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OFFICE OF ENVIRONMENTAL  
QUALITY CONTROL

January 28, 2003

Ms. Genevieve Salmonson, Director  
Office of Environmental Quality Control  
235 South Beretania Street, Suite 702  
Honolulu, HI 96813

Dear Ms. Salmonson:

**Subject: Finding of No Significant Impact (FONSI)**  
**Project: Kamehameha Investment Corporation**  
**TMK: 7-8-010: Por. 35 and Por. 93**

The Hawaii County Planning Department has reviewed the comments received during the 30-day public comment period which began on December 9, 2002 - OEQC Publication Date. The agency has determined that this project will not have significant environmental effects and has issued a FONSI. Please publish this notice in the February 8, 2003 OEQC Environmental Notice. ✓

We have enclosed a completed OEQC Publication Form and four copies of the Final Environmental Assessment (FEA). If you have any questions, please call Norman Hayashi of this department at 961-8288.

Sincerely,

A handwritten signature in cursive script that reads "Chris Yuen".

CHRISTOPHER J. YUEN  
Planning Director

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Enclosures: OEQC Publication Form  
4 copies of FEA

Ms. Genevieve Salmonson, Director  
Office of Environmental Quality Control  
Page 2  
January 27, 2003

cc: Long Range Planning  
Steven Lim, Carlsmith Ball LLC  
Kamehameha Investment Corporation

FEB 8 2003

2003-02-09-HA-FEA

FILE COPY

FINAL ENVIRONMENTAL ASSESSMENT

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*KAMEHAMEHA INVESTMENT CORPORATION*

*Parcel 14C*

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TMKs: (3) 7-8-10:por. 35 and por. 93 (14.47 acres)

**Prepared for:**  
Kamehameha Investment Corporation

**Prepared by:**  
Steven S.C. Lim  
Carlsmith Ball LLP  
121 Waiuanue Avenue  
Hilo, Hawaii 96720  
Telephone: (808) 935-6644

January, 2003

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## **SUMMARY OF PROPOSED ACTION**

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<b>Applicant/Owner:</b>	Kamehameha Investment Corporation, a Hawaii corporation
<b>Property Location:</b>	Kahaluu and Keauhou 1st, District of North Kona, corner of Alii Drive as it adjoins the future Kahului-Keauhou Parkway (fka Alii Highway).
<b>Tax Map Key and Parcel Size:</b>	7-8-10:por. 35 (Parcel 14A-1) and 7-8-10:por. 93 (Parcel 14B-1) Total area 14.47 acres [13.129-acres (Parcel 14A-1) / 1.341-acres (Parcel 14B-1)]
<b>Approving Agency:</b>	County of Hawaii Planning Department 101 Pauahi Street, Suite 3 Hilo, Hawaii 96720
<b>Consultant:</b>	Steven S. C. Lim Carlsmith Ball LLP 121 Waiuanue Avenue Hilo, Hawaii 96720 Telephone: 935-6644
<b>Proposed Action:</b>	Applicant Kamehameha Investment Corporation ("KIC") seeks a Special Management Area Use Permit to allow for the development of up to 200 multiple-family residential units and related improvements on approximately 14.47 acres of land [13.129-acre portion of Parcel 35 (KIC Area 14A-1) and a 1.341-acre portion of Parcel 93 (KIC Area 14B-1)] ("Property") located at the corner of Alii Drive and the proposed Kahului-Keauhou Parkway at Kahaluu and Keauhou 1st, District of North Kona. The Property is within the County Special Management Area ("SMA") which extends from the coastline to the makai boundary of the Kuakini Highway right-of-way. The Property is located entirely within the Kahaluu Historic District (SIHP 50-10-37-4150) which was included in the National Register of Historic Places (NRHP) on December 27, 1974. The Kahaluu Historic District was removed from the State Register in March, 1980. The Applicant will comply with the Preservation and Data Recovery Plans currently under review by, and as approved by the State Historic Preservation Division.
<b>Anticipated Determination:</b>	The proposed action is expected to have no significant impact on the environment, therefore, a Finding of No Significant Impact ("FONSI") is anticipated, subject to the provisions of Section 11-200-9, Hawaii Administrative Rules.
<b>Agencies / Community Assn. Consulted</b>	State of Hawaii <ul style="list-style-type: none"><li>• Department of Land &amp; Natural Resources, Historic Preservation Division &amp; Land Management</li><li>• Department of Transportation</li><li>• Department of Health, Office of Environmental &amp; Quality Control</li></ul> County of Hawaii <ul style="list-style-type: none"><li>• Planning Department</li><li>• Department of Water Supply</li><li>• Department of Public Works</li><li>• Fire Department</li><li>• Police Department</li><li>• Department of Parks and Recreation</li><li>• Department of Environmental Management</li></ul> Community Associations / Adjacent Property Owners <ul style="list-style-type: none"><li>• Keauhou Cultural Advisory Committee</li><li>• Keauhou Outreach Group (as listed in Exhibit 10)</li></ul>

## CHAPTER 1

### INTRODUCTION

#### 1.1 Identification of Applicant and Ownership

The Applicant is Kamehameha Investment Corporation ("KIC"), a Hawaii corporation, whose mailing address is 567 South King Street, Suite 600, Honolulu, Hawaii 96813. The Applicant is the fee owner of the properties, being portions of R.P. 6856, L.C. Aw. 7713, Ap. 6 to V. Kamamalu and R.P. 4475, L.C. Aw. 7713, Ap. 7 to V. Kamamalu at Kahaluu and Keauhou 1st, District of North Kona, Island, County and State of Hawaii, being Parcels 14A-1 and 14B-1, more particularly identified as tax map key parcels: (3) 7-8-10:por. 35 and por. 93 (Figures 1 and 2). The Applicant's ownership of the properties is evidenced by the Deed, recorded on May 5, 1998, in the Bureau of Conveyances of the State of Hawaii as Document No. 98-62488.

#### 1.2 Project Overview

The Applicant is proposing to develop a multiple-family residential project of up to 200 units and related improvements on approximately 14.47 acres of land, located in Kahaluu and Keauhou 1<sup>st</sup>, about five miles south of Kailua-Kona. The site abuts Alii Drive on its southwest (makai) boundary and the proposed Kahului-Keauhou Parkway on its east (mauka) boundary. The Property is located 700 feet inland from the shoreline and is approximately 100-110 feet in elevation along the proposed Kahului-Keauhou Parkway and 30 feet in elevation along Alii Drive. The components of the Proposed Action (Figure 3) are as follows:

- Parcel 35 (portion)  
13.129 acres (KIC Area 14A-1)  
1-, 2- and 3-story buildings comprising up to approximately 176 units, with an overall density of approximately 13.4 units per acre. The maximum density for this area is approximately 194 units. The proposed units will be approximately 1,100 square feet in area; and
- Parcel 93 (portion)  
1.341 acres (KIC Area 14B-1)  
1-, 2- and 3-story buildings comprising up to approximately 24 units, with an overall density of approximately 17.89 units per acre. The maximum density for this area is approximately 30 units. The proposed units will be approximately 1,100 square feet in area.

The historic sites identified within portions of Parcels 35 and 93 located makai of the Great Wall of Kuakini (Kuakini Wall), including the Kuakini Wall are not included within the Project site and will be subdivided off and consolidated with the archaeological preserve and cultural complex located within a portion of TMK: (3) 7-8-10:35.

The Keauhou Resort lands were master-planned in the 1960's and 1970's to allow for the orderly development of residential communities within a resort setting. Residential sales within the Keauhou Resort have been relatively strong due in large part to the well-planned resort-residential community environment, the range and quality of residential products being offered, and the wealth of nearby commercial and recreational amenities. The purpose of the Proposed Action is to provide a broad mix of residential opportunities in the North Kona region in response to existing and projected market demands for retirement, second home, and vacation rental units, as well as primary and local housing units.

The Property is located adjacent to, and makai of the existing Keauhou Shopping Village complex and will offer residents with readily available infrastructure and public support services within close proximity. The Proposed Action has been planned to respond to the topographical characteristics of the site and sensitivity to the environmental and cultural considerations of the site, including the integration and protection of archaeological site complexes. Those areas of the site not planned for residential development consists of the portion makai of and including the Kuakini Wall, and the archaeological preserve (SIHP 50-10-37-7828).

### **1.3 Purpose and Contents of this Document**

This Final Environmental Assessment ("FEA") has been prepared in accordance with the provisions of the Hawaii Revised Statutes ("HRS"), Chapter 343, and Title 11, Department of Health ("DOH"), Chapter 200, Environmental Impact Rules, Sections 11-200-6 through 11-200-13. Section 11-200-6(b) establishes certain classes of action which subject the Applicant to compliance with Chapter 343, HRS. These classes include:

- Use of State or County lands;
- Use of lands classified within the Conservation District;
- Use of the shoreline area;
- Use of any historic site, as designated within National or Hawaii Registers;
- Use within the Waikiki/Diamond Head area of Oahu;

- Any amendment to existing County General Plan that would result in designations other than Agriculture, Conservation, or Preservation;
- Use of State or County funds; and
- Construction of new, or expansion or modification of helicopter facilities.

The Properties are located within the Kahalu'u Historic District, which is listed on the National Register of Historic Places ("NRHP"). The proposed use within the Kahalu'u Historic District, requires compliance with the provisions of Chapter 343, HRS. Therefore, this document serves as the FEA for the proposed action at Keauhou. A description of the affected environment, the alternatives considered to date, proposed mitigation measures, preliminary impact determinations based on the information contained herein, and the reasons supporting those determinations are provided.

This FEA has been prepared in support of the Special Management Area ("SMA") Use Permit application to allow for the development of the proposed multiple-family residential project of up to 200 units and related improvements within the Keauhou Resort area on the island of Hawaii.

For purposes of this FEA, the improvements being proposed by the Applicant will be called either the "Project Site" or the "Proposed Action", and the lands on which the Project is proposed will be called the "Property."

#### 1.4 Identification of Approving Agency

The governmental permits and approvals needed to implement the Proposed Action are listed as follows:

	<u>Approvals Needed</u>	<u>Agency</u>
Hawaii County:	HRS Chapter 343 compliance Special Management Area (SMA) Permit Final Plan Approval Building Permits Consolidation/Resubdivision	Planning Department/ Planning Commission Planning Department Dept. of Public Works Planning Department
State of Hawaii:	NPDES	Department of Health
Federal Government:	None	

This FEA is being submitted in conjunction with a Special Management Area Use Permit application to the Planning Department, in accordance with Rule 9-11, Planning

Commission Rules of Practice and Procedure. The approving agency for this environmental assessment is the Planning Department.

### 1.5 Identification of Agencies Consulted in Making Assessment

The following agencies provided assistance or information in preparing this assessment:

#### State Agencies

- DLNR, State Historic Preservation Division and Land Management
- Department of Transportation
- Department of Education
- Department of Health, Office of Environmental & Quality Control

#### County Agencies

- Planning Department
- Department of Water Supply
- Department of Public Works
- Fire Department
- Police Department
- Department of Parks and Recreation
- Department of Environmental Management

## CHAPTER 2

### DESCRIPTION OF THE PROPOSED ACTION

#### 2.1 Project Location

The Property is located at the corner of Alii Drive and the proposed Kahului-Keauhou Parkway at Kahaluu and Keauhou 1st, District of North Kona, approximately five miles south of the Kailua-Kona (Figure 2). The Property abuts Alii Drive on its southwest (makai) boundary and the proposed Kahului-Keauhou Parkway on its east (mauka) boundary. Separating the Property from the shoreline, across (makai) of Alii Drive, is existing resort development: Ohana Keauhou Beach Resort, the former Kona Lagoon Hotel, and the Keauhou Kona Surf & Racquet Club. East and south of the Property, across Alii Drive, are the Keauhou Gardens Resort condominium and the Kona Country Club. The Keauhou Village Shopping Center complex is located east (mauka) and adjacent to the proposed Kahului-Keauhou Parkway.

#### 2.2 Existing Conditions

The Property is classified "Urban" by the State Land Use Commission. The Urban District is generally defined as lands in urban use with sufficient reserve to accommodate foreseeable growth. Land uses within the Urban Districts are administered by the counties in which they are located.

The County General Plan LUPAG map designation for the Property is "Medium Density Urban" east (mauka) of the Kuakini Wall and "Open" south (makai) of the Kuakini Wall. Medium Density Urban is defined as village neighborhood commercial and residential and related functions (3-story commercial; residential - up to 35 units per acre). The Open designation is defined as parks and historic sites.

The County zoning designation classifies a portion of the Property as Multiple-Family Residential (RM-3.0) and Open (O) within TMK:(3) 7-8-10:por. 35 and Multiple-Family Residential (RM-3.0) and Open (O) within TMK:(3) 7-8-10:por. 93.

The Property is located within the Special Management Area, which extends from the coastline to the makai boundary of the Kuakini Highway right-of-way, and is, therefore, subject to the SMA Rules and Regulations of the County of Hawaii.

**2.3 Existing Uses and Activities**

The Property is an undeveloped parcel, characterized by open scrub grassland and kiawe thickets. The Kuakini Wall (SIHP 50-10-27-6302) traverses the makai boundaries of the properties. The Property is located entirely within the Kahaluu Historic District (SIHP 50-10-37-4150) which was included in the National Register of Historic Places ("NRHP") in December, 1974, and removed from the Hawaii Register of Historic Places in March, 1980. The Property is also located within the Kona Field System (SIHP 50-10-37-6601).

**2.3 Surrounding Uses and Activities**

The surrounding areas encompass the master-planned Keauhou Resort lands. The Property is located on the corner of the proposed Kahului-Keauhou Parkway alignment to the east (mauka) and Alii Drive to the west (makai). The Keauhou Shopping Center complex is located to the east (mauka) and zoned Village Commercial (CV-7.5). Existing resort developments, Ohana Keauhou Beach Resort, the former Kona Lagoon Hotel, and the Keauhou Kona Surf & Racquet Club are located to the west (makai) across of Alii Drive and are zoned Resort (V-.75). The Kona Gardens botanical and cultural garden is located within Parcel 35 and zoned Resort (V-4). Southeast of the Property, across Alii Drive, are the Keauhou Gardens Resort condominiums zoned Multiple-Family (RM-2) and the Kona Country Club golf course. The Keauhou Lands to the north are zoned Multiple-Family (RM-2 and 3.5) and Agricultural (A-5a).

**2.4 Timetable for Development**

The Applicant proposes to begin work on the proposed improvements upon receipt of all required permits from the County.

**CHAPTER 3****DESCRIPTION OF THE ENVIRONMENTAL CHARACTERISTICS OF THE PROPOSED ACTION - Impacts and Mitigation****3.1 Physical Characteristics****3.1.1 Geology, Physiography and Climate**

*Setting.* The Property is presently vacant and rises approximately 100-110 feet in elevation along the eastern boundary along the proposed Kahului-Keauhou Parkway, 30 feet in elevation along Alii Drive, and is approximately 700 feet inland from the shoreline. Located on remnants of lava flows from Hualalai, the Property is geographically similar to other sites within the Keauhou Resort which are characterized primarily by exposed a'a lava rockland and scattered pahoehoe exposures. The topography mauka of Kuakini Wall has a more pronounced slope and an elevation that provides relatively more views toward the ocean. The little soil present consists almost entirely of shallow, small pockets of slowly decaying organic matter. The general slope of the properties are approximately 0 to 10%.

Winds in this region are often light and variable due to the wind shadow effect caused by Hualalai and Mauna Loa, though, storms from the south during winter months can bring in very strong winds for brief periods. Temperatures range from the low 60° to a maximum in the high 80 to lower 90°. Average annual rainfall is approximately 30 inches.

**3.1.2 Soils and Agricultural Potential**

Soils in Hawaii are commonly rated in terms of three classifications systems: (1) Land Study Bureau-Detailed Land Classifications, (2) USDA-SCS Soil Survey, and (3) Agricultural Lands of Importance to the State of Hawaii. These are discussed as follows:

Detailed Land Classification. Based on the five-level productivity rating system from the Land Study Bureau's 1967 Detailed Land Classifications, Island of Hawaii (Baker, et al., 1965), where A represents the highest rating and E the lowest, the soil within the Property is classified as "E," or "Very Poorly Suited," to agricultural productivity. None of the Properties are categorized as A or B soils, which are considered important for agricultural purposes under Hawaii Revised Statutes, Section 205-4.5.

Soil Survey. Soils on the Property are identified by the Soil Survey of the Island of Hawaii (USDA-SCS 1973) as "rLV", lava flows, Aa. This lava has practically no soil covering and is bare of vegetation, except for mosses, lichens, ferns, and small ohia trees. These soils are rated as poorly suited for agriculture due to their rocky character, relatively thin depths, and rapid permeability.

Agricultural Lands of Importance to the State of Hawaii. The Agricultural Lands of Importance to the State of Hawaii (ALISH) classification system identifies three types of agricultural lands, based on characteristics such as soil quality, growing season and moisture supply. The three classifications used are Prime, Unique, and Other Important Lands. None of the lands within the Property are classified in the ALISH system.

Impacts and Mitigation. The proposed action would not result in loss of any valuable agricultural lands, since the soils on the properties are poor, and is currently not in agricultural use.

### 3.1.3 Natural Hazards

#### *Setting.*

Surface Water and Drainage. The Property lands are situated within an area of relatively low rainfall amounts and intensities (20 to 30 inches annually). The land is comprised of porous and unweathered lava and has sparse soil cover, which allow much of the rainfall to percolate to the water table. There are no discernible streams or drainage ways at the Property and runoff is unlikely due to the high permeability rate. No naturally occurring or well-defined drainage ways or drainage outlets are found on-site, and surface water run-off occurs only at rare times of intense rainfall. Development of the Project site will not have any significant adverse effect on the drainage patterns off- and on-site.

Flood and Coastal Hazards. The Property is located outside of the tsunami inundation area and therefore, will be minimally impacted by storm wave and tsunami hazards. In addition, the Property is designated as "X" or outside of the 500-year flood plain per Federal Emergency Management Agency (FEMA) and therefore not shown on Flood Insurance Rate Maps (FIRM) on file with the County Department of Public Works. Additionally, no serious flood problems or natural drainage features are found in the area. All development within the Project site would comply with the requirements of Chapter 27, Flood Control, of the Hawaii County Code.

Volcanic and Earthquake Hazards. The U.S. Geological Survey divides the Island into zones that are ranked from 1 through 9 based on the probability of lava coverage. The

USGS Lava Flow Hazard Maps show the Property to be within Lava Flow Hazard Zone 4. Zone 4 includes all of Hualalai, where the frequency of eruptions is lower than on Kilauea and Mauna Loa. In the last 3,000 years, Hualalai has erupted near its summit, along the northwest and south-southwest rift zones, and from vents on the north flank of the volcano. Twenty-five percent of the volcano is covered by flows less than 1,000 years old.

*Impacts and Mitigation.* The Property is not located within the coastal high hazard area, and thus the degree of risk to human life is minimal. The placement of the proposed improvements is sufficiently inland from the shoreline. All development generated runoff will be disposed on-site. In order to minimize potential damage to structures as a result of earthquakes, all buildings and structures within the Project site will be designed and constructed in compliance with applicable Building Codes and Standards.

#### 3.1.4 Flora

*Setting.* A botanical surveys prepared by Char & Associates in June, 1988, encompassed 275 acres bounded by the Kamehameha III and Kuakini Highways and Alii Drive (Exhibit 1). The survey, which includes the Project site (Area 2) concluded that there is no intact native plant community present within the area. The survey further concluded that there are no listed, proposed, or candidate threatened and endangered species, as designated by the Federal and/or State government found on the site. Vegetation surrounding the area is typical of that found in dry leeward areas, where kiawe, koa haole and exotic weeds and grasses have replaced most native species.

*Impacts and Mitigation.* The Proposed Action is not expected to significantly impact existing flora and vegetation since all the dominant species now on the site are common xerophytic exotics such as kiawe.

#### 3.1.5 Fauna

*Setting.* The survey of the avifauna and feral mammals prepared by Phillip Bruner in August, 1988 encompassed approximately 315 acres and includes the Project site (Exhibit 2). No endemic land birds, migratory shorebirds, no resident indigenous land birds, seabirds or waterbirds were observed and recorded during the field survey. Ten exotic bird species and one feral mammal were recorded during the field survey. The survey concluded that the present environment provides a moderate range of habitats which are utilized by an array of exotic species of birds, and no endangered species were observed.

*Impacts and Mitigation.* The Proposed Action would also not impact existing avifauna and feral mammal habitat as no rare, endangered or threatened species have been evidenced within the Property or surrounding area. The on-site wildlife survey conducted by Phillip Bruner in June, 1979, also notes that no endangered or native species are known to inhabit the Project site.

### 3.1.6 Valued Cultural, Historical and Natural Resources

*Setting.* The Property is located entirely within the Kahalu'u Historic District (SIHP 50-10-37-4150; a district with multiple sites) which was nominated for inclusion into the National Register of Historic Places on December 27, 1974 (Exhibit 3). The Historic District was placed on the NRHP because of the following: (1) the numerous heiau in the area, (2) the unique architecture of several of the heiau, (3) the intrinsic value of petroglyphs in the area (including that of Keeku Heiau), and (4) the district's association with important traditional political and religious activities. The Kahalu'u Historic District was removed from the State Register in March, 1980 due to insufficient notice requirements to private landowners that their properties were nominated for inclusion into the State Register. The Property is also located within the Kona Field System (SIHP 50-10-37-6601). A number of archaeological investigations and surveys have been conducted within the Property and surrounding areas, and significant historic sites within the Property have been located.

L.J. Soehren (1979) conducted an archaeological reconnaissance survey within the Project site identified as KIC Land Area 14A (Parcel 35) and the seaward portion of KIC Land Area 14B (Parcel 93) in conjunction with the development of Kona Gardens, a botanical and cultural park. During the survey, Soehren identified and relocated 42 archaeological features.

In 1980, Archaeological Research Center Hawaii, Inc. (ARCH) carried out a survey of KIC Land Area 14B (Parcel 93) and KIC Land Area 14C (Project site) as part of a larger survey of a portion of Keauhou-Kona Resort (Hammatt and Folk 1980). The ARCH survey identified 35 sites, including six in the northern Archaeological Preserve, 19 in the southern Archaeological Preserve, and ten in KIC Land Areas 14B and 14C. Walker and Rosendahl (1989), Tomanari-Tuggle (1985) and Tuggle (1989) also conducted archaeological studies in the area. ARCH's inventory report (Hammatt and Folk 1980) identified a mauka-makai oriented foot trail (SIHP 50-10-37-4618), the Great Wall of Kuakini (SIHP 50-10-27-6302) and four, multi-structure historic properties comprised of enclosures, pavements and platforms that appear are dominantly residential (SIHP 50-10-37-7827, 7828, 7829, and 7930) (Exhibit 5).

An archaeological field inspection (December, 1983) and Archaeological Reconnaissance Survey prepared by PHRI (September, 1989) encompassed the entire Project site (Study Area 2) in support of Azabu Keauhou Resorts' project within Parcel 35 (Exhibits 6a and 6b). Results of the survey indicated a total of 21 significant archaeological sites within Study Area 2 (Project site). Most of the sites were identified in previous archaeological investigations and surveys. The report identified additional components within those previously identified within SIHP 50-10-37-1617 as follows: (1) SIHP 50-10-37-7827, 7828 and 7829.

The Applicant has submitted draft Preservation and Data Recovery Plans for Historic Properties at Keauhou Development Parcel 14C prepared by Cultural Surveys Hawaii, Inc., dated October 22, 2002 (Plans) to the Department of Land & Natural Resources, SHPD (Exhibit 7a) and is in the process of revising the Plans to address comments and concerns from SHPD (Exhibit 7b). The Applicant will adhere to the Plans as approved by SHPD.

As identified in the Plans, the Habitation and Burial Complex (SIHP 50-10-37-7828) is a complex comprised of over 21 features including platforms, enclosures, terraces, C-shape structures, ahu, and foot trails. As stated in the draft Plans, Site 7828 will be preserved. Cultural Surveys Hawaii recommends a buffer zone of 20 feet from the outer edge of the peripheral features of the site will be used except along the southeast corner of the preserve where the buffer will be no less than five feet from the features to allow safe access to the Project site from Alii Drive. In addition, interim and maintenance measures will be used to protect the site as outlined in the Plans. The Applicant will consult with its cultural consultants as to the site's cultural use.

Data recovery excavations as outlined in the draft Plans, present measures for mitigation of Sites 7827, 7829, 7830, and 4618. Site 7827 is a complex consisting of 18 features, Site 7829 is a complex consisting of 18 features, and Site 7830 is a complex consisting of four features. These complexes are tight clusters of small and large, predominantly habitation features. These sites were recommended for archaeological data recovery in a 1989 resource management plan (Tuggle 1989a:22).

SIHP 50-10-37-4618 is a mauka-makai trail and was recommended for data recovery and preservation in Rosendahl (1988:47-50). The recent land surveying of the trail is included as a part of the documentation in the data recovery report. The Applicant is in agreement with the concept of preservation of the mauka-makai corridor for use as a foot trail, and believes that this is better served by a corridor through the preserved historic features north of the Property (Ohia lava tube complex and other surface features) as the trail access for interpretation and cultural practices. To preserve the trail corridor in this

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manner will involve moving the trail corridor approximately 100 feet to the north passing along the north boundary of Property.

The Kuakini Wall (SIHP 50-10-27-6302) traverses the Property. The Kuakini Wall and the area located makai will remain as Open space, and are not included within the Project site. Cultural Surveys Hawaii recommends a buffer zone of 11 feet from the outer edge of the peripheral features of the Wall will be used.

Pursuant to the requirements of Hawaii Revised Statutes, Section 205A-4, and the Hawaii Supreme Court ruling in the Ka Pa'akai O Ka 'Aina case, the Planning Commission is required to make specific findings and conclusions relating to the following:

1. The identity and scope of "valued, cultural, historical, or natural resources" in the petition area, including the extent to which traditional and customary native Hawaiian rights are exercised in the petition area;

**Discussion:** The Property is located within the Kahalu'u Historic District (SIHP 50-10-37-4150) and the Kona Field System (SIHP 50-10-37-6601). The Habitation and Burial Complex (SIHP 50-10-37-7828) is a complex and will be preserved, to include a 20 feet zone and interim and maintenance measures. Mitigation (data recovery excavation) is proposed of Sites 7827, 7829, 7830, and 4618 as outlined in the draft Preservation and Data Recovery Plans for Historic Properties at Keauhou Development Parcel 14C. The recent land surveying of the mauka-makai trail (SIHP 50-10-37-4618) is included as a part of the documentation in the data recovery report. The Applicant is in agreement with the concept of preservation of the mauka-makai corridor for use as a foot trail, and believes that this is better served by a corridor through the preserved historic features north of the Property (Ohia lava tube complex and other surface features) as the trail access for interpretation and cultural practices. The Kuakini Wall (SIHP 50-10-27-6302) traverses the Property. The Kuakini Wall and the area located makai will remain as Open space, and are not included within the Project site. A buffer zone of 11 feet from the outer edge of the peripheral features of the Wall will be used. No development is proposed by the Applicant within Site 7828 and appropriate buffers will be implemented. There are no observable traditional and customary native Hawaiian practices being exercised on the Parcels. Preconsultation by the Applicant with the Keauhou Cultural Advisory Committee revealed no additional native Hawaiian resources on the Property.

2. The extent to which those resources - including traditional and customary native Hawaiian rights - will be affected or impaired by the proposed action; and

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**Discussion:** The cultural, historical and natural resources within the Project site will not be affected or impaired by the proposed use. The Applicant has submitted draft Preservation and Data Recovery Plans for Historic Properties at Keauhou Development Parcel 14C prepared by Cultural Surveys Hawaii, Inc., dated October 22, 2002 (Plans) to the Department of Land & Natural Resources, SHPD, and is in the process of revising the Plans. The Applicant will ensure coordination and communication with the Department of Land and Natural Resources, SHPD to provide the most appropriate protection of significant features. The buffers as recommended by the SHPD will be adhered to.

3. The feasible action, if any, to be taken by the Planning Commission to reasonably protect native Hawaiian rights if they are found to exist.

**Discussion:** There is no feasible action to be taken by the Planning Commission other than to require that if in the future, any valued cultural, historical, natural resources and/or traditional and customary native Hawaiian rights are discovered in the Project site, that the Applicant will report the discovery to the Department of Land and Natural Resources, SHPD for review and assessment.

*Impacts and Mitigation.* The Property is located entirely within the Kahalu'u Historic District and the Kona Field System. A number of archaeological investigations and surveys have been conducted within the Project site and surrounding areas, and significant historic sites within the Property have been located. The Applicant has submitted draft Preservation and Data Recovery Plans for Historic Properties at Keauhou Development Parcel 14C prepared by Cultural Surveys Hawaii, Inc., dated October 22, 2002 (Plans) to the Department of Land & Natural Resources, SHPD, and is in the process of revising the Plans. The Applicant will ensure coordination and communication with the Department of Land and Natural Resources, SHPD to provide the most appropriate protection of significant features. The buffers as recommended by the SHPD will be adhered to.

### 3.1.7 Air and Noise Quality

#### *Setting.*

*Air.* Generally, air quality is affected by regional and local climates, together with the amount and type of human activity in a given location. Prevailing northeast trade winds and diurnal land and sea breezes sculpted by the regions's topography forms air circulation patterns that can create local concentrations of pollutants. Air quality in the Property vicinity is most affected by emissions from natural and vehicular sources. The

dominant factor for the past several years has been the volcanic haze (vog) from Kilauea Volcano. Another natural source of air pollution that may affect the air-quality at the site is windblown dust. Although there is little air quality monitoring data currently available for the area, it appears that both State and Federal ambient air quality standards are currently being met, despite the persistent vog.

The Proposed Action area would increase traffic in the area very slightly, although the projected level of project generated traffic at build-out is not expected to generate significant levels of air pollutants. There could be short-term air quality impacts due to construction activities, especially during clearing and grubbing operations. However, these impacts can be mitigated through utilization of best management practices such as, covering transported materials, water spraying, and planting of ground cover as soon as practical.

*Noise.* The noise generated in the vicinity of the Property is associated with existing vehicular sources. Other noises in the Property comes from natural sources (ocean and wind) and wildlife. The Proposed Action will not employ visually offensive structures or equipment, nor produce unpleasant noise.

*Impacts and Mitigation.* Minor short-term increase in noise level may be experienced due to construction activities, especially during clearing and grubbing operations. However, these impacts can be mitigated through scheduling work during the daytime and by ensuring that construction equipment complies with County and State Department of Health noise regulations during the construction phase of the Proposed Action. When fully developed, the Proposed Action is not expected to add significantly to current noise levels.

### 3.1.8 Scenic and Open Space Resources

*Setting.* The Property is located between the proposed Kahului-Keauhou Parkway and Alii Drive and is not listed in the County of Hawaii General Plan as an example of natural beauty in the North Kona District. The present landscape of the Property is characterized by scrub grasslands of no particular outstanding aesthetic value.

*Impacts and Mitigation.* The Proposed Action is similar in character to the surrounding area and is not likely to result in any substantial adverse impact on the surrounding environment. In addition, open space will be retained in the portion of the Property located makai of the Kuakini Wall, the Archaeological Preserve located on Parcel 35 and archaeological site on Parcel 93. The Proposed Action will not adversely affect views to and along the shoreline due to the integration of the sloping property with 1-, 2- and 3-

story maximum heights of the residential development. Therefore, the Proposed Action will not negatively impact the scenic and open space resources of the Property.

### 3.1.9 Coastal Resources

*Setting.* There are no public recreational resources being affected by the Proposed Action. The Property is located approximately 700 feet inland from the coastline, is not tied directly with the recreational resources of the coastal areas, and will not reduce the size of the coastline or other areas used for public recreational uses. Further, the Property is located outside of the County of Hawaii Civil Defense Agency's evacuation area for hazards due to tsunami and possible surges from hurricanes.

*Impacts and Mitigation.* The Proposed Action is not anticipated to have any direct adverse impact on the shoreline resources, and will not reduce the size of the coastline or negatively impact other areas used for public recreational activities, and should not impact upon recreational resources. Alterations to the existing land forms should cause minimal adverse impact to the water resources, scenic and recreational amenities. There is no change that would affect the amount of wave energy striking the shoreline since the Property is located a significant distance from the coastline. The Proposed Action should not adversely impact upon coastal or high water hazards, since the Property is located outside of the County of Hawaii Civil Defense Agency's evacuation area. Overall, the Keauhou Resort does not provide beneficial recreational opportunities, such as beach parks and public shoreline accesses for the general public.

### 3.2 Socioeconomic Considerations

The Proposed Action will provide temporary construction-related job opportunities for local residents and positively affect the economy through construction industry purchases from local suppliers. Property, income, excise and other taxes will be generated, resulting in an increase in State and County revenues which in turn can be used to provide needed public services and facilities. Further, 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. The Proposed Action will retain the overall Keauhou Resort master-planned concept and will provide new housing opportunities for residents in a well planned and secure neighborhood environment within a resort setting.

### 3.3 Public Facilities and Services

#### 3.3.1 Access

*Setting.* Based upon a Traffic Impact Analysis Report for various Keauhou Resort parcels dated July 29, 1998, prepared by The Traffic Management Consultant, the traffic generated by the development of the Area 14C Project site is estimated at 106 vph during the AM peak hour of traffic and 130 vph during the PM peak hour of traffic. The report recommends that access on the proposed Kahului-Keauhou Parkway be located as far north as the Project site development constraints make it feasible (Exhibit 8).

The Kahului-Keauhou Parkway, is planned to include a 24-foot wide paved median, separating two 12-foot wide travel lanes in each direction. The 100-foot wide right-of-way would include 8-foot wide paved shoulders and 6-foot wide unpaved shoulders on both sides of the highway.

Primary access to the Project site will be via Alii Drive at the south end of the Project site. Secondary access will be via a full access unsignalized intersection at the proposed Kahului-Keauhou Parkway, including appropriate turning, acceleration and deceleration lanes and appurtenant improvements to allow traffic to exit from the Project site, as has been agreed to by the Department of Public Works by letter dated August 14, 1998 (Exhibit 9). The location of the full access intersection is proposed about 800 feet north of the intersection of the Kahului-Keauhou Parkway and Alii Drive. Secondary roadways within the Project site will consist of asphalt-concrete paved roadways to be held in private ownership and maintained by unit owners within the Project site.

*Impacts and Mitigation.* Although short-term negative impacts may occur during the construction of the Project site roadways due to construction vehicles slowing area traffic while on the public roadways, closure or rerouting of existing public traffic lanes are not anticipated.

#### 3.3.2 Water Resources

*Setting.* The North Kona district receives most of its water from the four Kahaluu wells and the Kahaluu Shaft, located in the mauka lands above Kahaluu Bay. The Applicant has entered into the October 17, 1983 Water Commitment Agreement with the County to provide the necessary water commitments required for the proposed 200 unit multiple-family development on the Project site, and the Department of Water Supply recently confirmed that these units will adequately serve the proposed Project site. The

site will be connected to an existing 12-inch DWS water line along the proposed Kahului-Keauhou Parkway.

*Impacts and Mitigation.* The Department of Water Supply recently confirmed that the water units for the Proposed Action will adequately serve the Project site. Common area landscaping will be developed to minimize the use of potable water.

### 3.3.3 Utilities

#### *Setting.*

Wastewater System. The Keauhou-Kona sewer system consists of gravity lines, force mains, pumping facilities and the Heeia Waste Water Treatment Plant (WWTP) near Heeia Bay, and is sufficient to handle the proposed Project. The existing 8-inch sanitary sewer force main connection to the Project site is located at Alii Drive and is linked to the expanded Kahaluu Park pump station and the Kahaluu pump station, as well as the Heeia WWTP.

Solid Waste Disposal. The Project will be a source of solid waste, which will be collected by commercial haulers and disposed of at the Puuanahulu landfill. Solid waste would be collected and disposed of in compliance with all applicable Federal, State, and County laws, ordinances, rules and regulations.

Electrical Power, Telephone and Cable Service. Electrical power service would be provided by Hawaii Electric Light Company (HELCO). The power lines for the Proposed Action will connect with the existing lines which run along Alii Drive and will meet HELCO's design and installation standards. Coordination with the utility's engineers well in advance of development will ensure that the provisions of electrical power are integrated with planned utility system improvements in the area. Verizon Hawaii provides telephone and other telecommunication services to the Keauhou area.

*Impacts and Mitigation.* The expansion of the waste water facilities is adequate to handle the Proposed Action. In addition, because the Proposed Action will not cause a change in the manner of collection and disposal, and because there is ample capacity at the County landfill to accommodate the projected waste generated from the Proposed Action, no adverse impacts are expected relative to solid waste disposal. Utilities services are available to the Project site.

### 3.3.4 Protective Services

*Setting.*

The nearest available public health facility is the Kona Hospital, located in Kealahou, a secondary healthcare facility. Kona Hospital is intended to provide major secondary care for the North Kona district and serves as a major referral center and key support for shared services, emergency services, specialty care and long-term care.

Police protection is provided from its Kealahou station. Fire protection is provided from the Kealahou, Kailua-Kona and Kealahou stations. In addition, emergency medical and paramedical services are provided by the Hawaii County Fire Department.

*Impacts and Mitigation.* The existing fire, emergency medical and police protection services should adequately accommodate the increase in anticipated demand generated by the Proposed Action.

**CHAPTER 4****RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES AND CONTROLS FOR THE AFFECTED AREA****4.1 Chapter 205, Hawaii Revised Statutes, State Land Use Law**

Under the State Land Use Law (Chapter 205, Hawaii Revised Statutes) all lands in the State are classified in one of four land use districts: Urban, Rural, Agricultural, or Conservation. The Property lies within the Urban District. The Proposed Action is a permitted use under this designation.

**4.2 Hawaii State Plan, Chapter 226, Hawaii Revised Statutes**

The Hawaii State Plan, Chapter 226, HRS, consists of goals, objectives, policies and priority directions to guide the future long-range development of the State. The goals of the Hawaii State Plan and their relationship to the Proposed Action are as follows:

**State Goal**

*Section 226-4, HRS sets forth three components to this plan:*

- (1) To achieve a strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii's present and future generations;*
- (2) To achieve a desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people; and*
- (3) To achieve physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life.*

**Discussion:** The Proposed Action would contribute to the attainment of the three goals in that the Proposed Action would expand the availability of residential products available to Hawaii residents and would contribute to the stability, diversity and growth of the local and regional economies. More specifically, the Proposed Action would provide housing opportunities in a planned setting wherein the design, operation, maintenance and provisions for environmental protection can be effectively, efficiently and economically controlled. By providing residential opportunities within a planned setting with nearby opportunities for employment, recreation and access to community services, the Proposed

Action would encourage a sense of community responsibility and participation in family life.

#### **Objectives and policies for socio-cultural advancement -- housing**

*Objective:*

- *The orderly development of residential areas sensitive to community needs and other land uses.*

*Policies:*

- *Effectively accommodate the housing needs of Hawaii's people.*
- *Increase home ownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.*
- *Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.*
- *Facilitate the use of available vacant, developable, and underutilized urban lands for housing.*

**Discussion:** The Hawaii State Plan, Socio-Cultural Advancement-Housing element encourages the orderly development of residential areas sensitive to community needs and other land uses, and the promotion of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas. The Proposed Action is anticipated to meet demands for retirement, second home, and vacation rental units, as well as primary and local housing units. The Proposed Action will allow for the expansion within the Keauhou Resort area and will help to meet the growing demand for multiple-family residential units in an orderly and cost-effective manner.

#### **4.3 Hawaii County General Plan**

The Hawaii County General Plan is the County's comprehensive land use policy for guiding long-range development on the Island of Hawaii. It specifies goals, policies, and standards of development for the most desirable land uses on the island, and includes the Land Use Pattern Allocation Guide ("LUPAG") Map which indicates the general location of designated land utilization. The LUPAG map designates the Project site as "Medium Density Urban" east (mauka) of the Kuakini Wall and "Open" south (makai) of the Kuakini Wall. The Medium Density Urban designation allows for village and neighborhood commercial and residential and related uses (Residential - up to 35 units per acre).

Under this designation, the Proposed Action is consistent with the Hawaii County General Plan LUPAG map. The Proposed Action is consistent with the goals, policies, standards and recommended courses of action of several functional areas or elements of the General Plan as follows:

#### **Economic**

##### *Goals:*

- *Provide residents with opportunities to improve their quality of life.*
- *Economic development and improvement shall be in balance with the physical and social environments of the island of Hawaii.*
- *The County of Hawaii shall strive for diversity and stability in its economic system.*
- *The County shall provide an economic environment which allows new, expanded, or improved economic opportunities that are compatible with the County's natural and social environment.*

##### *Policies:*

- *The County of Hawaii shall strive for an economic climate which provides its residents an opportunity for choice of occupation.*
- *The County of Hawaii shall strive for diversification of its economy by strengthening existing industries and attracting new endeavors.*
- *The County shall promote a distinctive identity for the island of Hawaii to enable government, business and travel industries to promote the County of Hawaii as an entity separate and unique within the State of Hawaii.*

##### *Standard:*

- *The island of Hawaii should be developed into a unique scientific and cultural model. The island should become a model of living where economic gains are in balance with social and physical amenities. Development should be reviewed on the basis of total impact on the residents of the County, not only in terms of immediate short run economic benefits.*

**Discussion:** The Proposed Action will provide temporary construction-related job opportunities for local residents and positively affect the economy through construction industry purchases from local suppliers. Property, income, excise and other taxes will be generated, resulting in an increase in State and County revenues which in turn can be used to provide needed public services and facilities. Further, 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. The Proposed Action will retain the overall Keauhou Resort master-planned concept and will provide new housing opportunities for residents in a well planned and secure neighborhood environment within a resort setting.

**Housing****Goals:**

- *Attain safe, sanitary, and livable housing for the residents of the County of Hawaii.*
- *Attain a diversity of socio-economic housing mix throughout the different parts of the County.*
- *Maintain a housing supply which allows a variety of choice.*
- *Develop better places to live in Hawaii County by creating viable communities with decent housing and suitable living environments for our people.*
- *Improve and maintain the quality and affordability of the existing housing stock.*
- *Seek sufficient production of new affordable rental and fee-simple housing in the County in a variety of sizes to satisfactorily accommodate the needs and desires of families and individuals.*
- *Ensure that housing is available to all persons regardless of age, sex, marital status, ethnic background, and income.*

**Policy:**

- *The County shall encourage a volume of construction and rehabilitation of housing sufficient to meet growth needs and correct existing deficiencies.*

**Standard:**

- *Standards of the single-family and multiple residential land use elements.*

**Course of Action:**

- *Aid and encourage the development of a wide variety of housing for this area to attain a diversity of socio-economic housing mix.*

**Discussion:** The Proposed Action will implement the Housing element goals, policy and standard, as the Proposed Action is intended to supplement the existing inventory of residential units in Keauhou. This will allow the market to have a continued, as well as, diverse supply of quality resort multiple-family residential units. The Proposed Action will be constructed in accordance with the standards and requirements of the Department of Public Works and other applicable standards related to housing construction.

**Environmental Quality****Goal:**

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

**Policies:**

- *The County of Hawaii shall take positive action to further maintain the quality of the environment for residents both in the present and in the future.*

- *Minimum controls are established by the Federal and State governments; through its powers the County shall reinforce and strengthen established standards where it is necessary, principally by initiating, recommending, and adopting ordinances pertaining to the control of pollutants which affect the environment.*

*Standards:*

- *Pollution shall be prevented, abated, and controlled at levels which will protect and preserve the public health and well-being, through the enforcement of appropriate Federal, State and County standards.*
- *Federal and State environmental regulations shall be adhered to.*

**Discussion:** An environmental quality policy of the Hawaii County General Plan is to maintain the quality of the environment for present and future residents. The proposed Action will not have a substantial adverse effect on the environment. It will not diminish the valuable archaeological and natural resources of the region. The Proposed Action will not result in any significant adverse effect on the environment. Mitigative measures would be employed to protect environmentally sensitive areas. In addition, those potential short-term adverse effects on the surrounding area associated with construction activities, such as potential noise, air quality, or drainage impacts, would be reduced or eliminated through the implementation of appropriate mitigative measures.

#### **Historical Sites**

*Goals:*

- *Protect and enhance the sites, buildings and objects of significant historical and cultural importance to Hawaii.*
- *Access to significant historic sites, buildings and objects of public interest should be made available.*

*Policies:*

- *Agencies and organizations, either public or private, pursuing knowledge about historic sites should keep the public apprised of projects.*
- *The County of Hawaii shall require both public and private developers of land to provide a historical survey 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.*
- *The County of Hawaii shall encourage the restoration of significant sites on private lands.*
- *Signs explaining historic sites, buildings and objects shall be in keeping with the character of the area or the cultural aspects of the feature.*

**Discussion:** The Property is located entirely within the Kahalu'u Historic District which was nominated for inclusion into the NRHP in December, 1974 and the Kona Field

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System. The Kahalu'u Historic District was removed from the HRHP in March, 1980. A number of archaeological investigations and surveys have been conducted within the Property and surrounding areas.

L.J. Soehren (1979) conducted an archaeological reconnaissance survey within the Project site identified as KIC Land Area 14A (Parcel 35) and the seaward portion of KIC Land Area 14B (Parcel 93) in conjunction with the development of Kona Gardens, a botanical and cultural park. During the survey, Soehren identified and relocated 42 archaeological features.

In 1980, Archaeological Research Center Hawaii, Inc. (ARCH) carried out a survey of KIC Land Area 14B (Parcel 93) and KIC Land Area 14C (Project site) as part of a larger survey of a portion of Keauhou-Kona Resort (Hammatt and Folk 1980). The ARCH survey identified 35 sites, including six in the northern Archaeological Preserve, 19 in the southern Archaeological Preserve, and ten in KIC Land Areas 14B and 14C. Walker and Rosendahl (1989), Tomanari-Tuggle (1985) and Tuggle (1989) also conducted archaeological studies in the area. ARCH's inventory report (Hammatt and Folk 1980) identified a mauka-makai oriented foot trail (SIHP 50-10-37-4618), the Great Wall of Kuakini (SIHP 50-10-27-6302) and four, multi-structure historic properties comprised of enclosures, pavements and platforms that appear are dominantly residential (SIHP 50-10-37-7827, 7828, 7829, and 7930) (Exhibit 5).

An archaeological field inspection (December, 1983) and Archaeological Reconnaissance Survey prepared by PHRI (September, 1989) encompassed the entire Project site (Study Area 2) in support of Azabu Keauhou Resorts' project within Parcel 35 (Exhibits 6a and 6b). Results of the survey indicated a total of 20 significant archaeological sites within Study Area 2 (Project site). Most of the sites were identified in previous archaeological investigations and surveys. The report identified additional components within those previously identified within SIHP 50-10-37-1617 as follows: (1) SIHP 50-10-37-7827, 7828 and 7829.

The Applicant has submitted draft Preservation and Data Recovery Plans for Historic Properties at Keauhou Development Parcel 14C prepared by Cultural Surveys Hawaii, Inc., dated October 22, 2002 (Plans) to the Department of Land & Natural Resources, SHPD (Exhibit 7a) and is in the process of revising the Plans to address comments and concerns from SHPD (Exhibit 7b). The Applicant will adhere to the Plans as approved by SHPD.

As identified in the Plans, the Habitation and Burial Complex (SIHP 50-10-37-7828) is a complex comprised of over 21 features including platforms, enclosures, terraces, C-shape

structures, ahu, and foot trails. As stated in the draft Plans, Site 7828 will be preserved. Cultural Surveys Hawaii recommends a buffer zone of 20 feet from the outer edge of the peripheral features of the site will be used except along the southeast corner of the preserve where the buffer will be no less than five feet from the features to allow safe access to the Project site from Alii Drive. In addition, interim and maintenance measures will be used to protect the site as outlined in the Plans. The Applicant will consult with its cultural consultants as to the site's cultural use.

Data recovery excavations as outlined in the draft Plans, present measures for mitigation of Sites 7827, 7829, 7830, and 4618. Site 7827 is a complex consisting of 18 features, Site 7829 is a complex consisting of 18 features, and Site 7830 is a complex consisting of four features. These complexes are tight clusters of small and large, predominantly habitation features. These sites were recommended for archaeological data recovery in a 1989 resource management plan (Tuggle 1989a:22).

SIHP 50-10-37-4618 is a mauka-makai trail and was recommended for data recovery and preservation in Rosendahl (1988:47-50). The recent land surveying of the trail is included as a part of the documentation in the data recovery report. The Applicant is in agreement with the concept of preservation of the mauka-makai corridor for use as a foot trail, and believes that this is better served by a corridor through the preserved historic features north of the Property (Ohia lava tube complex and other surface features) as the trail access for interpretation and cultural practices. To preserve the trail corridor in this manner will involve moving the trail corridor approximately 100 feet to the north passing along the north boundary of Property.

The Kuakini Wall (SIHP 50-10-27-6302) traverses the Property. The Kuakini Wall and the area located makai will remain as Open space, and are not included within the Project site. Cultural Surveys Hawaii recommends a buffer zone of 11 feet from the outer edge of the peripheral features of the Wall will be used.

