'(stone house) in good condition, at which 20 students were enrolled" [HAS – Series 262, Agents Reports, 1877] (2002:83). Due to population decrease and economic issues, the schoolhouse was no longer operating by 1882 (Maly and Maly 2002:83). In the Missionaries' reports, much information pertaining to daily life in South Kona, church happenings, and local populations can be found (see Maly and Maly 2002). One missionary letter, written by C. Forbes on November 8, 1835, states, "I suppose there are something like 2,000 inhabitants on

that [south] side of the bay in the villages of Kealakekua, Napopo-Keii [Nāpoʻopoʻo & Keʻei]." (cited in Maly and Maly 2002:82)

By the mid-nineteenth century, the ever-growing population of Westerners had forced socioeconomic and demographic changes that promoted the establishment of a Euro-American style of land ownership. This change in land tenure was promoted primarily by the missionaries and Western businessmen in the island kingdom. Generally these individuals were hesitant to enter business deals on leasehold land.

In 1848 the *Māhele ʻĀina* became the vehicle for determining ownership of native lands. The *Māhele* (division) defined the land interests of Kamehameha III (the King), the high-ranking chiefs, and the *konohiki*. During the *Māhele*, all lands in the Kingdom of Hawaiʻi were placed in one of three categories: (1) Crown Lands (for the occupant of the throne); (2) Government Lands; and (3) *Konohiki* Lands (Chinen 1958:vii and Chinen 1961:13). The chiefs and *konohiki* were required to present their claims to the Land Commission to receive awards for lands provided to them by Kamehameha III. They were also required to provide commutations to the government in order to receive royal patents on their awards. The lands were identified by name only, with the understanding that the ancient boundaries would prevail until the land could be surveyed. This process expedited the work of the Land Commission.

All three types of land were subject to the rights of the native tenants therein; those individuals who lived on the land and worked it for their subsistence and the welfare of the chiefs (Sinoto and Kelly 1970). Native tenants could claim, and acquire title to, *kuleana* parcels that they actively lived on or farmed at the time of the *Māhele*. The Kuleana Act of December 21, 1849 provided the framework by which native tenants could apply for and receive fee-simple interest in their *kuleana* lands from the Land Commission. The Board of Commissioners over saw the program and administered the lands as Land Commission Awards (LCAw.).

The *ahupuaʻa* of Kahauloa 2nd was awarded as an *aliʻi* award to Kanele (LCAw. 32; Royal Patent No. 4513) during the *Māhele*, who also received a 0.l5 acre parcel LCAw. 204B (Royal Patent No. 8393). This land was inherited by Bernice Pauahi Bishop and eventually came to be held by the Kamehameha Schools Bishop Estate. The boundaries of Kahauloa 2nd were surveyed in 1876 for the estate of C.R. Bishop (No. 106). Thirteen *kuleana* claims were made for Kauhaloa 2nd Ahupua'a, of which eight were awarded. At least three of these awardees also claimed agricultural lands distant from their house lots, in more *mauka* sections of the *ahupuaʻa*.

The population of South Kona declined during the early nineteenth century and Hawaiians maintained marginalized communities outside of the central population centers. These communities were located in the "out-of-the-way" places, like Kaʻawaloa Point, while the recently immigrated Asian and *haole* populations lived above the *pali* (Alvarez 1990). In the aftermath of the *Māhele*, economic interests in the region swiftly changed from the traditional Hawaiian land tenure system of subsistence farming and regional trading networks to the more European based cash crops including coffee, tobacco, sugar, and pineapple, and emphasized dairy and cattle ranching.

The current project area is adjacent to Keawaiki Beach Lots, which were established in the early 1960s by the then landowner Kamehameha Schools Bishop Estate. The ten (originally 11) lots were sold in fee simple and Kamehameha Schools retained the remaining land *mauka* of the Beach Lots (including land included in the current lease agreement between Kamehameha Schools and the Bundrants). A 1976 USGS aerial photograph shows that the area was relatively undeveloped at that time (Figure 15).

Recent improvements to the property have included the construction of a new well-house building which replaced a former wooden structure that was present in 2008. The well appears on a 1959 USGS map of Honaunau Quadrangle (Figure 16), but is not labeled on a 1928 USGS map of the same area (Figure 17). A 1954 USGS aerial photograph of the area shows the location of the well-site adjacent to Keʻei Beach Road (Figure 18), suggesting the well was constructed sometime between 1928 and 1954.

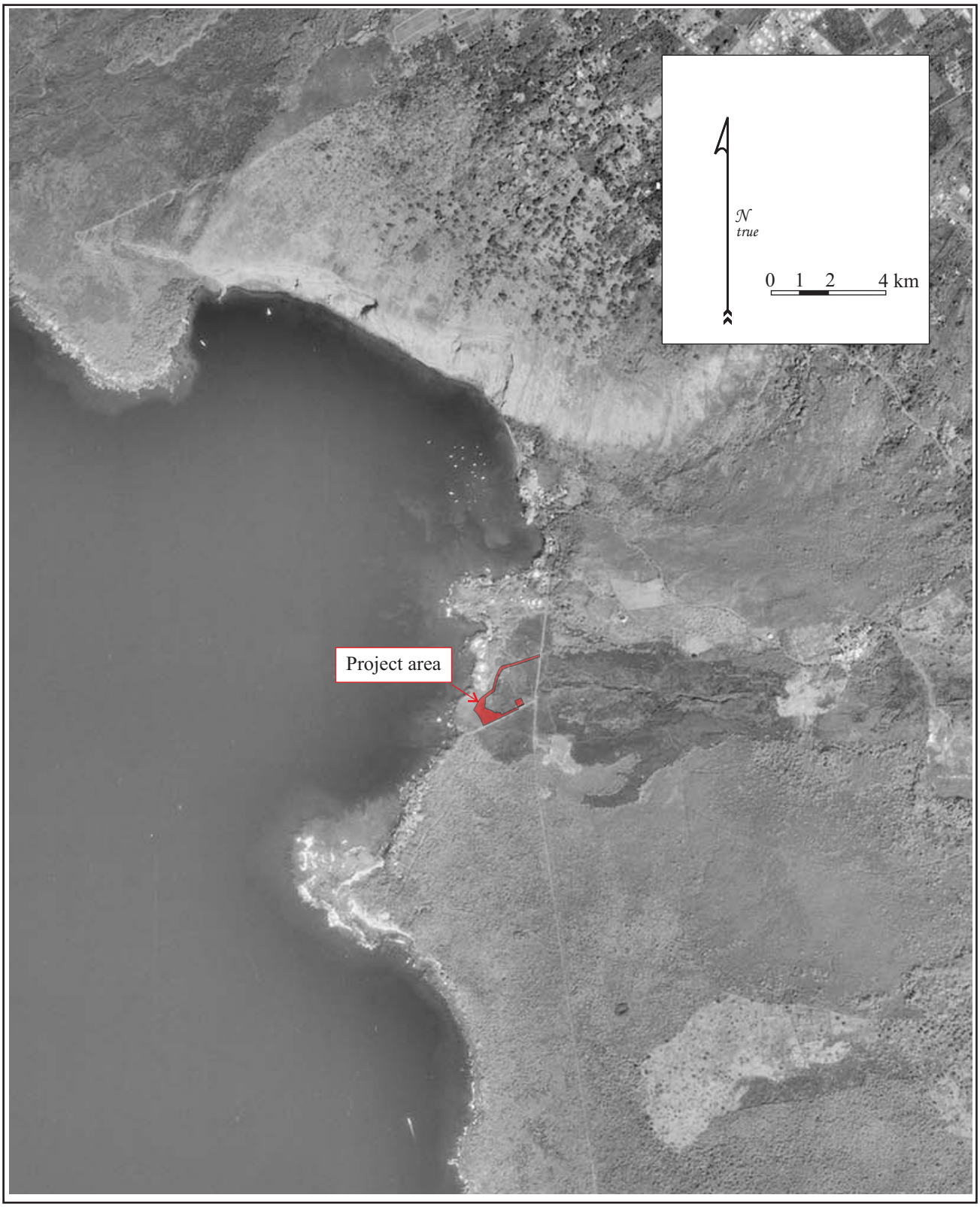

Figure 15. Portion of a December, 13 1976 USGS aerial photograph showing Keawaiki Beach lots (north and west of project area).

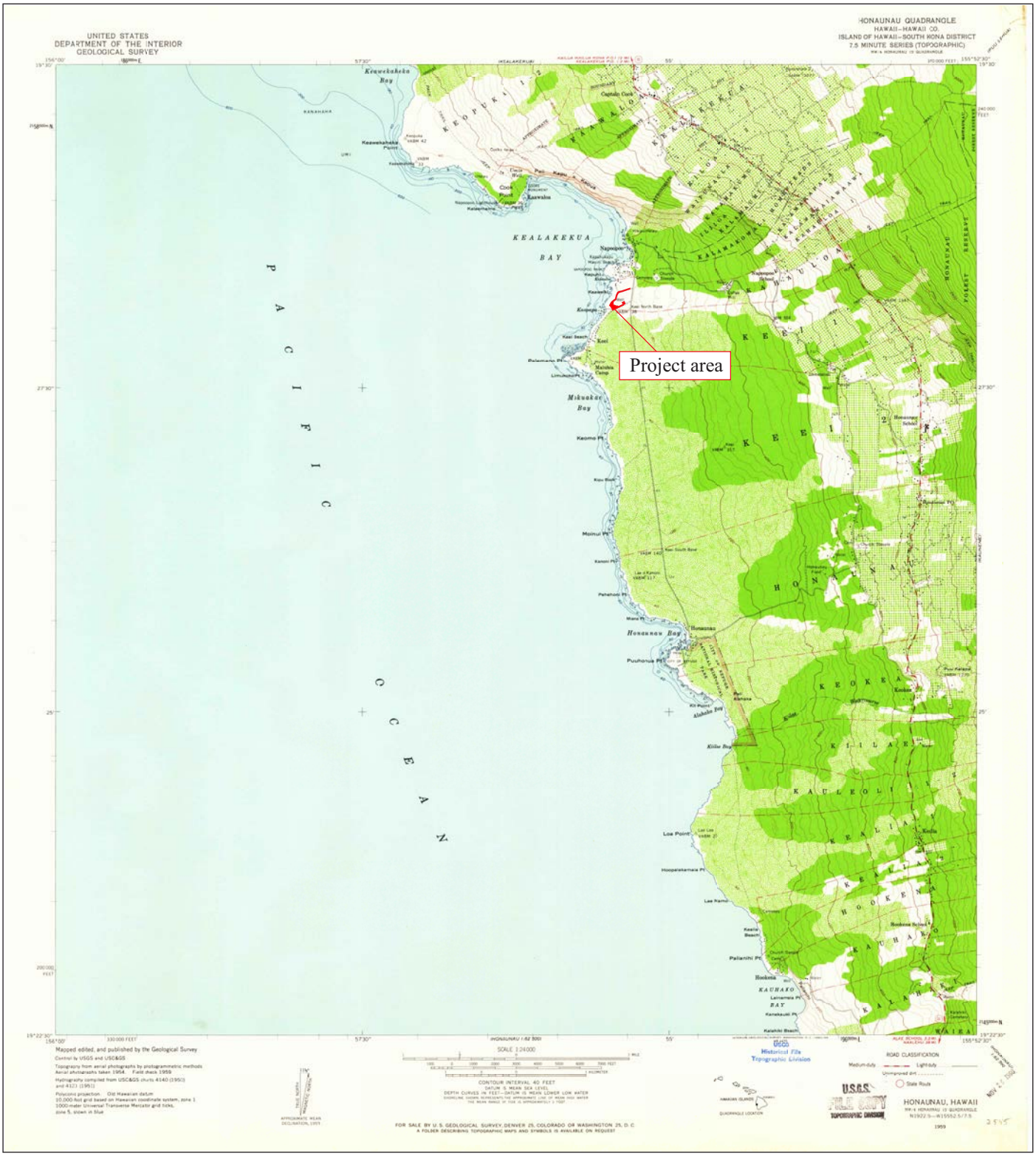

Figure 16. 1959 USGS Map of Hōnaunau Quadrangle, showing current study area.

Figure 17. 1928 USGS Hōnaunau Quadrangle Map showing current study area.

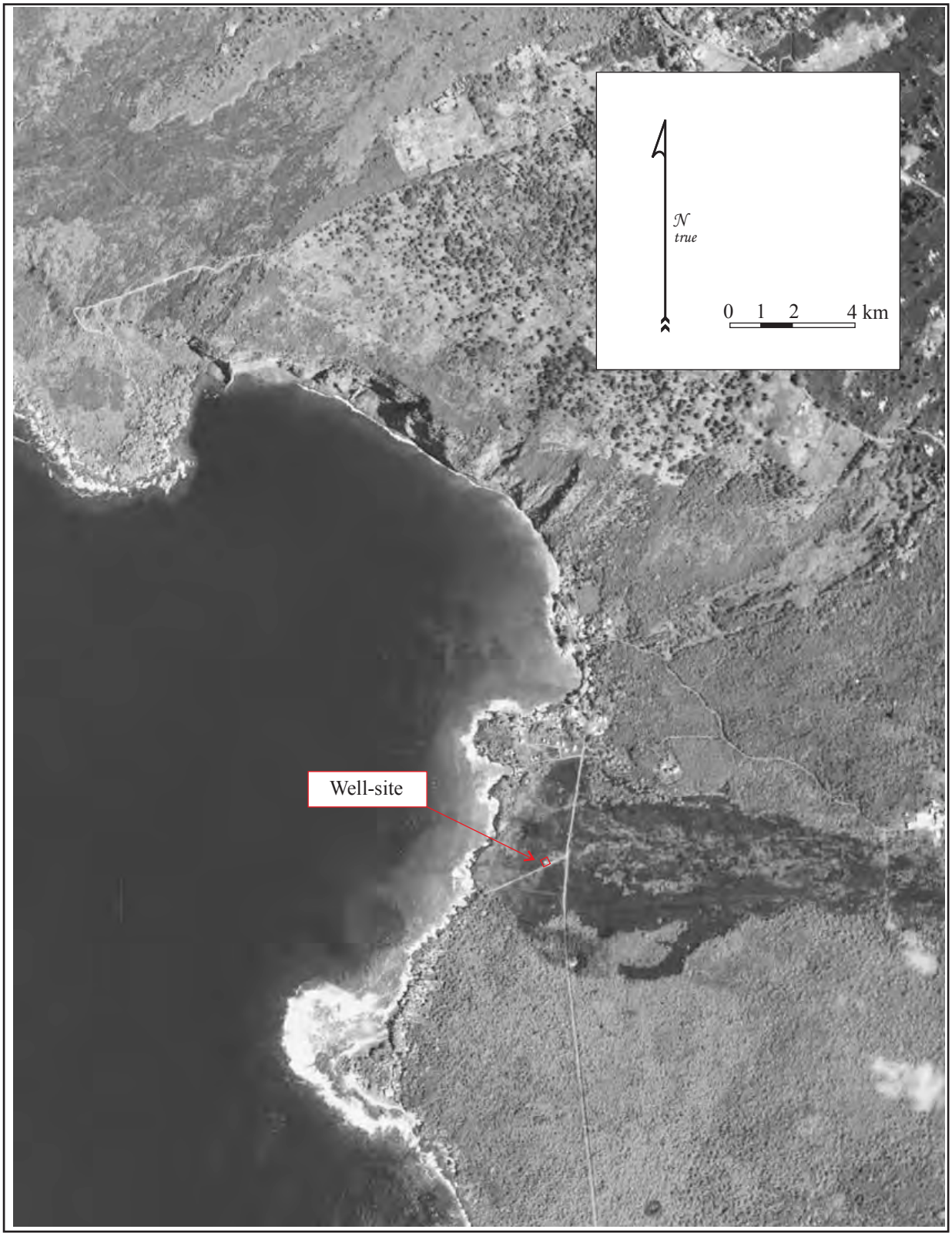

Figure 18. Portion of an October 7, 1954 aerial photograph showing well-site location.

