

**Palamanui Waterline,  
343-foot Elevation Reservoir  
& Main Street Collector Road Extension**

**D r a f t   E n v i r o n m e n t a l   A s s e s s m e n t**



May 2008

prepared by:

 **PBR HAWAII**  
& ASSOCIATES, INC.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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**TABLE OF CONTENTS**

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>1</b>
1.1	PROJECT SUMMARY .....	1
1.2	LOCATION .....	5
1.3	LAND OWNERSHIP .....	5
1.4	IDENTIFICATION OF APPLICANT.....	5
1.5	IDENTIFICATION OF ENVIRONMENTAL CONSULTANT .....	5
1.6	IDENTIFICATION OF APPROVING AGENCY.....	6
1.7	COMPLIANCE WITH STATE OF HAWAI‘I AND COUNTY OF HAWAI‘I ENVIRONMENTAL LAWS .....	6
1.8	IDENTIFICATION OF AGENCIES CONSULTED.....	6
1.9	STUDIES CONTRIBUTING TO THIS ENVIRONMENTAL ASSESSMENT.....	7
<b>2.0</b>	<b>PROJECT DESCRIPTION .....</b>	<b>8</b>
2.1	EXISTING LAND USE .....	8
2.2	BACKGROUND INFORMATION ON PALAMANUI DEVELOPMENT AND UNIVERSITY OF HAWAI‘I AT WEST HAWAI‘I (UHCWH).....	8
2.3	DESCRIPTION OF THE PROPOSED IMPROVEMENTS .....	12
2.4	PROJECT COST AND IMPLEMENTATION TIMEFRAME.....	13
<b>3.0</b>	<b>DESCRIPTION OF THE NATURAL ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATION MEASURES .....</b>	<b>14</b>
3.1	CLIMATE .....	14
3.2	GEOLOGY AND TOPOGRAPHY .....	14
3.3	SOILS .....	15
3.3.1	Natural Resources Conservation Service (NRCS).....	15
3.3.2	Land Study Bureau Detailed Land Classification .....	16
3.3.3	Agricultural Lands of Importance to the State of Hawai‘i (ALISH)...	16
3.4	NATURAL HAZARDS.....	21
3.5	FLORA & FAUNA.....	23
3.5.1	Flora .....	23
3.5.2	Fauna.....	24
<b>4.0</b>	<b>DESCRIPTION OF THE HUMAN ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATION MEASURES .....</b>	<b>27</b>
4.1	ARCHAEOLOGICAL AND CULTURAL RESOURCES .....	27
4.1.1	Archaeological Resources .....	27
4.1.2	Cultural Resources .....	30
4.2	ROADWAYS AND TRAFFIC .....	31
4.3	NOISE .....	32
4.4	AIR QUALITY .....	33
4.5	VISUAL RESOURCES.....	33

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

4.6	SOCIAL & ECONOMIC CHARACTERISTICS .....	36
4.7	INFRASTRUCTURE AND UTILITIES.....	37
4.7.1	Water System .....	37
4.7.2	Wastewater System .....	38
4.7.3	Drainage System .....	38
4.7.4	Electrical and Communications Systems .....	38
4.7.5	Solid Waste.....	38
4.8	PUBLIC SERVICES AND FACILITIES.....	39
<b>5.0</b>	<b>LAND USE CONFORMANCE.....</b>	<b>41</b>
5.1	FEDERAL .....	41
5.1.1	Endangered Species Act .....	41
5.1.2	Coastal Zone Management Act.....	41
5.2	STATE OF HAWAII.....	41
5.2.1	State Land Use Law, Chapter 205, Hawai'i Revised Statutes .....	41
5.2.2	Coastal Zone Management Act, Chapter 205A, Hawai'i Revised Statutes .....	43
5.2.3	Hawai'i State Plan .....	45
5.3	COUNTY OF HAWAII PLANS AND CONTROLS .....	45
5.3.1	County of Hawai'i General Plan.....	45
5.3.2	County of Hawai'i Zoning.....	45
5.3.3	Keāhole to Kailua Development Plan .....	48
5.3.4	West Hawai'i Regional Plan .....	48
5.3.5	Kona Community Development Plan.....	48
5.4	LIST OF REQUIRED PERMITS AND APPROVALS .....	48
<b>6.0</b>	<b>ALTERNATIVES.....</b>	<b>50</b>
<b>7.0</b>	<b>FINDINGS, SUPPORTING REASONS AND ANTICIPATED DETERMINATION... 52</b>	
7.1	PROBABLE IMPACT, INCLUDING CUMULATIVE IMPACTS .....	52
7.2	SIGNIFICANCE CRITERIA.....	56
7.3	ANTICIPATED DETERMINATION.....	59
<b>8.0</b>	<b>REFERENCES CITED.....</b>	<b>60</b>

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

**TABLE OF FIGURES**

Figure 1: Location Map .....	3
Figure 2: Tax Map Key .....	4
Figure 3: Aerial Photograph.....	10
Figure 4: Natural Resources Conservation Service Soil Survey .....	18
Figure 5: Detailed Land Classification.....	19
Figure 6: Agricultural Lands of Importance to the State of Hawai'i .....	20
Figure 7: Flood Insurance Rate Map .....	22
Figure 8: Site Photographs .....	35
Figure 9: State Land Use Districts .....	42
Figure 10: County of Hawai'i General Plan .....	46
Figure 11: County of Hawai'i Zoning .....	47
Figure 12: Surrounding Projects.....	55

**APPENDICES**

APPENDIX A:	Pre-consultation Comments and Responses
APPENDIX B:	Botanical Survey
APPENDIX C:	Archaeological Survey

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

**LIST OF ACRONYMS AND ABBREVIATIONS**

ALISH	Agricultural Lands of Importance in the State of Hawai'i
CDP	Census Designated Place
CZ	Coastal Zone
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DAGS	Department of Accounting and General Services
DBA	District Boundary Amendment
DHHL	Department of Hawaiian Home Lands
DLNR	Department of Land and Natural Resources
DOH	Department of Health
DWS	County Department of Water Supply
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FIRM	Flood Insurance Rate Map
FHWA	U.S. Federal Highway Administration
FWS	U.S. Fish and Wildlife Service
HDOT	Hawai'i State Department of Transportation Highways Division
HELCO	Hawai'i Electric Light Company
HRS	Hawai'i Revised Statutes
kV	Kilovolt
LLC	Limited Liability Corporation
LRDP	Long Range Development Plan
LUC	Land Use Commission
mgd	million gallons per day
msl	mean sea level
MOU	Memorandum of Understanding
NOAA	National Oceanic & Atmospheric Administration
NGPC	Notice of General Permit Coverage
NPDES	National Pollutant Discharge Elimination System
NRCS	U.S. Department of Agriculture Natural Resources Conservation Services
OEQC	Office of Environmental Quality Control
OSP	Office of State Planning
ROW	Right of way
SHPD	State Historic Preservation Division
SMA	Special Management Area
TMK	Tax Map Key
UH	University of Hawai'i
UHCWH	University of Hawai'i Center at West Hawai'i
USGS	United States Geological Survey
WWTP	Wastewater Treatment Plant

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

**1.0 INTRODUCTION**

This Draft Environmental Assessment (EA) is prepared in accordance with Chapter 343, Hawai'i Revised Statutes (HRS), because it is triggered by the use of State lands.

**1.1 PROJECT SUMMARY**

**Project Name:** Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension

**Location:** North Kona, Island of Hawai'i, Hawai'i (Figure 1)

**Land Owner:** State of Hawai'i Department of Land and Natural Resources (DLNR); Department of Hawaiian Home Lands (DHHL)

**Applicant:** Pāalamanui, LLC

**Tax Map Key:** (3) 7-3-10:39 (por.), 40 (por.), 42 (por.), 43 (por.), 44 (por.) and 45 (por.) (Figure 2)

**Land Area:** Approximately 12 acres

**Existing Use:** Vacant

**Proposed Use:** Construction of a new 16-inch underground Pāalamanui Waterline on State lands

Construction of 343-Foot Elevation Reservoir to service both the Pāalamanui Development and the University of Hawai'i Center at West Hawai'i (UHCWH) project site (TMK: 7-3-10:42).

