

**Draft Environmental Assessment and
Anticipated Finding of No Significant Impact
for the Proposed Kona Commons Project
Keahuolū, North Kona District, Kailua-Kona, Hawaii
TMK: portion of (3) 7-4-08:02;
(3) 7-4-015: portion of 15 and 22; (3) 7-4-10**

**Applicant:
Queen Lili‘uokalani Trust
1100 Alakea Street, Suite 1100
Honolulu, Hawaii 96813**

**Approving Agency:
County of Hawaii Planning Department
101 Pauahi Street, Suite 3
Hilo, Hawaii 96720**

**Prepared by
Belt Collins Hawaii Ltd.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819**

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Chapter 1

Purpose and Need

1.1 Introduction and Background

This environmental assessment (EA) is prepared in accordance with Chapter 343, Hawaii Revised Statutes (HRS), to evaluate potential impacts of the Kona Commons project. Kona Commons is on Queen Lili‘uokalani Trust (QLT) land at Keahuolū, North Kona District, in Kailua-Kona, Hawaii. Although it is being developed on private land, Chapter 343 is applicable due to a component of the project that uses public land. The project involves construction of roadway improvements and installation of a waterline within the Queen Ka‘ahumanu Highway right-of-way on land owned by the State of Hawaii. This EA addresses a requirement by the State of Hawaii Department of Transportation (DOT) – Highways Division. DOT approval is the final clearance needed to implement the first two phases of the project. All other entitlements have been obtained, including zoning, final plan approval, construction plan approval for the balance of the infrastructure, and the Phase I building permit. (The Phase II building permit is expected by the end of the year.)

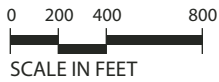
Kona Commons is located within the MCX-20 zoned 100-acre Makalapua Business Center (see Figure 1).

Roadway, water, and sewer improvements to support the proposed commercial uses comprised the first phase of development at Keahuolū. “Backbone” infrastructure constructed by QLT included Makala Boulevard and the signalized intersection at Queen Ka‘ahumanu Highway; a potable water well, reservoir, and transmission lines; and connection to the County’s sewage treatment plant.


1.2 Need for the Project

Makalapua Shopping Center on Kamakaeha Avenue was the first increment of commercial development at Keahuolū. Revenue from Makalapua Shopping Center supports the operations of the Queen Lili‘uokalani Children’s Center (QLCC), and Kona Commons is being developed for the same purpose.

QLCC is the social service agency that carries out the mission of the Queen Lili‘uokalani Trust (QLT). On December 2, 1909, Queen Lili‘uokalani executed a Deed of Trust, which established a private foundation dedicated to the welfare of orphaned children. She amended her Deed of Trust on October 11, 1911 adding destitute children among her beneficiaries. QLCC operates nine units statewide, offering a wide range of services to beneficiaries, including finding suitable homes, developing education plans, counseling, arranging for foster care or adoption, and extending financial assistance. QLCC’s Kona Unit is located west of the Kona Commons site, a distance of about one-half mile.



LEGEND

 Kona Commons Project Area

**Figure 1
LOCATION MAP**

Kona Commons
Environmental Assessment
December 2007

1.3 Proposed Action

QLT proposes to develop approximately 67 acres of its Keahuolū land for commercial use. The site is located makai of the Queen Ka‘ahumanu Highway, north of and adjacent to the existing Kona Industrial Subdivision. Kona Commons would be developed in three phases and involve construction of buildings and supporting infrastructure. Two aspects of the project, the connection of the Eho Street extension to Queen Ka‘ahumanu Highway and installation of a waterline in the Queen Ka‘ahumanu Highway right-of-way, trigger this Chapter 343 environmental review. The Eho Street extension is a condition of County of Hawaii zoning approval. The waterline installation, serving two fire hydrants, meets County Department of Water Supply standards and also provides a county water system improvement.

Chapter 2

Proposed Action and Alternatives

2.1 Proposed Action (Preferred Alternative)

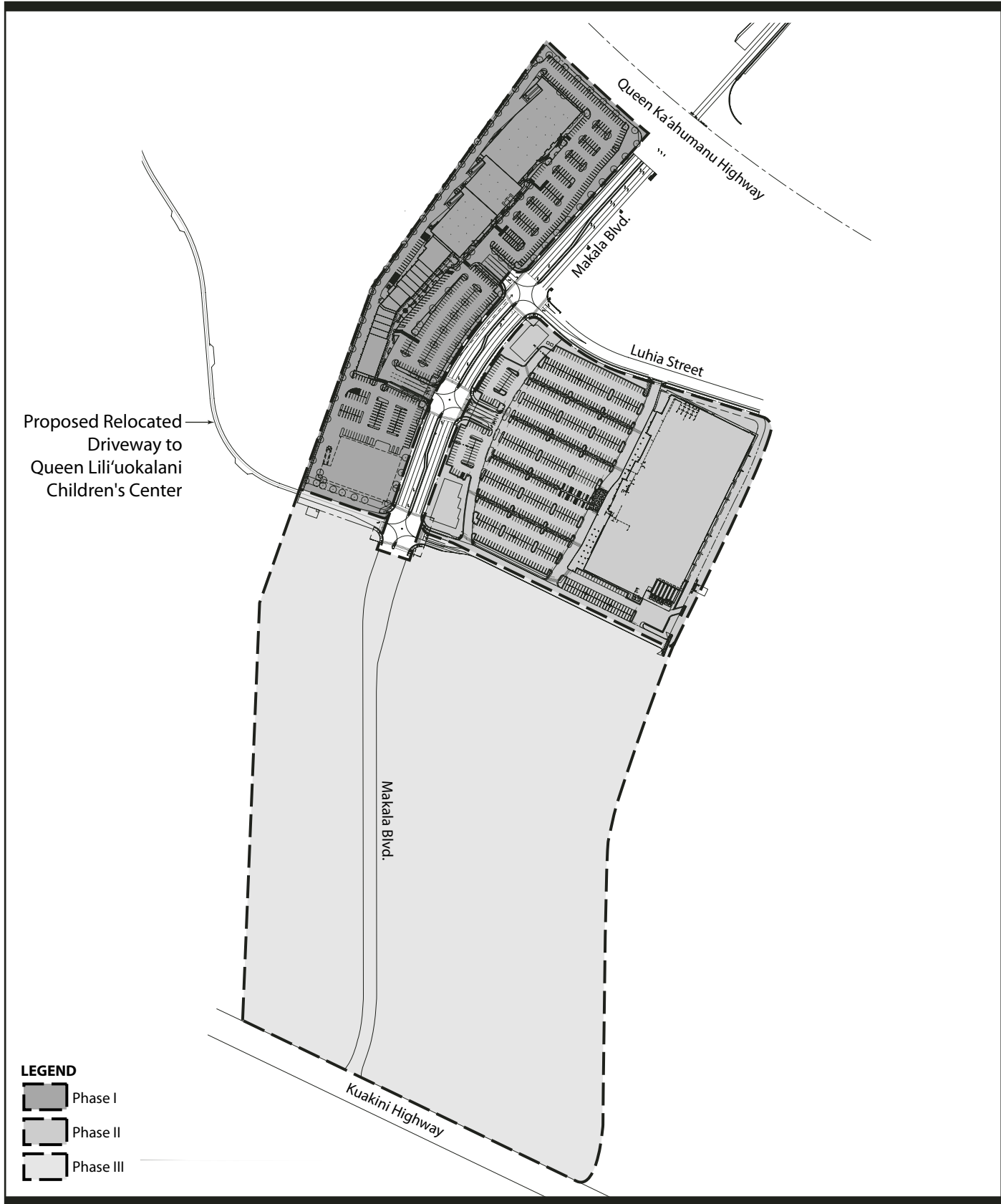
Queen Lili‘uokalani Trust proposes to develop approximately 67 acres of its land at Keahuolū for commercial use. Known as Kona Commons, the project would be developed in three phases (see site plan in Figure 2). Phase I, located on approximately 11 acres, would have an estimated 134,800 square feet (SF) of commercial space. Access to Phase I would be via two driveways off of Makala Boulevard, one at the intersection with Luhia Street and the other located approximately 400 feet further makai (southwest).

Phases II and III of the project would be located south of Makala Boulevard. Phase II would have approximately 177,245 SF of commercial/retail space on a site of about 13 acres. The amount of commercial/retail space in Phase III, approximately 40 acres, would be subject to market demand; for planning purposes it is estimated to be in the range of 300,000 SF. Access to these phases would be via six driveways, three off of Makala Boulevard, one off of Luhia Street, and two off of Loloku Street. (Note: The remaining 3 acres of the project site consists of roadways.)

Phase I of the project would be completed in 2008, Phase II would be completed in 2009, and Phase III is scheduled for completion by 2012.

The project would involve construction of buildings and required roadway improvements, including curbs, gutters, sidewalks, and infrastructure (water, sewer, drainage, electrical) for dedication to the County. QLT is funding the infrastructure improvements, and private developers are funding and building the private commercial facilities. The project elements are described below.

- Kona Commons Phase I would be anchored by four major tenants, which include national athletic, pet, office and electronic supply retailers. The square footage for each of these retailers would be approximately 15,000 to 40,000 SF. Phase I would also include approximately 14 inline retail spaces ranging from 1,100 to 3,600 SF in size. Design elements would include outdoor public gathering places and amenities, artwork, and architectural design features to break up building masses. The landscape plan would utilize native plant species. The County of Hawaii has issued final plan approval and a building permit for Phase I.
- Kona Commons Phase II would consist of a 162,244-SF major discount retailer and approximately 15,000 SF in retail space along Makala Boulevard. Architectural design elements and landscaping would be used to break building mass. Native species would be incorporated into the landscape plan. Final plan approval has been obtained from the County and a building permit is expected by year end.



0 100 200 400
SCALE IN FEET

Figure 2
KONA COMMONS SITE PLAN

Kona Commons
Environmental Assessment
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- Widening of Makala Boulevard immediately mauka and makai of Queen Ka‘ahumanu Highway (100-foot total width) and addition of turning lanes on Makala Boulevard and Queen Ka‘ahumanu Highway. Improvements to Makala Boulevard makai would require construction of an embankment onto previously graded areas and limited excavation into undisturbed areas.
- Improvements to Luhia Street to meet county standards. These would include an additional 20 feet of pavement, curb, gutter, and sidewalk widening on the makai side into undisturbed areas. Minimal earthwork is required since these improvements are near or at-grade.
- Replacement of driveway that currently provides vehicular access to the Queen Lili‘uokalani Children’s Center. The driveway, relocated about 300 feet to the south, would connect to Makala Boulevard. It would be about 1,534 feet long and include a 12-foot-wide pavement section with two-foot shoulders. The existing driveway will be closed since it is being cut off by development of Kona Commons Phase I.
- Installation of traffic signals at two intersections with Makala Boulevard—Luhia Street and the retail complex entry—as recommended in the traffic impact assessment report (TIAR) prepared for the Kona Commons developer (The MacNaughton Group).
- Utility service connections (water, sewer, electrical) and new driveway aprons on Loloku Street. Work would be limited to a fully developed roadway section. Trenching depths would range from 3 to 5 feet.
- Construction of 20-foot-deep drainage drywells within planned road rights-of-way.

Infrastructure construction plans for Kona Commons Phases I and II have been approved by the County.

In addition, QLT plans to carry out the following projects in the Kona Industrial Subdivision concurrently with the above-described Kona Commons improvements:

- Construction of a new one-lane roadway through a previously disturbed area connecting Eho Street to Queen Ka‘ahumanu Highway. The Eho Street extension is required under Condition N of the Hawaii County Ordinance 01-65. This ordinance, effective August 8, 2001, amended Section 25-8-3 (North Kona Zone Map), Article 8, Chapter 25 (Zoning Code) of the Hawai‘i County Code, by changing the district classification of the land on which the Kona Commons site is located from Limited Industrial (ML-1a) to Industrial-Commercial Mixed (MCX-20). Condition N states: “Prior to the commencement of development of Phase 2, the applicant shall extend Eho Street in the Kona Industrial Subdivision to Queen Ka‘ahumanu Highway meeting with DPW approval.”

As required by the State DOT Highways Division, the new Eho Street/Queen Ka‘ahumanu Highway intersection will be used only for right turns into the Kona Industrial Subdivision by vehicles traveling southbound on Queen Ka‘ahumanu Highway toward Kailua-Kona town. Left turn from Queen Ka‘ahumanu Highway onto Eho Street will not be allowed. Traffic from the Kona Industrial Subdivision will not be able to use Eho Street to access the Queen Ka‘ahumanu Highway.

- Installation of a water line within the Queen Ka‘ahumanu Highway right-of-way to serve a new fire hydrant near the Queen Ka‘ahumanu/Eho Street intersection and a relocated fire hydrant in the vicinity of Eho Street’s intersection with Luhia Street. The new waterline would interconnect the county waterline on the mauka side of Queen Ka‘ahumanu Highway to the existing county system in the Kona Industrial Subdivision. It would run through the right-of-way to the makai side of the highway and extend down Eho Street. The new fire hydrant is required to meet Department of Water Supply standards, while the interconnection is a county system improvement.
- When warranted, future signalization of the Ka‘iwi Street/Kuakini Highway intersection, as recommended in the traffic impact assessment. Traffic lights would be installed by the developer and/or QLT.

2.2 No Action Alternative

Chapter 343 HRS requires evaluation of alternatives, including no action. Under the no-action alternative, QLT would not move forward with development of the rezoned MCX-20 parcel. No offsite or onsite infrastructure improvements would be constructed. The Kona Commons site would remain vacant rather than developed to its highest and best use, failing to generate much needed revenue to support QLCC. Furthermore, failure to develop would not implement County land use policies.

2.3 Other Alternatives Considered

QLT considered expanding commercial/retail development at Makalapua Shopping Center on its Keahuolū mauka lands, which have the appropriate land use entitlements like the Kona Commons site. However, the makai site was preferred due to infrastructure considerations.

- The makai project site has the advantage of an existing roadway, Makala Boulevard, providing a mauka-makai link between Queen Ka‘ahumanu Highway and Kuakini Highway. Development of a mauka site would require a mauka extension of Makala Boulevard.
- In addition, the makai site has existing water, sewer, electrical, telephone, and cable infrastructure.

- The makai site is relatively flat, whereas the mauka land has steep slopes. Development of the latter would require more extensive and costly site work. This was an important consideration for a major tenant comparing available sites in Kona for its store.

2.4 Management Constraints on Construction Activities

Management constraints would be implemented as part of the proposed action to avoid or minimize potential impacts on the environment during construction. Construction-related impacts are not considered significant since they would be temporary and controlled by having the contractor follow best practices. Constraints would include standard construction practices required by government regulatory agencies to control erosion, runoff, traffic congestion, noise, dust, emissions, and release of hazardous substances. Measures would include but not be limited to:

- Erosion/runoff. Compliance with National Pollutant Discharge Elimination System (NPDES) regulations controlling storm water runoff.
- Traffic. Following a traffic management plan that limits certain activities to non-peak hours and provides for traffic control measures when needed to assure safety and minimize congestion.
- Noise. Compliance with Title 11, Chapter 46, of the Hawaii Administrative Rules (HAR 11-46), which defines maximum permissible sound levels and is intended to control/abate noise pollution from construction equipment. Measures to minimize noise impacts may include limiting work to daytime hours, reducing truck/equipment idling when not in use, using manually adjustable or self-adjusting backup alarms, and fitting generators and equipment with manufacturer-approved exhaust mufflers.
- Air quality. Compliance with State of Hawaii Air Pollution Control regulations prohibiting visible emissions of fugitive dust from construction activities at the property line; compliance with federal and state ambient air quality standards (AAQS) regulating ambient concentrations of particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, and lead, as well as state standards for hydrogen sulfide. A dust control program will be implemented as part of the project, to include watering active work areas, using wind screens, keeping adjacent paved roads clean, covering open-bodied trucks, limiting the area to be disturbed at any given time, and other measures.
- Hazardous materials. Compliance with all applicable federal and state regulations, enforced by the State Department of Health, regarding the storage and handling of hazardous materials and disposal of hazardous wastes.