Previous Archaeological Research

Several archaeological studies have been conducted in the *ahupuaʻa* of Kahauloa, six of which have included portions of the current study area (Reinecke 1930; Ching 1971; McEldowney 1979; Rechtman 2008; and Rechtman 2009). Brief descriptions of the previous studies with summaries of their findings are presented below. The locations of the study areas are shown on Figure 19.

Archaeological studies in the region began with John Reinecke's 1930 survey of coastal sites in South Kona conducted for the Bishop Museum. Reinecke identified two archaeological sites in and around the vicinity of the current study area; "Site 32," consisting of two platforms, and "Site 33," a complex, divided by an *ahupuaʻa* boundary wall, containing a *pūʻoʻa* and a lava tube shelter on the Keʻei 1st Ahupuaʻa side, and a platform, animal pens (enclosures), wall fragments, and several *pūʻoʻa* located on the Kahauloa 2nd Ahupuaʻa side (see Figure 21). Reinecke describes "Site 33" as:

> A stone wall marks the boundary between Keei and Kahauloa 2, at the edge of the a-a flow. On the Keei side are a puoa and a shelter. On the Kahauloa side, between the two stone walls shown on the topographic map, are the following remains: old pen; fragments of wall; puoa and platform (probably of dwelling); walled house site; other puoa on a very old platform; large house site on a-a; small a-a platform below it; A little mauka are remains of a pen with smooth floor. Overlooking the canoe landing is a pen enclosing a house site. Two paths cross the a-a, one with a border of stones and the other with stepping stones. (Reineke 1930: 156)

It is evident that the aforementioned stone wall marking the boundary between Keʻei 1st Ahupuaʻa and Kahauloa 2nd Ahupuaʻa was later recorded and assigned SIHP Site 6022 by Ching (1971) and later revisited by McEldowney (1979) and Hammatt and Shideler (2013). The exact locations of the other features associated with "Site 33" are not known.

To the southeast of the project area, Archaeological Research Center Hawaii (Ching 1971) conducted a surface survey of the Nāpoʻopoʻo-Hōnaunau Road Alignment (Alternate 2) for the Department of Public Works. The survey corridor ranged from coastal elevations to approximately 1-mile inland and extended for a total distance of 4.7 miles (see Figure 19). The survey efforts identified a total of 144 archaeological features which were placed into seven major categories: habitation structures, enclosures, agricultural features, burials, trails, *ahu*, and miscellaneous (27 independent walls and one cistern). Because of the linear nature of this study (coursing across multiple *ahupuaʻa* at varying elevations), it offered a unique opportunity to observe settlement strategies used for this particular environment along the southern Kona coastline. Of these features, only SIHP Site 6022, the boundary wall between Keʻei 1st Ahupuaʻa and Kahauloa 2nd Ahupuaʻa, is located within the current study area.

A statewide inventory conducted by the Hawaiʻi State Office of Historic Preservation inspected and evaluated multiple sites in the general vicinity of Kahauloa 2nd *ahupuaʻa*. This effort, conducted between 1971 and 1975, contributed to defining the Kealakekua Bay Archaeological and Historical District and provided information on previously recorded sites in Keʻei 2nd Ahupuaʻa, south of the current project area, as well as a summary of sites at Hōnaunau (McEldowney 1979).

The Bishop Museum (McEldowney 1979) conducted a reconnaissance survey of roughly 9 acres for a proposed subdivision development in Keʻei 1st Ahupuaʻa, along the coast to the south of the project area (see Figure 19). During the survey, dense vegetation and existing residences on the survey property reduced the ability of the surveyors to identify and record existing features and accurately delimit site boundaries. The study was divided into four sub-areas based on the vegetation and survey method used. A portion of the current study area was included in McEldowney's (1979) Sub-area 1. Sites identified in Sub-area 1 included a core-filled boundary wall dividing Kahauloa 2nd Ahupuaʻa and Keʻei 1st Ahupuaʻa (SIHP Site 6022), several steppingstone trails extending through the surrounding *ʻaʻā*, and a large habitation complex including platforms, possible burial platforms, a C-shape enclosure, a stone alignment, terraces, a wall and cupboard feature, and a stepping-stone trail segment (i.e. Sites 29796, 29797, and Site 29233).

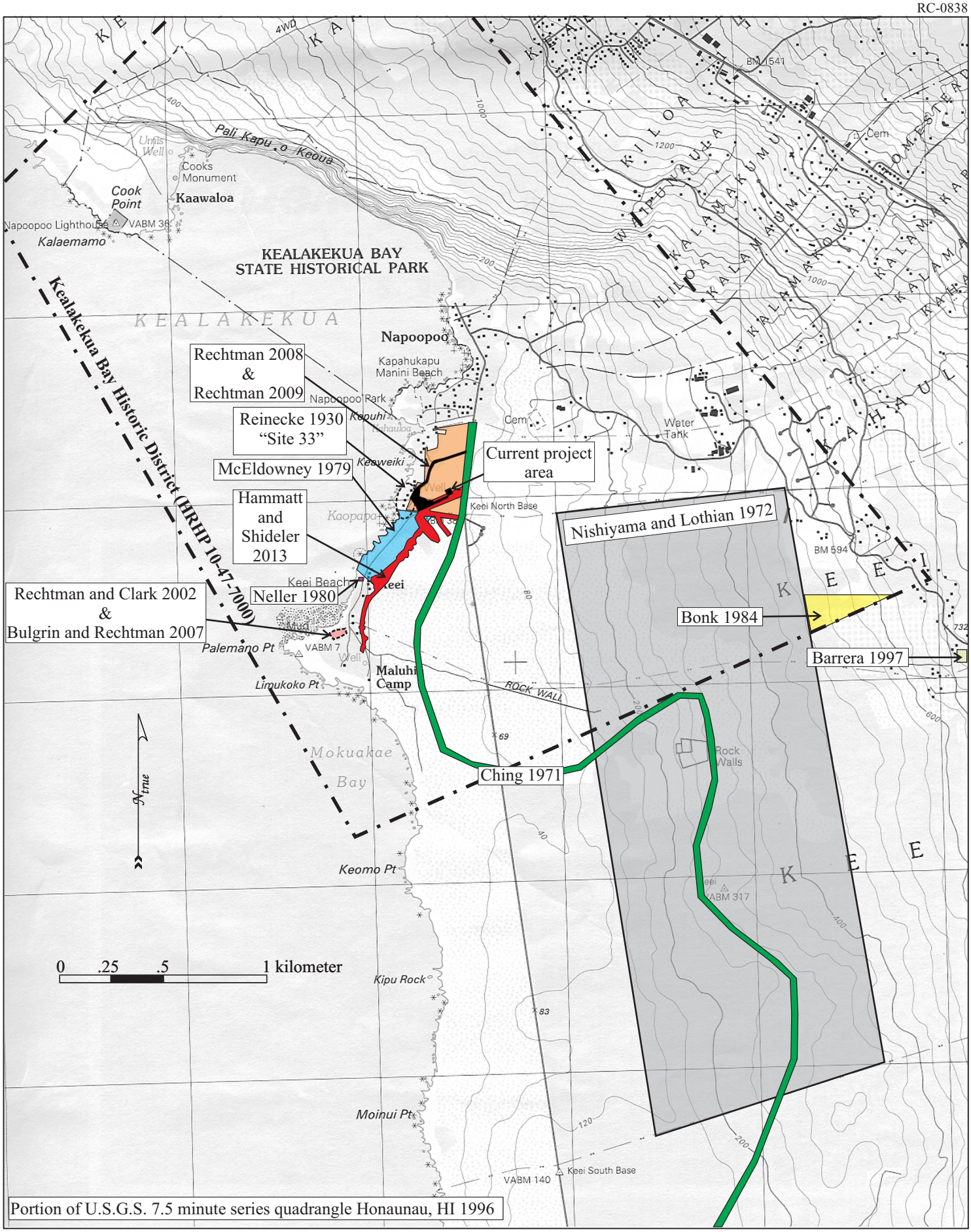

Figure 19. Previous archaeological studies conducted in the vicinity of the current study area.

It is likely that some of the features within Sub-area 1 are those recorded during the current study, but there is no definite site correlation between the sites recorded in 1979 and the sites recorded during the current study. The sites observed in Sub-area 2 to the south of the current project area were mostly obscured by dense vegetation and included a wall segment, a possible terrace, two terraced platforms with scattered marine shell and *ʻiliʻili*, and a rock mound. Sites located in the third sub-area include core-filled walls and collapsed wall segments interspersed with rock mound features that were interpreted as a coastal agricultural complex, and one rectangular enclosure. No sites were located in the fourth sub-area. Recommendations for sites in the project area include comprehensive site recordation, test excavations, and a thorough evaluation for the sites in the Kealakekua-Hōnauanu area.

On behalf of Chuck and Diane Bundrant, Rechtman Consulting, LLC previously prepared requests for determination of "no historic properties affected" associated with the proposed consolidation and re-subdivision of three parcels (TMKs (3) 8-3-05:001, 020, 021; Rechtman 2008), and the proposed construction of two gates on existing access roads within TMK: 3-8-3-05:001 (Rechtman 2009), in Kahauloa 2nd Ahupuaʻa (see Figure 19). As part of the Rechtman (2008) study, a systematic reconnaissance survey was performed of the entire area encompassed by TMK: 3-8-3-05:001, as well as two smaller parcels (020 and 021). Numerous archaeological features were encountered within Parcel 001 (and to a lesser extent on the other parcels), including features previously recorded by Ching (1971). During the reconnaissance survey Rechtman (2008) found that the limits of the distribution of the features within the project area were coterminous with the edges of the previously bulldozed areas. Based upon these findings a re-subdivision of the lease property was proposed that placed all of the extant archaeological features within two parcels, and created two additional parcels that had previously been graded for potential residential and agricultural development. SHPD issued a letter of concurrence with the determination of "no effect" associated with the proposed consolidation and re-subdivision of the parcels (DOC NO: 0902MD35), but the consolidation and re-subdivision process was never completed. Subsequently, although included in the earlier study area, Rechtman (2009) re-examined the areas at either end of Keawaiki Road where the Lessees were proposing to erect two gates and found that the specific areas where the gates were to be constructed were highly disturbed by prior mechanized activity. SHPD also issued a letter of concurrence with the determination of "no effect" associated with the installation of the two access gates (DOC NO: 0907MD05), and the gates were built.

In 2013, Cultural Surveys Hawaii (Hammatt and Shideler 2013) conducted an archaeological inventory survey for a Kamehameha Schools waterline improvements project within Kahauloa 2nd, Keʻei 1st, and Keʻei 2nd *ahupuaʻa*. Their project area roughly parallels the shoreline approximately 200-300 meters inland from the coast. The project was somewhat unusual in that the task was to identify viable waterline installation routes that would cause minimal or no impact to cultural resources, resulting in a two-part survey consisting of a reconnaissance survey area and a 30 feet (9 meter) wide corridor project area that extended for 3,450 (1,050 meters) along previously graded, unimproved Jeep and utility access roads. The reconnaissance survey area measured 10 acres in total (see Figure 19), and included areas alongside the corridor where waterline installation routes could potentially be placed without causing damage to any archaeological resources. The 30-foot wide corridor, totaling 2.38 acres, was located entirely within the reconnaissance survey area. During the course of their fieldwork a number of Historic properties were identified within the reconnaissance survey area, with no archaeological resources encountered in the 30-foot wide corridor.

Thirty-six historic properties were identified by Hammatt and Schideler (2013) including trails, possible storage cupboards, habitation and/or burial platforms, an enclosure, mounds, a shrine, walls, a habitation terrace, and a burial/habitation cave. One of these historic properties (a trail; SIHP Site 29232) is located in close proximity to the current study area. The following description is reproduced from Hammatt and Shideler:

> A trail segment was observed running roughly *mauka/makai* on the north side of Keʻei Beach Road along the top of a low *ʻaʻā* scoria ridge. The trail segment was distinguished by the slightly darker "bruised", pebble sized *ʻaʻā* scoria roughly 60-90 cm wide forming a depression 10-15 cm deep in cross-section. It appeared that there had been some sorting for the removal of larger than pebble sized *ʻaʻā* scoria from the trail as may have resulted form a pattern of mundane pedestrian use (effectively kicking larger scoria chunks to the side). No stepping stones or cairns were observed. The trail is thought to have pre-dated the current Keʻei Beach Road and to most-likely [*sic*] be pre-contact in origin. Only

> about 40 m of the trail segment is extant having been cut by grading at both the east and west ends. While the east end appears to have been cut by Keʻei Beach Road related grading, the trail is effectively lost 5 m or more north of Keʻei Beach Road and thus any slight widening or placement of a utility along the north margin of the road would not impact this trail remnant further. (Hammatt and Shideler 2013:B-1).

The written reconnaissance survey report including archaeological feature location maps (Figure 20), selected photographs, and brief descriptions of the observed features. This documentation, while not to AIS recording standards, was sufficient to obtain State Inventory of Historic Property (SIHP) numbers for the identified archaeological sites and to identify a project area that avoids all archaeological resources. Based on their investigation, it was determined that the project would not affect any significant historic properties and no mitigation was proposed, although monitoring was required.

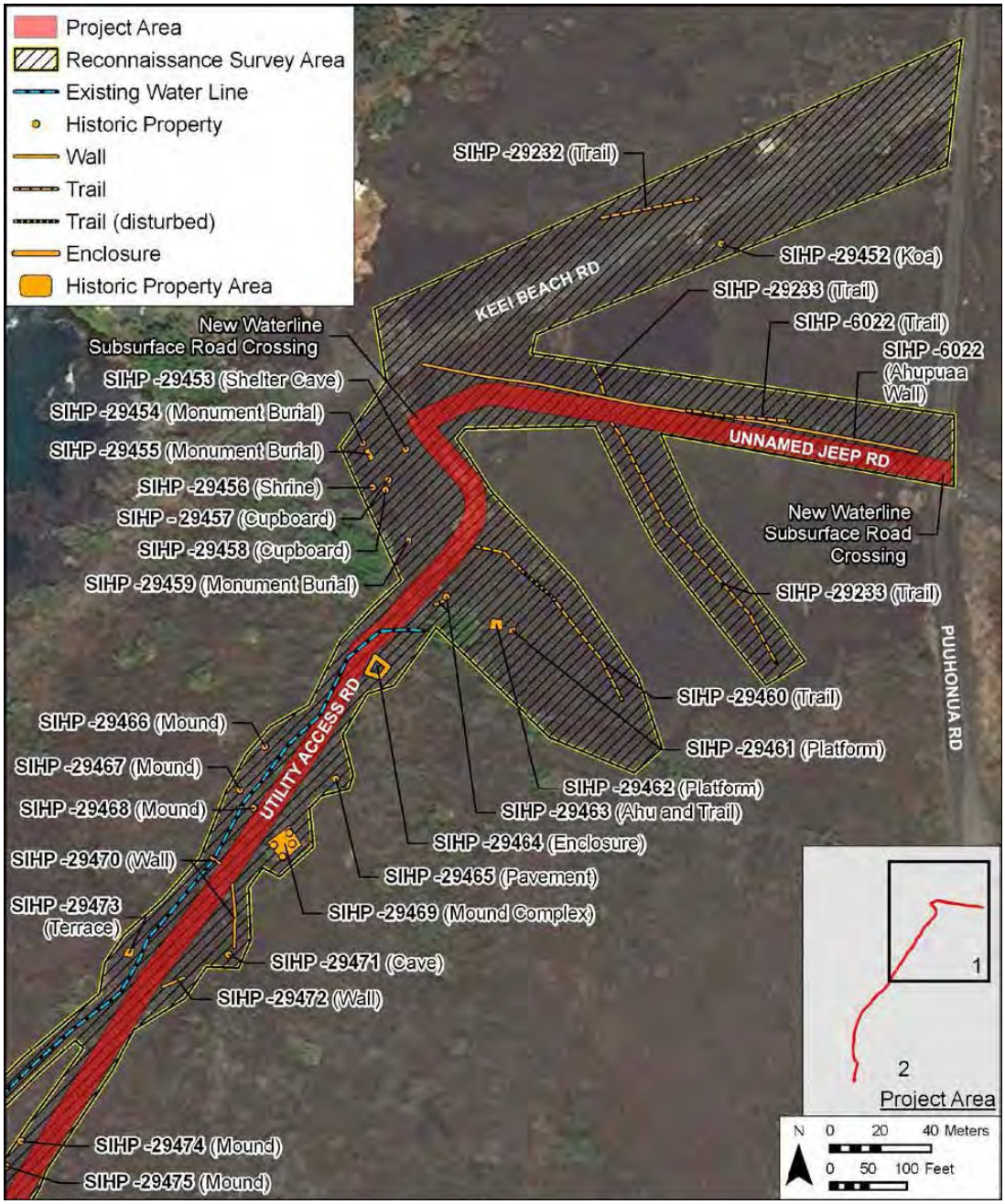

Figure 20. Locations of archaeological features recorded by Hammatt and Shideler (2013:B-3).