Construction of Main Street Collector Road Extension through the UHCWH parcel into Pāalamanui from the Main Street Collector Road

**Land Use Designations:** State Land Use District: Urban  
County General Plan: Urban Expansion, University Use  
Hawai'i County Zoning: Agricultural (A-5a), Open  
Special Management Area: Project is not within the SMA

**Permits/Required:** Construction Permits (Building, Grading & Paving)  
National Pollutant Discharge Elimination System (NPDES)  
Underground Injection Control (UIC)

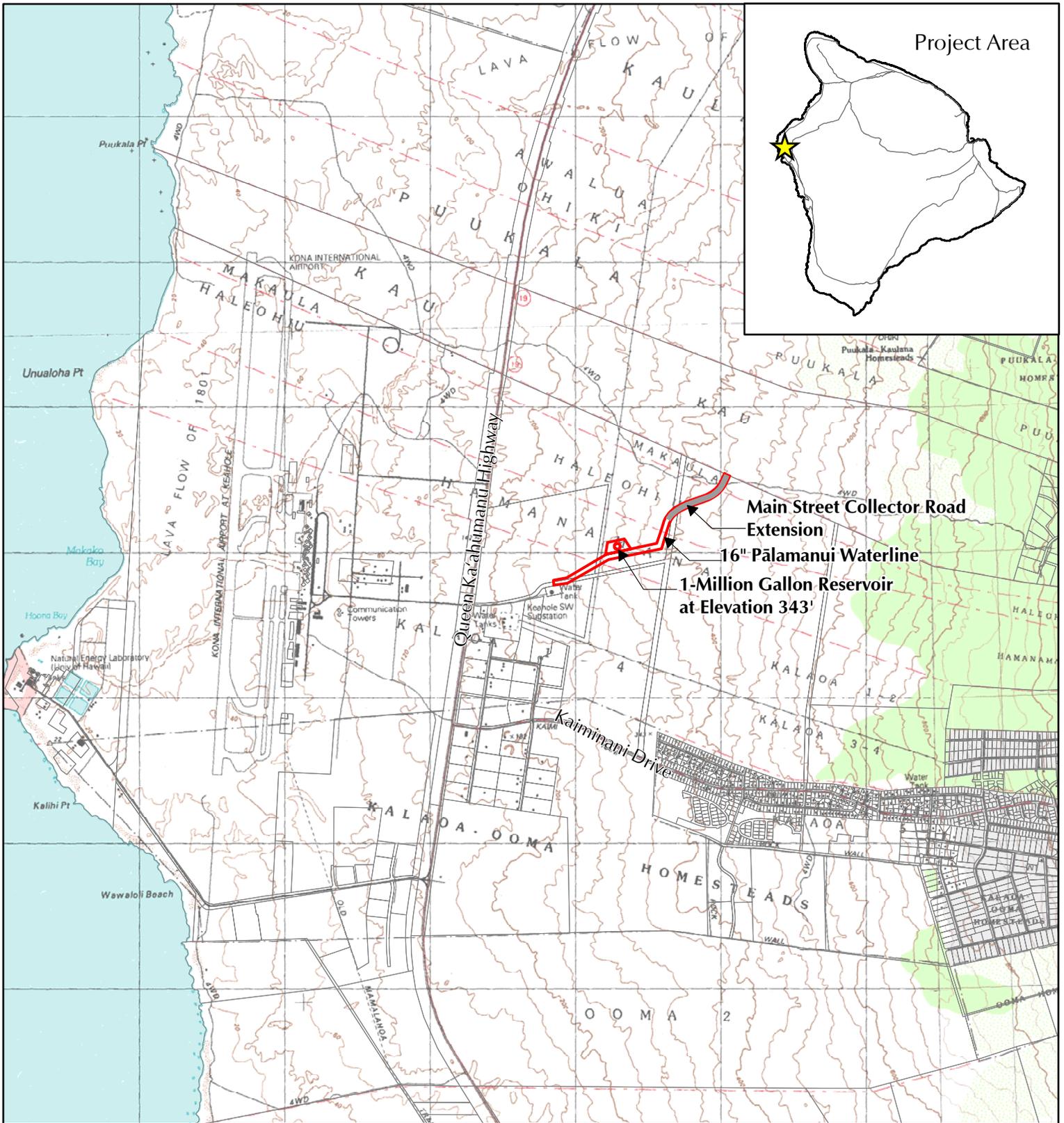
**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

Water System Construction Plan Approval  
Consolidation and re-subdivision of rights-of-way (ROW)

**Approving Agency:** State of Hawai'i Department of Land and Natural Resources

**Anticipated  
Determination:** Finding of No Significant Impact (FONSI)



**LEGEND**

 Project Site Boundary

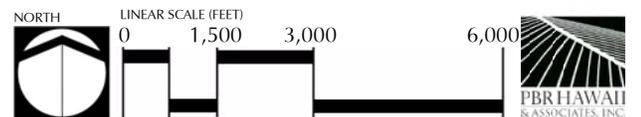
**FIGURE 1**

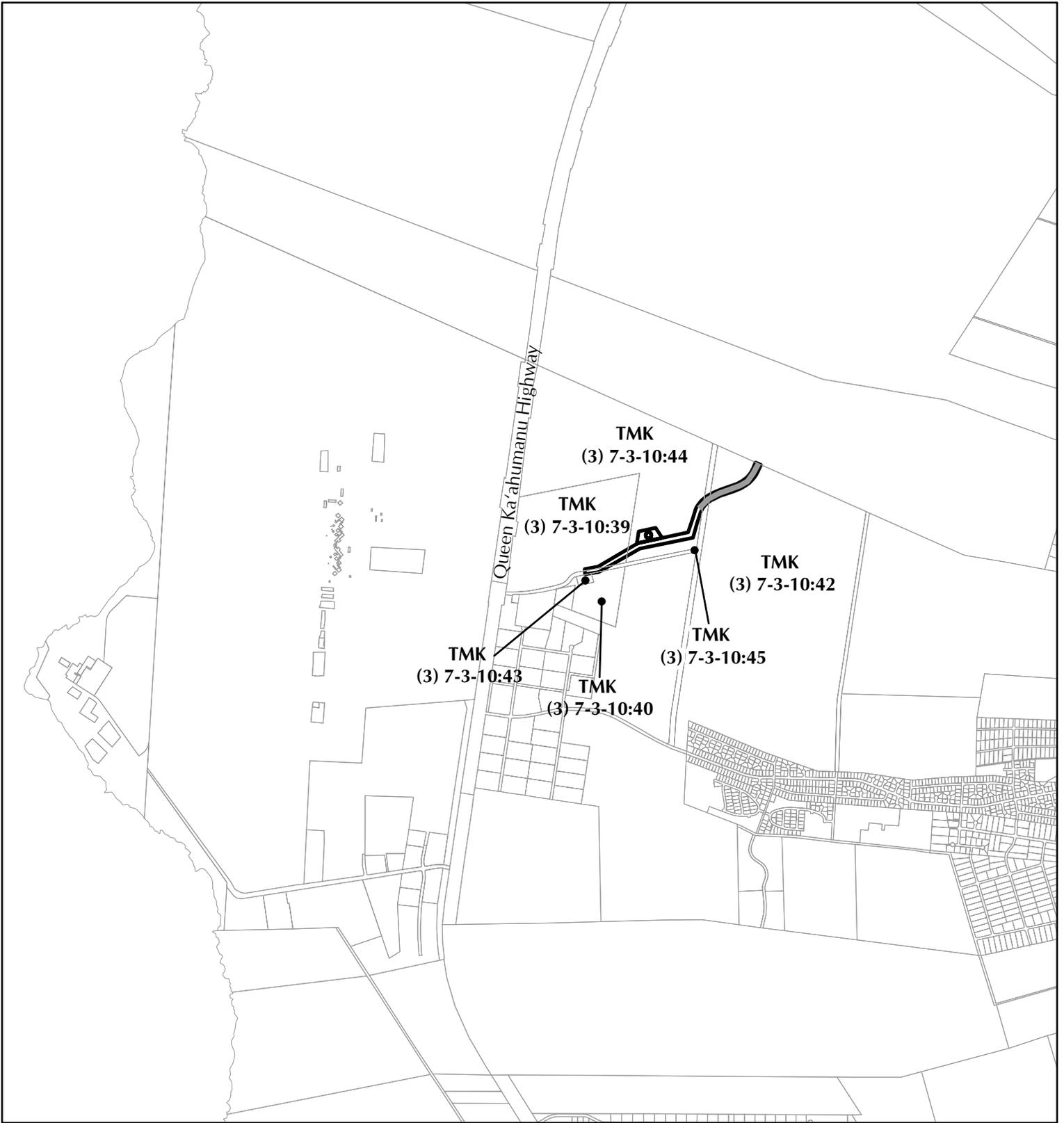
Regional Location

**Pālanui Waterline,  
343-foot Elevation Reservoir and  
Main Street Collector Road Extension**

Pālanui, LLC

Island of Hawai'i





**LEGEND**

 Project Site Boundary

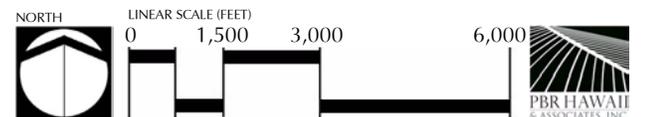
**FIGURE 2**

Tax Map Key

**Pālanui Waterline,  
343-foot Elevation Reservoir, and  
Main Street Collector Road Extension**

Pālanui, LLC

Island of Hawai'i



**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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## **1.2 LOCATION**

The project area is located mauka of Queen Ka'ahumanu Highway and the Kona International Airport at Keāhole, in the North Kona district on the Island of Hawai'i (Figure 1). The major commercial center in the North Kona district is Kailua-Kona, the second largest city on the Island of Hawai'i. The two major roads that pass through Kailua-Kona are Queen Ka'ahumanu Highway (State Route 19) and Māmalahoa Highway (State Route 190). Queen Ka'ahumanu Highway was completed and opened for use in 1975 and is the main transportation route between Kailua-Kona, West Hawai'i's deep water harbor at Kawaihae, and the large resort areas of Hualālai, Waikoloa and Hapuna Beach.

## **1.3 LAND OWNERSHIP**

The land under the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension project area (TMKs: (3) 7-3-10: 39, 40, 42, 43, 44 and 45) (Figure 2) is owned by the State of Hawai'i, but managed by various agencies. Parcel 42 is under the jurisdiction of the University. Parcels 39 and 40 are under the jurisdiction of DHHL. Parcel 45 is the existing right-of-way owned by the State. The remainder of the parcels are managed by DLNR.