**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.*

*Policies:*

- *All development-generated runoff shall be disposed of in a manner acceptable to the Department of Public Works.*
- *It is the responsibility of both the government and the private sector to maintain and improve existing drainage systems and to construct new drainage facilities.*
- *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.*

**Discussion:** The Property is not located within any flood way or flood plain. Surface water runoff and sedimentation will be minimized by methods approved by the Department of Public Works. In addition, the Property is located in Zone X according to the Flood Insurance Rate Maps (FIRM) prepared by FEMA. Grading and landscaping will be designed to minimize need for fertilizers and maximize entrapment and containment of storm water runoff. If required, the Applicant will obtain a NPDES permit for the Proposed Action.

**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.*

*Policy:*

- *Increase public pedestrian access opportunities to scenic places and vistas.*

**Discussion:** The scenic and natural beauty of Hawaii is recognized as an irreplaceable asset, which needs to be protected. A goal of the Hawaii County General Plan is to preserve the quality of coastal scenic resources and to protect scenic vistas and view planes from being obstructed. Scenic view planes toward the shoreline will not be obstructed by the Proposed Action. The Property is not listed in the County of Hawaii General Plan as an example of natural beauty in the North Kona District, and the Proposed Action will not adversely affect views to and along the shoreline due to the integration of the sloping property with 1-, 2- and 3-story maximum heights of the residential development.

**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 land forms 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.*

*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 is located approximately 700 feet inland from the shoreline and is not anticipated to have any direct adverse impact on the shoreline resources, will not reduce the size of the coastline or negatively impact other areas used for public recreational activities, and should not impact upon recreational resources. Overall, the Keauhou Resort does not provide beneficial recreational opportunities, such as beach parks and public shoreline accesses for the general public.

**Public Utilities:***Goal:*

- *To have public utility facility which are designed to fit into their surroundings or concealed from public view.*

*Policy:*

- *All water systems shall be designed and built to Department of Water Supply standards.*

**Discussion:** All utilities to the Project site will be installed underground and constructed in accordance with State and County design standards and requirements. A private treatment system currently serves the Keauhou Resort area and has sufficient existing capacity to service the planned development.

**Recreation:***Goals:*

- *Provide a wide variety of recreational opportunities for the residents and visitors of the County.*
- *Maintain the natural beauty of recreation areas.*
- *Provide a diversity of environments for active and passive pursuits.*

*Policy:*

- *Public access to the shoreline shall be provided in accordance with an adopted program of the County of Hawaii.*

**Discussion:** The Proposed Action does not contemplate significant recreational facilities. The Keauhou Resort, however, offers recreational opportunities such as golf, boating, and beach activities, that are available to its guests, visitors and Hawaii Island residents. All of the recreational facilities within Keauhou have been developed to maintain the natural beauty of the area. All new projects within the resort include, to some extent, opportunities for beach or shoreline accesses for public use.

**Land Use - General:***Goal:*

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

*Policies:*

- *Promote and encourage the rehabilitation and use of urban and rural areas which are serviced by basic community facilities and utilities.*
- *Allocate appropriate requested zoning in accordance with the existing or projected needs of neighborhood, community, region and County.*
- *The County shall encourage the development and maintenance of communities meeting the needs of its residents in balance with the physical and social environment.*

**Land Use - Multiple Residential:***Goals:*

- *To provide for multiple residential developments that maximize convenience for its occupants.*
- *To provide for suitable living environments which accommodate the physical, social and economic needs of the island residents.*

*Standard:*

- *Provide adequate access to arterial streets, shopping facilities, schools, employment center and other services.*

**Discussion:** The Proposed Action is one of several residential projects that will help to supplement the existing inventory of apartments and house lots in Keauhou, thus providing a continued choice of residential units in the area. The Keauhou Resort is a major visitor destination area that has been carefully planned and programmed as a quality resort and residential community consisting of public and private services, shopping centers, and community facilities.

Under Section 25-5-30, Hawaii County Code, the Multiple-Family Residential (RM) district provides for medium and high density residential use. It includes areas with full community facilities and services.

#### 4.4 Hawaii County Zoning Code

The Hawaii County Zoning Map for the North Kona District designates the Project site as follows:

TMK: 7-8-10:por. 35 Multiple-Family Residential (RM-3.0)  
Open (O)

TMK:7-8-10:por. 93 Multiple-Family Residential (RM-3.0)  
Open (O)

The Proposed Action will be limited to the existing RM zoned areas with the Property, and is a permitted use within the RM designation pursuant to Section 25-5-303(a)(9), Hawaii County Code. The Proposed Action will conform to the requirements of the zone district relative to maximum allowable height, minimum yard setbacks, minimum off-street parking, and landscaping.

#### 4.5 County Special Management Area

The Properties are located within the Special Management Area which is located along the makai boundary of the Kuakini Highway right-of-way, and is, therefore, subject to the Special Management Area (SMA) Rules and Regulations of the County of Hawaii.

Chapter 205A, HRS, is the Coastal Zone Management Act ("CZMA") for the State of Hawaii which seeks "to preserve, protect, and where possible, to restore the natural

resources of the coastal zone of Hawaii” by “maintaining, restoring, and enhancing the overall quality of the coastal zone environment . . . its amenities and aesthetic values, and to provide adequate public access to publicly owned or used beaches, recreation areas and national reserves” by controlling development within an area along the shoreline, the County SMA.

The following addresses the Proposed Action’s relation to the objectives and policies of Chapter 205A related to Coastal Zone Management and the SMA guidelines as contained within Rule 9 of the County of Hawaii Planning Commission Rules and Regulations.

#### **Recreational Resources:**

##### *Objective:*

- *Provide coastal recreational opportunities accessible to the public.*

##### *Policies:*

- *Improve coordination and funding of coastal recreational planning and management*
- *Provide adequate, accessible and diverse recreational opportunities in the coastal zone management area.*

**Discussion:** There are no public recreational resources being affected by the Proposed Action. The Property is located approximately 700 feet inland from the coastline, is not tied directly with the recreational resources of the coastal areas, and will not reduce the size of the coastline or other areas used for public recreational uses. In addition, there will be no disruption of existing public access to the shoreline. Accordingly, the Proposed Action is consistent with the recreational resources objectives and policies in that the proposed action does not preclude recreational opportunities to the general public.

#### **Historic Resources:**

##### *Objective:*

- *Protect, preserve and, where desirable, restore those natural and man made historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.*

##### *Policies:*

- *Identify and analyze significant archaeological resources.*
- *Maximize information retention through preservation of remains and artifacts or salvage operations.*
- *Support state goals for protection, restoration, interpretation and display of historic resources.*

**Discussion:** Historic and cultural resources within the Property have been identified and analyzed. The Historic Preservation Mitigation Plan for the Archaeological Preserve within Parcel 35 was accepted by the Department of Land and Natural Resources, SHPD by letter dated October 4, 1989. The Applicant will ensure that coordination and communication will be made with the Department of Land and Natural Resources, Historic Sites Preservation Office to provide the most appropriate protection of significant features. The buffers to be recommended by the SHPD will be adhered to.

#### **Scenic and Open Space Resources:**

*Objective:*

- *Protect preserve and where desirable, restore or improve the quality of coastal scenic and open space resources.*

*Policies:*

- *Identify valued scenic resources in the coastal zone management area.*
- *Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural land forms and existing public views to and along the shoreline.*
- *Preserve, maintain and, where desirable, improve and restore shoreline open space and scenic resources.*
- *Encourage those developments which are not coastal dependent to locate in inland areas.*

**Discussion:** The Proposed Action is similar in character to the surrounding area and is not likely to result in any substantial adverse impact on the surrounding environment. In addition, open space will be retained in the portion of the Project site located makai of the Kuakini Wall, the Archaeological Preserve located on Parcel 35 and archaeological site on Parcel 93 (SIHP 50-10-37-7828). Therefore, the Proposed Action is consistent with the policies of ensuring that new developments are compatible with their visual environment.

#### **Coastal Ecosystems:**

*Objective:*

- *Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.*

*Policies:*

- *Improve the technical basis for natural resource management.*
- *Preserve valuable coastal ecosystems of significant biological or economic importance.*

- *Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs.*
- *Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibits land and water uses which violate state water quality standards.*

**Discussion:** There are no coastal ecosystems being affected by the Proposed Action as the Property is located approximately 700 feet inland from the shoreline. Accordingly, the Proposed Action is consistent with the coastal ecosystem objective and policies which aim to protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.

There is no change that would affect the amount of wave energy striking the shoreline. The Proposed Action should not adversely impact upon coastal or high water hazards, since the Property is located outside of the County of Hawaii Civil Defense Agency's evacuation area for hazards due to tsunami and possible surges from hurricanes. Therefore, the proposed subdivision is consistent with the coastal ecosystem objectives and policies which aim to protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.

**Economic Uses:**

*Objective:*

- *Provide public or private facilities and improvements important to the State's economy in suitable locations.*

*Policies:*

- *Concentrate in appropriate areas the location of coastal dependent development necessary to the State's economy.*
- *Ensure that coastal dependent development such as harbors and ports, visitor industry facilities, and energy generating facilities are located, designed, and constructed to minimize adverse social, visual and environmental impacts in the coastal zone management area.*

**Discussion:** The Proposed Action is not a coastal dependent development. The Proposed Action proposes private improvements that will be important to the State's economy as the Proposed Action is in a suitable location with the proper zoning, and is in conformance with State and County plans. Further, the Proposed Action will provide temporary economic benefits by supporting local construction industry and construction related employment opportunities, and long-term economic benefits by increasing the economic base on the island. The Proposed Action does not conflict with the economic

uses, objectives and policies which recommend providing public or private facilities and improvements important to the State's economy in suitable locations.

**Coastal Hazards:***Objective:*

- *Reduce hazards to life and property from tsunami, storm waves, stream flooding, erosion and subsidence.*

*Policies:*

- *Develop and communicate adequate information on storm wave, tsunami, flood, erosion and subsidence hazard.*
- *Ensure that developments comply with requirements of the Federal Flood Insurance Program.*
- *Prevent coastal flooding from inland projects.*

**Discussion:** The Property is located approximately 700 feet inland from the shoreline and is separated from the coastline by existing resort development and Alii Drive. Therefore, the Property is not subject to coastal hazards. In addition, the Flood Insurance Rate Maps (FIRM) prepared by FEMA delineate the Property in Zone "X" or outside the 500-year flood plane. The Proposed Action would not create an increase in coastal flooding under normal rainfall conditions, and on-site drainage systems will be developed to completely contain and adequately dispose of development generated surface runoff. Accordingly, the proposed improvements are consistent with the coastal hazards objectives and policies which provide for the control of development in areas subject to tsunami, flood, erosion and subsistence hazards.

**Managing Development:***Objective:*

- *Improve the development review process, communication, and public participation in the management of coastal resources and hazards.*

*Policies:*

- *Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development.*
- *Facilitate timely processing of application for development permits and resolve overlapping or conflicting permit requirements.*
- *Communicate the potential short and long term-impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the general public to facilitate public participation in the planning and review process.*

**Discussion:** The Applicant will notify the surrounding property owners within 300 feet of the perimeter of the Property as required by Planning Commission Rule No. 9 (Special Management Area) public hearing notification requirements. The Applicant is required to serve a First Notice to the surrounding property owners of the Proposed Action at the time the Special Management Area Use Permit Application is submitted to the Planning Director. The First Notice informs the surrounding property owners of the opportunity to participate in the evaluation of the Applicant's request in the Special Management Area Use Permit Application. The public participation process also includes the Contested Case Hearing process. As such, the public's participation begins as soon as the Application is submitted to the Planning Department. The public is able to submit their comments and provide information to the Planning Director, prior to the scheduling of the Special Management Area Use Permit Application for a public hearing. This initial and the subsequent public notice and hearing process improves the development review process, communication, and public participation in the management of coastal resources and hazards.

**Public Participation:**

*Objective:*

- *Stimulate public awareness, education, and participation in coastal management.*

*Policies:*

- *Maintain a public advisory body to identify coastal management problems, and to provide policy advice and assistance to the coastal management program.*
- *Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities.*

**Discussion:** The County of Hawaii Planning Commission must hold a public hearing on the Applicant's Special Management Area Use Permit Application. At the public hearing, the public is free to participate in this open hearing forum and to provide their comments to the Planning Commission. The Planning Commission public hearing and if required, the Contested Case Process, provides the vehicle for stimulating public awareness, education of this process and more importantly, participation in the coastal management decision making.

**Beach Protection:***Objective:*

- *Protect beaches for public use and recreation.*

*Policies:*

- *Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion.*
- *Prohibit construction of private erosion structures seaward of the shoreline; except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities.*
- *Minimize the construction of public erosion-protection structures seaward of the shoreline.*

**Discussion:** The Property is located approximately 700 feet inland from the shoreline and will not cause any erosion activities and/or interfere with existing recreational and shoreline-dependent activities. Therefore, the Proposed Action will not affect any public beaches nor adversely affect public use and recreation of the shoreline in this area.

**Marine Resources:***Objective:*

- *Implement the State's ocean resources management plan.*

*Policies:*

- *Exercise an overall conservation ethic, and practice stewardship in the protection, use and development of marine and coastal resources.*
- *Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial.*
- *Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency.*
- *Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone.*
- *Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources.*
- *Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.*

**Discussion:** The Property is located approximately 700 feet inland from the shoreline and there will be no structures near the shoreline which would affect any use and development of marine and coastal resources.

#### 4.6 Special Management Area Guidelines

The Proposed Action is consistent with the County of Hawaii Special Management Area (SMA) guidelines pursuant to Hawaii Revised Statutes, Chapter 205A-26, as amended.

- (1) *All development in the special management area shall be subject to reasonable terms and conditions set by the Authority in order to ensure:*
- (A) *Adequate access, by dedication or other means, to publicly owned or used beaches, recreation areas, and natural reserves is provided to the extent consistent with sound conservation principles;*
  - (B) *Adequate and properly located public recreation areas and wildlife preserves are reserved;*
  - (C) *Provisions are made for solid and liquid waste treatment, disposition, and management which will minimize adverse effects upon Special Management Area resources; and*
  - (D) *Alterations to existing land forms and vegetation, except crops and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, wind damage, storm surge, landslides, erosion, siltation, or failure in the event of earthquake.*

**Discussion:** The Proposed Action will not reduce the size of the coastline or other areas used for public recreational activities, and should not impact upon recreational resources, since mauka-makai public shoreline access is available to the shoreline, which is coordinated with existing Keauhou Resort development makai of Alii Drive.

The Keauhou-Kona sewer system consists of gravity lines, force mains, pumping facilities and the Heeia Waste Water Treatment Plant (WWTP) near Heeia Bay that is sufficient to handle the Proposed Action. The existing sewer connection for the Project site is at Alii Drive and is linked to the expanded Kahaluu Park pump station and the Kahaluu pump station, as well as the Heeia WWTP. The expansion of these facilities is adequate to handle the Proposed Action.

The siting of the buildings will be configured and engineered to minimize altering of terrain, so as not to increase any potential flood hazards within the Project site or divert runoff to other properties. Furthermore, the view planes to and along the shoreline towards the Property will not be adversely impacted as the lands in the immediate area are developed with existing resort and multiple family residential development. The Proposed Action will also conform to the Uniform Building, Plumbing and Electrical Codes. Based on these requirements, the Proposed Action shall cause minimal or no adverse effect to water resources, and scenic and recreational amenities. The Proposed Action will pose a minimal danger of floods, wind damage, storm surge, landslides, erosion, siltation, or failure in the event of earthquake.

- (2) *No development shall be approved unless the Authority or the Director has first found:*
- (A) *The development will not have any substantial adverse environmental or ecological effect, except as such adverse effect is minimized to the extent practicable and clearly outweighed by public health, safety, or compelling public interest. Such adverse effect shall include, but not be limited to, the potential cumulative impact of individual developments, each one of which taken in itself might not have a substantial adverse effect and the elimination of planning options;*
  - (B) *The development is consistent with the objectives and policies and Special Management Area guidelines of this chapter and any guidelines enacted by the legislature; and*
  - (C) *The development is consistent with the General Plan, zoning and subdivision codes, and other applicable ordinances.*

**Discussion:** The Proposed Action will not have any substantial adverse environmental or ecological effect, and mitigating measures will be employed, wherever possible to reduce or lessen any adverse environmental impacts as described in this environmental report. There are also compelling public interest factors that would be supported by the Proposed Action. The Proposed Action does not involve the potential cumulative impact of individual developments, each one of which taken in itself might not have a substantial adverse effect, and it does not significantly curtail other planning options; especially with regard to coastal resources.

The Proposed Action is consistent with the public policies of the County of Hawaii, including the Hawaii County General Plan, Kona Regional Plan and West Hawaii Regional Plan, and objectives and policies as provided by Chapter 205A, Hawaii Revised Statutes. The Proposed Action will not interfere with any existing or planned public accesses to the shoreline. Provisions will be made in accordance with the State and County rules and regulations for solid and liquid waste treatment and disposition. Water resources, scenic and recreational resources will not be adversely impacted.

There is adequate access from the Project site to recreation areas within the area. There are adequate and properly located public recreation areas relative to the subject Property. Wildlife preserves will not be affected by the Proposed Action. There are adequate provisions for solid and liquid waste treatment, disposition, and management for the Proposed Action that will minimize adverse effects upon Special Management Area resources. Alterations to existing land forms and vegetation will have no measurable effect on water resources and scenic and recreational amenities; the Property is not located in any area prone to flooding, landslides, erosion, siltation or failure in the event

of an earthquake and thus, will not increase the danger or risk to human life. Erosion and siltation will be dealt with by erosion control and other mitigating measures approved by the Department of Public Works of the County of Hawaii. Adverse environmental or ecological impacts will be minimized to the extent practicable, as discussed in this environmental report. The Applicant will comply with the requirements of the Zoning and Subdivision Codes relative to the Proposed Action. The Proposed Action will comply with the County of Hawaii's Uniform Building, Plumbing and Electrical Codes. The Proposed Action is also consistent with the goals, policies and standards of the General Plan, as detailed above.

- (3) *The Authority shall seek to minimize, where reasonable:*
- (A) *Dredging, filling or otherwise altering any bay, estuaries, salt marsh, river mouth, slough, or lagoon;*
  - (B) *Any development which would reduce the size of any beach or other area usable for public recreation;*
  - (C) *Any development which would reduce or impose restrictions upon public access to tidal and submerged lands, beaches, portions of rivers and streams within the Special Management Area and the mean high tide line where there is no beach;*
  - (D) *Any development which would substantially interfere with or detract from the line of sight toward the sea from the State Highway nearest the coast; and*
  - (E) *Any development which would adversely affect water quality, existing areas of open water free of visible structures, existing and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agricultural uses of land.*

**Discussion:** The Proposed Action does not involve any dredging, filling, or other alteration of any bay, estuary, salt marsh, river mouth, slough or lagoon, and will not involve any development that would reduce the size of any beach or other area usable for public recreation. The Proposed Action does not involve any development that would reduce or impose restrictions upon public access to tidal and submerged lands, beaches, and portions of rivers and streams within the Special Management Area, and the mean high tide line where there is no beach. The Proposed Action does not involve any development that would substantially interfere with or detract from the line of sight toward the sea from the state highway nearest the coast or from other scenic areas identified in the County General Plan. The Proposed Action does not involve any development that would adversely affect water quality, existing areas of open water free of visible structures, existing and potential fisheries and fishing grounds, wildlife habitats, estuaries sanctuaries, potential or existing agricultural uses of land.

#### 4.7 Chapter 343, HRS, Environmental Impact Statement Regulations

The Property is located entirely within the Kahaluu Historic District (SIHP 50-10-37-4150; a district with multiple sites) which was included in the National Register of Historic Places (NRHP) on December 27, 1974, and the Kona Field System (SIHP 50-10-37-6601). The Historic District was placed on the NRHP because of the following: (1) the numerous heiau in the area, (2) the unique architecture of several of the heiau, (3) the intrinsic value of petroglyphs in the area (including that of Keeku Heiau), and (4) the district's association with important traditional political and religious activities. The Kahaluu Historic District was removed from the State Register in March, 1980 due to insufficient notice requirements to private landowners that their properties were nominated for inclusion into the State Register.

Pursuant to Section 343-5(a)(4), HRS, an environmental assessment shall be required for actions which "propose any use within any historic site as designated in the National Register or Hawaii Register as provided for in the Historic Preservation Act of 1966, Public Law 89-665, or chapter 6E. "Historic Sites" are those sites where an important event or activity transpired, or where a person of note is identified with the entire landscape ensemble (1993 Haw. Sess. Laws, Act 156, §§ 1 and 2, effective July 1, 1993). An example of historic sites in this context would be the imprisonment of Queen Liliuokalani at Iolani Palace.

Based upon the Hawaii Register of Historic Places (HRHP) inventory nomination form, the only site located within the Property is SIHP 50-10-37-1617, which was originally identified as a platform complex consisting of seven platforms, three small enclosures, Kuakini Wall and another part of a wall (Exhibit 4). This Site was originally inventoried in 1929. The HRHP submittal reveals that this Site is not "unusual" and does not possess "important characteristics".

An archaeological field inspection (December, 1983) and Archaeological Reconnaissance Survey prepared by PHRI (September, 1989) encompassed the entire Project site (Study Area 2) in support of Azabu Keauhou Resorts' project within Parcel 35 (Exhibits 6a and 6b). Results of the survey indicated a total of 21 significant archaeological sites within Study Area 2 (Project site). Most of the sites were identified in previous archaeological investigations and surveys. The report identified additional components within those previously identified within SIHP 50-10-37-1617 as follows: SIHP 50-10-37-7827, 7828 and 7829.

Applicant has further obtained verbal confirmation from the Department of Land and Natural Resources, State Historic Preservation Division (SHPD), that a proposed use

within the Historic District may not require the preparation of an environmental assessment, so long as adequate measures are taken to preserve and protect the historic sites in the vicinity of the Project site. The Applicant has submitted draft Preservation and Data Recovery Plans for Historic Properties at Keauhou Development Parcel 14C (Plans) prepared by Cultural Surveys Hawaii, Inc., dated October 22, 2002 to the Department of Land & Natural Resources, SHPD (Exhibit 7a) and is in the process of revising the Plans to address comments and concerns from SHPD (Exhibit 7b). The Applicant will adhere to the Plans as approved by SHPD.

This environmental assessment has been prepared to fulfill these requirements.

#### **4.8 Kona Regional Plan**

The objectives of the Kona Regional Plan are to provide current socio-economic assumptions (updating those in the General Plan); to delineate areas of urban use and the pattern and relationship of such uses to other uses, such as open space and agriculture; and to provide an implementation strategy for directing the expenditure of public funds for capital improvements, and for coordinating priorities for urban growth.

The draft Kona Regional Plan, initially adopted in July 1982, was revised in 1983. The County Planning Commission adopted the plan on April 10, 1984. Planned land uses presented in the Kona Regional Plan are shown on the Conceptual Land Use (CLU) Map.

The makai area between Alii Drive and the Kuakini Wall is designated Open. The mauka area between the Kuakini Wall and the proposed Kahului-Keauhou Parkway is designated for residential uses. Surrounding land uses shown on the CLU Map include: Open, Residential and Village Commercial. The Proposed Action is consistent with the land use designated on the CLU Map for the Property, and is compatible with surrounding designated uses.

#### **4.9 West Hawaii Regional Plan**

The West Hawaii Regional Plan prepared by the Office of State Planning dated November 1989, addresses critical issues of State concern in North Kohala, South Kohala, and North Kona. Relevant issues as it relates to the proposed Project include the location, development, preservation, management, provision, utilization, and promotion of resort areas, new residential communities, outdoor recreation and open space, public infrastructure, special resource areas. The Plan is intended to complement the County's General Plan and Community Development Plans through the use of Special Resource Areas.

Special Resource areas include heritage or cultural resource areas. The Plan cites the need to more comprehensively inventory historical sites, to manage areas of cultural importance, to enhance and promote an appreciation of Hawaii's cultural heritage, and to enhance interpretation of sites within a regional context to provide cultural continuity and a quality visitor industry.

The Property is located entirely within the Kahalu'u Historic District and the Kona Field System. The Kuakini Wall and the area located makai of the Kuakini Wall will remain as Open space. A number of archaeological investigations and surveys have been conducted within the Project site and surrounding areas, and significant historic sites within the Property have been located. The Applicant has submitted draft Preservation and Data Recovery Plans for Historic Properties at Keauhou Development Parcel 14C prepared by Cultural Surveys Hawaii, Inc., dated October 22, 2002 (Plans) to the Department of Land & Natural Resources, SHPD, and is in the process of revising the Plans. The Applicant will ensure coordination and communication with the Department of Land and Natural Resources, SHPD to provide the most appropriate protection of significant features. The buffers as recommended by the SHPD will be adhered to.

## CHAPTER 5

### IDENTIFICATION OF MAJOR IMPACTS AND ALTERNATIVES CONSIDERED

#### 5.1 Major Impacts

**Impact:** Visual impact of residential development from Kamehameha III Road

**Mitigation:** The visual character of the area will change, but not in a negative manner. The existing scrub vegetation will be replaced with a residential landscape. Building will be low rise and will not significantly obstruct views from major roadways. The Applicant proposes implementation of project design and construction guidelines aimed at achieving visual cohesion with the Proposed Action, and visual compatibility with the surrounding environment.

**Impact:** The potential effects of sedimentation on coastal waters during construction.

**Mitigation:** The Property is located approximately 700 feet inland from the shoreline. However, during the construction phase, use of temporary settlement basins, filter berms, erosion control measures, and erosion barriers will minimize erosion potential and surface runoff. Approval of sedimentation and erosion control plans will be required prior to construction.

**Impact:** The Proposed Action will increase traffic at build out.

**Mitigation:** Applicant will implement the necessary roadway improvements in conjunction with development phasing to offset project related impacts.

**Impact:** Potential loss of historical, archaeological and cultural sites.

**Mitigation:** The significance of archaeological sites on the Property has been determined. The Applicant has submitted draft Preservation and Data Recovery Plans for Historic Properties at Keauhou Development Parcel 14C prepared by Cultural Surveys Hawaii, Inc., dated October 22, 2002 (Plans) to the Department of Land & Natural Resources, SHPD, and is in the process of revising the Plans. The Applicant will ensure coordination and communication with the Department of Land and Natural Resources, SHPD to provide the most appropriate protection of significant features. The buffers as recommended by the SHPD will be adhered to. The historic sites identified

within portions of Parcels 35 and 93 located makai of the Great Wall of Kuakini (Kuakini Wall), including the Kuakini Wall are not included within the development and will be subdivided off and consolidated with the archaeological preserve and cultural complex located within a portion of TMK: (3) 7-8-10:35.

## 5.2 Alternatives to the Proposed Action

“No Action” Alternative. The “no action” alternative would retain the Property in its present use. This alternative would deny the community the potential public benefits associated with the development proposal by providing housing to meet projected housing demands, planned in concert with long-term community plans, and for efficient integration of existing infrastructure with the present system to more efficiently accommodate existing and future needs of the community.

Higher and Lower Density Alternatives. Although the proposed site might be suitable for alternate uses permitted under the zoning, its location, topography and surrounding residential character heavily favor development of the Proposed Action. The alternative to the Proposed Action would not be in keeping with the County General Plan LUPAG map designation of Medium Density Urban and the Kona Regional Plan CLU Map residential designation. Residential sales within the Keauhou Resort have been relatively strong due in large part to the well-planned resort-residential community environment, the range and quality of residential products being offered, and the wealth of nearby commercial and recreational amenities. The Proposed Action is anticipated to meet demands for retirement, second home, and vacation rental units, as well as primary and local housing units. The Proposed Action will allow for the expansion within the Keauhou Resort area and will help to meet the growing demand for multiple-family residential units in an orderly and cost-effective manner. Under the Proposed Action, the density has been reduced from the maximum allowed of 194 to 176 units (parcel 53) and 30 to 24 units (parcel 93). The further scale-down would not represent an efficient use of existing infrastructure and services. Similarly, the higher density alternative would not allow for as sensitive a design in relation to the existing character of the site and sensitive treatment of archaeological sites and preservation of views.

**CHAPTER 6**

**WRITTEN COMMENTS AND RESPONSES DURING PUBLIC  
REVIEW PERIOD**

Agency comments on the Draft Environmental Assessment were received from the Office of Environmental Quality Control, County of Hawaii Parks and Recreation, Department of Land and Natural Resources, Land Management and Historic Preservation Division, Department of Health, Clean Water Branch and Clean Air Branch, and Department of Water Supply (Exhibit 10, agency comments and Applicant's responsive letters).

**CHAPTER 7****AGENCY ANTICIPATED DETERMINATION AND FINDINGS AND REASONS SUPPORTING ANTICIPATED DETERMINATION**

Based on the information described herein, the Proposed Action will not result in significant social, economic, cultural or environmental impacts. Consequently, a Finding of No Significant Impact ("FONSI") is anticipated, subject to the public review provisions of Section 11-200-9.1, HAR.

In considering the significance of potential environmental effects, the Applicant has considered the sum of effects on the quality of the environment and evaluated the overall cumulative effects of the proposed action. The Applicant has considered the expected consequences, both primary and secondary, and the cumulative, as well as, the short- and long-term effects of the Proposed Action.

As a result of these considerations, the Applicant has determined that the approval of the Proposed Action:

1. Will not involve a loss or destruction of any significant natural or cultural resources. The Applicant has submitted draft Preservation and Data Recovery Plans to the Department of Land & Natural Resources, SHPD, and is in the process of revising the Plans. The Applicant will ensure coordination and communication with SHPD to provide the most appropriate protection of significant features;
2. The beneficial uses of the environment for recreational and access purposes will not be curtailed since the Proposed Action does provide beneficial recreational opportunities, such as beach parks and public shoreline accesses for the general public;
3. The preparation of the environmental assessment is in compliance with Chapter 344, HRS, and the proposed action does not conflict with the short or long term policies, goals and guidelines of Chapter 343, HRS;
4. The economic or social welfare of the community will be positively affected from the creation of construction related jobs;
5. Public health will not be affected since mitigative measures would be employed to protect environmentally sensitive areas;

6. The Proposed Action will not cause substantial secondary impacts, nor adversely affect population changes on public facilities access and utility services which are available to the Project site;
7. The Proposed Action does not involve a substantial degradation of environmental quality as the proposed improvements do not compromise the character of the Property and surrounding area, but will improve the resources of the land by maintaining and preserving cultural sites through proper management;
8. The Property will remain consistent in character and size with other developed property in the area, and will neither conflict with or intensify existing land uses, nor burden existing area resources and available public services, and therefore does not have a cumulative effect upon the environment or involve a commitment for larger action;
9. There are no known rare, threatened, or endangered plant or animal species or habitats on the Property or immediate vicinity;
10. The Proposed Action will not detrimentally affect air or water quality or ambient noise levels since the air quality in the area is largely affected by air pollutants from vehicular rather than natural sources, does not involve any direct or chemical modifications to the nearshore environment nor change the amount of wave energy striking the shoreline, and any minor short-term increase in noise level during development will be confined to normal daylight hours;
11. The Proposed Action does not substantially affect environmentally sensitive areas such as flood plains, tsunami zone, erosion-prone areas, and geologically hazardous land;
12. The Proposed Action is consistent with the character and size of other developed parcels in the area, does not substantially impact upon the scenic vistas and viewplanes of surrounding properties, and will enhance the scenic and open space resources of the Project site; and
13. No energy consumption will be required for the Proposed Action.

Based on these findings, the Proposed Action will not result in significant environmental impacts and will not require preparation of an EIS in accordance with Chapter 343, HRS.

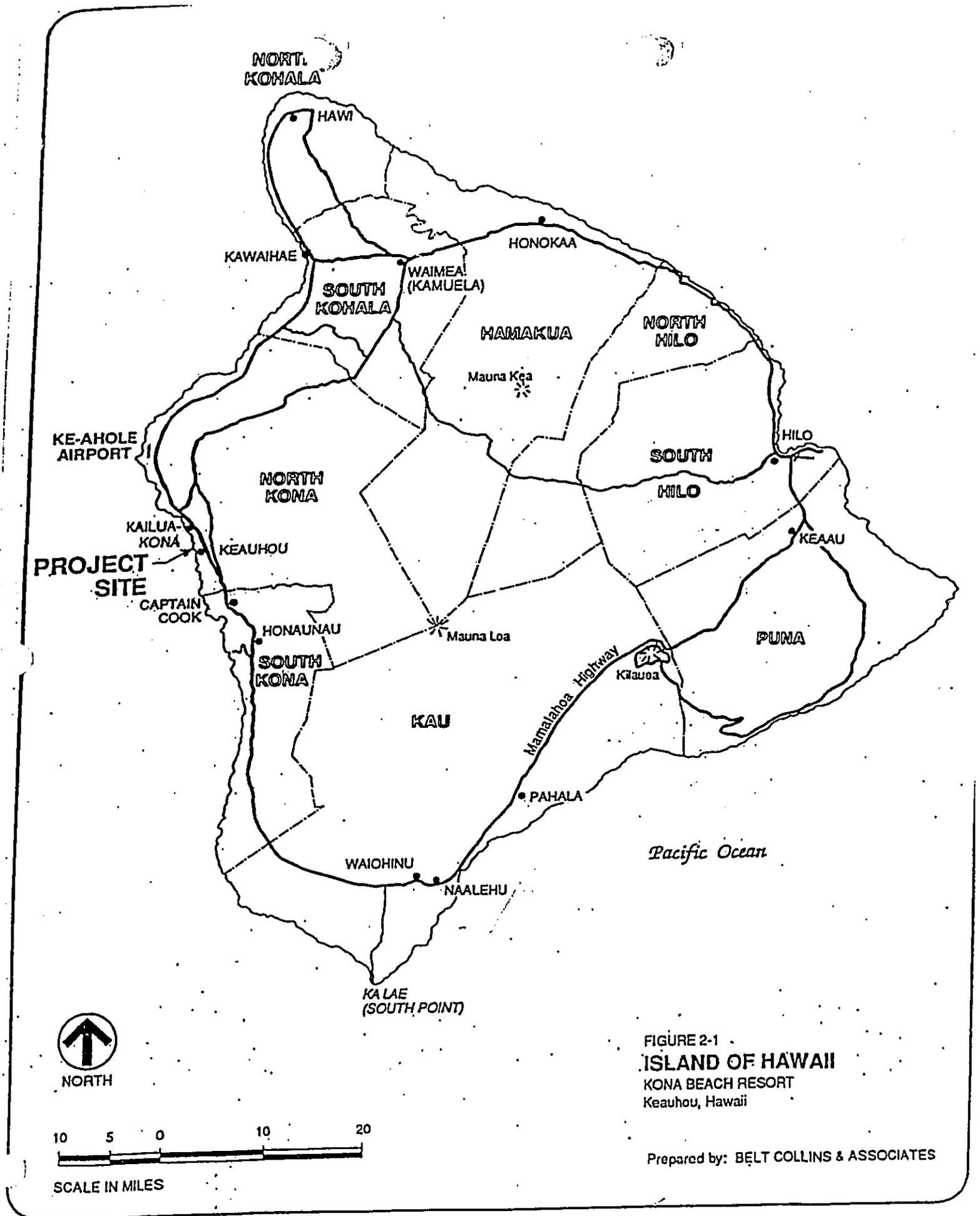
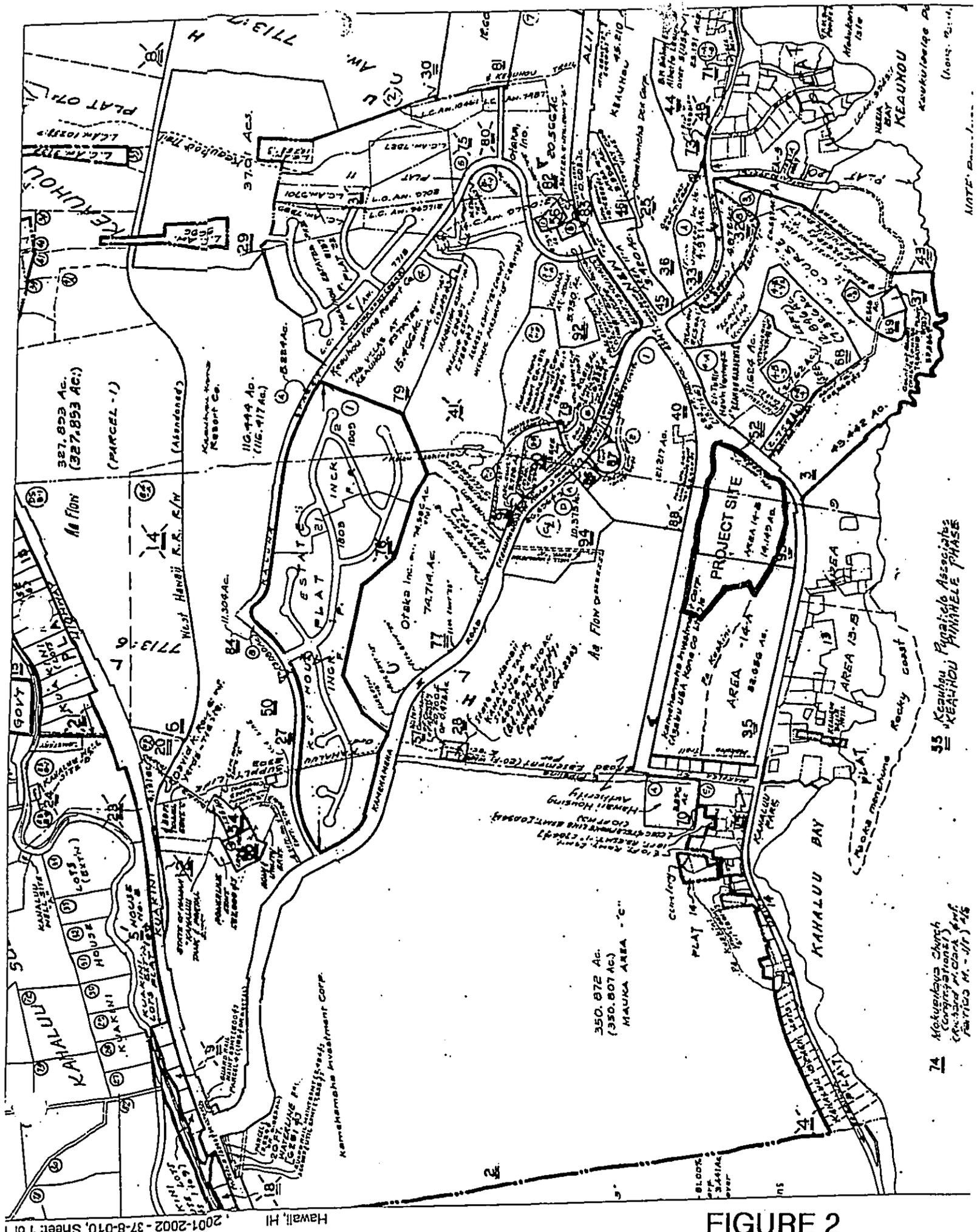


FIGURE 2-1  
**ISLAND OF HAWAII**  
 KONA BEACH RESORT  
 Keauhou, Hawaii

Prepared by: BELT COLLINS & ASSOCIATES

**FIGURE 1**



Hawaii, HI 2001-2002 - 37-8-010, Sheet: 1 of 1

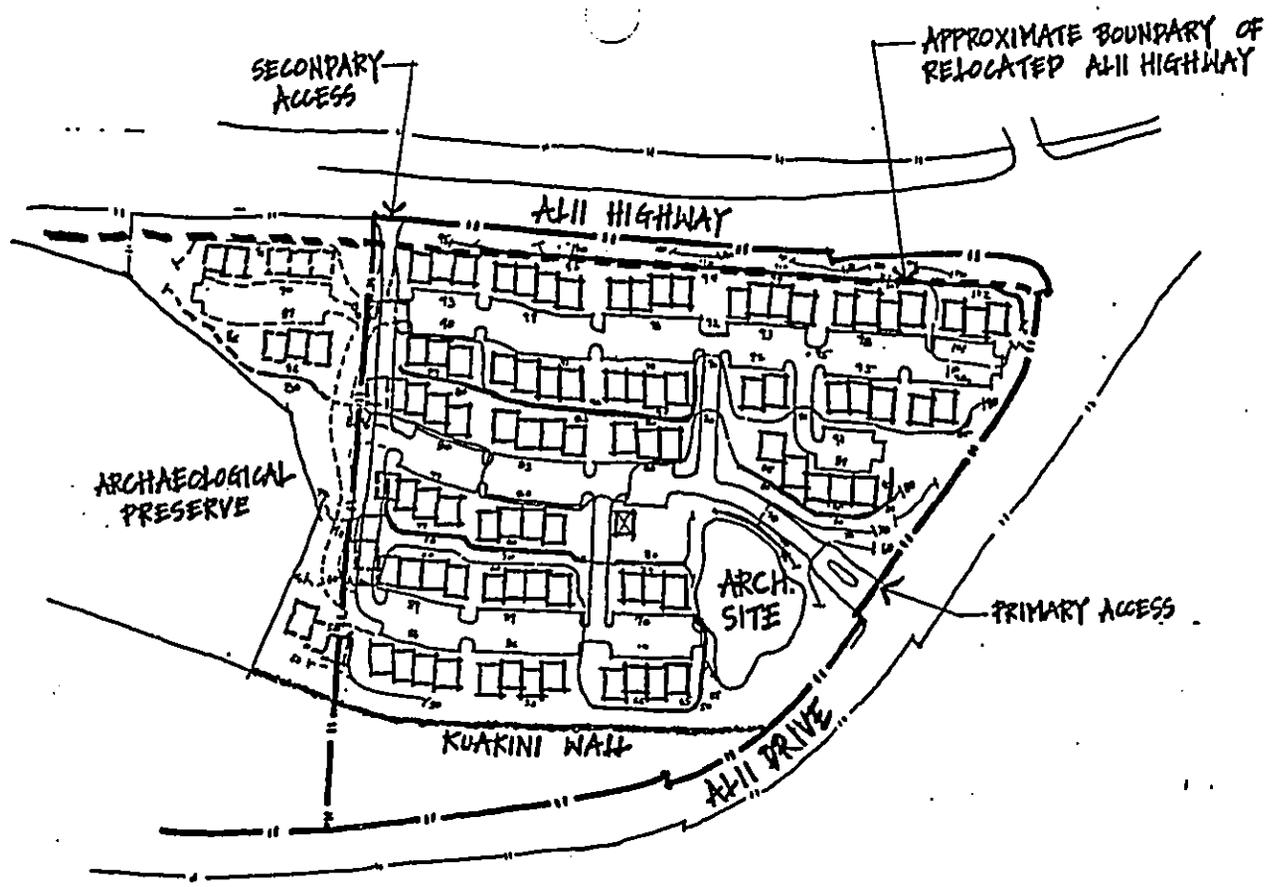
FIGURE 2

74 Makuaikaya Church  
(Congregational)  
Cen. and P. Clark, Inf.  
Ravens H. - (Jr) 4/5

55 Keauhou Pinnacle Associates  
KEAUHOU PINNACLE PHASE

NOTE: ...

DOCUMENT CAPTURED AS RECEIVED



Preliminary Concept Plan  
**KEAUHOU PARCEL 14C**  
Kamehameha Investment Corporation KEAUHOU, HAWAII

A north arrow pointing towards the top left of the page. Below it is a scale bar with markings at 0, 100, 200, and 400 feet.

FIGURE 3

BOTANICAL SURVEY  
KEAUHOU RESORT PROPERTY  
275-ACRE SITE  
DISTRICT OF NORTH KONA  
HAWAII

by

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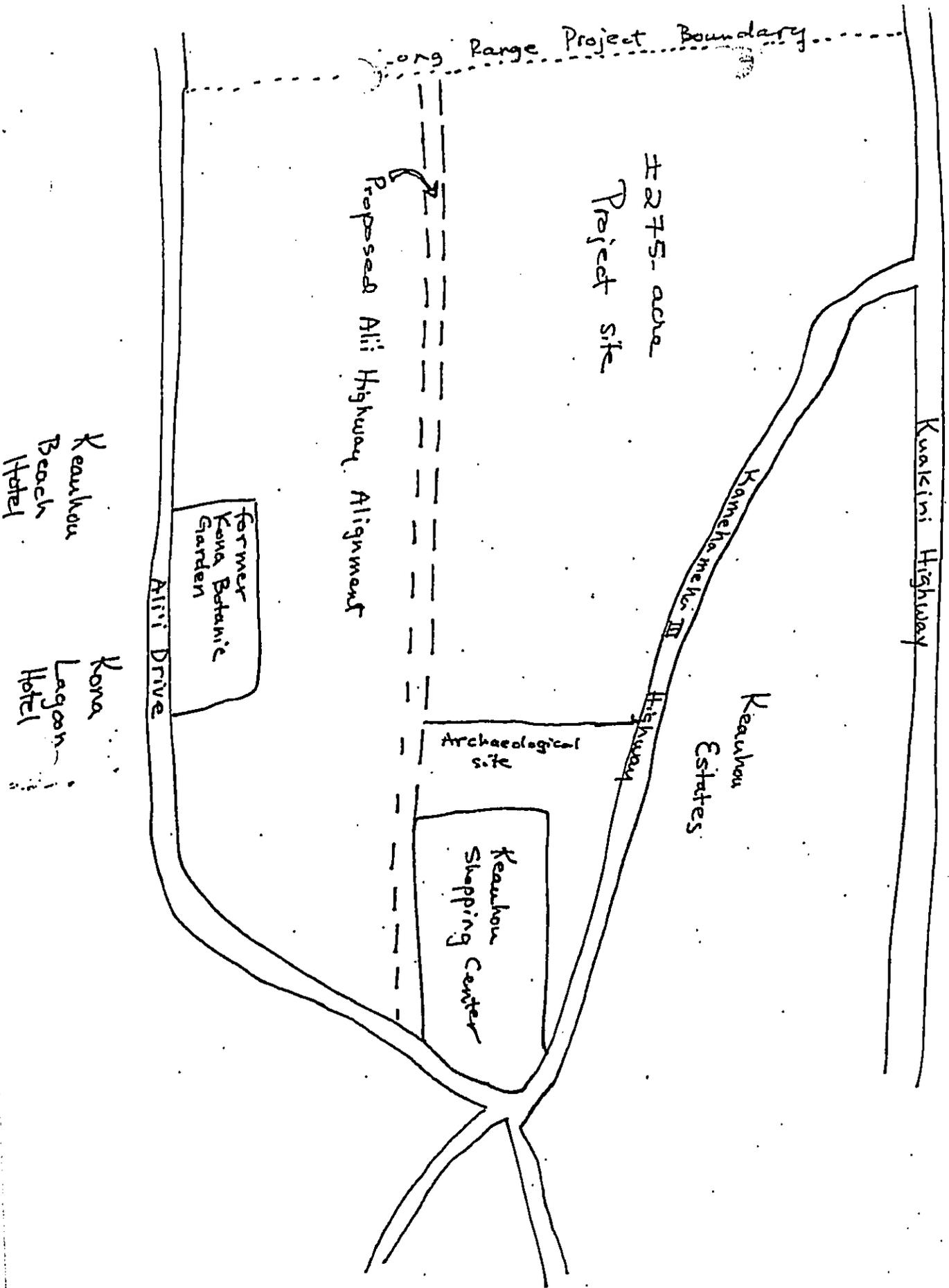
June 1988

EXHIBIT 1

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Sketch of ± 275-acre project site at Keauhou



## SUMMARY

On 23-24 May 1988, a botanical survey was carried out on the site of the proposed residential development. The site is approximately 275 acres in extent, located between the present Alii Drive and the Hawai'i Belt Road. There are two vegetation types present on the site: open, scrub-covered a'a lava field; and closed scrub- or forest-covered pahoehoe. A total of 105 species of vascular plants are found on the site. Of these, 95 (91%) are exotic weeds or deliberately introduced plants, and 10 (9%) native, or presumed-native plants. There is no intact native plant community present on the site. None of the species found in the course of the survey are officially listed as endangered or threatened; nor are any species proposed or candidate for such status.

## INTRODUCTION

The study site consists of approximately 275 acres in Keauhou, bounded on the west by the right-of-way for a proposed realignment of Alii Drive, on the east by Kamehameha III Road and Kuakini Highway. The northern boundary is marked by a stone wall and utility line running from Kuakini Highway to the present Alii Drive. The utility line right-of-way is cut periodically. The southern boundary is not well marked, consisting of a line perpendicular to Alii Drive and extending from Kamehameha III Road to the Kona Lagoon Hotel. The upper (eastern) boundary is at about 600 feet in elevation along Kuakini Highway, while the lower is at about 100-125 feet in elevation.

Because the high mountains of the Island of Hawai'i deflect the normal trade winds, weather does not follow patterns typical for the state on this portion of the Kona Coast. Mornings usually begin relatively clear, with clouds building continuously throughout the day. Rains may fall near the coast in the afternoon. During the evening, cloud cover decreases again. Summer months tend to be wetter than the rest of the year, just the reverse of the typical weather pattern for the state. Average annual rainfall is 35 inches. Relative humidity is relatively high (85%-90% maximum, 55%-65% mini-

mum). Annual maximum temperatures average 88°F, while minima average 65°F, a range only slightly exceeding the daily variation of 20°F (Leishmann 1986).

From the northern boundary and covering more than half of the site, soil is of the Punaluu Series, pahoehoe lava overlain with about four inches of acidic peat. Permeability is slow. Slope is from 6-20% and rock outcroppings cover 40-50% of the area. In the east, there are small patches of soils of the Kaimu series, neutral peat overlying a'a lava. Permeability is rapid. In the southern part of the site, the a'a is not overlain by any soil (Sato et al. 1973). Observation of the local weather patterns suggested that there may be a significant rainfall gradient from east to west across the site.