2.5 Required Permits and Approvals

QLT has obtained all major discretionary State of Hawaii and County of Hawaii approvals for the new development, including the earlier County zoning described above. Other required approvals include the following:

- State Department of Transportation approval for the Eho Street/Queen Ka‘ahumanu Highway connection: pending approval of this EA.
- Grading permit application approval by the County of Hawaii and State Historic Preservation Division: approved for the Kona Commons site; pending State Historic Preservation Division review for the Eho Street site.
- Subdivision application for the Makala Boulevard road lot and Phase I and Phase II Kona Commons development: tentative approval granted; final approval expected shortly.
- Underground Injection Control (UIC) Drainage Injection Well permit from the State Department of Health (DOH) for drywell drainage structures: approved for the Kona Commons site; pending review State Department of Health review for the Eho Street site.
- Update of QLT’s National Pollutant Discharge Elimination System (NPDES) General Permit to include the proposed work, by DOH: individual permit granted.
- County of Hawaii building permit(s): approved for Phase I, expected for Phase II by year end.
- Eho Street construction plans: awaiting County Planning Department approval; approval granted by other County agencies.

Chapter 3

Affected Environment, Environmental Consequences, and Proposed Mitigation

3.1 Overview

To the south of Kona Commons is the existing Kona Industrial Subdivision, also owned by QLT. Makala Boulevard provides mauka-makai access through the Makalapua Business Center. Luhia Street intersects Makala Boulevard and provides a connection to the Kona Industrial Subdivision. Eho Street is located in the Kona Industrial Subdivision.

Undeveloped QLT land lies to the north of Kona Commons. The Old Kona Airport Park and undeveloped coastal land are located makai.

3.2 References and Screening of Issues

The information presented in this document was obtained from the following:

- Belt Collins & Associates (October 1990). *Liliuokalani Trust Keahuolu Land of Kailua-Kona Hawaii Final Environmental Impact Statement*
- Belt Collins Hawaii Ltd. (September 2006) *Preliminary Engineering Report for Kona Industrial Subdivision, Sewer Master Plan Update*
- Haun & Associates (March 2007). *Archaeological Assessment, TMK: (3) 7-4-015:15, Land of Keahuolu, North Kona District, Island of Hawaii*
- Haun & Associates (May 2007). *Archaeological Inventory Survey, TMK (3) 7-4-015:014, Land of Keahuolu, North Kona District, Island of Hawaii*
- Haun & Associates (November 2007) *Plan for Archaeological Monitoring, TMK: (3) 7-4-015:15, Land of Keahuolu, North Kona District, Island of Hawaii.*
- Liliuokalani Trust Estate (September 30, 1994) *Infrastructure and Landscape Master Plan*
- Paul H. Rosendahl, Ph.D., Inc. (January 1993). *Archaeological Inventory Survey, Queen Liliuokalani Trust 100-Acre KIS Expansion Site, Land of Keahuolu, North Kona District, Island of Hawaii, (TMK: 3-7-4-08:Por.2)*
- Wilson Okamoto Corporation (February 2007). *Traffic Impact Report – Kona Commons*

A review of these documents indicates that an evaluation of impacts of the proposed action on the following issues/resources would be appropriate and relevant, in accordance with the intent of Chapter 343:

- Topography and Soils
- Hydrology and Drainage
- Visual Attributes
- Terrestrial Biota
- Archaeological Resources
- Cultural Practices
- Traffic
- Other Infrastructure: Water, Wastewater, Electrical, Solid Waste
- Energy Use
- Socioeconomics
- Land Use Compatibility

No further evaluation is required for the following resources for the reasons given:

- Environmentally sensitive areas: The site is not in a flood plain, tsunami inundation zone, or erosion prone area. It is not in a beach/coastal area or in the vicinity of an estuary. It is located in an area subject to earthquakes, and structures will be designed and constructed to comply with current building codes. The International Conference of Building Officials recommends that the entire island of Hawaii meet standards for Seismic Zone 4, which is the highest in the code's range from 0 to 4.
- Construction-related impacts: As explained in section 2.4, management constraints would be incorporated as part of the proposed action to avoid or minimize impacts relative to air and water quality, noise, and traffic during construction.
- Public services: The proposed project is in an urban area with existing police, fire, emergency response services. As planned, the Kona Commons commercial project would not generate additional population requiring an increase in educational or medical facilities.

3.3 Topography and Soils

3.3.1 Existing Conditions

Topography in the Kona Commons project area is gently sloping (0 to 5%) from the Old Kona Airport Park to Queen Ka'ahumanu Highway. There are two soil types: a'a lava flows (rLV) in the mauka portions of the site and pahoehoe lava flows (RLW) in the makai portions.

Terrain in the Eho Street area slopes gently to moderately to the southwest, and soil is comprised of pahoehoe lava.

Grading has already commenced on the Kona Commons site under a grading permit approved by the County. Hence, this site has been altered. The Eho Street site has been previously disturbed, likely during the construction of the Kona Industrial Subdivision in the mid 1980s; review of the permit application by the State Historic Preservation Division is pending. (Note: Issuance of a grading permit for development on private land is not a Chapter 343 HRS trigger. As stated in Chapter 1, this EA is triggered by connection of Eho Street to the state right-of-way, including a waterline.)

3.3.2 Potential Impacts and Proposed Mitigation

Significant impacts: none.

Proposed action: The project is being accomplished in accordance with applicable laws and rules regulating grading and erosion control. Erosion and runoff from the site during construction is being and will be avoided through the implementation of Best Management Practices, in accordance with National Pollutant Discharge Elimination System (NPDES) regulations (the individual permit has been granted). No other measures are required.

No action: none.

3.4 Hydrology and Drainage

3.4.1 Existing Conditions

Groundwater underlying the project area is basal groundwater, most likely brackish due to seawater intrusion at the shoreline—not sufficient or suitable for potable or non-potable water resource development.

Due to the highly permeable soil types, no perennial streams or well-defined drainageways are found in the project area. Likewise, no floodways or flood zones have been identified. Drainage of surface runoff is relatively rapid.

3.4.2 Potential Impacts and Proposed Mitigation

Significant impacts: none.

Proposed action: The project will comply with NPDES requirements to address surface runoff during construction. No other measures are required.

No action: none.

3.5 Visual Attributes

3.5.1 Existing Conditions

The Kona Commons site is in an area characterized by existing light industrial and commercial uses, undeveloped land, and a County beach park. Eho Street is located within the Kona Industrial Subdivision.

3.5.2 Potential Impacts and Proposed Mitigation

Significant impacts: none.

Proposed action: Kona Commons would be visible from public roadways, including the Queen Ka‘ahumanu Highway, Makala Boulevard, Loloku Street, and Kuakini Highway. It would also be visible from Old Kona Airport Park. These views would be similar to those of nearby developments. Views of the ocean and mountains would not be obstructed, given the sloping terrain of the site and low profiles of the buildings. The Eho Street extension would have little or no impact on existing views. No mitigation is required.

No action: none.

3.6 Terrestrial Biota

3.6.1 Existing Conditions

Flora

Vegetation on the Kona Commons site is dominated by introduced or alien plant species—generally covered with the introduced fountaingrass (*Pennisetum setaceum*) along with scattered trees and shrubs of various species, as well as open scrub. Scrub vegetation covers all of the makai portion of QLT’s Keahuolū lands. Besides fountaingrass, other plants typically found here include kiawe (*Prosopis pallida*), Christmas berry (*Canthium*), koa haole (*Leucaena leucocephala*), and klu (*Acacia farnesiana*). Varying densities of smaller shrubs include ‘ilima (*Sida fallax*), ‘uhaloa (*Waltheria indica*), maiapilo (*Capparis sandwichiana*), lantana (*Lantana camara*), and noni (*Morinda citrifolia*).

The site of the proposed Eho Street extension has similar vegetation, including low koa haole and fountaingrass with scattered opiuma (*Pithecellobium dulce*), kiawe, panini (*Opuntia megcantha*), noni, and lantana.

None of these plants are listed as threatened or endangered species. No mitigation is required.

Fauna

No endemic birds have been recorded on the QLT Keahuolū lands. Although not recorded, the short-eared owl or pueo (*Asio flammeus sandwichensis*) has been observed in similar habitat elsewhere in West Hawaii. No other endemic birds would be expected in the project site given the location and nature of the habitat.

Likewise, no migratory indigenous birds have been recorded here. Pacific golden plover (*Pluvialis fulva*) winter in Hawaii but prefer open areas such as mud flats, lawns, pastures, and plowed fields. The Kona Commons site does not offer suitable habitat. Resident indigenous birds, including seabirds, have not been recorded and would not be expected at the site given the nature of the habitat.

The fauna survey of the Keahuolū property recorded a total of 17 species of exotic (introduced) birds, as well as feral cats and Indian mongoose (*Herpestes aurapunctatus*). No individuals of the endemic and endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*) were observed, despite attempts to sight the species, which has been sighted in West Hawaii.

3.6.2 Potential Impacts and Proposed Mitigation

Significant impacts: none.

Proposed action: Development of Kona Commons and the associated Eho Street extension would occur in an area dominated by introduced flora and fauna. No threatened or endangered species have been recorded in the project area. No mitigation is required.

No action: none.

3.7 Archaeological Resources

3.7.1 Existing Conditions

Kona Commons Site

An archaeological inventory survey was conducted in January 1993 by PHRI, Inc. for the 100-acre Makalapua Business Center (Kona Industrial Subdivision expansion area). PHRI identified site 18511 for preservation in the project area due to the presence of human remains. A thirty-foot-wide buffer will be established around the site prior to land disturbance, in accordance with the November 1993 burial treatment plan recommended by the Hawaii Island Burial Council and subsequently approved by the State Historic Preservation Division in September 2002.

Eho Street Extension Site

Haun & Associates prepared an archaeological assessment covering TMK (3)7-4-015:15 and an archaeological inventory survey of TMK (3)7-4-015:014. For ease of reference, these study areas are referred to as Parcels A and B, respectively. The

study area for the archaeological assessment is the five-acre parcel adjacent to and east of a short segment of the existing Eho Street and the proposed alignment for its extension. Parcel A is bounded by Queen Ka'ahumanu Highway to the north. The archaeological inventory survey covers the 3.982-acre Parcel B adjacent to and east of the existing Eho Street. See Figure 3.

No archaeological sites or features were identified within Parcel A, which borders the alignment of the proposed roadway extension.

A total of five sites with seven features were identified within Parcel B, which borders the existing Eho Street. The sites consist of four single-feature sites and one complex of three features. The identified features consist of three modified outcrops, two lava blisters, one enclosure, and one lava tube. Functionally, the features are interpreted as agricultural (site no. 25933), temporary habitation (site nos. 25920, 25921, 25922), and permanent habitation (site no. 25919). All sites are assessed as significant under criterion "d" (Rules Governing Procedures for Historic Preservation Review, DLNR 1998: Chapter 275): "Have yielded, or is likely to yield, information important for research on prehistory or history."

The mapping, written descriptions, and photography at four of the five sites have adequately documented them and no further work or preservation is recommended. The remaining site—site no. 25919—is recommended for mitigation through data recovery.

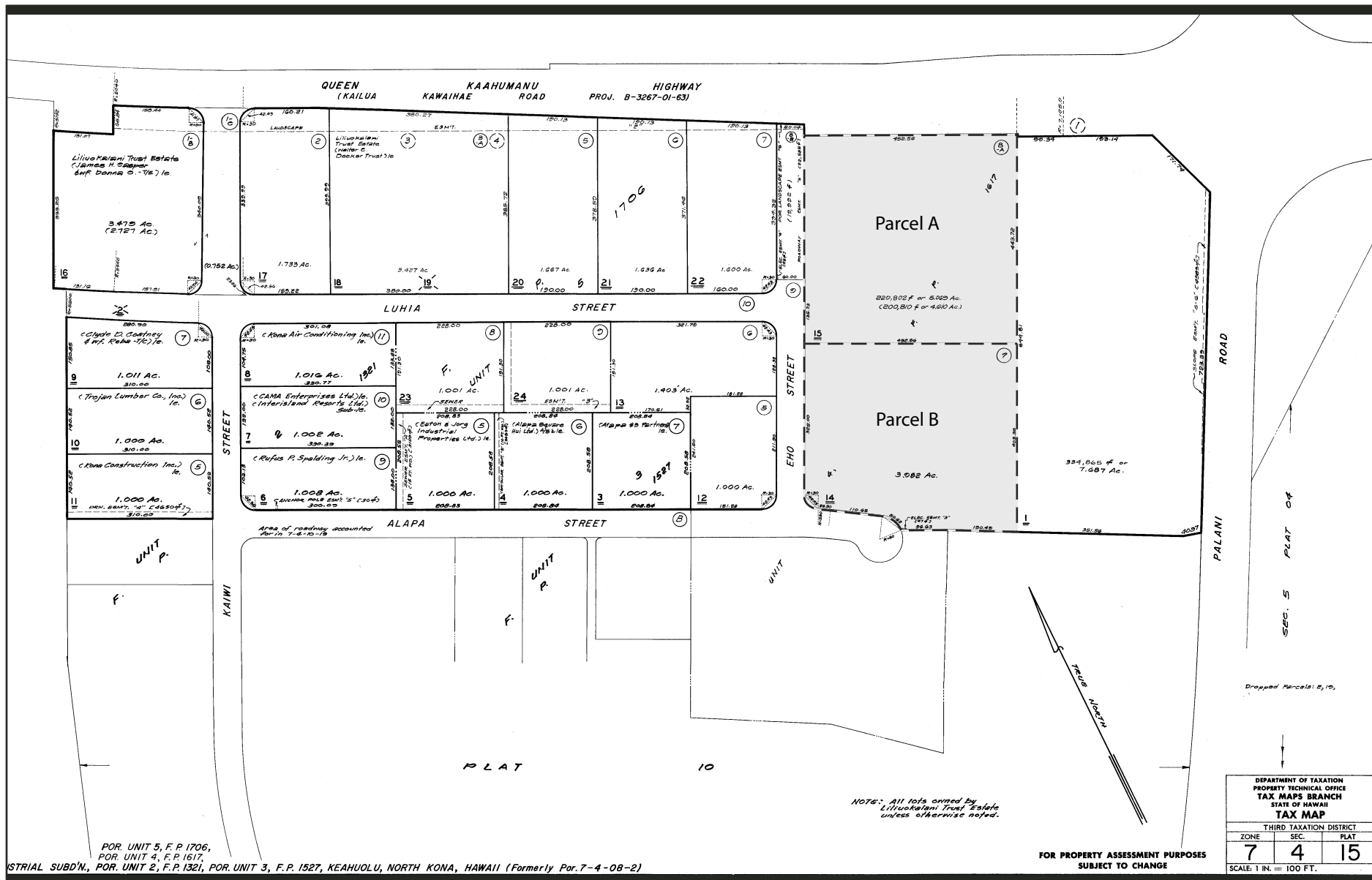
3.7.2 Potential Impacts and Proposed Mitigation

Significant impacts: none.

Proposed action:

Kona Commons Site: The establishment of a buffer (measures specified in the approved burial treatment plan) will minimize or avoid impacts of the Kona Commons development on the preservation site identified by PHRI. This buffer is on the final plat map for the subdivision.

Eho Street Extension Site, Parcel A: In its review of the archaeological assessment report for Parcel A, the State Historic Preservation Division requested that an archaeologist be present during all ground-disturbing activities as a precautionary measure. In response to this request, Haun & Associates prepared for QLT an archaeological monitoring plan for Parcel A, dated November 2007. The monitoring plan has been submitted to SHPD for review and approval. In summary, it specifies the following procedures:



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0 150 300
SCALE IN FEET

Figure 3
ARCHAEOLOGICAL STUDY AREA, EHO STREET

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- Notify DLNR-SHPD at the onset and completion of monitoring.
- Identify and evaluate the significance of archaeological remains revealed during construction.
- Notify DLNR-SHPD upon discovery of potentially significant resources to determine significance and the nature/extent of necessary data recovery or preservation measures.
- Inform construction supervisors of the purpose of monitoring and the monitor's authority. In pre-construction briefings and periodic briefings during construction, inform personnel of procedures to be followed upon inadvertent discovery of human remains and buried cultural deposits and artifacts.
- Analyze field data and collected materials.
- Prepare and submit a report to DLNR-SHPD within 180 days of project completion.