## **1.4 IDENTIFICATION OF APPLICANT**

The applicant is Pāalamanui, LLC.

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Pāalamanui, LLC  
PO Box 9007  
Kailua-Kona, HI 96745  
Telephone: (808) 325-0700  
Fax: (808) 443-0701

## **1.5 IDENTIFICATION OF ENVIRONMENTAL CONSULTANT**

The environmental consultant is PBR HAWAII.

**Contact:** Vincent Shigekuni, Vice President  
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Honolulu, Hawai'i 96813  
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**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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## **1.2 LOCATION**

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## **1.3 LAND OWNERSHIP**

The land under the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension project area (TMKs: (3) 7-3-10: 39, 40, 42, 43, 44 and 45) (Figure 2) is owned by the State of Hawai’i, but managed by various agencies. Parcel 42 is under the jurisdiction of the University. Parcels 39 and 40 are under the jurisdiction of DHHL. Parcel 45 is the existing right-of-way owned by the State. The remainder of the parcels are managed by DLNR.

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**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

**1.6 IDENTIFICATION OF APPROVING AGENCY**

The Department of Land and Natural Resources serves as the accepting agency for this document. The proposed action (Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension) sits on DLNR land.

**Contact:** Charlene Unoki  
Department of Land and Natural Resources  
P.O. Box 621  
Honolulu, Hawai'i 96809  
Telephone: (808) 587-0414  
Fax: (808) 587-0455

**1.7 COMPLIANCE WITH STATE OF HAWAI'I AND COUNTY OF HAWAI'I ENVIRONMENTAL LAWS**

This document has been prepared in accordance with the provisions of Chapter 343, Hawai'i Revised Statutes (HRS) and Title 11, Department of Health, Chapter 200, Hawai'i Administrative Rules (HAR) relating to Environmental Impact Statement Rules. Section 343-5, HRS, sets forth nine "triggers" requiring either an environmental assessment or an environmental impact statement.

In accordance with Section 343-5(b), HRS, the use of State land is a "trigger" requiring preparation of an environmental assessment (EA) by the applicant at the earliest practicable time in order to determine whether an environmental impact statement (EIS) shall be required. As such, this EA is prepared in compliance with all pertinent statutes and regulations.

**1.8 IDENTIFICATION OF AGENCIES CONSULTED**

The individuals and agencies (or agency documents) listed below were consulted in preparation of this EA. Correspondence received during the pre-consultation period and respective reply letters from the consultant are included as APPENDIX A.

**Federal**

Federal Emergency Management Agency  
U.S. Army Corps of Engineers  
U.S. Department of Agriculture, Natural Resources Conservation Service  
U.S. Department of the Interior, Fish and Wildlife Service

**State of Hawai'i**

Department of Business Economic Development & Tourism (DBEDT)  
Land Use Commission  
Office of Planning

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

## **2.0 PROJECT DESCRIPTION**

This section provides information on the existing uses, a general description of Pāalamanui Waterline, the 343-foot elevation reservoir and the Main Street collector road extension. The section also includes background on the purpose and need for the proposed infrastructure, discusses the development timetable, and preliminary development costs.

Concurrent with development of the waterline, reservoir and collector road extension, the construction of a 20,000 square foot building complex for UHCWH would commence – a project separate from the proposed action. These activities, along with their impacts and related mitigation measures, have been fully disclosed in the 2000 *University of Hawai'i Center at West Hawai'i* and 2004 *Pāalamanui Development* final environmental impact statements.

### **2.1 EXISTING LAND USE**

The Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension project area currently sits vacant and undeveloped (see Figure 3). Most of the area is covered with scrub grass, small trees and shrubs. No modern development has occurred in the immediate area.

### **2.2 BACKGROUND INFORMATION ON PALAMANUI DEVELOPMENT AND UNIVERSITY OF HAWAI'I AT WEST HAWAI'I (UHCWH)**

The Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension are proposed as infrastructure support for the Pāalamanui Development and the UHCWH, described below:

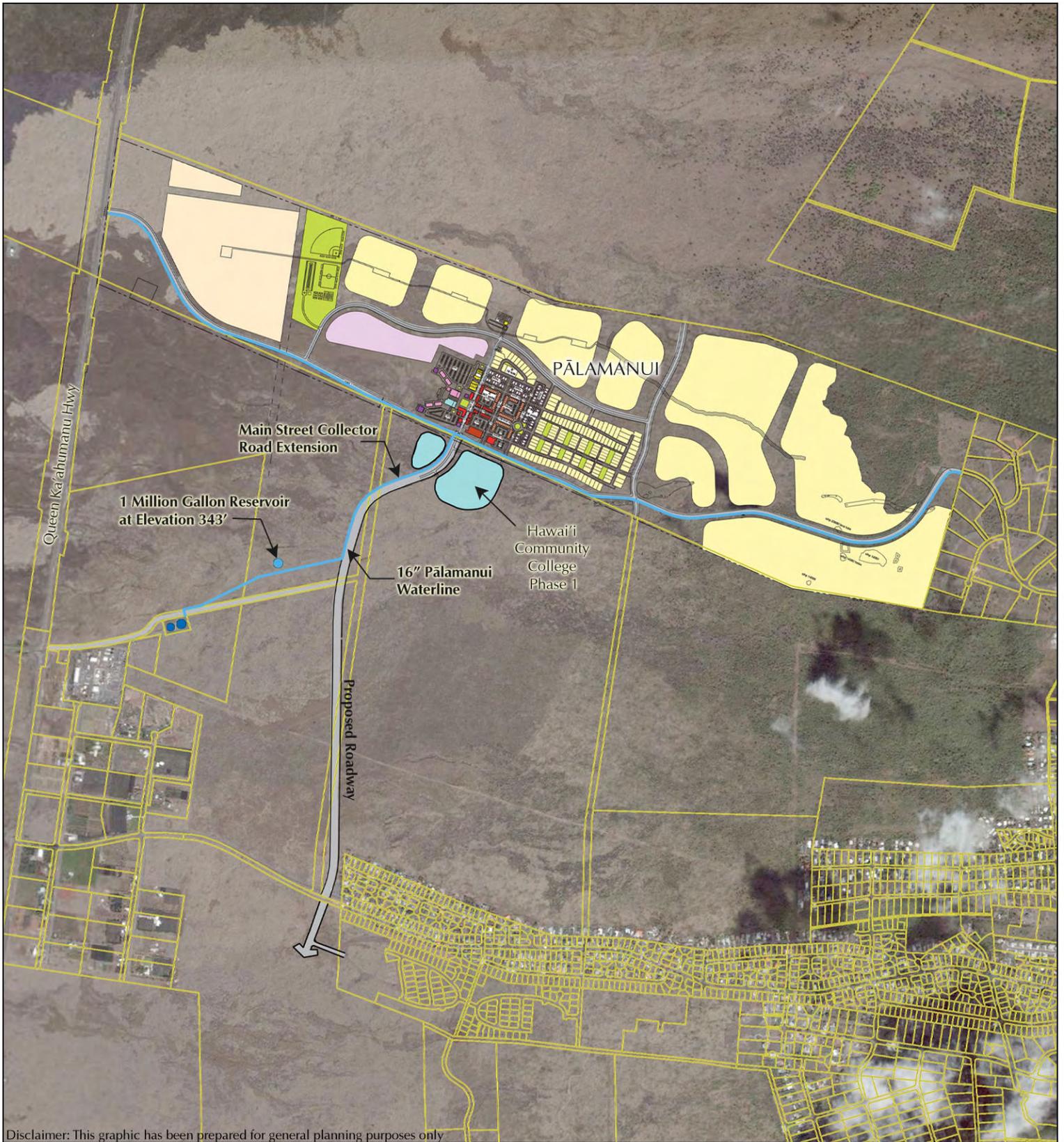
**Pāalamanui Development:** Pāalamanui, LLC (Pāalamanui) proposes development of its approximately 725-acre parcel (TMK: (3) 7-2-05:01) located mauka of Queen Ka'ahumanu Highway and makai of Makalei Estates (Figure 3). As a master planned community, Pāalamanui includes single- and multi-family residential units, University residential facilities, health facilities, research and development facilities, mixed commercial development, a small hotel, archaeological preserves, cave and lava tube preserves, a dry forest preserve, passive and active parks, open space and parking areas. Pāalamanui, LLC will provide the infrastructure facilities to support the Pāalamanui Development.

Infrastructure includes access and internal circulation roadway networks, a wastewater treatment and disposal system, a potable water supply and fire protection system, a non-potable water irrigation system, major electrical improvements and other utility systems. A Final Environmental Impact Statement was prepared for the "Pāalamanui—A Hiluhilu Development Project" in

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

September 2004 by Group 70 International, Inc. and accepted October 7, 2004  
by the State of Hawai'i Land Use Commission.



**LEGEND**

-  Proposed New Water Tank
-  Proposed 16" Waterline
-  Proposed Road and Utility Alignment

**FIGURE 3**

Aerial Photograph

**Pālanui Waterline,  
343-foot Elevation Reservoir, and  
Main Street Collector Road Extension**

Palamanui, LLC

Island of Hawai'i

NORTH



NOT TO SCALE



Source: Google Earth (2004)  
Lynch Hawai'i Development, LLC  
Mitsunaga & Associates, Inc.  
Riehm Ownsby Planners Architects  
SWA

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

**University of Hawai'i Center at West Hawai'i:** The University of Hawai'i Center at West Hawai'i (UHCWH) currently operates in the Kealakekua Business Plaza at the intersection of Haleki'i Street and Māmalahoa Highway (81-964 Haleki'i Street). University Centers are located in communities that lack access to programs offered elsewhere in the University of Hawai'i system. University Centers offer degrees and certificate programs accredited at other UH system campuses offered through distance learning. For administrative purposes, the UHCWH is assigned to the Hawai'i Community College in Hilo.