#### LITERATURE REVIEW

At least four previous botanical surveys have been done in the vicinity of the present study site (Park 1979; Char 1985, 1986, and 1988). All have found essentially the same assemblage of plants, though names reported are different. Most differences in plant names reflect changes of taxonomic opinion or source, some may reflect misidentifications, and some are actual differences in component species among the sites. None of the previous studies reported any rare or endangered species.

#### SURVEY METHODS

A walk-through method was used for this survey, with plants identified on sight. Plants that could not be positively identified were collected for later determination by comparison with known specimens in the herbarium and reference to standard taxonomic literature. Taxonomy and nomenclature of the ferns and fern allies is based on Wagner and Wagner (1987), while that for flowering plants follows Wagner et al. (in press). Access into the site was from along Kamehameha III Road and the Alii Drive realignment right-of-way. Access across the site was made possible by the utility-line right-of-way in the north, extensive cow trails, and some old, abandoned roads.

Species recorded from the site in this survey reflect both the season of study and the over-all environmental conditions. Surveys taken at different seasons of the year would probably yield slightly different species compositions, especially among the weedy annuals.

#### DESCRIPTION OF THE VEGETATION

##### Closed Scrub.

This is an extremely variable assemblage covering most of the site. In the lower, western portion it is characterized by a dense thicket of koa-haole (Leucaena leucocephala) with widely scattered emergent trees, mostly kiawe (Prosopis pallida), woman's tongue (Albizia lebeck) and 'opiuma (Pithecellobium dulce). Trees rarely encountered are Chinese banyan (Ficus microcarpa), tamarind (Tamarindus indica), and Jacaranda acutifolia. Beneath the koa-haole, the ground is covered with a dense growth consisting almost entirely of talinum (Talinum cf. triangulare), air plant (Kalanchoe pinnata), Chinese violet (Asystasia gangetica), or Guinea grass (Panicum maximum) to the exclusion of all else. On rocky outcrops, there is a thinner and more diverse cover, including Sida spinosa, Malvastrum coromandelianum, Bidens cynapifolia, Boerhavia coccinea, popolo (Solanum americanum), Chamaesyce hirta, 'uhaloa (Waltheria indica var. americana), Desmanthus virgatus, Eragrostis tenella, fountain grass (Pennisetum setaceum), Madagascar periwinkle (Catharanthus roseus), Stachytarpheta jamaicensis, 'ilie'e (Plumbago zeylanica), sour grass (Digitaria insularis), and rouge plant (Rivina humilis).

Small shrubs are not common, perhaps being excluded by the dense koa-haole thicket and ground covers. The few shrubby species present include ma'o (Abutilon grandifolium), cassia (Senna occidentalis), and indigo (Indigofera suffruticosa). Several species of vines climb trees and shrubs: bindweed (Ipomoea obscura), bittermelon (Momordica charantia), Coccinea grandis, and wild cucumber (Cucumis dipsaceus). Pelican flower (Aristolochia littoralis) is established in the northwestern corner the site.

In the upper portion of the site, trees are a more prominent component of the vegetation and also more diverse. In addition to those seen at lower elevation, there are monkey pod (Samanea saman), African tulip tree (Spathodea campanulata), Chinaberry (Melia azedarach), kukui (Aleurites moluccana), mulberry (Morus sp.), and papaya (Carica papaya). At one location along Kamehameha III Road, pink orchid tree (Bauhinia monandra) has escaped and is forming a large colony.

Cattle are far more common in the upper portion, and are probably responsible, at least in part, for differences observed in the shrub and herb vegetation. Shrubs include Pluchea symphytifolia, Lantana camara, klu (Acacia farnesiana), Christmasberry (Schinus terebinthifolius), castorbean (Ricinus communis), Buddleia asiatica, and sodom apple (Solanum linneanum). Common herb components here are Bermuda grass, (Cynodon dactylon), spiny pigweed (Amaranthus spinosus), four-o'clock (Mirabilis jalapa), beggar's ticks (Desmodium tortuosum), Cleome gynandra, Sacramento bur (Triumfetta semitriloba), Natal redtop (Rhynchelytrum repens), goose grass (Eleusine indica), heliotrope (Heliotropium amplexicaule), sowthistle (Sonchus oleraceus), Sida cordifolia and Sida rhombifolia, rattlepod (Crotalaria incana and pallida), partridge pea (Chamaecrista nictitans), Chenopodium murale and carinatum, Phyllanthus debilis and tenellus, finger grass (Chloris barbata), Emilia coccinea, crab grass (Digitaria ciliaris), and sand bur (Cenchrus echinatus).

At the upper elevation bindweed, coccinea, and koali awahi'a (Ipomoea indica) form the vine component, of which the last is by far the most predominant. Coccinea seems to have spread to this area from below only in the last year or two. It prefers dry coastal areas, and may be near its upper limit at Kuakini Highway.

#### Open Lava

This substrate is limited to the southernmost portion of the site. It is largely bare lava, little weathered, apparently not of great age, with broken patches of dense scrub 4-9 feet tall. To the west, this portion of the site

is contiguous with a separate 40-acre parcel also surveyed at about the same time.

The scrub is composed primarily of koa-haole, klu, and Christmasberry. Less common, but highly characteristic of this vegetation type, are noni (Morinda citrifolia) and maiapilo (Capparis sandwichiana). Tree species are stunted and scarcely taller than the scrub. They include autograph tree (Clusia rosea), octopus tree (Schefflera actinophylla), kukui, woman's tongue, monkey pod, and kiawe. Total plant cover is between 10% and 30%, denser at the interface with the closed scrub. Common vines are koali awahi'a, love-in-a-mist (Passiflora foetida), and huehue (Cocculus trilobus). The herb component is composed of beggar's ticks, cleome, Natal redtop, finger grass, Madagascar periwinkle, sowthistle, spurge, sida, malvastrum, and purslane (Portulaca oleracea). Sword fern (Nephrolepis multiflora) occurs sporadically in lava cracks. Adjacent to the nursery, there is a single clump of native prickly poppy (Argemone glauca).

A number of plants are established along Kamehameha III Road, but not farther into the site. These are a'ali'i (Dodonaea viscosa), Hedyotis corymbosa, Portulaca pilosa and Cyperus compressus.

#### THREATENED AND ENDANGERED SPECIES

No listed, proposed, or candidate threatened and endangered species, as designated by the Federal and/or State governments (U.S. Fish and Wildlife Service 1985; Herbst 1987) are found on the site. There are no remnant native plant communities. Only 9 native or presumed-native species are found on the site, and many of these are weedy, able to compete in the face of disturbance or invasion by other weeds.

## RECOMMENDATIONS

There is little of botanical interest on the project site, and it is of no great significance. Noni and kukui are possibly remnants of cultivation by the Hawaiians, though they both may have spread to the site from elsewhere without the help of man. These, as well as the native species, are found in similar environmental conditions throughout the islands. It is not likely that development of the site will result in serious damage to the state-wide status of any of the species involved.

Where feasible, it may be desirable to landscape with native plants. Plants are readily available, or can be propagated as needed, from local nurseries specializing in native plants. Many are adapted to such environmental conditions as are found on the site, are of cultural significance, and/or possess considerable ornamental value.

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## SPECIES LIST

A list of all the vascular plants found on the site follows. Plants are organized in three groups -- ferns and fern allies, monocots, and dicots. Within each group, they are further arranged in alphabetical order by family and genus. For each species, an accepted common name is given; the Hawaiian name is given if commonly used. Biogeographic status is indicated by a letter code. Finally, the presence (+) or absence (-) of each species within each vegetation type is provided. An explanation of abbreviations used (other than author citations) is given below.

### SCIENTIFIC NAME

cf. - correct species name not known with certainty, but plant resembles the species listed

sp. - correct species name not determined

### STATUS

E - endemic, native only to the Hawaiian Islands

I - indigenous, native to the Hawaiian Islands, but also native elsewhere.

P - Polynesian, not considered native, but thought to have been introduced by the Polynesians prior to 1778

X - exotic; not native, introduced after 1778

### VEGETATION TYPE

cs - closed scrub

ol - open lava

SPECIES LIST

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>BIOGEOGRAPHIC STATUS</u>		<u>VEGETATION TYPE</u>	
		<u>CS</u>	<u>OL</u>	<u>CS</u>	<u>OL</u>
<b>FERNS</b>					
Aspleniaceae					
<u>Nephrolepis multiflora</u> (Roxb.) Jarret ex Morton	sword fern	X		-	+
Polypodiaceae					
<u>Phymatosorus scolopendria</u> (Burm.) Ching	lau'ae	X		+	+
<b>MONOCOTS</b>					
Commelinaceae					
<u>Commelina benghalensis</u> L.	day flower	X		+	-
Cyperaceae					
<u>Cyperus compressus</u> L.	cyperus	X		-	+
Gramineae					
<u>Cenchrus echinatus</u> L.	sandbur	X		+	-
<u>Chloris barbata</u> (L.) Sw.	finger grass	X		+	+
<u>Cynodon dactylon</u> (L.) Pers.	Bermuda grass	X		+	-
<u>Digitaria ciliaris</u> (Retz.) Koeler	crab grass	X		+	+
<u>Digitaria insularis</u> (L.) Mez ex Ekman	sour grass	X		+	-
<u>Eleusine indica</u> (L.) Gaertn.	goose grass	X		+	-
<u>Eragrostis tenella</u> (L.) Beauv. ex R. & S.	Japanese love-grass	X		+	+

SCIENTIFIC NAME	COMMON NAME	STATUS	CS	01
<u>Heteropogon contortus</u> (L.) Beauv. ex R. & S.	pili	P?	+	-
<u>Melinis minutiflora</u> Beauv.	molasses grass	X	+	+
<u>Panicum maximum</u> Jacq.	Guinea grass	X	+	+
<u>Panicum maximum</u> Jacq. var. <u>trichoglume</u> Eyles ex Robyns	green panic grass	X	+	-
<u>Pennisetum setaceum</u> (Forsk.) Chiov.	fountain grass	X	+	+
<u>Rhynchelytrum repens</u> (Willd.) C. E. Hubb.	Natal reedtop	X	+	+
<u>Setaria verticillata</u> (L.) Beauv.	bristly foxtail	X	+	-
<b>DICOTS</b>				
Acanthaceae				
<u>Asystasia gangetica</u> (L.) T. Anderson	Chinese violet	X	+	+
Amaranthaceae				
<u>Amaranthus spinosus</u> L.	spiny pigweed	X	+	-
<u>Amaranthus viridis</u> L.	slender amaranth	X	+	-
Anacardiaceae				
<u>Schinus terebinthifolius</u> Raddi	Christmasberry	X	+	+
Apocynaceae				
<u>Catharanthus roseus</u> (L.) G. Don	Madagascar periwinkle	X	+	+
Araliaceae				
<u>Schefflera actinophylla</u> (Endl.) Harms	octopus tree	X	-	+

SCIENTIFIC NAME

COMMON NAME

STATUS CS 01

Aristolochiaceae

Aristolochia littoralis Parodi

pelican flower

X + -

Bignoniaceae

Jacaranda acutifolia Humb. & Bonpl.

Jacaranda

X + -

Spathodea campanulata Beauv.

African tulip tree

X + +

Boraginaceae

Heliotropium amplexicaule Vahl

heliotrope

X + +

Buddlejaceae

Buddleia asiatica Lour.

buddleia

X + +

Cactaceae

Opuntia ficus-indica (L.) Mill.

panini

X + +

Capparaceae

Capparis sandwichiana DC.

maiapilo, puapilo

E - +

Cleome gynandra L.

spider plant

X + +

Caricaceae

Carica papaya L.

papaya

X + +

Chenopodiaceae

Chenopodium carinatum R. Br.

chenopodium

X + +

Chenopodium murale L.

chenopodium

X + +

SCIENTIFIC NAME

COMMON NAME

STATUS

01

Compositae

<u>Ageratum conyzoides</u> L.		X	+	+
<u>Bidens cynapiifolia</u> HBK.		X	+	+
<u>Emilia coccinea</u> (Sims) G. Don		X	+	+
<u>Parthenium hysterophorus</u> L.		X	+	-
<u>Pluchea symphytifolia</u> (Miller) Gillis		X	+	+
<u>Sonchus oleraceus</u> L.		X	+	+
<u>Tridax procumbens</u> L.		X	-	+

Convolvulaceae

<u>Ipomoea indica</u> (J. Burm.) Merr.	I		+	+
<u>Ipomoea obscura</u> (L.) Ker-Gawl.	X		+	-

Crassulaceae

<u>Kalanchoe pinnata</u> (Lam.) Pers.		X	+	+
---------------------------------------	--	---	---	---

Cucurbitaceae

<u>Coccinea grandis</u> (L.) Voigt		X	+	+
<u>Cucumis dipsaceus</u> Ehrenb. ex Spach		X	+	+
<u>Momordica charantia</u> L.		X	+	-

Euphorbiaceae

<u>Aleurites moluccana</u> (L.) Willd.		P	+	+
<u>Chamaesyce hirta</u> (L.) Millsp.		X	+	+
<u>Chamaesyce hypericifolia</u> (L.) Millsp.		X	+	+
<u>Chamaesyce prostrata</u> (Ait.) Small		X	+	+

SCIENTIFIC NAME

Phyllanthus debilis Klein ex Willd.  
Phyllanthus tenellus Roxb.  
Ricinus communis L.

Guttiferae

Clusea rosea Jacq.

Labiatae

Leonotis nepetifolia (L.) R. Br.

Leguminosae

Acacia farnesiana (L.) Willd.  
Albizia lebbek (L.) Benth.  
Bauhinia monandra Kurz  
Chamaecrista nictitans (L.) Moench  
Crotalaria incana L.  
Crotalaria pallida Aiton  
Desmanthus virgatus (L.) Willd.  
Desmodium tortuosum (Sw.) DC.  
Indigofera suffruticosa Mill.  
Leucaena leucocephala (Lam.) deWit  
Pithecellobium dulce (Roxb.) Benth.  
Prosopis pallida (Humb. & Bonpl. ex Willd.) H.B.K.  
Samanea saman (Jacq.) Merr.  
Senna occidentalis (L.) Link  
Senna pendula (Humb. & Bonpl. ex Willd.) Irwin & Barneby

COMMON NAME	STATUS	CS	01
Phyllanthus	X	+	-
Phyllanthus	X	+	-
castorbean	X	+	+
autograph tree	X	+	+
lion's ear	X	+	+
klu	X	+	+
woman's tongue	X	+	+
pink bauhinia	X	+	+
partridge pea	X	+	+
rattlepod	X	+	-
rattlepod	X	+	-
virgate mimosa	X	+	-
beggarweed	X	+	+
indigo	X	+	+
koa-haole	X	+	+
'opiuma	X	+	+
kiawe	X	+	+
monkey pod	X	+	+
coffee senna	X	+	-
cassia	X	+	-

SCIENTIFIC NAME	COMMON NAME	STATUS	CS	01
<u>Tamarindus indica</u> L.	tamarind	X	+	-
Malvaceae				
<u>Abutilon grandifolium</u> (Willd.) Sweet	ma'o	X	+	+
<u>Malvastrum coromandelianum</u> (L.) Garcke	malvastrum	X	+	+
<u>Sida acuta</u> Burm.	sida	X	+	-
<u>Sida cordifolia</u> L.	sida	X	+	-
<u>Sida fallax</u> Walp.	'ilima	I	+	+
<u>Sida rhombifolia</u> L.	sida	X	+	+
<u>Sida spinosa</u> L.	sida	X	+	+
Meliaceae				
<u>Melia azedarach</u> L.	Chinaberry	X	+	-
Menispermaceae				
<u>Cocculus trilobus</u> (Thunb.) DC.	huehue	I	+	+
Moraceae				
<u>Ficus microcarpa</u> L. f.	Chinese banyan	X	+	+
<u>Morus</u> sp.	mulberry	X	+	-
Myrtaceae				
<u>Psidium guajava</u> L.	guava	X	+	+

SCIENTIFIC NAME

COMMON NAME STATUS CS 01

Nyctaginaceae

Boerhavia coccinea Mill.  
Mirabilis jalapa L.

boerhavia X + +  
four-o'clock X + -

Papaveraceae

Argemone glauca Pope

pua-kala, pokalakala E - +

Passifloraceae

Passiflora foetida L.

love-in-a-mist X + +

Phytolaccaceae

Rivina humilis L.

rouge plant X + -

Piperaceae

Peperomia leptostachya H. & A.

'ala'ala-wai-nui I - +

Plumbaginaceae

Plumbago zeylanica L.

'ilie'e I + +

Portulacaceae

Portulaca oleracea L.

Portulaca pilosa L.

Talinum cf. triangulare (Jacq.) Willd.

common purslane X + +  
portulaca X - +  
talinum X + +

SCIENTIFIC NAME

SCIENTIFIC NAME	COMMON NAME	STATUS	CS-01
Rubiaceae			
<u>Hedyotis corymbosa</u> (L.) Lam.	hedyotis	X	- +
<u>Morinda citrifolia</u> L.	noni	P	+ +
Sapindaceae			
<u>Dodonaea viscosa</u> Jacq.	a'ali'i	I	+ -
Solanaceae			
<u>Solanum americanum</u> Mill.	popolo	I?	+ -
<u>Solanum linneanum</u> Hepper & Jaeger	Sodom apple	X	+ -
Sterculiaceae			
<u>Maltheria indica</u> L. var. <u>americana</u> (L.) R. Br. ex Hosaka	'uhaloa, hi'aloa	I?	+ +
Tiliaceae			
<u>Triumfetta semitriloba</u> Jacq.	Sacramento bur	X	+ -
Verbenaceae			
<u>Lantana camara</u> L.	lantana	X	+ +
<u>Stachytarpheta jamaicensis</u> (L.) Vahl	stachytarpheta	X	+ +
Zygophyllaceae			
<u>Tribulus terrestris</u> L.	puncture vine	X	- +

SURVEY OF THE AVIFAUNA AND FERAL MAMMALS AT  
KEAUHOU RESORT PROJECT PROPERTY, KONA, HAWAII

Prepared for  
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By

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4 August 1988

EXHIBIT 2

SURVEY OF THE AVIFAUNA AND FERAL MAMMALS AT  
KEAUCOU RESORT PROJECT PROPERTY, KONA, HAWAII

INTRODUCTION

The purpose of this report is to summarize the findings of a three day (29-31 July 1988) bird and mammal field survey at Keauhou, Kona, Hawaii, for a proposed resort project (see Fig.1). Also included are references to pertinent literature as well as unpublished reports.

The objectives of the field survey were to:

- 1- Document what bird and mammal species occur on the property or may likely occur given the range of habitats available.
- 2- Provide some baseline data on the relative density of each species and where possible, within the constraints of the available time, determine the general habitat preferences of each species found on the property.
- 3- Determine the presence or likely occurrence of any native fauna particularly any that are considered "endangered" or "threatened". If such occur or are

likely to occur on the property identify what features of the habitat may be essential for these species and suggest how those resources may be protected.

#### GENERAL SITE DESCRIPTION

The project property is located on the Kona coast of the island of Hawaii (see Fig.1). Total acreage of the property surveyed was approximately 315 acres divided into two separate sites (Fig.1). This region of Hawaii normally receives light precipitation but may experience occasional heavy rain showers and flooding. The coastal sections of the site are more arid. Elevation in the mauka portions of the property is approximately 500 feet. Vegetation on the property consists of mostly exotic (introduced) trees with an understory of exotic weeds and grasses. Kiawe (Prosopis pallida) and Koa Haole (Leucaena glauca) are abundant. Cattle have grazed the understory making it possible to walk through the site despite its relatively steep terrain and brushy appearance.

Weather during the field survey varied from clear to light overcast. Winds were non-existent or very light from the SW.

## STUDY METHODS

Field observations were made with the aid of binoculars and by listening for vocalizations. These observations were concentrated during the peak bird activity periods of early morning and late afternoon. Attention was also paid to the presence of tracks and scats as indicators of bird and mammal activity.

At various locations (see Fig.1) eight minute counts were made of all birds seen or heard. Between these count stations walking tallys of birds seen or heard were also kept. These counts provide the basis for the population estimates given in this report. Data on habitat preferences come from these observations plus information provided in Berger (1972), Hawaii Audubon Society (1984) and Pratt et al. (1987). Unpublished reports of birds known from this coast and in this type of habitat on the island of Hawaii were also consulted in order to acquire a more complete picture of possible avifauna activity (Bruner 1984a, 1984b, 1984c, 1985, 1986). Observations of feral mammals were limited to visual sightings and evidence in the form of scats and tracks. No attempts were made to trap mammals in order to obtain data on their

relative density and distribution. Two nights were devoted to searching for the presence of owls and the Hawaiian Hoary Bat (Lasiurus cinereus semotus).

Scientific names used herein follow those given in the most recent American Ornithologist's Union Checklist (A.O.U. 1983), Hawaii's Birds (Hawaii Audubon Society 1984), Birds of Hawaii and the Tropical Pacific (Pratt et al. 1987) and Mammal species of the World (Honacki et al. 1982).

#### RESULTS AND DISCUSSION

##### Resident Endemic (Native) Land Birds:

No endemic land birds were recorded during the course of the field survey. Given the nature of the habitat none would be expected. The Short-eared Owl or Pueo (Asio flammeus sandwichensis) prefers more open grassland habitat and hence would not likely occur on this brushy site (Berger 1972, Pratt et al. 1987). This endemic subspecies is listed as endangered on Oahu by the State of Hawaii Department of Land and Natural Resources Division of Forestry and Wildlife but not elsewhere in Hawaii.

Migratory Indigenous (Native) Birds:

Migratory shorebirds winter in Hawaii between the months of August and May. Some juveniles will stay through the summer months (Johnson et al. 1981, in press). No migratory shorebirds were observed during the survey and due to the brushy conditions of the present habitat none would be expected to make extensive use of this area. The more open sections of Site 2 (see Fig.1) might occasionally serve as a roosting or loafing area during the winter months but foraging opportunities appear limited. Of all the shorebird species which winter in Hawaii the Pacific Golden Plover (Pluvialis fulva) is most likely to utilize what little suitable shorebird habitat exists on the present property. Plovers prefer open areas such as mud flats and lawns. They arrive in Hawaii in early August and depart to their arctic breeding grounds during the last week of April (Johnson et al. 1981). Johnson et al. (1981) and Bruner (1983) have also shown plovers are extremely site-faithful on their wintering grounds and many establish foraging territories which they defend vigorously. Such behavior makes it possible to acquire a fairly good estimate of the abundance of plover in any one area. These populations likewise remain relatively stable over many years.

Resident Indigenous (Native) Land Birds:

No resident indigenous species were observed. None would be expected in the present habitat.

Resident Indigenous (Native) Seabirds:

None were observed on the property and due to the number of potential predators none would be expected.

Resident Endemic and Indigenous (Native) Water Bird:

No wetlands occur on the property and thus the fact that no waterbirds were observed or expected.

Exotic (Introduced) Birds:

A total of only ten species of exotic birds were recorded during the field survey. Table One shows the relative abundance and typical habitat preferences of these species. The most abundant species during the three day survey were Japanese White-eye (Zosterops japonicus) Zebra Dove (Geopelia striata) House Finch (Carpodacus mexicanus) and Yellow-billed Cardinal (Paroaria capitata). Exotic species not recorded on the actual survey but which potentially could be found in this sector of the island and at this elevation and habitat include: Common Barn Owl (Tyto alba), Warbling Silverbill (Lonchura malabarica), Northern Mockingbird (Mimus polyglottos), Melodious Laughing-Thrush

(Garrulax canorus), Gray Francolin (Francolinus francolinus) and Ring-necked Pheasant (Phasianus colchicus) (Bruner personal field notes, Pratt et al. 1987).

Feral Mammals:

The only feral mammals observed during the survey were the Small Indian Mongoose (Herpestes auropunctatus) and cats. No rats or mice were recorded but it would be highly unusual if these ubiquitous mammals did not occur on the property. Without a trapping program it is difficult to conclude anything about the relative abundance of rats, mice, mongooses and cats. However, it is likely that their numbers are typical of what one would find elsewhere in similar habitat on this coast of Hawaii.

Records of the endemic and endangered Hawaiian Hoary Bat (Lasiurus cinereus semotus) are sketchy but the species has been reported from the Kona coast (Tomich 1986). None were observed on this field survey despite two nights of intense searching. However, bats have been observed in similar dry coastal habitat elsewhere in Hawaii (Bruner 1984c). This species roosts solitarily in trees. So it is not unreasonable to assume that it might occasionally occur on the property. Much remains to be known about the natural history of this species and its requirements here in Hawaii.

## CONCLUSION

A brief field survey can at best provide a limited perspective of the wildlife present in any given area. Not all species will necessarily be observed and information on their use of the site must be sketched together from brief observations and the available literature. The number of species and the relative density of each species may vary throughout the year due to available resources and reproductive success. Species which are migratory will quite obviously be a part of the ecological picture only at certain times during the year. Exotic species sometimes prosper for a time only to later disappear or become a less significant part of the ecosystem (Williams 1987). Thus only long term studies can provide the insights necessary to acquire both a broad view as well as a more definitive perspective of the bird and mammal populations in a particular area. However, when brief field studies are coupled with data gathered from other similar habitats the value of the conclusions drawn are significantly increased.

The following are broad conclusions related to bird and mammal activity on the property:

- 1- The present environment provides a moderate range of habitats which are utilized by the typical array of exotic species of birds one would expect at this

elevation and in this type of environment on the Kona coast of Hawaii. No native land birds or seabirds were recorded. No wetlands occur on the property and thus the absence of any wetland birds.

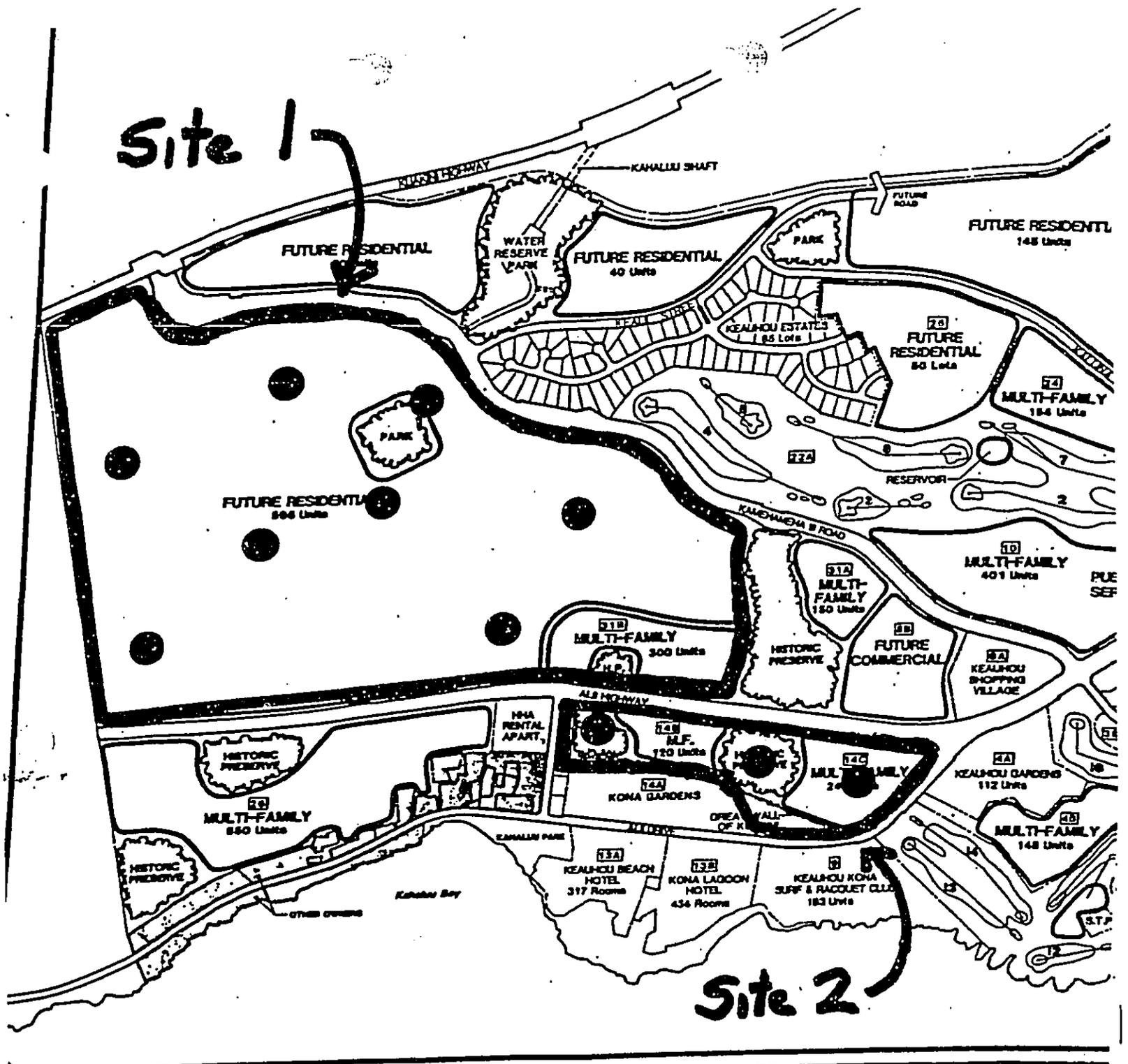
- 2- The dense nature of the vegetation on this property likely accounts for the relatively large number of individuals recorded on the eight minute counts for many of the species.
- 3- The proposed development would create considerably more open habitat than presently exist and would likely result in the following changes in the avifauna and feral mammals on this property:
  - a- Some species would probably experience a decline in numbers of individuals per unit area. Species in this situation would be: Japanese White-eye, Zebra Dove and Yellow-billed Cardinal.
  - b- Species whose population on the property will likely increase due to the proposed development include: Common Myna (Acridotheres tristis), House Sparrow (Passer domesticus) and Pacific Golden Plover.
  - c- Mongoose may become less abundant while the number of cats and also dogs could increase due to residential development.
- 4- The fact that no game birds such as Gray Francolin and Ring-necked Pheasant were noted on the property

was unexpected and may be due to a number of reasons ie. predator pressure or hunting pressure. These species are often detected by voice rather than by sight particularly in areas of dense vegetation.

- 5- The most unexpected discovery was the occurrence of the introduced Lavender Waxbill (Estrilda caerulescens) known presently in Hawaii only from the Puu Waa area (Hawaii Audubon Society 1984, Pratt et al. 1987). This species is obviously spreading in the Kona area.
- 6- In order to obtain more data on mammals, a trapping program would be required. The brief observations of this survey did not reveal any unusual mammal activity. No endangered species were observed.

Phillip Bruner  
Assistant Professor of Biology  
Director, Museum of Natural History  
BYU-H  
Laie, Hawaii 96762

4 August 1988



# LAND USE MASTER PLAN

## KEAUHOU RESORT

Fig. 1. Project property with both sites indicated and eight minute count stations marked by a ●

Relative abundance and general habitat preferences of exotic birds on Keauhou Resort Property, Kona, Hawaii.

COMMON NAME	SCIENTIFIC NAME	RELATIVE ABUNDANCE*	HABITAT*
Spotted Dove	<u>Streptopelia chinensis</u>	U = 2.2	E, D
Zebra Dove	<u>Geopelia striata</u>	A = 12.4	E, D
Common Myna	<u>Acridotheres tristis</u>	U = 2.3	D, E
Northern Cardinal	<u>Cardinalis cardinalis</u>	C = 5.3	T, E
Yellow-billed Cardinal	<u>Paroaria capitata</u>	A = 11.5	T, E, D
Japanese white-eye	<u>Zosterops japonicus</u>	A = 17	T, E
House Sparrow	<u>Passer domesticus</u>	R = 6	D
House Finch	<u>Carpodacus mexicanus</u>	A = 12.1	E, G
Nutmeg Mannikin	<u>Lonchura punctulata</u>	R = 15	G
Lavender Waxbill	<u>Estrilda caerulea</u>	R = 5	E, D

\* (See page 13 for key to symbols)

KEY TO TABLE 1

Relative Abundance = Average number of individuals observed during walking survey or average frequency on eight minute counts in appropriate habitat.

A = Abundant (ave. 10+) on 8 min. counts or noted between count stations

C = Common (ave. 5-10) on 8 min. counts or noted between count stations

U = Uncommon (ave. less than 5) on 8 min. counts or noted between count stations

R = Rare (number which follows is total recorded for all days of the survey)

Habitat Preference = Habitat type most likely to occur in on this property

T = Thickets of dense vegetation (trees/brush)

E = Ecotone (boundary of wooded areas and open patches)

D = Areas of human and cattle disturbance such as cattle pens

G = Patches of grassland (very limited on the present property)

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Certification of Property  
THE HAWAII REGISTER OF HISTORIC PLACES

Submitted to the Hawaii Foundation for History and the Humanities, Historic  
Places Review Board on July 14, 1972  
(date)

(10-37-4150)  
Kahalu'u Historic District is hereby placed on the Hawaii Register  
(name)

of Historic Places and found to be in Local significance  
National Register  
(category)

William K. Kihuchi  
Archaeologist

John H. Mott  
Architect

F. Jackson  
Historian

Richard Paolinawan

Bernard L. ...

March 19, 1973  
(date)

Transmitted by the Trustees, Hawaii Foundation for History and the  
Humanities at their meeting on March 20, 1973 to the State  
(date)  
Liaison Officer.

Frank H. ...  
Chairman, Board of Trustees  
Hawaii Foundation for History and  
the Humanities

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COVER SHEET

HAWAII REGISTER OF HISTORIC PLACES

50 - 10-37-4150

SITE NAME/TYPE KAHALU'U Historic District

SITE IDENTIFICATION NUMBER

DISTRICT NORTH KONA

PRE-1778  
DATE/PERIOD

AREA \_\_\_\_\_ square \_\_\_\_\_ s

PRESENT LAND USE(S) URBAN, PARK, GRAZING

CATEGORY Single Feature  Complex  Place

DESTRUCTION:  No Known Future Danger  Possible Future Danger  Future Danger Certain  Present Danger  Presently Being Destroyed

OWNERSHIP  Public  Private

STATUS  Occupied  Unoccupied

CONDITION  Excellent  Good  Fair  Deteriorated

INTEGRITY  Unaltered, Orig Loc  Unaltered, Moved  Altered, Orig Loc  Altered, Moved

ACCESSIBILITY  Unrestricted  Restricted  Inaccessible

LEGENDARY MATERIALS KNOWN  Yes  NO

WRITTEN HISTORICAL MATERIALS  Yes  No

SUSCEPTIBILITY TO INTERPRETATION  Good  Moderate  Poor

IMPORTANCE AS EXAMPLE OF TYPE SITE  Good  Moderate  Poor

RESEARCH POTENTIAL  Good  Moderate  Poor

LOCAL ATTITUDES ABOUT SITE  Valuable  Moderate Value  Low Value  Ambivalent  Unknown

BRIEF DESCRIPTION OF SITE (Columns 21-80)  
Complex of Ten heiau, Petroglyphs, habitations, fields, etc.

STAFF EVALUATION  High Value  Valuable  Reserve  Marginal

SUGGESTED THEME(S) Hawaiian site, Religion, Agriculture, Settlement patterns, Recreation, vestiges of Rome

DATE SUBMITTED TO REVIEW BOARD JUL 14 1972

REVIEWER'S RECORD AND EVALUATION

NAME \_\_\_\_\_ Date Reviewed \_\_\_\_\_

CATEGORY  High Value  Valuable  Reserve  Marginal

SIGNIFICANCE  National  State  Local

RECOMMENDED DISPOSITION  Nominate National Register  State Register  Staff Files

RECOMMENDED THEMES:  
REVIEWER'S COMMENTS:

REVIEW BOARD EVALUATION RECORD

DATE REVIEWED 3/19/73 RECORDER \_\_\_\_\_

OFFICIAL CATEGORY  High Value  Valuable  Reserve  Marginal

OFFICIAL SIGNIFICANCE  National  State  Local

OFFICIAL THEMES Hawaiian site, Religion, agriculture, settlement patterns, recreation

OFFICIAL DISPOSITION  National Register Nomination  State Register  Staff Files Notes

REVIEW BOARD COMMENTS:

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

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STATE PARKS DIVISION

HAWAII REGISTER OF HISTORIC PLACES  
ARCHAEOLOGICAL FORMS

0-51-112

FORM 01: FIELD SURVEY

12  
4 CORNER

2 N. / 23 E.  
13 14 15 16 17 18 19 20 21 22 23  
SINGLE POINT COORDINATE LOCATION

17 26 27 28 29 30 31 01 18  
24 25 26 27 28 29 30 31 32 33 34 35  
DISTRICT LOC FACTOR AREA SQUARE CATEGORY SIG 1 SIG 2

3 1 TSN 01 07 72  
6 37 38 39 40 41 42 43 44 45 46 47 48 49  
ESTR LAND CLASS PHOTOS INITIALS INSTITUTION MONTH YEAR

HISTORICAL OR COMMON NAME: KAHALU'U HIST DIST  
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67

<u>68</u> <u>69</u> <u>70</u> <u>71</u> <u>72</u> <u>73</u> <u>74</u> <u>75</u> <u>76</u> <u>77</u> FEATURE CLASSIFICATION CODE	<u>78</u> COND	<u>79</u> INTG	<u>80</u> PERIOD
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FORM 11: FOUR CORNER LOCATION

CORNER: 12 13 2 14 15 16 17 18 19 N. / 20 21 22 23 24 E.

CORNER: 25 26 2 27 28 29 30 31 32 N. / 33 34 35 36 37 E.

CORNER: 38 39 2 40 41 42 43 44 45 N. / 46 47 48 49 50 E.

CORNER: 51 52 2 53 54 55 56 57 58 N. / 59 60 61 62 63 E.  
QUAD NORTH GRID COORDINATE EAST GRID COORDINATE

CLASS:

NRHP

HRHP

Keypunched

ISLAND

QUAD

IDENTIFICATION NO.

50-10-37-7-4150

DOCUMENT CAPTURED AS RECEIVED



DEPARTMENT OF LAND AND NATURAL RESOURCES  
STATE PARKS DIVISION

JUL 11 1972

HAWAII REGISTER OF HISTORIC PLACES  
ARCHAEOLOGICAL FORMS

FORM 01: FIELD SURVEY

12  
4 CORNER

2 N. / 22 E.  
13 14 15 16 17 18 19 20 21 22 23  
SINGLE POINT COORDINATE LOCATION

17 26 27 28 29 30 3 01 18  
24 25 26 27 28 29 30 31 32 33 34 35  
DISTRICT LOC FACTOR AREA SQUARE CATEGORY SIG 1 SIG 2

3 1 TSN 01 07 72  
36 37 38 39 40 41 42 43 44 45 46 47 48 49  
DESTR LAND CLASS PHOTOS INITIALS INSTITUTION MONTH YEAR

HISTORICAL OR COMMON NAME: K A H A L U ' U H I S T D I S T  
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67

<u>68</u> <u>69</u> <u>70</u> <u>71</u> <u>72</u> <u>73</u> <u>74</u> <u>75</u> <u>76</u> <u>77</u> FEATURE CLASSIFICATION CODE	<u>78</u> COND	<u>79</u> INTG	<u>80</u> PERIOD
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FORM 11: FOUR CORNER LOCATION

NW CORNER: 12 13 2 N. / 20 21 22 23 24 E.  
14 15 16 17 18 19

NE CORNER: 25 26 2 N. / 33 34 35 36 37 E.  
27 28 29 30 31 32

SE CORNER: 38 39 2 N. / 46 47 48 49 50 E.  
40 41 42 43 44 45

SW CORNER: 51 52 2 N. / 59 60 61 62 63 E.  
53 54 55 56 57 58

QUAD NORTH GRID COORDINATE EAST GRID COORDINATE

CLASS: NRHP HRHP  
Keypunched  
ISLAND 50-10-37-7-4150  
QUAD 3 4 5 6 7 8 9 10 11  
IDENTIFICATION NO.



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M 31: PROPERTY OWNERSHIP

50 - 10 - 37 - 4150  
3 4 5 6 7 8 9 10 11  
ISLAND QUAD IDENTIFICATION NO.

12 21 1 2 2 2  
12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27  
USE 1 USE 2 STAT OWNR ATTD ACCS zone sect plat parcel  
T A X M A P K E Y  
VARIED, but main one is:

PROPERTY OWNER: B I S H O D E S T A T E  
28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45

STREET ADDRESS: 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

TOWN OR CITY: 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80  
STATE ZIP CODE

FORM 41: BACKGROUND DATA

50 - 10 - 37 - 4150  
3 4 5 6 7 8 9 10 11  
ISLAND QUAD IDENTIFICATION NO.

AHUPUA'A K A H A L U ' U  
12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

PREVIOUS SURVEYS: M U L T I P L E  
27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44

PREVIOUS SITE DESIGNATION(S): M U L T I P L E  
45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62

LAST NAME OF SURVEYOR: M U L T I P L E  
63 64 65 66 67 68 69 70 71 72 73 74

05 71 05  
75 76 77 78 79 80  
INSTITUTION YEAR FILED AT

## FEATURE DESCRIPTION FORM

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

Kahalu'u ahupua'a, or native land division, lies to the south of Kailua on the western coast of Hawaii Island. Today it is being developed as a major resort area with one hotel already erected and others under construction. In addition, a County Park is found at Kahalu'u Bay.

This historic district is noteworthy because detailed survey efforts by the Bishop Museum and others have located and recorded some ten heiau, the massive stone religious structures built by the ancient Hawaiians. Many of these heiau, are named and have both legendary and historic materials associated with them. Almost all are in good condition and have been relatively untouched by the ravages of time and urban development.

Among the most important heiau in the district is Kuemanu, a heiau dedicated to surfing. Kuemanu is a large structure constructed of piled stones immediately behind the sea at Kahalu'u Bay. It is the only known major heiau for surfers to be found in the state, and, as such, draws much of its importance from this for surfing has become an international sport after springing from its Hawaiian origins. Kuemanu is being acquired by the County of Hawaii at this time.

Other important heiau include Makole-'a, Ke'eku, Hapaiali'i, Ke'eku, Pa o umi, Halelaau, and Papakoholua, while nearby just over the ahupua'a boundary and included in this district are the Inikiwai and Kavalilili heiau.

Although the Kahalu'u Historic District is primarily a recognition of the clustering of significant heiau, the District also contains numerous other important historic places and remains. These include other important historic places and remains. These include an old stone church behind Kahalu'u Bay, a breakwater built by the chief Kalai-kini that encloses part of the Bay, portions of the ancient Hawaiian field system in the upland area, numerous habitation areas, caves, burial platforms, wells, midden sites, enclosures, petroglyph fields, and numerous walls. Sites within the District but not individually recorded by the Statewide Inventory Team are described in the Bishop Museum Anthropology Dept Reports 71-4, 71-5, 71-10, and 71-11.

### Significance

The basic significance and value to Hawaiian culture history is the concentration of such a number of heiau within a relatively small area. No other area on Hawaii Island has a comparable number of heiau in the same area, and in fact, this concentration is only exceeded by those of the Southeast Molokai Historic District.

Heiau are important to modern Hawaii for they illustrate the dominant role of religion in ancient Hawaiian society. Constructed of hundreds of thousands of large rocks, these heiau stand as a visible reminder of the complexities of Hawaiian society which could command and direct the labors of hundreds of workers for public works projects.

Heiau, such as these important ones at Kahalu'u, are treated with respect by modern residents for the ancient way of life does not lie so far behind in Hawaii.

SUPPLEMENTARY FEATURE DESCRIPTION FORM

10 ISLAND      37 QUAD      4150 IDENTIFICATION NO.      \_\_\_\_\_ FEATURE NUMBER

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

Significance - Cont'd

Kuemanu heiau, especially, is of importance within this District because it was a heiau used by surfers, who would make offerings to ensure good surfing conditions. It is the only such heiau known to still be in existence in the State, and it is especially important that Kuemanu be preserved, stabilized, restored, and interpreted. Surfing originated in Hawaii with the ancient Hawaiians, and has now spread throughout the world to become an international sport. It is altogether fitting that Kuemanu be preserved for the role it played in surfing in the past.

The other features in the District are also of importance for most are in good condition and have both high research and interpretive potential. Settlement pattern studies would be particularly rewarding, as would detailed excavations in midden and habitation areas. This area is already developing into a major visitor center and the many heiau and other sites could be stabilized and interpreted, perhaps through the use of a trail system.

SIGNED: \_\_\_\_\_

DATE: \_\_\_\_\_

7. DESCRIPTION

CONDITION	(Check One)					
	<input type="checkbox"/> Excellent	<input checked="" type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Deteriorated	<input type="checkbox"/> Ruins	<input type="checkbox"/> Unexposed
	(Check One)			(Check One)		
	<input type="checkbox"/> Altered	<input checked="" type="checkbox"/> Unaltered	<input type="checkbox"/> Moved	<input checked="" type="checkbox"/> Original Site		

DESCRIBE THE PRESENT AND ORIGINAL (if known) PHYSICAL APPEARANCE

The Kahalu'u Historical District encompasses the seaward half of the Kahalu'u ahupua'a (an ancient Hawaiian land division) and a small portion of Keauhou ahupua'a. The land is generally fairly flat for several hundred meters behind the sea, with perhaps a quarter covered by rough lava which supports a sparse vegetation of small shrubs and thorny kiawe trees. The remaining portion has been developed into urban resort areas and a county beach park. The major north-south coastal road, Alii Drive, separates the developed urban areas along the sea from the thickly vegetated sloping lands inland in the northern two-thirds, and the continuation of the barren lava flows of the southern third.

The historic district is most noteworthy because of the concentration of some ten major Hawaiian heiau within the area. Hawaiian heiau are massive structures of stacked stone constructed and dedicated to the worship and propitiation of the Hawaiian gods. It is very unusual, and highly significant, that so many major heiau are to be found in this rather small area. A number of these heiau have important associations with major events of traditional Hawaiian history and with occurrences in Hawaiian legend. Almost all are in good condition and have been relatively untouched by the ravages of time and urban development.

Among the most important heiau in the district is Kuemanu, a heiau dedicated to the ancient Hawaiian sport of surfing. Kuemanu is located immediately seaward of Alii Drive at the northern end of Kahalu'u Bay. It is one of the few remaining major heiau dedicated to surfing in the state, and draws much of its importance from this association with what has become an international sport.

Other important heiau include Makole-'a, Ke'eku, Hapaiali'i, Pa o umi, Halelaau and Papakoholua, while nearby, but just over the ahupua'a boundary in Keauhou are found Inikiwai and Kawaliilii heiau.

The district is also remarkable for a number of other historic places and remains, such as an old stone church behind Kahalu'u Bay; a breakwater built by the chief, Kalai'kini, that encloses part of the Bay; portions of the ancient Hawaiian field system in the upland area, numerous habitation areas, caves, walls, burial platforms, wells, midden sites, enclosures, and petroglyph fields. These are well described in a series of survey reports by the Bishop Museum (Anthropology Department Reports 71-4, 71-5, 71-10, and 71-11).

DOCUMENT CAPTURED AS RECEIVED

SEE INSTRUCTIONS

A. SIGNIFICANCE			
<b>PERIOD (Check One or More as Appropriate)</b>			
<input type="checkbox"/> Pre-Columbian	<input type="checkbox"/> 16th Century	<input type="checkbox"/> 18th Century	<input type="checkbox"/> 20th Century
<input type="checkbox"/> 15th Century	<input type="checkbox"/> 17th Century	<input type="checkbox"/> 19th Century	<input checked="" type="checkbox"/> Precontact
<b>SPECIFIC DATE(S) (If Applicable and Known)</b>			
<b>AREAS OF SIGNIFICANCE (Check One or More as Appropriate)</b>			
<input type="checkbox"/> Aboriginal	<input type="checkbox"/> Education	<input checked="" type="checkbox"/> Political	<input type="checkbox"/> Urban Planning
<input checked="" type="checkbox"/> Prehistoric	<input checked="" type="checkbox"/> Engineering	<input checked="" type="checkbox"/> Religion/Philosophy	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Historic	<input type="checkbox"/> Industry	<input type="checkbox"/> Science	_____
<input checked="" type="checkbox"/> Agriculture	<input type="checkbox"/> Invention	<input type="checkbox"/> Sculpture	_____
<input checked="" type="checkbox"/> Architecture	<input type="checkbox"/> Landscape	<input type="checkbox"/> Social/Humanitarian	_____
<input checked="" type="checkbox"/> Art	<input type="checkbox"/> Literature	<input type="checkbox"/> Theater	_____
<input type="checkbox"/> Commerce	<input type="checkbox"/> Military	<input type="checkbox"/> Transportation	_____
<input type="checkbox"/> Communications	<input type="checkbox"/> Music		_____
<input type="checkbox"/> Conservation			_____
<b>STATEMENT OF SIGNIFICANCE</b>			
<p>As indicated in the description statement, the Kahalu'u Historical District draws much of its significance from the rare occurrence of a number of major heiau within a relatively small geographical area. This indicates that the Kahalu'u ahupua'a was one of major importance in Hawaiian culture and history during the times before European contact, for heiau are built only after careful consideration of all geographical, social, political and supernatural factors. Important historical events in ancient Hawaii are closely associated with the construction, dedication, or use of these heiau, for Kahalu'u appears to have been a major seat of political power; perhaps a place where ruling chiefs held their courts. Many of the heiau are hundreds of years old, to judge from traditional history and legends, yet stand grandly above the now desolate terrain in fine condition. The mere fact that so many heiau exist in this district shows the complexity of Hawaiian society, for it must have taken literally thousands and thousands of man days to build them, since all are massive engineering feats of mortarless stonework.</p> <p>The heiau also show the central role of religion in ancient Hawaiian society, and illustrate the lengths to which the ancient rulers would go to ensure proper respect, worship, and propitiation of the Hawaiian gods.</p> <p>Although many of the coastal remains other than heiau have now disappeared beneath the bulldozers of modern hotel development, sufficient remains are still to be found to indicate the high population density and complexity of habitation patterns found in the district. It is especially significant that associated with the many heiau are the other types of ancient Hawaiian sites, such as petroglyphs, walls, enclosures, habitation areas, caves, and so forth. Since all, except a very few lying within Keauhou, are to be found within a single ancient Hawaiian land division, Kahalu'u ahupua'a, an excellent opportunity exists for detailed research on</p>			

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Form 10-300a  
(July 1969)

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE  
NATIONAL REGISTER OF HISTORIC PLACES  
INVENTORY - NOMINATION FORM

STATE	Hawaii
COUNTY	Hawaii
FOR NPS USE ONLY	
ENTRY NUMBER	DATE

(Continuation Sheet)

(Number all entries)

8. SIGNIFICANCE (Page Two)

Hawaiian settlement patterns and social interaction processes. It is known that socially recognized kinship groupings controlled lands within each ahupua'a, and that each ahupua'a encompassed many different types of ecozones because it extended from the sea to the mountains, in a generally pie-shaped wedge. Thus, in the Kahalu'u historical district, it is known that the peoples using the heiau and the coastal sites had close social and kinship connections with those living several miles inland in the massive agricultural field system. In many respects, the Kahalu'u historical district parallels the Lapakahi Complex of North Kohala, which is an entire ahupua'a with innumerable ancient remains and a well developed dryland field system. The difference is that few identifiable religious structures were found at Lapakahi and the area did not seem to have been central in the social or political history of Hawaii Island, as was Kahalu'u. The two districts, therefore, make an excellent foil and counter-foil for the intensive study of ancient Hawaiian culture and human ecology.