CURRENT PROJECT AREA EXPECTATIONS

The culture-historical background and the results of previous archaeological studies undertaken in the immediate vicinity of the project area (see Figure 19) allow for a specific set of project expectations to be generated. Within the proposed caretaker house survey area and utility and landscape corridor no sites are expected as this area has been completely bulldozed in the past. The geology of the lava flow makes lava blisters and lava tubes unlikely, therefore any burials identified would probably have been surface internments. The project area is located within the coastal portion of the Kona Field System, historically known to be an area of agriculture, however given the total lack of soil development; it is unlikely that agricultural features were present. With respect to the well parcel survey area, in addition to the potential historic well site, and given the general location between the coast and more *mauka* regions, *mauka*/*makai* and cross-*ahupua'a* trails are possible. Historical records indicate that the area was the location of previous warfare, and some archaeological features related to those events may be present. Habitation features are also expected due to the project area's proximity to known Precontact village sites in the Kealakekua Bay region, and previous studies (Ching 1971, McEldowney 1979, Rechtman 2008) which indicate such features may be present. No *kuleana* parcels exist within the current project area, so any cultural material encountered is expected to date to the Precontact Period or be a result of late Historic/Modern use of the property, particularly within the well parcel. Additionally, the easy accessibility of Keʻei Beach Road and modern land clearing activities within the project area has likely impacted existing archaeological resources.

FIELDWORK

Fieldwork for the current inventory survey was conducted March 18-21, 2013 by Matthew R. Clark, B.A., J. David Nelson, B.A., Ashton K. Dircks Ah Sam, B.A., and Lauryl K. Zenobi, B.A. under the direction of Robert B. Rechtman, Ph.D.

Methods

During the inventory survey fieldwork an effort was made to visually inspect the entire surface of the project area. The well parcel survey area was established by extrapolating the property boundaries from two corner property pins located in the field and the Tax Map Key. The caretaker house survey area boundaries were previously established by Rechtman (2008) as the edges of bulldozing in that area. The resulting project area boundaries were then plotted onto a scaled project area map using Garmin Vista HCx handheld GPS technology (set to the NAD 83 UTM projection) and the entire project area was surveyed utilizing pedestrian transects with fieldworkers spaced at 10-meter intervals. All previously recorded sites were relocated and re-examined, and all additional potential archaeological resources encountered during the pedestrian transects were plotted on the scaled project area map. Potential archaeological resources were assessed for formal architectural traits and cultural debris indicative of past human utilization. Each site was assigned a temporary site number and all of the sites within the project area were described using standardized site record forms. All of the sites and constituent features were photographed with a meter stick for scale, and scaled plan views of all non-linear sites were prepared using a measuring tape and compass. Each site was marked with a metal site tag containing its SIHP or temporary site number. No subsurface testing was conducted during the fieldwork.

Findings

As a result of the current inventory survey three newly recorded sites (SIHP Sites 29799-29801) were documented within the project area (Figure 21; Table 1). The recorded sites include a Historic well-site (Site 29799), a series of *pāhoehoe* excavations (Site 29800), and a trail (Site 29801). The latter two sites appear to represent Precontact Period activities. All three sites are discussed in detail below.

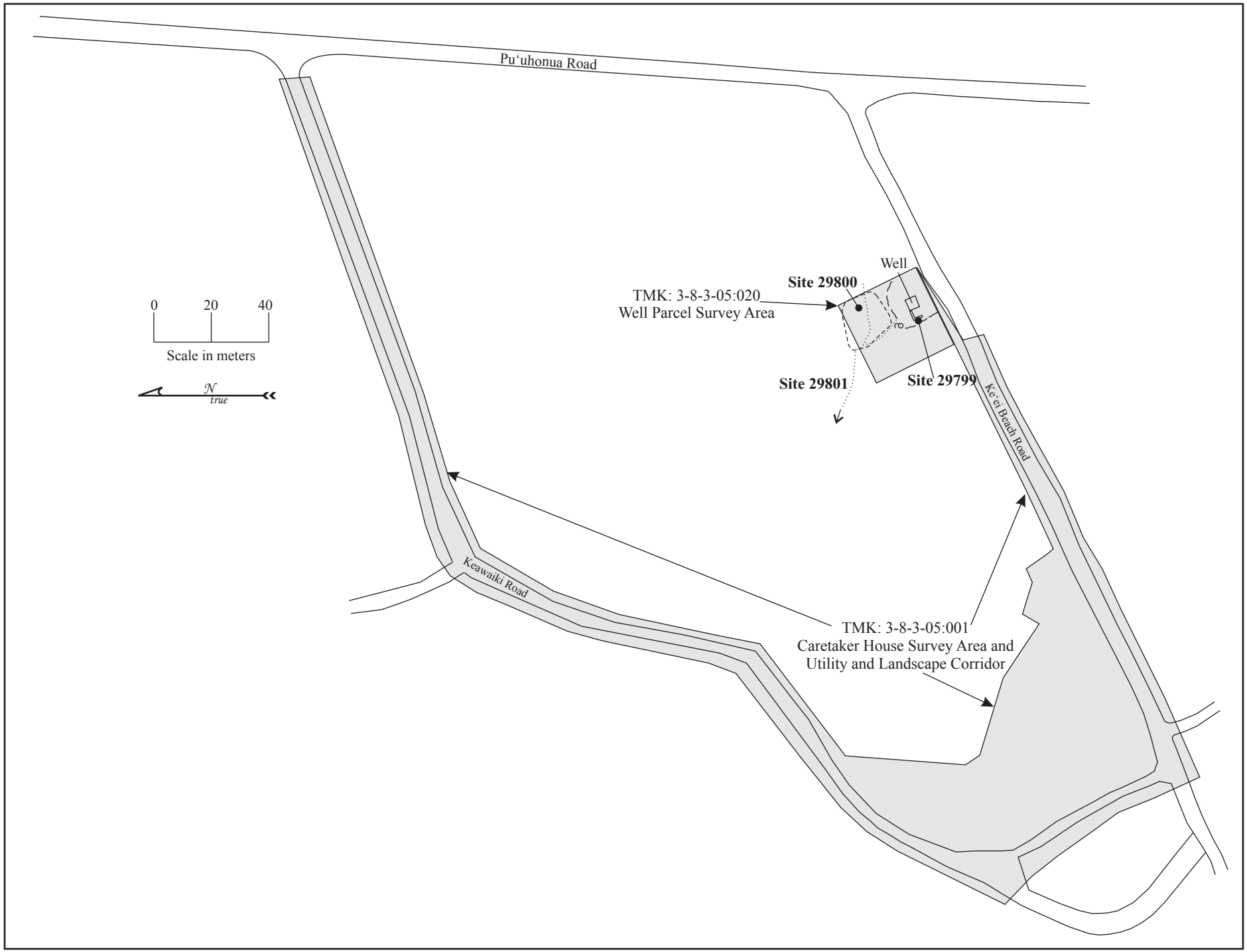

Figure 21. Plan view showing locations of sites within the current study area (shaded).

Table 1. Site recorded within the current study area.

SIHP No.	*Formal Type*	*Functional Type*	*Temporal Association*
29799	Well-site	Resource acquisition	Historic
29800	*Pāhoehoe* excavations	Quarry	Precontact/Historic
29801	Trail	Transportation	Precontact

SIHP Site 29799

Site 29799 is a Historic well site located within the well parcel (TMK:3-8-3-005:020) portion of the current study area, adjacent to Keʻei Beach Road (see Figure 21). Site 29799 is situated between two *ʻaʻā* ridges adjacent to a quarried disaggregated *pāhoehoe* flow to the northeast (Site 29800; see below). Overall, Site 29799 measures roughly 21 meters by 18 meters (Figure 22 and 23). The well site consists of a Historic well that has recently been covered by a modern building. The new building replaced an older structure that is visible on a 1976 aerial photograph (see Figure 15). It measures 4.5 meters long by 3.8 meters wide by 2.3 meters tall and is constructed of small *ʻaʻā* cobbles held in place with concrete, with a metal corrugated roof. A foundation from the earlier structure at the well site is visible along the west edge of the existing building (Figure 24). Surrounding the building is a leveled area consisting of imported gravel and small cobbles, resulting from bulldozing and other construction activities associated the new well-house and the previous well-house.

To the west of the building is an older well foundation in which an old Ford car has been dumped. The old well foundation consists of an excavated pit that measures 4.5 meters by 3.7 meters. Along its north and west edges the pit is lined with stacked cobbles that serve as a retaining edge (Figure 25) for the surrounding level surface, which has been highly impacted by bulldozing. At the southeast edge is a push pile of cobbles and gravel that slope towards the base of the excavated pit. Large cobbles and some small boulders have collapsed into the pit on its southwest edge, which has a maximum depth of 1.4 meters. The area north of the excavated pit is scattered with Historic and modern debris, including scrap metal, milled wood, a tire, concrete chunks, and bottle glass fragments (Figure 26).

Figure 22. SIHP Site 29799, view to the northeast.

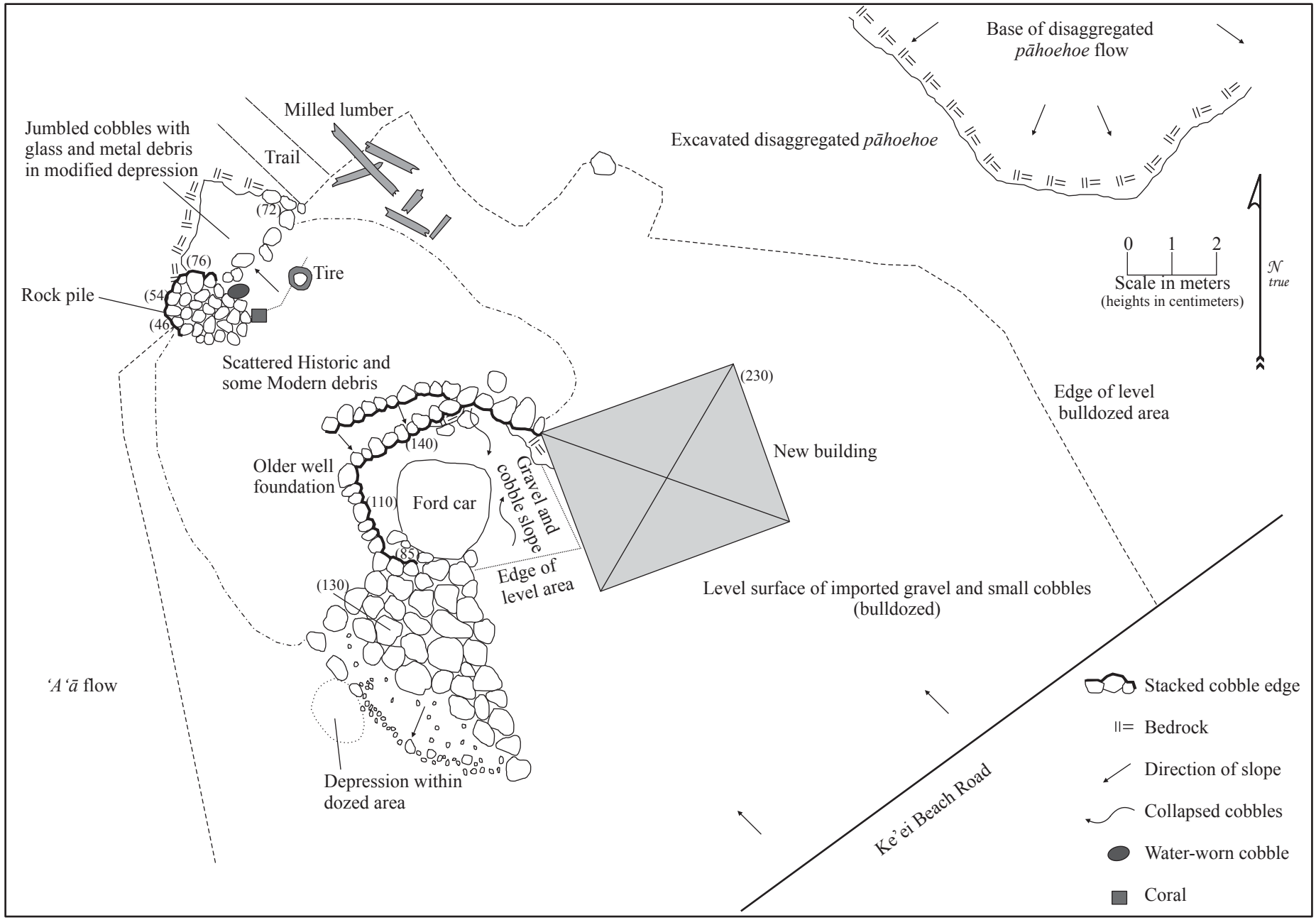

Figure 23. SIHP Site 29799 plan view.

Figure 24. SIHP Site 29799, existing structure and older well foundation, view to the east.

Figure 25. SIHP Site 29799, stacked retaining edge of excavated pit, view to the north.

Figure 26. SIHP Site 29799, Historic and modern debris, view to the southeast.

Located approximately 6.5 meters northeast of the building is a rock pile that has three stacked edges. The rock pile is constructed against the southwest edge of a modified depression in the *ʻaʻā* flow (Figure 27). The depression measures 2.5 meters by 2.5 meters and has a maximum depth of 72 centimeters. Within the interior are jumbled cobbles and scattered Historic and modern debris, such as metal cans, metal wire, a tire, and more bottle glass fragments (Figure 28). The southwest edge of the depression is defined by the stacked edge of the rock pile, which measures 2 meters long by 1.5 meters wide with a maximum height of 76 centimeters. It is constructed of small to large cobbles with two water-worn cobbles incorporated into the construction. A large water-worn coral chunk is located along the top edge of the modified depression adjacent to the stacked rock pile. The leveled bulldozed area surrounding the building extends up to the southern edge of the modified depression.

Adjacent to the modified depression is a side branch of Site 29801 (a trail; see below) that extends from the edge of the bulldozed area in a northwest direction for approximately 25 meters towards Site 29800 (see Figure 21). The trail in this area ranges from 60 to 90 centimeters in width and consists of a level surface with a few small stepping-stone slabs placed intermittently along its length (Figure 29).