A new permanent facility for the UHCWH has been proposed at Kalaoa, on a portion of the parcel (TMK: (3) 7-3-10:42) located adjacent to the Pāalamanui Development. This 500 acre parcel is owned by the State of Hawai'i. Initially, the campus will be approximately 33 acres. The UHCWH will include a Library/Learning Resource Center, Food Service Building, Operations and Maintenance Building, Instructional Support/Director Building, Student Services Building, Continuing Education Building and General Instruction classrooms. A Final Environmental Impact Statement was prepared for the UHCWH in October 2000 by Wil Chee – Planning & Environmental, Inc. and accepted by the Governor in March 2001.

Pāalamanui, LLC will develop and provide some of the infrastructure and buildings for UHCWH. On November 21, 2002, with University of Hawai'i Board of Regents' (BOR) approval, Hawai'i Community College entered into a Memorandum of Understanding (MOU) with Pāalamanui to consult and discuss joint development opportunities for the adjacent properties, with the developer providing initial infrastructure for the UHCWH. Pāalamanui, LLC will also develop a residential/commercial community on its property, with a University Village Center on a small portion of Pāalamanui's land and spanning a small part of the State's property (Figure 3). The University Village is envisioned as a walking village which would link the University's facilities with complimentary commercial, recreational and cultural facilities.

A 120-foot wide north-south roadway right-of-way paralleling Queen Ka'ahumanu Highway borders the makai boundary of the University site. Pāalamanui has proposed an alignment for the Main Street Collector Road which will provide access and utility corridor to Pāalamanui and the UHCWH. The Main Street Collector Road will run from Ka'iminani Drive to Pāalamanui and will be located in portions of TMK: (3) 7-3-10:42, 45 and 49. The Main Street Collector Road was initially planned to follow the existing 120-foot right-of-way (TMK: (3) 7-3-10:45), but was slightly realigned north to avoid archaeological sites. The Main Street Collector Road will initially consist of two 12-foot lanes, with the possibility to expand to four lanes in the future.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

A Final Environmental Assessment was prepared by Wil Chee – Planning & Environmental, Inc. for the “University of Hawai’i Center at West Hawai’i Main Street Collector Road” in January 2007, with a determination by the approving agency, the State of Hawai’i Department of Accounting and General Services (DAGS), that there will be no significant environmental impacts associated with the proposed action.

### **2.3 DESCRIPTION OF THE PROPOSED IMPROVEMENTS**

Pāalamanui, LLC is proposing to construct a 16-inch underground waterline (Pāalamanui Waterline), 343-foot Elevation Reservoir and Main Street Collector Road Extension in the North Kona district on the Island of Hawai’i. A brief description of each are included below:

**Waterline:** The Waterline will run approximately 5,750 feet. The waterline will start at the existing County of Hawai’i Department of Water Supply’s (DWS) Keāhole water tanks (located at the 280-foot elevation). The Keāhole water tanks consist of one 0.5 million gallon tank and one 1 million gallon tank. From the Keāhole water tanks, the waterline will extend mauka through open land, where it will intersect and run within the future Main Street Collector Road right-of-way. The 16-inch waterline connects to existing mauka and makai waterlines and forms an important northern “loop” in the DWS regional system. The Pāalamanui Waterline will provide water to the University of Hawai’i Center at West Hawai’i (UHCWH) and Pāalamanui development.

A 10-foot wide service/access road will be constructed by Pāalamanui for use by DWS and follow the same alignment of the Pāalamanui Waterline (from the Keāhole water tanks to the intersect with Main Street Collector Road). Upon completion, the waterline and reservoir will be dedicated to the County of Hawai’i through a title document similar to an Executive Order from the Governor of Hawai’i.

**343-foot Elevation Reservoir:** The proposed reservoir will be constructed along the proposed alignment for the Pāalamanui Waterline and mauka of the existing Keāhole water tanks. The reservoir will be concrete, designed according to DWS standards, and have a design capacity of 1 million gallons. The water for the reservoir will be drawn from two newly outfitted wells adjacent to Māmalahoa Highway and within the same ahupua’a.

Upon completion, the waterline and reservoir will be dedicated to DWS through a title document similar to an Executive Order from the Governor of Hawai’i.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

**Main Street Collector Road Extension:** As shown in Figure 1, the Main Street Collector Road Extension is an s-shaped curved road running through the UHCWH parcel into Pāalamanui from the Main Street Collector Road.

At the same time as the collector road extension waterline and reservoir are being implemented, the initial UHCWH 20,000 square foot building complex and 20-acre regional park will be constructed. These activities, along with their impacts and related mitigation measures, have been fully disclosed in the 2000 *University of Hawai'i Center at West Hawai'i* and 2004 *Pāalamanui Development* Final Environmental Impact Statements.

#### **2.4 PROJECT COST AND IMPLEMENTATION TIMEFRAME**

The cost of the proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension is approximately \$6 million. Pāalamanui anticipates commencement of development to begin as soon as all entitlements and approvals have been received, with completion estimated within 18 months.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

### **3.0 DESCRIPTION OF THE NATURAL ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATION MEASURES**

This section describes the existing conditions of the physical or natural environment, potential impacts of the Pālanuanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension on the environment and mitigation measures to minimize impacts.

#### **3.1 CLIMATE**

Hawai'i Island's geological features heavily influence its climate. Although the island consists of five volcanoes, the peaks of Mauna Loa (13,679 foot summit elevation) and Mauna Kea (13,796 foot summit elevation) dominate ground-based atmospheric influences. The region receives an annual rainfall of approximately 25 inches, with mauka areas typically experiencing larger amounts of rainfall than makai areas. Regional temperatures range from 72 to 77 degrees Fahrenheit (County of Hawai'i Department of Research and Development, 2005). Humidity ranges throughout the year between 68 percent in the morning to 80 percent in the afternoon (NOAA, no date).

Trade winds are typical of the Hawaiian Islands, blowing predominantly from a northeast direction, and averaging approximately 7 miles per hour (mph) (NOAA, no date). Hualālai and Mauna Loa, further influence the wind pattern for the Island of Hawai'i. In the early morning, the prevailing wind pushes out towards the ocean, and in the afternoon, the winds blow from the ocean towards the island (Juvick & Juvick, 1998).

#### ***Potential Impacts and Mitigation Measures***

Construction of the Pālanuanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension are not anticipated to have any impact on climatic conditions and no mitigation measures are planned.

#### **3.2 GEOLOGY AND TOPOGRAPHY**

##### **Geology**

Hualālai Volcano shaped the landscape of North Kona. Its most recent flow in 1800-1801, and including earlier flows, have created a harsh landscape that greatly slopes towards the sea. Multiple flows of differing ages overlap each other creating a layered landscape with lava colors reflecting differences in age, chemical composition, and state of weathering. Hualālai lay dormant since 1801, but a series of earthquakes in 1929 and other seismic activity indicate its most recent eruptive phase may not have concluded (Macdonald, Abbott & Peterson, 1983).

The site's geomorphology consists of multiple interbedded pāhoehoe and a'a flows. Pāhoehoe flows harden and form a smooth ropey surface while a'a flows harden as a

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

rough jagged surface. Both lavas contain buried voids like pockets, blisters, and extensive lava tubes and tunnels that form as the molten rock cools and residual lava drains beneath the solidified surface. Many of these lava tubes and voids have been found in the area. The thin roofs of lava tubes can collapse when placed under additional weight.

**Topography**

The project area slopes in an east to west (mauka to makai) direction, with a cross-slope of approximately four percent. The mauka extent will be located at an elevation of approximately 435 feet above mean sea level (msl) and the makai extent will be located at an elevation of approximately 180 feet above mean sea level.

***Potential Impacts and Mitigation Measures***

Construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will have no substantial adverse effect on the geology or topography of the area. Trenching will be necessary in order to install the waterline underground and existing vegetation will have to be cleared and the surface grubbed. Topography along the utility line alignment will not be altered and drainage patterns will be maintained. All construction will be conducted in compliance with dust and erosion control requirements of the County of Hawai'i. During site grading and all other construction activities involving soil disturbance, Best Management Practices (BMPs), which may include use of silt fences, sediment traps and diversion swales, will be utilized to minimize erosion of soil and the discharge of other pollutants, associated with project development.

**3.3 SOILS**

There are three soil suitability studies prepared for lands in Hawai'i whose principal focus has been to describe the physical attributes of land and the relative productivity of different land types for agricultural production. These are: 1) the U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) Soil Survey; 2) the University of Hawai'i Land Study Bureau Detailed Land Classification; and 3) the State Department of Agriculture's Agricultural Lands of Importance to the State of Hawai'i (ALISH).