A further reason for the significance of Kahalu'u historical district is the existence of excellent petroglyphs, the enduring form of Hawaiian art whereby figures are pecked, carved, or abraded into rock. The most important group of petroglyphs actually lies underwater at high tide, illustrating the gradual subsidence of the Kona coastline.

The high density of culturally interrelated ancient Hawaiian remains and the concentration of major religious structures combine to make the Kahalu'u Historical District an area of great historical significance, easily meeting the criteria for entry onto the National Register of Historic Places.

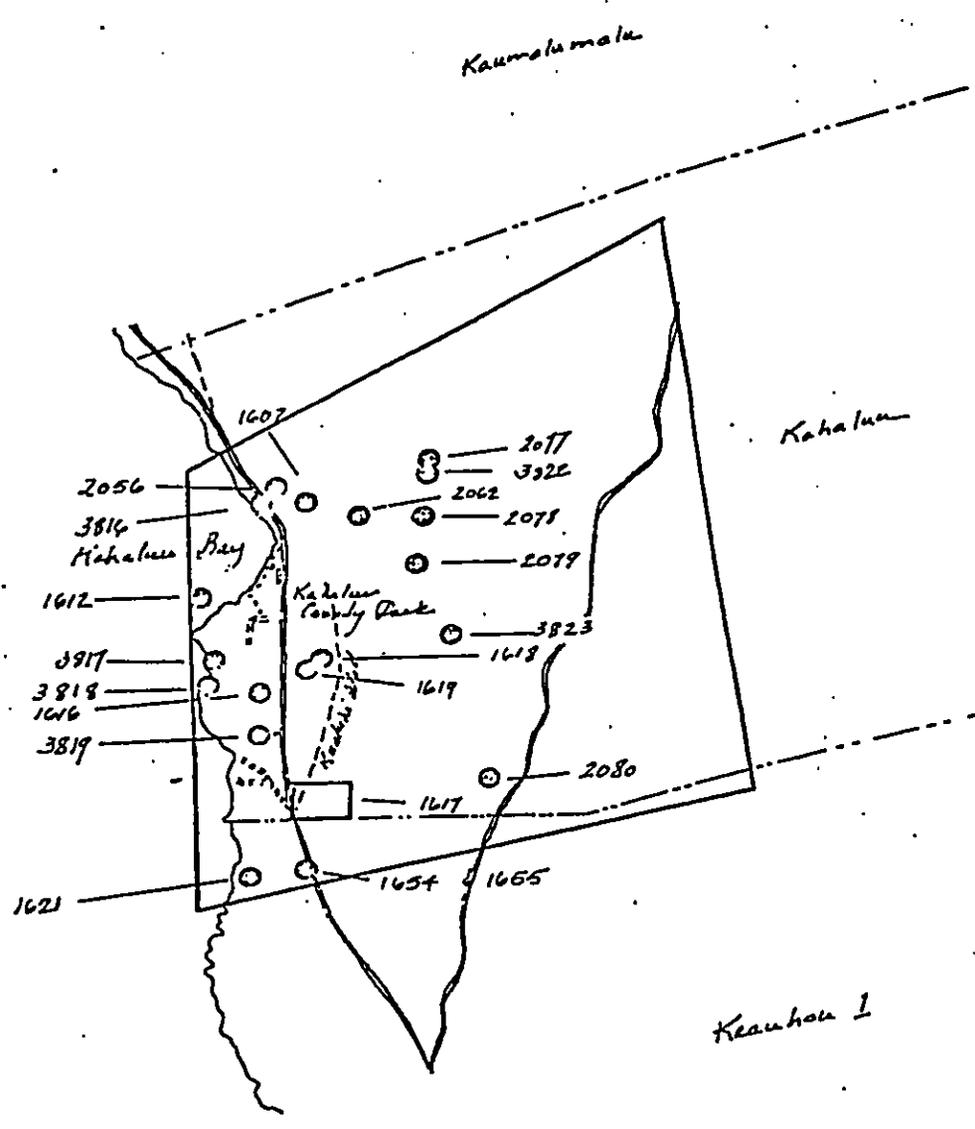
DOCUMENT CAPTURED AS RECEIVED

Form 10-3000  
(July 1969)

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE  
NATIONAL REGISTER OF HISTORIC PLACES  
INVENTORY - NOMINATION FORM  
(Continuation Sheet)

COUNTY	
FOR NPS USE ONLY	
ENTRY NUMBER	DATE

(Number all entries)



Compiled 4150  
Individual site locations  
Scale 1:24,000  
Taken from USGS 7 1/2 min

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Certification of Property  
THE HAWAII REGISTER OF HISTORIC PLACES

Submitted to the Hawaii Foundation for History and the Humanities, Historic  
Places Review Board on July 14, 1972 :  
(date)

(10-37-1617)  
Platform Complex is hereby placed on the Hawaii Register  
(name)

of Historic Places and found to be in valuable - National Register <sup>local significance</sup>  
(category)

William L. Kikuchi  
Archaeologist

Alton H. Nagel  
Architect

St. Johnston  
Historian

Richard Paghinauan

Bernard L. Holman

March 19, 1973  
(date)

Transmitted by the Trustees, Hawaii Foundation for History and the  
Humanities at their meeting on March 20, 1973 to the State  
(date)  
Liaison Officer.

Shirley Hironaka  
Chairman, Board of Trustees  
Hawaii Foundation for History and  
the Humanities

EXHIBIT 4

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COVER SHEET

HAWAII REGISTER OF HISTORIC PLACES

50 - 10-37-1617

SITE NAME/TYPE PLATFORM COMPLEX

SITE IDENTIFICATION NUMBER

DISTRICT NORTH KONA

2 1 PRE 1778  
TO II 12 13 14 15 16 17 18 19 20  
CARD NO DATE/PERIOD

AREA 50 square ARES s

CATEGORY Single Feature  Complex  Place

OWNERSHIP Public  Private

PRESENT LAND USE(S) UNUSED

KNOWN PRESSURES ON SITE None

DESTRUCTION No Known Future Danger  Possible Future Danger  Future Danger Certain   
Present Danger  Presently Being Destroyed

STATUS Occupied  Unoccupied  CONDITION Excellent  Good  Fair  Deteriorated

INTEGRITY Unaltered, Orig Loc  Unaltered, Moved  Altered, Orig Loc  Altered, Moved

ACCESSIBILITY Unrestricted  Restricted  Inaccessible

LEGENDARY MATERIALS KNOWN Yes  NO  WRITTEN HISTORICAL MATERIALS Yes  No

SUSCEPTIBILITY TO INTERPRETATION Good  Moderate  Poor

IMPORTANCE AS EXAMPLE OF TYPE SITE Good  Moderate  Poor

RESEARCH POTENTIAL Good  Moderate  Poor

LOCAL ATTITUDES ABOUT SITE Valuable  Moderate Value  Low Value  Ambivalent   
Unknown

BRIEF DESCRIPTION OF SITE (Columns 21-80)  
Complex of platforms and cleared areas in AALAWA flow

STAFF EVALUATION High Value  Valuable  Reserve  Marginal

SUGGESTED THEME(S) HAWAIIAN site, habitation

DATE SUBMITTED TO REVIEW BOARD JUL 14 1972

REVIEWER'S RECORD AND EVALUATION

NAME \_\_\_\_\_ Date Reviewed \_\_\_\_\_

CATEGORY High Value  Valuable  Reserve  Marginal

SIGNIFICANCE National  State  Local

RECOMMENDED DISPOSITION Nominate National Register  State Register  Staff Files

RECOMMENDED THEMES:  
REVIEWER'S COMMENTS:

REVIEW BOARD EVALUATION RECORD

DATE REVIEWED 3/17/73 RECORDER \_\_\_\_\_

OFFICIAL CATEGORY High Value  Valuable  Reserve  Marginal

OFFICIAL SIGNIFICANCE National  State  Local

OFFICIAL THEMES Hawaiian site, habitation

OFFICIAL DISPOSITION National Register Nomination  State Register  Staff Files

REVIEW BOARD COMMENTS:

VOTING RECCRD: Cliver \_\_\_\_\_ Daws \_\_\_\_\_ Hormann \_\_\_\_\_ Jackson \_\_\_\_\_  
Kikuchi \_\_\_\_\_ Lind \_\_\_\_\_ Nagata \_\_\_\_\_ Paglinawan \_\_\_\_\_  
Roche \_\_\_\_\_ Tuggle \_\_\_\_\_

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DEPARTMENT OF LAND AND NATURAL RESOURCES  
STATE PARKS DIVISION

JUL 14 1972

HAWAII REGISTER OF HISTORIC PLACES  
ARCHAEOLOGICAL FORMS

FORM 01: FIELD SURVEY

$\frac{1}{12}$   
4 CORNER

$\frac{2}{13} \frac{14}{15} \frac{16}{17} \frac{18}{19} \frac{20}{21} \frac{22}{23}$  N. / E.  
SINGLE POINT COORDINATE LOCATION

$\frac{17}{24} \frac{5}{26} \frac{3}{27} \frac{50}{28 \ 29 \ 30} \frac{3}{31} \frac{01}{32 \ 33} \frac{34}{35}$   
DISTRICT LOC FACTOR AREA SQUARE CATEGORY SIG 1 SIG 2

$\frac{2}{36} \frac{285}{37 \ 38 \ 39} \frac{2}{40} \frac{JHW}{41 \ 42 \ 43} \frac{01}{44 \ 45} \frac{12}{46 \ 47} \frac{70}{48 \ 49}$   
DESTR LAND CLASS PHOTOS INITIALS INSTITUTION MONTH YEAR

HISTORICAL OR COMMON NAME: PLATFORM COMPLEX  
 $\frac{50}{51} \frac{52}{53} \frac{54}{55} \frac{56}{57} \frac{58}{59} \frac{60}{61} \frac{62}{63} \frac{64}{65} \frac{66}{67}$

$\frac{68}{69} \frac{70}{71} \frac{72}{73} \frac{74}{75} \frac{76}{77}$ FEATURE CLASSIFICATION CODE	$\frac{78}{79}$ COND INTG	$\frac{80}{81}$ PERIOD
--	------------------------------	---------------------------

CLASS: NRHP  
HRHP  
Keypunched

FORM 11: FOUR CORNER LOCATION

NW CORNER:  $\frac{37}{12 \ 13} \frac{2167}{14 \ 15 \ 16 \ 17} \frac{35}{18 \ 19}$  N. /  $\frac{188}{20 \ 21 \ 22} \frac{47}{23 \ 24}$  E.

NE CORNER:  $\frac{37}{25 \ 26} \frac{2167}{27 \ 28 \ 29 \ 30} \frac{35}{31 \ 32}$  N. /  $\frac{188}{33 \ 34 \ 35} \frac{66}{36 \ 37}$  E.

SE CORNER:  $\frac{37}{38 \ 39} \frac{2167}{40 \ 41 \ 42 \ 43} \frac{23}{44 \ 45}$  N. /  $\frac{188}{46 \ 47 \ 48} \frac{66}{49 \ 50}$  E.

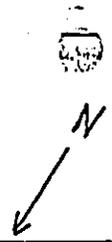
SW CORNER:  $\frac{37}{51 \ 52}$  QUAD  $\frac{2167}{53 \ 54 \ 55 \ 56} \frac{24}{57 \ 58}$  N. /  $\frac{188}{59 \ 60 \ 61} \frac{48}{62 \ 63}$  E.

NORTH GRID COORDINATE EAST GRID COORDINATE

50 -  $\frac{10}{3 \ 4} - \frac{37}{5 \ 6} - \frac{7}{7} - \frac{1617}{8 \ 9 \ 10 \ 11}$   
ISLAND QUAD IDENTIFICATION NO.

DOCUMENT CAPTURED AS RECEIVED

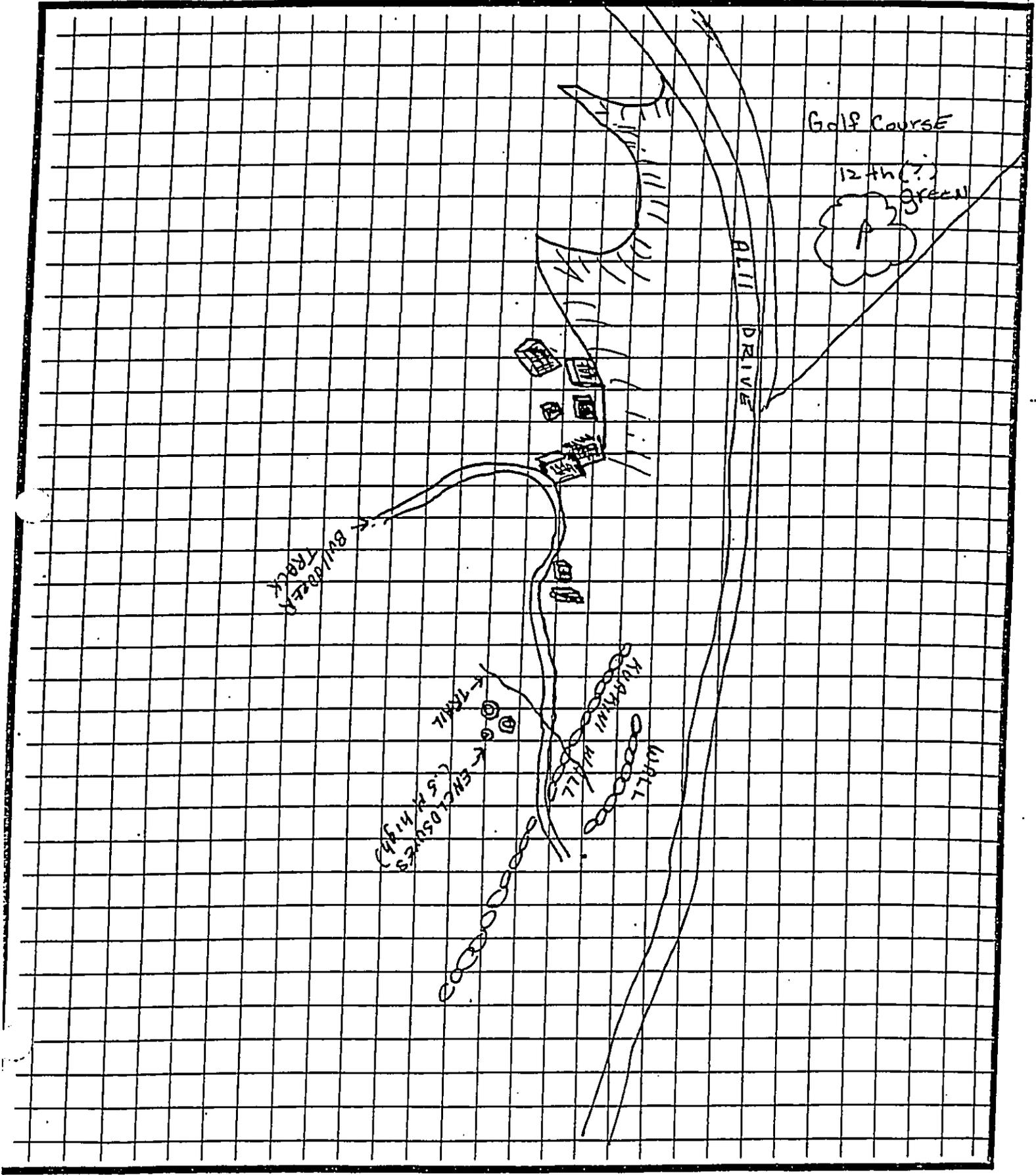
SCALE IN Meters  
0 10 20 30 40



FEATURE MAP FORM

MAPPING TECHNIQUE

SKETCH -- NOT TO SCALE



- f. Two sites so close together that they may have formed one house. The mauka one is an iliili floor, only 7x6 visible, surrounded by a crumbled wall of small a-a. The makai site has crumbling walls of larger rock on two sides and a rougher floor, c. 21x15, merging into the first.
- g. A rough, irregular platform c. 26x26x3 bearing three iliili strewn sites, averaging 8x6, once marked off by low walls. At its foot is a walled site 6x6.
- h. Remains of site c. 10x10, rough floor, walls 1' high and 2' wide.
- i. A flat slab standing 15" off the ground, 9x4' in size, thickly strewn with iliili.
- j. A remarkably smooth a-a floor. Then an enclosed site with iliili floor, 6x5.

Site 146. A platform c. 68x28x0-3, and strewn with iliili, bearing a row of four walled or enclosed hut sites about 15' back from front. They measure 6x6, 5x5 $\frac{1}{2}$ , 7x7 $\frac{1}{2}$ , and 8x7 respectively. This must have been an old homestead, with four of the six houses which orthodox theory allows the Hawaiian family. Sites 147 and e and g of 145 are similar.

Site 147. Platform with two sites and another back of one of these. Dimensions c. 45x32x0-3; the small hut sites 7 $\frac{1}{2}$ x6 $\frac{1}{2}$ , 8x6, 8x6.

Site 148. Smoothed a-a bearing hut sites:

- About 7x8, iliili, trace of wall.
- About 8x5 $\frac{1}{2}$ , trace of wall.
- About 8 $\frac{1}{2}$ x8x1.
- About 11x10, traces of wall and iliili.
- About 3x7, " " "

Site 149. The a-a flow here descends in a pali about 40' high. A narrow ridge reaches out from the higher ground almost to the road, bearing Sites 149 and 150, while 151 occupies the flat ground at the top.

- Banks on slope; a possible shelter.
- On the ridge, a rough, partly natural platform c. 14x13.
- Adjoining area of iliili, ~~8x10~~ c. 16x10.
- In the depression on the north, and area c. 14x14, with iliili, banked in front and with a bit of wall on either side. The great boulder above it is levelled on top.
- On the ridge back of c; and six feet higher, two adjoining platforms, the makai one 6" higher, 6x7; the mauka one 7x7.
- To the north, on a level with c, but 6' lower than c, a group of four tiny pens with walls about 3-4' high. Two have bits of iliili paving (one may be a house site 3x3), the others are very rough.

Site 150. Where the ridge broadens at the foot of the acclivity:

- 6x8, iliili.
- 6 $\frac{1}{2}$ x5 $\frac{1}{2}$ , iliili; adjacent to a rougher platform c. 10x7.
- 7x6, iliili.
- c. 10x8, iliili.
- 7x7, with rough platform in front.
- c. 9x7.
- c. 9x6.
- 7x7.
- Originally perhaps 11x7, now walled to the top side.

- j. Very fine, 8x6x3.  
 k. 6x5.  
 l. 8x5.  
 m. c. 9x7, rough.

Most of these are enclosed, in one or two cases with what might be termed a wall.

Site 151. On the high, flat ridge back of Site 150, a group of platforms. Beginning at the N.W. corner:

- a. Platform at brow of ridge, 32' wide on west, decreasing mauka, 40' long, faced 3' high makai; has a feature very common in large platforms, of the platform proper beginning 2-3' back of and a few inches higher than the facing; paved with medium large stones covered with a-a fragments and iliili. There is a platform four feet below it, 9x3x4, of use chiefly as an abutment.  
 b. Similar platform mauka, 39x27, with wing at one corner, 5' high on N, a-a paving.  
 c. Inclosed site on brow of ridge, 8x7, iliili. On south side as a sort of abutment is a platform 11x7x3.  
 d. A double platform, rear part 8x7 with iliili; fore part probably a lanai, 8x14.  
 e. On brow of ridge, rather rough platform 13x11 plus 3x2-3.  
 f. Platform c. 12x20, iliili, continued mauka in a rough platform c. 15x13x3, with a pit in middle, and what seems to be an enclosed site 5x4.

Site 152. Group of sites:

- a. Platform of fine a-a, 15x10x1. Indistinct platform 16x7x1.  
 b. Platform in two terraces, upper 27x16, lower 24x15.  
 c. Trace of walled site.  
 d. Vague platform c. 22x18.

Site 153. By the end of the Pa Kuakini (Kuakini's wall):

- a. A small cairn.  
 b. A platform at junction of Pa Kuakini and the lesser wall which follows the curve of the pali, 7x7x1.  
 c. At the foot of the steep slope, two pits in the lava, 3x2x2 and 2x2x2.

Site 154. Shapeless platforms in fine a-a in front of the lesser wall. Five spots bear iliili; one farthest north is large and perhaps most recent. A little farther north are two small sites marked by iliili, then mauka a sloping platform of fine a-a, about 28x15; back of it traces of another, larger one-- a sort of backyard for the platform.

This site lies within Kahaluu, and brings us squarely into the grounds of Kahaluu proper, which hereabouts begins to be overgrown with brush.

Somewhere in this section is a slight elevation known as Puu o Kukae, near which there is an entrance to a cave, used recently as a burial cave by Kahaluu residents, and there fore not shown me.

This hill reminded my informant of an anecdote concerning Kamoharua the Great, which he could not explain fully because

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FORM 21: FEATURE COMPLEX, PAGE 2  
3

50 - 10 - 37 - 1617  
4 5 6 7 8 9 10 11 12  
ISLAND QUAD IDENTIFICATION NO.

<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>	<u>21</u>	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>	<u>31</u>	<u>32</u>
<u>33</u>	<u>34</u>	<u>35</u>	<u>36</u>	<u>37</u>	<u>38</u>	<u>39</u>	<u>40</u>	<u>41</u>	<u>42</u>	<u>43</u>	<u>44</u>	<u>45</u>	<u>46</u>	<u>47</u>	<u>48</u>	<u>49</u>	<u>50</u>	<u>51</u>	<u>52</u>
<u>53</u>	<u>54</u>	<u>55</u>	<u>56</u>	<u>57</u>	<u>58</u>	<u>59</u>	<u>60</u>	<u>61</u>	<u>62</u>	<u>63</u>	<u>64</u>	<u>65</u>	<u>66</u>	<u>67</u>	<u>68</u>	<u>69</u>	<u>70</u>	<u>71</u>	<u>72</u>
FEATURE NUMBER					FEATURE CLASSIFICATION CODE										COND	INTG	PERI	QUANT	

FORM 21: FEATURE COMPLEX, PAGE 3  
3

50 - 4 - 6 - 8 - 9 - 10 - 11 - 12  
4 5 6 7 8 9 10 11 12  
ISLAND QUAD IDENTIFICATION NO.

<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>	<u>21</u>	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>	<u>31</u>	<u>32</u>
<u>33</u>	<u>34</u>	<u>35</u>	<u>36</u>	<u>37</u>	<u>38</u>	<u>39</u>	<u>40</u>	<u>41</u>	<u>42</u>	<u>43</u>	<u>44</u>	<u>45</u>	<u>46</u>	<u>47</u>	<u>48</u>	<u>49</u>	<u>50</u>	<u>51</u>	<u>52</u>
<u>53</u>	<u>54</u>	<u>55</u>	<u>56</u>	<u>57</u>	<u>58</u>	<u>59</u>	<u>60</u>	<u>61</u>	<u>62</u>	<u>63</u>	<u>64</u>	<u>65</u>	<u>66</u>	<u>67</u>	<u>68</u>	<u>69</u>	<u>70</u>	<u>71</u>	<u>72</u>
FEATURE NUMBER					FEATURE CLASSIFICATION CODE										COND	INTG	PERI	QUANT	

FORM 21: FEATURE COMPLEX, PAGE 3  
3

50 - 4 - 6 - 8 - 9 - 10 - 11 - 12  
4 5 6 7 8 9 10 11 12  
ISLAND QUAD IDENTIFICATION NO.

<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>	<u>21</u>	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>	<u>31</u>	<u>32</u>
<u>33</u>	<u>34</u>	<u>35</u>	<u>36</u>	<u>37</u>	<u>38</u>	<u>39</u>	<u>40</u>	<u>41</u>	<u>42</u>	<u>43</u>	<u>44</u>	<u>45</u>	<u>46</u>	<u>47</u>	<u>48</u>	<u>49</u>	<u>50</u>	<u>51</u>	<u>52</u>
<u>53</u>	<u>54</u>	<u>55</u>	<u>56</u>	<u>57</u>	<u>58</u>	<u>59</u>	<u>60</u>	<u>61</u>	<u>62</u>	<u>63</u>	<u>64</u>	<u>65</u>	<u>66</u>	<u>67</u>	<u>68</u>	<u>69</u>	<u>70</u>	<u>71</u>	<u>72</u>
FEATURE NUMBER					FEATURE CLASSIFICATION CODE										COND	INTG	PERI	QUANT	

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FEATURE DESCRIPTION FORM

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

1. This complex is located on the mauka side of Alii Drive across from the 12th (13th?) green on the Keauhou golf course.
- 2,3. This complex consists of 7 platforms, 3 small enclosures (circular) and Kuakini's wall and a part of another wall. See the enclosed sketch for the approx. size of these structures.
- 4,5. Most of the structures are constructed of piled a'a. Some of the platforms have 'ili'ili on top.
6. The complex is located on a large a'a outcropping. There is little vegetation.
7. The condition is fair
8. none visible
9. none visible
10. No unusual or important characteristics

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FORM 31: PROPERTY OWNERSHIP

50 -  $\frac{1}{3} \frac{0}{4}$  -  $\frac{3}{5} \frac{7}{6}$  -  $\frac{1}{7} \frac{6}{8} \frac{1}{9} \frac{7}{10} \frac{1}{11}$   
ISLAND QUAD IDENTIFICATION NO.

$\frac{2}{12} \frac{6}{13}$   $\frac{2}{16}$   $\frac{2}{17}$   $\frac{18}{18}$   $\frac{19}{19}$   $\frac{20}{20}$   $\frac{21}{21}$   $\frac{22}{22} \frac{23}{23} \frac{24}{24}$   $\frac{25}{25} \frac{26}{26} \frac{27}{27}$   
USE 1 USE 2 STAT OWNR ATTD ACCS zone sect plat parcel  
T A X M A P K E Y

PROPERTY OWNER:  $\frac{28}{28} \frac{29}{29} \frac{30}{30} \frac{31}{31} \frac{32}{32} \frac{33}{33} \frac{34}{34} \frac{35}{35} \frac{36}{36} \frac{37}{37} \frac{38}{38} \frac{39}{39} \frac{40}{40} \frac{41}{41} \frac{42}{42} \frac{43}{43} \frac{44}{44} \frac{45}{45}$   
STREET ADDRESS:  $\frac{46}{46} \frac{47}{47} \frac{48}{48} \frac{49}{49} \frac{50}{50} \frac{51}{51} \frac{52}{52} \frac{53}{53} \frac{54}{54} \frac{55}{55} \frac{56}{56} \frac{57}{57} \frac{58}{58} \frac{59}{59} \frac{60}{60} \frac{61}{61} \frac{62}{62} \frac{63}{63}$   
TOWN OR CITY:  $\frac{64}{64} \frac{65}{65} \frac{66}{66} \frac{67}{67} \frac{68}{68} \frac{69}{69} \frac{70}{70} \frac{71}{71} \frac{72}{72} \frac{73}{73} \frac{74}{74} \frac{75}{75}$  STATE  $\frac{76}{76} \frac{77}{77} \frac{78}{78} \frac{79}{79} \frac{80}{80}$  ZIP CODE

FORM 41: BACKGROUND DATA

50 -  $\frac{1}{3} \frac{0}{4}$  -  $\frac{3}{5} \frac{7}{6}$  -  $\frac{1}{7} \frac{6}{8} \frac{1}{9} \frac{7}{10} \frac{1}{11}$   
ISLAND QUAD IDENTIFICATION NO.

AHUPUA'A  $\frac{12}{12} \frac{13}{13} \frac{14}{14} \frac{15}{15} \frac{16}{16} \frac{17}{17} \frac{18}{18} \frac{19}{19} \frac{20}{20} \frac{21}{21} \frac{22}{22} \frac{23}{23} \frac{24}{24} \frac{25}{25} \frac{26}{26}$   
PREVIOUS SURVEYS:  $\frac{27}{27} \frac{28}{28} \frac{29}{29} \frac{30}{30} \frac{31}{31} \frac{32}{32} \frac{33}{33} \frac{34}{34} \frac{35}{35} \frac{36}{36} \frac{37}{37} \frac{38}{38} \frac{39}{39} \frac{40}{40} \frac{41}{41} \frac{42}{42} \frac{43}{43} \frac{44}{44}$   
PREVIOUS SITE DESIGNATION(S):  $\frac{45}{45} \frac{46}{46} \frac{47}{47} \frac{48}{48} \frac{49}{49} \frac{50}{50} \frac{51}{51} \frac{52}{52} \frac{53}{53} \frac{54}{54} \frac{55}{55} \frac{56}{56} \frac{57}{57} \frac{58}{58} \frac{59}{59} \frac{60}{60} \frac{61}{61} \frac{62}{62}$   
LAST NAME OF SURVEYOR:  $\frac{63}{63} \frac{64}{64} \frac{65}{65} \frac{66}{66} \frac{67}{67} \frac{68}{68} \frac{69}{69} \frac{70}{70} \frac{71}{71} \frac{72}{72} \frac{73}{73} \frac{74}{74}$   
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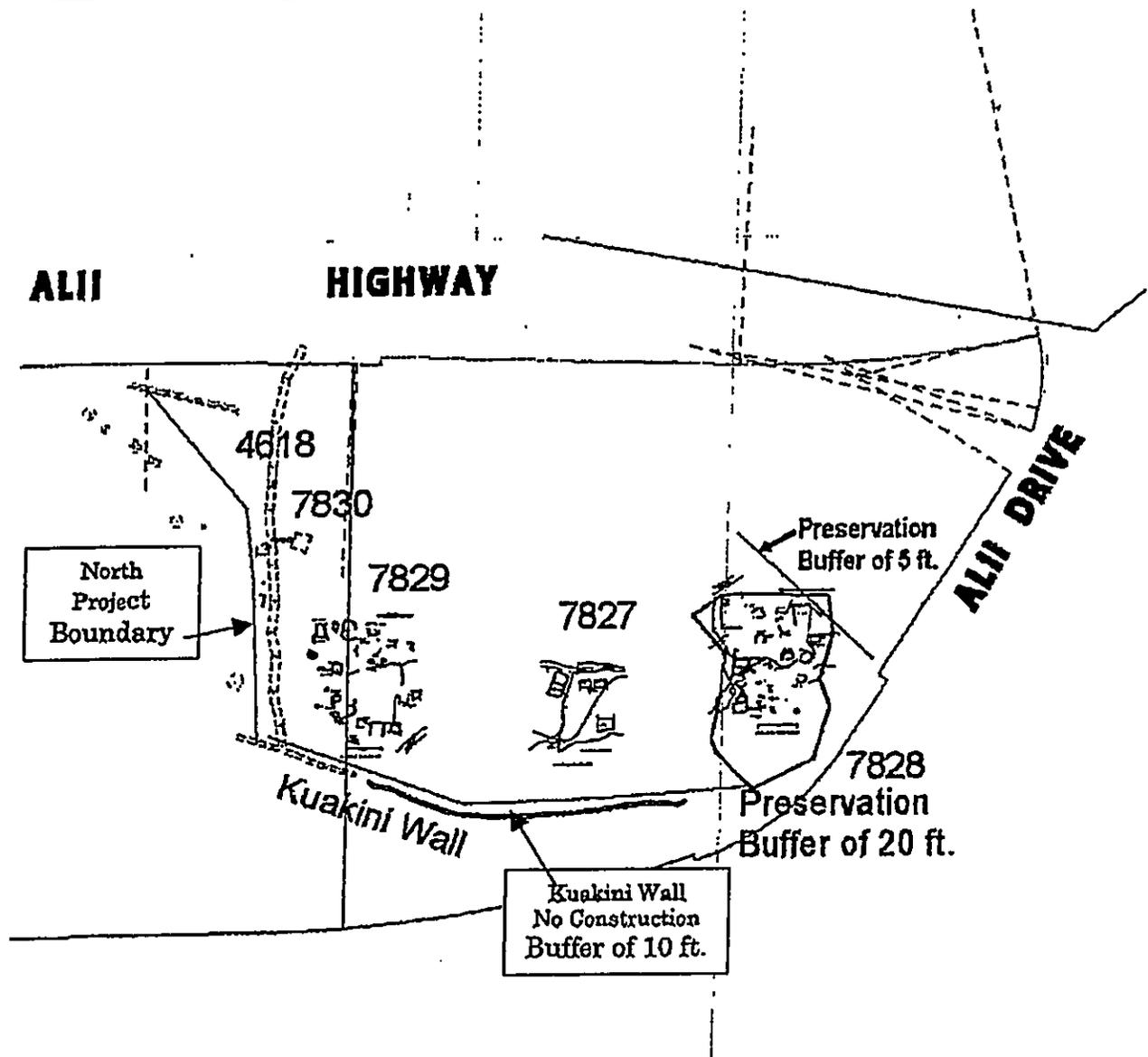


Figure 2 Project Area Showing Location of Historic Properties

# Preservation and Data Recovery Plans for Historic Properties at Keauhou Development Parcel 14C

TMK: 3-7-8-10:4-portion

BY

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Prepared For  
Kamehameha Investment Corporation

By

Cultural Surveys Hawai'i, Inc.  
October 22, 2002

EXHIBIT 6a

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## ABSTRACT

This plan addresses data recovery for three historic properties and preservation of a fourth historic property within an approximately fourteen-acre parcel in the *makai* portion of Keauhou and Kahalu'u *ahupua'a*, North Kona, Hawai'i Island. Data recovery will focus on determining the function of the features, the status of the people that inhabited the features within historic properties 7827, 7829 and 7830, and contemporaneity between the three site complexes.

The Introduction presents the purpose and scope of this integrated Data Recovery and Preservation Plan. The Background section follows and presents an historical overview of the two *ahupua'a* and summarizes previous archaeological findings in the project area. The introductory and background information applies to both the Data Recovery Plan and the Preservation Plan that follow as separate chapters.

The Data Recovery Plan defines the goals of the present archaeological research at the historic properties 50-10-37-7827, 50-10-37-7829 and 50-10-37-7830. The plan provides a model for testing, and provides a sampling strategy for the proposed excavations. A section on Field and Laboratory Methods is included, presenting details of report preparation, review, and dissemination.

The Preservation Plan addresses interim and long-term preservation planning for the historic property 50-10-37-7828, a complex of habitation and other features on the south edge of the project area.

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## INTRODUCTION

At the request of Kamehameha Investment Corporation (KIC), Cultural Surveys Hawai'i, Inc. has prepared this Integrated Archaeological Mitigation Plan comprised of a Preservation Plan and a Data Recovery Plan for historic properties in Parcel 14C at Keauhou, North Kona, Hawai'i.

### *Project Description*

The Development Parcel 14C project area (Figure 1), owned by KIC, is approximately 14-acres of undeveloped land within the *ahupua'a* of Kahalu'u and Keauhou. The parcel is situated on the western slope of Mount Hualalai between approximately 12 m. (40 ft.) and 30 m. (100 ft.) elevation, approximately six miles south of the town of Kailua. It is on the *mauka* side of Ali'i Drive approximately 0.8 km. (0.5 mi.) north of the intersection of Ali'i Drive and Kamehameha III Highway. The Parcel 14C south boundary is the existing Ali'i Drive, the east boundary is the proposed new Ali'i Highway, the north boundary is a surveyed line, and the west boundary is the east edge of the Kuakini Wall (SIHP 50-10-27-6302). The Kuakini wall will be protected during construction by a barricade fence ten feet east of the Wall. The parcel is located within the bounds of Kahalu'u Archaeological District (SIHP no. 50-10-37-4150) and also within the bounds of the Kona Field System (SIHP no. 50-10-37-6601).

Archaeological Research Center Hawaii, Inc. conducted the first thorough archaeological inventory survey of the KIC property that included Parcel 14C in 1979-1980 (Hammatt and Folk 1980). Walker and Rosendahl (1989), Tomana'ari-Tuggle (1985); Tuggle (1989) also conducted archaeological studies in the area. The inventory survey report (Hammatt and Folk 1980) identified a *mauka-makai* oriented foot trail (SIHP 50-10-37-4618), the southern extreme of a north-south oriented wall of stacked boulder construction within Parcel 14C (SIHP 50-10-37-7631), the Great Wall of Kuakini (SIHP 50-10-27-6302) and four, multi-structure historic properties (SIHP 50-10-37-7827, 7828, 7829, and 7930) (Figure 2). The features comprising these latter four historic properties include enclosures, pavements and platforms and appear dominantly residential. Historic property data for this integrated historic property data recovery and preservation plan is derived from the inventory survey.

### *Scope Of Work*

The Scope of Work for Parcel 14C at Keauhou, North Kona, Hawai'i is to develop an archaeological mitigation plan comprised of two separate plans as follows:

- 1) Preservation Plan: to develop, in the public's interest, proper preservation that identifies forms of preservation, elements of protection buffers, short-term and long term preservation protection measures, consultation processes & preservation treatment expressed by those consulted, and interpretive requirements. The preservation plan will list and depict preservation sites them on a map of sufficient scale.
  - 2) Data Recovery Plan: to identify historic properties for study, define objectives and methods for acquiring and analyzing the data, and deposition of collections after
-

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conclusion of the data recovery project, and to report on these activities and findings.

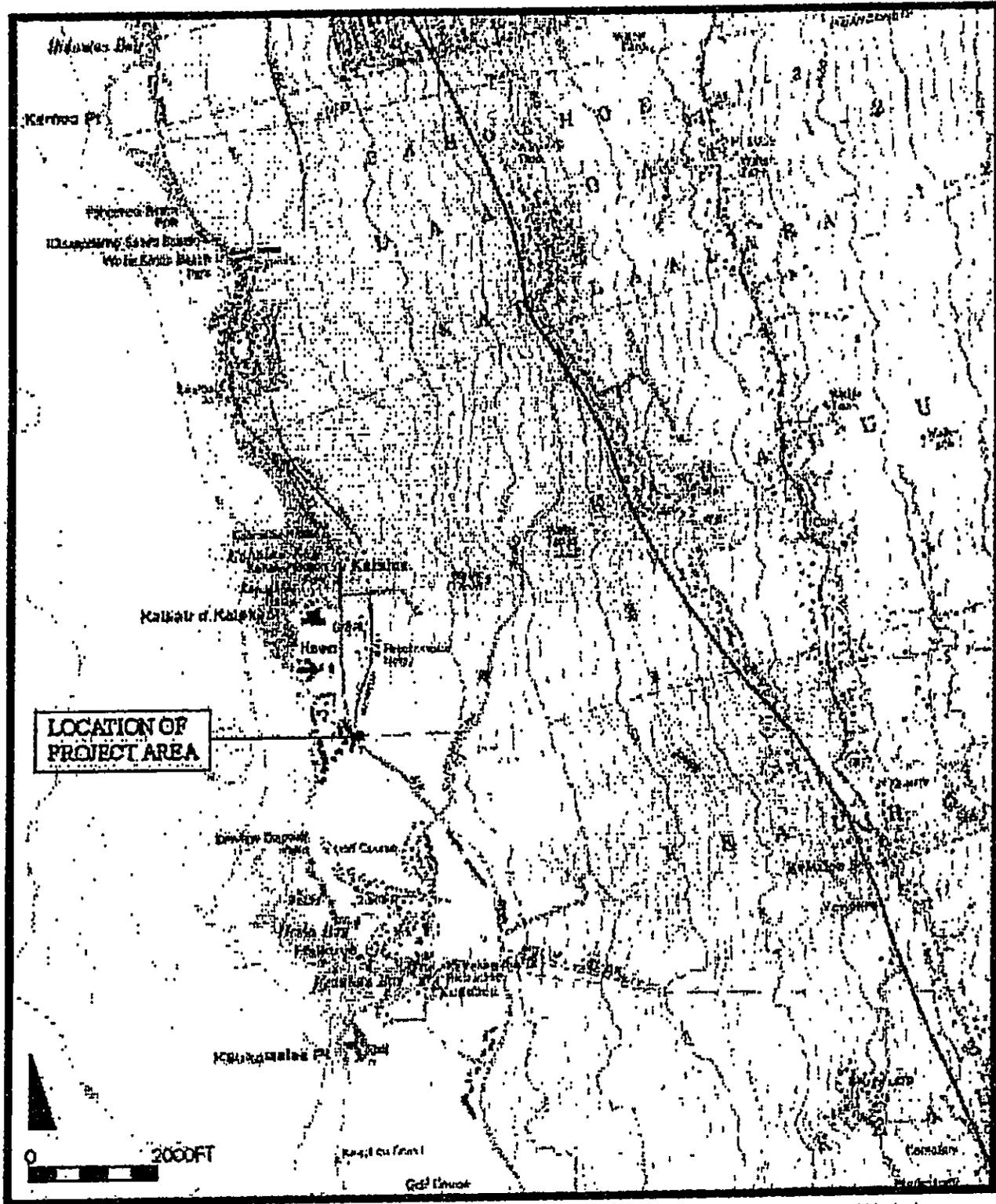


Figure 1 USGS 7.5-Minute Series Showing Project Area Location

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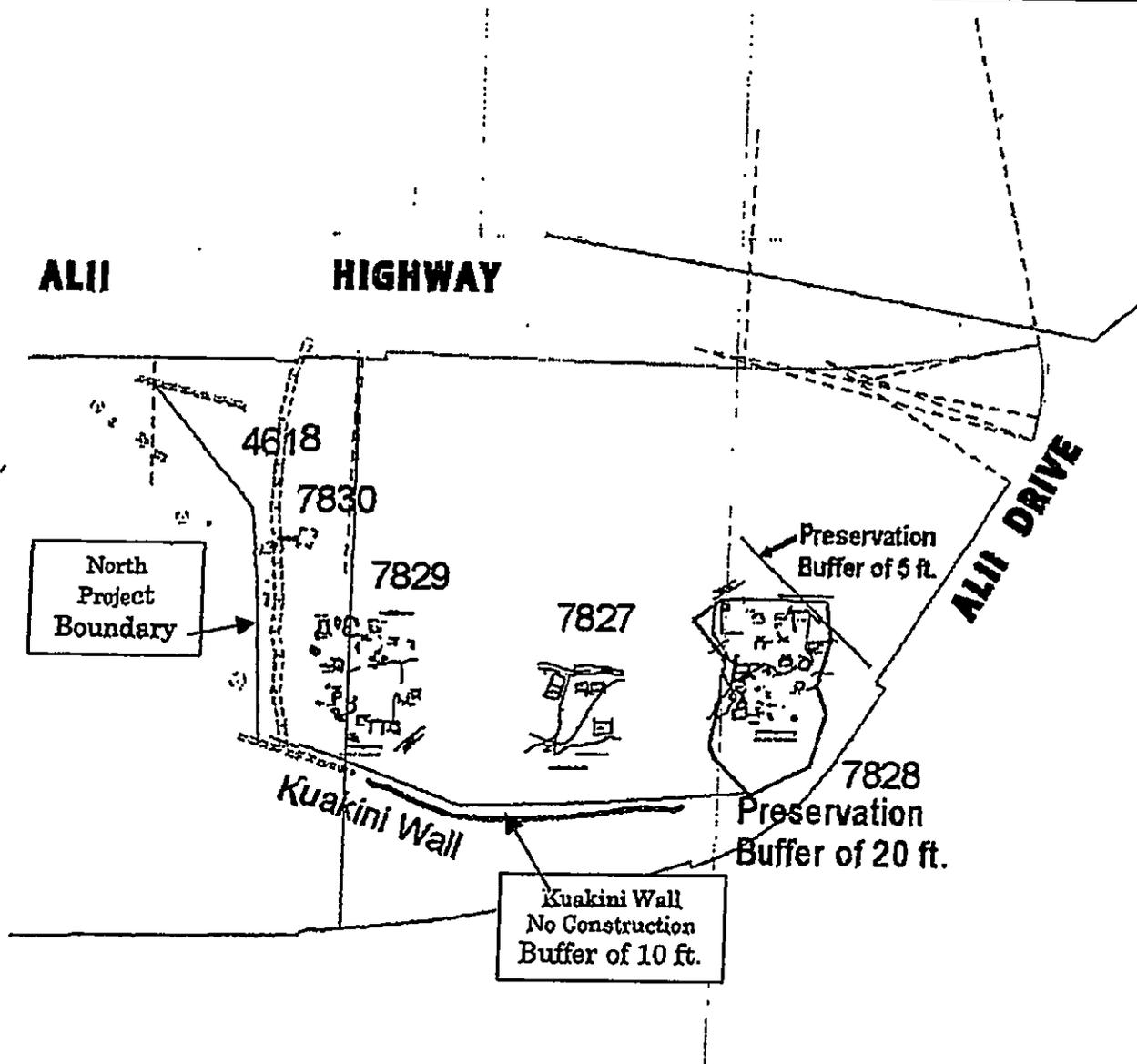


Figure 2 Project Area Showing Location of Historic Properties

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## BACKGROUND

This section incorporates historical material and previously accomplished archaeological research to chronicle historic events and changes in settlement patterns within Keauhou and Kahalu'u *ahupua'a*.

### *Overview Of The History And Archaeology Of Kahalu'U And Keauhou (1<sup>st</sup> And 2<sup>nd</sup>) Ahupua'a*

The history of Kahalu'u and Keauhou (1<sup>st</sup> and 2<sup>nd</sup>) *Ahupua'a* have been covered in detail in several studies including Sterling 1960, Crozier 1971a, Emory *et al.* 1971, Hammatt and Folk 1980, Kelly and Barrere 1980 and Tomonari-Tuggle 1985. The reader is referred to these studies for more detailed accounts and only a brief overview is attempted here drawing heavily upon the work of Tomonari-Tuggle 1985, Sterling 1960 and Silva 1985.

Tomonari-Tuggle (1985:15-24) suggested a pre-contact cultural history sequence divided into four periods as follows:

#### The Beginning of Settlement: Pre-AD 1000 to the 1300s

Based on dates derived almost exclusively from hydration rind analysis, she postulates that Keauhou-Kahalu'u is initially settled sometime after AD 1000. Logically enough early settlement is suggested to be marine resource-oriented with habitation probably focused around Kahalu'u and Keauhou Bays. Kin-based social and economic ties linked coastal areas in the vicinities of the bays. By AD 1300, upland areas at least 4,000 feet inland are cultivated. This is suggested to be the origin of the Kona Field System, which developed from lower closer elevations farther inland after this time.

#### Settlement Expansion: the fourteenth to sixteenth centuries

Initial development of the complex chiefdoms and social organization recorded at Western contact begins. Settlement and the Kona Field System expand inland.

#### The Time of 'Umi and Lono or the Late Traditional Period: Late 16th to 18th Centuries

The time of the first specific associations with Keauhou-Kahalu'u. Tradition holds that the ruling chief Umi-a-Liloa moved his court to Kona stopping for a time at the Ahu-o-Umi in the uplands of Keauhou 2nd (Baker 1917:63; see also Fornander 1917:Vol. IV: 232). While Umi's place of residence in Kona is usually tied to the Kailua area, the heiau Pa-o-'Umi (Site ~3823) is attributed to this chief. The ruling chief, Lono-i-ka-makahiki, said to be a grandson of 'Umi-a-Liloa, is said to have resided in coastal Kahalu'u (Fornander 1917: IV:356 ) at an impressive high-walled complex. It is asserted that he sacrificed the ruling chief of Maui, Kamalawalu at either 'Ohi'amukumuku or Ke'ekū in coastal Kahalu'u. Other Kahalu'u *heiau* associated with the reign of Lono-i-ka-makahiki include Mākole'a, Kapuanoni and Keahiolo. Reinecke (1930b:2) reports that "The land of Kahalu'u is said to take its name from a chiefess of high rank, Kahalu'u, wife of Keolonahihi and mother of Makolea."