Eho Street Extension Site, Parcel B: Four of the five sites identified in the Eho Street extension area have been adequately documented and no further work or preservation is recommended. The fifth site is recommended for mitigation through data recovery. Site no. 25919 is located in the southeast portion of Parcel B, near the Alapa Street cul-de-sac, and not in the immediate vicinity of the proposed Eho Street extension. A data recovery plan will be prepared for review and approval by the State Historic Preservation Division.

No action: none.

3.8 Cultural Impact Assessment

3.8.1 Existing Conditions

Helen Wong Smith was engaged to prepare a cultural impact assessment for the lands within the ahupua'a of Keahuolū, in which the Kona Commons and Eho Street parcels are situated. The assessment, presented in Appendix A, is based on a review of archaeological reports, government and other historical records, Hawaiian language sources translated into English, and interviews with long-term residents, including native Hawaiians familiar with the cultural history and resources of Keahuolū. Research reveals limited cultural sites in the project area. Contemporary or continuing cultural practices include gathering of ocean resources in offshore waters and gathering of the endemic plant maiapilo or pilo (*Capparis sandwichiana*) from the 300-foot elevation seaward. Pilo is used for medicinal purposes. It is not listed as a threatened or endangered species.

3.8.2 Potential Impacts and Proposed Mitigation

Significant impacts: none.

Proposed action:

Based on the findings of the assessment, it is determined that the proposed action would have limited impact on Hawaiian cultural resources, beliefs, and practices. Care should be taken to preserve the habitat of endemic plants such as pilo and to assure access for gathering activities.

No action: none.

3.9 Traffic

3.9.1 Existing Conditions

In February 2007, Wilson Okamoto Corporation completed a report identifying and assessing traffic impacts resulting from the proposed Kona Commons development. Turning movement count surveys were conducted on May 10-11 and 18-19, 2005 during morning peak hours of 6:00 to 8:30 AM and afternoon peak hours of 3:00 to 6:00 PM at six intersections in the project vicinity (see Figure 4).

- Queen Ka‘ahumanu Highway and Makala Boulevard
- Makala Boulevard and Luhia Street
- Makala Boulevard and Kuakini Highway
- Kuakini Highway and Ka‘iwi Street
- Kuakini Highway, Palani Road, and Ali‘i Drive
- Palani Road and Queen Ka‘ahumanu Highway

In addition, 24-hour turning movement count surveys were conducted along Makala Boulevard and Loloku Street.

The analysis performed in this study was based upon the *Highway Capacity Manual*, Transportation Research Board (2000), and Highway Capacity Software developed by the Federal Highway Administration. The analysis used the concept of Level of Service or LOS, a quantitative and qualitative assessment of traffic operations ranging from LOS “A” through “F.” LOS A represents ideal or free-flow traffic operating conditions, and LOS F represents unacceptable or potentially congested traffic operating conditions.

Volume to capacity (v/c) ratio is another measure indicating relative traffic demand to the road carrying capacity. A v/c ratio of one (1.00) indicates that the roadway is operating at or near capacity. A v/c ratio of greater than 1.00 indicates that traffic demand exceeds the road’s carrying capacity.



0 200 400 800
SCALE IN FEET

LEGEND

- Kona Commons Project Area
- Traffic Study Intersection

Figure 4
TRAFFIC STUDY INTERSECTIONS

Kona Commons
Environmental Assessment
December 2007

Table 1 summarizes existing traffic operating conditions at the study intersections during morning (AM) and afternoon (PM) peak periods. This table also shows projected operating conditions in 2008 without the project, or the no action alternative. The analysis in this EA follows guidance from the State of Hawaii Department of Transportation, which considers LOS E and F as unacceptable.

- Queen Ka‘ahumanu Highway/Makala Boulevard. Existing AM and PM traffic conditions on both approaches to this signalized intersection are acceptable at LOS C or D.
- Makala Boulevard/Luhia Street. Existing conditions are acceptable at LOS A or B. The intersection is unsignalized.
- Makala Boulevard/Kuakini Highway. Existing traffic conditions range from LOS A through C at this unsignalized intersection depending on the approach and peak period.
- Kuakini Highway/Ka‘iwi Street. Existing morning peak traffic on approaches to this unsignalized intersection are in the acceptable range (LOS B and C), but during the afternoon peak, westbound left-turn and through traffic movements are at LOS E. Afternoon northbound and southbound traffic conditions are at LOS D.
- Kuakini Highway/Palani Road/Ali‘i Drive. Existing AM and PM peak period traffic operating conditions are at LOS B and C. The intersection is signalized.
- Palani Road/Queen Ka‘ahumanu Highway. Existing AM peak period conditions are at LOS C and D. All approaches to this signalized intersection are at an unacceptable LOS E during the afternoon peak period due to higher traffic volumes overall.

3.9.2 Potential Impacts and Proposed Mitigation

Table 2 summarizes projected traffic operating conditions at the study intersections during AM and PM peak periods with the Kona Commons project in 2008 (Phases I and II) and 2010 (Phase III). Table 3 compares projected traffic in 2008 with and without the proposed project.

The trip generation methodology used in the traffic study was based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in *Trip Generation*, 7th Edition (2003). The travel forecast was based upon historical traffic count data obtained from the State DOT, Highways Division at a survey station located at the Queen Ka‘ahumanu Highway/Palani Road intersection. Another consideration was the Hawaii Long-Range Land Transportation Plan prepared by State DOT in cooperation with the County of Hawaii Department of Public Works and Planning Department.

Table 1: Existing and Projected Year 2008 (Without Project) LOS Traffic Operating Conditions

Intersection	Critical Movement		AM		PM	
			Exist	Year 2008 w/out Proj	Exist	Year 2008 w/out Proj
Queen Ka‘ahumanu Hwy/ Makala Blvd	Eastbound	LT	C	B	C	C
	Westbound	LT	D	D	D	D
	Northbound	LT	D	D	D	D
		TH	C	C	D	D
Makala Blvd/ Luhia St	Westbound	LT	A	A	A	A
	Northbound	LT-TH-RT	B	B	B	C
Makala Blvd/ Kuakini Hwy	Westbound	LT-RT	B	B	C	C
	Southbound	LT-TH	A	A	A	A
Kuakini Hwy/ Ka‘iwi St	Westbound	LT-TH	C	C	E	F
	Northbound	LT-TH	C	C	D	E
	Southbound	LT-TH-RT	B	C	D	E
Kuakini Hwy/ Palani Rd/Ali‘i Dr	Eastbound	LT	C	C	B	B
	Westbound	TH	B	C	C	C
	Northbound	TH	C	C	B	B
	Southbound	TH-RT	C	C	C	C
Palani Rd/Queen Ka‘ahumanu Hwy	Eastbound	LT	D	D	E	E
	Westbound	TH	D	D	E	E
	Northbound	LT	C	D	E	E
		TH	D	D	E	E

Table 2: Projected Year 2008 (Without and With Project) Traffic Operating Conditions

Intersection	Critical Movement		AM		PM	
			w/out Proj	with Proj	w/out Proj	with Proj
Queen Ka‘ahumanu Hwy/ Makala Blvd	Eastbound	LT	B	D	C	C
	Westbound	LT	D	D	D	D
	Northbound	LT	D	D	D	D
		TH	C	D	D	C
Makala Blvd/ Luhia St	Westbound	LT	A	B	A	C
	Northbound	LT-TH	B	B	C	B
		RT		B		C
Makala Blvd/ Phase I/Phase II Dwy	Eastbound	TH-RT	-	B	-	B
	Westbound	LT	-	B	-	B
		TH-RT	-	B	-	B
	Northbound	LT-TH	-	B	-	B
		RT	-	B	-	B
Makala Blvd/ Access Rd/ Phase II Dwy	Eastbound	TH-RT	-	B	-	B
	Westbound	TH-RT	-	B	-	B
Makala Blvd/ Kuakini Hwy	Westbound	LT	B	B	C	C
		RT		A		A
	Southbound	LT-TH	A	A	A	B
Kuakini Hwy/ Ka‘iwi St	Westbound	LT-TH	C	B	F	C
	Northbound	LT-TH	C	B	E	B
	Southbound	LT-TH-RT	C	B	E	C
Kuakini Hwy/ Palani Rd/Alī‘i Dr	Eastbound	LT	C	C	B	C
	Westbound	TH	C	C	C	C
	Northbound	TH	C	C	B	B
	Southbound	TH-RT	C	C	C	C
Palani Rd/Queen Ka‘ahumanu Hwy	Eastbound	LT	D	D	E	E
	Westbound	TH	D	D	E	E
	Northbound	LT	D	D	E	E
		TH	D	D	E	E

Table 3: Projected Year 2008 With Project and 2010 With Project Traffic Operating Conditions

Intersection	Critical Movement		AM		PM	
			2008 w/Proj	2010 w/Proj	2008 w/Proj	2010 w/Proj
Queen Ka'ahumanu Hwy/ Makala Blvd	Eastbound	LT	D	D	C	C
	Westbound	LT	D	D	D	D
	Northbound	LT	D	D	D	D
		TH	D	D	C	C
Makala Blvd/ Luhia St	Westbound	LT	B	B	C	C
	Northbound	LT-TH	B	B	B	C
		RT	B	B	C	C
Makala Blvd/ Phase I/Phase II Dwy	Eastbound	TH-RT	B	B	B	B
	Westbound	LT	B	B	B	B
		TH-RT	B	B	B	B
	Northbound	LT-TH	B	B	B	B
		RT	B	B	B	B
Makala Blvd/ Access Rd/Phase II Dwy	Eastbound	TH-RT	B	B	B	B
	Westbound	LT	B	B	B	B
		TH-RT	B	B	B	B
	Northbound	LT-TH	B	B	B	B
		RT	B	B	B	B
Makala Blvd/ Kuakini Hwy	Westbound	LT	B	B	C	D
		RT	A	A	A	A
	Southbound	LT-TH	A	A	B	B
Kuakini Hwy/ Ka'iwi St	Westbound	LT-TH	B	C	C	D
	Northbound	LT-TH	B	C	B	B
	Southbound	LT-TH-RT	B	B	C	D
Kuakini Hwy/ Palani Rd/Ali'i Dr	Eastbound	LT	C	C	C	D
	Westbound	TH	C	C	C	D
	Northbound	TH	C	C	B	B
	Southbound	TH-RT	C	C	C	D
Palani Rd/Queen Ka'ahumanu Hwy	Eastbound	LT	D	E	E	E
	Westbound	TH	D	E	E	E
	Northbound	LT	D	E	E	E
		TH	D	E	E	E

3.9.2.1 No Action Alternative (2008)

Projections of traffic operating conditions at the study intersections under the no action alternative (2008 without project) are summarized in Table 1.

- Without the Kona Commons project, LOS traffic operating conditions at the Kuakini Highway/Ka'iwi Street intersection are expected to deteriorate due to anticipated increases in traffic along the surrounding roadways. Critical movement on the westbound approach is expected to deteriorate from LOS E to LOS F during the PM peak period. Critical movements on the northbound and southbound approaches at this intersection are expected to deteriorate from LOS D to LOS E.
- Conditions at the other study intersections would remain about the same.
 - At the Queen Ka'ahumanu Highway/Makala Boulevard intersection, critical movement on the eastbound approach was projected to improve from LOS C to LOS B during the AM peak period, assuming widening of the highway.
 - Without the project, traffic operating conditions are expected to change in three other cases, but none involve deterioration to unacceptable levels (LOS E or F).

3.9.2.2 Proposed Action

Significant impacts: none with the incorporation of improvements designed to avoid or minimize potential impacts.

For the study purposes, it was assumed that the following traffic/roadway improvements would be constructed as part of the Kona Commons project: (1) widening of the eastern portion of Makala Boulevard to a four-lane divided highway; (2) modification of the intersection of Makala Boulevard with Queen Ka'ahumanu Highway and Luhia Street to accommodate anticipated increases in project-related traffic; (3) installation of traffic signals at the Makala Boulevard/Luhia Street and Kuakini Highway/Ka'iwi Street intersections, as well as at project driveways and access roads. These improvements would have the effect of minimizing traffic impacts due to the project.

Traffic operations at certain study intersections are expected to deteriorate due to ambient growth in traffic and the addition of vehicles generated from the Kona Commons site in 2008 (Phase I), 2009 (Phase II), and 2012 (Phase III, full buildout). A comparison with the no action alternative (2008 without project) shows the following changes attributable to the project that potentially result in a marked change in LOS or deterioration to an unacceptable level (LOS E or F). In other cases, conditions are expected to involve little or no change or even some improvement.

- Queen Ka‘ahumanu Highway/Makala Boulevard intersection:
 - Eastbound/left turn/AM peak: LOS D in 2008 and 2010, compared to LOS B in 2008 without project.
 - Northbound/through traffic/AM peak: LOS D in 2008 and 2010, compared to LOS C in 2008 without project.
 - Northbound/through traffic/PM peak: LOS C in 2008 and 2010, compared to LOS D in 2008 without project.
- Kuakini Highway/Palani Road/Ali‘i Drive intersection:
 - Eastbound/left turn/PM peak: LOS C and D in 2008 and 2010, respectively, compared to LOS B in 2008 without project.
 - Westbound/through traffic/PM peak: LOS C and D in 2008 and 2010, respectively, compared to LOS C in 2008 without project.
 - Southbound/right turn and through traffic/PM peak: LOS C and D in 2008 and 2010, respectively, compared to LOS C in 2008 without project.
- Palani Road/Queen Ka‘ahumanu Highway intersection:
 - Eastbound/left turn/AM peak: LOS D and E in 2008 and 2010, respectively, compared to LOS D in 2008 without project.
 - Westbound/through traffic/PM peak: LOS D and E in 2008 and 2010, respectively, compared to LOS D in 2008 without project.
 - Northbound/left-turn and through traffic/AM peak: LOS D and E in 2008 and 2010, respectively, compared to LOS D in 2008 without project.
- In summary, traffic operating conditions would potentially deteriorate to an unacceptable level (LOS E) upon the addition of site-generated vehicles at full buildout (Phase III).
- The improvements described above at the beginning of this section have been incorporated into the project design. (Note: According to the Department of Public Works, installing a traffic signal at the Kuakini Highway/Ka‘iwi Street intersection can be deferred since it is expected that Kuakini will be widened in the near future.) These measures serve to avoid or reduce site-generated traffic during Phases I and II. Based on the traffic analysis, the following additional improvements would be installed prior to Phase III.
- Provide exclusive left-turn and right-turn lanes for the Phase III driveways along Loloku Street to facilitate the entry and exist of vehicles from the project site.

- Install a traffic signal at the Makala Boulevard/Kuakini Highway intersection.
- Widen Makala Boulevard between the access road/Phase II driveway and Kuakini Highway to provide two travel lanes in both directions with raised medians between them and exclusive left-turn lanes at the intersections along the roadway.
- Provide exclusive left-turn and right-turn lanes on the westbound approach of the Makala Boulevard/Kuakini Highway intersection to minimize vehicular queuing along Makala Boulevard.

In addition, the proposed Eho Street extension and connection—offering another option to access the Kona Industrial Subdivision from Queen Ka‘ahumanu Highway, is expected to help reduce traffic volumes on other area roadways, particularly Ka‘iwi Street.

3.10 Other Infrastructure

3.10.1 Existing Conditions

The Kona Commons site is served by existing infrastructure, including water service from the County Department of Water Supply, sewer service from the County Department of Environmental Management, Wastewater Division, and electrical service from Hawaii Electric Light Company.

3.10.2 Potential Impact and Proposed Mitigation

Significant impacts: none.

Proposed action:

Sufficient potable water is available to support the Kona Commons project. QLT has acquired 500 water credits from the Department of Water Supply to service the project area. To date, 162 credits have been allocated to existing developments. DWS has agreed to an allocation of 207 credits for Kona Commons Phases 1 and 2, and 131 credits remain available for the development of Phase 3.

The Kealakehe Wastewater Treatment plant serves QLT’s Keahuolū properties, including the Kona Commons site. The total estimated sewer demand of Kona Commons Phases I, II, and III and existing nearby developments on QLT land is 0.474 MGD.¹ QLT’s 1994 Land Use Master Plan² projected a sewer demand of 1.388 million gallons per day (MGD) for the full build-out of the Trust’s Keahuolū properties mauka and makai of Queen Ka‘ahumanu Highway. Therefore, the ultimate sewer demand for the QLT Keahuolū properties has yet to be realized.