Due to recent construction and bulldozing activities within the Site 29799 area, it's likely that the majority of features observed date to the Historic and Modern Periods. The well-site, which appears as an unnamed well on a 1959 USGS Honaunau Quadrangle map, is not labeled on a 1928 USGS map of the same area (see Figures 14 and 15). A 1954 USGS aerial photograph of the area shows the location of the well adjacent to Keʻei Beach Road (see Figure 16), suggesting that the well was constructed sometime between 1928 and 1954.

Figure 27. SIHP Site 29799, stacked rock pile at edge of modified depression, view to the southeast.

Figure 28. SIHP Site 29799, modified depression, view to the south.

Figure 29. Side branch of SIHP Site 29801 extending northwest (north arrow on trail), view to the west.

SIHP Site 29800

Site 29800 is series of *pāhoehoe* excavations located partially within the well parcel (TMK:3-8-3-005:020), 18 meters north of Site 29799 (see Figure 21). The portion of the site within the well parcel measures roughly 18 meters by 10 meters (Figure 30). Outside of the project area Site 29800 extends for 15 meters to the east/northeast (see Figure 21). The excavations are located south of an *ʻaʻā* ridge and east of an area of unmodified *ʻaʻā* bedrock occupying a transitional area between the *ʻaʻā* flow to the north, west and south, and the west edge of the disaggregated *pāhoehoe* flow that extends from the east near Site 29799 (Figure 31). Within this transitional zone are four *pāhoehoe* excavations surrounded by an area of slightly modified bedrock (see Figure 30). Cultural material at the site is limited to several large water-worn cobbles, and a scatter of Historic metal cans at the south extent of the excavations. Site 29800 appears to have been exploited as a *pāhoehoe* cobbles source, serving as a quarry that may date to the Precontact Period, with some Historic utilization that is probably associated with the construction of Site 29799.

Excavation #1 is situated at the west end of Site 29800. It measures 3.8 meters by 1.6 to 2 meters in width. Medium to large subangular cobbles have been excavated from the interior of a shallow depression and piled along its exterior edges (Figure 32). The interior of the depression consists of bedrock with a few scattered cobbles, with a maximum depth of 60 centimeters below the surrounding surface bedrock and piled cobbles. A Christmas-berry shrub is currently growing in the center of the depression.

Excavation #2 is immediately adjacent to Excavation #1. A roughly constructed alignment measuring 2.5 meters long and 1 meter wide separates the two excavated areas (Figure 33). Excavation #2 measures 1.5 meters by 2.1 meters, and consists of a depression from which cobbles were excavated and placed along its edges (Figure 34). The interior of the depression has an average depth of 60 centimeters, with edges that slope towards the center.

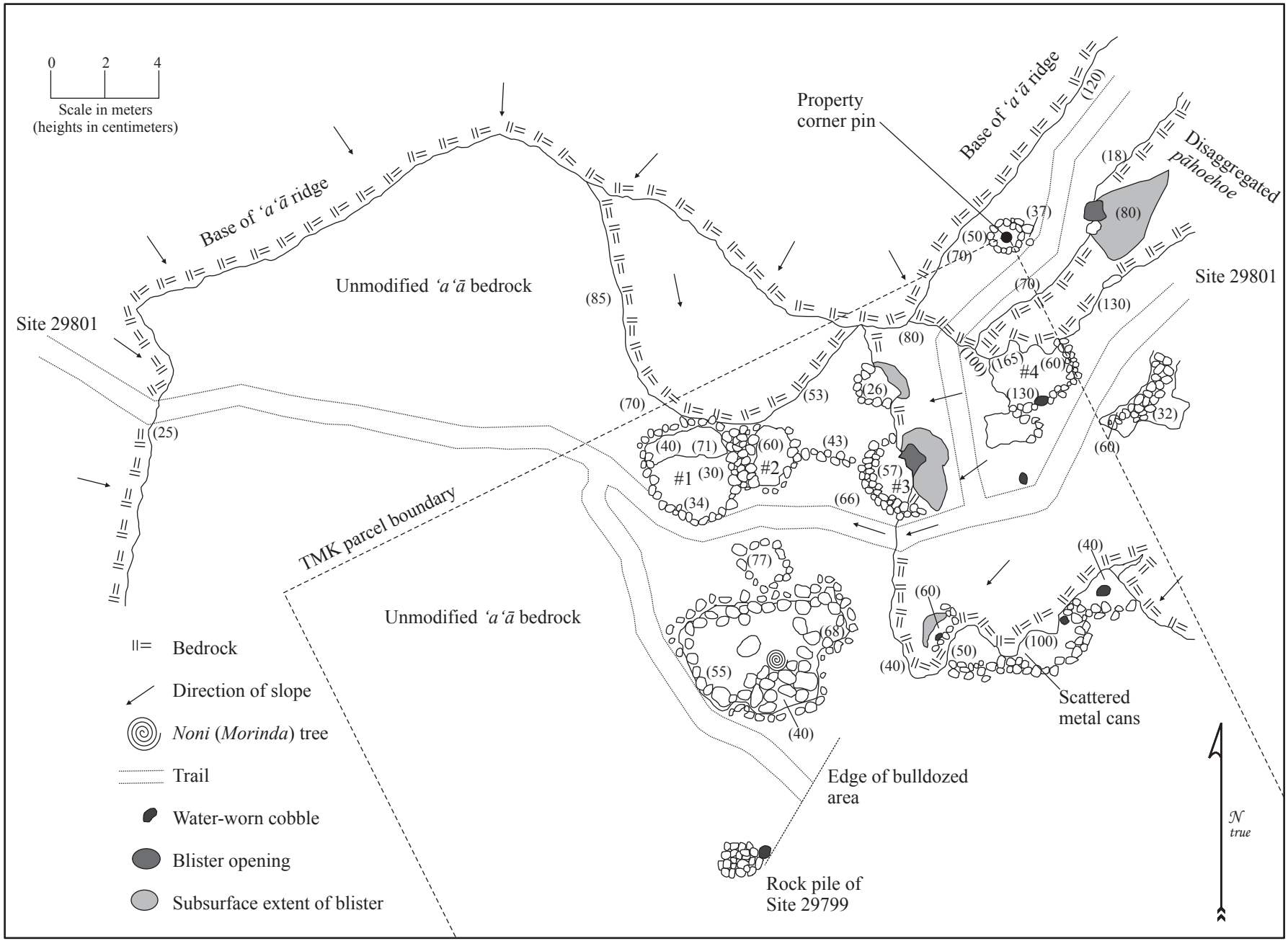

Figure 30. SIHP Site 29800 and 29801 plan view.

Figure 31. SIHP Site 29800, Site 29799 in the background, view to the southeast.

Figure 32. SIHP Site 29800, Excavation #1, view to the northeast.

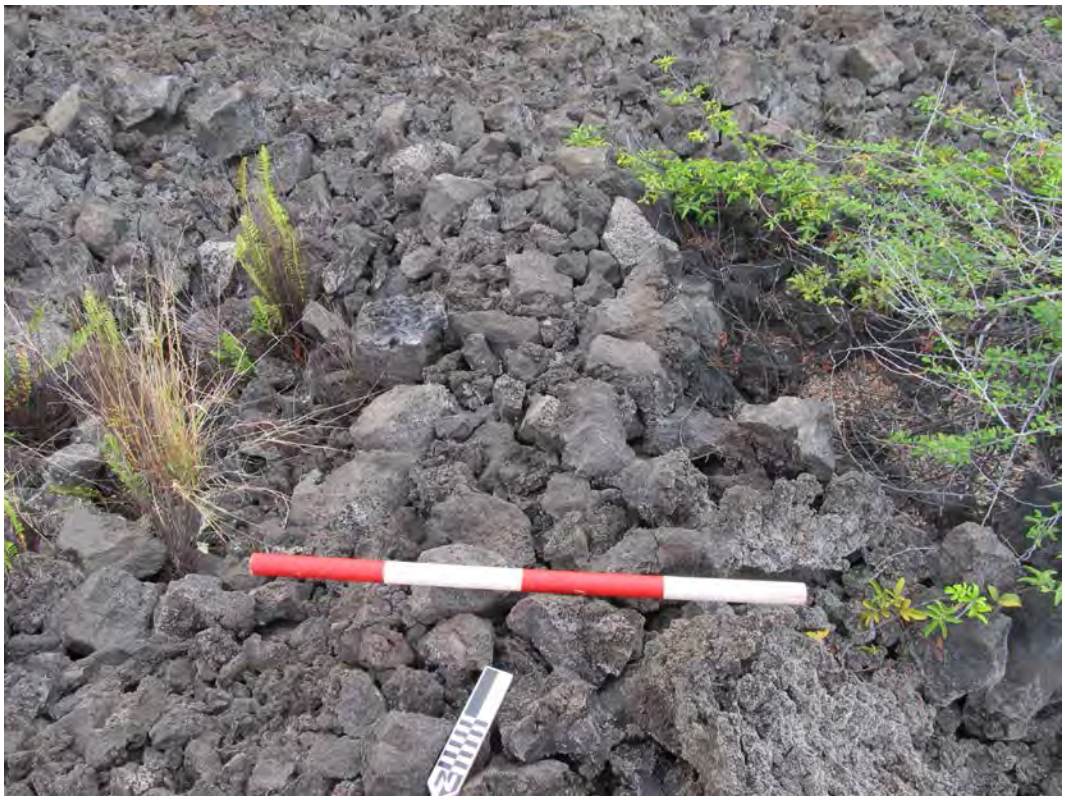

Figure 33. SIHP Site 29800, constructed wall separating Excavation #1 and #2, view to the northeast.

Figure 34. SIHP Site 29800, Excavation #2, view to the south.

Excavation #3 is 3 meters east of Excavation #2. It consists of large cobbles that have been excavated from a blister and piled along its south and west edges (Figure 35). The excavated portion measures 3.3 meters by 2.7 meters. The opening to the blister is located at the northeast end of the excavated area, and measures 1 meter by 60 centimeters. From the blister opening the blister extends for 1.3 meters to the south and 65 centimeters to the east, with a maximum interior height of 80 centimeters. Small cobbles are scattered throughout the interior floor of the blister, which slopes to the west. The excavated cobbles have been piled into an L-shaped wall that measures 2.7 meters long by 90 centimeters wide with heights of 40 to 66 centimeters.

Excavation #4 is 4 meters northeast of Excavation #3, on an upslope portion of disaggregated *pāhoehoe* extending from the west. It measures 2.4 meters by 2 meters. Cobbles have been excavated from the base of a southeast facing slope, and piled along the east and south edges of the resulting depression (Figure 36). The depression has a depth of 55 centimeters below the surrounding bedrock, with cobbles delineating the south, west and east edges. This portion of bedrock that Excavation #4 occupies is 1.65 meters below a *pāhoehoe* outcrop edge to the north. North of Excavation #4 is a property pin that marks the corner of the well-site parcel (Figure 37).

There are several areas of bedrock surrounding the excavations which also appear to have been excavated, but do not exhibit any formal construction and were recorded as tertiary aspects of Site 29800 (see Figure 30). Several trail segments (Site 29801) cross through Site 29800.

Figure 35. SIHP Site 29800, Excavation #3, view to the southeast.

Figure 36. SIHP Site 29800, Excavation #4, view to the northwest.

Figure 37. SIHP Site 29800, corner property pin, overview.

SIHP Site 29801

Site 29801 is a trail located in the northeast portion of the project area, partially within the well parcel (see Figure 21). The segment of the trail within the project area measures 20 meters and is roughly 1 meter wide (see Figure 30). Outside of the project area the trail stretches for an additional 140 meters towards a Precontact habitation complex, intersecting with an extensive trail network associated with multiple features in the west portion of TMK:3-8-3-04:001 *mauka* of the bulldozed house pad location survey area. Within the project area the trail enters Site 29800, crossing over a low spot in an *ʻaʻā* ridge to pass by the *pāhoehoe* excavations of Site 29800 (Figures 38, 39 and 40). The trail consists of small cobble paving, with the occasional small slab stepping-stone. Larger cobbles seem to have been cleared to the side of the trail as it was constructed. The trail branches in several possible directions within Site 29800. A branch of the trail extends southeast towards Site 29799, while another branch extends from Excavation #4 towards the corner property pin of the parcel. At its *mauka* extent the trail becomes untraceable, but may connect to another trail segment to the east. The context of the trail indicates it was constructed during the Precontact Period as an access route between this site and other nearby features that exist outside of the current study area.

Figure 38. SIHP Site 29801, view to the west.

Figure 39. SIHP Site 29801, view to the west.

Figure 40. SIHP Site 29801, trail where it passes near Site 29800 Excavation #1, view to the northeast.

Summary

As a result of the current inventory survey three sites (SIHP Sites 29799, 29800, and 29801) were documented within the project area (see Figure 21), all within the well parcel survey area. No sites were observed within the caretaker house survey area and utility and landscape corridors. The well location (Site 29799) was expected and documents the Historic Period development of the area and the importance of taping ground water for that development. The two Precontact sites, a bedrock quarry area (Site 29800) and a trail (Site 29801) are elements of the larger archaeological landscape and are clearly related to the former extensive coastal habitation that once occupied this general area. As anticipated, no agricultural features were observed; and no burial features were present in the current project area.

SIGNIFICANCE EVALUATION AND TREATMENT RECOMMENDATIONS

The above-described archaeological sites are assessed for their significance based on criteria established and promoted by the DLNR-SHPD and contained in the Hawai‘i Administrative Rules 13§13-284-6. This significance evaluation should be considered as preliminary until DLNR-SHPD provides concurrence. For a resource to be considered significant it must possess integrity of location, design, setting, materials, workmanship, feeling, and association and meet one or more of the following criteria:

A Be associated with events that have made an important contribution to the broad patterns of our history;

B Be associated with the lives of persons important in our past;

C Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;

D Have yielded, or is likely to yield, information important for research on prehistory or history;

E Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity.

The significance and recommended treatment for the recorded archaeological sites are discussed below and presented in Table 2.

Table 2. Site significance and treatment recommendations.

SIHP No.	*Type*	*Temporal Association*	*Significance*	*Treatment*
29799	Well-site	Historic	D	No further work
29800	*Pāhoehoe* excavations	Precontact/Historic	D	Preservation
29801	Trail	Precontact	D	Preservation

All three sites are considered significant under Criterion D for their information content relative to Precontact and Historic Period use of the study area. The intact elements of SIHP Sites 29800 and 29801 can be avoided and preserved. Given the comprehensive data recordation during the current study, no further historic preservation work is the recommended treatment for SIHP Sites 29799.

For SIHP Sites 29800 and 29801 a preservation plan should be prepared and submitted to DLNR-SHPD for review and approval. This plan should address how these two sites will be protected during the water well upgrade activities and how they will be treated after the upgrade work has been completed.

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ENVIRONMENTAL ASSESSMENT

Bundrant Single-Family Home, Landscaping and Well Repairs at Kahauloa

APPENDIX 3
Cultural Impact Assessment

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RC-0838

Cultural Impact Assessment Associated with Development Activities on TMKs: 3-8-3-05:001 and 3-8-3-05:020

Kahauloa 2nd Ahupuaʻa
South Kona District
Island of Hawaiʻi

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ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL STUDIES

RC-0454

Cultural Impact Assessment Associated with Development Activities on TMKs: 3-8-3-05:001 and 3-8-3-05:020

Kahauloa 2nd Ahupuaʻa
South Kona District
Island of Hawaiʻi

RECHTMAN CONSULTING

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INTRODUCTION

At the request of Chuck and Diane Bundrant, lessees under Kamehameha Schools (landowner), Rechtman Consulting, LLC has prepared this cultural impact assessment (CIA) to accompany an Environmental Assessment and a Conservation District Use Application associated with the proposed construction of a caretaker house and a water well, in Kahauloa 2nd Ahupuaʻa, South Kona District, Island of Hawaiʻi (Figures 1 and 2). The Bundrant's intend to construct a caretaker house within an existing disturbed area on TMK: 3-8-3-005:001 and further develop an existing water well on TMK:3-8-3-05:020. The current project area (Figure 3) consists of 1.429 acres encompassing two distinct areas—a proposed caretaker house location totaling roughly 1.2 acres, and a well parcel totaling 0.229 acres. Portions of the two areas have been altered by mechanical land clearing activities. The entire proposed caretaker house location area within TMK:3-8-3-05:001 was previously graded by a bulldozer in its entirety (Figure 4). Similarly, the southern portion of the well parcel (TMK:3-8-3-05:020), in which a well was constructed sometime between 1928 and 1954 and a modern well-house structure that replaced an older building are located, has been subjected to bulldozing activities associated with its original and subsequent construction episodes (Figure 5).