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Tomonari-Tuggle suggests the creation of refuge-type openings at major lava tubes like 'Ōhi'a Cave were undertaken for purposes of concealment during the wars and political instability of this period. Habitation, particularly high status habitation appears to have focused on the lands back of Kahalu'u Bay taking advantage of the amenities of extensive inshore reefs and the proximity of brackish or freshwater ponds. Other habitations extended to the south to He'eia and Keauhou bays and also scattered up among the agricultural fields.

### The Time of Kalani'ōpu'u and Kamehameha: First Half of the 18th Century to the Early 1800s

The Late Pre-contact and Early Contact Period. After the death of Captain Cook, the ruling chief Kalani'ōpu'u is said to have "dwelt some time in the Kona District, about Kahalu'u and Keauhou, diverting himself with hula performances (Fornander). Kamakau (1961:106) adds that Kalani'ōpu'u moved to Keauhou "where he could surf in the waves of Kahalu'u and Hōlualoa." The many *heiau* of Kahalu'u drew both Kalani'ōpu'u and Kamehameha to gain the support of the deities. It is said that after his defeat by the Maui chief Kahekili c. 1775 that Kalani'ōpu'u built (or rededicated) the *heiau* of 'Ōhi'amukumuku at Kahalu'u and Keikipu'ipu'i at Kailua as *heiau* against sedition and for vengeance (Kamakau 1961:180). Kamehameha I is also said to have built (or rededicated) Kamaike'eku and 'Ōhi'amukumuku *heiau*. 'Ōhi'amukumuku in particular appears to have been regarded as particularly auspicious for upon Kamehameha's return to Kona in 1813 "his first object was to pray to the gods and for this purpose he made *kapu* the *heiau* of Hikiau and then that of 'Ōhi'amukumuku at Kahalu'u (Kamakau 1961:200). Kamehameha and his court are said to have resided at Kahalu'u for about a year following his return (T̄i 1959:113)

Several high ranking chiefs were born at Kahalu'u including: John Adams Kuakini, born c. 1791, who would be the governor of Hawai'i Island from 1820 to 1844; Miriam Kekāluohi, born c. 1794, and *kuhina nui* of Hawai'i *nei* from 1839 to 1845; and Kauikesouli Kamehameha III born c. 1814. Keōpūolani, the most sacred wife of Kamehameha I and mother of Kamehameha II and III, was said to have dwelled at Kahalu'u between 1789 and 1795 (Kamakau 1961). The editor of the Sandwich Islands Gazette (Mackintosh 1838:23) posited that the birth of so many high-ranking Hawaiians at or near Kahalu'u related to the locale having "been a favorite residence of the Queens of olden days, at the periods when in the maturity of events, they were inclined to confer upon the nation new heirs to royalty." Tomonari-Tuggle suggests that the association of these *ali'i* births with Kahalu'u-Keauhou was not one of any particular auspiciousness (as in an *ali'i* birthing place such as are known at Kūkaniloko O'ahu and Pōhaku Ho'ohānau, Kaua'i) but rather was the association of these lands with the ruling chief Ke'eaumoku who was kin to these chiefs. This ruthless and independent "Kona Uncle" of Kamehameha the Great appears to have been awarded the *ahupua'a* of Kahalu'u and Keauhou for his services. Archibald Menzies (1920:149), surgeon with the Vancouver expedition of the 1790s described Keauhou as "a small cove belonging to Ke'eaumoku."

### Western Contact at Kahalu'u/Keauhou: 1794 to 1819

Already by 1794 there was a foreigner in residence at Keauhou engaged in the manufacture of charcoal to supply visiting western ships (Menzies 1920:149). It seems

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probable that the population of Kahalu'u/Keauhou declined rapidly in the early historic period due not only to introduced diseases but also due to demographic shifts to the entrepots at Kailua and Ka'awaloa. Opposition to the presence of foreigners was a driving factor in the rebellion of Kekuaokalani following the death of Kamehameha I in 1819. The Lekeleke burial ground in coastal Keauhou 2nd is said to be where Kekuaokalani, his brave wife Manono, and three hundred followers were laid to rest following the battle of Kuamo'o. The 'Ainoa or "Free-Eating Event" of 1819 would have affected Kahalu'u as much as any place in Hawai'i nei. Like Mecca, Qom and Benares, Kahalu'u must have prospered from traffic with the devout who would have supported a learned kahuna class. With its 37+ heiau suddenly out of business the main reason for people to have visited Kahalu'u/Keauhou, with their hogs and other offerings, would have almost literally disappeared overnight.

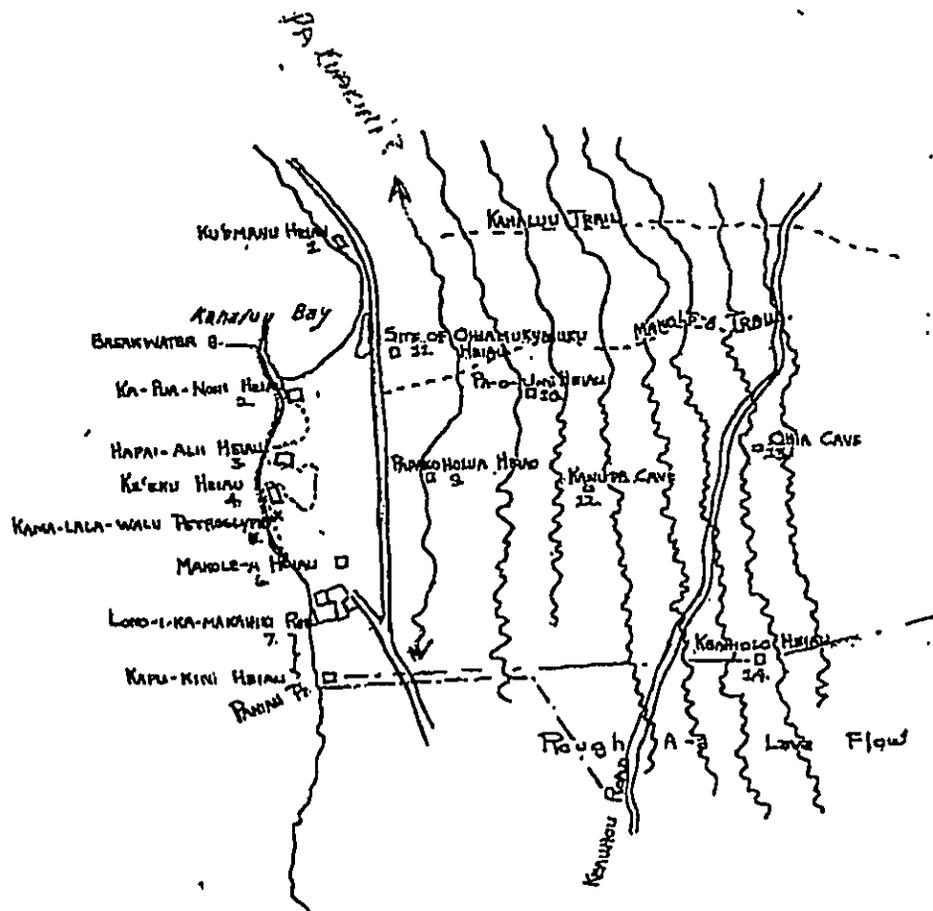


Figure 3 Sketch of Keauhou after Sterling

### Merchants and Missionaries: 1820 to 1850

The departure of the center of government from Kona, Hawai'i to Honolulu in 1820 was a further demographic hit to places like Kahalu'u/Keauhou which must have relied at least in part on royal patronage. This loss would have been partially offset by the continuing victualing trade and the trade in sandalwood. Mackintosh (1838:2) wrote that

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the anchorage at Keauhou Bay "is resorted to by vessels for cargoes of firewood, sandalwood and other commodities of produce." Keauhou was well sited to funnel the bounty of the Kona Field System - which quickly included new cultigens such as coffee, melons, maize, Irish potatoes, beans and citrus- to supply shipping. Keauhou may have always been particularly well suited geographically for the transportation of forest resources to the coast and the sandalwood of a vast interior could have funneled down through Keauhou to the waiting holds of Keauhou Bay.

Our first detailed glimpse of Kahalu`u/Keauhou is with the London Missionary Society missionary William Ellis in 1823. Probably walking an alignment much like modern Ali`i Drive, Ellis reports nineteen heiau and 610 houses between Kailua and Keauhou, and eight heiau and 448 houses between Keauhou and Ka`awaloa. At Keauhou itself Ellis noted 135 houses and that about 150 people assembled to hear him and his companions. Ellis remarked on the steppingstone trail across a mile-wide stretch of `a`a between Kahalu`u and Keauhou villages. Ellis (1969:121) notes the houses of "those who live among the plantations on the sides of the hills." Kahalu`u/Keauhou were outliers for the Kailua Mission Station and missionaries from the American Board of Commissioners for Foreign Missions (ABCFM) would periodically take sermonizing trips down the coast, often on their way to the Ka`awaloa mission. Artemis Bishop (1892:18) noted (c. 1825) that the Hawaiian communities at Hōlualoa, Kahalu`u, Keauhou and Kainaliu routinely marshaled 500+ people to meet him.

#### Kahalu`u/Keauhou at the Māhele:1848 to 1850s

In the great division of lands or Māhele of 1848 Victoria Kamāmalu received the *ahupua`a* of Kahalu`u and the northern portion of Keauhou known as Keauhou 1 or Keauhou 1st. Her brother, Lot Kapuāiwa (later Kamehameha V) received the southern portion of coastal Keauhou (including a vast interior area) known as Keauhou 2 or Keauhou 2nd. That these lands were retained by the Kamehameha dynasty reflects their perceived value. Tomonari-Tuggle (1985:27) suggests that the division of Keauhou into these two parts dates from this time (1848). She notes that the Keauhou 1/Keauhou 2 division cuts through many commoner kuleana awards which suggests the division post-dates the occupation of those areas.

There were a total of 126 Land Commission Awards (LCAs) in these *ahupua`a* with 66 granted in Kahalu`u, 50 granted in Keauhou 1 and 19 granted in Keauhou 2 (one award in Keauhou could not be located specifically to Keauhou 1 or 2). LCAs included from one to three discrete parcels (*āpana*). As is typically the case, the size of the kuleana LCAs were relatively modest ranging from 0.07 to 4.49 acres in Kahalu`u and 0.14 to 6.66 acres in the Keauhou.

The residence pattern was decidedly coastal. In Kahalu`u *Ahupua`a* 28 of the houselot claims are tightly clumped along the north edge of Kahalu`u Bay with the other 15 houselot claims scattered on the point south of the bay. Notably all of the house lot claims lie makai of the Kuakini Wall which is understood to have been overseen by John Adams Kuakini, governor of Hawai`i Island for the purpose of keeping wild cattle and their depredations mauka of this coastal habitation zone. Most of the houselots included between one and five houses which were enclosed by stone walls (*pa*). A number of useful plants are

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mentioned within these houselots including *kou*, *hala*, *hau*, papaya, *loulou* palm, pineapples, noni, and coconut trees.

At Keauhou Bay houselots were focused primarily on the north promontory south of He'eia Bay with seven houselots situated on the south side of the bay and one lot on the southern coast of Keauhou 2.

Tomonari-Tuggle (1985:27) notes there were at least four trails leading into the uplands in Kahalu'u and Keauhou 1. Such trails would have led the commoners of Keauhou up to their food plant patches in the uplands, which are understood to have been primarily between 1,000 to 1,700 foot elevation in areas of well-drained silty clay loams. Such gardens would have taken advantage of vagaries in topography, soil and rainfall and formed something of a patchwork portion of the Kona Field System.

Tomonari-Tuggle (1985:30) notes an interesting feature of the land claims in that many of the claims did not claim possession of the land over a long period and in fact were upfront about the occupying families having moved onto vacant or idle land. Archaeological evidence clearly indicates that a wide belt of permanent habitation structures had contracted to a narrow coastal strip in the early historic period. Clearly by c. 1850 many of the families that had resided at Keauhou had died out or moved away. Depopulation, the collapse of the religious center, the focus of trade on Kailua and Ka'awaloa and the depredations of cattle, horses and goats inland of the Kuakini wall would all have been factors underlying this demographic change.

### Late 19th Century

Lacking sufficient water and easily developable land the Kona Coast of Hawai'i was largely spared the changes associated with plantation agriculture that affected so much of Hawai'i. Economic opportunities created by this commercial agriculture elsewhere was another pull for relocation away from Kahalu'u. Tomonari-Tuggle notes that according to Kingdom of Hawai'i tax ledgers the population of this area drops from 72 in 1857 to 24 in 1881. While the overall importance of the Kona Coast diminished the relative importance of Keauhou on that coast may have increased somewhat as Kealakekua Bay (Ka'awaloa and Napō'opo'o) became less important as an entrepot. In her survey of Government license ledgers between 1855 and 1870, Tomonari-Tuggle (1985:32) notes eleven applications (by five individuals) for enterprises at Keauhou in comparison with 25 applications at Kailua, 10 for Kealakekua, 7 for Napō'opo'o 4 for Ka'awaloa and 3 each for Hōlualoa and Hōnaunau. The uplands of Kahalu'u and Keauhou became more important as the century drew to a close with the growth of the cultivation of coffee. A modest Chinese presence is noted with one residing at Kahalu'u and two resident at Keauhou in 1870. A Chinese store was located at Keauhou by 1867. Curiously fishing appears to have been a minor enterprise during this period.

### Kahalu'u/Keauhou in the Twentieth Century

The early twentieth century saw a boom in the coffee industry in the Kona uplands and small towns sprung up along the belt highway. Insightful regarding the coast is Schenck's (1931:80) account of Keauhou Bay as "miles off the beaten path... a place where people used to live in numbers and now live no more." Tourism grew almost exponentially

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in the decades after WWII and the boom starting in the 1970s radically changed the face of Keauhou and Kahalu'u.

### Previous Archaeology at Keauhou and Kahalu'u

Previous archaeological studies at Keauhou and Kahalu'u are briefly summarized in Appendix A and are listed in the references section. Keauhou/Kahalu'u is one of the most studied areas in Polynesia although rather notably all but one identified study (Dougherty and Rechtman 2002) lie seaward of Kuakini Highway (Belt Highway 11). Virtually all of the archaeological studies undertaken find not only evidence of human occupation but also evidence of permanent habitation and agricultural development in areas that have not been graded. Based on his extensive field experience, Reinecke (1930b:1) concluded:

The land of Kahalu'u is probably the richest of any in Kona for Hawaiian remains. With an exceptionally abundant water supply and land *mauka* of at least average fertility, it must have supported a dense population.

Reinecke's primary informant in Kahalu'u, Mr. Thomas Robert Kahulumu, listed thirty-seven *heiau* in that *ahupua'a* (list given in Reinecke 1930b:16), and Reinecke (1930b:1) notes that "there are in addition several far *mauka* in the woods which he does not know, and several nearer the shore whose names have been lost." The exceptional archaeological remains at Kahalu'u/Keauhou led to the creation of the Kahalu'u Historic District (Site 50-10-37-4150; a district with multiple sites) that was placed on the National Register of Historic Places on December 27, 1974. The present study area lies within this National Register Site (Figure 5). The neighboring Great Wall of Kuakini (Site 50-10-37-6302 or -7276) and the Kona field System (Site 50-10-37-6601) (Figure 4) have also been found eligible for the National Register.

Clearly there was a wide belt of permanent habitation back from the coast in traditional Hawaiian times with scattered permanent habitations extending on the slopes up at least as far as Kuakini Highway. While it has generally been understood that the optimal area for agriculture lies above 1,000 feet elevation there are widespread indications of fairly intensive agriculture at lower elevations as well.

### Previous Archaeological Studies in the Present Project Area

Previous archaeological studies covering the present project area include: Hammatt, and Folk 1980, Hammatt, Folk and Ida 1981, Allen 1984, Tomonari-Tuggle 1985, Tuggle 1989a, Tuggle 1989b, Walker & Rosendahl 1989.

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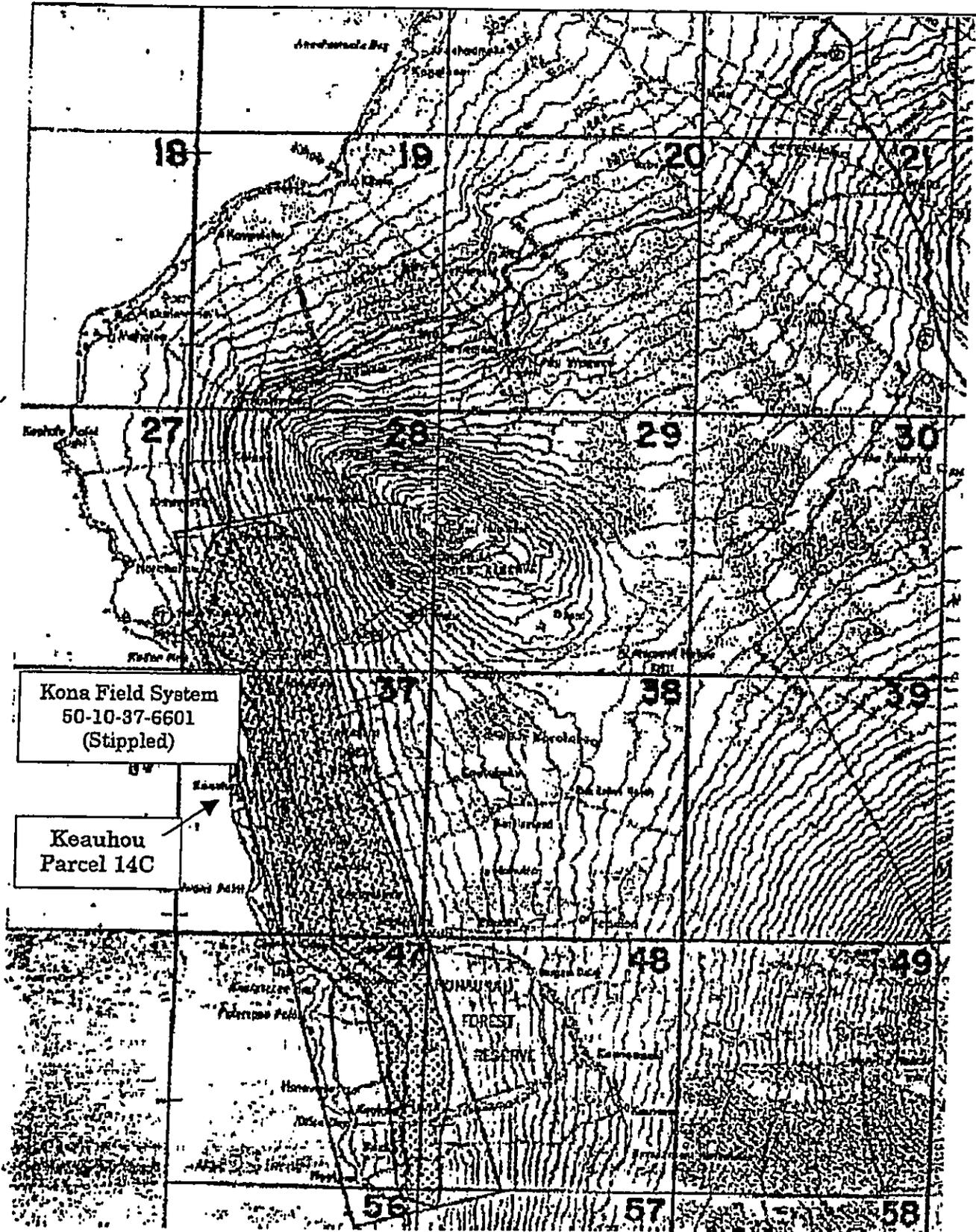


Figure 4 Keauhou in the Context of the Kona Field System

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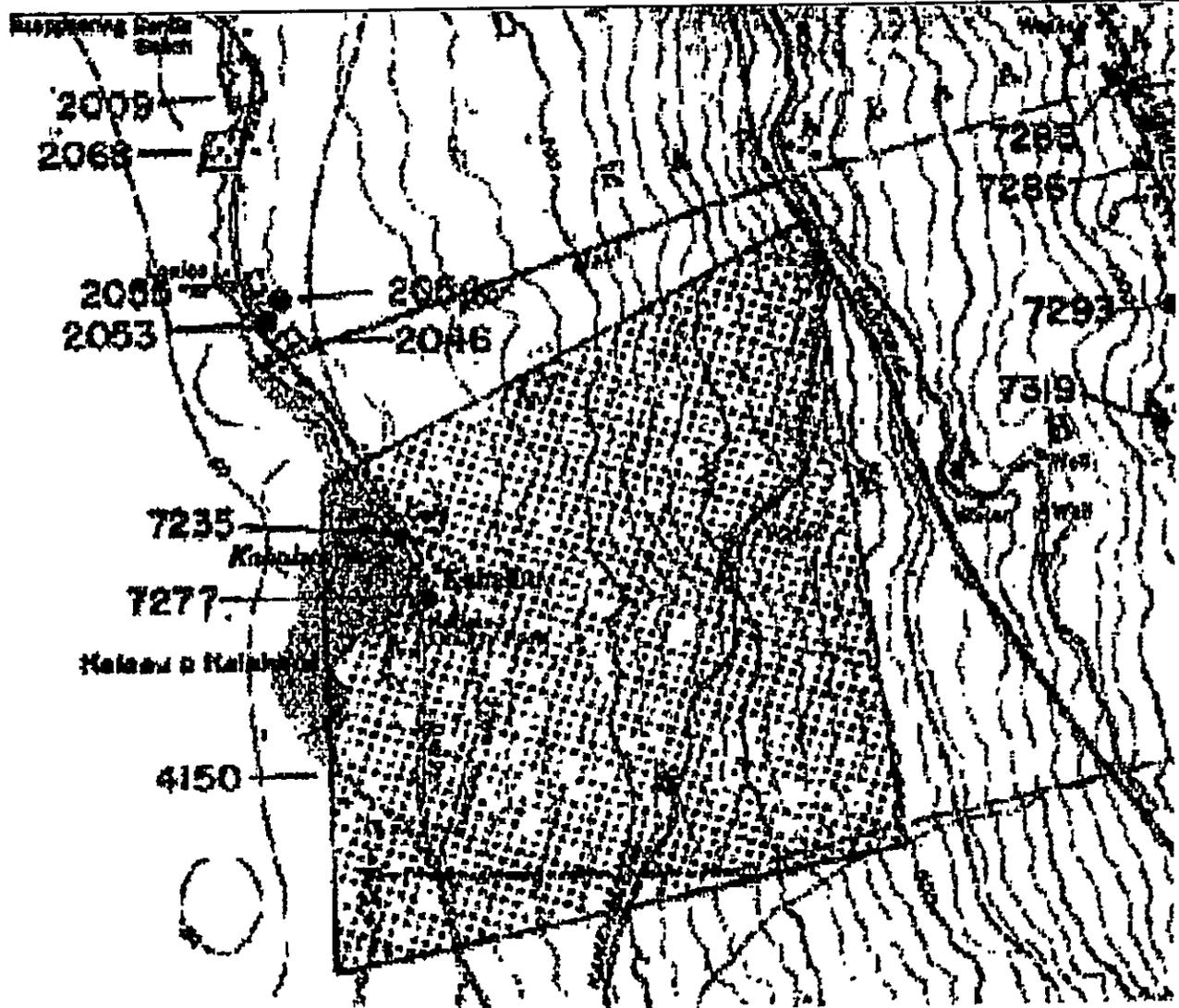


Figure 5 Kahalu'u Historic District. SIHP 50-10-37-4150

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### PRESERVATION PLAN

The Habitation and Burial Complex known as State Inventory of Historic Places (SIHP) number 50-10-37-7828 (Hammatt and Folk 1980) is recommended for preservation (Tuggle, 1989a:21). The complex comprises over twenty-one features (Table 1) including platforms, enclosures, terraces, C-Shape structures, *ahu*, and foot trails (the *ahu* and intra-site foot trails are not assigned feature designators). The historic property 7828 extends over a rectangular area of approximately 2800 square meters or, 46 m. (150 ft.) by 61 m. (200 ft.), not including continuation of the foot trails beyond the group of structural features (Figure 6).

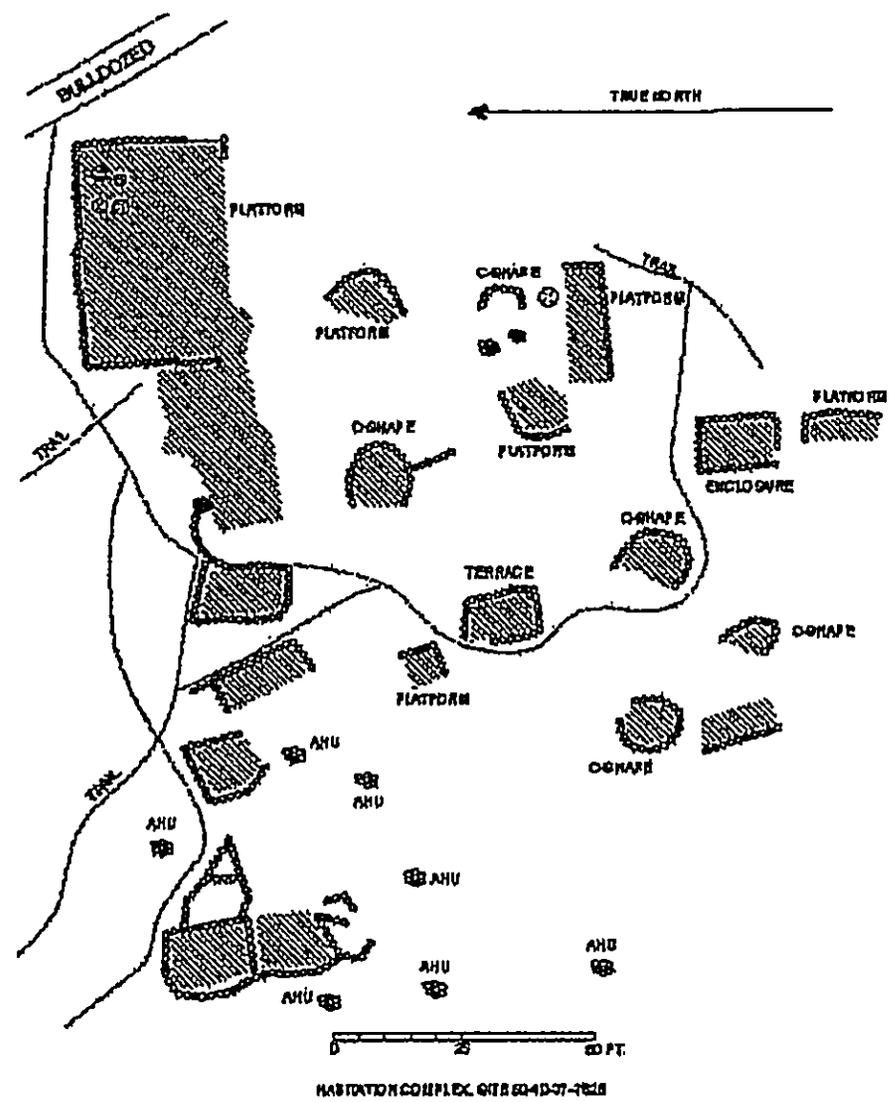


Figure 6 Historic Property 50-10-37-7828. Habitation and Ceremonial Complex

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Preservation of 50-10-37-7828 will take the form of conservation, i.e. the historic property will be avoided and protected. The aspect of what is appropriate cultural use will be addressed by KIC and its cultural consultants on the basis of the larger plan of development and preservation in Keauhou and Kahalu'u.

Table 1 Features of the Historic Property Preserve.

Site Number	Feature	Feature Area	Feature Type
50-10-37-7828	A	126.0	Terrace (Platform)
	B	10.64	Terrace (Platform)
	C	15.75	C-Shape
	D	8.88	C-Shape
	E	36.0	Terrace
	F	28.75	Terrace
	G	20.0	Terrace
	H	8.0	Terrace
	I	12.0	C-Shape
	J	12.0	C-Shape
	K	7.84	C-Shape
	L	6.9	Terrace
	M	14.0	C-Shape
	N	14.0	C-Shape
	O	17.5	C-Shape
	P	9.0	C-Shape
	Q	9.0	Terrace
	R	24.7	Terrace
	S	30.0	Enclosure
	T	74.82	Enclosure
	U	14.0	Terrace
TOTAL	21	Avg. 23.8	

### *Buffer Zone*

A buffer zone of twenty-feet (6.1 m.) from the outer edge of the peripheral features of 7828, with one exception, will be used to ensure preservation of the integrity and context of the entire historic property as one entity (Figure 2 Project Area Showing Location of Historic Properties). The exception is at the southeast corner of the preserve where the buffer will be no less than five-feet from the features to allow safe access to the property from Ali'i Drive. A bright colored barricade fence will be erected on the buffer outer boundary prior to start of construction and will be inspected periodically and maintained during all periods of construction. This buffer zone boundary will be the position for placement of *pulo'u* fencing (log posts with rope strung one to the other) as the physical markers for the long-term preservation. No other landscaping will be used for the buffer demarcation. Once established and approved the long-term buffer zone boundary shall be surveyed and marked on a land survey map and the overall project maps.

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### *Cultural Consultation*

The Kamehameha Investment Corporation has close contact with organizations and individuals for whom the historic properties at Keauhou are of direct cultural significance. The KIC has assembled a cultural advisory committee comprising ten individuals and organizations to address affairs relating to culture history and cultural sensitivity. Three of these are *kupuna*, five are organizations and two are native Hawaiian individuals who represent KIC. The KIC or any member of the advisory committee contacts other members to set a meeting as necessary to discuss events or incidences relating to historic properties of cultural significance. A list of these persons or points of contact for organizations and a summary of their comments on this plan is provided in Appendix A.

### *Interim Protection Measures*

The following interim protection measures will be used to protect the historic property 50-10-37-7828 and its buffer zone during construction activities.

1. Prior to all construction activity in the project property Parcel 14C the historic property buffer boundary will be surveyed by Land Survey (this has already been accomplished. Refer to Figure 2 Project Area Showing Location of Historic Properties).
2. A temporary barrier of bright colored barricade fencing will be erected on the outer edge of the surveyed buffer.
3. The surveyed historic property buffer will be drawn on construction plans and specifications, with notation that it is an area within which no construction activity of any kind may occur.
4. Each construction firm hired for work on the project parcel will schedule and conduct an on-site, pre-construction briefing to include company supervisors, foremen and equipment operators assigned to the job.
5. An archaeological monitor will be on-site during initial ground alteration activities immediately outside the preservation fence, and will conduct periodic checks during construction to insure the protective fence is maintained in good condition.

### *Maintenance Measures*

Historic property 50-10-37-7828 is located on unweathered *a'a* lava and thus, has little vegetative cover. Where non-native vegetation is present it will be hand cleared from the preserve. New colonizing plants will be removed by hand on a regular basis. The non-native vegetation is predominantly Christmas-berry trees and noxious grasses. Native plants now present consist of predominantly *noni*. These plants will be left in place.

The historic property is planned for conservation. Stability of the features within the historic property is good at present. It is not anticipated that there will be impact from direct contamination of litter because of the restricted access. Litter that arrives from outside sources will be removed at the same time as other maintenance measures.

There are no plans at present for the public to access the site. Potential future impacts are nil as a result. There are also no immediate plans to interpret and inform the

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public about the site. KIC will incorporate the site into the overall Keauhou interpretive plans and trails systems as they develop in consultation with the SHPD. The overall plans will contain provisions for reasonable monitoring of historic property integrity by the appropriate agency, and SHPD inspection to assure compliance. KIC and the Cultural Advisory Committee Aha Hanapono will determine possible use of the site for cultural purposes as appropriate.

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## DATA RECOVERY PLAN

The following Data Recovery Plan presents measures for mitigation of the historic properties 50-10-37-7827, 7829, and 7830 located in Parcel 14C of the Kamehameha Investment Corporation lands at Keauhou and Kahalu'u. These properties are recommended for archaeological data recovery in a 1989 resource management plan for the KIC Development Parcel 14 (Tuggle 1989a:22). A fourth property, 50-10-37-4618, was recommended for data recovery and preservation in Rosendahl (1988:47-50). The land surveying of the trail conducted recently will suffice as data recovery of this feature and should be included as part of the documentation in the data recovery report. KIC is in agreement with the concept of preservation of a *mauka-makai* corridor for use as a foot trail, and believes this is better served by a corridor through the preserved historic features north of Parcel 14C. That parcel contains the Ohia lava tube complex and other surface features that will need trail access for interpretation, and cultural practices. To preserve the trail corridor in this manner will involve moving the trail corridor approximately one-hundred feet to the north, passing along the north boundary of Parcel 14C.

This plan presents research goals by means of general assumptions followed by four models and the archaeological implications for testing these models. The methods for fieldwork data collection, laboratory data analysis, reporting format, and curation procedures for the archaeological materials derived from this mitigation are detailed in this section.

### *Research Goals*

#### Patterns

The general approach to Data Recovery of the habitation sites within the Parcel 14C project area will focus on settlement pattern and social status studies. These studies will be in the context of the perceived patterns of the archaeological and cultural history of Keauhou. These patterns are summarized as follows:

1. Settlement of this portion of Keauhou is fairly late in Hawaiian pre-history, generally post-dating 1400 A.D. (Burtchard 1996:33ff).
2. Keauhou was a major center for *ali'i* and a focus of much political power within the late pre-historic and early historic period. There are archaeological remnants of chiefly residences and smaller less prominent habitation features for congregation of dependent people, who gathered here for labor, construction, warfare, and trade in connection with chiefly residence. The evidence for warfare indicates involvement of the local population in late pre-historic times (Kamakau 1961:228).
3. Agricultural production appears to have played a minor role within the Parcel 14C project area. Traditional subsistence would have depended on fishing and contact with productive areas of older lava flows north, *mauka*, and south of the project area in Kahalu'u and Keauhou (Burtchard 1996, Hammatt and Shideler, 1991; and Hammatt *et al.* 1991).
4. The residence complexes show distinctive clustering or grouping of features and each cluster is spatially separated. Smaller features in each of the complexes generally surround structures of larger size.

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5. There is historical evidence for late pre-historic contact between Keauhou and other islands, particularly, Maui and especially through Kalani'opu'u's endeavors (Kamakau 1961).

The most prominent characteristic that emerges from the archaeological inventory of Parcel 14C is the similarity of the separate historic property clusters especially that of 7827 and 7828 where a substantial number of smaller habitation features are in close proximity to one or more larger habitation features. These characteristics could be viewed from two different theoretical viewpoints: 1) a more traditional chronological expansion of Keauhou settlement; possibly with the *a'a* land settled late, and 2) the assumption that the majority of features are contemporaneous and represent only the last phase of Hawaiian settlement involved with political consolidation and massing of people at Keauhou for labor, warfare, and trade. Is the cultural landscape represented at Parcel 14C in Keauhou the result of a slow development through four or five hundred years of Hawaiian pre-history? or, are we seeing the result of a flurry of activity by large numbers of people associated with the political and military exploits of the Kamehameha dynasty centered around Keauhou and Kahalu'u bays. If the former is true, habitation sites should yield a succession of dates and should show evidence of traditional subsistence, such as fishing, farming and craft activities associated with these pursuits. If the latter were true, evidence of traditional subsistence including crafts, such as fishhook making, would be at a minimum in these sites, and short-term residences of high and low status persons would be in evidence. This question of status is a secondary research question and is addressed in Models 3 and 4.

Alternatively, if a combination of sites exists in the project area, some belonging to one group or the other, the archaeological signature should allow their separation into one or the other category. The models and test implications can be stated as follows:

#### I. Settlement/Habitation

**Model 1:** The habitation sites at Keauhou in Parcel 14C represent various components of a stable agricultural subsistence based population and long-term developmental sequence of settlement from about 1400 A.D. to historic abandonment.

##### Archaeological implications

- a. The majority of the sites will contain evidence of domestic and subsistence activities associated with permanent settlement along the coast.
- b. These sites should contain well-developed habitation layers with high density of cultural material including food and cooking debris and features, and lithic debris in evidence of tool manufacture and use.
- c. Generally, these cultural layers will be single components.
- d. Habitation sites should tend to have different functions and or/levels of use and should have the spatial patterning more characteristic of family units.
- e. Habitation sites should display a wide chronological spread, characteristic of long-term habitation throughout late pre-history.

**Model 2:** The habitation sites at Keauhou in Parcel 14C represent only the late pre-historic or early historic events characterized by congregation of large numbers of people around a royal center for short periods of time for specific tasks related to support of ruling chiefs attending ceremonial events, for warfare, or for labor in construction or trade.

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**Archaeological implications**

- a. The sites should contain little or no evidence of traditional subsistence activities
- b. These sites should contain single or multiple, thin cultural layers from short phases of occupation with a low density of midden, characteristic of temporary habitation and a low density of lithics, and other objects of subsistence tool manufacture.
- c. Habitation sites should tend to have similar levels of use and be characterized by their uniformity of function and size. Spatial patterning should be disparate from typical family units and may be defined as, for example, a military pattern to protect the higher status residence in the cluster.
- d. Habitation sites should display a very narrow chronological spread from multiple layers or multiple features. The habitation sites should display a very narrow chronological spread confined to the late pre-historic and early historic period about the time of Kamehameha I.
- e. In addition, another expected characteristic would be imported goods from inter-island contact. This may include importation of basalt and/or volcanic glass materials that through petrography could be sourced to other islands.

**II. Status Differentiation in Habitations**

**Model 3.** The largest structures within the site complexes of parcel 14C are high status habitation sites.

**Archaeological implications**

- a. Large structures, internal features, differentiation of activity areas within sites
- b. Discernable variation in content from high status site to others such as more animal bone, and evidence of other specialized food remains.
- c. Varied function from one site to another evidenced by special design in layout, or spacing between other sites.

**Model 4.** Structures of smaller size within the site complexes of Parcel 14C are of lesser or commoner status.

**Archaeological implications**

- a. Small structures, no internal features, uniformity in size and structural design, no separate activity areas within the primary structure
- b. No discernable variation in archaeological content from one site to another, especially less mammal bone and other specialized food remains.
- c. Little spatial separation from site to site.

The Data Recovery will attempt to distinguish quantitatively which features belong in which category on the basis of a combination of information derived both from spatial interrelationships as well as archaeological excavation of the individual features. Survey data and excavation data will be considered together. These *a'a* slopes above the Keauhou coastal community contain more archaeological sites than would normally be expected in such an un-vegetated, barren environment. This may be the result of development of Keauhou as a center of politics and warfare during the Kamehameha dynasty. It is also established by other studies that the elements of a more traditional settlement pattern,

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predating the Kamehameha period, are present *mauka* and north of Parcel 14C, and separable from what may be later elements on the *ewa* of Parcel 14C.

**Sampling**

Four separate historic properties within Parcel 14C have been identified as site complexes. The complexes are tight clusters of small and large, predominantly habitation, features in close proximity. There are nine features in Site 7827, eighteen features in 7829, and four features in 7830 for a total of thirty-one features for data recovery excavation. The over twenty-one features in Site 7828 are all slated for preservation. The trail and the wall at the north end of Parcel 14C have been surveyed and inspected and have yielded their significant information. They will not be sampled. Descriptions of each feature in each historic property are presented in the archaeological inventory survey report (Hammatt and Folk 1980), the archaeological research plan (Hammatt et al. 1981) and an archaeological reconnaissance survey for EIS (Walker and Rosendahl 1989). Maps of the historic properties 7827 (Figure 7) and 7829 (Figure 8) are reprinted here from these sources.

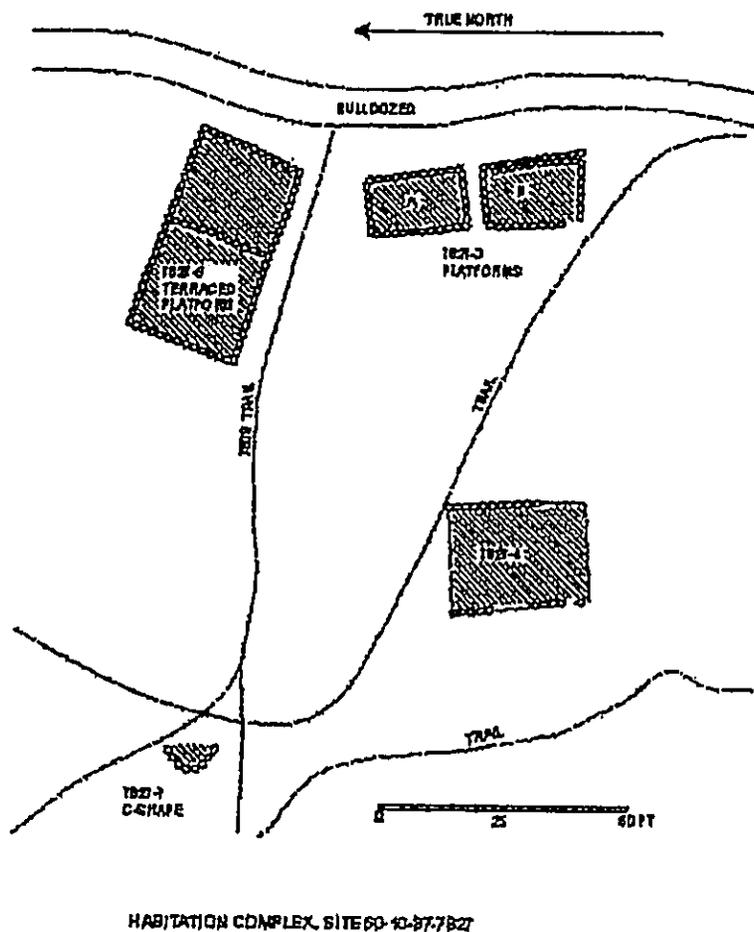


Figure 7 Historic Property 50-10-37-7827

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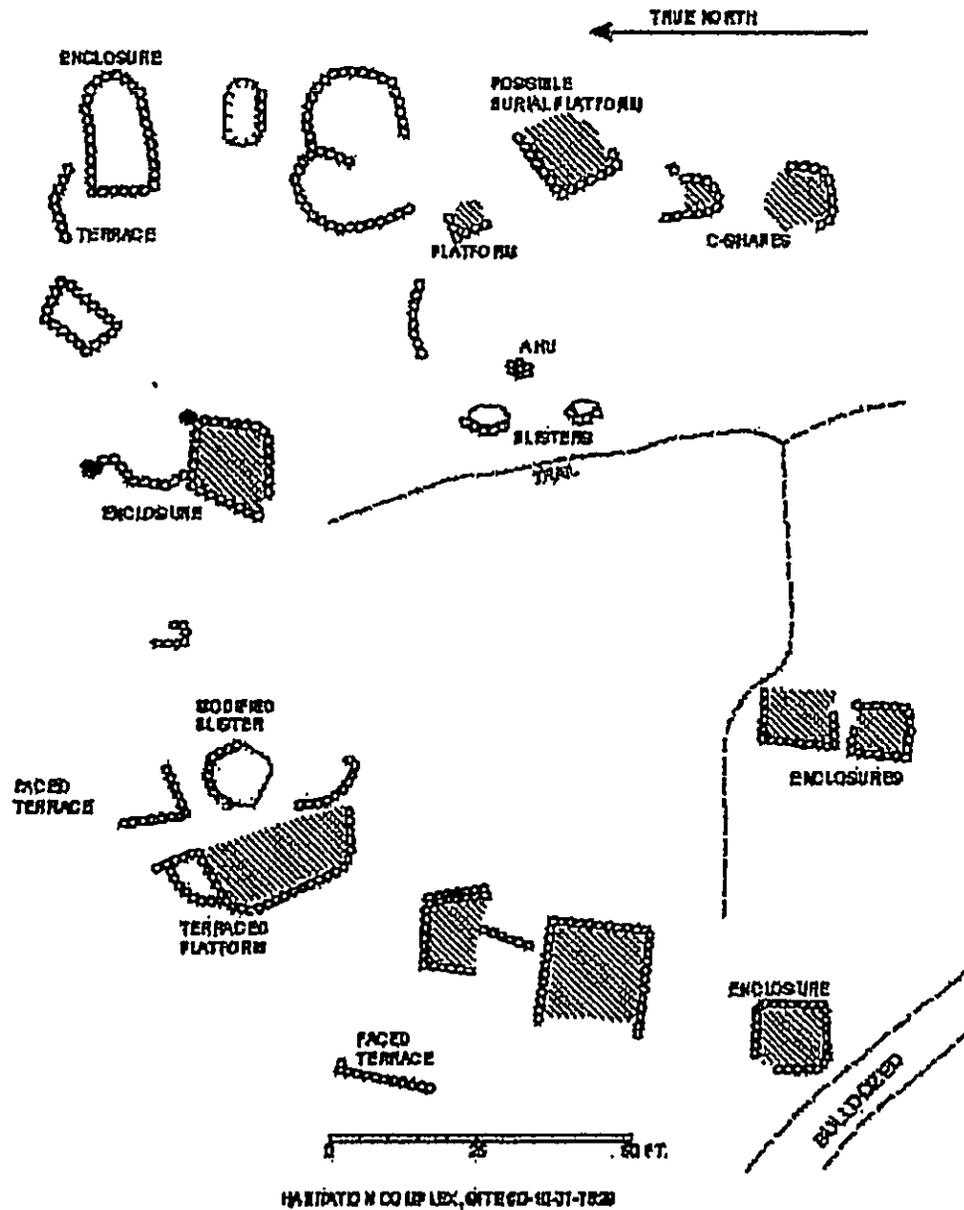


Figure 8 Historic Property 60-10-37-7829

The four multi-feature historic properties may be contemporaneous and related to the late pre-historic encampment-type of settlement pattern events postulated in Model 2. The individual features comprising these archaeological sites in Parcel 14C are primarily enclosures, platforms and pavements, and are interpreted as predominantly residential in function. It is believed that high and low status structures occur together in each of the

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complexes.

All of the sites are constructed of a'a clinker on the same rough, unweathered a'a lava. The degree of subsurface stratification from which data to test the models will be collected is perceived as a major problem in the a'a. In the excavation of these sites it is anticipated that mixing of midden and artifacts will have occurred naturally and will be further advanced by excavation. Thus selecting sites for excavation is in part a broad search for stratigraphy and for small features such as fireplaces associated with each structure's interior or exterior. This is especially important in considering to excavate an approximate ten percent sample of many of the features rather than excavation of large contiguous areas of a few sites. Table 2 Historic Property Features for Excavation presents the feature area in square meters (from inventory survey data) and the number of trenches to be excavated. Feature type is also noted.

Excavation of about ten percent (based on inventory survey measurements) of most features within each of the three historic properties designated for data recovery in the project area is appropriate to address the research goals. A specified minimum number of trenches (see Table 2) will be excavated at the selected features that will most contribute to addressing the research questions of short versus long-term use and status in use as described in the above models. This will include excavations in features A, G, P, and U of the historic property 50-10-37-7828, designated for preservation.

In the excavations of the historic properties in Parcel 14C particular attention will be paid to structural evidence of re-use or re-design of the features. One profile per excavated feature will be documented to define the stratigraphic and chronological relationship of the stone structure to its associated cultural layer.

Table 2 Historic Property Features for Excavation

Site Number	Feature	Feature Area	Minimum Number of Square Meters To Be Excavated	Feature Type
50-10-37-7827	A	7.29	1	Enclosure
	B	2.16	3	Cobble filled area
	C1	15.75	2	Platform
	C2	17.25	2	Platform
	D	81.0	8	Pavement
	E1	0.09	1	Cupboard
	E2	0.0625		Cupboard
	F	120.0	12	Stepped Platform
	G	7.29	1	C-Shape
TOTAL	9	Avg. 27.88	30	
50-10-37-7829	A	17.1	3	Platform
	B	28.0	2	Enclosed paved area
	C	30.0	2	Leveled area
	D	4.37	1	Platform

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Site Number	Feature	Feature Area	Minimum Number of Square Meters To Be Excavated	Feature Type
	E	14.0	1.5	C-Shape
	F	17.5	1.5	C-Shape
	G	37.5	4	Enclosure
	H	12.5	1	Terrace
	I	10.4	1	Enclosure
	J	22.5	1.5	Terrace
	K	16.0	1.5	Terrace
	L	3.75	1.0	Terrace
	M	45.0	4.5	Terrace
	N	16.0	2	L-Shape
	O	36.0	4	C-Shape
	P	22.56	3	Enclosure
	Q	12.5	1	C-Shape
	R	16.88	1	Enclosure
<b>TOTAL</b>	18	Avg. 20.14	36.5	
<b>50-10-37-7830</b>	A	6.84	2	Enclosure
	B	6.66	1	Cave
	C	9.9	2	Wall
	D	57.7 6	5	Enclosure
<b>TOTAL</b>	4	Avg. 20.29	10	
<b>GRAND TOTAL</b>	52	AVG. 23.03	82.5	

Survey information will be supplemented with GPS locations to accurately present spatial relationships of all features, and any features not previously recorded will be mapped and evaluated for testing the research questions.

As many as 15 carbon samples, if available, will be submitted for radiocarbon dating. These samples will be obtained from a wide variety of features, i.e. large and small platforms, enclosures, and terraces. A portion of the samples will be submitted to Dr. Gail Murakami for wood identification. The results of this identification will guide selection of samples for dating.

### *Field And Laboratory Methods*

The following methods will be used to conduct data recovery excavations, analyze excavated materials, and report on historic property mitigation through data recovery in Parcel 14C at Keauhou.