**3.3.1 Natural Resources Conservation Service (NRCS)**

The Natural Resource Conservation Service, Soil Survey for the Island of Hawai'i, classifies the soils of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension project site as pāhoehoe lava flows (rLW), Punalu'u extremely rocky peat, 6 to 20 percent slopes (rPYD) and a'a lava flows (rLV) (Figure 4). A brief description of each soil type is included below:

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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**Lava Flows, pāhoehoe (rLW)** - This soil has a billowy, glassy surface that is relatively smooth. In some areas, the surface is rough and broken and there are hummocks and pressure domes. The soil has no cover and is typically bare of vegetation, except for mosses and lichens. Some flat slabs are used as facings on buildings and fireplaces.

**Punalu‘u extremely rocky peat, 6 to 20 percent slopes (rPYD)** - This soil has a rapidly permeable black peat surface layer, about four inches thick and is underlain by very slowly permeable pāhoehoe lava bedrock. The peat has weak, very fine, granular structure that is very friable, non-sticky, non-plastic and non-smearly, with many very fine pores, few pebbles on the surface and many roots. The soil has medium acidity. Approximately 40 to 50 percent of the surface consists of rock outcrop. Runoff is slow and there is slight erosion hazard. Roots are matted over the pāhoehoe lava. The soil is primarily used for pasture.

**Lava Flows, a‘a (rLV)** – This soil is rough and broken, consisting of a mass of clinkery, hard, glassy, sharp pieces piled in tumbled heaps. There is practically no soil covering and is typically bare of vegetation, except for mosses, lichens, ferns and a few small ‘ōhi‘a trees.

### **3.3.2 Land Study Bureau Detailed Land Classification**

The University of Hawai‘i Land Study Bureau document, Detailed Land Classification, Island of Hawai‘i, classifies soils based on a given class productivity rating using the letters A, B, C, D and E, with A representing the highest class of productivity and E the lowest. There is also a U designation, which means the soils are not classified. The soils under the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension project site have no classification (Figure 5).

### **3.3.3 Agricultural Lands of Importance to the State of Hawai‘i (ALISH)**

The Agricultural Lands of Importance to the State of Hawai‘i (ALISH) system classify important agricultural lands as Prime, Unique, or Other Agricultural Land. The Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension project site lands have no classification (Figure 6).

### ***Potential Impacts and Mitigation Measures***

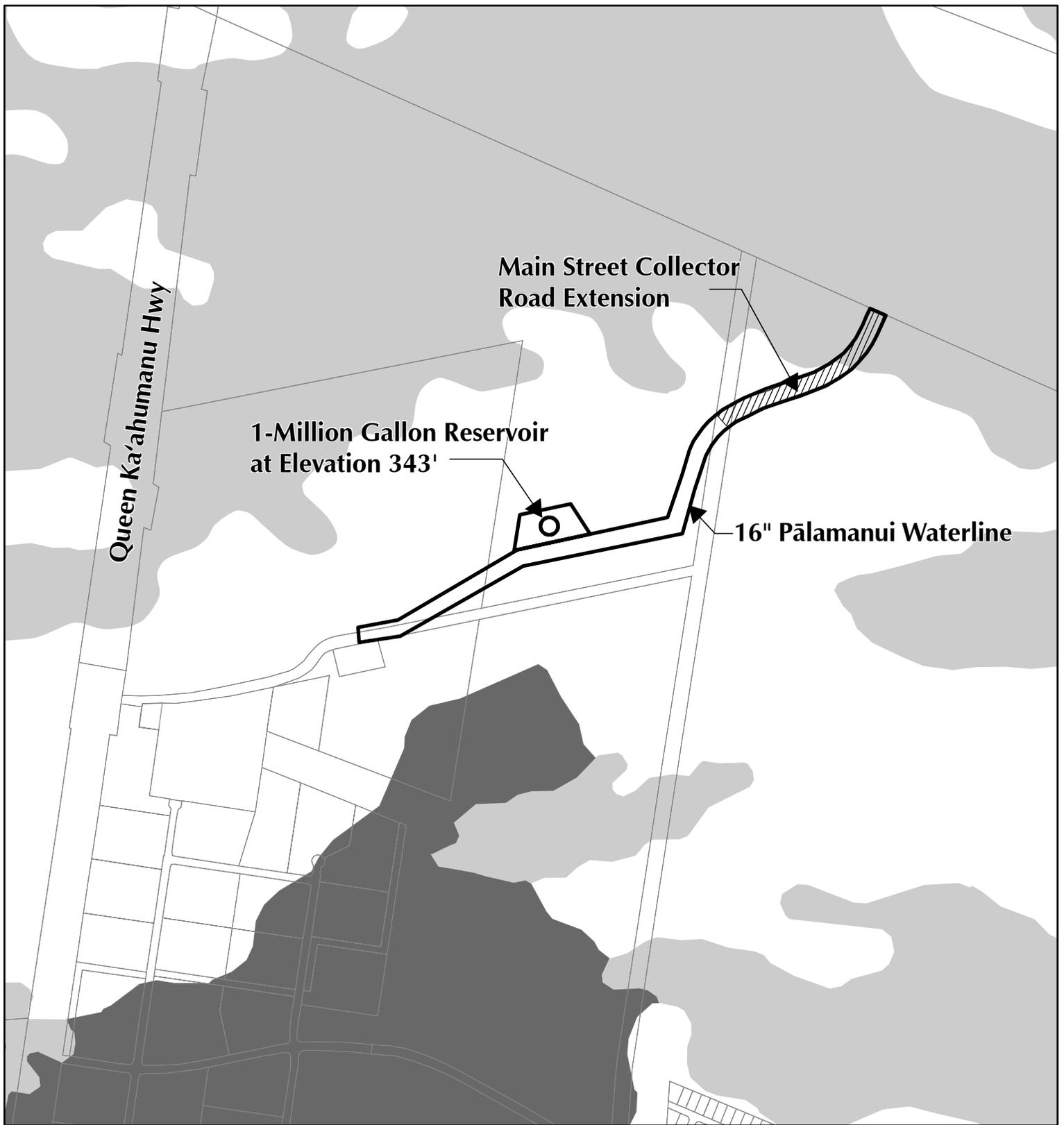
Construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will have no adverse effect on the potential for cultivation of the soils on the project site. Because the soils at the project site are not well suited for

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

crop cultivation, the proposed development is not expected to impact the availability of agricultural land.

Potential impacts to soils include soil erosion and the generation of dust during construction. However, subsequent to line installation, trenches will be backfilled to match existing grades. All construction will be conducted in compliance with dust and erosion control requirements of the County of Hawai'i. During site grading and all other construction activities involving soil disturbance, Best Management Practices (BMPs), which may include use of silt fences, sediment traps and diversion swales, will be utilized to minimize erosion of soil and the discharge of other pollutants, associated with project development.



**LEGEND**

-  Project Site Boundary
-  rLV: Lava Flows, A'a
-  rLW: Lava Flows, Pahoehoe
-  rPYD: Punalu'u Extremely Rocky Peat, 6-20% Slopes

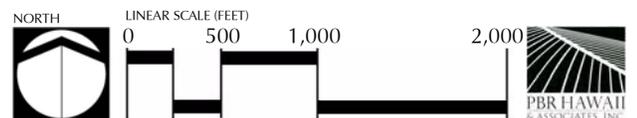
**FIGURE 4**

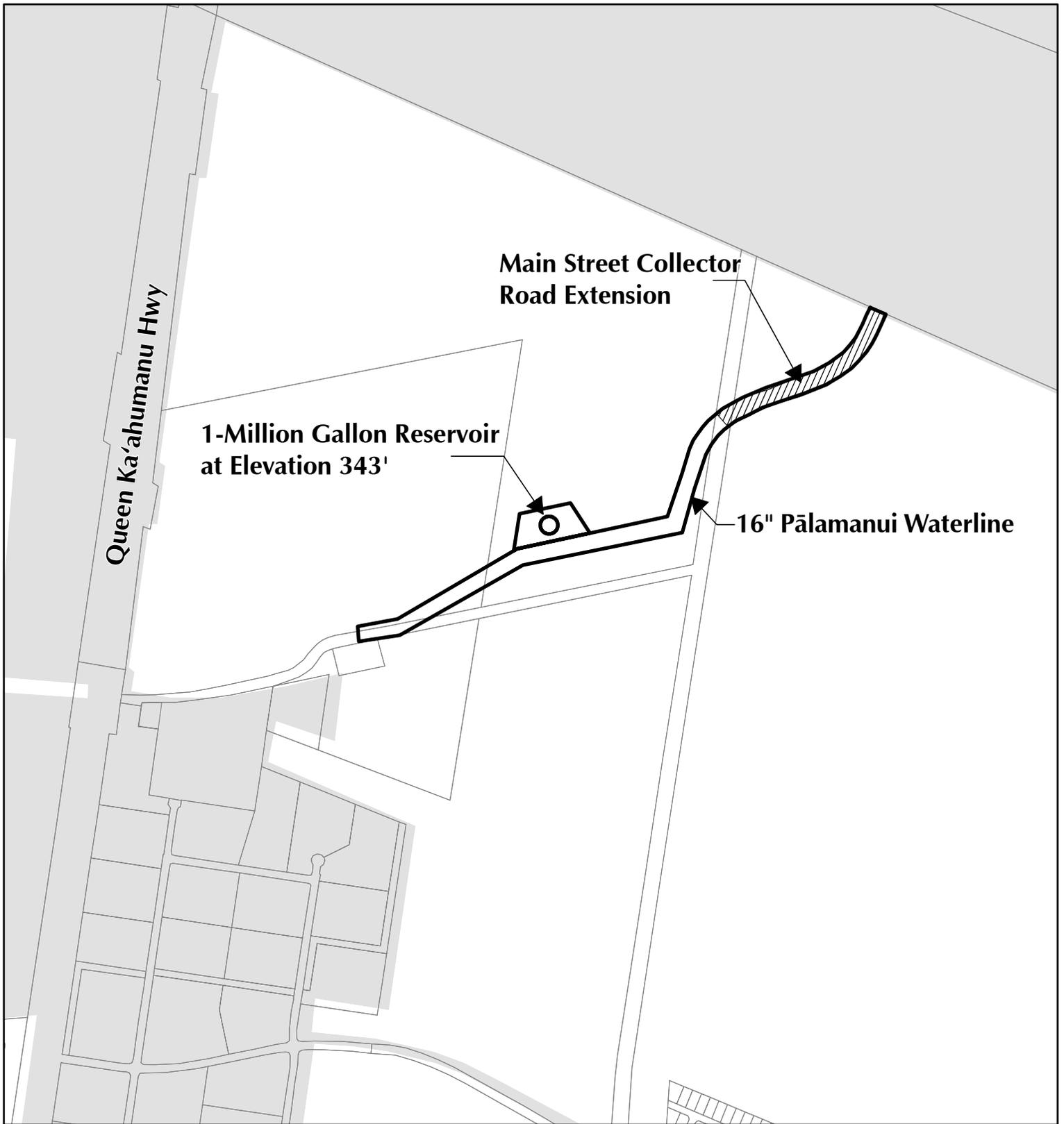
Natural Resources Conservation Service  
Soil Survey