The current project area is situated within the southwest corner of the Kealakekua Bay Historic District (HRHP 10-47-7000) which is listed in both the National Register of Historic Places (NRHP) and the Hawaiʻi Register of Historic Places (HRHP). The project area also falls within the coastal zone of the Kona Field System (SIHP Site 4150), a complex of dryland agricultural and habitation features covering minimally 60 square miles between Kailua (to the north) and Hoʻokena (to the south). The Kona Field System has also been determined eligible for listing in the National Register of Historic Places. A recent archaeological inventory survey (Zenobi et al. 2013) of the current study area resulted in the discovery of three sites (SIHP Sites 29799-29801) that include a Historic well-(Site 29799), a series of *pāhoehoe* excavations (Site 29800), and a trail (Site 29801). The latter two sites appear to represent Precontact Period activities. All three sites were considered significant under state significance Criterion D for their information content relative to Precontact and Historic Period use of the study area. The intact elements of SIHP Sites 29800 and 29801 are to be avoided and preserved. Given the comprehensive data recordation that occurred during the inventory study, no further historic preservation work was the recommended treatment for SIHP Sites 29799. The archaeological inventory survey contains a detailed culture-historical background establishing an appropriate context within which to assess any potential cultural impacts that might be identified during the current study; and that background is repeated here. An earlier CIA (Rechtman 2009) was prepared for development activities on the same parcel as the proposed caretaker house and the information in that report as well as the consultation conducted is completely relevant to the current proposed project. The current study focuses on additional consultation with the identified individuals with respect to their personal knowledge and experience concerning cultural resources and practices that might be impacted by the proposed caretaker house and well development.

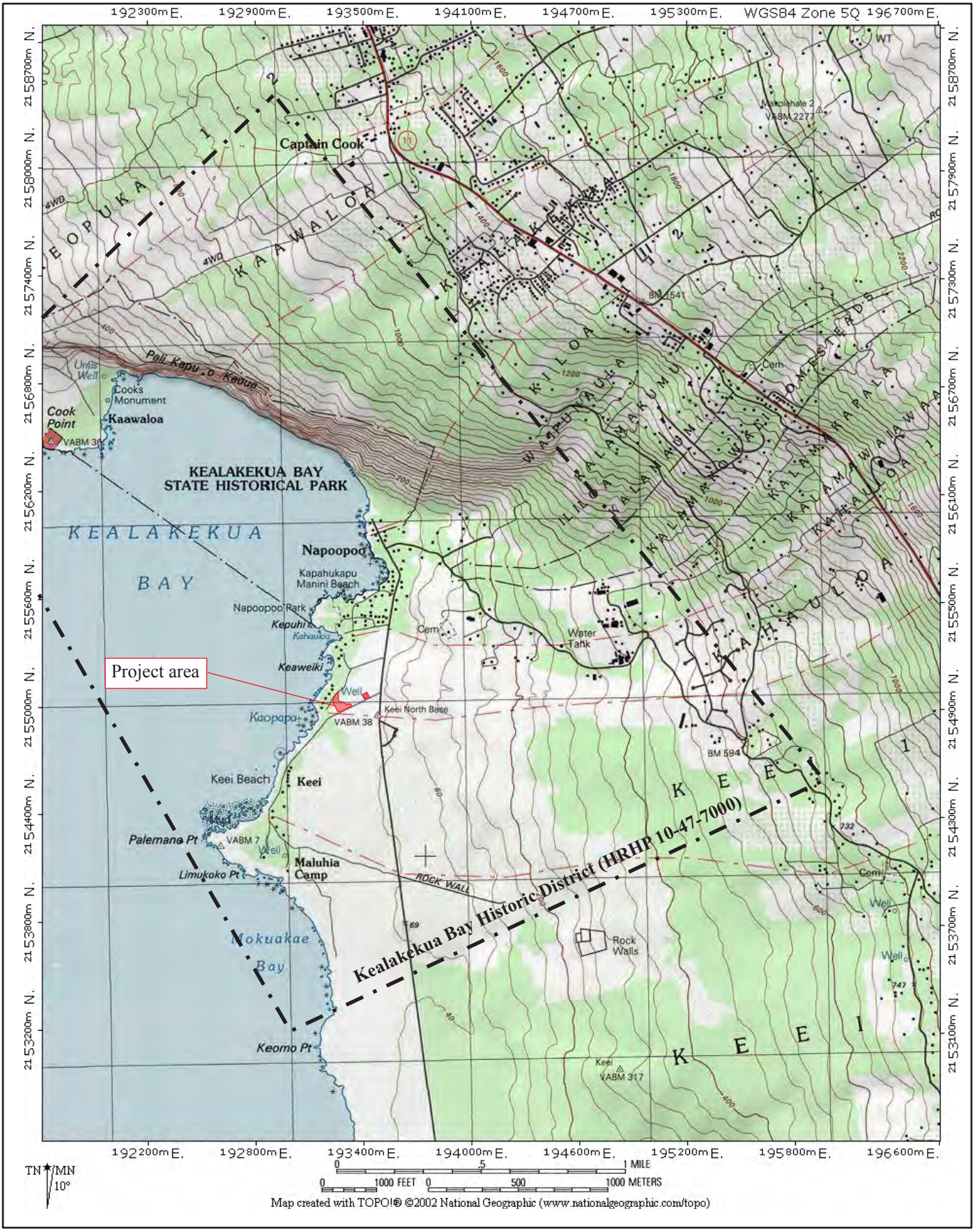

Figure 1. Project area location.

Figure 2. Tax Map Key 3-8-3-05 showing the current study area.

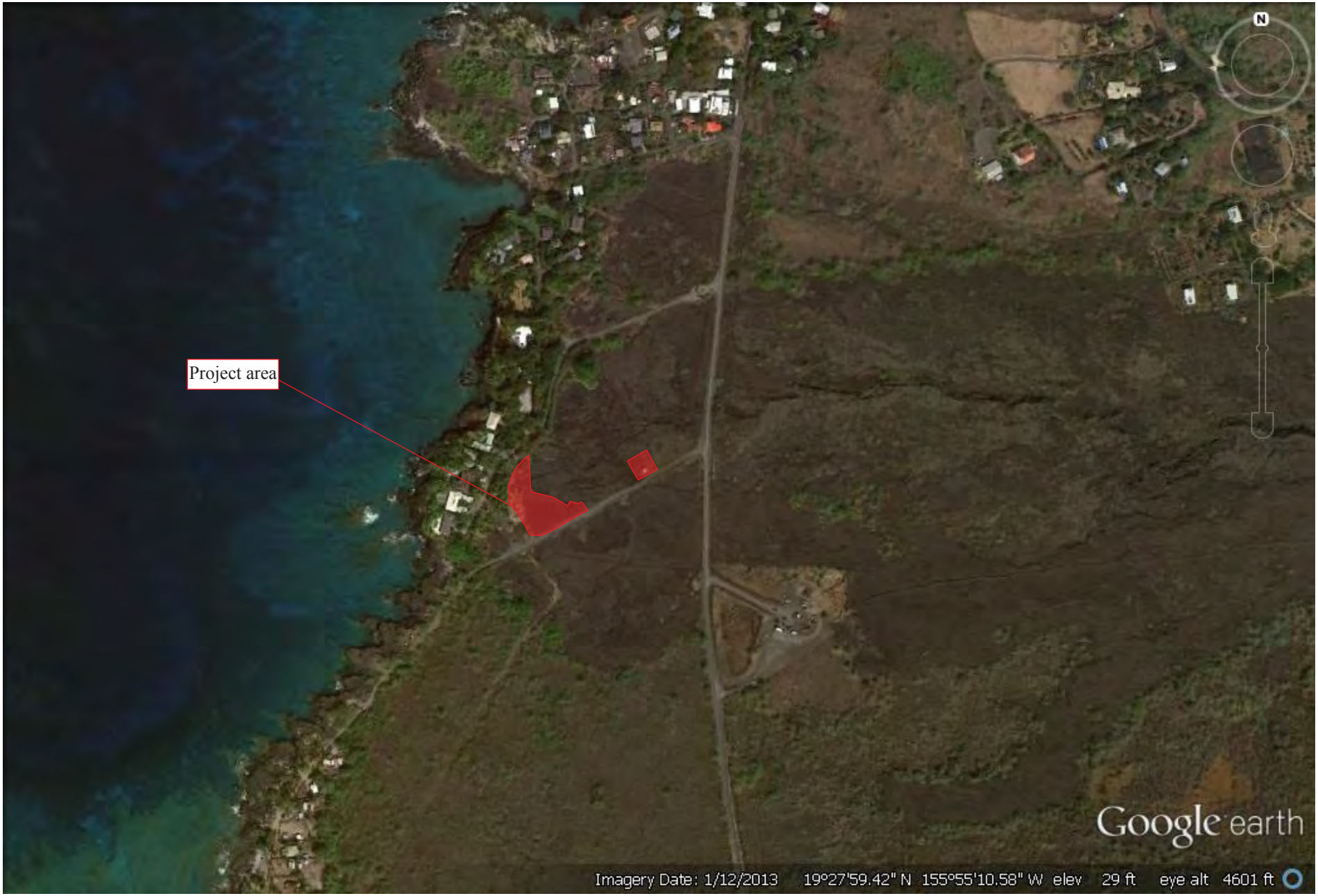

Figure 3. Google Earth image showing current study area location.

Figure 4. Bulldozed house pad survey area, view to the west.

Figure 5. Well parcel and modern well-house structure, view to the northeast.

CULTURE-HISTORICAL BACKGROUND

Archaeologists and historians describe the inhabiting of the Hawaiian Islands in the context of settlement that resulted from voyages taken across the open ocean. For many years, researchers have proposed that early Polynesian settlement voyages between Kahiki (the ancestral homelands of the Hawaiian gods and people) and Hawaiʻi were underway by A.D. 300, with long distance voyages occurring fairly regularly through at least the thirteenth century (Rechtman and Maly 2003). More recently, however, Kirch (2011) has convincingly argued that Polynesians may not have arrived in the Hawaiian Islands until at least A.D. 1000, but expanded rapidly thereafter. It has been generally reported that the sources of the early Hawaiian population—the Hawaiian Kahiki—were the Marquesas and Society Islands (Cordy 2000; Emory in Tatar 1982:16-18).

For generations following initial settlement, communities were clustered along the watered, windward (*koʻolau*) shores of the Hawaiian Islands. Along the *koʻolau* shores, streams flowed and rainfall was abundant, and agricultural production became established (Rechtman and Maly 2003). The *koʻolau* region also offered sheltered bays from which deep sea fisheries could be easily accessed, and near shore fisheries, enriched by nutrients carried in the fresh water, could be maintained in fishponds and coastal waters. It was around these bays that clusters of houses where families lived could be found (McEldowney 1979:15). In these early times, Hawaiʻi's inhabitants were primarily engaged in subsistence level agriculture and fishing (Handy et al. 1991:287). There is no archaeological evidence within the Kona region during this initial stage of occupation.

Over a period of several centuries, areas with the richest natural resources became populated and perhaps even crowded, and the population began expanding to the *kona* (leeward side) of the island (Cordy 2000:130). In Kona, communities were initially established along sheltered bays with access to fresh water and rich marine resources. The primary "chiefly" centers were established at several locations—the Kailua (Kai-a-ke-akua) vicinity, Kahaluʻu-Keauhou, Kaʻawaloa-Kealakekua, and Hōnaunau (Rechtman and Maly 2003). The communities shared extended familial relations, and there was an occupational focus on the collection of marine resources. By the fourteenth century, inland elevations to around the 3,000-foot level were being turned into a complex and rich system of dryland agricultural fields (today referred to as the Kona Field System). This area extends north at least to Ka'u Ahupua'a and south to Honaunau, west from the coastline and east to the forested slopes of Hualalai (Cordy 1995). By the fifteenth century, residency in the uplands was becoming permanent, and there was an increasing separation of the chiefly class from the common people. In the sixteenth century the population stabilized and the *ahupuaʻa* land management system was established as a socioeconomic unit (see Ellis 1963; Handy et al. 1991; Kamakau 1992; Kelly 1983; and Tomonari-Tuggle 1985).

In Kona, where there were no regularly flowing streams to the coast, access to potable water (*wai*), was of great importance and played a role in determining the areas of settlement. The waters of Kona were found in springs and caves (found from shore to the mountain lands), or procured from rain catchments and dewfall (Rechtman and Maly 2003). Traditional and historic narratives abound with descriptions and names of water sources, and also record that the forests were more extensive and extended much further seaward than they do today. These forests not only attracted rains from the clouds and provided shelter for cultivated crops, but also in dry times drew the *kēhau* and *kēwai* (mists and dew) from the upper mountain slopes to the low lands (Rechtman et al. 2001).

In the 1920s-1930s, Handy et al. (1991) conducted extensive research and field interviews with elder native Hawaiians. In lands of North and South Kona, they recorded native traditions describing agricultural practices and rituals associated with rain and water collection. Primary in these rituals and practices was the lore of Lono—a god of agriculture, fertility, and the rituals for inducing rainfall. Handy et al., observed:

> The sweet potato and gourd were suitable for cultivation in the drier areas of the islands. The cult of Lono was important in those areas, particularly in Kona on Hawaiʻi . . . there were temples dedicated to Lono. The sweet potato was particularly the food of the common people. The festival in honor of Lono, preceding and during the rainy season, was essentially a festival for the whole people, in contrast to the war rite in honor of Ku which was a ritual identified with Ku as god of battle (Handy et al. 1991:14).

Handy et al. (1991) noted that the worship of Lono was centered in Kona. Indeed, it was while Lono was dwelling at Keauhou, that he is said to have introduced taro, sweet potatoes, yams, sugarcane, bananas, and *ʻawa*

to Hawaiian farmers (Handy et al. 1991:523). The rituals of Lono—"The father of waters"—and the annual *Makahiki* festival (honoring Lono) preceding and during the rainy season, were of great importance to the native residents of this region (Handy et al. 1991:14). The significance of rituals and ceremonial observances in cultivation and indeed in all aspects of life was of great importance to the well being of the ancient Hawaiians, and cannot be overemphasized, or overlooked when viewing traditional sites of the cultural landscape (Rechtman and Maly 2003).