¹ *Preliminary Engineering Report for Kona Industrial Subdivision, Sewer Master Plan Update*, Belt Collins Hawaii Ltd., September 2006.

² *Liliuokalani Trust Estate, Land Use, Infrastructure and Landscape Master Plan*, Belt Collins Hawaii, September 30, 1994.

Kona Commons would connect to the existing County sewer system along the project frontages. Hydraulic computations indicate that the sewer system has sufficient capacity to convey the projected sewer demands from all three phases of the project.³

QLT has secured a commitment from the Hawaii Electric Light Company for 6.5 MVA to service the Trust's future Keahuolū developments, including the Kona Commons project. Electrical service to existing developments within QLT's Keahuolū lands is provided under a separate allocation. Kona Commons Phases I and II have a projected electrical demand of 0.35 MVA. The remaining electrical capacity has not been allocated at this time.

The proposed action would not require substantial energy consumption. Kona Commons Phase I plans call for the installation of solar photovoltaic panels on the roof to convert sunlight into electricity, producing approximately 800 kilowatts per hour.

No action: none.

3.11 Socioeconomics

3.11.1 Existing Conditions

The proposed Kona Commons project is in the North Kona district of the island of Hawaii. Kailua-Kona is the commercial, industrial, and resort center of the district, serving a population of residents and visitors that has grown for decades. North Kona's population has increased at a faster rate than the island as a whole. In the year 2000, the district's population was at 28,543. Projections based on data from the State Department of Business, Economic Development and Tourism (DBEDT) indicate that if trends continue, the district's population will be 36,320 in 2010 and 43,718 in 2020.

West Hawaii has become more dependent on tourism over the years. The islandwide ratio of visitors to residents is approximately 1 to 6, whereas in West Hawaii the ratio is about 1 to 3. In 2000, North Kona had almost 44 percent of the visitor units on the island.⁴

According to U.S. Census data, Kailua-Kona had 165 retail establishments in 2002, with annual gross sales of \$410 million (24% of the island total) and a retail workforce of 2,174 persons.

³ Preliminary Engineering Report for Kona Industrial Subdivision, Sewer Master Plan Update, Belt Collins Hawaii Ltd., September 2006.

⁴ Hawaii State Data Book, 1985 and 2005; Hawaii State Department of Labor and Industrial Relations; Hawaii Visitors Bureau; DBEDT.

The 2000 U.S. Census showed that incomes in North Kona tended to be above the county average, with a median household income of \$47,610 compared to \$39,805 islandwide, and a lower share of the population with incomes below poverty level (9.7% compared to 15.7% islandwide). Regarding jobs, Hawaii County's unemployment rate is low—3.3 percent in 2005, compared to 4.8 percent in 2000 and 3.5 percent in 1990.⁵

3.11.2 Potential Impacts and Proposed Mitigation

Significant impacts: none.

Proposed action: As a commercial project, Kona Commons would not result in measurable changes to the population of Kailua-Kona or the North Kona district. The project would serve the existing and projected resident and visitor populations. Construction jobs, to be created in the short term, would be filled by contractors using existing employees. New employment generated during operations is estimated to be approximately 400 jobs in Phase I and an additional 250 jobs in Phase II. The number of new jobs associated with Phase III would depend on market demand.

No action: none.

3.12 Land Use Compatibility

3.12.1 Existing Conditions

The State Land Use Commission classified the Kona Commons and Eho Street extension project areas in the Urban District in 1980. Over the years, Hawaii County has approved Change of Zone ordinances for QLT lands in the Kona Industrial Subdivision and Makalapua Business Center, including ML-1 zoning (limited industrial) in 1984, CV-10 zoning (village/commercial) in 2000 and rezoning to MCX-20 (industrial/commercial mixed use) in 2001. These state and county approvals have required QLT to conform to conditions to mitigate potential impacts. The extension of Eho Street is one of these conditions.

3.12.2 Potential Impacts and Proposed Mitigation

Significant impacts: none.

The proposed land uses are compatible with those in the vicinity, including the Kona Industrial Subdivision, Kona Coast Shopping Center, Makalapua Shopping Center, and other parts of the Makalapua Business Center. The project is consistent with the Hawaii County General Plan and State and County land use designations for the subject area. No adverse impacts are expected. The 2001 rezoning approval required QLT to meet conditions to mitigate impacts (e.g., traffic and archaeology). Zoning in the ML-1 district anticipated multiple, small industrial lots, compared to

⁵ *Hawaii State Data Book, 2005; Hawaii State Department of Labor and Industrial Relations.*

fewer, larger parcels being developed under MCX-20 zoning. Neither creates any adverse effects on each other or on neighboring developments. In fact, commercial and industrial uses, when appropriately planned, can create a “synergy” beneficial to both. With a single landowner involved here, there are more opportunities for planning that assures not only land use compatibility but greater economic viability.

From the standpoint of impacts, the uses and activities being planned as part of Kona Commons would not be significantly different than what was allowed under the previous zoning. Many of the uses in MCX zoned districts are the same as those found in ML districts-such as repair shops and incidental support uses (banks, restaurants)-with the main difference being the greater flexibility allowed in the types of commercial and industrial uses.

3.13 Secondary and Cumulative Impacts

Secondary impacts are those impacts caused by the action that are later in time or further removed in distance but still reasonably foreseeable (HAR 11-20-2). For commercial projects such as Kona Commons, secondary impacts could include indirect and induced jobs. An example of indirect jobs would be new/additional employees of local manufacturers or wholesalers serving the retail businesses at Kona Commons. An example of induced jobs would be those created as a result of increased spending in the local economy by employees of Kona Commons businesses. A modest number of indirect and induced jobs would be generated by the proposed project.

Cumulative impacts are environmental impact resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future action, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (HAR 11-200-2).

Kona Commons occurs within the context of a region/district/locale (West Hawaii, North Kona, Kailua-Kona) that has seen steady, long-term population and economic growth. Hence, traffic and socioeconomic impacts are cumulative, taking into account developments throughout the region.

The project site is zoned MCX-20 (industrial-commercial mixed use). Subsequent to completion of the proposed commercial project, future development of the site consistent with the MCX zoning is a possibility, depending on market demand in the longer term and other factors. Evaluation of future development would be premature and speculative at this time.

3.14 Other Considerations

3.14.1 Consistency with Government Plans and Policies

The Kona Commons project and associated improvements at Eho Street are consistent with government plans and policies for the area, including the Hawaii County General Plan, Hawaii State Plan, and applicable State Functional Plans. Kona Commons is located on land reclassified to the Urban District by the State Land Use Commission and zoned MCX-20 by the County. The Urban District is generally defined as land in urban use with sufficient reserve to accommodate foreseeable growth. Commercial uses being planned for the site are consistent with the State and County land use designations. Specifically, the County has approved other permits for the project.

3.14.2 Irretrievable and Irreversible Commitment of Resources

The proposed action would involve no irretrievable or irreversible commitment or loss or destruction of any natural or cultural resources. Development of the property would permanently alter the use and character of the land, and the project will require the investment of labor and funds that might otherwise be employed elsewhere. Kona Commons will require an ongoing commitment of resources such as potable water and electrical energy. However, a conservative estimate of the amount of electricity to be produced by photovoltaics is approximately 800 kilowatts per hour, serving to substantially offset energy consumption.

Chapter 4

Determination and Findings

Based on the analysis documented herein, the expected determination is a Finding of No Significant Impact (FONSI). This determination has taken into consideration primary and secondary consequences of the proposed action, as well as cumulative, short-term, and long-term effects. In summary, the project would have no detrimental effect on natural or cultural resources, would not result in any changes to the area's resident or visitor population, would be consistent with land uses in the vicinity and with government land use policies and designations, would have no significant traffic impacts with the incorporation of roadway improvements into the project, and can be accommodated by existing and planned infrastructure.

Following is a discussion of the FONSI determination, using the significance criteria established in HAR Section 11-200-12 to evaluate project impacts. Pursuant to subparagraph 12,*an action shall be determined to have a significant effect on the environment if it:*

- (1) *Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.*

No significant natural or cultural resources would be affected by the proposed action. No threatened or endangered species or their habitats have been identified on the site. Measures have been identified to avoid or minimize impacts on the preservation site in the Kona Commons vicinity. Five archaeological sites were identified on Parcel B in the Eho Street extension area, but none are recommended for preservation. Although no sites or features were identified on Parcel A, archaeological monitoring will be conducted on the parcel during construction in response to a request from SHPD. Traditional practices are limited to gathering of ocean resources in offshore waters and gathering of maiapilo or pilo, used for medicinal purposes. Access to the shoreline and to pilo habitat areas will be maintained.

- (2) *Curtails the range of beneficial uses of the environment.*

The proposed action would not curtail the range of beneficial uses of the environment. Development of the property would enhance QLT's ability to continue and enhance services to its beneficiaries.

- (3) *Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revision thereof and amendments thereto, court decisions, or executive orders.*

The proposed action is being carried out in compliance and in concert with the applicable environmental policies, goals, and guidelines.

- (4) *Substantially affects the economic and social welfare of the community or state.*

The proposed action has the potential to benefit the economic and social welfare of the community, particularly Native Hawaiian families and children served by Queen Lili'uokalani Trust. Another benefit is the generation of jobs.

- (5) *Substantially affects public health.*

No public health impacts would be associated with the proposed action.

- (6) *Involves substantial secondary impacts such as population changes or effects on public facilities.*

As documented herein, no population changes or substantial effects on public facilities would be associated with the proposed commercial development.

- (7) *Involves a substantial degradation of environmental quality.*

No degradation of environmental quality would be associated with the proposed action.

- (8) *Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.*

Cumulative impacts disclosed in this EA, specifically traffic and socioeconomics, would not have considerable effects upon the environment or involve a commitment for larger actions. Measures have been incorporated into the project to avoid or minimize traffic impacts.

Although existing zoning would allow mixed use development on the site, the proposed project is limited to commercial use. Any future expansion would be subject to separate evaluation at that time.

- (9) *Substantially affects a rare, threatened, or endangered species, or its habitat.*

No rare or listed species or their habitat is known to occur on the project areas.

- (10) *Detrimentially affects air or water quality or ambient noise levels.*

No significant short-term or long-term impacts on air or water quality or noise levels are anticipated. Any temporary impacts during construction would be avoided or minimized by compliance with applicable laws and regulations.

- (11) *Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.*

The Kona Commons site and the Eho Street extension area are not located in or near any of these sensitive areas.

- (12) *Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.*

Scenic vistas or viewplanes would not be substantially affected by the proposed action, which is located in an existing commercial/industrial area.

- (13) *Requires substantial energy consumption.*

The proposed action would not require substantial energy consumption. Photovoltaic panels would be installed on the roofs to convert sunlight into electricity, producing approximately 800 kilowatts per hour and thereby serving to offset energy consumption.

Chapter 5

Consulted Parties

5.1 Pre-Assessment Consultation

Queen Lili‘uokalani Trust and its consultants carried out extensive consultation in the community and with government agencies regarding the Kona Commons project. QLT held eight community meetings in July 2007 regarding the proposed land use plan for Keahuolū, including Kona Commons. A total of 47 individuals attended these meetings: kupuna meeting (5 attendees), Hawaiian community meetings (10), beneficiary meeting (5), business leader meeting (9), lessee meeting (4), and a lessee/business leader meeting (14). In addition, the following agencies were consulted regarding the project: County of Hawaii Planning Department, Public Works Department, Department of Water Supply, and Department of Parks and Recreation; and State of Hawaii Department of Transportation, Highways Division.

5.2 Draft EA Distribution List

The distribution list for this document is presented in Appendix B.

Chapter 6

References

- Belt Collins & Associates (October 1990). *Liliuokalani Trust Keahuolu Land of Kailua-Kona Hawaii Final Environmental Impact Statement*
- Belt Collins Hawaii Ltd. (September 2006) *Preliminary Engineering Report for Kona Industrial Subdivision, Sewer Master Plan Update*
- Haun & Associates (March 2007). *Archaeological Assessment, TMK: (3) 7-4-015:15, Land of Keahuolu, North Kona District, Island of Hawaii*
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- Liliuokalani Trust Estate (September 30, 1994) *Infrastructure and Landscape Master Plan*
- Paul H. Rosendahl, Ph.D., Inc. (January 1993). *Archaeological Inventory Survey, Queen Liliuokalani Trust 100-Acre KIS Expansion Site, Land of Keahuolu, North Kona District, Island of Hawaii, (TMK: 3-7-4-08:Por.2)*
- Wilson Okamoto Corporation (February 2007). *Traffic Impact Report – Kona Commons*

APPENDIX A

Cultural Impact Assessment for the lands within the ahupua‘a of Keahuolū

Cultural Impact Assessment for the lands within the ahupua‘a of Keauholū

TMKs 3-7-4-020-009, 3-7-4-020-010, 3-7-4-020-014, 3-7-4-020-015, 3-7-4-020-011, 3-7-4-020-012, 3-7-4-020-013, 3-7-4-020-022, 3-7-4-008-002, 3-7-4-008-001, 3-7-4-008-063, 7-4-015-014, 7-4-015-015

By

Helen Wong Smith, MLIS, CA

November 15, 2007

Abstract

At the request of LeeAnn Crabbe of Queen Lili'uokalani Trust Helen Wong Smith was engaged to prepare a cultural impact assessment for lands within the *ahupua`a* of Keauholū (TMKs 3-7-4-020-009, 3-7-4-020-010, 3-7-4-020-014, 3-7-4-020-015, 3-7-4-020-011, 3-7-4-020-012, 3-7-4-020-013, 3-7-4-020-022, 3-7-4-008-002, 3-7-4-008-001, 3-7-4-008-063, 7-4-015-014, 7-4-015-015).

This document provides a cultural assessment for a proposed multi-use development at Keauholū, North Kona, Hawai'i Island. The assessment is based on a review of a wide range of written material – archaeological reports, government and other historical records, Hawaiian language sources translated into English, and interviews with long-term residents including native Hawaiians familiar with the cultural history and resources of Keauholū.

Research took place between August 17 and November 15, 2007 and included resources of the Hawaii State Archives, University of Hawai'i at Hilo Edwin H. Mookini Library, and the Hilo Public Library as well as online resources, i.e. Ulukau and previous historical and cultural reports and interviews. Serendipitously, the author was provided with reports and interview notes from Paul H. Rosendahl, Inc. (PHRI) for a different project occurring within Keahuolū. These reports are not readily available to the public and provided additional information.

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I. INTRODUCTION

Keahuolū has been written in several ways in historic records. In *Place Names of Hawai'i*¹ it is written as “Ke-ahu-o-Lū” given the interpretive translation of “the heap [cairn] of Lū” without an explanation of who Lū may be. Tangarō translates the name as “Shrine of Lū, a legendary voyager” but does not provide a reference for this translation². The place name has also been written “Ke-`ohu-`olu,” which can be translated as “the cool mists.” Kaiokekoa, a native Hawaiian resident of the Kekaha region relayed to Kepā Maly in 1994 he recalled his elders pronouncing the place name the second way³.

Located in the *moku o loko* (district) of Kona, this northern section of Kona was divided into two regions, *Kona kai `opua* (Maly provides the interpretive translations “Kona of the distant horizon clouds above the ocean⁴) and *Kekaha-wai-`ole* (the waterless place). Kekaha-wai-`ole-o-nā-Kona spans from Kalaoa *ahupua`a* (Keāhole Point) to Kealakehe *ahupua`a*. Keahuolū falls within Kekaha which was described as “a dry, sun-baked land⁵.” Sheltered by the abrupt rise of Hualālai, Kekaha receives very little rain below the 1,000-ft elevation contour. Maly provides the following description of residential movement within Kekaha-wai-`ole-o-nā-Kona during the late 1800s and early 1900s in the Hawaiian Newspaper *Ke Hōkū o Hawai'i*:

“O ia ka wāe ne`e `ana ka lā iā Kona, hele a malo`o ka `āina i ka `ai kupakupa `ia e ka lā, a o nā kānaka, nā li`l o Kona, pūhe`e aku la a noho i kahakai kāhi o ka wai e ola ai nā kānaka. (It was during the season, when the sun moved over Kona, drying and devouring the land, that the chiefs and people fled from the uplands to dwell along the shore where water could be found to give life to the people⁶.