### **Excavation Methods**

1. Excavated sediments will be screened through 1/8 inch mesh screen;
2. All artifacts and shell and bone midden will be recovered from the screens;

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3. *In situ* charcoal samples and charcoal samples from the screening of sediments will be collected for radiocarbon dating and wood species identification as appropriate;
4. A minimum of one stratigraphic profile from each unit from each feature will be recorded by scale drawing. One profile from each excavated feature will show stratigraphic relationship of structural elements to the sediment layers.
5. All trenches will be excavated to culturally sterile sediments or bedrock;
6. Cultural strata will be excavated in 10 cm. levels where applicable.
7. Features within excavation trenches will be treated as discrete excavation units.

### Mapping

1. All sites designated for testing or excavation will be mapped to scale, if not previously done so. As most of the features have scale maps the existing drawings will be used for additional notation and location of excavation units. Mapping, as necessary, will precede the testing and excavation.
2. GPS will be used to compliment the location of trenches within features where applicable. Any GPS data collected will be available for inclusion in the SHPD database.

### Laboratory Methods

This phase of work will involve the following specific procedures:

1. Identification and cataloguing of artifactual material including both historic as well as prehistoric forms will be completed. Artifacts will be measured with representative samples drawn and/or photographed to scale.
2. Identification, weighing, and analysis to genus and species of a representative midden sample, consisting of one quadrant of each excavation unit will be completed. Data will be tabulated by depth and stratigraphic unit.
3. Calculation of total weight of midden by excavation unit, by depth by stratigraphic unit of each feature.
4. Charcoal samples containing pieces suitable for wood identification will be submitted for species analysis first. Selection of charcoal samples for dating. Will be selected in part based on the wood species findings;
5. Historic era artifacts will be identified by type and age;
6. Select faunal remains will be submitted to Dr. Alan Ziegler for identification;
7. Select samples of basalt may be submitted for petrographic analysis related to sourcing of raw material.

### Reporting

The final report will contain the following sections:

1. A section detailing all excavation data by feature by historic property.
2. Findings of the excavation that will include,
  - A separate section on artifact analysis including summary tables, distribution maps and discussion of artifact assemblages;
  - A separate section on midden analysis including summary tables of midden by layer and discussion of midden assemblages.
  - A separate section on stratigraphy including discussion on stratigraphic relationships and interpretation of profiles;
  - A separate section interpreting radiocarbon chronology and charcoal species

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- identification;
3. An in-depth presentation of each research question incorporating prior archaeological and historic studies in Keauhou and other comparable areas in Hawaii;
  4. A summary chapter, which interprets the findings in the context of each research question;
  5. A list of references cited;
  6. Appendices including:
    - Master Artifact Catalog;
    - Midden Catalog; and
    - Select photos.

A draft of the final data recovery report will be submitted to SHPD review.

#### Disposition Of Finds And Documentary Data

All materials generated by this project (except burials) will be deposited for curation at a facility on Hawaii Island acceptable to the landowner, and the SHPD.

Disposition of any burial finds will be determined by the Hawaii island burial council and SHPD/DLNR.

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Archaeological Appendix A

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## APPENDIX A

### Kamehameha Investment Corporation Cultural Advisory Committee Aha Hanapono

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## APPENDIX B

*Table Of Previous Archaeological Research: Kahalu'u And Keauhou (1&2) Ahupua'a*

Table 3 Previous Archaeological Research

Source	Nature of Study	Location of Study	Findings
Baker 1915	Narrative Focused on <i>Heiau</i>	Between Kailua & Kealakekua bays	Discusses <i>heiau</i> of Kahalu'u & Keauhou
Stokes 1919	Survey of <i>Heiau</i>	Island-wide	Discusses 13 <i>heiau</i> in Kahalu'u, 1 on border, & 2 in Keauhou 1
Reinecke 1930a	Survey	Shoreward sections of Keauhou 1 & 2	Identifies 95 sites in 3 concentrations, 1 about the village of Keauhou & 1 coterminous with Kahalu'u
Reinecke 1930b	Survey	Kahalu'u	Identifies 59 sites, lists names of 37 <i>heiau</i> (additional Kahalu'u sites listed in his Keauhou survey)
Emory 1932	Survey	Kahalu'u	Field book of survey
Sterling 1960	Study of "Important Sites"	Kahalu'u	Discusses 14 sites including Lonoikamakahiki residence, 9 <i>heiau</i> & Kahalu'u breakwater
Apple 1965	Trail Study	Coastal Kahalu'u & Keauhou	Documents stepping stone trail - precontact to 1819 form
Soehren 1966	Study of <i>Hōlua</i> Slide	<i>Hōlua</i> Slide, Keauhou	Documents <i>Hōlua</i> Slide
Soehren 1968	Field Trip Report	Kahalu'u	Not seen
Cox & Stasack 1970	Petroglyph Study	State-wide	Mention petroglyphs at Kahalu'u
Emory 1970	Report on an Inventory of Bishop Museum records	West Hawai'i	Based on Stokes 1906, Reinecke 1929/1930 & Kekahuna and Kelsey 1952-1956

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Source	Nature of Study	Location of Study	Findings
Barrera 1971	Excavations and Survey	Keauhou	Test excavations at 7 sites, brief descriptions of 16 sites
Crozier 1971a	Archaeological Survey	Kamehameha III Road	6 discrete sites, 366 features
Crozier 1971b	Archaeological Excavations	Kamehameha III Road	13 pits excavated in 3 feature areas
Emory <i>et al.</i> 1971	Archaeological Survey	Kahalu'u & Keauhou	47 sites described in 4 areas
Holland 1971	M.A. Thesis	Kona Coast, Hawai'i	An attempt to reconstruct land & livelihood in 1825
Rosendahl, P. 1972	Walk-through Survey	Queen Lili'uokalani Village, Keauhou	Not seen
Ching <i>et al.</i> 1973	Surface Survey	Ali'i Drive Realignment into Kahalu'u	Describes 3 cave sites, 9 platforms, 14 walled shelters, 5 enclosures, 28 probable burial mounds, etc.
Kirch 1973	Archaeological Excavations	Kahalu'u	Covers excavations at 3 sites documenting six construction phases at a men's house
Rosendahl, P. 1973	Test Excavations	Site D4-59	Not seen
Connolly III 1974	Reconnaissance Survey	Golf Course Areas Keauhou	Ten sites, including Keahuolo Heiau, located with brief descriptions
Emory, 1975	Archaeological Reconnaissance	Land Area 16	Notes petroglyphs, old trail, possible habitation floor
Rosendahl, P. 1975	Reconnaissance Survey	Ali'i Highway Extension, Keauhou	Not seen
Mann 1977	Reconnaissance	Adjacent to Ali'i Drive in Kahalu'u	Reports on excavations at a Historic House Platform Site
Rogers- Jourdane 1978	Reconnaissance	Roadway Extension & Area 19, Keauhou	Not seen
Soehren, 1978	Preliminary Archaeological Reconnaissance	Between Kuakini Wall and Ali'i Drive, Kahalu'u	Notes Papakoholua Heiau, a platform complex, rock carvings

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Source	Nature of Study	Location of Study	Findings
Connolly III 1979	Intensive Area Survey	Keauhou Gardens, <i>makai</i> of Kamehameha III & Ali'i Drive	Describes 28 sites and test excavations at 5 - mostly temporary habitation & Kauali'ili'i Heiau
Hammatt 1979	Reconnaissance	South Shoreline Keauhou Bay	Describes a complex with an enclosure, platform, & canoe shed
Rosendahl P. 1979a	Reconnaissance Survey	Keauhou Gardens	Not seen
Rosendahl P. 1979b	Proposal for Pre- stabilization Study	Kuemanu Heiau	Not seen
Rosendahl M. & Rosendahl P. 1979	Reconnaissance Survey	Substation Transmission Line, Kahalu'u	Not seen
Rosendahl M. & Rosendahl P. 1979	Reconnaissance Survey	38 acres on the South side of Keauhou Bay, Keauhou 2nd	Relocate two, possibly three state sites
Soehren 1979a	Letter Report Re: Reconnaissance Survey	Near Keauhou Bay, Keauhou	Mostly bulldozed but remnant structures and considerable midden was observed
Soehren 1979b	Letter Report Re: Reconnaissance Survey	Ali'i Drive, Kahalu'u	Describes 2 historical house sites, a pen, a platform, a grave & considerable midden
Soehren 1979c	Letter Report Re: Reconnaissance Survey	<i>Mauka</i> of Ali'i Drive	Nothing on lot, reports recent bulldozing had damaged the Kuakini Wall
Soehren 1979d	Reconnaissance Survey	24 acre Kona Gardens area, Kahalu'u	Reports 42 sites including Papakoholua Heiau and the Kuakini Wall
Ching 1980	Reconnaissance	<i>Hōlua</i> Slide, Keauhou	Recommendations for further documentation, stabilization & interpretation
Hammatt 1980	Letter Report: Re- evaluation of the Emory <i>et al.</i> 1971 survey	Area 1, Keauhou	Notes several sites had been destroyed or disturbed

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Development Parcel 14 C

Source	Nature of Study	Location of Study	Findings
Hammatt & Folk 1980	Survey	751 acres in Keauhou & Kahalu'u	Describes 320 sites and site complexes
Kelly & Barrere 1980	Background History	Kona Area, Hawai'i	Background History of the Kona area up through 1980
Rosendahl P. 1980a	Letter Report Buffer Zone Flagging	Kanaloa-at-Keauhou Development	Discusses flagging at 3 sites including Kumahaula Heiau
Rosendahl P. 1980b	Preservation Plan Proposal	Kanaloa-at-Keauhou Development	For three sites around He'eia Bay
Rosendahl P. 1980c	Test Excavations Report	Kahalu'u	Reports on 7 test pits at a cave shelter site -7702
Rosendahl P. 1980d	Data Recovery Plan	Kahalu'u	Plan for Data Recovery at site -7702
Soehren 1980a	Letter Report, Reconnaissance Survey	Parcel on Ali'i Drive, Kahalu'u	No surface structures, notes presence of midden
Soehren 1980b	Letter Report, Reconnaissance Survey	Helani Church lot on Ali'i Drive, Kahalu'u	Notes runs of 'Ohi'amukumuku Heiau, 2 historical structures & 8 graves
Soehren 1980c	Letter Report, Reconnaissance Survey	Parcel at Ali'i Drive & Mokole'a Street, Kahalu'u	Reports on 6 features: shelter cave, 2 low platforms, 3 probable burials
Soehren 1980d	Intensive Archaeological Survey	Portion Kahalu'u Historic District	Located 3 sites: 2 remnant features and a lava tube shelter cave
Van Giesen 1980	Report on Dredging Project	Waikua'a'ala Pond, Kahalu'u	Pre-contact & historic artifacts were recovered during pond dredging
Hammatt 1981	Reconnaissance Survey	Lower Portion Hōlua Slide, Keauhou	Outlines recommendations for stabilization, restoration & landscaping
Hammatt et al. 1981	Plan for Archaeological Salvage Research	Keauhou & Kahalu'u	Test excavations were carried out on 26 features

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Development Parcel 14 C

Source	Nature of Study	Location of Study	Findings
Rosendahl, P. 1981a	Archaeological Salvage Excavations	Site -7702, Kahalu'u	Report on 48 m <sup>2</sup> of excavations at Site -7702 & 2m <sup>2</sup> at Site - 5611; two lava tube shelters
Rosendahl, P. 1981b	Proposal for Archaeological Salvage Excavations	Site -7702, Kahalu'u	A proposal basically taken from Rosendahl, P. 1981a
Rosendahl P. 1981c	Archaeological Test Excavations	Site -7702, Kahalu'u	A descriptive summary with tables
Rosendahl P. & Severance 1981	Reconnaissance for Erosion Control Study	Kahalu'u Park	Discussion of Kahalu'u breakwater site
Rosendahl P. 1982a	Progress Report upon Completion of Fieldwork	Kahalu'u Condominium Development Site, Kahalu'u	Reports on work at 6 sites
Rosendahl P. 1982b	Archaeological Services for an SMA Application	Heiau Site -4673	Re-evaluation of site reported by Hammatt and Folk 1980
Soehren 1982	Reconnaissance Survey	Parcel on Ali'i Drive, Kahalu'u	A frame house and stone platform are noted
Allen 1983a	Archaeological Survey & Testing	Keauhou & Kahalu'u	Not seen
Allen 1983b	Report on Archaeological Resources	Keauhou & Kahalu'u	Not seen
Allen 1983c	Report on Intensive Survey	Keauhou & Kahalu'u	Not seen
Hommon & Rosendahl 1983	Archaeological Investigation	Ali'i Drive Realignment Corridors	Not seen
Kelly 1983	History of Land Use	Kona, Hawai'i	
Rosendahl M. 1983	Intensive Survey & Test Excavation	Parcel Kahalu'u & Keauhou	
Rosendahl P. 1983	Cultural Resource Management Work	Kamehameha III Birth Site	

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Source	Nature of Study	Location of Study	Findings
Shun 1983	Intensive Archaeological Survey	'Ōhi'a Cave, Keauhou	Presents data on 'Ōhi'a Cave
Tomonari-Tuggle 1983a	Management & Data Recovery Plan	Keauhou	
Tomonari-Tuggle 1983b	Management Plan	Kamehameha III Birth Site	
Allen 1984a	Limited Reconnaissance & Evaluation	Parcels 14B & 14C, Keauhou	
Allen 1984b	Limited Reconnaissance & Evaluation	Parcel 22C, Keauhou	
Allen 1984c	Inspection & Evaluation	Parcel 26, Kahalu'u	
Bath & Rosendahl 1984	Intensive Archaeological Survey & Testing	Helco Substation, Kahalu'u	
Hammatt & Shideler 1984a	Survey & Salvage	Parcel 22B, Keauhou	
Hammatt & Shideler 1984b	Survey & Salvage Addendum	Parcel 22B, Keauhou	
Rosendahl M. 1984	Reconnaissance	Well "A" & Access Road, Kahalu'u	
Rosendahl M. & Rosendahl 1984	Reconnaissance	Substation Transmission Line, Kahalu'u	
Rosendahl P. 1984	Field Inspection	Mauka of Ali'i Drive, Keauhou & Kahalu'u	Concluded lot line would not effect archaeological features directly
Schilt 1984	Archaeological Study	Kuakini Hwy. Realignment Corridor	

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Archaeological Appendix BKamehameha Investment Corporation  
Development Parcel 14 C

Source	Nature of Study	Location of Study	Findings
Shun 1984	Reconnaissance	22B Parcel, Keauhou	
Shun & Walker 1984	Intensive Archaeological Survey	Well "A" Access Road, Kahalu'u	
Hammatt and Borthwick 1985	Archaeological Reconnaissance	Between Kamehameha III Road and Kuakini Hwy., Keauhou 1st	Identified 10 sites including agricultural features, walls, a massive habitation enclosure & a walled platform
Hammatt <i>et</i> <i>al.</i> 1985	Archaeological & Ethnohistorical Investigations	Halekai, N. Keauhou Bay, Keauhou	
Kaschko, Michael W. 1985	Intensive Archaeological Survey and Testing	Kahalu'u Condominium Development Site, Mauka of Ali'i Drive, Kahalu'u	Identifies stepped terraces, rock mound, habitation cave, platform
Landrum, III, and Rosendahl 1985	Preliminary Report Archaeological Salvage Research Excavations	Kahalu'u Bay Villas Condominium Site, Mauka of Ali'i Drive, Kahalu'u	Reports on 27 m <sup>2</sup> of excavations at 5 features
Rosendahl P. 1985	Management Plan	'Ohi'a Cave, Kahalu'u	
Silva, Carol 1985	Preliminary Historical Documentary Research	Kahalu'u Area	Presents a Relatively Detailed History of Kahalu'u
Tomonari- Tuggle 1985	Cultural Resource Management Plan	Keauhou	
Cordy 1986a	<i>Heiau</i> Fieldcheck	Hapaaali'i Heiau, Kahalu'u	Presents summary of data on <i>heiau</i> & documents conditions
Cordy 1986b	<i>Heiau</i> Fieldcheck	Kapuanoni Heiau, Kahalu'u	Presents summary of data on <i>heiau</i> & documents conditions
Hay, <i>et al.</i> 1986	Data Recovery Report	Kahalu'u	Excavation of 49 3/4 m <sup>2</sup> at Site 50-10-37-7702, Kahalu'u Habitation Cave, large artifact assemblage dating 1400s to 1700s

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Development Parcel 14 C

Source	Nature of Study	Location of Study	Findings
Rosendahl M. 1986a	Reconnaissance	HPA Site between Kuakini Hwy & Kamehameha III, Kahalu'u	Identifies habitation & ag. complexes, railroad bed, <i>heiau</i>
Rosendahl M. 1986b	Site Location Plotting Report	HPA Site between Kuakini Hwy & Kamehameha III, Kahalu'u	Reports flagging of Rosendahl M. 1986a sites
Rosendahl P. 1986a	Reconnaissance	<i>Mauka</i> of Kuakini Wall, Kahalu'u	Identifies 3 surface features: terrace, alignment, modified outcrop
Rosendahl P. 1986b	Reconnaissance	<i>Mauka</i> of Kuakini Wall, Kahalu'u	Identifies Kuakini Wall and modified outcrop
Rosendahl P. 1986c	Reconnaissance	Keauhou Circle K, just <i>mauka</i> of Ali'i Drive, Kahalu'u	Sparse midden scatter in a bulldozed lot
Cordy 1987	Comments on Development	<i>Mauka</i> of Kamehameha III road, Kahalu'u/ Keauhou	Discusses cartroad, ag complex, enclosure, housing complex
Haun, Alan E. 1987	Reconnaissance Survey	Kona Surf Wedding Chapel Keauhou 2 <sup>nd</sup>	Identified 5 features including <i>papamu</i> , platform, terrace, & enclosure
Rosendahl, M. and Rosendahl 1987	Interim Report: Survey, Testing & Data Recovery Excavations	Development Parcel 23, Keauhou Resort, Keauhou	Investigates 6 sites including a cupboard, modified outcrop, enclosure wall, & burial complex
Walker, and Haun 1987	Interim Report : Intensive Survey and Test Excavations	Kona Surf Hotel Wedding Chapel, Land of Keauhou 2 <sup>nd</sup>	Reports on 13 test units
Rosendahl P. 1988	Supplemental Information to Reconnaissance	<i>Mauka</i> of Kuakini Wall, Kahalu'u	Supplemental information for PHRI reports 263-080886 & 263-080786
Cordy 1989	Trail Study	Keauhou 1 <i>Ahupua'a</i>	Focuses on "Keauhou Trail" between Ali'i Hwy & Kuakini Hwy.
Tuggle 1989a	Management Plan	Azabu Kona Resort	

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Development Parcel 14 C

Source	Nature of Study	Location of Study	Findings
Tuggle 1989b	Data Recovery Plan	Azabu Keauhou Resort	
Tuggle 1989c	Mitigation Plan	Azabu Keauhou Resort	
Walker, and Haun 1989	Intensive Survey and Test Excavations	Kona Surf Hotel Wedding Chapel,S. Keauhou Bay, Keauhou 2nd	5 sites identified including papamu, subsurface cultural deposit, platform, terrace, U- shape wall & enclosure
Walker, and Rosendahl 1989	Archaeological Reconnaissance Survey	Kahalu'u, both sides of Ali'i Drive	Documents 110 sites including 211+ component features incl named and unnamed <i>heiau</i> , probable burials, refuge cave, pond, petroglyphs
Athens 1990a	Reconnaissance	Nursury Parcel between Kamehameha III Road & Kuakini Hwy, Kahalu'u	Identifies 8 sites: mounds, alignments, walls, terraces
Athens 1990b	Reconnaissance	Parcel 33 between Kamehameha III Road & Kuakini Hwy, Kahalu'u	Describes 6 sites: lava tube, railroad berm, ranching walls, agricultural mounds
Hammatt, and Chiogioji 1990	Archaeological Inventory Survey	Coastal Keauhou 2 south of Keauhou Bay	Study completed by Perzinski, <i>et al.</i> 2001
Kennedy 1990	Inventory Survey	Kahalu'u	Scraped to bare rock" but notes a habitation terrace
Pearson, 1990	Archaeological Reconnaissance	Parcel 34, Keauhou	Reviews data for parcel, concludes a relatively low density of features
Pearson and Ladefoged 1990	Intensive Archaeological Survey	Development Parcel 34, Keauhou	Identifies 20 sites mostly agricultural or ranching with a couple of shelters
Athens 1991	Archaeological Inventory Survey	Keauhou	
Barrera, 1991	Archaeological Reconnaissance	Kahalu'u	Appeared mechanically cleared, no findings

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Archaeological Appendix BKamehameha Investment Corporation  
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Source	Nature of Study	Location of Study	Findings
Dunn and Rosendahl 1991	Preliminary Report: Intensive Archaeological Survey	Ali'i Highway Corridor across Kahalu'u into Keauhou 1	Massive study documenting numerous sites
Lutfy and Athens 1991a	Archaeological Inventory Survey	Parcel 33, between Kamehameha III Road & Kuakini Hwy, Kahalu'u	Identifies 4 new sites: ranching, traditional agriculture, railroad berm
Lutfy and Athens 1991b	Archaeological Inventory Survey	Nursery parcel between Kamehameha III Road & Kuakini Hwy, Kahalu'u	Identifies 5 new sites: ranching, traditional agriculture, railroad berm
Burtchard 1992a	Mitigation Plan	Parcel 34 Keauhou	
Burtchard 1992b	Archaeological Inspection Reports	Between Kamehameha III & Kuakini Hwy, Kahalu'u/ Keauhou Boundary	Identifies mounds, lava tube, possible terrace platform features
Burtchard 1992c	Maps and Summary Description	Parcel 35, Keauhou	Documents lava tube burial cave site 50-10-37-16045
Denham <i>et al.</i> 1992	Archaeological Inventory Survey with Subsurface Testing	<i>Makai</i> of Kuakini Wall, Kahalu'u	Discusses Kuakini Wall, cattle walls and habitation terraces
Kennedy and Denham 1992	Data Recovery Plan	<i>Makai</i> of Kuakini Wall, Kahalu'u	Discusses Kuakini Wall, cattle walls and habitation terraces
Rosendahl, and Walker 1992	Archaeological Field Inspection	S side Keauhou Bay, Keauhou 2 <sup>nd</sup> ,	No sites identified
Burtchard 1993	Archaeological Inventory Survey Narrative	Keauhou	
Burtchard <i>et al.</i> 1993	Archaeological Inventory Survey Site Data	Keauhou	

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Source	Nature of Study	Location of Study	Findings
Charvet-Pond & Rosendahl 1993	Archaeological Consultant Services	'Ōhi'a Cave, Keauhou	
Goodfellow, Susan T. 1993	Scope of Work, Schedule, and Inventory of Archived Materials	'Ōhi'a Cave (Site 7962) Keauhou	Summary of PHRI field records and inventories for 'Ōhi'a Cave
Jones, <i>et al.</i> 1993	Archaeological Reconnaissance Survey	Frazier Parcel, midway between Ali'i Drive & Kuakini Hwy.	15 features identified incl. Keauhou Trail, enclosure, midden deposits, walled enclosures & terrace platforms
O'Hare, and Rosendahl 1993	Archaeological Inventory Survey	<i>Makai</i> Portion of 'Ōhi'a Cave	Documentation of Site 50-10-37-7962
Borthwick, <i>et al.</i> 1994	Archaeological Inventory Survey	Proposed Kona Country Club Estates Project Site, Keauhou 2nd	
Burchard <i>et al.</i> 1994	Archaeological Survey & Data Recovery	Parcel 35 Keauhou	
Liston, and Burchard 1994	Archaeological Data Recovery	Parcel 34, Midway between Ali'i Drive & Kuakini Hwy., Keauhou 1st	Mapping & excavation at 4 sites
Tomonari-Tuggle 1994a	Archaeological Inventory Survey of Surface Structures	'Ōhi'a Preserve, Keauhou	
Tomonari-Tuggle, M.J. 1994b	Preservation Plan	'Ōhi'a Preserve, Keauhou	Discusses protection and interpretive measures
Walker, Alan T. and Paul H. Rosendahl 1994	Archaeological Inventory Survey	Azabu Keauhou Resort <i>Mauka</i> , <i>Makai</i> of Kamehameha III Road, Kahalu'u	Describes 251 sites with 632 component features

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Source	Nature of Study	Location of Study	Findings
Sweeney, and Burtchard 1995	Archaeological Inventory Survey	Frazier Parcel, midway between Ali'i Drive & Kuakini Hwy., Keauhou 1st	Identifies 4 sites including historic wall, Keauhou Trail, enclosures, platform terraces, & modified outcrops
Barrera, Jr. 1996	Archaeological Investigations	North of Keauhou Bay, Keauhou 1	Entire lot had been graded, a cultural deposit was tested
Burtchard 1996			
Jimenez, 1996	Interim Report Phase 1 (d) Data Collection	Ali'i Highway Corridor across Kahalu'u into Keauhou 1	Massive study documenting numerous sites
McGerty, et al. 1996	Archaeological Inventory Survey	Just <i>makai</i> of Kuakini Hwy. Keauhou 1	No sites
Anderson 1998	Archaeological Inventory Survey	Helani Church Lot, Kahalu'u	Identifies 4 sites: church, historic school & church meeting house, 'Ohi'amukumuku Heiau & a lava tube with skeletal remains
Haun et al. 1998	Archaeological Intensive Survey	Ali'i Highway Corridor across Kahalu'u into Keauhou 1	Massive study documenting numerous sites
Walker, and Rosendahl 1998	Limited Archaeological Data Recovery	Kahalu'u Development Parcels, east of Kuakini Wall, South of Makolea St.	Documents excavation of 2m <sup>2</sup>
Dega, 2000	Burial Testing	Healani Church Lot, Kahalu'u	16 trenches were excavated, 1 burial was encountered
Elmore & Kennedy 2000	Archaeological Inventory Survey with Subsurface Testing	Between Ali'i Hwy & Kuakini Hwy, Keauhou	Documents 2 sites: a historic house and an agricultural complex
Clark, and Rechtman 2001	Archaeological Inventory Survey	<i>Mauka</i> of Ali'i Drive, North Kahalu'u	Identifies one site (-23005) remains of a house

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Archaeological Appendix B

Kamehameha Investment Corporation  
Development Parcel 14 C

Source	Nature of Study	Location of Study	Findings
Elmore & Kennedy 2001	Archaeological Inventory Survey with Subsurface Testing	Between Ali'i Hwy & Kuakini Hwy, Keauhou	Identifies an agricultural complex and an adjacent burial site
McEldowney , and Smith 2001	Report of Field Inspection and Assessment of Lava Tube	Healani Church Lot, Kahalu'u	Verification & resolution of certain issues pertaining to sites -21404 and -21396
Perzinski, <i>et al.</i> 2001	Archaeological Inventory Survey with Limited Subsurface Testing	0.8 km south of Keauhou Bay, Coastal Keauhou 2 <sup>nd</sup>	47 sites are located and described incl. permanent habitation, agricultural sites & probable burials
Dougherty, and Rechtman 2002	Archaeological Reconnaissance Survey	Portion of the Kona Gold Coffee Plantation, 1600-2000 ft elevation well <i>mauka</i> of Kuakini Hwy, Kahalu'u & Keauhou 1	Identified 3 sites: trail segment, ag. complex, enclosure complex

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Archaeological Appendix C

Kamehameha Investment Corporation  
Development Parcel 14 C

## APPENDIX C

### *Archaeological Studies And Other Worked Cited Pertaining To Kahalu'u And Keauhou*

- Allen, Melinda S.  
1984a *Limited Archaeological Reconnaissance and Evaluation of Previously Identified Sites: Development Parcel 14B and 14C, Keauhou-Kona Resort, Keauhou, North Kona, Island of Hawai'i, Ms 111-032784 PHRI, Kurtistown, HI.*
- Allen, Melinda S.  
1984b *Limited Archaeological Reconnaissance and Evaluation of Previously Identified Sites: Development Parcel 22C, Keauhou-Kona Resort, Keauhou, North Kona, Island of Hawai'i, PHRI, Kurtistown, HI.*
- Allen, Melinda S.  
1984c *Archaeological Inspection and Evaluation of Previously Identified Sites: Development Parcel 26, Keauhou-Kona Resort, Kahalu'u, North Kona, Island of Hawai'i, Ms 111-032784 PHRI, Kurtistown, HI.*
- Allen Melinda S.  
1983a *Archaeological Survey and Testing* IN P. H. Rosendahl (ed.) 1983, PHRI, Kurtistown, HI.
- Allen Melinda S.  
1983b *Report to Keauhou-Kona Resort Company on Archaeological Resources at Keauhou Kona Ms. 69-012583, PHRI, Kurtistown, HI.*
- Allen Melinda S.  
1983c *Letter Progress Report to Keauhou-Kona Resort Company on Intensive Survey Ms. 69-062783, PHRI, Kurtistown, HI.*
- Anderson, Lisa  
1998 *Archaeological Inventory Survey of the Helani Church Lot (TMK: 7-8-14-45) Kahalu'u Ahupua'a, Hawai'i Island*
- Apple, Russell A.  
1965 *Trails: From Steppingstones to Kerbstones, B.P. Bishop Mus. Spec. Publ, 63, Bishop Museum Press, Honolulu, HI.*
- Athens, J. Stephen  
1991 *Archaeological Inventory Survey, Phase I: Mauka Land, Keauhou Resort, Keauhou, North Kona, Hawaii Island, IARI Inc., Honolulu, HI.*
- Athens, J. Stephen

Jan. 24. 2003 1:10PM

CULTURAL SURVEY HI.808-262-4950

No.5900 P. 48/56

LINDA LINGOLE  
GOVERNOR OF HAWAII



PETER T. YOUNG, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCES MANAGEMENT

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION  
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ENFORCEMENT  
CONVEYANCES  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND  
STATE PARKS

January 15, 2003

Mr William Folk  
Cultural Surveys Hawaii  
733 N. Kalaheo Avenue  
Kailua, Hawaii 96734

LOG NO: 31440  
DOC NO: 0301PM02

Dear Mr. Folk.

**SUBJECT: Chapter 6E-42 Historic Preservation Review—“Preservation Plan and Data Recovery Plans for Historic Properties at Keauhou Development Parcel 14C” (Folk et al, 2002), Keauhou, North Kona, Hawaii Island  
TMK: (3) 7-8-10: Por. 4**

Thank you for submitting a copy of the above referenced report for our review and comment. The report was received in our office on November 7, 2002. We apologize for our late review and any inconvenience this may have caused you or your client, Kamehameha Investment Corporation (KIC).

The integrated mitigation plan calls for the preservation of Site 7828 (a habitation and burial site complex) and data recovery of three habitation sites (7827, 7829 and 7830) located in the approximately 14-acre subject parcel, referred to by KIC as Parcel 14C. The parcel was part of a 751-acre project area surveyed in 1980 by Archaeological Research Center Hawaii, Inc. (ARCH) and by other archaeological consulting firms after that date. According to new information received from you on January 10, 2003, the recommendations for the four sites were made in a report by Dave Tuggle in 1989. As noted in our detailed comments (see Attachment), the history of archaeological research in the subject parcel should be discussed in more detail to explain, for example, why Site 7830 was initially recommended for preservation in your 1980 report (“Archaeological Survey (Phase A) Portions of Keauhou-Kona Resort, Keauhou and Kahalu’u, Kona, Hawaii’i Island”) and later changed to data recovery. The preservation status of two other sites located in Parcel 14C, the Kuakini Wall (Site 6302) and a trail (Site 4618), should also be made clear.

We have a number of other questions and comments on both the preservation plan and the data recovery plan (see Attachment for details). Please revise the two plans and resubmit them for our continued review and approval.

EXHIBIT 6b

If you should have any questions about our review comments please contact our Hawaii Island archaeologist, Patrick McCoy (692-8029).

Aloha,

*P. Holly McEldowney*

P. Holly McEldowney, Acting Administrator  
State Historic Preservation Division

c. Chris Yuen, Hawaii County Planning Department  
Kai Embler, Hawaii County Department of Public Works

**Attachment**

**Detailed Comments on Draft Plan**

**'Preservation Plan and Data Recovery Plans for Historic Properties at Keauhou  
Development Parcel 14C'**

(Folk et al, 2002)

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**Abstract**

Page i, para. 1. It is unclear what you mean by status of the features in the three data recovery sites. We assume that you mean the status of the people that inhabited the sites. Please clarify.

**Introduction**

✓ Page 1, para. 2. Does the project area encompass parts of both Kahalu'u and Keauhou, and if so where is the boundary between the two *ahupua'a* on the site location map?

Page 1, para. 2. The project description notes that the Kuakini Wall forms the west boundary of parcel 14C. This important site, which should be preserved, is thus within the area of potential effect. The revised Figure 2 map that you sent us on January 10, 2003 indicates that no construction will be allowed within 10 feet of the wall. This addresses part of our concern but you still need to discuss in full the preservation commitments (both short-term and long-term) for this site in the current project area. It appears to us that this site should be included in the preservation plan.

Page 1, para. 3. We suggest that you add the number for each of the sites mentioned here so that the sites can be matched to Figure 2. Were the 1980 ARCH and 1989 LARII survey reports, on which the current plan is based, reviewed and approved by our office?

✓ Page 3, Figure 2. It is virtually impossible to read this map because of the small scale. We suggest that you enlarge it. You should also add a north arrow and scale. Please also indicate on the map the boundaries of parcel 14C. The location of Site 4618 on this map differs from the location on Figure 4 of your 1980 report ("Archaeological Survey (Phase A) Portions of Keauhou-Kona Resort, Keauhou and Kahalu'u, Kona, Hawai'i Island" --Hammatt and Folk 1980). The site is described in the 1980 report (Table 10) as "a foot trail 1.5 feet wide, running roughly east to west that passes between Sites 4612 and 4613." Is this the same trail?

**Previous Archaeology**

Page 9. The discussion of previous archaeology in the project area is limited to a single sentence, which though identifying a number of studies, provides no details on the findings of those studies or recommendations contained therein. For example, how many sites, if any, were tested and dated and what were the results? In preparing a revised summary of previous work we suggest that you include the survey area map from the 1980 report to show the location of the current project area.

#### Preservation Plan

✓ Page 12 (Fig. 6) and Page 3 (Fig. 2). It is difficult to relate these two maps of Site 7828. Part of the problem, as already noted, is the small scale of Figure 2 and lack of a north arrow.

Page 12, para. 1. The statement that Site 7828 is comprised of over 21 features suggests that not all of the features may have been identified in the 1980 survey and that the boundaries of the site may not yet have been established. You need to address this issue. Another problem with this paragraph is that the features are identified by letters in Table 1, but not on Figure 6, which means that the map and table cannot be related.

✓ Page 12, Figure 6 The proposed buffers for Site 7828 should be shown on this map so that we can understand how the buffers were set. We suggest that you replace the current map with an enlargement of Figure 2.

Page 13, Table 1. This table should include a column identifying the inferred function of each feature. It is especially important to know many of the features are burials and where they are located.

Page 13, para. 1. What is the status of the consultation on appropriate cultural uses? The results of the consultation process should be integrated into this plan. Have you consulted with our Burials Sites Program staff and the Hawaii Island Burial Council about this project?

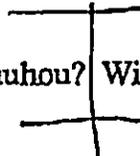
Page 13, buffer zone. The proposed 20 foot buffer, except for the southeast corner of the site preserve where the buffer will be reduced to roughly 5 feet to facilitate access from Ali'i Drive, may or may not be adequate. You should discuss how the proposed 20 foot buffer was determined. Did you take into account, for example, the topographic setting of the site and the potential visual effects of the planned development on the site?

✓ Page 14, cultural consultation. Appendix A presents a list of names but there are no comments on this plan as noted here. Please add these.

Page 14, interim protection measures. You should add that our office will be notified when the temporary fencing is in place.

Page 14, maintenance measures. The location of Site 7828 on Ali'i Drive suggests that there is a potential for impacts because of the easy access. You may want to reconsider the statement that the potential for impacts is nil.

Page 15, para. 1. What are the interpretive plans for Keaouhou? Will descendants, if any exist, be allowed access to the burial features?



#### **Data Recovery Plan**

Page 16, para. 2. As you make clear shortly, what are called general assumptions are actually "patterns" of various kinds. We suggest that you replace the caption "General Assumptions" with "Patterns."

Page 16, general assumptions, number 3. You may want to comment here or elsewhere on the age of the lava flow and the relevance this has to agricultural potential.

Page 16, general assumptions, number 4. Please provide a reference to a study or studies that established the pattern identified here. This is important since the models are based on the pattern.

Page 16, last paragraph. We don't understand the link you seem to be trying to establish between the spatial relationship of small and large habitation features and local settlement history. Please clarify.

#### **General Comments on Models 1 and 2.**

(1) You need to consider the possibility of a third model, that the archaeological landscape in the project area is comprised of some sites that fit Model 1 and some sites that fit Model 2.

(2) Model 1 does not fit the pattern summarized under "general assumptions" (number 3) where you note that agricultural production "appears to have played a minor role within the Parcel 14C project area." On page 18 you note that the parcel is situated on an a'a flow. This suggests low agricultural potential. You need to reconcile this contradiction and reassess the validity of the model.

#### **General Comments on Models 3 and 4**

(1) These two models are in our view really a single model. You are simply saying that the larger structures in the site complexes are probably high status habitations and the smaller structures, low status habitations.

(2) Is there any ethnographic or archaeological evidence for high and low status habitations in a single site as assumed here?

(3) We applaud your attempt to go beyond the usual limited focus on dating and function to consider social factors, but we think that you need to present some background information on efforts by other researchers in Hawaii to investigate status or rank.

**General Comment on Test Implications.** One problem with the test implications is that almost all of them are based on premises or assumptions that are taken to be self-evident and true, whereas

we would say that most are in fact hypotheses. We think that you need to discuss the data that support the assumptions to establish the validity of the criteria that are being employed (e.g. little spatial separation between sites in Model 4)

Page 18, sampling. Figure 2 shows four habitation site complexes, a trail (Site 4618), the Kuakini Wall (Site 6302) and a wall with no site number located in Parcel 14C. Is there written concurrence that the recording of the trail and wall at the north end of Parcel 14C was sufficient to justify no further work?

✓ Page 19, Figure 6. The map of Site 7827 shows only a few of the features that are proposed for excavation in Table 2. Please review and revise as needed.

✓ Page 20, Figure 8. You need to add the feature designations to the map to correspond to the information presented in Table 2

Pages 21-22, Table 2. This table should include a column indicating feature function.

Page 21, para. 1 and 2. We do not believe that a 10% sample of the larger features listed in Table 2 is adequate to provide the data to test the models

Page 22. Table 2 lists four features for excavation at Site 7830. There is no map showing the locations of these features and any other features that might exist at this site.

#### **Field Methods**

Page 23, mapping. If the small-scale maps that appear in this plan are the only maps of these sites, then remapping will definitely be required in order to accurately portray the sites and plot the excavation units

#### **Laboratory Methods**

Page 23. The identification and cataloguing of artifacts by itself is inadequate. You should also include specific analyses to provide the data necessary to test the models. You seem to imply that this will be done in the discussion of the report outline below.

Page 23. If the volume of midden recovered is small, as we expect it might be, then we believe that you should analyze all of it.

Page 23. All of the vertebrate faunal material should be submitted for analysis, not just select remains.

#### **Appendix A**

Page 25. As previously noted, the comments of the cultural advisory committee members are missing and need to be added.

**Appendix B**

Pages 26-38. This appears to be a reasonably complete summary of previous archaeological research in the two *ahupua'a*, but it is unclear why it was prepared and included in this plan, especially since there is so little discussion of previous research in the main body of the plan. For it to be really useful you would also need to include a map showing each of the individual project areas. We won't ask you to remove this appendix, but it seems to have little relevance to the current plan.

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# Archaeological Reconnaissance Survey for Environmental Impact Statement (EIS)

## Azabu Keauhou Resort Project

Land of Kahaluu  
North Kona District, Island of Hawaii

(TMK:3-7-8-10:35; 3-7-8-13:2,13,42,43)

by

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September 1989

**PHRI**

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EXHIBIT 7a

Table 1. (Cont.)

Site Feature Number	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Mode Assess.			Field Work Tasks		
			R	I	C	DR	SC	EX
<b>Previously Identified Sites (cont.)</b>								
7814	Cave (1)	Habitation	M	L	M	+	+	+
7827	Complex (9)	Habitation/ ceremonial	M	L	M	+	+	+
A	Enclosure							
B	Cobble filled area							
C-1	Platform							
C-2	Platform							
D	Pavement							
E-1	Cupboard							
E-2	Cupboard							
F	Stepped platform							
G	C-shape							
7828	Complex (21)	Habitation/ ceremonial	H	H	H	+	+	+
A	Terrace							
B	Terrace							
C	C-shape							
D	C-shape							
E	Terrace							
F	Terrace							
G	Terrace							
H	Terrace							
I	C-shape							
J	C-shape							
K	C-shape							
L	Terrace							
M	C-shape							
N	C-shape							
O	C-shape							
P	C-shape							
Q	Terrace							
R	Terrace							
S	Enclosure							
T	Enclosure							
U	Terrace							
7829	Complex (18)	Habitation/ ceremonial	M	L	L	+	+	+
A	Platform							
B	Enclosed paved area							
C	Leveled area							
D	Platform							

Table 1. (Cont.)

Site Feature Number	Formal Site/Feature Type	Tentative Functional Interpretation	CRM Value Mode Assess.			Field Work Tasks		
			R	I	C	DR	SC	EX
<b>Previously Identified Sites (cont.)</b>								
<b>7829 (cont.)</b>								
E	C-shape							
F	C-shape							
G	Enclosure							
H	Terrace							
I	Enclosure							
J	Terrace							
K	Terrace							
L	Terrace							
M	Terrace							
N	L-shape							
O	Box C-shape							
P	Enclosure							
Q	C-shape							
R	Enclosure							
7830	Complex (4)	Habitation	M	L	L	+	+	+
A	Enclosure							
B	Cave							
C	Wall							
D	Enclosure							
7831	Wall (1)	Boundary wall	L	L	L	-	-	-
7832	Complex (2)	Ceremonial-burial	M	L	L/H	+	-	+
A	Terrace							
B	Terrace							
7833	Enclosure (1)	Habitation	L	L	L	-	-	-
7840	Terrace (1)	Ceremonial-burial	M	L	L/H	+	+	+
7841	Complex (5)	Habitation/ ceremonial	M	H	H	+	+	+
A	Platform							
B	Platform							
C	Platform							
D	Boulder filled area							
E	Terrace							
7842	Complex (2)	Habitation	M	L	L	+	-	+
A	Terrace							
B	Walled depression							

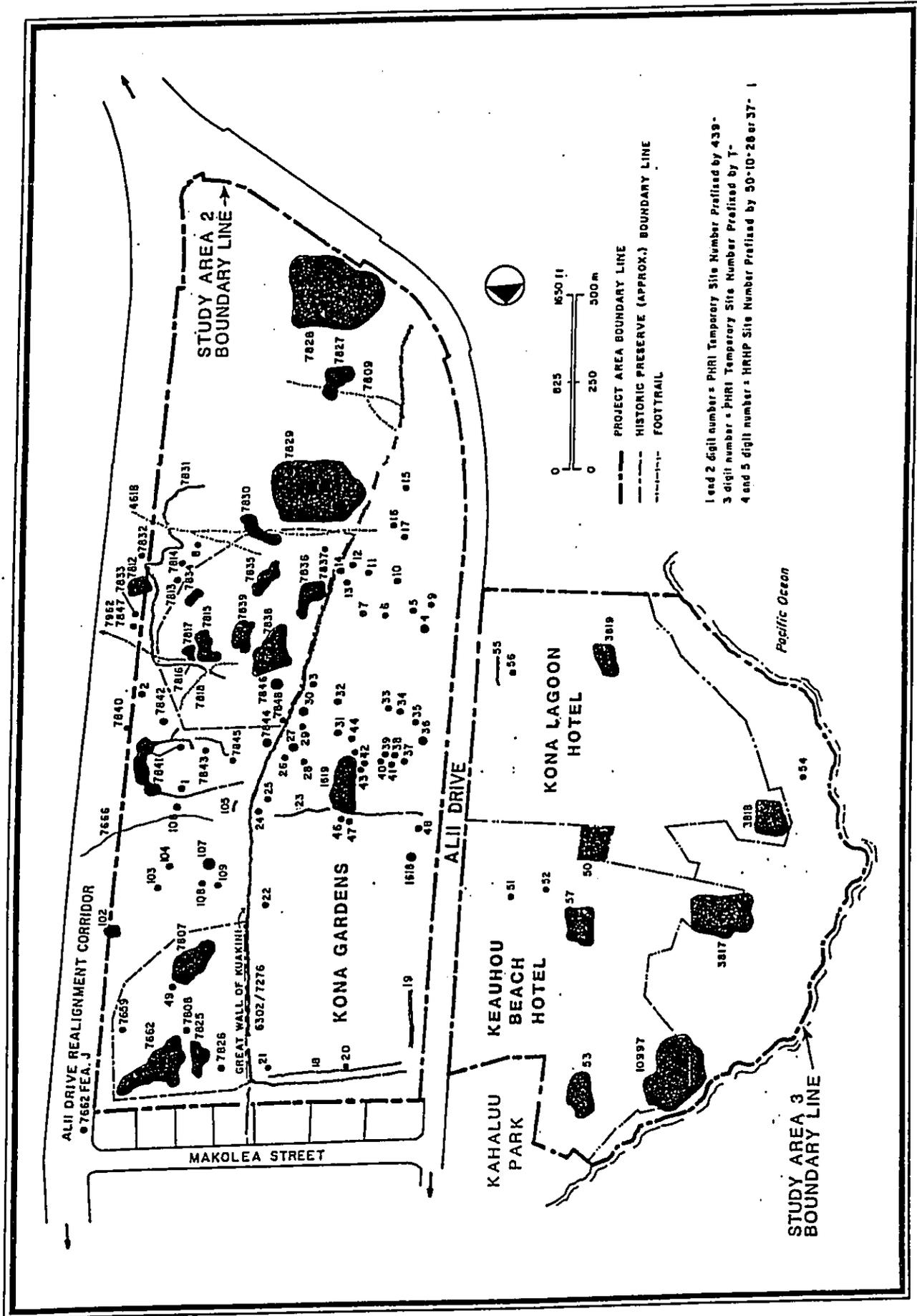


Figure 3. SITE LOCATION MAP

**FUNCTIONAL INTERPRETATION:** Transportation  
**DIMENSIONS:** 38.00 m by 3.50 m by 0.75 m (approx.)  
**DESCRIPTION:** Site 7818, oriented east-west, is situated adjacent to site complexes 7815 and 7817.

"This site features a foot trail that leads up to a 3.0-foot high modified pahoehoe bluff. A large inclined pahoehoe slab set against a 4-foot high wall serves as a step to mount the wall to the top of the paved bluff" (Hammatt and Folk 1980:153).

"Trail is demarcated by two parallel rubble mounds of boulders and cobbles discontinuous in places. These rubble mounds are 1.50 m wide and 0.75 m high" (Hommon and Rosendahl Field Records 1983).

**SITENO.:** State: 7825 Soehren:—BPBM:—PHRI:—  
**SITE TYPE:** Complex (4 Features)  
**TOPOGRAPHY:** Slightly undulating aa flow  
**VEGETATION:** Kiawe, koa-haole, portulaca, grasses  
**CONDITION:** Poor  
**INTEGRITY:** Unaltered  
**PROBABLE AGE:** Prehistoric  
**FUNCTIONAL INTERPRETATION:** Habitation  
**DESCRIPTION:** Overall complex area measures c. 61.0 m (N-S) by 9.0 m (E-W).

**FEATURE A:** Enclosure  
**DIMENSIONS:** 3.60 m by 1.80 m by 0.45 m (approx.)

"Feature A is an oval enclosure 6 by 12 feet, probably used for planting. Walls are low and very wide with an interior facing 1.5 feet high surrounding a soil area. No midden...visible" (Hammatt and Folk 1980:147).

**FEATURE B:** Enclosure  
**DIMENSIONS:** 4.60 m by 4.00 m by 0.45 m (approx.)

"Feature B is a circular enclosure 15 feet in diameter that is adjacent [to] and similar to Feature A. Wall height is 1.5 feet...soil interior. No midden visible" (Hammatt and Folk 1980:147).

**FEATURE C:** Enclosure  
**DIMENSIONS:** 6.00 m by 3.60 m by 0.60 m (approx.)

"Feature C is three probable planting enclosures averaging 12 by 20 feet, with an average wall height of 1.5 to 2.0 feet" (Hammatt and Folk 1980:147).

**FEATURE D:** C-shape  
**DIMENSIONS:** 5.00 m by 4.00 m by 0.60 m (approx.)

Opens seaward. It is constructed with boulders, cobbles and utilizes bedrock. Walls are rubbly and are not faced.

**SITENO.:** State: 7826 Soehren:—BPBM:—PHRI:—  
**SITE TYPE:** Cave  
**TOPOGRAPHY:** Undulating aa and pahoehoe flows  
**VEGETATION:** Kiawe, koa-haole, portulaca, grasses  
**CONDITION:** Fair

**INTEGRITY:** Unaltered  
**PROBABLE AGE:** Prehistoric  
**FUNCTIONAL INTERPRETATION:** Habitation  
**DIMENSIONS:** 5.00 m by 4.00 m by 0.76 m (approx.)  
**DESCRIPTION:** "The cave [collapsed blister] measures 12 feet in diameter, with an entrance height of 2.0 to 2.5 feet, with large waterworn cobbles scattered atop the dirt floor interior. One wana spine was located within the cave; no other shell midden were visible. Atop the cave ledge is a fairly level cobble/pebble pavement which extends 8.0 feet in length and 3.0 feet in width" (Hammatt and Folk 1980:114).