Over the generations, the ancient Hawaiians developed a sophisticated system of land and resources management. By the time 'Umi-a-Līloa rose to rule the island of Hawai'i in ca. 1525, the island (*moku-puni*) was divided into six districts or *moku-o-loko* (Fornander 1996–Vol. II:100-102). The district of Kona is one of six major *moku-o-loko* of the island. The district itself, extends from the shore across the entire volcanic mountain of Hualālai, and continues to the summit of Mauna Loa, where Kona is joined by the districts of Ka'ū, Hilo, and Hāmākua. One traditional reference to the northern and southern-most coastal boundaries of Kona tells us of the district's extent:

> *Mai Ke-ahu-a-Lono i ke 'ā o Kani-kū, a hō'ea i ka 'ūlei kolo o Manukā i Kaulanamauna e pili aku i Ka'ū!*—From Keahualono [the Kona-Kohala boundary] on the rocky flats of Kanikū, to Kaulanamauna next to the crawling (tangled growth of) 'ūlei bushes at Manukā, where Kona clings to Ka'ū! (*Ka'ao Ho'oniua Pu'uwai no Ka-Miki in Ka Hōkū o Hawai'i*, September 13, 1917; Translated by K. Maly)

The traditional district of Kona is divided today into two districts, North Kona and South Kona, and like other large districts on Hawai'i, was further subdivided into '*okana* or *kalana* (regions of land smaller than the *moku-o-loko*, yet comprising a number of smaller units of land). Of all the land divisions, perhaps the most significant management unit was the *ahupua'a* (Rechtman and Maly 2003). *Ahupua'a* are subdivisions of land that were usually marked by an altar with an image or representation of a pig placed upon it (thus the name *ahu-pua'a* or pig altar). In their configuration, the *ahupua'a* may be compared to wedge-shaped pieces of land that radiate out from the center of the island, extending to the ocean fisheries fronting the land unit. Their boundaries are generally defined by topography and geological features such as *pu'u* (hills), ridges, gullies, valleys, craters, or areas of a particular vegetation growth (Lyons 1875).

The *ahupua'a* were also divided into smaller units of land (such as the *'ili, kō'ele, māla*, and *kīhāpai*, etc.), generally oriented in a *mauka-makai* direction, and often marked by stone alignments (*kuaiwi*). In these smaller land units the native tenants tended fields and cultivated crops necessary to sustain their families, and the chiefly communities with which they were associated. As long as sufficient tribute was offered and *kapu* (restrictions) were observed, the common people, who lived in a given *ahupua'a* had access to most of the resources from mountain slopes to the ocean (Rechtman and Maly 2003). These access rights were almost uniformly tied to residency on a particular land, and earned as a result of taking responsibility for stewardship of the natural environment, and supplying the needs of the *ali'i* (see Kamakau 1992:372-377 and Malo 1951:63-67).

Entire *ahupua'a*, or portions of the land were generally under the jurisdiction of appointed *konohiki* or lesser chief-landlords, who answered to an *ali'i-'ai-ahupua'a* (chief who controlled the *ahupua'a* resources). The *ali'i-'ai-ahupua'a* in turn answered to an *ali'i 'ai moku* (chief who claimed the abundance of the entire district). Thus, *ahupua'a* resources supported not only the *maka'āinana* and *'ohana* who lived on the land, but also contributed to the support of the royal community of regional and/or island kingdoms (Rechtman and Maly 2003). This form of district subdividing was integral to Hawaiian life and was the product of strictly adhered to resources management planning. In this system, the land provided fruits and vegetables and some meat in the diet, and the ocean provided a wealth of protein resources. The following passage summarizes the degree to which each section of an *ahupua'a* was utilized:

> The ocean resources fronting Ke'ei were integral to life upon the land. On the *kula kahakai* or shoreward flats, were found potable water sources (caves, wells and springs), several village clusters and many residents, groves of coconut trees, and low land agricultural fields. The *kula uka* or upland plains, extending up to an area above the *mauka Alaloa*, Keala'ehu (near present day Māmalahoa Highway), was highly valued for its fertile lands, which were extensively cultivated. The lands extending from around the 2,000 to 5,000 foot elevation were cultivated in bananas, and were a significant resource of woods, fibers, birds, and other materials of value and importance to native life (Maly and Maly 2002:1).

Trails (*alahele*) and thoroughfares (*alaloa*) were integral to resource access within and between *ahupua'a*, and continue to serve as important features of the cultural landscape. A coastal trail connected Kealakekua and Hōnaunau, passing along the shoreline at Kahauloa. These *alahele* and *alaloa* were by the 1840s modified into a system of roads referred to as "Ala Nui Aupuni", or Government roads (Maly and Maly 2002:84). The location of the Upper and Lower Government Roads in the vicinity of the current project area are shown on Hawai'i Registered Map No. 1796 prepared by W.A. Wall in 1885 (Figure 6).

The current project area is located within the *ahupua'a* of Kahauloa 2nd, along the southern shore of Kealakekua Bay. This area played a well-documented and significant role in the history of the Hawaiian Islands. Kealakekua Bay is the former home of some of Hawai'i's most powerful *ali'i* and feared warriors, as well as notable battles. One such warrior, named Kekūhaupi'o, was born of royal blood (his father was Kohapi'olani, a Ke'ei chief, and his mother was from Nāpo'opo'o) at Ke'ei, just south of the project area. An article published in *Ka Hōkū o Hawai'i* on September 10, 1908 (translated by K. Maly) tells of Kekūhaupi'o's loyalty to Kamehameha and his role at the battle of Moku'ōhai, which also took place just south of the project area, against the chief's cousin, Kiwala'ō. Although a lower chief, Kekūhaupi'o fought so well in this battle that he came to be known as "*Ko Kamehameha koa a waele makaihe*" (Kamehameha's warrior who weeds through men with a spear) and he became the most cherished companion of Kamehameha, outside of his own uncles.

Kekūhaupi'o continued to live at Ke'ei and serve Kamehameha for the remainder of his life, which he lost not in battle, but at the sport of spear fighting. The fierce battle of Moku'ōhai established the Kamehameha dynasty by reuniting Hawai'i Island, and continues to be a defining event for the region. In 1913 M.W. Kinney described the area in which the battle was fought:

> ….KEEI village is a pretty spot on the beach, about a mile south of Napoopoo. Here are several papa konane (chess boards), but most of them are poorly preserved. Directly south thereof, on the lava, between this village and Kepu [Kipu], where there is a cocoanut [*sic*] grove, was the great battle of MOKUOHAI, in about 1782, where a chief, named Kiwalao, was killed after a great fight. His remains were taken to Napoopoo and baked (a last indignity) at Paokalani, where the oven is still shown. (Maly and Maly 2002:120).

Kealakekua Bay (more precisely the flats of Ka'awaloa north of the current project area) is perhaps best known as the place where Captain Cook first made landfall on the island and then ultimately met his demise. The arrival of Europeans on Hawai'i Island began a long series of events that would eventually, but not immediately, alter the Hawaiian way of life. As Major writes, "From the moment Cook and his crew arrived, relations between Native Hawaiians and outsiders were heavily influenced by the sailors' need for supplies" (Major 2001). Because of Hawai'i's isolation in the mid-Pacific it made an excellent way point for Europeans and Americans involved in the East Indian and northwest American trade networks (Sahlins 1992). Kealakekua Bay, with its excellent anchorage and abundant supply of food soon became the most frequented harbor by visitors to the island. Thus began the written history of Hawai'i.

Captain James Cook and members of his crew provided the first European accounts of this coastal region in 1779. The journals and diaries of the expedition noted the political and religious importance of the area. Descriptions provided by John Ledyard and Lieutenant James King of the expedition described the coastal area (Figure 7) to approximately 3 miles inland as being cultivated primarily in sweet potatoes *('uala*). Of the general coastal area of Kealakekua Bay King writes:

> I was never myself above 3 miles into the body of the Country, for [page520] the first 2 ½ miles it is compos'd of burnt loose stones, & yet almost the whole surface beginning a little at the back of the town, is made to yield Sweet potatoes & the Cloth plant. One then comes to breadfruit trees which flourish amazingly. The ground was very uneven & although there was a tolerable Soil about the trees, yet there was constant breaks in the land & large bare, burnt rocks; in the bottoms that these made were planted the Sweet Potatoe roots with earth collected about them;… (Maly and Maly 2002:109).

Also grown in this coastal zone were sugar cane, *wauke*, and banana trees. Breadfruit trees (*ulu*) were cultivated in the area situated inland of this coastal habitation and agrarian zone. Archibald Menzies, who was a member of Captain George Vancouver's 1792-1794 expeditions, provided descriptions of the coastal and upland areas and observed that the upper elevations were cultivated primarily in taro and ti.

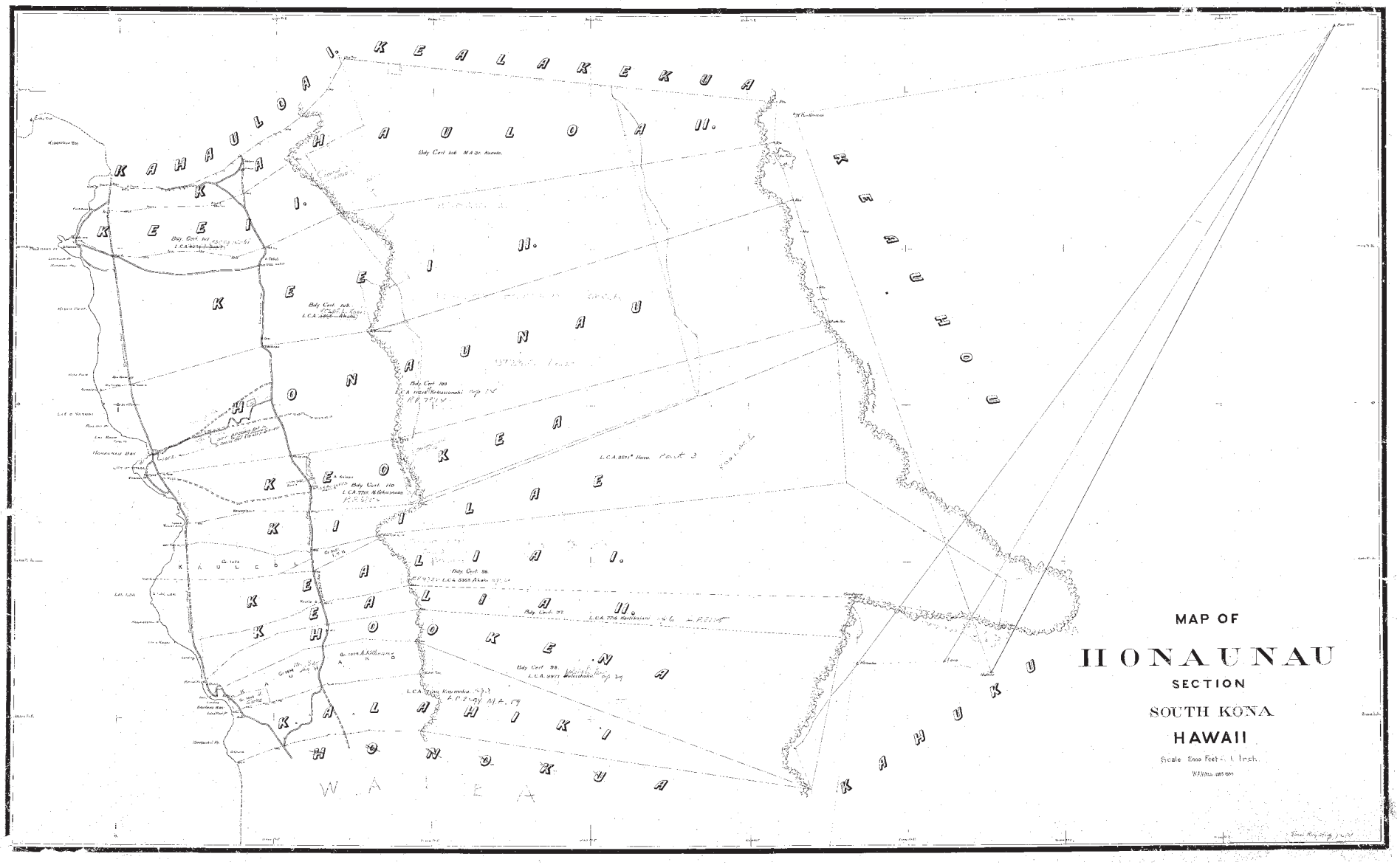

Figure 6. Hawai‘i Registered Map No. 1796 showing ahupua’a borders between Kahauloa 2nd, Ke’ei 1st and Ke’ei 2nd.

RC-0838

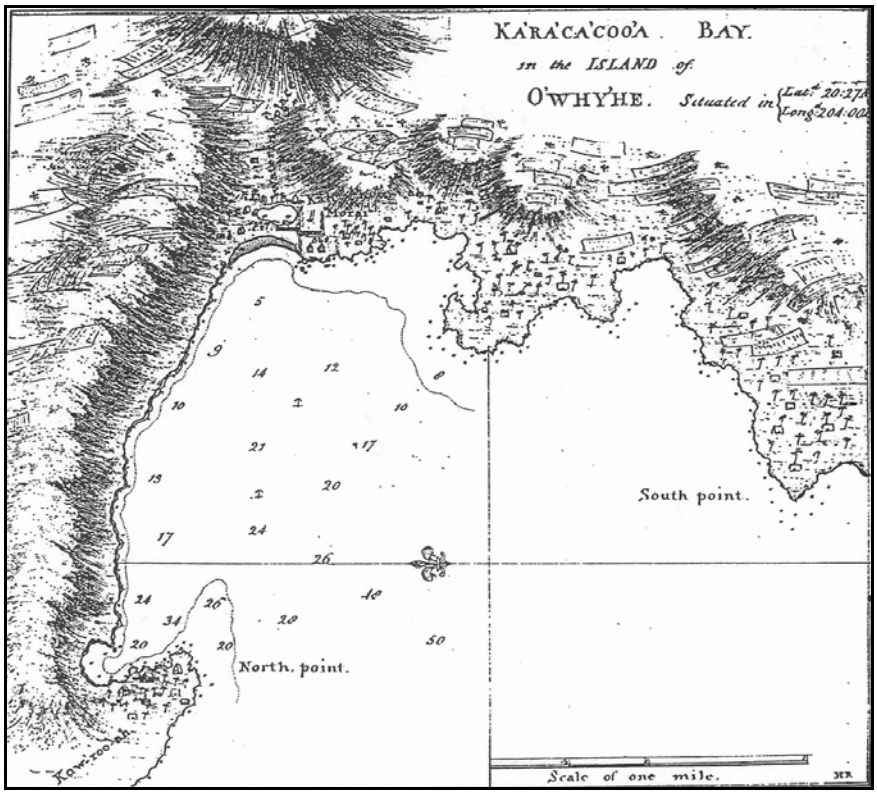

Figure 7. Map of Kealakekua Bay depicting villages and agricultural fields extending to the uplandsabove Kealekekua Pali; Henry Roberts Survey (1779) (Fitzpatrick 1986).

Demographic trends during this period indicate population reduction in some areas, due to war and disease, yet increases in others, with relatively little change in material culture. However, there was a continued trend toward craft and status specialization, intensification of agriculture, *ali'i* controlled aquaculture, upland residential sites, and the enhancement of traditional oral history (Rechtman and Maly 2003). The Kū cult, *luakini heiau*, and the *kapu* system were at their peaks, although western influence was already altering the cultural fabric of the Islands (Kirch 1985; Kent 1983). Foreigners had introduced the concept of trade for profit, and by the time Kamehameha I had conquered O'ahu, Maui and Moloka'i, in 1795, Hawai'i saw the beginnings of a market system economy (Kent 1983). This marked the end of the Proto-Historic Period and the end of an era of uniquely Hawaiian culture.