Hawaiian authority and *kumu hula* Pualani Kanaka`ole Kanahale states “This clearly communicates that the natives of Kekaha-wai-`ole-o-nā-Kona had great knowledge of their land’s cycles and its productive abilities. There were springs and brackish water ponds inland from the shore and the ocean was abundant. They planted in the ma uka or upland forest and had sufficient amount of rain for their crop. When the rainy season passed, they camped at the shore, grew sweet potato, and fished. Their basic needs were satisfied⁷. “

¹ Pukui, Elbert, and Mookini 1974

² Tangarō et al. 2006:19 A search in *Hawaiian Mythology* by Martha Beckwith revealed a voyager by the name of Kaulu but none by the name of Lū

³ Maly IN Wulzen et al. 1996:12

⁴ Maly IN O`Hare 1993:Appendix B1

⁵ Kelly 1971:2

⁶ Hawaiian orthography will be employed by this author except when directly quoting. For this reason many of the quotations will lack diacritical and other marks as they are presented verbatim.

⁷ Kanehele 2001:4

Kekaha has been streaked with ancient and recent (1801 and 1859) lava flows, which contribute to its desolate appearance. Emerson surveyed the area in the 1880s and his map (Reg. Map 1280) denotes “rough pahoe hoe [pāhoehoe], little vegetation” within Keahuolū.

Mahaihole is the southern boundary of Keahuolū, some 1.8 km north of Kukailimoku Point – named after the diety of victory in battle. Between Kukailimoku and the Keahuolū boundary is a narrow strip of land belonging to *ahupua`a* of Lanihau reducing Keahuolū shoreline dramatically. Kukailimoku Point and the surrounding sand dunes were used in both pre-contact and early historic periods as burial grounds. An 1883 map depicts graves at Kukailimoku and larger cluster at Kaliliki Point to the south. The surveyor, Jackson, identified a massive masonry tomb as “Kamehameha’s Tomb⁸.” A 1930 survey identified graves in Lanihau and Keahuolū as do consequent surveys. Neller⁹ reported four locations of exposed human remains at the Lanihau/Keahuolū boundary and historic burials were identified at Pāwai Bay by Neighbor Island Consultants in 1973.

Ka`iwi Point is the boundary between Keahuolū and Kealakehe. Kanahele reports that fishermen of the area, “Kaiwi Point houses a mamamo ko`a¹⁰ [a shrine to increase the catch of *mamo* or sergeant fish *Abudefduf abdominalis*].

II. MO`OLELO `AINA: NATIVE TRADITIONS AND HISTORIC ACCOUNTS OF KEAHUOLŪ

Kekāhi Mo`olelo Hawai`i (Selected Hawaiian Traditions)

Legendary references to Keahuolū are few. In his report of a reconnaissance survey of the Old Kona Airport area, now a state park in Keahuolū, Earl Neller erroneously ascribes the O`ahu chief Kualī`i to Keahuolū:

The area around the old Kona airport may also have some connection with the legendary Hawaiian chief Kualī`i. He was said to have been born at Kalapawai in Kailua, and defied the oppression of Lono-ikaika during the dedication of the heiau at Kawaluna. He is associated with Ku-kailimoku, the god of victory in battle. Perhaps by coincidence, all of these place names are found in the beach park area¹¹.

Neller’s reference is Beckwith who states the Kailua referred to is on O`ahu¹². As Kalapawai is the name of the beach in Kailua, O`ahu, (and memorialized by the Kalapawai Store at the entrance of Kailua Beach Park) it is unlikely Neller’s references

⁸ Neller 1980:5

⁹ Neller 1980:11-13

¹⁰ Kanahele 2001:10

¹¹ Neller 1980:15

¹² Beckwith 1972:395

has anything to do with Kailua on Hawai'i Island. The *heiau* at Kawaluna is located in Waiolani in upper Nu'uuanu Valley¹³.

An accurate legendary reference to Keahuolū is found in *Ka'ao Ho'oniu Pu'uwai No Ka-Miki* (The Heart Stirring Story of Ka-Miki) translated by Kepā Maly, a legendary account of two super-natural brothers, Ka-Miki and Maka'iole, who traveled around Hawai'i Island set in the period when Pili-a-Ka'aiea was chief of Kona, ca. 12th – 13th century). It was originally published in serial form between 1914 and 1917 in the Hilo based Hawaiian language newspaper *Ka Hōkū o Hawai'i* by Hawaiian historians John H. Wise and John Whalley Hermosa Isaac Kihe. Excerpts from Maly's translation:

...Within the lands of Keahuolu you saw Hale-pa'u which is also near Kapā-wai (The water enclosure). Kapāwai is also known as Makā'eo (Look with anger), and a coconut grove encircled those places. Further on, between the lands of Keahuolu and Kealakehe was the *āhua* (Hillock-plantation mound) of Lae-oniau...¹⁴

...The priest who officiated over rituals of Keahuolu and Kealakehe was named Kalua'ōlapauila. He was the priest of the temple Kalihi, which is also called Kalua'ōlapauila. This temple is in the coastal area¹⁵ along the border of Keahuolu and Kealakehe, near the old road into Kailua....¹⁶

...The district of Keahuolu and divisions of Lanihau (1 and 2) were under the rule of Kapohuku'imaile (kāne) and Papalūlā (wahine), and Papaumauma was their warriors champion. When Papaumauma competed with Ka-Miki at the contest site 'Iwa'awa'a (at Kohana-iki), he was defeated. Papaumauma was honorable, and he greatly admired the superior skills of Ka-Miki and asked to turn his status and land rights over to Ka-Miki, but Ka-Miki declined...¹⁷

Ka-noenoe (The mist, foginess) – The mound-hill called Pu'u-o-Kaloa sits upon the plain of Kanoenoe which is associated with both Keahuolu and Kealakehe. The setline of mists upon Pu'u-o-Kaloa was a sign of pending rains; thus the traditional farmers of this area would prepare their fields. This plain was referenced by Pili when he described to Ka-Miki the extent of the lands which Ka-Miki would over see upon marrying the sacred chiefess Paehala of Honokōhau. The inheritance lands included everything from the uplands of Hikuhia above Nāpu'u and the lands of the waterless Kekaha, which spanned from the rocky plain of Kanikū (Keahualono) to the plain of Kanoenoe at Pu'uokaloa¹⁸.

¹³ Pukui et al. 1974:226

¹⁴ April 2 and 9, 1914

¹⁵ Boundary Commission Testimony places this place at the midpoint of Keahuolū rather than the coast.

¹⁶ April 30, 1914

¹⁷ May 21, 1914

¹⁸ October 25, 1917

Pu`u-okaloa (Mound, or hill of Kaloa) – The narratives of Ka-Miki identify Pu`uokaloa as “*Pu`uokaloa I ka malo o Ka`eha e waiho ala...*” Pu`uokaloa where Ka`eha’s loin cloth (symbolic of the mists) was spread out¹⁹.

Ka Hōkū o Hawai`i published another legendary account provided by J.W.H.I. Kihe entitled “*Nā Ho`onanea o ka Manawa, Kekāhi mau wahi pana o Kekaha ma Kona*” (A pleasant passing of time, [stories from] some of famous places of Kekaha in Kona). This section describing agricultural practices as related to Pu`uokaloa is translated by Maly:

Pu`u-o-kaloa is a mound-hill site in the lands of Keahuolu – Kealakehe, not far from the shore of Kaiwi and Hi`iakanoholae. During periods of dry weather (*ka lā malo`o*) when planted crops, from the grassy plains to the `āma`auma`u (fern forest zone), and even the ponds (*ki`o waī*) were dry, people would watch this hill for signs of coming rains. When the *lihau* (light dew mists) sat atop the hill of Pu`u-o-kaloa, rains were on the way. Planters of the districts agricultural fields watched for omens at Pu`uokaloa, and it was from keen observation and diligent work that people prospered on the land. If a native of the land was hungry, and came asking for food, the person would be asked:

Ua ka ua I Pu`uokaloa, ihea `oe?

When rains fell at Pu`uokaloa, where were you?

[If the answer was...]

I Kona nei no!

In Kona!

[There would be no sweet potatoes for this person.]

[But if the answer was:]

I Kohala nei no!

In Kohala!

[The person would be given food to eat for they had been away, thus unable to accomplish the planting²⁰.]

Within S.N. Hale`ole’s epic *Ka Mo`olelo o Lā`ieikawai* (The Hawaiian Romance of Lā`ieikawai) a short reference to Keahuolū and Lanihau as parents is found in the story of *Hiku and Kawelu*:

¹⁹ October 25, 1917; Maly 1996:12-13

²⁰ May 19, 1914; 1996:13

The son of Keaaulu [sic] and Lanihau, who live in Kaumalumalu, Kona, once sends his arrow, called Puane, into the hut of Kawelu, a chiefess of Kona. She falls violently in love with the stranger who follows to seek it, and will not let him depart. He escapes, and she dies of grief for him, her spirit descending to Milu. Hiku, hearing of her death, determines to fetch her thence. He goes out into mid-ocean, lets down a *koali* vine, smears himself with rancid *kukui* oil to cover the smell of a live person, and lowers himself on another vine. Arrived in the lower world, he tempts the spirits to swing on his vines. At last he catches Kawelu, signals to his friends above, and brings her back with him to the upper world. Arrived at the house where the body lies, he crowds the spirit in from the feet up. After some days the spirit gets clear in. Kawelu crows like a rooster and is taken up, warmed, and restored²¹.

Fornander provides a longer version of this tradition providing the father's name as Keahuolu²².

The origin of the place name Ka`iwi on the shoreline on the boundary of Keahuolū and Kealakehe is presented in this excerpt:

Ka`iwī (The bone) is also called Ka-lae-o-ka-iwi (The point of Ka-iwi) and is the name of a shark shaped stone near heiau of Kalua`ōlapauila. The priest Kalua`ōlapauila had two body forms, one human, as the priest, and the other body form as a shark in which he swam along the shore of Kealakehe and Keahuolu, attacking people. The shark form was named Kaiwi, and the point Ka-lae-o-Kaiwi is named after him²³.

Kanahele provides additional insight to this story adding that Ka`iwi and Kalua`ōlapauila are destroyed by “their” grandmother, Kauluhenuihikolo who teaches her grandchildren to call up the fires of Pele to rid the land of this man eating shark. “Hi`iakanoholae, known today as Ka Lae Keahuolū, was the boundary direction for the lava flow. The protocol for lava is that a course of flow is given and Hi`iakanoholae is the southern limit of the flow. The flow did exactly what it was asked to do with Kaiwi and the characteristic of a Hi`iakaikale`i and Hi`iakaikalemo`e flow is seen at Kaiwi Point²⁴.”

Figure 1 provides the location of these and other place names compiled by Lloyd Soehren and presented as *Hawaiian Place Names*²⁵. Soehren determined their locations from Boundary Commission testimonies, surveyor field books, and a myriad of primary resources.

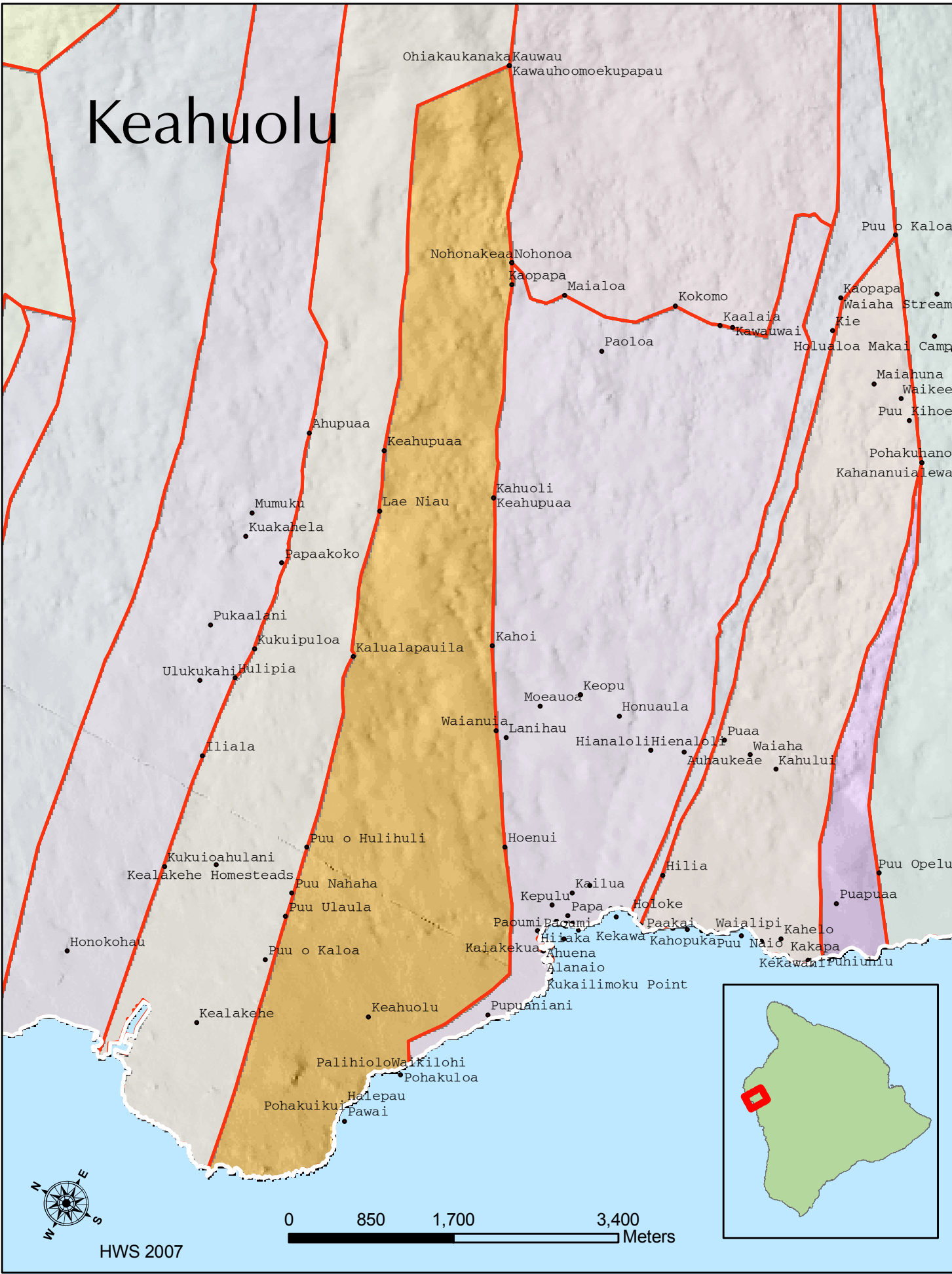
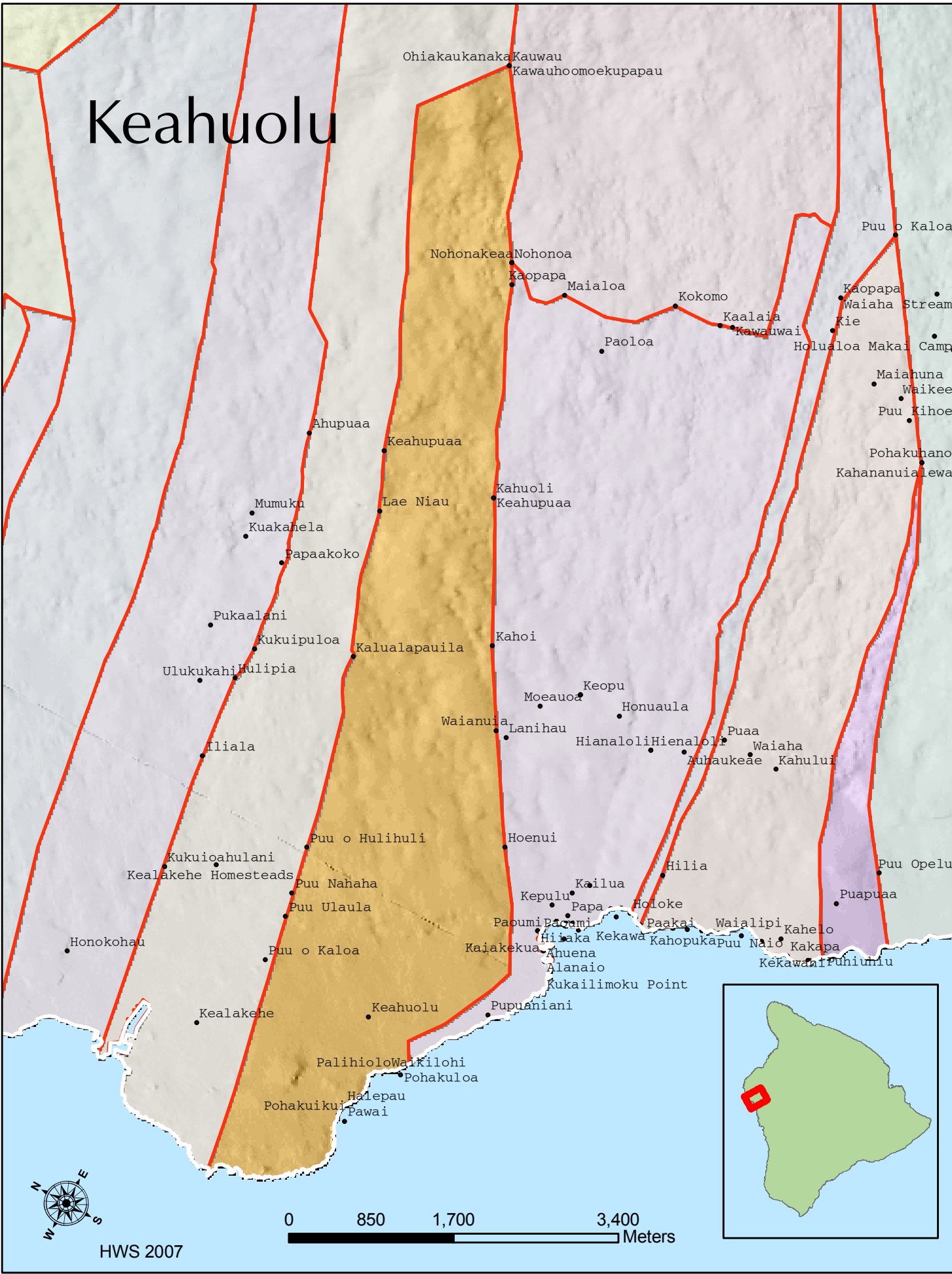
²¹ Hale`ole 1997:660