**Pālanui Waterline,  
343-foot Elevation Reservoir, and  
Main Street Collector Road Extension**

Pālanui, LLC

Island of Hawai'i





**LEGEND**

-  Project Site Boundary
-  Type E (Very Poor)
-  Not Classified

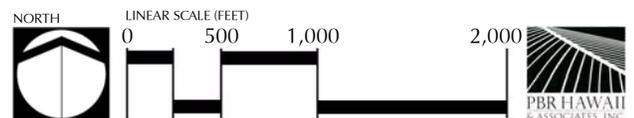
**FIGURE 5**

Detailed Land Classification

**Pāalamanui Waterline,  
343-foot Elevation Reservoir, and  
Main Street Collector Road Extension**

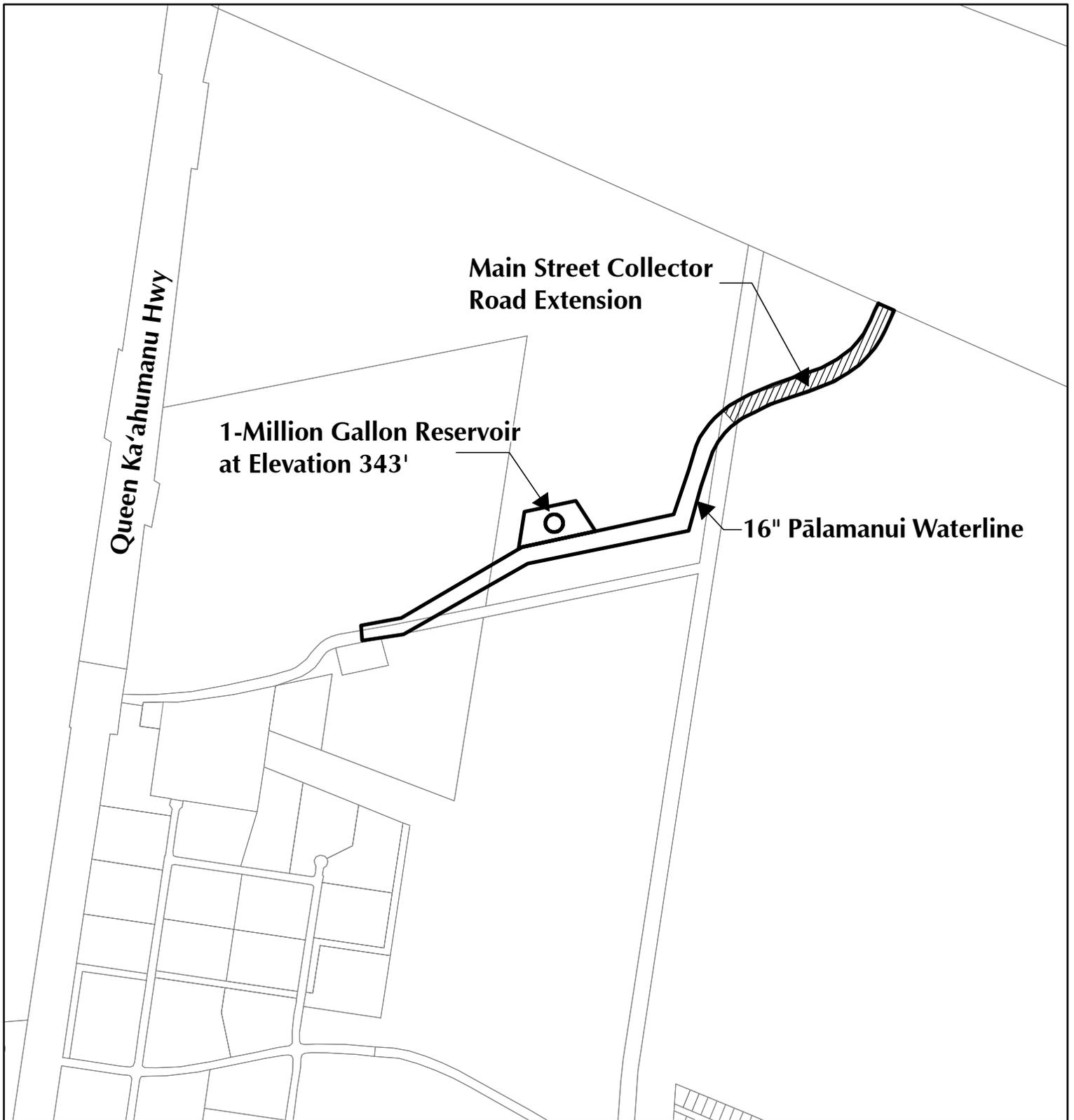
Pāalamanui, LLC

Island of Hawai'i



Source: Land Study Bureau (1967)  
Disclaimer: This graphic has been prepared for general planning purposes only





**LEGEND**

-  Project Site Boundary
-  Unclassified ALISH Lands

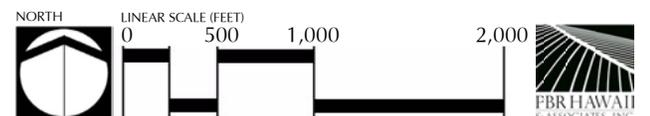
**FIGURE 6**

Agriculture Lands of Importance to the State of Hawai'i (ALISH)

**Pālamanui Waterline,  
343-foot Elevation Reservoir and  
Main Street Collector Road Extension**

Pālamanui, LLC

Island of Hawai'i



Source: U.S. Department of Agriculture (1977)  
Disclaimer: This graphic has been prepared for general planning purposes only

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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### **3.4 NATURAL HAZARDS**

The Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension project site are at risk from hazardous events, such as flooding, tsunami inundation, hurricanes, earthquakes and volcanic eruptions.

#### **Flooding**

According to the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA), National Flood Insurance Program, the project site is located in Zone X, an area determined to be out of the 500-year flood plain (Figure 7). The site is located in a dry and arid environment where the risks of flooding are low due to a combination of factors, including low rainfall, thin soil layer and high porosity of the bedrock. During periods of heavy rainfall ponding and some scouring by flowing surface water may occur, but it normally does not last long and rapidly percolates into the substrate.

#### **Tsunami**

Since the early 1800s, approximately 50 tsunamis were reported in Hawai'i. Seven caused major damage and two were generated locally. The proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will be located outside of the tsunami inundation area, according to maps issued by the Hawai'i County Civil Defense Agency.