In the twelve years following the arrival of Captain Cook, sixteen foreign ships (all British and American) called in Hawaiian waters, many of them anchoring in Kealakekua Bay (Restarick 1927). In 1792, Captain George Vancouver, who had sailed with Cook, arrived in Kealakekua Bay with a small fleet of British ships and met with Kamehameha, who he recognized from his previous voyage. Vancouver stayed only a few days on this fist visit, but returned again in 1793 to take on supplies. Vancouver found the water of this area too brackish for drinking, however, so Kamehameha sent a fleet of canoes to bring fresh water from elsewhere along the coast, for which Vancouver made gifts of sheep, cattle, and orange seeds (Restarick 1927). While anchored in the bay, Archibald Menzies, a surgeon and naturalist on board Vancouver's ship, journeyed inland where he encountered extensive plantations. Menzies wrote:

> We soon lost sight of the vessel, and entered their breadfruit plantations, the trees of which were a good distance apart, so as to give room to their bows to spread out vigorously on all sides, which was not the case in the crowded groves of Tahiti, where we found them always planted on the plains along the seaside. But here the size of the trees, the luxuriances of their crop and foliage, sufficiently show that they thrive equally well on an elevated situation. The space between these trees did not lay idle. It was chiefly planted with sweet potatoes and rows of cloth plant.

> As we advanced beyond the bread-fruit plantations, the country became more and more fertile, being in a high state of cultivation. For several miles round us there was not a spot that would admit of it but what was with great labor and industry cleared of the loose stones and planted with esculent [taro] roots or some useful vegetables or other. In clearing the ground, the stones are heaped up in ridges between the little fields and planted on each side, either with a row of sugar cane or the sweet root [ti] of these islands . . . where they afterwards continue to grow in a wild state, so that even these stony, uncultivated banks are by this means made useful to the proprietors, as well as ornamental to the fields they intersect (1920:75-76).

Hawai‘i’s culture and economy continued to change drastically as capitalism and industry established a firm foothold in the islands. The sandalwood (*Santalum ellipticum*) trade, established by Euro-Americans in 1790 and turned into a viable commercial enterprise by 1805 (Oliver 1961), was flourishing by 1810. Kamehameha, who resided on the island of O‘ahu during this time, did manage to maintain some control over the trade (Kuykendall and Day 1976; Kent 1983).

Upon returning to Kailua in 1812, Kamehameha ordered men into the mountains of Kona to cut sandalwood and carry it to the coast, paying them in cloth, *tapa* material, food and fish (Kamakau 1992). This new burden added to the breakdown of the traditional subsistence system. Farmers and fishermen were ordered to spend most of their time logging, resulting in food shortages and famine that led to population decline. Kamakau wrote that, “this rush of labor to the mountains brought about a scarcity of cultivated food . . . The people were forced to eat herbs and tree ferns, thus the famine [was] called Hi-laulele, Haha-pilau, Laulele, Pualele, ‘Ama‘u, or Hapu‘u, from the wild plants resorted to” (1992:204). Once Kamehemeha realized that his people were suffering, he “declared all the sandalwood the property of the kingdom and ordered the people to devote only part of their time to its cutting and return to the cultivation of the land” (ibid.:204). In the uplands of Kailua a vast plantation named Kuahewa was established where Kamehameha himself worked as a farmer. Kamehameha enacted the law that anyone who took one taro or one stalk of sugarcane must plant one cutting of the same in its place (Handy et al. 1991).

Kamehameha died in 1819 at Kamakahonu in Kailua-Kona. With the passing of Kamehameha, his heir Liholiho was given the name of Kamehameha II. Ka‘ahumanu, the favorite wife of Kamehameha, announced his last commands:

> O heavenly one! I speak to you the commands of your grandfather. Here are the chiefs; here are the people of your ancestors; here are your guns; here are your lands. But we two shall share the rule over the land. Liholiho consented and became ruling chief over the government (Kamakau 1992:220):

Following the death of a prominent chief, it was customary to remove all of the regular *kapu* that maintained social order and the separation of men and women and elite and commoner. Thus, following Kamehameha’s death, a period of *‘ai noa* (free eating) was observed along with the relaxation of other traditional *kapu*. It was for the new ruler and *kahuna* to re-establish *kapu* and restore social order, but at this point in history traditional customs saw a change:

> The death of Kamehameha was the first step in the ending of the tabus; the second was the modifying of the mourning ceremonies; the third, the ending of the tabu of the chief; the fourth, the ending of carrying the tabu chiefs in the arms and feeding them; the fifth, the ruling chief's decision to introduce free eating (*‘ainoa*) after the death of Kamehameha; the sixth, the cooperation of his aunts, Ka-ahu-manu and Ka-heihei-malie; the seventh, the joint action of the chiefs in eating together at the suggestion of the ruling chief, so that free eating became an established fact and the credit of establishing the custom went to the ruling chief. This custom was not so much of an innovation as might be supposed. In old days the period of mourning at the death of a ruling chief who had been greatly beloved was a time of license. The women were allowed to enter the heiau, to eat bananas, coconuts, and pork, and to climb over the sacred places. You will find record of this in the history of Ka-ula-hea-nui-o-ka-moku, in that of Ku-ali‘i, and in most of the histories of ancient rulers. Free eating followed the death of the ruling chief; after the period of mourning was over the new ruler placed the land under a new tabu following old lines. (Kamakau 1992:222)

Immediately upon the death of Kamehameha I, Liholiho was sent away to Kawaihae to keep him safe from the impurities of Kamakahonu brought about from the death of Kamehameha. After purification ceremonies Liholiho returned to Kamakahonu:

> Then Liholiho on this first night of his arrival ate some of the tabu dog meat free only to the chiefesses; he entered the *lauhala* house free only to them; whatever he desired he reached out for; everything was supplied, even those things generally to be found only in a tabu house. The people saw the men drinking rum with the women *kahu* and smoking tobacco, and thought it was to mark the ending of the tabu of a chief. The chiefs saw with satisfaction the ending of the chief's tabu and the freeing of the eating tabu. The *kahu* said to the chief, "Make eating free over the whole kingdom from Hawaii to Oahu and let it be extended to Kauai!" and Liholiho consented. Then pork to be eaten free was taken to the country districts and given to commoners, both men and women, and free eating was introduced all over the group. Messengers were sent to Maui, Molokai, Oahu and all the way to Kauai, Ka-umu-ali‘i consented to the free eating and it was accepted on Kauai. (Kamakau 1992:225)

When Liholiho, Kamehameha II, ate the *kapu* dog meat, entered the *lauhala* house and did whatever he desired it was still during a time when he had not reinstituted the eating *kapu* but others appear to have thought otherwise. With an indefinite period of free-eating and the lack of the reinstatement of other *kapu* extending from Hawai‘i to Kaua‘i, and the arrival of the Christian missionaries shortly thereafter, the traditional religion had been officially replaced by Christianity within a year following the death of Kamehameha I (see Kame‘eleihiwa (1992) for an alternative explanation suggesting an intentioned overthrow of the *‘ai kapu*).

"*Ali‘i Nui* received their political power from Kū; therefore, an *Ali‘i* must be religious and proclaim the *‘Aikapu* upon his ascent to the office of *Mō‘i*. If he did not his people would reject him as irreligious and other *Ali‘i Nui* would be tempted to usurp his position" (Kame‘eleihiwa 1992:39). Liholiho's cousin, Kekuaokalani, caretaker of the war god Kū‘kā‘ilimoku, was one such *Ali‘i Nui* and he revolted. However, by December of 1819 the revolution was quelled. Kamehameha II sent edicts throughout the kingdom renouncing the ancient state religion, ordering the destruction of the *heiau* images, and ordering that the *heiau* structures be destroyed or abandoned and left to deteriorate. He did, however, allow the personal family religion, the ‘*aumakua* worship, to continue (Oliver 1961; Kamakau 1992).

In October of 1819, seventeen Protestant missionaries had set sail from Boston to Hawai‘i. They arrived in Kailua-Kona on March 30, 1820 to a society with a religious void to fill. Many of the *ali‘i,* who were already exposed to western material culture, welcomed the opportunity to become educated in a western style and adopt their dress and religion. Soon they were rewarding their teachers with land and positions in the Hawaiian government. These Christian missionaries were some of the first Europeans to reside permanently on the island, besides sailors who jumped ship. In 1823, William Ellis visited this coastal area during his tour of the Island of Hawai‘i. After leaving Ke‘ei village for Hōnauanu, he described passing the location of the decisive battle of Moku‘ōhai where Kamehameha defeated his cousin Kiwala‘ō for control of half of the island of Hawai‘i. His description of the battlefield follows:

> Since leaving Ke‘ei, we had seen several heaps of stones raised over the bones of the slain, but now became more numerous. As we passed along, our guide pointed out the place where Tairi, Tamehameha's [Kamehameha's] war-god, stood, surrounded by the priests, and, a little further on, he showed us the place where Tamehameha himself, his sisters, and friends, fought during the early part of the eighth day. A few minutes after we left it, we reached a large heap of stones overgrown with moss, which marks the spot where Kauikeouli [Kiwalao] was slain. (Ellis 1963:95)

In 1824, Reverend James Ely established the South Kona Mission Station on the Flats of Ka‘awaloa (Maly and Maly 2002). The Mission set up not only churches in South Kona, but schools as well (for formal education and the spread of the Christian word). In 1847, the area between Keauhou and Kealekekua supported eleven schools, with one school each at Ka'awaloa and at Kealekekua (Maly and Maly 2001:213). Maly and Maly describe a schoolhouse at Ke'ei, "as a 'Hale Pohaku'(stone house) in good condition, at which 20 students were enrolled" [HAS – Series 262, Agents Reports, 1877] (2002:83). Due to population decrease and economic issues, the schoolhouse was no longer operating by 1882 (Maly and Maly 2002:83). In the Missionaries' reports, much information pertaining to daily life in South Kona, church happenings, and local populations can be found

(see Maly and Maly 2002). One missionary letter, written by C. Forbes on November 8, 1835, states, "I suppose there are something like 2,000 inhabitants on that [south] side of the bay in the villages of Kealakekua, Napopo-Keii [Nāpoʻopoʻo & Keʻei]" (cited in Maly and Maly 2002:82).

By the mid-nineteenth century, the ever-growing population of Westerners had forced socioeconomic and demographic changes that promoted the establishment of a Euro-American style of land ownership. As Osorio explains, it was foreign economic interests originally promoted by the Hawaiian League and their "bayonet constitution" that ultimately infiltrated beliefs, ideas, and institutions; and as he put it, "literally and figuratively dismembered the lāhui (the people) from their traditions, their land and ultimately their government" (2002:5). Indeed, the Hawaiian culture was well on its way towards Western assimilation, although not without resistance (Silva 2004), as industry in Hawaiʻi went from the sandalwood trade, to a short-lived whaling industry, to the more lucrative, but environmentally destructive sugar industry. Changes in land tenure were promoted primarily by the missionaries and Western businessmen in the island kingdom, claiming that they were hesitant to enter business deals on leasehold land.

In 1848 the *Māhele ʻĀina* became the vehicle for determining ownership of native lands. The *Māhele* (division) defined the land interests of Kamehameha III (the King), the high-ranking chiefs, and the *konohiki*. During the *Māhele*, all lands in the Kingdom of Hawaiʻi were placed in one of three categories: (1) Crown Lands (for the occupant of the throne); (2) Government Lands; and (3) *Konohiki* Lands (Chinen 1958:vii and Chinen 1961:13). The chiefs and *konohiki* were required to present their claims to the Land Commission to receive awards for lands provided to them by Kamehameha III. They were also required to provide commutations to the government in order to receive royal patents on their awards. The lands were identified by name only, with the understanding that the ancient boundaries would prevail until the land could be surveyed. This process expedited the work of the Land Commission.

All three types of land were subject to the rights of the native tenants therein; those individuals who lived on the land and worked it for their subsistence and the welfare of the chiefs (Sinoto and Kelly 1970). Native tenants could claim, and acquire title to, *kuleana* parcels that they actively lived on or farmed at the time of the *Māhele*. The Kuleana Act of December 21, 1849 provided the framework by which native tenants could apply for and receive fee-simple interest in their *kuleana* lands from the Land Commission. The Board of Commissioners over saw the program and administered the lands as Land Commission Awards (LCAw.).

The *ahupuaʻa* of Kahauloa 2nd was awarded as an *aliʻi* award to Kanele (LCAw. 32; Royal Patent No. 4513) during the *Māhele*, who also received a 0.l5 acre parcel LCAw. 204B (Royal Patent No. 8393). This land was inherited by Bernice Pauahi Bishop and eventually came to be held by the Kamehameha Schools Bishop Estate. The boundaries of Kahauloa 2nd were surveyed in 1876 for the estate of C.R. Bishop (No. 106). Thirteen *kuleana* claims were made for Kauhaloa 2nd Ahupua'a, of which eight were awarded. At least three of these awardees also claimed agricultural lands distant from their house lots, in more *mauka* sections of the *ahupuaʻa*.

The population of South Kona declined during the early nineteenth century and Hawaiians maintained marginalized communities outside of the central population centers. These communities were located in the "out-of-the-way" places, like Kaʻawaloa Point, while the recently immigrated Asian and *haole* populations lived above the *pali* (Alvarez 1990). In the aftermath of the *Māhele*, economic interests in the region swiftly changed from the traditional Hawaiian land tenure system of subsistence farming and regional trading networks to the more European based cash crops including coffee, tobacco, sugar, and pineapple, and emphasized dairy and cattle ranching.

The current project area is adjacent to Keawaiki Beach Lots, which were established in the early 1960s by the then landowner Kamehameha Schools Bishop Estate. The ten (originally 11) lots were sold in fee simple and Kamehameha Schools retained the remaining land *mauka* of the Beach Lots (including land included in the current lease agreement between Kamehameha Schools and the Bundrants). A 1976 USGS aerial photograph shows that the area was relatively undeveloped at that time (Figure 8).

Recent improvements to the property have included the construction of a new well-house building which replaced a former wooden structure that was present in 2008. The well appears on a 1959 USGS map of Honaunau Quadrangle (Figure 9), but is not labeled on a 1928 USGS map of the same area (Figure 10). A 1954 USGS aerial photograph of the area shows the location of the well-site adjacent to Keʻei Beach Road (Figure 11), suggesting the well was constructed sometime between 1928 and 1954.

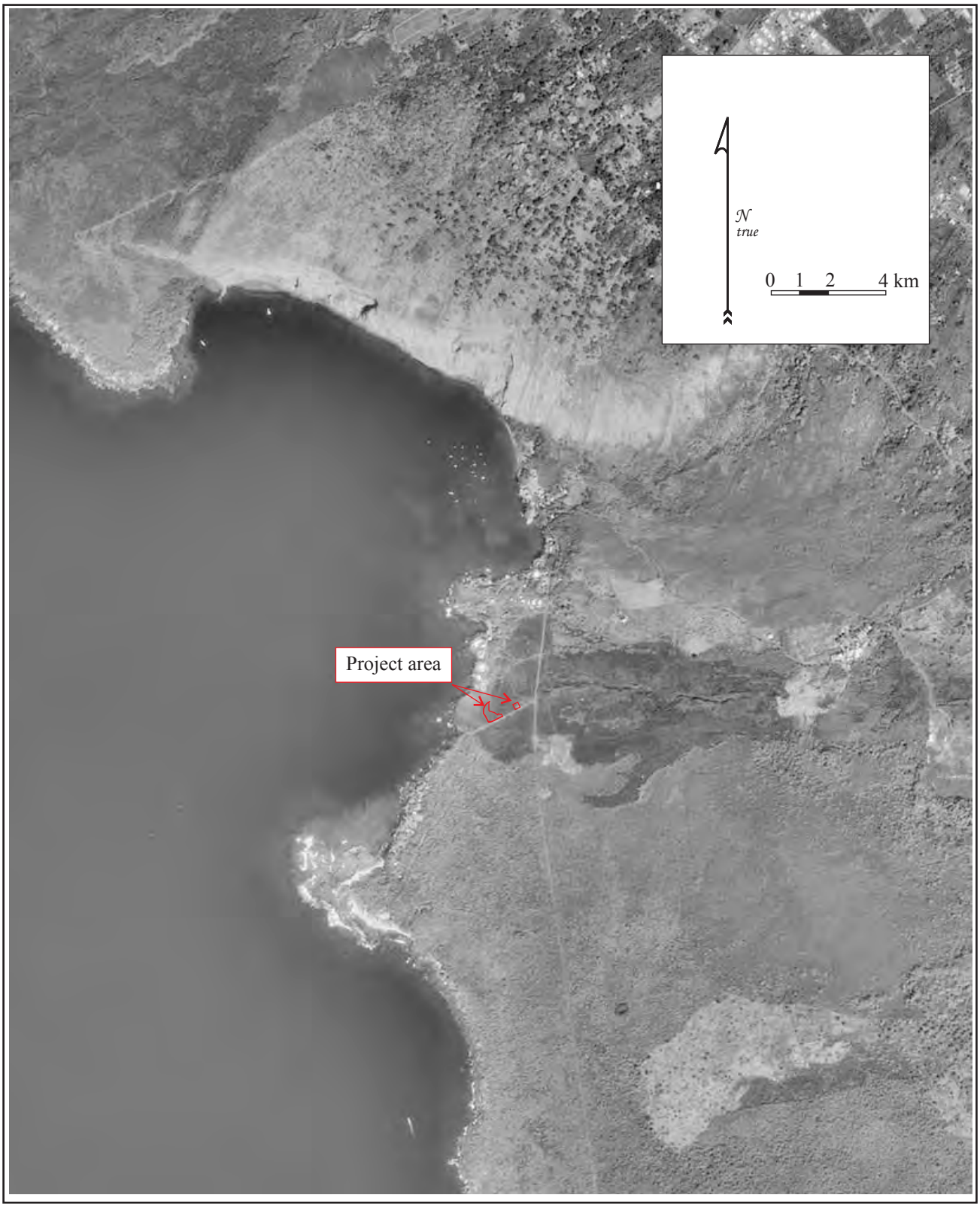

Figure 8. Portion of a December, 13 1976 USGS aerial photograph showing Keawaiki Beach lots (north and west of project area).