A rusted tin can, pig bone, Conidae, coral, and waterworn pebbles are present on the site surface. Situated on the seaward side of the blister is a terrace c. 0.3 m in height. Site may be mitigated and removed from the preservation area.

**SITENO.:** State: 7827 Soehren:—BPBM:—PHRI:—  
**SITE TYPE:** Complex (9 Features)  
**TOPOGRAPHY:** Level to slightly sloping aa flow  
**VEGETATION:** Sparse grass, noni, and uhaloa  
**CONDITION:** Fair  
**INTEGRITY:** Unaltered  
**PROBABLE AGE:** Prehistoric  
**FUNCTIONAL INTERPRETATION:** Habitation-

ceremonial  
**DESCRIPTION:** Overall complex area measures 52.0 m (E-W) by 46.0 m (N-S) (Figure A-4). Features A, B, and E were not relocated. Recorded a cairn (0.8 m in diameter by 0.8 m in height) near Kuakini Wall, ca. 25.0 m southwest of Feature D.

"Area between features also appears to have been artificially leveled. Trail 7809 also flagged at E end of site. Continues eastward above bulldozer road. Marked by vegetation (mostly grasses and Waltheria)" (Allen Field Records 1984).

The locations of Features A, B, E-1, and E-2 are not shown on the Hammatt et al (1981:66) site map and were not found during the present survey. Site 7827 was originally recorded as features of HRHP Site 1617 (HRHP 1970C).

**FEATURE A:** Enclosure  
**DIMENSIONS:** 2.70 m by 2.70 m by 0.60 m (approx.)

"Feature A is a C-shaped enclosure constructed with aa cobbles and boulders, measuring 9.0 feet in diameter, with a 1.0 to 2.0-foot high wall. At the top of the mauka extension is an exposed 2.0 feet of pahoehoe bedrock. No pavement

or midden visible within the enclosures" (Hammatt and Folk 1980:114). This feature was not relocated during the present survey.

**FEATURE B:** Cobble-filled area  
**DIMENSIONS:** 1.80 m by 1.20 m (approx.)

"Feature B is a possible burial situated in a 4.0 by 6.0-foot aa crevice. A (human) lower mandible, bleached, was found atop the aa fill of the burial" (Hammatt and Folk 1980:114). This feature was not relocated during the present survey.

**FEATURE C-1:** Platform  
**DIMENSIONS:** 4.50 m by 3.50 m by 0.45 m (approx.)

"Feature C consists of two platforms situated on an aa flow. Platform A [Feature C-1] is constructed with aa boulders with a roughly level pebble pavement. On the north and east edge is an alignment of cobbles and boulders 0.5 to 1.0 feet high" (Hammatt and Folk 1980:114). According to Allen Field Records (1984) a waterworn cobble flake was present on the surface and no midden was visible.

**FEATURE C-2:** Platform  
**DIMENSIONS:** 5.75 m by 3.00 m by 0.30 m (approx.)

"Platform B [Feature C-2] is similar in construction, [as Feature C-1]...and is situated directly south (2.0 feet) of Platform A [Feature C-1]" (Hammatt and Folk 1980:114). It consists of aa boulders and a roughly level pebble pavement.

**FEATURE D:** Pavement  
**DIMENSIONS:** 9.00 m by 9.00 m (approx.)

"Feature D consists of an aa pebble pavement 30 by 30 feet, situated on an open aa flow. In the southeast corner of the pavement is a possible pit, 0.5 feet in depth. An alignment of single cobbles and boulders partially encompasses the northeast corner" (Hammatt and Folk 1980:114). During the 1984 survey no midden was visible. A cairn (0.8 m in diameter x 0.8 m in height) was located near Kuakini Wall ca. 25.0 m SW of Feature D.

**FEATURE E-1:** Cupboard  
**DIMENSIONS:** 0.25 m by 0.25 m by 0.38 m (approx.)

"Feature E consists of two cupboards. Cupboard A [E-1] is a modified vertical hole situated in an aa flow. Aa cobbles are stacked on the north side, level to the surface. A single waterworn pebble was found within the cupboard" (Hammatt and Folk 1980:114). This feature was not relocated during the present survey.

**FEATURE E-2:** Cupboard  
**DIMENSIONS:** 0.30 m by 0.30 m by 0.15 m (approx.)

"Cupboard B [E-2] is a modified horizontal hole 1.0 feet deep, with an opening 1.0 feet wide...and 6 inches high, located 5.0 feet southeast of Cupboard A [E-1]. A single waterworn pebble also was found within this cupboard" (Hammatt and Folk 1980:114). This feature was not relocated during the present survey.

**FEATURE F:** Stepped platform  
**DIMENSIONS:** 12.00 m by 10.00 m by 0.65 m (approx.)

"Feature F is a terraced [stepped] platform constructed with aa boulders and cobbles, with a surface pebble pavement..." (Hammatt and Folk 1980:115) of worn aa pebbles, some 'ili'ili pebbles, and a shell. A bulldozed road passes east of the platform.

**FEATURE G:** C-shape  
**DIMENSIONS:** 2.70 m by 2.70 m by 0.30 m (approx.)

"Feature G is a C-shape, constructed with aa boulders and cobbles, featuring an interior pebble pavement. The C-shape measures 9.0 feet in diameter, with a wall height of 1.0 feet. A waterworn boulder was found 5.0 feet south of this site" (Hammatt and Folk 1980:115).

**SITE NO.:** State: 7828 Soehren: — BPBM: — PHRI: —  
**SITE TYPE:** Complex (21 Features)  
**TOPOGRAPHY:** Situated along the top of, across the slope of, and at the base of an aa bluff  
**VEGETATION:** Sparse grasses, uhaloa, Christmas-berry, noni  
**CONDITION:** Good  
**INTEGRITY:** Unaltered-partially altered  
**PROBABLE AGE:** Prehistoric  
**FUNCTIONAL INTERPRETATION:** Habitation-ceremonial

**DESCRIPTION:** Overall complex area measures c. 75.0 m (E-W) by 56.0 m (N-S) (Figure A-5). "Site 7828 is a complex situated atop a bluff and the surrounding ground area below" (Hammatt and Folk 1980:115). Situated atop the bluff are Features A-F. The remaining features are located below. Possible additional cairns, leveled areas, and walled shelters in the area. The trails are vague and indistinct. According to Allen (1984) there is "...ili'ili pebble paving on most features...scattered midden also present. Site 7828, originally recorded as features of HRHP Site 1617 (HRHP 1970c), may be Reinecke's Site 151 or 152.

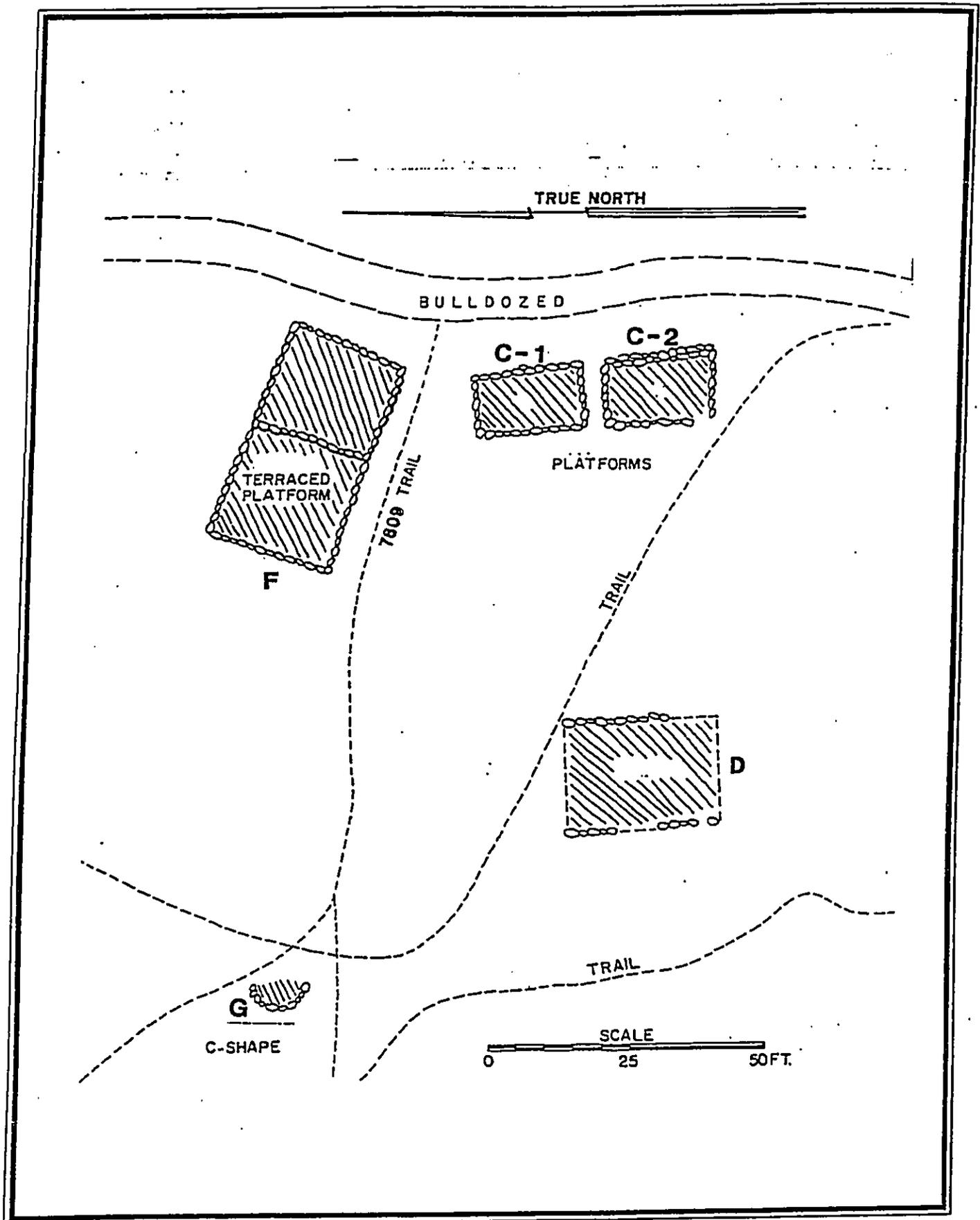


Figure A-4 - SITE 7827 (Hammatt et al. 1981:66)

**FEATURE A:** Terrace  
**DIMENSIONS:** 14.00 m by 9.00 m by 1.50 m (approx.)

Feature A is located on top of an aa bluff. It is rectangular in plan and is constructed of aa boulders and cobbles. It is faced on the north and east sides. The upper surface consists of a level cobble/pebble pavement with some 'ili'ili present. Pits/depressions are on the upper surface visible. Abutting the terrace is a west extension ca. 13.0 m (E-W) by 8.0 m (N-S) by 2.4 m in height.

**FEATURE B:** Terrace  
**DIMENSIONS:** 3.80 m by 2.80 m by 0.70 m (approx.)

Constructed of aa boulders and cobbles; raised along the east half. Upper surface is fairly level with cobbles and boulders.

**FEATURE C:** C-shape  
**DIMENSIONS:** 4.50 m by 3.50 m by 0.60 m (approx.)

C-shape opens to the west. Constructed of aa boulders and cobbles. The wall is ca. 0.7 m wide, raised but not faced. The interior surface is level and consists of aa pebbles and cobbles. An adjoining terrace (4.5 m by 4.5 m by 0.65 m in height) is located south of the C-shape. It is raised on the south and east faces and has a level interior surface.

**FEATURE D:** C-shape  
**DIMENSIONS:** 3.70 m by 2.40 m by 0.40 m (approx.)

Open to the west. Constructed of small aa boulders. The walls are constructed of rubble and are c. 0.6 m wide. The interior surface is uneven with loose boulders and cobbles.

**FEATURE E:** Terrace  
**DIMENSIONS:** 8.00 m by 4.50 m by 0.90 m (approx.)

Raised on the east and south sides and partly raised on the west side. Consists of aa boulders and cobbles. The interior surface is fairly level and consists of cobbles and boulders. Pits, 'ili'ili, and a cairn visible on the interior surface. The south face is partially collapsed. This feature may have been previously excavated by ARCH in 1981.

**FEATURE F:** Terrace  
**DIMENSIONS:** 5.75 m by 5.00 m by 1.10 m (approx.)

Constructed of aa boulders and cobbles. Faced on the north and west sides; raised 5-7 courses high. The interior surface is level and consists of cobbles and boulders. A possible trail segment visible along the east end.

**FEATURE G:** Terrace  
**DIMENSIONS:** 5.00 m by 4.00 m by 0.50 m (approx.)

Terrace is walled on the N and E sides. The wall averages 0.4 m and the wall is 0.5 m high. The interior surface is level and consists of aa boulders and cobbles. About 15 waterworn basalt boulders and some 'ili'ili present on surface.

**FEATURE H:** Terrace  
**DIMENSIONS:** 4.00 m by 2.00 m by 0.30 m (approx.)

Terrace is walled along portions of the east and south sides. Constructed of aa boulders and cobbles; wall width averages 0.5 m. The terrace interior is roughly level and consists of aa boulders and cobbles. A possible walled shelter present approximately south of Feature H.

**FEATURE I:** C-shape  
**DIMENSIONS:** 4.00 m by 3.00 m by 0.65 m (approx.)

Opens to the NW; constructed of aa boulders and cobbles. Wall width ranges between 0.6-0.8 m.

**FEATURE J:** C-shape  
**DIMENSIONS:** 4.00 m by 3.00 m by 0.40 m (approx.)

Opens to the NW; it is constructed of aa boulders and cobbles. Wall width is c. 0.7 m. A noni tree is growing from within the feature.

**FEATURE K:** C-shape  
**DIMENSIONS:** 2.80 m by 2.80 m by 0.90 m (approx.)

Opens to the north. Wall constructed of aa boulders and cobbles. The wall width ranges between 0.5-0.8 m; wall height is between 0.35-0.90 m. The interior surface is paved with 'ili'ili. This feature may have been excavated in 1981 by ARCH.

**FEATURE L:** Terrace  
**DIMENSIONS:** 3.00 m by 2.30 m by 1.20 m (approx.)

Rectangular in plan; faced on the west side. Interior surface level and filled with aa cobbles.

**FEATURE M:** C-shape  
**DIMENSIONS:** 4.00 m by 3.50 m by 0.70 m (approx.)

Walled C-shape situated at base of bluff. Walls are 0.6 m wide by 0.25-0.70 m high. The interior of the C-shape consists of aa pebble paving. Coral, waterworn basalt boulders, and 'ili'ili present.

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APPENDIX A

A-14

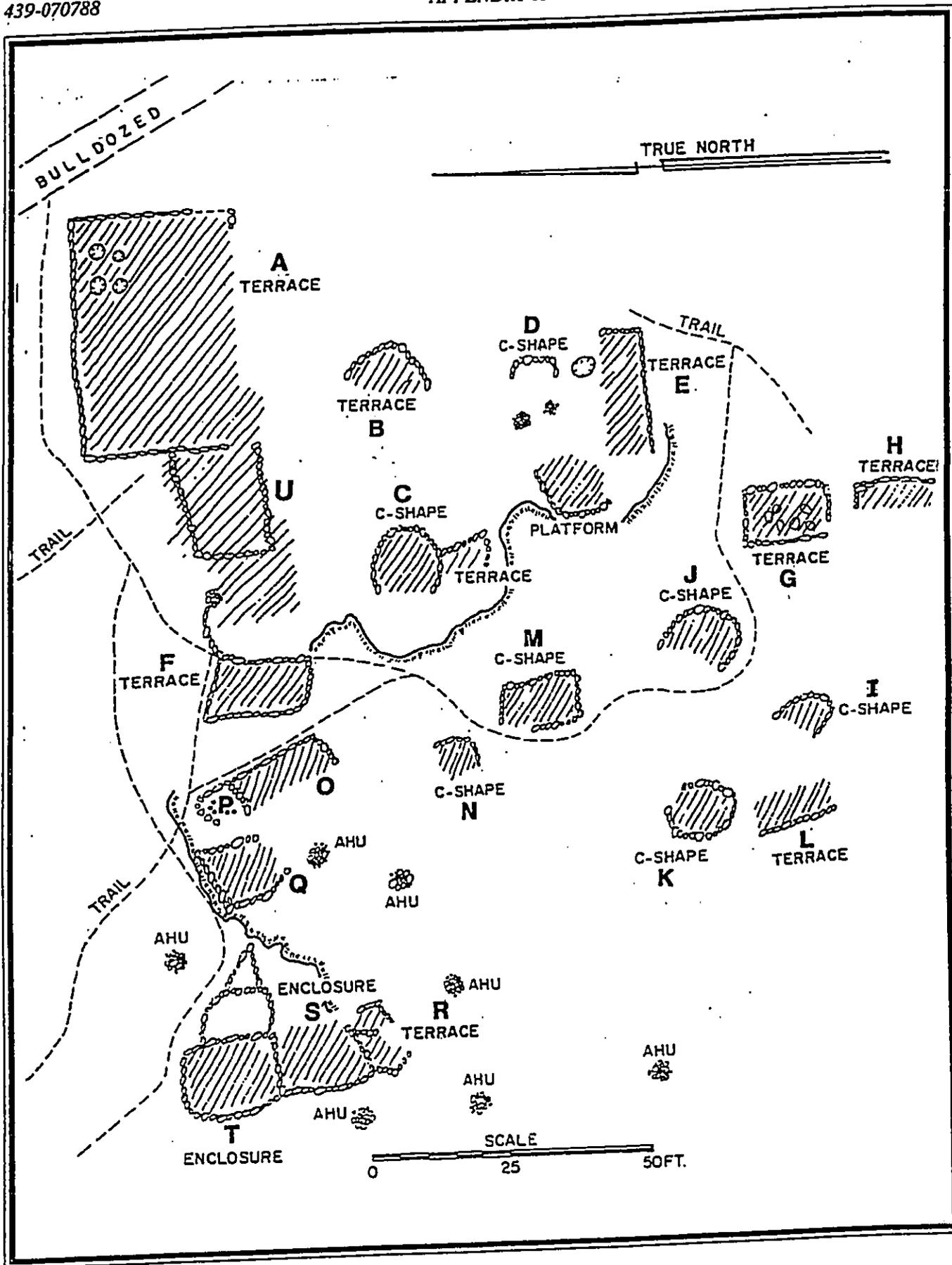


Figure A-5. SITE 7828 (Hammatt et al. 1981:67)

**FEATURE N:** C-shape  
**DIMENSIONS:** 4.00 m by 3.50 m by 0.20 m (approx.)

Walled C-shape in poor condition; appears to open to the NW. The 1.0 m wide walls are collapsed.

**FEATURE O:** C-shape  
**DIMENSIONS:** 5.00 m by 3.50 m by 0.60 m (approx.)

Walled C-shape open to the west. Constructed with aa boulders and cobbles; wall width is c. 0.6 m. Interior consists of aa cobble paving.

**FEATURE P:** C-shape  
**DIMENSIONS:** 3.00 m by 3.00 m by 0.45 m (approx.)

North of and adjoining Feature O. C-shape open to the west. Constructed of aa boulders and cobbles. The wall width is 0.6 m and the interior floor consists of level 'ili'ili paving.

**FEATURE Q:** Terrace  
**DIMENSIONS:** 3.00 m by 3.00 m by 0.35 m (approx.)

Level aa cobble and pebble paving. Crude boulder windbreaks on the north, east, and west sides, ranging from 0.2-0.5 m in height.

**FEATURE R:** Terrace  
**DIMENSIONS:** 6.50 m by 3.80 m by 0.70 m (approx.)

Crude wall on the SE corner c. 0.7 m wide and high. Terrace platform consists of level aa cobble, pebble, and 'ili'ili paving. An internal boulder alignment divides the terrace.

**FEATURE S:** Enclosure  
**DIMENSIONS:** 7.50 m by 4.00 m by 1.00 m (approx.)

Rectangular in plan. Utilizes bedrock outcrop as its south wall. Walls constructed with aa boulders and cobbles. Walls are raised and faced, 1.0 m high and 1.0 m wide. To the north and adjoining Feature S is Feature T.

**FEATURE T:** Enclosure  
**DIMENSIONS:** 4.20 m by 2.90 m by 1.40 m (approx.)

Constructed of aa boulders. Walls raised and faced on four sides. Wall widths average 0.5-1.0 m. Possible cupboard located within the west wall. Interior surface is level and consists of aa cobbles, aa pebbles, and 'ili'ili. A crude enclosure extending east and adjoining Feature T. It measures 3.0 m (N-S) by 2.0 m (E-W). The wall width is 0.6 m and the wall height is 1.0 m.

**FEATURE U:** Terrace  
**DIMENSIONS:** 4.00 m by 3.50 m by 1.30 m (approx.)

This terrace abuts the base of the western extension of Feature A. The terrace is faced on the west and south sides. The interior surface of the terrace is level and consists of aa cobbles and pebbles. A slightly sunken/depressed area within the interior may indicate that this feature had been tested in 1981 by ARCH.

**SITE NO.:** State: 7829 Soehren: —BPBM: —PHRI: —  
**SITE TYPE:** Complex (18 features)

**TOPOGRAPHY:** Slightly sloping to undulating pahoehoe and aa flows

**VEGETATION:** Christmas-berry, uhaloa, and grasses

**CONDITION:** Good

**INTEGRITY:** Unaltered

**PROBABLE AGE:** Prehistoric

**FUNCTIONAL INTERPRETATION:** Habitation-ceremonial

**DESCRIPTION:** Overall complex measures c. 76.0 m (E-W) by 53.0 m (N-S) (Figure A-6). "A complex of numerous features in close proximity covering a 200 by 250-foot area on an open aa flow...Also noted was a system of intra-complex foot trails connecting various features as well as a trail connecting this complex with Site 7827 complex. Shell midden as well as waterworn pebbles and cobbles and coral were observed scattered in and around many of the features" (Hammatt and Folk 1980:115). Site 7829 was originally recorded as features of HRHP Site 1617 (HRHP 1970s).

**FEATURE A:** Platform  
**DIMENSIONS:** 4.50 m by 3.80 m by 0.80 m (approx.)

Roughly square in plan. Partially faced with aa cobbles and boulders; other portions collapsed. Interior surface consists of level aa cobbles. This feature may have been tested by ARCH in 1981.

**FEATURE B:** Enclosed paved area  
**DIMENSIONS:** 7.00 m by 4.00 m by 0.45 m (approx.)

Aa pebble-paved area with 'ili'ili; area is enclosed by walls 0.50 m wide and 0.45 m high. Walls are raised but are not faced.

**FEATURE C:** Leveled area  
**DIMENSIONS:** 7.50 m by 4.00 m by 0.55 m (approx.)

Level aa pebble paved area; south side of area paved with crude rubble. Wall width is 0.5 m and wall height is 0.55 m. One piece *Cypraea* shell noted.

**FEATURE D: Platform**  
**DIMENSIONS:** 2.30 m by 1.90 m by 0.45 m (approx.)

Low platform constructed of aa boulders and cobbles; upright present in NW corner. Upper surface is fairly level and consists of aa cobbles.

**FEATURE E: C-shape**  
**DIMENSIONS:** 4.00 m by 3.50 m by 0.45 m (approx.)

C-shape has crude walls constructed of rubbly boulders and cobbles. Walls are c. 0.55 m wide. The interior floor of the C-shape is level and is paved with aa pebbles. Four waterworn basalt boulders present south of C-shape. The C-shape opens to the WNW and faces Feature F. Feature E shares a wall with Feature F.

**FEATURE F: C-shape**  
**DIMENSIONS:** 5.00 m by 3.50 m by 0.45 m (approx.)

Has crude walls constructed of rubbly boulders and cobbles. Walls are c. 0.55 m wide. Interior floor is level and is paved with aa pebbles.

**FEATURE G: Enclosure**  
**DIMENSIONS:** 7.50 m by 5.00 m by 0.70 m (approx.)

Rectangular enclosure constructed of boulders and cobbles. The walls average 0.9 m in width. Portions of the enclosure are faced. Other portions are collapsed.

**FEATURE H: Terrace**  
**DIMENSIONS:** 5.00 m by 2.50 m by 0.40 m (approx.)

Fairly level area of cobbles and pebbles. Situated NNW of Feature G.

**FEATURE I: Enclosure**  
**DIMENSIONS:** 4.00 m by 2.60 m by 0.30 m (approx.)

Roughly rectangular in plan. The walls are collapsed and rubbly and average 0.6 m in width.

**FEATURE J: Terrace**  
**DIMENSIONS:** 5.00 m by 4.50 m by 0.40 m (approx.)

Terrace with crude collapsed walls (0.6 m wide) on the N and E sides. An upright present in the center of the north wall. Aa cobble/pebble paved interior surface. A pahoehoe excavation, 3.0 m (N-S) by 2.0 m (E-W), present immediately south of feature. Midden eroding from terrace along west edge.

**FEATURE K: Terrace**  
**DIMENSIONS:** 4.00 m by 4.00 m by 0.56 m (approx.)

Interior surface is level and consists of aa cobbles and pebbles. A crude collapsed wall (0.6 m wide) present along the west edge. This feature is situated immediately north of and adjoining Feature J. Midden eroding from terrace along west edge of Feature K.

**FEATURE L: Terrace**  
**DIMENSIONS:** 2.50 m by 1.50 m by 0.50 m (approx.)

Crudely faced terrace with aa cobble paving. Is in poor condition, is vague, and is collapsed. To the south is a blister with boulders piled along its north edge. The blister measures c. 3.0 m in diameter and does not appear to contain a cultural deposit.

**FEATURE M: Terrace**  
**DIMENSIONS:** 9.00 m by 5.00 m by 0.60 m (approx.)

Raised on the north, west, and south sides. Interior surface appears to be aa cobble/pebble paved.

**FEATURE N: L-shape**  
**DIMENSIONS:** 4.00 m by 4.00 m by 0.70 m (approx.)

L-shaped shelter with collapsed and rubbly walls 0.7 m wide. Shelter is partially enclosed on the north and east sides. The interior surface of the shelter is paved with aa cobbles.

**FEATURE O: Box C-shape**  
**DIMENSIONS:** 6.00 m by 6.00 m by 0.50 m (approx.)

Box C-shape opens to the west. The walls are constructed with aa boulders and cobbles to an average width of 0.7 m. The interior surface is paved with aa cobbles and pebbles. A waterworn pebble is present.

**FEATURE P: Enclosure**  
**DIMENSIONS:** 4.75 m by 4.75 m by 0.55 m (approx.)

Square in plan; constructed with aa boulders and cobbles. The wall is stacked three courses high along a portion of the east face. The remaining sections are mostly rubbly and collapsed. The walls average 0.65 m in width. The interior surface is level with aa boulders and cobbles. A waterworn basalt boulder is present in the SE corner of the enclosure. A bulldozed road is present immediately west of feature.

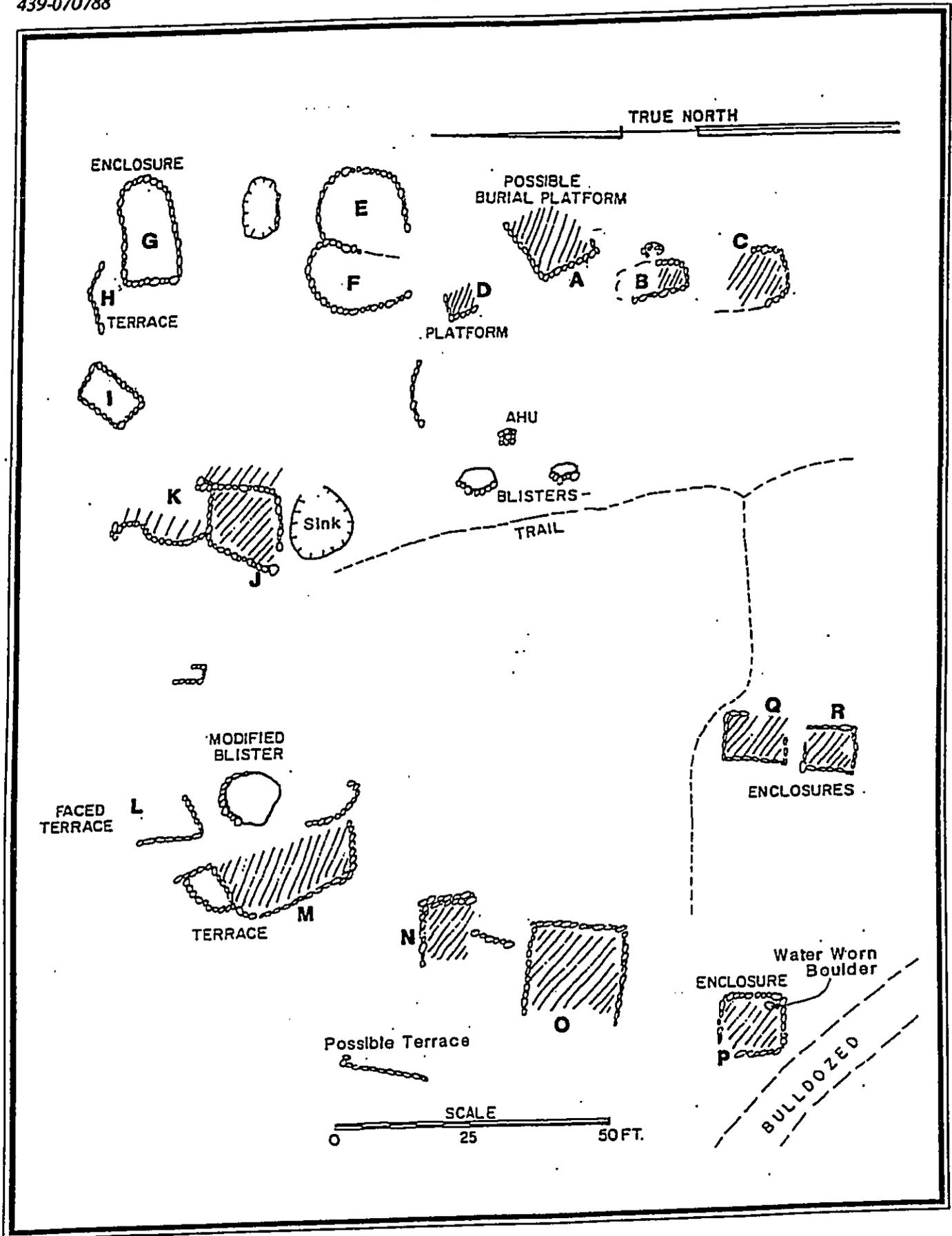


Figure A-6 - SITE 7829, (Hammatt et al. 1981:69)

**FEATURE Q:** C-shape  
**DIMENSIONS:** 3.50 m by 3.50 m by 0.60 m (approx.)

Slightly raised on all sides. A wall surrounds the north half. Faced along portions of the interior; sloping exterior face. Wall-width averages c. 0.8 m. Interior surface is paved with aa cobbles.

**FEATURE R:** Enclosure  
**DIMENSIONS:** 4.50 m by 3.75 m by 0.70 m (approx.)

The wall is constructed with aa boulders and cobbles. Portions of the wall are faced. The remaining sections are raised, but not faced. Wall width averages 0.6 m. The interior floor of the enclosure is level and is paved with aa cobbles and pebbles. Waterworn basalt cobbles and four pieces of *Cypraea* present.

**SITENO.:** State: 7830 Soehren: — BPBM: — PHRI: —  
**SITE TYPE:** Complex (4 Features)  
**TOPOGRAPHY:** Slightly sloping to undulating aa flows  
**VEGETATION:** *Kiawe*, *koa-haole*, *portulaca*, and grasses  
**CONDITION:** Fair  
**INTEGRITY:** Unaltered  
**PROBABLE AGE:** Prehistoric  
**FUNCTIONAL INTERPRETATION:** Habitation  
**DESCRIPTION:** Overall complex area measures c. 53.0 m in diameter

**FEATURE A:** Enclosure  
**DIMENSIONS:** 7.60 m by 0.90 m by 0.60 m (approx.)

"Feature A is a low enclosure...constructed with loosely stacked aa cobbles and boulders with some pebble paving in the interior" (Hammatt and Folk 1980:116).

**FEATURE B:** Cave  
**DIMENSIONS:** 3.70 m by 1.80 m by 0.80 m (approx.)

"Feature B is a small lava bubble cave with a roughly oval-shaped interior, 6.0 feet (east to west) by 12 feet (north to south), with a maximum interior height of 2.5 feet. The entrance is slightly modified" (Hammatt and Folk 1980:116). According to Allen Field Records (1984), two pieces coral and one waterworn cobble present inside the cave.

**FEATURE C:** Wall  
**DIMENSIONS:** 5.50 m by 1.80 m by 0.45 m (approx.)

"Feature C is a low, L-shaped, stacked aa boulder wall measuring 18.0 feet maximum length" (Hammatt and Folk 1980:116).

**FEATURE D:** Enclosure  
**DIMENSIONS:** 7.60 m by 7.60 m by 1.20 m (approx.)

Overall feature area measures 23.0 m (N-S) by 7.6 m (E-W). "Feature D consists of an enclosure and adjoining pavement [terrace 8 m by 4 m] of pebbles and cobbles. The enclosure is on a raised area and measures 25.0 by 25.0 feet, with walls 6.0 to 8.0 feet [1.8-2.4 m] wide and 2.0 to 4.0 feet [0.6-1.2 m] high of stacked aa boulders. The interior of the enclosure is oval-shaped, 10.0 by 12.0 feet [3.7 m by 3.0 m], with a maximum wall height of 3.0 feet [0.9 m] on the mauka side. A low wall of stacked boulders extends 70.0 feet [21.0 m] south of the southeast corner of the enclosure, 1.0 feet [0.3 m] high and 2.0 feet [0.6 m] wide" (Hammatt and Folk 1980:116).

**SITENO.:** State: 7831 Soehren: — BPBM: — PHRI: —  
**SITE TYPE:** Wall  
**TOPOGRAPHY:** Gently sloping aa flow  
**VEGETATION:** *Kiawe*, *koa-haole*, Christmas-berry, *pua-pilo*, *opiuma*  
**CONDITION:** Poor-fair  
**INTEGRITY:** Partially altered  
**PROBABLE AGE:** Prehistoric  
**FUNCTIONAL INTERPRETATION:** Boundary wall  
**DIMENSIONS:** 76.00 m by 0.90 m by 0.90 m (approx.)  
**DESCRIPTION:** "Site 7831 is a low wall 3 feet high and 3 feet wide of upright boulders on the makai edge. This wall continues into Site 7812B and joins to wall 7816" (Hammatt and Folk 1980:155).

"This multiple stacked wall runs along the base of the lobe of aa on which 7812 is situated. The notes prepared during the reconnaissance survey provide an adequate record of relevant data. Because the site's significance is due to the information it contains, and because that information has been recorded during the survey, no further work is recommended" (Hommon and Rosendahl 1983:128).

**SITENO.:** State: 7832 Soehren: — BPBM: — PHRI: —  
**SITE TYPE:** Complex (2 Features)  
**TOPOGRAPHY:** Rocky aa lava flow  
**VEGETATION:** *Koa-haole*, several monkeypod trees, Christmas-berry, grasses  
**CONDITION:** Poor  
**INTEGRITY:** Unaltered  
**PROBABLE AGE:** Prehistoric  
**FUNCTIONAL INTERPRETATION:** Ceremonial-burial  
**DESCRIPTION:** Overall complex area measures c. 4-8.0 m (N-S) by 6.5 m (E-W). It is bulldozed on the east side.

## CONCLUSION

### DISCUSSION

The documentary research conducted for the present project indicates that the Land of Kahaluu prehistorically and historically had considerable cultural and political significance. Early historic accounts depict Kahaluu as the birthplace of and gathering place for certain members of Hawaii's chiefly class. Kahaluu's religious significance is attested to by the numerous heiau that have been recorded in the area (Thrum 1908; NRHP n.d.). The eight LCA claims within the project area, the numerous LCA claims within the whole of Kahaluu, and the fact that Victoria Kamamalu, sister to Kamehameha IV and V and half-sister to Ruth Keelikolani, was deeded the entire ahupua'a of Kahaluu, attests to the socio-economic significance of the area.

Previous archaeological work indicates there are two major archaeological areas in Kahaluu—the Kahaluu Historic District and the Kona Field System—and a major site, the Great Wall of Kuakini. As mentioned in the Project Area Description of this report, the Kahaluu Historic District has been placed on the NRHP: (a) because it includes numerous heiau, (b) because of the unique architecture of several of the heiau, (c) because of the intrinsic value of petroglyphs associated with a heiau (Keeku Heiau; the petroglyphs are thought to represent Kamalalawalu, King of Maui, an adversary of Lonoikamakahiki [Stokes n.d.]), and (d) because of the district's association with important traditional political and religious activities. The Kona Field System (Site 6601), a complex of aboriginal Hawaiian dryland cultivation and habitation sites and features which covers an area approximately 3 by 18 miles, extending from the Kailua area south to Hookena, has been declared eligible for inclusion on the NRHP. The field system, which dates to c. AD 1050-1400 (Schilt 1984), is divided into a number of zones (kula, kaluulu, 'apa'a, and 'ama'u; zones are summarized in Schilt [1984:6]). The present project area lies within the kula (coastal area) zone, which includes the area from sea level to c. 500 ft (150 m) elevation. General chronological phases for the Kona Field System are discussed further in Schilt 1984:276-284). The Great Wall of Kuakini (Site 6302 [also listed as 7276]) has also been declared eligible for inclusion on the NRHP. The wall is highly significant in terms of both interpretive and cultural values. Named after Kuakini, governor of Hawaii from 1820-1844, the wall was probably constructed in the early 19th century (Tomonari-Tuggle 1985:152-153). The wall is interpreted to function either to prevent pigs from entering cultivated agricultural uplands (Baker 1915) or to prevent herbivores from straying into the coastal villages (Emory et al. 1971; Soehren 1979).

Given the established historical significance of Kahaluu and the previous archaeological work conducted in the area, it was not surprising that the present survey identified/reidentified 110 sites in the project area. The sites and features are mostly within Study Area 2. Study Area 3, because it was altered in the course of constructing Kona Lagoon and Keauhou Beach Hotels, contains relatively few sites. The overall physical condition and integrity of sites/features varies from poor to good, with most sites/features being in fair condition. The condition and integrity of the sites/features varies greatly between study areas. Sites/features in Study Area 2, in contrast to Study Area 3, are generally intact and contain very little historic modifications. Sites and features within Study Area 3 generally represent isolated and/or selected conservation of known archaeological structures.

In Study Area 3 the general areas of Kapuanoni and Makolea heiau and the area of Po'o Hawaii have been extensively altered. In addition, Kapuanoni Heiau has been rebuilt historically with concrete and has been partially incorporated into Keauhou Beach Hotel. Hapaialii Heiau, also in Study Area 3, has been naturally eroded historically by storm surf. Despite the historic land modifications in Study Area 3, the sites in the area still contain excellent potential in terms of interpretive development, scientific research value, and cultural values.

Study Area 2 provides an excellent opportunity for preserving archaeological sites. Although construction and landscaping of the Kona Gardens botanical/historical park has altered much of the original terrain in the area, the present survey indicated that archaeological sites in the area were only slightly affected. Of the 42 sites previously identified within or adjacent to the park, 40 were relocated during the present survey. The conservation of the sites in the park is largely due to the historical theme of the park. The sites include a wide variety of features. The features are in fair condition, and the features are in their original environment. Conservation of these features would insure an adequate sample of archaeological remains would be preserved for future generations, whether it be for pure research, public recreation and education, or promotion of cultural and ethnic identity and values.

No components of the Kona Field System were identified during the present survey. Allen (1984) had previously interpreted several sites identified within the present project area to function as agricultural features. Reevaluation of these sites (T-105, T-108, and possibly 7659 and 7825)

Table 5.

**SUMMARY OF GENERAL SIGNIFICANCE ASSESSMENTS  
AND RECOMMENDED GENERAL TREATMENTS**

Site or Feature No.	Significance Category				Recommended Treatment			
	A	X	B	C	FDC	NFW	PID	PAI
1619	+	-	+	+	+	-	+	-
3817	+	-	+	+	+	-	+	-
3818	+	-	+	+	+	-	+	-
3819	+	-	+	+	+	-	+	-
4618	+	-	+	+	+	-	+	-
6302/7276	+	-	+	+	+	-	+	-
7662	+	-	+	+	+	-	+	-
7807	+	-	+	+	+	-	+	-
7815	+	-	+	+	+	-	+	-
7817	+	-	+	+	+	-	+	-
7818	+	-	+	+	+	-	+	-
7828	+	-	+	+	+	-	+	-
7834	+	-	+	+	+	-	+	-
7835	+	-	+	+	+	-	+	-
7836	+	-	+	+	+	-	+	-
7838	+	-	+	+	+	-	+	-
7839	+	-	+	+	+	-	+	-
7841	+	-	+	+	+	-	+	-
7846	+	-	+	+	+	-	+	-
7962	+	-	+	+	+	-	+	-

**General Significance Categories:**

- A** = Important for information content, further data collection necessary (PHRI=research value);
- X** = Important for information content, no further data collection necessary (PHRI=research value, SHPO=not significant);
- B** = Excellent example of site type at local, region, island, State, or National level (PHRI=interpretive value); and
- C** = Culturally significant (PHRI=cultural value).

**Recommended General Treatments:**

- FDC** = Further data collection necessary (intensive survey and testing, and possibly subsequent data recovery/mitigation excavations);
- NFW** = No further work of any kind necessary, sufficient data collected, archaeological clearance recommended, no preservation potential (possible inclusion into landscaping suggested for consideration);
- PID** = Preservation with some level of interpretive development recommended (including appropriate related data recovery work); and
- PAI** = Preservation "as is," with no further work (and possible inclusion into landscaping), or minimal further data collection necessary.

Table 6.

**SUMMARY OF SITES RECOMMENDED  
FOR PRESERVATION**

Site or Feature No.	Preservation As Is / Interp. Develop.	Site or Feature No.	Preservation As Is / Interp. Develop.
<b>Study Area 2</b>			
439-44	- *		
1619	+ -	439-46	- *
6302/7276	+ -	439-47	- *
7813	- *	439-49	+ -
7828	+ -		
7832	- *	<b>North Preserve</b>	
7838	+ -		
7839	+ -	7659	- *
7840	- *	7662	+ -
7841	+ -	7807	+ -
7845	- *		
7846	+ -	<b>South Preserve</b>	
7962	+ -		
T-104	- *	4618	+ -
439- 1	- *	7815	+ -
439- 2	- *	7817	+ -
439-14	- *	7818	+ -
439-22	- *	7834	+ -
439-25	- *	7835	+ -
439-26	- *	7836	+ -
439-28	- *		
439-29	- *	<b>Study Area 3</b>	
439-30	- *		
439-33	- *	3817	+ -
439-34	- *	3818	+ -
439-36	- *	3819	+ -
439-37	- *	10997	+ -
439-41	- *	439-53	+ -
439-42	- *	439-54	+ -

\* Provisional assessment; definite assessment pending further data collection (i.e., testing for presence/absence of skeletal remains).

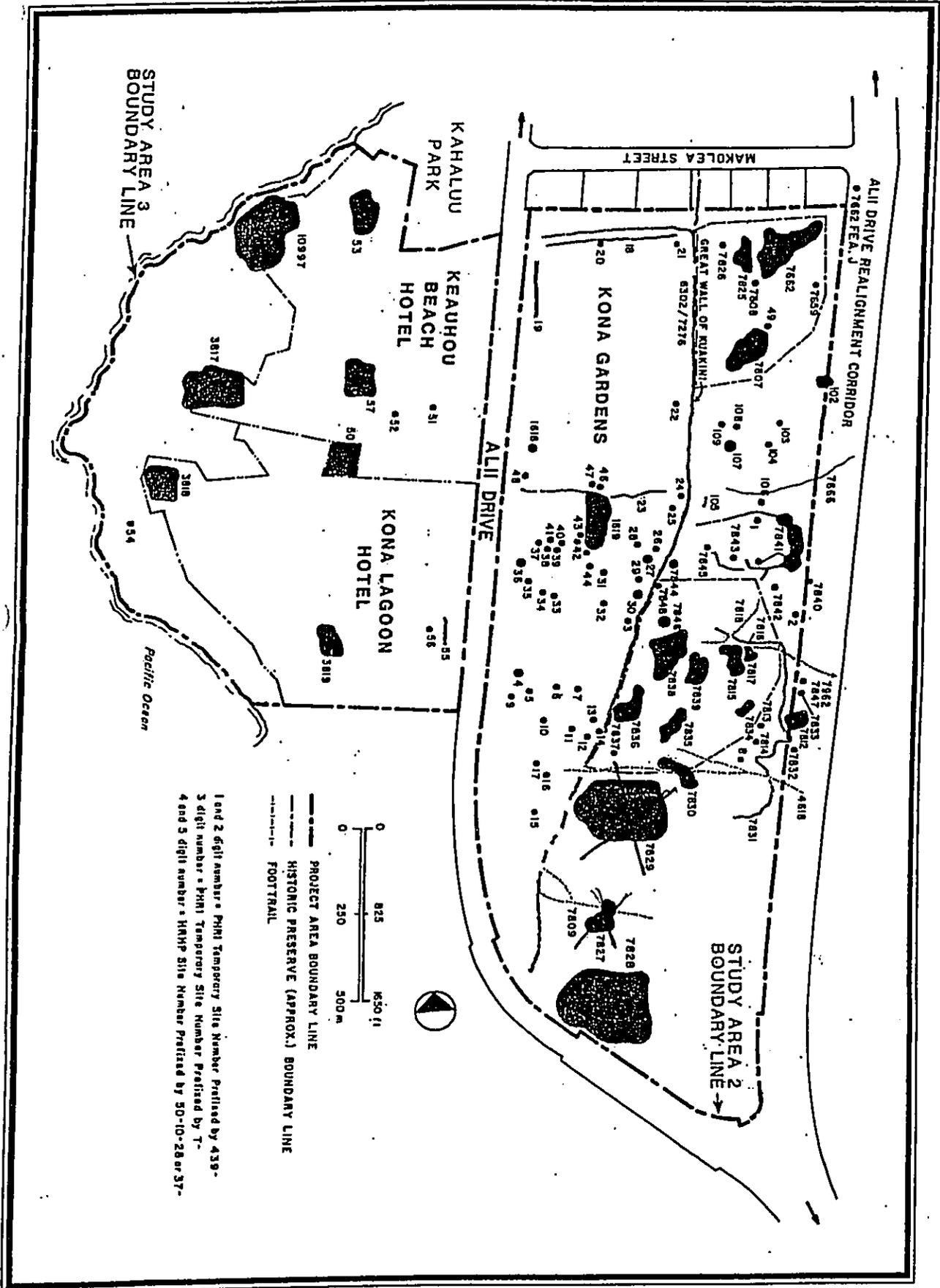


Diagram 3 STUDY BOUNDARIES

PAUL H. ROSENDAHL, Ph.D., Inc.  
Consulting Archaeologist

UU  
JAN 15 1984  
BILT, COLLINS & ASSOCIATES

Report Ms.95-122983

January 9, 1984  
83-95

Mr. Glen T. Koyama  
Belt, Collins & Associates  
606 Coral Street  
Honolulu, Hawaii 96813

SUBJECT; Archaeological Field Inspection  
Development Parcel 14  
Keauhou-Kona Resort  
Keauhou and Kahaluu, North Kona  
Island of Hawaii

Dear Mr. Koyama:

On Monday, December 12, 1983, I conducted at your request an archaeological field inspection of proposed subdivision lot lines within Development Parcel 14 at the Keauhou-Kona Resort. The purpose of this inspection was to determine the presence or absence of any significant archaeological sites or features that might be adversely affected by subdivision of the subject parcel according to the proposed lot lines indicated on the 1" = 300' scale map provided to me. A copy of the relevant portion of that map is attached to this letter report.

Development Parcel (DP) 14 is located immediately inland of the existing Alii Drive. It is bound on the north by Makole'a Street, along the west (seaward side) and south by Alii Drive, and on the east (inland side) by the proposed Alii Highway realignment corridor. The parcel is physically divided into inland and seaward portions by the Great Wall of Kuakini. The seaward portion is presently referred to as DP-14A (Keauhou-Kona Resort Land Use Master Plan). The northern part of DP-14A has been developed recently as a botanical/cultural park named Kona Gardens, while the southern part remains as yet undeveloped. The inland portion of the parcel consists of two proposed historic preserve areas (HP), and two multi-family development areas referred to as DP-14B and 14C. It is your proposal to subdivide DP-14 into five parcels as follows (see attached map): Parcel 1--inland of Kuakini Wall and including DP-14B and the northern HP area; Parcel 2--inland of Kuakini Wall and including DP-14C and the southern HP area; Parcels 3 and 4--seaward of Kuakini Wall and consisting of the northern portion of DP-14A (the existing Kona Gardens development); and Parcel 5--seaward of Kuakini Wall and consisting of the southern portion of DP-14A.

The specific proposed subdivision lot lines we were requested to inspect and evaluate were the following (see attached map): (a) a line extending north-south across the entire DP-14, and located three feet inland of Kuakini Wall--thus separating proposed parcels 1 and 2 from parcels

EXHIBIT 7b

3,4 and 5; (b) a line extending inland from Alii Drive and separating parcels 4 and 5; and (c) a line extending inland from near Kuakini Wall and separating parcels 1 and 2.