²² Fornander 1919 v5:182-184

²³ Maly IN Wulzen 1996:14

²⁴ Kanahele 2001:10

²⁵ <http://www.ulukau.org/cgi-bin/hpn?>

[illegible]

This topographic map of Keahuolu, Hawaii, displays the mountain's rugged terrain with elevation contours ranging from 0 to 3,400 meters. The map is color-coded by elevation: green for lower elevations (0-1,000m), yellow for mid-elevations (1,000-2,000m), and brown for higher elevations (2,000-3,400m). A network of red lines indicates various trails, including the prominent Keolu Trail that runs along the eastern ridge. Numerous landmarks and points of interest are labeled, such as Keolu Peak (3,400m), Keolu Point, and the Keolu Stream. The map also shows the surrounding coastline, including the Keolu Peninsula and the Keolu Bay. A compass rose in the bottom left corner indicates the cardinal directions, and a scale bar at the bottom provides a reference for distances. An inset map in the bottom right corner shows the location of Keahuolu on the island of Hawaii.

[illegible]

Keahuolū Described in the Journals and Logs of Historic Visitors (1823 to 1902)

One of the earliest descriptions of the Kailua region was made in 1823. Rev. William Ellis reports the observations made by Reverends Thurston and Bishop who walked the coastline from Kailua toward Ka`iwi Point crossing the entire coastline of Keahuolū:

The environs were cultivated to a considerable extent; small gardens were seen among the barren rocks on which the houses were built, wherever soil could be found sufficient to nourish the sweet potato, the watermelon, or even a few plants of tobacco, and in many places these seemed to be growing literally in the fragments of lava, collected in small heaps around their roots.

The next morning, Messrs. Thurston, Goodrich, and Harwood, walked towards the mountains, to visit the high cultivated parts of the district. After traveling over the lava for about a mile, the hollows of the rocks began to be filled with a light brown soil; and about half a mile further, the surface was entirely covered with a rich mould, formed by decayed vegetable matter and decomposed lava.

Here they enjoyed the agreeable shade of bread-fruit and ohia trees; the latter is a deciduous plant, a variety of *Eugenia*, resembling the *Eugenia malaccensis*, bearing red pulpy fruit, of the size and consistence of an apple, juicy, but rather insipid to the taste. The trees are elegant in form, and grow to the height of twenty or thirty feet; the leaf is oblong and pointed, and the flowers are attached to the branches by a short stem. The fruit is abundant, and is generally ripe, either on different places in the same island, or on different islands, during all the summer months²⁶.

The cultivation and environs described above fall within the zone the project areas are located and dispenses the assumption this was all barren lava supporting little life.

This type of gardening in lava is called *makaili*²⁷ when even small pockets of semidisintegrated lava are utilized, and potatoes are grown by fertilizing with rubbish and by heaping up fine gravel and stones around the vines. Handy writes, "Such cultivation produces inferior potatoes; they are said to be rather tasteless and ridged (*`awa`awa*) or wrinkled²⁸."

²⁶ Ellis 1963:31-32

²⁷ Fornander 1919-1920, Vol. 6:164

²⁸ Handy 1972:129

III. CHRONOLOGICAL HISTORY OF RESIDENCY AND LAND OWNERSHIP IN KEAHUOLŪ

Early demographics for Keahuolū are difficult to ascertain. Schilt based her chronology of settlement and land-use in Kona on chronologies for the entire archipelago comprised by other archaeologists and applied it to subzones²⁹.

Keahuolū was awarded to Anealea Keohokālole (c.1814-1869) who numbered among her offspring King David Kalākaua, Queen Lydia Lili'uokalani, and William Pitt Leleiōhoku (adopted by Ruth Ke'elikōlani). Keohokālole was a great-granddaughter of both Kame'eiamoku and Keaweāheulu two of the important chiefs who supported Kamehameha I in his rise to power³⁰. Kame'eilehiwa states, "Keohokālole was regarded by the Kamehameha clan as an *Ali'i Nui* in honor of the great courage and loyalty proffered by her ancestors in their support of Kamehameha³¹." As *Ali'i Nui* Keohokālole held the fifth largest number of 'āina after the *Māhele* with 50 parcels³². She relinquished 48% of her original 96 'āina to the *Mō'i* [King] retaining 23 parcels on Hawai'i, 25 on Maui, and two on O'ahu. Of her lands on the island of Hawai'i two-thirds were located in the Kona District³³.

Keohokālole's award for Keahuolū is LCA 8452, Apana 12 (Royal Patent 6851). This award had a total area of 4,071 acres. She conveyed 15,000-20,000 acres of Keahuolū lands with the balance going to her heir, Lili'uokalani. Attached to the following letter is a list of lands including Keahuolū:

To Highness, John Young
Minister of Interior

Greetings:

This is to inform you and the Privy Council of my desire to convey some of my lands for the Governments one third in the land which remain as mine. Grant me this, of course, with the approval of the Privy Council Below is a list of the lands I wish to convey to the government³⁴.

To Your Highness, John Young
Minister of Interior

Greetings:

²⁹ Schilt 1984:276-283

³⁰ Kame'eilehiwa 1992:230

³¹ *ibid.*

³² Kame'eilehiwa 1992:245

³³ Kelly 1983:31

³⁴ Native Testimony v10:326

Here is a list of names of my lands which has been left for me pending for an approval of its distribution....Keahuolu ahupuaa, Kona, Hawaii...

With appreciation,
A. Keohokalole³⁵

The following testimony was given by Awahua, to verify Keohokālōle's holding for LCA 8452 in Kona:

Awahua, sworn, says he knows the house lots claimed by Keohokalole at Kaawaloa, Hawaii. The first one is fenced all round with a stone wall. It is bounded makai by the sea shore, on Kailua side by the Government land, mauka by the land of Nahaku, and Awahua, and on the other side by the road. Claimant derived this lot from her ancestors, who held it from very ancient times. There is a stonehouse and several grass houses in it belonging to claimant, besides a tomb.

The second lot is called "Awili," and is fenced all round. It is bounded makai by government road., on Kailua side by the same, mauka the same, on the side next [to] the pali by the road.

Claimant derived this lot from her ancestors, who held it from older times.

Witness knows the three house lots in Kealakekua, claimed by Keohokalole. The first lot is called "Kulou" and is fenced in. It is bounded makai by the sea beach, Kaawaloa side by government land, mauka by the road, south Kona side by a lot belonging to T. Cummings.

The second lot is called "Kaahaloa" [and] it is enclosed all round, and bounded on Kona Hema by a lot belonging to T. Cummings, mauka by the lot of Nakoko, North Kona by an old heiau, makai by the road.

The third lot is called "Wailokoalii" and is bounded on the South Kona side by an old Heiau, mauka by a Government lot and the lot of Ialua, makai by the sea beach, on the other side by a pali.

Claimant inherited these lots from her ancestors by the mother's side, who possessed them from ancient times. Kekaalua, sworn, says he knows these lots perfectly and confirms in full the testimony by Awahua³⁶.

Whenever *ali'i* received an entire *ahupua'a*, they were bound to respect the rights of the existing tenants. These tenants, if they filed a claim to The Board of Commissioners to

³⁵ Native Testimony v10:327

³⁶ Foreign Testimony v3:573

Quiet Land Titles, could continue to cultivate and reside on their parcels. The following testimonies are for such awards granted within Keahuolū:

Land Commission Award (LCA) 11071 to Aki for .60 acres

Kuia sworn, He has seen Aki's land that which he had cultivated himself, it is in the *ili* land of Pauaiki of Keohoeolu [sic] ahupuaa in Hawaii. Section 1, five cultivated kihapais. Section 2, one kihapai not cultivated. Section 6, four cultivated kihapai. Section 7, one cultivated kihapai. These interests have been made from Kaea, Nahaalualu and Kalekahi at the time of Kamehameha I³⁷.

LCA 10303 to Maa for 2.25 acres

Mahu sworn, He had seen a whole section of land, however, it is just as he has indicated in his claim that there are eleven taro kihapais, and ten potato kihapais in the *ili* land of Maili of Keahuolu ahupuaa. That land is not cultivated completely, but, Maa had planted seven palm trees. The fruit is for Samuela, both Maa and Samuela have joint interest in the seven fan palm trees. There is also a coconut grove which had been planted by Maa's grandparents for the Chings who owned the land, they were the caretakers. The same had applied to Maa's parents and to him at the present time. The coconuts went to Keohokalole upon the death of Keoua and it has been that way to the present time.

One whole section is salt land and it is still yielding salt...Land passed down to Maa's parents, these to him now. Maa's grandparents received the *ili* land Maili of Keahuolu during the time of Kamehameha I. Kamauoha had given to Maa the land section of Lanihau ahupuaa in 1848, no one had object to him³⁸.

LCA 10345 to Nahaalualu (Naalualu) for 2 acres

Kuia sworn, He had seen Naalualu place that he had cultivated himself in the *ili* land of Puuokaliu of Keahuolu ahupuaa in Hawaii. Section 1 (boundaries given) one section cultivated. Section 2, four cultivated kihapai, Section 3, one cultivated kihapai, Section 4, four cultivated kihapais...³⁹

LCA 10198 to Hailewalewa (Kailewalewa) for 1.30 acres

Mahu sworn, He has seen the place on which Hailewalewa had cultivated with his own hands, it is in Ulelele *ili* of Keahuolu ahupuaa. Section 1 taro. Section 2, Kaluulu. Land has been cultivated, one land section. On land from Hailewalewa's parents to him. Uncertainty for one section⁴⁰.

³⁷ Native Testimony v4:527

³⁸ Native Testimony v4:526

³⁹ Native Testimony v4:527

⁴⁰ Native Testimony v4:525

LCA 8012 to Apiki for 1.10 acres

Mahu, sworn, says he knows the kuleana of Claimant in Kailua, Kona. It consists of five patches of Kalo and a lot of patches of potatoes. The kalo patches form one piece, bounded on Kau side by Lanihau, makai by Papaula's land, Kohala side the same, mauka by Hai's land. The potato land is bounded mauka by Haino's land, Kau side by Lanihau, makai by Kahili's land, Kohala side the same. Claimant derived the land from the Konohiki, before the death of Kuakini, and has held it ever since without disputes⁴¹.

LCA 7351 to Kahuanui for 2.90 acres

Papaula, sworn says I know the claim of Kahuanui. It is in the ahupuaa of Keahuolu, Kona. It consists of one piece of kalo land, five patches—all lying together. One of these patches is planted with coffee. It is bounded mauka by the land of Kahookohukaneole, Kau by Lanihau, makai by the land Nahaalualu, Kohala by the konohiki. Claimant received this land from his brother in 1846, and his title has never been disputed⁴².

Two references to Keahuolū were found in the Hawaiian language newspapers that have been digitized and available online at *Ulu Kau: Hawaiian Digital Library*⁴³. Unfortunately, they provide little insight to land use

Olelo Hoolaha.

O MAUA NA MEA NONA NA INOA Malalo nei, ke hai aku nei maua i na mea a pau; e kii mai i ko oukou mau holoholona, e hele ana Ma Keahuolu a me Lanihau, iloko o keia malama o Dekemaba, 1862, me ka uku kupono. A o na holoholona e loa ia maua mahope o keia makahiki, e hoopaa ana maua ma kahi kupono, a e uku mai ka mea nana ka holoholona, a o ke kahu paha nana e malama \$5 00. A oi aku paha no ke komo hewa, a me ka poino, a me ka luhi i ka ho-a ana; no ka mea, ua pilikia na hoaina i ka oukou holoholona.

P. KAPAE.⁴⁴

J. NAKIEWIKI.

Kailua, Hawaii, Nov. 28. 1862. 56-3t⁴⁵

Announcement.

⁴¹ Foreign Testimony v8:676

⁴² Foreign Testimony v8:682

⁴³ www.ulukau.org

⁴⁴ These names are most likely aliases.

⁴⁵ *Nupepa Kuakoa*, Vol.1 No. 56, 20 December 1862

We are the ones whose names are below, we would like to let everyone know to come and collect your animals that are moving about in the Keahuolu and Lanihau areas in December 1862, with the proper payment. And as for those animals that still remain with us after this year, we will secure them in the proper area, and owner of the animal will pay us, and his keeper will profit \$5.00 or more for trespassing and danger, and for roam and the trouble it caused to the land for these animals

Olelo Hoolaha

EIA MA KO'U LIMA KEKAHI WAA UUKU, ua loa ia'u ma ka moana, ma kahi e kokoke ana i ke awa poe o Pawai, aole he aina, he mau ia kono nae, ua loa ia'u kela Waa, iloko o na la hope o ka malama o Maraki i hala ae nei. E kii kokie mai ka mea nona keia Waa, me ka uku mai he \$15.00, ina aole e kii mai ka mea nona keia Waa, alaila, e lilo no ia'u keia waa, e like me na laau pae.

MAA.

Keahuolu, Kona A., Hawaii, Mei 16, 1865.

5-2t⁴⁶

Announcement.

I have a small canoe that I got in the deep ocean, near the round bay of Pawai, not near land, but it did have some fish in the last days of this past March. Whoever this canoe belongs to should come and get it quickly and pay \$15.00, if you don't claim your canoe I will possess this canoe as my own like the pieces of wood that just wash ashore.