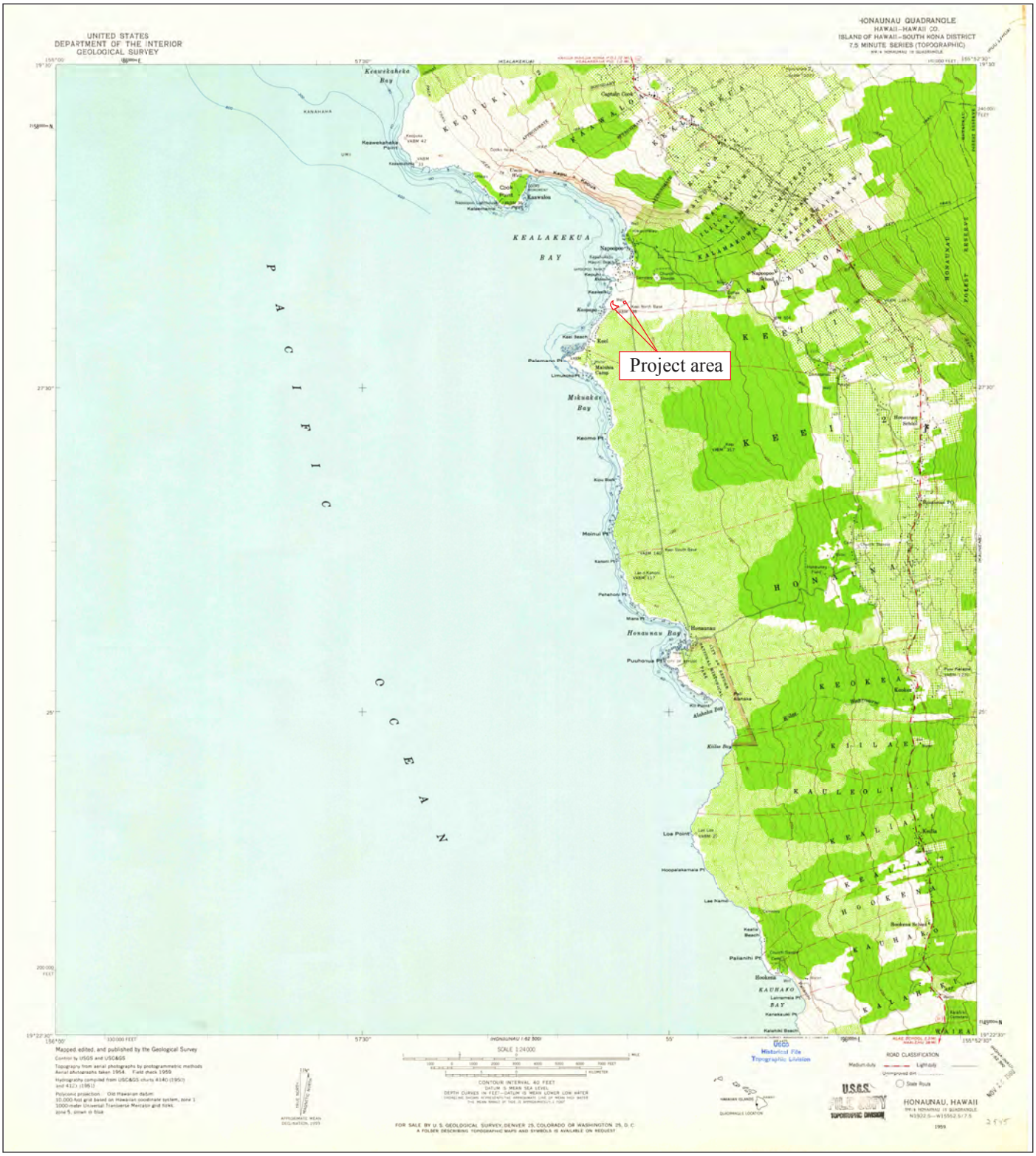

Figure 9. 1959 USGS Map of Hōnaunau Quadrangle, showing current study area.

Figure 10. 1928 USGS Hōnaunau Quadrangle Map showing current study area.

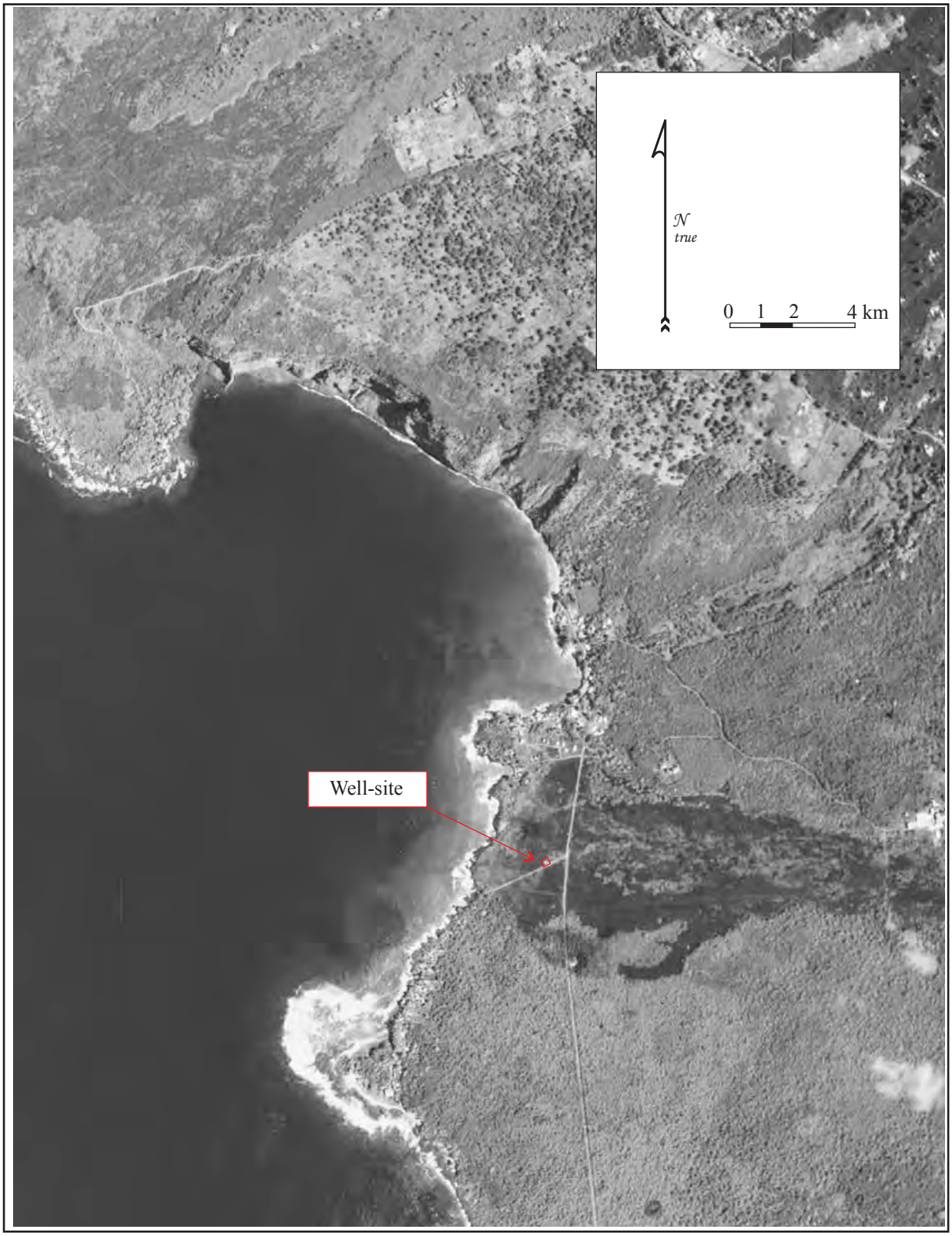

Figure 11. Portion of an October 7, 1954 aerial photograph showing well-site location.

CONSULTATION

When assessing potential cultural impacts to resources, practices, and beliefs; input gathered from community members with genealogical ties and/or long-standing residency relationships to the study area is vital. It is precisely to these individuals for whom meaning and value are ascribed to traditional resources and practices. Community members may also retain traditional knowledge and beliefs unavailable elsewhere in the historical or cultural record of a place. As part of the earlier assessment study (Rechtman 2009) several individuals were consulted; during those consultations other potential interested parties were identified that were also contacted. The information obtained during the earlier study (Rechtman 2009) was for the same project area as the current study, thus a summary of the earlier consultation is present here along with a follow-up consultation with one of the earlier participants (Gordon Leslie) who possesses a wealth of cultural and historical knowledge of the current study area.

Steven Wilcox was contacted by telephone on June 22, 2009. His family (a *kamaʻāina* family with genealogical ties to Kauaʻi) now owns and has resided on five parcels at Kahauloa Bay adjacent to the Keawaiki Beach Lots for over 30 years. Steven's father Allen C. Wilcox, Jr. first moved to the area in the early 1970s and lived there until his passing in 2003. Steven related that from his experience the only traditional and customary use of the area has been fishing that occurs along the rocky shoreline fronting his family's properties and the Keawaiki Beach Lots.

On July 7, 2009, an informal consultation was conducted at the Kahauloa Bay extended family residence of Maxiedel "Uncle Del" Navas and Lawrence Alu (Uncle Del's nephew). These individuals have strong genealogical ties to the area having descended from Hawaiians resident in Kahauloa dating from pre *Māhele* times, and likely Precontact times. Uncle Del's personal recollection of the current study area extends back to 1956, when he was a small boy walking the trails and roads and collecting water from the formerly several (now only one) *punawai* in and around Kahauloa Bay. He explained that before the houses along Keawaiki Beach were built, foot traffic for travel to Keʻei was along the old coastal trail where the houses are now or for subsistence activities directly along the shoreline; and that people also used the roadway that is *mauka* of the houses for vehicular travel. His nephew Lawrence added that now the direct shoreline is impassible due to excessive vegetation planting, and that the lateral vehicle road has also been blocked in the vicinity of the Wilcox parcels.

In a 2002 legal proceeding, the Office of Environmental Quality Control recognized the organization Mālama Pono Kealakekua as an affected citizens group that must be consulted in the Environmental Assessment process relative to development of the State Park at Kealakekua Bay. Mr. Matsukawa, a principal in that group, was contacted by telephone on July 9, 2009 and he related that as far as he knew the group Mālama Pono Kealakekua, of which he is a member, has been idle for several years. On June 22, 2009, Gordon Leslie was consulted by telephone. Gordon's genealogy ties him to South Kona and he is a resident at Manini Beach along the southern shore of Kealakekua Bay, situated just to the north of the current study area. He is culturally active in the community and has served as the chair of the cultural committee of Mālama Pono Kealakekua. Gordon related that his family once own land in the immediate vicinity of the study area. A follow-up phone call was made with Mr. Leslie on December 1, 2013 to discuss the current development plans. He explained that the well was formerly used in association with coffee milling and he believed that untreated, the water was not potable but was suitable for agricultural uses. The current proposed caretaker house and well development plans were described to Mr. Leslie and he stated that he had no concerns or objections.

POTENTIAL CULTURAL IMPACTS

The Office of Environmental Quality Control (OEQC) guidelines identify several possible types of cultural practices and beliefs that are subject to assessment. These include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs. The guidelines also identify the types of potential cultural resources, associated with cultural practices and beliefs that are subject to assessment. Essentially these are natural features of the landscape and historic sites, including traditional cultural properties. A working definition of traditional cultural property is:

> … any historic property associated with the traditional practices and beliefs of an ethnic community or members of that community for more than fifty years. These traditions shall be founded in an ethnic community's history and contribute to maintaining the ethnic community's cultural identity. Traditional associations are those demonstrating a continuity of practice or belief until present or those documented in historical source materials, or both.

The origin of the concept of traditional cultural property is found in National Register Bulletin 38 published by the U.S. Department of Interior-National Park Service. "Traditional" as it is used, implies a time depth of at least 50 years, and a generalized mode of transmission of information from one generation to the next, either orally or by act. "Cultural" refers to the beliefs, practices, lifeways, and social institutions of a given community. The use of the term "Property" defines this category of resource as an identifiable place. Traditional cultural properties are not intangible, they must have some kind of boundary; and are subject to the same kind of evaluation as any other historic resource, with one very important exception. By definition, the significance of traditional cultural properties should be determined by the community that values them.

It is however with the definition of "Property" wherein there lies an inherent contradiction, and corresponding difficulty in the process of identification and evaluation of potential Hawaiian traditional cultural properties, because it is precisely the concept of boundaries that runs counter to the traditional Hawaiian belief system. The sacredness of a particular landscape feature is often times cosmologically tied to the rest of the landscape as well as to other features on it. To limit a property to a specifically defined area may actually partition it from what makes it significant in the first place. A further analytical framework for addressing the preservation and protection of customary and traditional native practices specific to Hawaiian communities resulted from the *Ka Pa'akai O Ka'āina* v Land Use Commission court case. The court decision established a three-part process relative to evaluating such potential impacts: first, to identify whether any valued cultural, historical, or natural resources are present; and identify the extent to which any traditional and customary native Hawaiian rights are exercised; second, to identify the extent to which those resources and rights will be affected or impaired; and third, specify any mitigation actions to be taken to reasonably protect native Hawaiian rights if they are found to exist.

As a result of the archaeological inventory survey (Zenobi et al. 2013) the identified significant archaeological resources are recommended for preservation, and no archaeological sites other than the existing well will be impacted by the current proposed development activities. During the earlier consultation with community members (Rechtman 2009) and in the follow-up interviews done as a part of the current study there were no cultural resources or traditional practices identified that would be directly impacted by the current proposed construction of a caretaker house and water well. It is the assessment of the current study that the addition of another residential structure and an improved water supply within the already developed Keawaiki Beach lots will not have an effect, singular or cumulative, on this particular landscape.

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