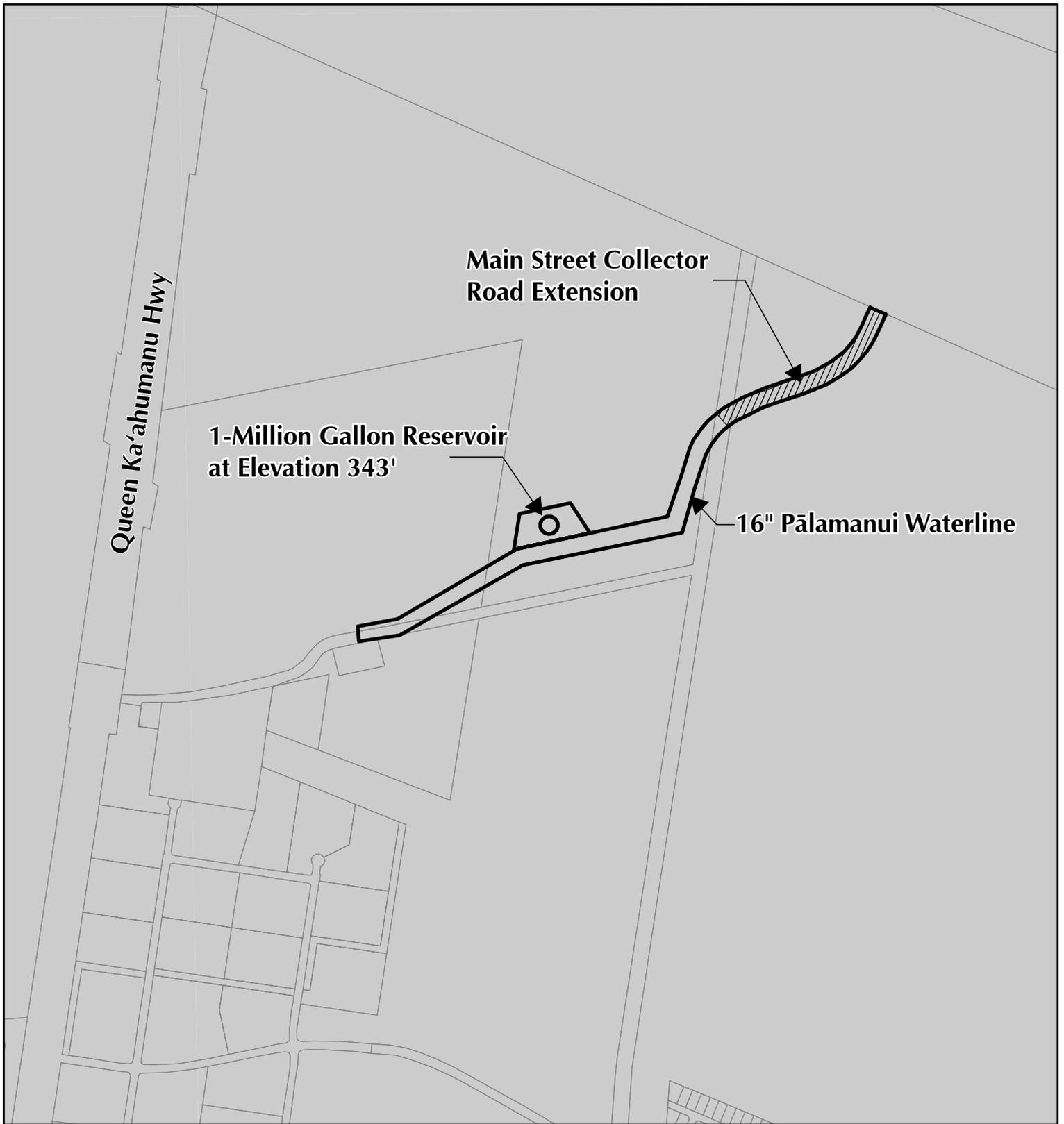
#### **Hurricanes**

Since 1980, two hurricanes have had a devastating effect on Hawai'i. They were Hurricane 'Iwa in 1982 and Hurricane 'Iniki in 1992. While it is difficult to predict such natural occurrences, past history reveals periodic events giving rise to the likelihood of future occurrences.

#### **Seismic Hazards**

In Hawai'i, volcanic activity produces most earthquakes in contrast to other areas sitting on tectonic plate margins. Thousands of earthquakes occur in Hawai'i each year. However, the vast majority of them are undetectable through normal human senses. A few historical earthquakes have reached moderate and even disastrous magnitudes.

The last earthquake reported with an epicenter near the project area, in Hualālai, occurred in 1929 with a magnitude of 6.5. This earthquake caused extensive damage to the Kona area. The most recent series of earthquakes, with magnitudes of 6.7 and 6.0, occurred at Kīholo Bay on October 15, 2006. These earthquakes resulted in more than \$100 million in damages to the northwest area of the island, and induced massive electrical blackouts statewide.



**LEGEND**

-  Project Site Boundary
-  Zone X: Outside of Floodplain/Minimal Flooding

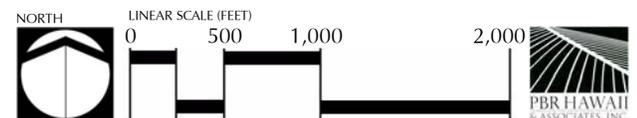
**FIGURE 7**

Flood Insurance Rate Map

**Pāalamanui Waterline,  
343-foot Elevation Reservoir, and  
Main Street Collector Road Extension**

Pāalamanui, LLC

Island of Hawai'i



**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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**Volcanic Hazards**

The volcanic hazard zone map for the Island of Hawai'i divides the island into zones ranked from 1 through 9 (with 1 being the area of greatest hazard and 9 being the area of least hazard) based on probability of coverage by lava flows. The project site is within Zone 4, which includes all of Hualālai, where about 5 percent has been covered with lava since 1800 and less than 15 percent has been covered by lava in the last 750 years. Lava flows typically cover large areas but the frequency of eruptions is lower than other volcanoes, such as Kīlauea and Mauna Loa (USGS, 1997).

***Potential Impacts and Mitigation Measures***

The construction and use of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension are not anticipated to have any impact on any natural hazard conditions and no mitigation measures are planned.

**3.5 FLORA & FAUNA**

**3.5.1 Flora**

A botanical survey was conducted by Patrick Hart, PhD for the proposed Pāalamanui Access Road on April 12, 2007 (see APPENDIX B). The purpose of the botanical survey was to determine if any federally listed, endangered, threatened, proposed, or candidate plants are located within the area proposed for the Pāalamanui Waterline within Main Street Collector Road. During the survey, plant species and vegetation types present were recorded and estimates of relative abundance (abundant, common, rare, etc.) of each species were made.

The proposed site consists of mixed shrub-grassland in the south and in grassland to the north. The only species of concern was *maiapilo* amidst the shrub-grassland areas. The amount of *maiapilo* and other generally rare native species, such as *maua*, is greater in the grassland area with the greatest density of native shrubs and trees within the corridor occurring near the northern boundary of the property.

***Potential Impacts and Mitigation Measures***

The proposed work will not impact any listed or important native trees. Although some destruction of a few *maiapilo* will occur, most in the area will not be disturbed. The Pāalamanui Waterline located within portions of the Main Street Collector Road is not expected to have a significant adverse impact on rare, threatened, or endangered plant species.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

The Biological Resources Survey conducted by AECOS Consultants in 2005 for the Main Street Collector Road Final Environmental Assessment reports that all plants in the area are vulnerable to fire and development (Wil Chee – Planning & Environmental, Inc., 2007). Mitigation measures that were suggested for the proposed Main Street Collector Road should also be considered in the construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension include:

- Flag and record locations of native trees to minimize any losses. Furthermore, this information should be transmitted to contractors to avoid inadvertent destruction during grading and construction activities, where the route passes close to a plant.
- New individuals of any native plants that were destroyed by construction activities could be cultivated in archaeological preserve areas expected to be established on the UHCWH site or replaced with additional natives.

### **3.5.2 Fauna**

AECOS Consultants were contracted to conduct a Biological Resources Survey to assess conditions along the corridor for the routing of the Main Street Collector Road whose findings were included in the road's Final EA (Wil Chee – Planning & Environmental, Inc., 2007). Findings from AECOS Consultants' study are summarized in this section since portions of the Pāalamanui Waterline will be located within the Main Street Collector Road ROW.

AECOS Consultants performed investigations to determine if there were any species of concern. The assessment entailed a search for invertebrates and vertebrates. Surface and lava tube (cave) investigations for invertebrates were conducted during the day and again at night. Only one native snail, *Succinea*, was observed on a rotting log. It was determined that if the survey was conducted immediately after a period of rain, more would be found, since the genus is a prevalent native snail. No alien species of medical importance (centipedes, scorpions, widow spider, honey bee colonies and common paper wasp nests) were identified. No native invertebrates on the federal or state endangered, threatened, proposed, or candidate lists were observed. Five alien mammalian species were detected during the survey. There was evidence of dogs, cats, goats, pigs and cattle. No rodents or mongoose, which are threats to avian species, were detected during the course of the survey. However, it was deemed almost certain that such species depended on the resources in the area. The habitat was considered to be typical of the fountain grass dominated, xeric communities of the North Kona District, which are not conducive to supporting native bird species. In total, 121 birds of 10 distinct avifauna species alien to Hawai'i, representing 8 separate families, a majority of which were spotted within 100-meters of existing housing along Ka'iminani Drive, were recorded during the course of the survey. The endangered Hawaiian Hoary Bat (*Lasiurus cinereus semotus*) was not witnessed. However, it was stated in the report that they could be expected to fly over the project site.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

***Potential Impacts and Mitigation Measures***

The Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension are not expected to have a significant adverse impact on rare, threatened, or endangered species.

The Biological Resources Survey conducted by AECOS Consultants in 2005 for the Main Street Collector Road reports that there are no expected adverse impacts on the Hawaiian Hoary Bat, the only listed terrestrial mammalian species in Hawai'i. Mitigation measures that were suggested during the construction of the proposed Main Street Collector Road should also be considered in the construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension, which include the shielding of any exterior lighting that would be used during construction phases of the project to minimize the disorientation and subsequent downing of Hawaiian Petrels and Newell's Shearwater. In this case, because trenching and installation associated with the proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will occur during the day, there would be no possibility for lighting impact on Hawaiian Petrels and Newell's Shearwater because they are nocturnal species. Therefore, no mitigation is necessary.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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## **4.0 DESCRIPTION OF THE HUMAN ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATION MEASURES**

This section describes the existing conditions of the human environment, potential impacts of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension on the environment and mitigation measures to minimize impacts.