Correspondence to the Minister of Interior often provides insights to land use and transactions. In a report by J.H. Kalaiheana, dated April 25, 1866, Keahuolū is said to belong to Keohokālole. In a letter dated July 8, 1869 from David K. Kalākaua to his sister, Lili'uokalani, a detailed description of Keahuolū is provided. Kalākaua writes:

This land is situated in the District of North Kona, bounded by the ahupuaa of Lanihau (in Kailua) belonging to Prince Lunaliilo on the Kau side, and on the Kohala side, by Kealakehe, a government land and Honokohaniki belonging to Keelikolani. Keahuolu runs clear up to the mountains and includes a portion of nearly one half of Hualalai mountains. On the

⁴⁶ *Ke au Okoa*, Vol. 1, No. 6, 29 May 1865

mountains the koa, kukui and ohia abounds in vast quantities. The upper land or inland is arable, and suitable for growing coffee, oranges, taro, potatoes, bananas &c. Breadfruit trees grow wild as well as the Koli oil seed. The lower land is adopted for grazing cattle, sheep, goat &c. The fishery is very extensive and a fine grove of cocoanut trees of about 200 to 300 grows on the beach. The flat land near the sea beach is composed chiefly of lava, but herbs and shrubbery grows on it and [it is] suitable for feed of sheep and goats. It is estimated at 15,000 to 20,000 acres or more.

A letter written by Lili'uokalani to the Minister of the Interior, dated October 6, 1894, gives permission for a road to run through Keahuolū, and includes orders for the Government to fence both sides of this road.

On a map drafted by J.S. Emerson in the 1880s (Reg. Map 1280), a narrow band of shading running in a north-south direction crosses Keahuolū. This band is at the approximate elevation of 6,250 to 7,250 ft. In Emerson's Field Notebook sketches, this line is identified as the "Commencement of the Forest." The notebook notes that *ma uka* of the forest line, the land is "lava covered with scattering forest and dense masses of *ki* [ti] root"⁴⁷. *Ma kai* of the forest line he described as "rocks covered with long grass"⁴⁸. Kelly approximates this forest edge at an average elevation of 550 to 650 ft. from Kailua south⁴⁹.

In his reconnaissance survey of Keahuolū, Rosendahl (1972) notes, "...the Great Wall of Kuakini...is a historic period structure built during the period A.D. 1830-1840 at the direction of Kuakini, Governor of the Island of Hawaii..." Kelly writes of this Kuakini Wall:

It has long been presumed that this wall was built sometime during the governorship of John Adam Kuakini (1820-1844) to protect the cultivated uplands from the depredations of cattle. However, as the wall is at all points less than a mile from the seacoast, only the food plots in the coastal region would have been protected by it. It probably would have only kept cattle and horses grazing on the kula away from theouselots and small gardens along the shoreline⁵⁰.

...the Kuakini wall may have been the Pa'aina named as the makai boundary in several claims to land along its course. At times, the wall reaches a height of 8 or 9 feet, which seems unnecessarily high as a barrier to roaming cattle or pigs...The fact that the term used in the register of claims is "papipi," which refers to a wall or enclosure for cattle, not pigs, should answer the question of what kind of animal the

⁴⁷ Kelly 1983:58

⁴⁸ *ibid*:59

⁴⁹ *ibid*:58

⁵⁰ *ibid*:75

wall was meant to restrict in the 1840s. Perhaps in more recent years it served other purposes. Why it is located between the grazing land and the gardens, or why it is so high in places, we can only surmise⁵¹.

As recently as the 20th century existed a small village of *‘ōpelu* (Mackerel scad) fishermen who resided at a coconut grove in Keahuolū. Behind this village, known as Makaeo, were several large brackish water ponds where *‘ōpae‘ula* (*Crangon ventrosus*) thrived. These shrimps were used to mix in the *palu* or chum, used for catching *ōpelu*. Several springs and one well provided potable water. The village, coconut grove, and all the pools but one were destroyed during the construction of the Old Kona Airport⁵².

Cartographic material depicting Keahuolū was sought at the State Department of Accounting and General Services, Survey Division. Reg. Map 512 (c.1875) shows only a *kukui* tree and coconut grove at Pohakuloa. A 1929 U.S.G.S. topographic quadrangle, however, indicates a sisal (*Agave sisilana*) mill located in Keahuolū. Kelly briefly discusses this crop in her 1983 history of the *Gardens of Kona*. She places its cultivation in Kona with the following quote from Thrum in 1905: “The McWayne sisal tract consisted of about 500 acres at or near Kailua⁵³.” Kelly adds, “...how much of this acreage was actually planted in sisal is unclear⁵⁴.” In an attempt to locate the cultivated area, various articles were consulted and informant interviews conducted.

Early periodical reports focus on sisal cultivating efforts on O‘ahu. However, the earliest mention of McWayne’s efforts were found in the *Honolulu Advertiser’s* column “History from our Files,” which reports for 1918 that “[t]en tons of baled sisal, first of an estimated crop of 200 tons from the McWayne Estate, Kailua, Kona, reached Honolulu for transshipment to San Francisco⁵⁵.” Herman D. Nichols, vice-president of Tubbs Cordage Co., suggested in a 1949 editorial that utilization of sisal fiber of wild plants throughout the Territory be explored⁵⁶.

Mr. Minoru Inaba was interviewed by the author in February 1990 as he worked at the sisal mill after finishing the 8th grade in 1921. He said the mill was owned and operated by Luther S. Aungst from 1917 until its closing in 1924. Inaba recollects there were over 1,000 acres in cultivation in the *ahupua‘a* of Kealakehe and Keahuolū. The mill, abutting Palani Road, was surrounded by the sisal fields. The challenge, Mr. Inaba relayed, was getting the sisal from the fields to the mill, as it was very bulky and sharp. Field workers cut the sisal in the field, then bundled and transported it on donkeys to the mill. At the mill the sisal was thrashed, dried, and baled. From Kailua Bay, the bales of dried sisal would be shipped to San Francisco on steamers. Mr. Inaba’s job was to dispose of the by-products. Working with the sisal “made his skin itchy,” and he wore protective clothing.

⁵¹ *ibid*:76

⁵² Clark 1985:110

⁵³ Thrum 1905:185

⁵⁴ Kelly 1983:89

⁵⁵ *Honolulu Advertiser* July 31, 1948, editorial page

⁵⁶ *Honolulu Advertiser* September 20, 1949

According to Mr. Inaba, Mr. Aungst played an important role in the development of the Kona district. He started the telephone company that connected Kona with Waimea, and later added Volcano to its line. This phone systems was eventually sold to Mutual Telephone Co., Aungst was also the postmaster and owned a garage in Kona⁵⁷.

Tax Map Branch history sheets dated 1950 to 1983 reveal a navigation easement for TMK 3-7-008:Por.2 (1950) within the current Phase 3. In 1953 the Queen Lili'uokalani Trustees allowed access to the government to enter the land for purposes of securing the needed engineering and surveying data. In 1969 a centerline for a 10-ft. sewer easement is noted. In 1972, a setup for a 325-ft. elevation reservoir site is noted. The Kona Industrial Subdivision appears in 1973, for an area of 22.981 acres. In 1975, a lease to Pay 'N Save Corp., et al. commenced for a period of twenty years.

In the 1981 Status Report for the Trust, expansion of the industrial section is discussed:

A two-year option agreement with Kuakini Corp., which was selected in May as having the most attractive proposal of the five submitted to develop 100 acre expansion of the industrial area, was executed December 8, 1981. The Trust received \$50,000 in payment for the option which allows the developer to prepare his plans to create approximately 76 one-acre industrial lots and to apply to the County for rezoning.

In 1985, the Trust's 74th Annual Report gives an update for Keahuolu:

The survey of the mauka Kona farmlots was completed by Austin, Tsutsumi & Assoc. As the leased areas on the map differ from the property description in most of the leases, the lessees will be asked to confirm the area leased so that new leases can be prepared.

There were only two responses to the Trustees' request for proposals to develop the entire Keahuolu parcel. The proposal by Santa Cruz Properties, Inc. for a residential development was rejected by the Trustees. It was agreed that a proposal made by the Gentry Companies was unique and that discussions regarding their proposal should continue.

The Kona Industrial Subdivision Unit 5 area was cleared and grubbed, which created a renewed interest in the five unleased lots⁵⁸.

⁵⁷ pers. comm. February 1 and 8, 1990

⁵⁸ Queen Lili'uokalani Children's Center 1985

IV. SELECTED DOCUMENTATION OF THE HISTORY AND ARCHAEOLOGY OF KEAHUOLŪ

An island-wide description of sites was published by Henry Kinney in the earlier part of the 20th century. Kinney writes of the Keahuolū shoreline:

From the point where the Honokohau Trail leaves Kailua a poor trail leads makai over the lava to the lighthouse. Hence it continues along the beach for a couple of miles. After passing several old stone mausoleums, the trail passes an abandoned grass house where is a stone wall, the remnants of the heiau Keohuulu [sic]. Still further north is a coconut grove, where there were several kuula here, one particularly powerful one, the idol of which is still remembered as having been in a fair state of preservation, only one arm missing, when a Christian priest took it from the cave where it was kept. Since then, say the inhabitants, the fishing has been comparatively poor. In the grove are two cocoanut stumps which served as gallows for the first execution conducted by hanging in Hawaii. A chief, Kekuakahaku was the victim.

Beyond the main [coconut] grove are a few isolated trees near the edge of the flow. Here was the heiau of Pauai, and here the trail ends⁵⁹.

The area in which Pauai *heiau* is located is known as Pāwai. Research by the Lili'uokalani Trust has determined that Pāwai is an abbreviation of Papawai and this is the name the Trust uses. Papawai's literal meaning is water stratum. It is also known as Bean's Beach⁶⁰.

In his 1919 report on *heiau* on the island, J.F.G. Stokes reports the following sites within Keahuolū:

Ko'a of Halepau, in Halepa'u Section...A small fishing heiau on the pahoeohoe, 100 feet north-west of Keahuolu. Well preserved walls, 4 feet high (Site #10-27-2139)

Heiau of Kawaluna...on the beach, a quarter mile from the boundary of Lanihau, in a section (ili) called Pawai. An enclosure, the walls of which have been carefully rebuilt, without opening. The interior was filled with loose stones piled up without arrangement. The local informant stated that an old fisherman was in the habit of offering fish in this heiau. Asked as to the resulting luck, the answer was that it was not as much as that of other fishermen, perhaps because the offering was made at a heiau instead of the ko'a (Halepa'u) nearby.

⁵⁹ Kinney 1913

⁶⁰ Clark 2002

Heiau of Palihio, at Waikilo, at or near the boundary of Keahuolu and Lanihau, North Kona; on the beach in an old coco-palm grove; this is an insignificant pen, 25 by 29 feet in size with small, thin walls built on the upper slopes of the beach. Coral has been spread over the floor as a paving. The only interest attaching to the place is the account given by a very old native living in the grove. He said that Palihio was formerly a heiau for human sacrifice [luakini], and that it was rebuilt by Kalakaua's orders before the latter left for the United States (ca 1890). The old native also said that Kalakaua promised to have a sacrifice at Palihio on his return from America, but that he died in that country⁶¹. The old native was very insistent on the truth of his statements. It might be mentioned that the surrounding grove of palms is where Kalakaua's grandfather was hanged for murder⁶². Other information from the old native is given here for convenience, that this king ordered the rebuilding of the two heiaus of Kawaluna and Palihio where human sacrifices were formerly offered, and the ko'as of Halepa'u and Maka'eo....It might be remarked that these four structures have the appearance of having been rebuilt in recent times⁶³.

Ko'a of Maka'eo...This is a small pen, 200 feet from the sea and about half a mile to the southeast of Palihio.

In 1930 John Reinecke conducted a survey of Hawaiian sites on the Island and reported on sites in Keahuolu. Comments for these sites were provided by Earl Neller (EN) in 1980:

Site 4. A group of masonry platform graves on the sand beach. (Referred to as "graves of chiefs" in Jackson's 1883 Field Notes, p.32 – EN)

Site 5. Remains of a platform of large stones. Near this is a notable group of petroglyphs. There is also a hole with a ring around it, a form of carving which I have found elsewhere, but what it represented is hard to say—perhaps a *kohe*. There are also *papamu*⁶⁴: a clear one 16 x 13; a very fine one with evenly arranged holes 1½ in diameter; and a third too dim to make out the rows, but there must have been about 12 each way.

Site 6. A large masonry tomb or powder magazine, with very massive walls. (Note; This is probably the structure referred to as "Kamehameha's Tomb" in George Jackson's 1883 Field Notes, p.30 – EN)

⁶¹ Kalākaua died on January 20, 1891 in San Francisco attributed to Bright's disease. Baliley:1975:302

⁶² Kamanawa, Kalākaua's paternal grandfather was hung for murdering his ex-wife Kamoku'iki by giving her poison in a cup of 'awa. Kamanawa was the first public execution under the 1840 laws.

⁶³ Stokes 1991

⁶⁴ Stone on which the checker-like game, kōnane, was played

Site 7. ON the beach, the ruins of a platform and pen of boulders; on the *pāhoehoe* back of this, a small house platform of *pāhoehoe* fragments. (This could be Stoke's "*Ko'a of Maka'eo*" – EN)

Site 8. Remains of a medium-sized platform, sand-covered. From its position, it may be a fishing *heiau*. By it is an old *papamū*, 12 x 11. (This could be Stoke's "*Ko'a of Maka'eo*" – EN)

Site 9. Group of ruins centering about the ponds of Makeo. (This site has been largely destroyed by construction of the old Kona Airport – EN) About 200' NW of Site 8 is a modern pen, and by it a large coral-strewn platform (perhaps Stoke's "*Heiau of Palihilo*" – EN) and the remains of a very old pen. Back of that, among *kiawe*, are five house platforms, all but one being coral-strewn, two enclosures which seem to be walled house sites, and two very old house platforms. The small fishpond is divided into seven sections. It is now shallow and muddy, but was once carefully walled up—a feature common to the brackish ponds along this coast. Even yet they are occasionally cleansed of their scum. Between it and the large pond is a small platform like a *puoa* [*pū'o'a*]⁶⁵. The marsh contains one large pond, with many small pools and waterholes, some of them walled round.

Site 10. Well-built walled platform, walls 3½' wide and 3' high; inside dimensions 12 x 11½; floor about 6" off the ground. A small platform near. (This site destroyed by construction of old Kona Airport – EN)

Site 11. Near the house at Makeo, on the beach: a very dim *papamū*, 7 x 6, and a petroglyph. (This site probably destroyed – EN)

Site 12. A series of yard walls by the house of Makeo:

- a. House site in the yard of the present residence. (This site probably destroyed – EN)
- b. Modern house site with brackish pool behind.
- c. Pen, probably once surrounding a water pool.
- d. House, platform and pool.
- e. Old, small house platform on a knoll. Farther on is a pen and three old, small house platforms, and perhaps a *puoa*.

Site 13. Modern house platform and graveyard. (This could be Stoke's *Kawaluna Heiau* – EN)

Site 14. Three small old house platforms; canoe landing; a modern house platform with a dim old house site in the same lot; a pen (about 50' x 35') containing a platform, chiefly a mass of rough, large stones—uses unknown.

⁶⁵ Tower, steeple, pyramid, peak; house for depositing a corpse

In 1970 Kenneth Emory prepared an inventory of known sites for parts of the Big Island including Keahuolū.

3841 (D9-4) Lanihau, Kailua-Kona, SW of old airport. Petroglyphs, located in three clusters, totaling 75 units, includes dots, circles, diagrams, and triangular and linear figures. (This site is probably the one southeast of the old airport –EN)

3842 (D10-1) Waikilohi beach at Keahuolu. Palihiolu Heiau, and enclosure 25 by 29 feet with a coral pavement, not located.

3843 (D10-2) Pawai beach at Keahuolu. Kawaluna Heiau, an enclosure used until recently by fishermen as a *ko'a* or fishing shrine, not located.