Prior to our actual field work, I consulted several available sources for relevant information on past archaeological work within and immediately adjacent to DP-14. (See attached list of references cited.) In 1979, Soehren conducted an archaeological reconnaissance survey of DP-14A and the seaward portion of DP-14B in conjunction with the development of the botanical/cultural park and associated plant nursery known as Kona Gardens (Soehren 1979). During this survey, he identified 42 archaeological features. In 1980, Archaeological Research Center Hawaii, Inc. (ARCH) carried out a survey of DP-14B and DP-14C as part of their larger survey of portions of the Keauhou-Kona Resort (Hammatt and Folk 1980). During this survey, ARCH identified 35 sites, including 6 in the northern HP area, 19 in the southern HP area, and 10 in the remaining areas of DP-14B and DP-14C. During subsequent work in this portion of the Keauhou-Resort in 1981, ARCH conducted test excavations at three sites within DP-14C and three other sites within the southern HP area (Hammatt, Folk, and Ida 1981).

In February 1983, we identified several sites located along the inland boundary of DP-14B and DP-14C during our reconnaissance survey of the Alii Drive realignment corridor (Hommon and Rosendahl 1983). Subsequently, in August 1983, as part of a rapid field inspection of development parcels at Keauhou being done in conjunction with the preparation of a cultural resource management plan for Kamehameha Investment Corporation, we inspected DP-14B and DP-14C in order to assess the reliability of the 1980 ARCH survey (Tomonari-Tuggle 1983).

I carried out the field inspection of the proposed subdivision lot lines for DP-14 on December 12, 1983, with the assistance of Field Archaeologist Alan T. Walker. Our work was facilitated by the use of a 1" = 40' scale topographic map of the northern part of DP-14A, and two 1" = 50' scale topographic maps (with known archaeological features included) of that portion of DP-14 inland of Kuakini Wall. We began our inspection at Alii Drive by walking a ten meter-wide corridor along the approximate location of the lot lines separating proposed subdivision parcels 4 and 5. We continued inland along the lot line separating proposed subdivision parcels 1 and 2. We then completed our inspection by checking along the inland side of Kuakini Wall--the lot line separating proposed subdivision parcels 1 and 2 from parcels 3,4, and 5. During our field inspection, we also took a rapid look at many of the features comprising the two proposed historic

preserve areas. For the most part, the terrain encountered during our inspection was rocky and exhibited a virtually continuous cover of koa-haole. This vegetation was dry and thus allowed relatively easy passage and inspection of the ground surface.

Our inspection revealed that few archaeological features would be directly affected by the proposed subdivision lot lines indicated on the attached map, and none of these features appear to be significant in terms of substantial research, interpretive, or cultural values. The only features encountered along the lot line between proposed subdivision parcels 4 and 5 were four (possibly five) low, stacked stone platforms--probably monuments marking the location of graves. The lot line between proposed subdivision parcels 1 and 2 roughly approximated the northern periphery of the southern historic preservation area--most likely c. 50 to 100 feet inside the preserve area. The more substantial features included within this preserve area are situated somewhat further to the south, and thus the lot line does not directly affect any significant features. The lot line proposed to extend the full length of DP-14, approximately three feet inland of Kuakini Wall, does not appear to affect directly any substantial archaeological features either.

In our conduct of the December 12 field inspection, the basic distinction followed in the assessment of potential problems involved with the adoption of the proposed subdivision lot lines was whether any specifically affected archaeological sites or features appeared to be of such significance that their continued physical preservation had to be assured, or whether their value was in the archaeological data contained within them. In the latter case, the important data could be recovered through the conduct of appropriate archaeological work such as intensive survey and possibly subsequent research excavations, and the continued physical survival of the sites would not be essential.

The significance of archaeological resources can be evaluated in terms of potential research, interpretive, and/or cultural values. Research value refers to the potential of archaeological resources for producing information useful in the understanding of culture history, past life-ways, and cultural processes at the local, regional, and inter-regional levels of organization. Interpretive value refers to the potential of archaeological resources for public education and recreation. Cultural value, within the general framework for significance evaluation used here, refers to the potential of archaeological resources for the preservation and promotion of cultural and ethnic identity and values.

In our opinion, none of the specific archaeological sites and features that would probably be directly affected by the proposed subdivision lot lines appear to be of such significance that their continued physical preservation would be required. The various features encountered during our inspection of the approximate lot line locations all appear to be ones that could be dealt with adequately by appropriate further archaeological work--intensive survey, and in certain instances, subsequent excavations. We do recommend that the lot line between proposed subdivision parcels 1 and 2 be shifted slightly to the north--from 50 to 100 feet at the most--to conform more closely with the northern periphery of the southern historic preserve area.

On the basis of both our literature review of prior archaeological work and our recently completed field inspection, we have a further recommendation to make concerning the boundary of the archaeological resources contained within DP-14 overall. We recommend that work involving the evaluation of all archaeological sites and features present within DP-14 be undertaken as an important further step in any development planning. The general scope of such evaluation work would include the following tasks: (a) completion of detailed review of all prior archaeological work to date (this task is virtually done already); (b) detailed field examination of all individual sites and features present within DP-14; and (c) preparation of an evaluation report, which would include specific recommendations for the disposition of individual sites and features within the framework of specific development plans.

The evaluation of the sites and features would be done in order to accomplish several objectives: (a) determine the probable significance of each in terms of potential research, interpretive, and/or cultural values; (b) determine the accuracy of the prior archaeological recording in terms of plotted locations, descriptions, and probable functional interpretations; (c) determine and mark on-the-ground the actual limits for the two historic preserve areas; and (d) determine on a site-specific basis which sites and features, if any, are of such significance as to require their continued physical preservation, and which might be handled through appropriate measures of archaeological data recovery work such as intensive survey and excavations.

Ms.95-122983

-5-

If you have any questions concerning the findings of our field inspection of the proposed subdivision lot lines, or the recommendations made on the basis of our work, please contact me.

Sincerely yours,

*Paul H. Rosendahl*

Paul H. Rosendahl, Ph.D.  
President and Principal  
Archaeologist

PHR:lb



**CARLSMITH BALL**

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OUR REFERENCE NO. 037756-7

July 31, 1998

M HD CJ P (ENC) X  
Date: 8-11-98 B

Donna Fay K. Kiyosaki, P.E.  
Chief Engineer  
Department of Public Works  
County of Hawaii  
25 Aupuni Street, Room 202  
Hilo, Hawaii 96720

Re: Alii Highway Project

Dear Ms. Kiyosaki:

Per our discussions regarding the Alii Highway intersection requirements for the Kamehameha Investment Corporation ("KIC") lands at Kahaluu and Keauhou, enclosed is the July 29, 1998 written report from the Traffic Management Consultant and the "Exhibit 1" diagram depicting the intersections we tentatively agreed upon.

The four full access intersections to Alii Highway depicted on Exhibit 1 are unsignalized, and each includes the appropriate turning lanes, acceleration and deceleration lanes and appurtenant requirements to allow traffic at each of the four intersections to exit the development parcels and travel in the north direction and south direction from those intersections.

In consideration of KIC's agreement to support the Department of Public Works in the Alii Highway SMA proceedings, we request that the County of

2005450.1.037756-7

**EXHIBIT 8**

Donna Kiyosaki  
July 31, 1998  
Page 2

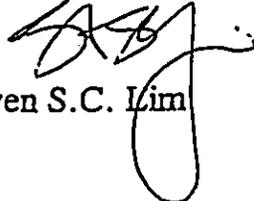
Hawaii commit in writing to inclusion of the four full access traffic intersections and details noted in the attached report into the construction plans for the Alii Highway project.

Additionally, Kamehameha Schools / Bishop Estate ("KSBE") owns two properties (TMK 3-7-6-16:1 and TMK 3-7-6-15:7) whose mauka boundaries abut the Alii Highway alignment immediately to the south of the Alii Highway / Royal Poinciana Drive intersection. See Exhibit 2. This will confirm that the County of Hawaii agrees to work with KSBE to include either one (1) right in / right out intersection along Alii Highway for traffic moving in the south direction for each TMK parcel, or a coordinated full access intersection at Alii Highway shared by the two parcels which would allow north and south turning movements. The County of Hawaii also commits to allow and assist KSBE with incorporation of the road sections between and abutting those parcels into the KSBE traffic circulation plans.

Please call me if you have any questions.

Very truly yours,

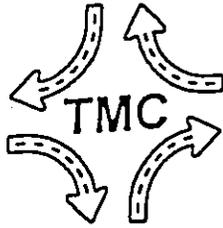
CARLSMITH BALL

  
Steven S.C. Lim

SSL:bny

Enclosure

cc: Louis A. Kau  
Joseph Spencer



## THE TRAFFIC MANAGEMENT CONSULTANT

Randall S. Okaneke, P. E., Principal • 1188 Bishop Street • Suite 1907 • Honolulu, Hawaii 96813  
Telephone: (808) 536-0223 • Facsimile: (808) 537-2985

Job No. 9303.3

July 29, 1998

Kamehameha Investment Corporation  
567 South King Street, Suite 310  
Honolulu, Hawaii 96813

Attention: Mr. Louis Kau, President

Gentlemen and Ladies:

Subject: Traffic Access Requirements for Parcels 53, 26, 14B, and 14C

The purpose of this preliminary traffic analysis is to assess the traffic access requirements for the subject Parcels along the County-proposed Ali'i Highway.

### Ali'i Highway

The Ali'i Highway is being planned by the County of Hawaii as a four-lane, divided arterial highway between Kailua and Keauhou. The Ali'i Highway would begin at Queen Kaahumanu Highway, south of its intersection with Hualalai Road, extend to the west across Kuakini Highway, and turn south toward Keauhou. Ali'i Highway would intersect Ali'i Drive at the Keauhou Shopping Village Driveway, and continue southward along the existing alignment.

The typical section is being planned to include a twenty-four (24) foot wide paved median, separating two twelve (12) foot wide travel lanes in each direction. The 100 foot wide right-of-way would include eight (8) foot wide paved shoulders and six (6) foot wide unpaved shoulders on both sides of the highway. Additional rights-of-way and/or easements would be required on both sides of the highway for grading purposes. The design speed for the proposed Ali'i Highway would be 60 miles per hour (mph).

### Parcel 53

The traffic impact analysis for the Keauhou Resort Parcel 53 was documented in the "Traffic Impact Analysis Report Keauhou Parcel 53" (TIAR), dated July 27, 1994. In the TIAR, the traffic generated by the makai area of Parcel 53 would use Ali'i Highway as its primary access. The trip generation for the makai area was estimated at 167 vehicles per hour (vph) during the AM peak hour of traffic and 231 vph during the PM peak hour of traffic.

The development plan for Parcel 53 identified two (2) full access intersections on the proposed Ali'i Highway. The primary makai entry would be located approximately 900 feet south of the intersection of Ali'i Highway and Makole'a Street. The secondary makai entry would be located about 2,800 feet north of the intersection of Ali'i Highway and Makole'a Street. In the TIAR, the access intersections for Parcel 53 on Ali'i Highway were envisioned as full access unsignalized Tee-intersections, each with an exclusive left turn lane.

#### Parcel 26

Parcel 26 fronts the makai (west) side of Ali'i Highway for a distance of about one half mile, between the north boundary of Parcel 53 and the Hawaii Housing Authority project on the northwest corner of the intersection of Ali'i Highway and Makole'a Street. Part of the Ali'i Highway frontage includes a historic preserve, located along the northern half of the Parcel 26 frontage.

Parcel 26 is planned for about 650 multi-family residential dwelling units, according to the Land Use Master Plan for Keauhou Resort. The traffic generated by Parcel 26 is estimated at 286 vph during the AM peak hour of traffic and 351 vph during the PM peak hour of traffic.

Two (2) full-access intersections are recommended on Ali'i Highway for Parcel 26. The proposed access points are based upon: the 650 dwelling units planned for the Parcel and the traffic generation associated the development density; the length of frontage available on Ali'i Highway; and the configuration of the site, which is determined by the location of historic preserves within Parcel. The north access to Parcel 26 is recommended opposite the secondary makai entry to Parcel 53. The south access to Parcel 26 is proposed as a Tee-intersection, located about 1,500 feet south of the proposed north access intersection and about 1,300 feet north of the intersection of Ali'i Highway and Makole'a Street.

#### Parcel 14B

Parcel 14B is situated on the makai (west) side of the proposed Ali'i Highway, south of Makole'a Street. Historic preserves are located to the north, south, and west of the site.

Parcel 14B is planned for about 120 multi-family residential dwelling units, according to the Land Use Master Plan for Keauhou Resort. The traffic generated by Parcel 14B is estimated at 59 vph during the AM peak hour of traffic and 72 vph during the PM peak hour of traffic.

The only access opportunity for Parcel 14B is located on Ali'i Highway. A full access intersection to Parcel 14B should be located opposite the primary makai entry to Parcel 53, located about 900 feet south of the intersection of Ali'i Highway and Makole'a Street.

#### Parcel 14C

Parcel 14C is located on the northwest corner of the intersection of the proposed Ali'i Highway and Ali'i Drive. Parcel 14C is separated from Parcel 14B by a historic preserve. Parcel 14C is bounded on the west by Ali'i Drive and the Great Wall of Kuakini.

Parcel 14C is planned for about 240 multi-family residential dwelling units, according to the Land Use Master Plan for Keauhou Resort. The traffic generated by Parcel 14C is estimated at 106 vph during the AM peak hour of traffic and 130 vph during the PM peak hour of traffic.

Parcel 14C access on the future Ali'i Highway should be located as far north as the site development constraints make it feasible. A full access intersection for Parcel 14C is proposed about 800 feet north of the intersection of Ali'i Highway and Ali'i Drive.

#### Turning Lane Requirements

Exclusive left turn lanes would be required on Ali'i Highway at each of the proposed full access intersections to the subject Parcels. The left turn lanes can be delineated with striping within the 24-foot wide paved median on Ali'i Highway, provided the pavement structure under the median is designed for traffic-bearing loads. At a design speed of 60 mph, left turn lane lengths can extend up to 800 feet, including deceleration lengths and lane tapers, but excluding storage length requirements. At these lengths, the left turn lanes on northbound Ali'i Highway at Makole'a Street and on southbound Ali'i Highway at the primary makai entry to Parcel 53 may eliminate the median. Similarly, the left turn lane requirements on southbound Ali'i Highway at the Keauhou Shopping Village Driveway and on northbound Ali'i Highway at the access to Parcel 14C also may eliminate the median.

Right turn acceleration and deceleration lanes may be required on Ali'i Highway at each of the proposed full access intersections to the subject Parcels; as well at Makole'a Street. Right turn acceleration and deceleration lanes include only the acceleration/ deceleration lengths and the taper lengths, since they usually do not require storage lengths. Acceleration lane and taper lengths can total over 1,800 feet at a design speed of 60 mph. Deceleration lane and taper lengths can extend up to 750 feet. The planned 100-foot wide right-of-way on Ali'i Highway will not accommodate right turn acceleration and deceleration lanes.

Additional rights-of-way would need to be acquired to accommodate a twelve (12) foot wide right turn acceleration/deceleration lane on both sides of the highway. The right turn deceleration lane on southbound Ali'i Highway at the access to Parcel 26 and the right turn acceleration lane from the secondary makai exit for Parcel 53 would require additional rights-of-way beyond the northern boundaries of Parcels 53 and 26. Within the limits of the subject Parcels' frontages on Ali'i Highway, additional rights-of-way would be required to accommodate the right turn acceleration and deceleration lanes. The planned right-of-way may need to be increased from 100 feet wide to a minimum 124 feet wide. The wider alignment also may need to be adjusted so as not to encroach into the historic preserves.

While the desirable length of a turning lane is the sum of the storage length, deceleration length, and lane taper, in practice these distances are sometimes overlapped, based upon the design engineer's judgement and the reviewing agency's acceptance of shorter lane lengths. The reduction of the design speed along this section of Ali'i Highway would further reduce the lane length requirements. Lower design speeds would be consistent with the posted speed limits as Ali'i Highway enters and exits Keauhou.

#### Recommendations

##### **A. Access to Parcels 53, 26, 14B, and 14C**

The following recommendations are proposed for the full access intersections to the subject Parcels:

1. Access to Parcel 26 should be located opposite the proposed secondary makai access to Parcel 53.
2. A secondary access to Parcel 26 should be located approximately 1,300 feet north of the intersection of Ali'i Highway and Makole'a Street.
3. Access to Parcel 14B should be located opposite the proposed primary makai access to Parcel 53.
4. Access to Parcel 14C should be located about 800 feet north of the intersection of Ali'i Highway and Ali'i Drive.
5. Exclusive left turn lanes should be provided at all access intersections to the subject Parcels.
6. Right turn deceleration lane should be considered at all access intersections to the subject Parcels.

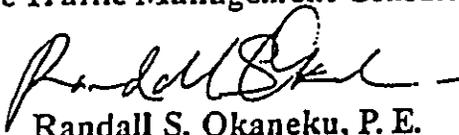
7. Right turn acceleration lane should be considered at all access intersections to the subject Parcels.
8. The preliminary design of the proposed access intersections at the subject Parcels should be completed to provide the necessary information to the County of Hawaii in the planning and design of the Ali'i Highway.

**B. Ali'i Highway**

The following recommendations should be included in the planning of the proposed Ali'i Highway to accommodate the future access requirements for the subject Parcels:

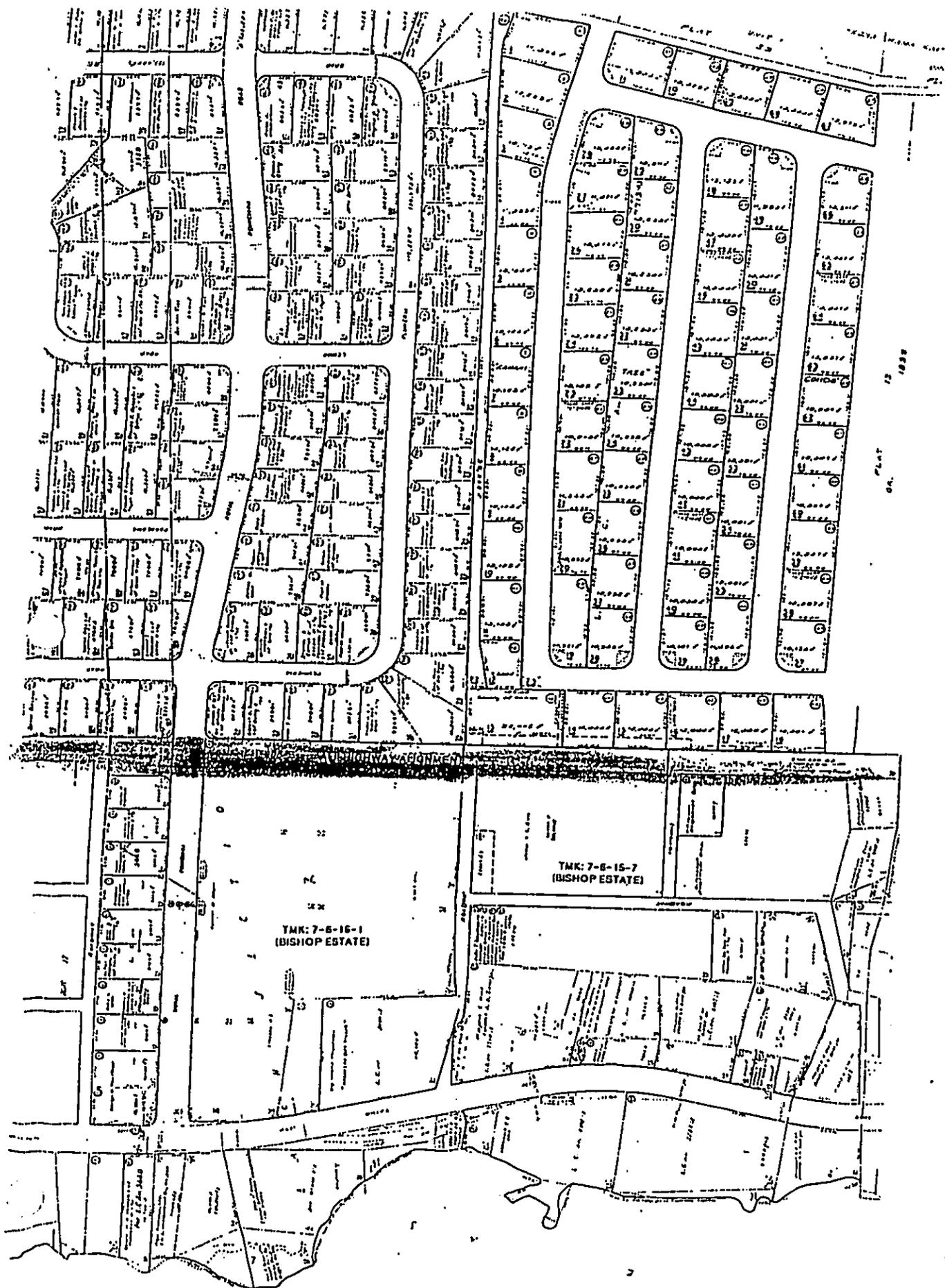
1. Additional rights-of-way along Ali'i Highway, up to a minimum 124 feet wide, should be acquired/reserved to accommodate right turn acceleration and deceleration lanes at each intersection access to the subject Parcels as well as at Makole'a Street.
2. Planned drainage culverts, crossing Ali'i Highway within the limits of the proposed full access intersections to the subject Parcels, should be extended/relocated to accommodate the proposed improvements, as necessary.
3. Underground traffic signal conduits should be installed across Ali'i Highway at future intersections, where preliminary designs are available, as well as at Makole'a Street.
4. The paved median and shoulders should be designed for traffic bearing loads to accommodate future turning lanes.
5. The reduction of the design speed for Ali'i Highway, within the limits of the subject Parcels, should be considered, corresponding to the posted transitional speed limits as Ali'i Highway enters Keauhou.

The locations of the proposed full access intersections to the subject Parcels are depicted on the attached "Access Requirements for Parcels 53, 26, 14B, and 14C Keauhou, North Kona". If you would like to discuss the above material or have any other questions, please do not hesitate to call me.

Very Truly Yours,  
The Traffic Management Consultant  
By   
Randall S. Okaneku, P. E.  
Principal

Attachment





Stephen K. Yamashiro  
Mayor



Donna Fay K. Kiyosak  
Chief Engineer

Jiro A. Sumada  
Deputy Chief Engineer

**County of Hawaii**  
**DEPARTMENT OF PUBLIC WORKS**  
25 Aupuni Street, Room 202 • Hilo, Hawaii 96720-4252  
(808) 961-8321 • Fax (808) 961-8630

August 14, 1998

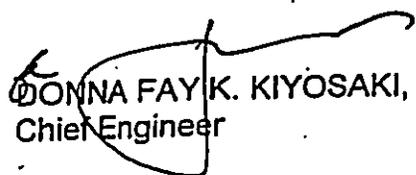
KAMEHAMEHA INVESTMENT CORPORATION  
C/O STEVEN S C LIM ESQ  
CARLSMITH BALL  
121 WAIANUENUE AVENUE  
HILO HI 96720

**SUBJECT: ALII HIGHWAY PROJECT**

The following is to confirm the position of the County of Hawaii, Department of Public Works regarding the agreements reached with Kamehameha Investment Corporation ("KIC") on intersection details for the proposed Alii Highway project adjacent to your client's property at Kahaluu and Keauhou, and the KSBE properties near Royal Poinciana Drive.

The Department of Public Works agrees to allow the intersections as depicted in Exhibits 1 and 2, and your letter of July 31, 1998 to our office. The Department of Public Works also agrees to work with KSBE to allow one of the intersection options and work with KSBE on the existing roads and paper roads in that area to ensure proper traffic circulation. The details regarding final design and the parties' responsibility for construction costs shall be determined at a later date between the parties.

Should you have any questions or concerns, please feel free to contact me.

  
DONNA FAY K. KIYOSAKI, P.E.  
Chief Engineer

GK:vmht

cc: Robert Yanabu  
ENG (Hilo & Kona)  
TRF

**EXHIBIT 9**

RECEIVED DEC 09 2002

LINDA LINGLE  
GOVERNOR OF HAWAII



GENEVIEVE SALMONSON  
DIRECTOR

STATE OF HAWAII  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL  
735 SOUTH BERETAMA STREET  
SUITE 702  
HONOLULU, HAWAII 96813  
Telephone (808) 586-4185  
Facsimile (808) 586-4186  
Email: oeqc@health.state.hi.us

December 6, 2002

Mr. Christopher Yuen, Director  
Planning Department, County of Hawaii  
101 Pauahi Street, Suite 3  
Hilo, Hawaii 96720

Dear Mr. Yuen:

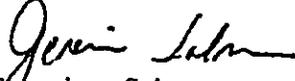
**Subject:** *Draft Environmental Assessment for the Kamehameha Investment Corporation Multi-Family Residential Units, North Kona, Hawai'i*

Thank you for the opportunity to review the draft environmental assessment. We have the following comments.

1. The project is located close to 700 feet from the ocean. What is the extent of grading for the project? What specific mitigation measures are planned to reduce storm water run-off from entering the ocean? Please consult the Department of Health concerning any potential NPDES permit.
2. Please consult with adjacent neighbors and community associations.
3. Please comply with Department of Health noise regulations during construction.
4. Please list all the permits that are required for this development.

If you have any questions please call Jeyan Thirugnanam at 586-4185.

Sincerely,

  
Genevieve Salmonson  
Director

c: Steve Lim

EXHIBIT 10

# CARLSMITH BALL LLP

A LIMITED LIABILITY LAW PARTNERSHIP

121 WAIANUENUE AVENUE  
P.O. BOX 686  
HILO, HAWAII 96721-0686  
TELEPHONE (808) 935-6644 FAX (808) 935-7975  
WWW.CARLSMITH.COM

E-MAIL SLIM@CARLSMITH.COM

January 24, 2003

Genevieve Salmonson  
Director  
Office of Environmental Quality Control  
235 South Beretania Street, Suite 702  
Honolulu, Hawaii 96813  
Attention: Jeyan Thirugnanam

Re: Special Management Area (SMA) Use Permit Application  
Applicant: Kamehameha Investment Corporation / Parcel 14C  
Parcels 14A-1 and 14B-1, being portions of R.P. 6856, L.C. Aw. 7713, Ap. 6 to  
V. Kamamalu and R.P. 4475, L.C. Aw. 7713, Ap. 7 to V. Kamamalu at  
Kahaluu and Keauhou 1st, District of North Kona, Island, County and  
State of Hawaii  
Tax Map Key Nos.: (3) 7-8-10:por. 35 and 93

Dear Ms. Salmonson:

Thank you for your comments on the Draft Environmental Assessment (DEA) for Kamehameha Investment Corporation who is seeking approval to allow for the development of up to 200 multiple-family residential units and related improvements on approximately 14.47 acres of land. We appreciate your review of the DEA and have the following response to your comments:

1. Storm water run-off impacts and mitigative measures. The Project lands are situated within an area of relatively low rainfall amounts (20 to 30 inches annually) and intensities. The land is comprised of porous and unweathered lavas and has sparse soil cover, which allow much of the rainfall to percolate to the water table. There are no discernible streams or drainage ways at the Project site and runoff is unlikely due to the high permeability rate. Development of the Project site will not have any significant adverse effect on the drainage patterns off- and on-site. Consequently, no naturally occurring or well-defined drainage ways or drainage outlets are found on-site, and surface water run-off occurs only

at rare times of intense rainfall. Surface water runoff and sedimentation will be minimized by methods approved by the Department of Public Works. In addition, the property is located in Zone X according to the Flood Insurance Rate Maps (FIRM) prepared by FEMA. Project grading and landscaping will be designed to minimize need for fertilizers and maximize entrapment and containment of storm water runoff. Therefore, no NPDES permit will not be required for the proposed Project.

2. Consultation with adjacent neighbors and community associations. Applicant consulted with adjacent neighbors and community associations through the Keauhou Outreach Group (see attached listing).
3. Compliance with DOH noise regulations. The Applicant will comply with Department of Health noise regulations during construction.
4. Listing of required developmental permits. The governmental permits and approvals needed to implement the Project are as follows:

	<u>Approvals Needed</u>	<u>Agency</u>
Hawaii County:	HRS Chapter 343 compliance Special Management Area (SMA) Permit Final Plan Approval Building Permits	Planning Department/ Planning Commission Planning Department Dept. of Public Works
State of Hawaii:	None	
Federal Government:	None	

Your letter and this response will be appended to the final environmental assessment to ensure that the document adequately addresses pertinent development and environmental issues.

Very truly yours,

  
STEVEN S. C. LIM

SSL:KYL

Enclosure

xc w/enclosure: Kamehameha Investment Corporation  
County of Hawaii Planning Department

## KEAUHOU OUTREACH GROUP

Bayview Estates	Ross Griffin, Stuart Lowry, Dan Woolley, Lorraine Christy
County Club Villas	John Harris, Erik Sandberg
Hale Kehau	Susan Gregg, Emily Griffith, Kris Johnson, Walt & Sally Bobb
Kanaloa at Kona	Jim Heather, Charlene Davis, Howard Weir
Keauhou Akahi	Jeff Sell, Jean Dickson, Tom Chilvers, Tom Miksch
Keauhou Bay Area 5 Subdivision	Roland Kleger, Paul Catanzaro
Keauhou Estates	Chuck Crowe, James Robinett, Mike Henninger
Keauhou Gardens	Joane Summers, Jere Pennell
Keauhou Kai Condo	Buck Logan
Keauhou Kona S&R Club	Thomas Koontz, Jean Gray, Michael Gardner
Keauhou Palena	Sue West, Ray Kirchner
Keauhou Punahale	Jim Anderson
Keauhou Resort Condo	Robin Elcock, Garrey Peska
Kona Coast Resort	Craig Leeper, Noel Lorenzo
Makolea Condo	Lambert LeeLoy, M.D.
Mauna Loa Village	David Hoopaugh, Chris Breed, Gretchen Watson-Kabei
Villas at Keauhou	Jean Murphy, George LaBroad
G. Rick Robinson	Kamehameha Schools
Keauhou Cultural Advisory Committee	Lilly Kong
Keauhou Master Homeowner Assn.	William Taylor
Lifecare Kona Rehab & Health Center	Lynda Johnson
Keauhou Shopping Center	Marleen Akau
Kona County Club	Greg Molfino
Ohana Keauhou Beach Resort	Wayne Sterling, Sharon Paoa, Roxanne Benson, MayLou Foley Laurie Sokach, Tom Metz
George & Sharon Handgis	
Nancy Pisticchio	
Puhi Dant	
Patrick Cunningham	

Jan-22-2003 12:36pm From-STATE Historic Preservation

808 682 8020

T-275 P.001/003 F-326

LINDA LINGLE  
GOVERNOR OF HAWAII



PETER T. YOUNG, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCES MANAGEMENT

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION  
KAKUHIHEWA BUILDING, ROOM 655  
601 KAMOKILA BOULEVARD  
KAPOLE, HAWAII 96707

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
COMMISSION ON WATER RESOURCE  
MANAGEMENT  
CONSERVATION AND RESOURCES  
ENFORCEMENT  
CONVEYANCES  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND  
STATE PARKS

January 22, 2003

Mr. Steven S.C. Lim  
Carlsmith Ball LLP  
121 Waiianuenue Ave.  
P.O. Box 686  
Hilo, Hawaii 96720

LOG NO: 31518  
DOC NO: 0301PM06

Dear Mr. Lim:

**SUBJECT: Chapter 6E-42 Historic Preservation Review  
Draft Environmental Assessment and Special Management Area  
(SMA) Use Permit Application -Kamehameha Investment  
Corporation—Parcel 14C  
Kahaluu and Keauhou, North Kona, Hawaii Island  
TMK: (3) 7-8-10: Por. 35 and 93**

Thank you for submitting for our review and comment the Draft Environmental Assessment (DEA) for Kamehameha Investment Corporation's Special Management Area (SMA) Use Permit Application for a proposed residential project in Kahalu'u and Keauhou. The DEA was received in our office on January 2, 2003.

The DEA indicates that Kamehameha Investment Corporation (KIC) is planning to develop up to 200 multiple-family residential units and related improvements on approximately 14.47 acres of land in the subject parcels. The proposed development will have an adverse effect on several historic sites identified in archaeological surveys of the subject parcels in the 1970s and 1980s.

In anticipation of approval of the SMA application, KIC had an archaeological consulting firm, Cultural Surveys Hawai'i, Inc., prepare an archaeological mitigation plan for sites located in the proposed project area. Our office has recently completed a review of the draft plan (McEldowney to Joe Spencer, January 15, 2003; Log No. 31440; Doc. No. 0301PM02). We have asked for revisions to the plan, which calls for data recovery of three sites (7827, 7829 and 7830) and preservation of one site (7828). A comparison of the proposed mitigation measures in this draft plan and in the DEA reveals some inconsistencies between the two and other problems. These are summarized below.

Mr. Steven S.C. Lim  
Page Two

(1) The DEA makes reference to Site 7827, 7828 and 7829, noting that Site 7828 had been earlier recommended for preservation. There is no discussion, however, of the need for mitigation of the other three sites and no mention at all of Site 7830. This raises questions as to exactly which sites are going to be mitigated.

(2) The DEA (page 2) states that "The culturally significant portions of Parcels 35 and 93 located makai of the Great Wall of Kuakini (Kuakini Wall) will be subdivided off and consolidated with the archaeological preserve and cultural complex located within a portion of TMK (3) 7-5-10:35." Figure 3 of the DEA shows the existing archaeological preserve on the north side of the subject area, but there is no indication on this or any other map of the boundaries of the culturally significant portions of the two parcels makai of the Kuakini Wall that will be preserved. There is, moreover, no mention of the numbers and kinds of sites to be preserved in this area. This addition to the existing preserve should be clearly shown on a map. While the addition to the preserve is outside of the proposed residential development, we believe that the applicant should commit in writing to the preparation of an acceptable preservation plan for the area in question within a specified time period.

(3) The DEA (page 6) notes that an archaeological mitigation plan for the existing archaeological preserve in Parcel 35 was accepted by our office in a letter dated October 4, 1989. The date of the approval letter is incorrect. The correct letter, which is included as Exhibit 5 of the DEA, is dated July 2, 1989 (Nagata to Tuggle). The July 28, 1989, letter states that the mitigation plan for the Azabu Resort Improvement Project was accepted with conditions. The extent to which any of the conditions have been fulfilled is unclear. According to our July 28, 1989, letter Belt Collins & Associates was supposed to notify our office in writing that the conditions were acceptable. We have no record that this was ever done. We believe that the applicant needs to provide a written update on the conditions of the plan approval and the bearing that these have on the proposed development in the subject area.

(4) The DEA (pages 12-13) states that "The preservation and mitigation plans for Site 1617 and the setbacks from the proposed Project area will address the protective criteria of the Kahalu'u Historic District." This statement is vague and should be clarified. As noted on page 11, Site 1617 was subsequently redesignated as Sites 7827, 7828 and 7829. We suggest that the final EA refer to the three sites, rather than the old site number.

The final EA should address the above comments. It should also clarify the mitigation status of two other sites located in the proposed project area, the Kuakini Wall (Site 6302) and a section of trail (Site 4618).

Mr. Steven S.C. Lim  
Page Three

If you should have any questions about this project please contact our Hawaii Island archaeologist, Patrick McCoy, at 692-8029.

Aloha,

*P. Holly McEldowney*

P. Holly McEldowney, Acting Administrator  
State Historic Preservation Division

PM:jk

c: Chris Yuen, County of Hawaii Planning Department  
Kai Emler, County of Hawaii Department of Public Works  
Joe Spencer, Kamehameha Investment Corporation  
OEQC

# CARLSMITH BALL LLP

A LIMITED LIABILITY LAW PARTNERSHIP

121 WAIANUENUE AVENUE  
P.O. BOX 686  
HILO, HAWAII 96721-0686  
TELEPHONE (808) 935-6644 FAX (808) 935-7975  
WWW.CARLSMITH.COM

E-MAIL SLIM@CARLSMITH.COM

January 27, 2003

P. Holly McEldowney  
Acting Administrator  
State Historic Preservation Division  
Kakuhikewa Building, Room 555  
601 Kamokila Boulevard  
Kapolei, Hawaii 96707

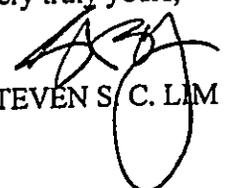
Re: Special Management Area (SMA) Use Permit Application  
Applicant: Kamehameha Investment Corporation / Parcel 14C  
Parcels 14A-1 and 14B-1, being portions of R.P. 6856, L.C. Aw. 7713, Ap. 6 to V.  
Kamamalu and R.P. 4475, L.C. Aw. 7713, Ap. 7 to V. Kamamalu at Kahaluu  
and Keauhou 1st, District of North Kona, Island, County and State of Hawaii  
Tax Map Key Nos.: (3) 7-8-10:por. 35 and 93

Dear Ms. McEldowney:

Thank you for your comments on the Draft Environmental Assessment (DEA) for Kamehameha Investment Corporation who is seeking approval to allow for the development of up to 200 multiple-family residential units and related improvements on approximately 14.47 acres of land. We appreciate your review of the DEA. The environmental assessment has been revised to incorporate the preservation plan of Site 7828, and the data recovery mitigation plans for Site 7827, 7829, 7830, the Kuakini Wall (Site 6302) and the mauka-makai trail (Site 4618) as further detailed in the draft Preservation and Data Recovery Plans for Historic Properties at Keauhou Development Parcel 14C, prepared by Cultural Surveys Hawaii, Inc., dated October 22, 2002.

Your letter and this response will be appended to the final environmental assessment to ensure that the document adequately addresses pertinent development and environmental issues.

Very truly yours,

  
STEVEN S. C. LIM

SSL:KYL  
xc: Kamehameha Investment Corporation  
County of Hawaii Planning Department

RECEIVED JAN 17 2003

Harry Kim  
Mayor



Patricia G. Engelhard  
Director

Pamela N. Mizuno  
Deputy Director

**County of Hawai`i**  
**DEPARTMENT OF PARKS AND RECREATION**  
101 Pauahi Street, Suite 6 • Hilo, Hawai'i 96720  
(808) 961-8311 • Fax (808) 961-8411

January 15, 2003

Kamehameha Investment Corporation  
C/o Steven S.C. Lim  
Carlsmith Ball, LLP  
121 Waianuenu Avenue  
Hilo, HI 96720

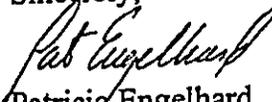
Re: Draft Environmental Assessment  
Special Management Area Use Permit Application  
Kamehameha Investment Corporation/Parcel 14C  
TMK: 7-8-10:por 35 and 93

Dear Sir:

It is our understanding that no recreation-related conditions or provisions were attached to the permitted land use of the subject parcels. As such, we have neither adverse comments nor objections to offer on the proposed project.

Thank you for the opportunity to review the draft assessment.

Sincerely,

  
Patricia Engelhard  
Director

cc Office of Environmental Quality Control  
Planning Department, County of Hawaii

LINDA LINGLE  
GOVERNOR



ERIC T. HIRANO  
ACTING CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

DEAN A. NAKANO  
ACTING DEPUTY DIRECTOR FOR  
THE COMMISSION ON WATER  
RESOURCE MANAGEMENT

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

P.O. Box 621  
HONOLULU, HAWAII 96809

January 7, 2003

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

L-18

LD/NAV  
Ref.: ALIHIGHWAYDEA.CMT

Suspense Date: 1/20/03

MEMORANDUM:

TO: XXX Division of Aquatic Resources (distributed Doc)  
\*\*XXX Division of Forestry & Wildlife  
~~\*\*XXX Na Ala Hele Trails~~  
XXX Engineering Division (Distributed Doc)  
XXX Division of State Parks (Distributed Doc)  
Division of Boating and Ocean Recreation  
\*\*XXX Commission on Water Resource Management  
Land Division Branches:  
XXX Planning and Technical Services  
XXX Hawaii District Land Office (Distributed Doc)

RECEIVED  
LAND DIVISION  
HONOLULU, HAWAII  
2003 JAN -9 A 11:05

FROM: Dierdre S. Mamiya, Administrator  
Land Division *Charles*

SUBJECT: Draft Environmental Assessment (DEA) covering the Ali Highway Project, Hawaii - Consultant: CARLSMITH BALL LLP

Please review the subject DEA and submit your comments (if any) on Division letterhead within the time requested above.

Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

\*\*NOTE: One (1) copy of the DEA is available for your review in the Land Division Office, room 220.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

We have no comments.

Comments attached.

Signed: *Harvy Vaccaro*

Name: Harvy Vaccaro

Date: 1/13/03

**CARLSMITH BALL LLP**  
A LIMITED LIABILITY LAW PARTNERSHIP

121 WAIANUENUE AVENUE  
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January 28, 2003

June F. Harrigan-Lum  
Manager  
Environmental Planning Office  
Department of Health  
919 Ala Moana Boulevard, Room 312  
Honolulu, Hawaii 96814

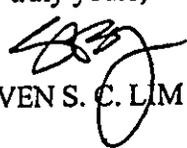
Re: Special Management Area (SMA) Use Permit Application  
Applicant: Kamehameha Investment Corporation / Parcel 14C  
Parcels 14A-1 and 14B-1, being portions of R.P. 6856, L.C. Aw. 7713, Ap. 6 to V.  
Kamamalu and R.P. 4475, L.C. Aw. 7713, Ap. 7 to V. Kamamalu at Kahaluu  
and Keauhou 1st, District of North Kona, Island, County and State of Hawaii  
Tax Map Key Nos.: (3) 7-8-10:por. 35 and 93

Dear Ms. Harrigan-Lum:

Thank you for your comments on the Draft Environmental Assessment (DEA) for Kamehameha Investment Corporation who is seeking approval to allow for the development of up to 200 multiple-family residential units and related improvements on approximately 14.47 acres of land. We appreciate your review of the DEA. If required, the Applicant will obtain a NPDES permit for the Project.

Your letter and this response will be appended to the final environmental assessment to ensure that the document adequately addresses pertinent development and environmental issues.

Very truly yours,

  
STEVEN S. C. LIM

SSL:KYL  
xc: Kamehameha Investment Corporation  
County of Hawaii Planning Department

LINDA LINGLE  
GOVERNOR OF HAWAII



CHIYOME L. FUKINO, M.D.  
DIRECTOR OF HEALTH

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

In reply, please refer to:  
File:

03-014/epo

January 28, 2003

Mr. Steven S. C. Lim  
Carlsmith Ball LLP  
121 Waianuenu Avenue  
P.O. Box 686  
Hilo, Hawaii 96721-0686

Dear Mr. Lim:

Subject: Draft Environmental Assessment (DEA) and Special Management Area (SMA) Use Permit Application  
Kamehameha Investment Corporation  
North Kona, Hawaii  
Tax Map Key: 7-8-010:035 & 093 (por)

Thank you for the opportunity to review and comment on the subject proposal. The DEA was routed to the various branches of the Environmental Health Administration. We have the following comments:

Clean Water Branch (CWB)

1. The Army Corps of Engineers should be contacted to identify whether a Federal permit (including a Department of Army permit) is required for this project. Pursuant to Section 401(a)(1) of the Federal Water Pollution Act (commonly known as the "Clean Water Act"), a Section 401 Water Quality Certification is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters...."
2. A National Pollutant Discharge Elimination System (NPDES) general permit coverage is required for the following activities:
  - a. Storm water associated with industrial activities, as defined in Title 40, Code of Federal Regulations, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi);

Mr. Steven S.C. Lum  
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*(Note: After March 10, 2003, an NPDES permit will be required for construction activities, including clearing, grading, and excavation that result in the disturbance of one (1) acre or more.)*

- b. Construction activities, including clearing, grading, and excavation that result in the disturbance of equal to or greater than five (5) acres of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. **An NPDES permit is required before the commencement of the construction activities.**
- c. Discharge of treated effluent from leaking underground storage tank remedial activities;
- d. Discharge of once through cooling water less than one (1) million gallons per day;
- e. Discharge of hydrotesting water;
- f. Discharge of construction dewatering effluent;
- g. Discharge of treated effluent from petroleum bulk stations and terminals;
- h. Discharge of treated effluent from well drilling activities;
- i. Discharges of treated effluent from recycled water distribution systems;
- j. Discharges of storm water from a small municipal separate storm sewer system; and
- k. Discharge of circulation water from decorative ponds or tanks.

The CWB requires that a Notice of Intent (NOI) to be covered by a NPDES general permit for any of the above activities be submitted at least 30 days before the commencement of the respective activities. The NOI forms may be picked up at our office or downloaded from our website at <http://www.state.hi.us/doh/eh/cwb/forms/genl-index.html>.

- 3. The applicant may be required to apply for an individual NPDES permit if there is any type of activity in which wastewater is discharged from the project into State waters, and/or coverage of the discharge(s) under the NPDES general permit(s) is not permissible. An application for the NPDES permit is to be submitted at least 180 days before the commencement of the activities. The NPDES application forms may also be picked up at our office or downloaded from our website at <http://www.state.hi.us/doh/eh/cwb/forms/indiv-index.html>.

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4. Hawaii Administrative Rules, Section 11-55-38, also requires the owner to either submit a copy of the NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD) or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD.

If you have any questions, please contact the CWB at (808) 586-4309.

Clean Air Branch (CAB)

*Control of Fugitive Dust*

There is a significant potential for fugitive dust emissions during all phases of construction. Proposed construction activities will occur in proximity to existing residences and major thoroughfares, thereby exacerbating potential dust problems. It is recommended that a dust control management plan be developed which identifies and addresses all activities that have a potential to generate fugitive dust. Implementation of adequate dust control measures during all phases of development and construction activities is warranted.

Construction activities must comply with provisions of Hawaii Administrative Rules, Chapter 11-60.1, "Air Pollution Control," Section 11-60.1-33, Fugitive Dust.

The contractor should provide adequate measures to control dust from the road areas and during the various phases of construction. These measures include, but are not limited to:

- a. Planning the different phases of construction, focusing on minimizing the amount of dust generating materials and activities, centralizing on-site vehicular traffic routes, and locating potentially dusty equipment in areas of the least impact;
- b. Providing an adequate water source at the site prior to start up of construction activities;
- c. Landscaping and rapid covering of bare areas, including slopes, starting from the initial grading phase;
- d. Controlling of dust from shoulders and access roads;
- e. Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
- f. Controlling of dust from debris being hauled away from project site.

If you have any questions regarding these issues on fugitive dust, please contact the CAB at (808) 586-4200.

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Wastewater Branch (WWB)

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems." We reserve the right to review the detailed wastewater plans for conformance to applicable rules.

If you have any questions, please contact the Wastewater Branch at (808) 586-4294.

Sincerely,

*Jane F. Harrigan-Lum*

JUNE F. HARRIGAN-LUM, MANAGER  
Environmental Planning Office

c: CWB  
CAB  
WWB

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**DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII**

345 KEKUANAOA STREET, SUITE 20 • HILO, HAWAII 96720  
TELEPHONE (808) 961-8050 • FAX (808) 961-8657

January 24, 2003

Kamehameha Investment Corporation  
c/o Mr. Steven S. C. Lim  
Carlsmith Bail, LLP  
121 Waiānuenue Avenue  
Hilo, HI 96720

**DRAFT ENVIRONMENTAL ASSESSMENT  
KAMEHAMEHA INVESTMENT CORPORATION  
PARCEL 14C  
TAX MAP KEYS 7-8-010:POR. 35 AND POR. 93**

We have reviewed the subject document and our comments are as follows.

Water is available from a 12-inch waterline within the proposed Kahului to Keauhou Parkway, which fronts the parcel. Currently, the parcel has a service lateral with the Department to service a 4-inch water meter assigned with 240 equivalent units of water or a maximum of 144,000 gallons per day. As stated in the Draft Environmental Assessment, these units will adequately serve the proposed project; therefore, water service will be subject to compliance with the Department's Rules and Regulations and Water System Standards.

Should there be any questions, please contact our Water Resources and Planning Branch at 961-8070.

Sincerely yours,

Milton D. Pavao, P.E.  
Manager

SHK:sco

copy - OE@C Bulletin  
Planning Department

*... Water brings progress...*

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January 24, 2003

Bruce McClure  
Manager  
Department of Public Works  
101 Puahi Street  
Hilo, Hawaii 96720

Re: Draft Environmental Assessment  
Special Management Area (SMA) Use Permit Application  
Applicant: Kamehameha Investment Corporation / Parcel 14C  
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Kahaluu and Keauhou 1st, District of North Kona, Island, County and  
State of Hawaii  
Tax Map Key Nos.: (3) 7-8-10:por. 35 and 93

Dear Mr. McClure:

This will confirm that your agency has no comments on the Draft Environmental Assessment. It is our understanding that your agency's specific concerns relative to the proposed 200-unit development will be via the SMA Use Permit process. This letter will be appended to the Final Environmental Assessment.

Very truly yours,

  
STEVEN S. C. LIM

SSL:KYL  
xc: Kamehameha Investment Corporation  
County of Hawaii Planning Department

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January 24, 2003

DBEDT Planning Office  
235 South Beretania Street, 6<sup>th</sup> Floor  
Honolulu, Hawaii 96813

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Special Management Area (SMA) Use Permit Application  
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STEVEN S. C. LIM

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