Also in 1970 Thomas Stell Newman made a field inspection for State Parks and reported on a few sites:

10-27-2000 Lanihau Petroglyphs. Southeast of runway. Traditional Hawaiian stick figures; about 15 figures, on a *pāhoehoe* blister. Recommend valuable (This site on fringe of Bishop Museum's Site #3841 –EN)

10-27-2001 Lanihau Papamu. 50 meters *ma kai* of runway. A single human stick figure petroglyph holding something in right hand. A large *pāpamu* of 11 by 12 rows of holes. Nearby is a very small *kōnane* board of 3 by 4 rows of holes. Condition good. This site is important. (This seems to be part of Reinecke's "Site 8" –EN)

10-24-2002 House & burials. Located 100 meters west of *pāpamu*, site 2001. 25 meters *ma kai* of the runway. Rectangular enclosure, 5 by 6 meters, stacked stone walls about .5 meters high, walls partly collapsed, artifact collectors have excavated a portion of the interior; no midden seen. 10 meters north of enclosure are two graves, slab-lined crypts barely visible, about 2 x 4 meters. The central area of both graves is filled with small rubble (This could be part of Reinecke's "Site 9." It could also be Stoke's Palihiolu Heiau –EN)⁶⁶

[No site number] A modern burial area lies off the west end of the main runway and I suspect there are still living relatives for those buried there. Numerous bait cups or holes ground in the rocks just back of the high tide mark are to be found all along the beach but it would not appear to be in any danger from construction. (This is probably Reinecke's "Site 13." –EN)

⁶⁶ Palihiolu Heiau was later placed within Lanihau and assigned SIHP Site #2002 with several burials identified by Newman.

A walk-through archaeological survey of the Queen Lili'uokalani Village – Unit 3 Tract⁶⁷, some 100 acres, was conducted in September 1972 by Paul Rosendahl. The subject parcel is located on the *ma kai* side of Palani Road. Fourteen archaeological features were found including five stone walls, two platforms, two stone mounds, two stone-walled enclosures, one foot trail, one small cave shelter, and one road causeway. Rosendahl judged the features to be of “little or no archaeological value—none have any real excavation potential, none are features of outstanding structural or other characteristics, and none have any real known historical interest, value, or significance⁶⁸.” Two stone walls were recommended to be preserved for their scenic value.

In 1975 Aki Sinoto surveyed a road corridor in coastal Keahuolū. He identified seven sites, all small, semi-permanent or temporary structures associated with coastal marine activities⁶⁹.

Lloyd Soehren conducted a reconnaissance survey of two parcels near Kamakahonu in Lanihau 1st August 1976, Soehren identified a “*kuaiwi* or low mounding of small stones into a row containing scattered pebbles of waterworn coral” which he considered an *ahupua'a* boundary marker between Lanihau and Keahuolū⁷⁰. This “windrow extended some 300 yards eastward before it is obliterated, and is coincident with the present boundary. It continues to the west, prolonging the line toward the shore rather than following the present, deviant boundary which parallels the shore for some distance. The antiquity of the feature is unknown, but almost certainly predates European contact⁷¹.” These two parcels are both *ma kai* of Kuakini Highway outside of the present project area.

An archaeological survey of a section *ma kai* of the Queen Ka'ahumanu Highway near the Old Kona Airport also owned by Lili'uokalani Trust was conducted in November 1978. Fifty-nine sites were discovered which included 140 separate features. Most of the features were concentrated along the coast subject to ocean damage. Although small cave shelters along the coast and slightly inland contained cultural deposits and were deemed to have value for excavation and subsequent historic interpretation, it was noted the inland portion of the parcel was devoid of significant remains. The single exception was site 6540 which consisted of a cluster of occupation features including platforms, paved areas and cave shelters⁷².

An additional reconnaissance survey of a c.20-acre parcel where the Queen Lili'uokalani Children's Center is located was conducted by Folk in 1980, revealing no sites. However within three *kipuka* near the shore Folk documented seven pavements,

⁶⁷ TMK 7-4-08

⁶⁸ Rosendahl 1972:7

⁶⁹ Sinoto 1975:3

⁷⁰ Soehren 1976:1

⁷¹ *ibid.*

⁷² Archaeological Research Center Hawaii (Ching) 1978:1

three caves, two platforms, four historic campsites, a burial or shrine, a historic animal enclosure, and three habitation areas⁷³.

In January 1983, Lloyd Soehren conducted an archaeological survey on a Keahuolū parcel (TMK 7-4-08:001) *ma uka* of the Queen Kaʻahumanu Highway and adjoining Queen Liliʻuokalani Village between 800 and 1000 feet elevation. Soehren identifies the parcel as part of the former sisal plantation. He did not identify any archaeological sites save the entrance to a small lava tube near the west boundary which he deemed void of any Hawaiian cultural activity.

Theresa Donham working for Paul H. Rosendahl, Inc. (PHRI) conducted an archaeological inventory survey for a portion of the current project area, namely TMK 3-7-04-08:Por 2, 12 between 1989 and 1990. Two hundred thirty-seven newly identified and two previously recorded sites containing a total of 1,810+ component features were identified. Twenty-five sites were assessed as having value as examples of site types and were recommended for interpretive development. All but two of the 25 sites are within an area designated as an archaeological preserve by QLT. Eight of the 25 sites were assessed as having provisional cultural value due to the possible presence of burials. Two of the 25 sites, Māmalahoa Trail and Kuakini Wall, were assessed as having interpretive and cultural values. Six cave sites were recommended for preservation due to the presence of human skeletal remains⁷⁴.

The most recent archaeological surveys conducted for Queen Liliʻuokalani Trust by Haun & Associates were conducted for two small parcels, TMK 7-4-015:15, a c.5-acre parcel in March 2007 and TMK 7-4-015:14, a 3.982-acre parcel in May 2007. No archaeological sites were identified in the former survey and five sites with seven features were identified in the latter. The features were interpreted as agricultural, temporary and permanent habitation but not recommended for preservation⁷⁵.

Table 1 - Summary of the archaeological findings within Keahuolū

Year	Author	Scope	Zone	Findings
1919	Stokes	<i>Heiau</i> Survey	Coastal/Inland	3 <i>heiau</i>
1930	Reinecke	Reconnaissance Survey	Coastal	12 sites primarily habitation platforms & enclosed yards
1970	Emory	Site Inventory	Coastal/Inland	2 <i>heiau</i> discussed
1970a	Newman	Inspection	Coastal	Historic burials and “bait cups”
1972	Bevacqua	Reconnaissance Survey	Coastal	9 sites
1973	Neighbor Island Consultants	Reconnaissance Survey	Coastal	Historic burials located
1975	Sinoto	Reconnaissance Survey	Coastal	7 sites – temporary structures
1978	Ching	Reconnaissance Survey	Coastal	59 sites – salt pans, cave shelters, paving, cairns

⁷³ Folk 1980:21-22

⁷⁴ Jensen 1992:1

⁷⁵ Haun May 2007:ii

1979	Rosendahl	Reconnaissance Survey	Coastal	4 complexes, 2 modified sinkholes, 2 wall sections, 1 cairn, 1 rock shelter, 2 petroglyph areas, 1 walled enclosure
1980	Estioko-Griffin & Lovelace	Reconnaissance Survey	Coastal	35 sites – caves, petroglyphs, burials, house sites
1980	Folk	Reconnaissance Survey & Test Excavations	Coastal	21 sites in 3 <i>kipuka</i> – 7 pavements, 3 caves, 2 platforms, 4 historic/recent campsites, 1 burial/shrine, animal enclosure, 3 habitation areas
1980	Neller	Reconnaissance Survey	Coastal	
1983	Soehren	Survey	Inland	Sisal plantation remnants
1983	Rosendahl	Survey	Inland	2 sites – agricultural and habitations, possible ceremonial and burial. One site was later found destroyed
1984	Schilt	Field Work	Coastal/Inland	Kuakini Highway realignment crossing 24 <i>ahupua`a</i> . Within Keahuolū – cairn and modified outcrop
1990	Donham	Reconnaissance Survey	Coastal/Inland	239 sites – <i>pāhoehoe</i> quarry, agricultural excavations, rock mounds, modified blisters or outcrop, the majority interpreted as agricultural features
1989	PHRI	Inventory Survey	Inland	Sites indicate relatively intensive agricultural activities
1990	PHRI	Inventory Survey	Inland	32 sites – agricultural/boundary-related, temporary habitation
1993	O'Hare & Rosendahl	Inventory Survey	Inland	18 sites – agricultural, temporary habitation, burial, historic dump, transportation feature, quarry and marker
1993	PHRI	Field Inspection	Inland	16 sites – ceremonial and burials
2007	Haun	Inventory Survey and Assessment	Inland	5 sites – agricultural, temporary and permanent habitation

V. INFORMANT INTERVIEWS

Informant interviews were conducted for a number of previous cultural impact assessments prepared for Keahuolū. Cultural information pertinent to the current project area is presented in this table:

Table 2 – Summary of cultural knowledge of Informants

Informant	Relation	Reporter	Site	Notes
Peter Keka	Kona kama`āina	Kanahele ⁷⁶	Maliu Point	AKA Pu`uoina
↓			Kaukauholo is the name of the beach and cliff area within Keahuolū	
↓			Hale La`i o Hi`iaka is synonymous with Hi`iakanoholae and	

⁷⁶ Kanahele 2001:30-31

			Keahuolū Point	
↓			Pu`ukaloa	a small <i>ahu</i> near a guava tree in Keahuolū
↓			Hale o Pao`o	Keka considers Pāwai and Papawai different locations. The latter is a flat area <i>ma uka</i> of Makaeau rock out side of the old airport which was made of red cinders.
↓			Ka`iwi Point	There was an abundance of <i>pili</i> grass here.
Michael Ikeda	Employee of QLT & Kona resident for 30 years	PHRI	Areas where lobsters, <i>āholehole</i> , <i>mamamo</i> and <i>`opelu</i> can be found	
Clarence Mederios, Jr.	Kona kama`āina	PHRI	From 300 ft. elevation and below is found the endemic plant <i>Maiapilo</i> or <i>pilo</i> (<i>capparis sandwichiana</i>)	This plant used for medicinal purposes and is vulnerable. He continues to gather <i>pilo</i> for medicinal uses.
↓			Sisal plant also found in Keahuolū	His father was employed by QLCC and would harvest sisal to use for thatching.
↓			Repaired boundary and retainer walls in 1974 during the widening and resurfacing of Palani Road from the Palani Junction to Kuakini Hwy.	

VI. CULTURAL IMPACTS

The cultural impacts to any locale in Hawai`i are not always readily evident. What is assessed by Western eyes as “barren land” may be a rich resource to Hawaiians for harvesting material i.e. *pili* grass; spiritual aspects, i.e. the wind; or for the trails on which to travel. References to these cultural features have been found for the general Keahuolū and specific to the project area is the availability and the gathering of *pilo* by one cultural practitioner.

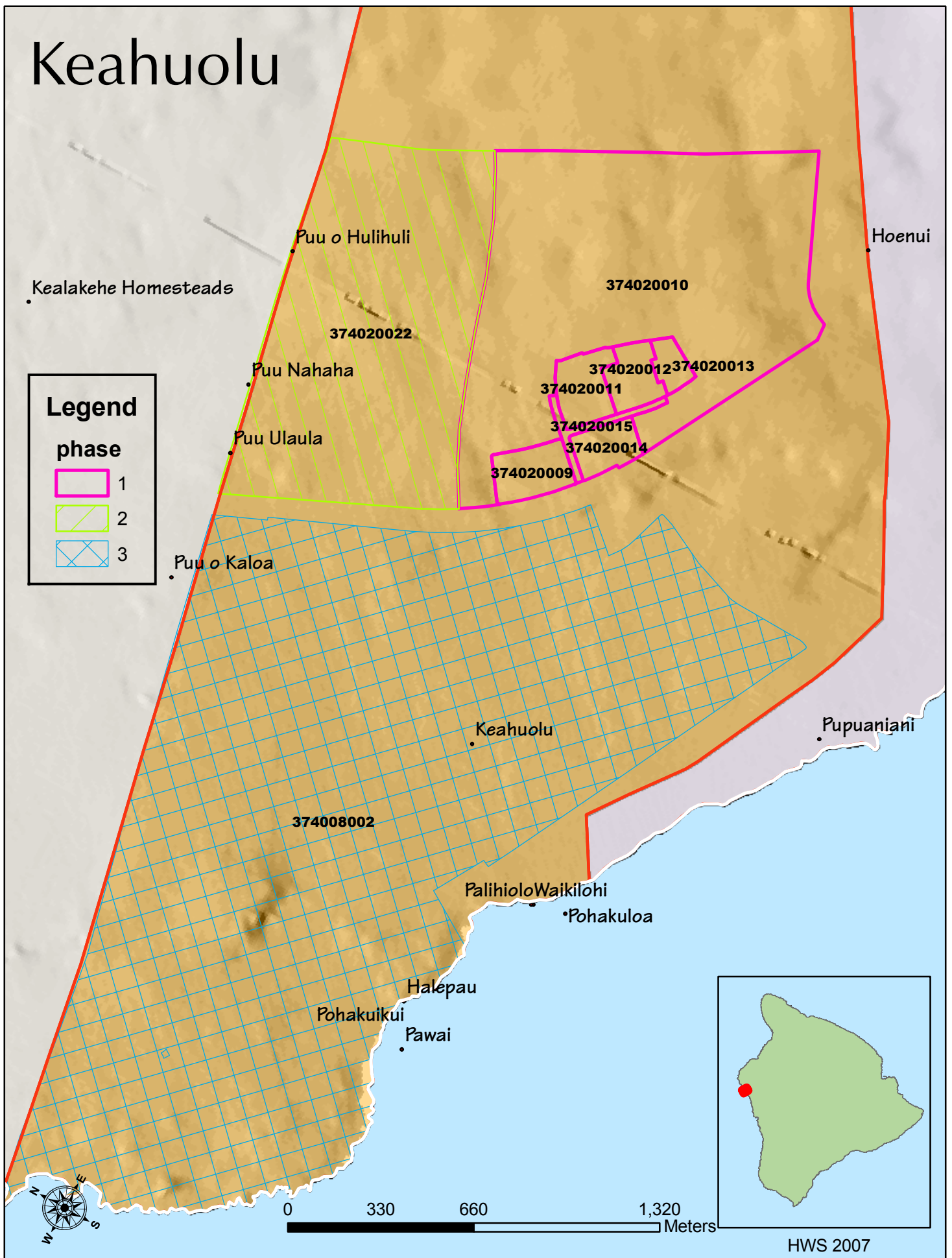
The three phases the current project are mapped out on Figure 2 to place their locations to the traditional place names and *wahi pana* (storied places) covered in this report.

Documentary resources and archaeological surveys reveal the preponderance of burials in the sand dunes and other coastal areas of Keahuolū. Further

inland, caves, lava blisters and other modified features revealed human remains less frequently.

Based on previous and the current research, adaptations similar to those have been observed further north in North Kona, are likely to have occurred in Keahuolū. Permanent populations appear to have been present along the coast, the midlands were used for temporary habitation and were crossed by trails linking the coast to the uplands, and the uplands were used for agricultural cultivation.

Keahuolu



VII. SUMMARY & RECOMMENDATIONS

Reviewing the information presented in this cultural impact assessment – historical documentation, archaeological surveys and research, and oral reminiscences – reveal limited cultural sites in the project area. Contemporary or continuing cultural practices include gathering activities of the ocean resources and specific plants from the 300 ft. elevation seaward.

Along with several *heiau* along the coast, previous researchers have located several probable permanent residential sites with enclosed yards. Further inland, there are sites and features indicative of dryland agricultural activities substantiated by Mahele testimonies of *kalo*, potato, and limited coffee cultivation. Features indicating temporary habitation were also identified. In the upper elevations, there was a substantial increase in rock mounds, particularly faced mounds and modified lava blisters collaborating to the tradition of increased agricultural activities *ma uka* where the moisture increases.

Historic uses exhibit Keahuolū was exposed to far less livestock grazing than Kealakehe to the north. The absence of grazing activity increases the likelihood of cultural sites to remain intact or to suffer less degradation.

Based on the findings of this assessment, the project will have limited impact on Hawaiian cultural resources, beliefs and practices. Care should be taken to preserve the habitat of endemic plants, i.e. *pilo* in addition to access for gathering activities. It should be noted, however remnants of Hawaiian practices, be it agricultural, temporary habitation sites, or additional burials may reveal themselves during development as they have been identified in other areas of Keahuolū. In the event such archaeological resources are encountered during land-altering activities associated with construction, work in the immediate area of the discovery should be halted and DLNR-SHPD contacted as outlined in *draft* Hawaii Administrative Rules 13§13-280.

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APPENDIX B

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Kailua-Kona, HI 96740

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