### **4.1 ARCHAEOLOGICAL AND CULTURAL RESOURCES**

#### **4.1.1 Archaeological Resources**

Archeological studies conducted for nearby projects were reviewed for applicability to this project. They include studies done by Pacific Legacy for the Main Street Collector Road Final Environmental Assessment (Wil Chee – Planning & Environmental, Inc., 2007), and an archeological/cultural impacts study by Paul Rosendahl, Inc. (PHRI) for the Keahole Generating Station & Airport Substation Final Environmental Impact Statement (Belt Collins Hawaii, 2005).

#### Main Street Collector Road Final Environmental Assessment

An Archaeological Assessment for the area was conducted by archaeologists from Pacific Legacy in May 2005 and findings were included in the Main Street Collector Road Final EA. The proposed Pāalamanui Waterline will be located within portions of the Main Street Collector Road; therefore Pacific Legacy's Archaeological Assessment covers some of the same project area and is applicable to this environmental assessment.

Pacific Legacy's work entailed locating and assessing the condition of sites near the western boundary of the UH acreage. GPS coordinates were recorded for all of the sites and a total of ten sites were located during the field investigation. The sites that were investigated include:

Site 50-10-28-6418: A lava tube complex that consists of three tube sections. Two of the sections have some potential for excavation to provide important archaeological data.

Site 50-10-28-15262: Three *ahu* (cairns) with an associated terrace are located on a prominent knoll in the northern portion of the project area. Given the location it appears they were used for religious purposes and not habitation or agricultural sites.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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Site 50-10-28-15264: Two modified outcrops and a lava tube are at this location. The site is in good condition and parts are covered with fountain grass. No additional data appear to be present in these feature, but preservation is advised.

Site 50-10-28-15287: A *papamū*, or game board for the Hawaiian checker game of *kōnane*, is the major feature at this location. This game board appears to be associated with a habitation site that is close by (Site 50-10-28-15264).

Site 50-10-28-15288: This is the location of an *ahu* (cairn) that is in good condition and may have been square or circular in shape but it has since deteriorated into an amorphous shape. It may have been a marker along a mauka-makai trail. No additional data appear to be present in these feature, but preservation is advised.

Site 50-10-28-15298: This location consists of a habitation and refuge cave that is over 700 meters long and contains numerous features including human burials. It is in good condition and sealing is recommended to protect the integrity of the site.

Site 50-10-28-15302: This site is a large habitation cave that may have also provided a site for ceremonial functions. Although no human remains were observed within this site it is strongly recommended that this site be preserved due to its potential uses as a ceremonial area.

Site 50-10-28-15303: The features here consist of a modified lava tube and a modified outcrop or blister with an associated basalt alignment.

Site 50-10-28-15304: A single petroglyph is located here. The petroglyph resembles the letter "X" or a cross. It possibly was created after European contact in 1778 and may be an early surveyor's mark. This site appears to have low interpretive value and no further field work is recommended, but preservation of this site is advised.

Site 50-10-28-21361: This feature is identified as a stepping stone trail on the top of an a'a lava flow. It is in poor condition and appears to have been disturbed by grading activities. This site appears to have low interpretive value and no further field work is recommended, but preservation of this site is advised.

All of the sites are significant under criteria "d" of the National Historic Preservation Act and need to be treated appropriately. The significance level of "d" indicates that the sites have yielded, or may be likely to yield, information important in prehistory or history.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

The State of Hawai'i has an additional significance criterion that may be used in the evaluation process, which is "e", items that have an important value to the Native Hawaiian people or to another ethnic group of the State due to associations with cultural practices once carried out or still carried out at the property; or due to associations with traditional beliefs, events, or oral accounts, these associations being important to the group's history and cultural identity. In addition to the National Historic Preservation Act significance level of "d", seven of the above sites meet the "e" significance level (sites: 50-10-28-6418, 50-10-28-15262, 50-10-28-15287, 50-10-28-15288, 50-10-28-15298, 50-10-28-15302 and 50-10-28-15304).

In January 2007, Rechtman Consultants carried out an archeological field survey to identify a corridor for the waterline and access road that would avoid impacting the lava tube system (APPENDIX C). The tube system was field identified, and the proposed development corridor was re-aligned to the north of the extent of the tube system. In the course of identifying the subsurface extent of the tubes, one subsurface archaeological feature, a cache of four wooden *kāpa* beaters within a decaying gourd were encountered, but was not within the study area. The feature was documented and its discovery was reported to DLNR-SHPD, along with an expression of concern for the protection of this feature from potential impact resulting from on-going illegal activities (mechanical and hand rock harvesting, and marijuana cultivation) in the immediate vicinity of the finds. A second, surface feature, a single petroglyph, was also observed to be present outside of the study area.

A detailed culture-history from legendary times to the Historic Period revealed that the project area was not heavily occupied or used during Pre-contact times and became part of large granted lease holdings during historic times. There were no kuleana awarded in the study area during the *Mahele*. Archaeological studies for the region conducted between 1968 and 1993 indicate possible trails, petroglyphs, dry land agricultural features, temporary habitation sites, and lava tubes containing burial and habitation features.

The field investigators thoroughly examined the 200-foot wide study corridor. No archaeological resources were observed within the study area and the likelihood of encountering subsurface resources is extremely remote. On June 27, 2007, Rechtman Consultants requested DLNR-SHPD to issue a written determination of "no historic properties affected" in accordance with HAR 13-284-5(b)1. To date, SHPD has not responded.

Keahole Generating Station & Airport Substation Final Environmental Impact Statement

The archeological study done by PHRI for this 2005 Final EIS covered a half-acre area that is included in the makai portion of the proposed waterline alignment. This study found no resources of any significance and requested a "no-effect" determination from the SHPD of DLNR.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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***Potential Impacts and Mitigation Measures***

Because road-building activities could damage sites found along the proposed corridor at the western edge of the University of Hawai'i's 500-acre parcel, the corridor was realigned to the north, as described above, to mitigate damage to archeological sites found along the originally proposed alignment.

Additional mitigation measures were recommended by Pacific Legacy Inc. for construction of the Main Collector Road that included the following:

1. All sites in the area should be avoided if possible and attempts made to preserve them. The final road alignment will be designed to avoid sites. There is enough room to shift the alignments of the road.
2. If avoidance is not possible a bridge or causeway over the site will be constructed.
3. Since the archaeological sites are on land owned by the State of Hawai'i the State is responsible for the preservation of the sites.
4. In all aspects of the planning process, community involvement will continue to be encouraged and in the case of burial sites the Hawai'i Island Burial Council will be contacted for input.

If Pālamānui, LLC and its contractor adhere to the mitigation measures listed above, impacts to historic and archaeological should remain at a minimum

**4.1.2 Cultural Resources**

In January 2007, the Rechtman study, which included a detailed culture-history from legendary times to the Historic Period, revealed that the project area was not heavily occupied or used during Pre-contact times and became part of large granted lease holdings during historic times. There were no *kuleana* awarded in the study area during the *Mahele*.

In addition, a Cultural Impact Assessment for the Main Collector Road was prepared by Pacific Legacy, Inc. in November 2005 and was included in the Final EA. Pacific Legacy, Inc. conducted interviews and background research and concluded that the area does not currently support any traditional cultural uses. The area is not frequented by spiritual or cultural practitioners and no other traditional activity is conducted there.

Also of interest is an archeological and cultural impacts assessment study that was conducted in 2005 by Paul Rosendahl (PHRI) for the Keahole Generating Station & Airport Substation Final EIS. The generation station area includes the makai portion of the waterline alignment. This study found no evidence of any potentially significant cultural resources (properties, features, natural resources, practices or beliefs) either within or

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

directly related to the site; and no indication of any kind that the site is being used by cultural practitioners of any cultural affiliation for traditional cultural purposes.

Hunting and gathering activities continue to occur in the larger area. However the locations of these practices are not site specific. Hunting, in particular, would be limited in the vicinity of the proposed waterline. The proximity of Queen Ka'ahumanu Highway, DHHL lessees and the airport creates human disturbance limiting animal activity in the area. Moreover, a fauna survey was conducted on the UHCWH site in 2000. The investigators did not see or hear any goats, pigs, or donkeys, nor was there any recent evidence of their presence. In 1998, Derral Herbst conducted a flora survey of the UHCWH site. The flora survey found no plants commonly gathered in native Hawaiian practices like *ko'oko'olau* (*Bidens micrantha ssp.*), *hala* (*Pandanus tectorius*) and *noni* (*Morinda citrifolia*), which are plants commonly gathered. The lack of site identifications in both the fauna and flora studies support the conclusion that little or no known hunting or gathering activity occurs in the immediate area. During the pre-consultation period, the State Office of Hawaiian Affairs (OHA) was consulted, but OHA replied in writing that it had no comments at that time.

***Potential Impacts and Mitigation Measures***

Given the lack of evidence of any recent cultural or traditional practices, and the lack of recent hunting or gathering activities from the above-cited studies, impacts to cultural or traditional practices from this project are minimal to non-existent. Therefore, no mitigation measures appear warranted or are planned.

**4.2 ROADWAYS AND TRAFFIC**

Currently two major roads service traffic between Kailua-Kona and the alignment of Main Street Collector Road either on Ka'iminani Drive connecting to Queen Ka'ahumanu Highway or Māmalahoa Highway connecting Palani Road. The intersection of Queen Ka'ahumanu Highway and Palani Road creates one of the major highway bottlenecks on the island.

Queen Ka'ahumanu Highway (State Route 19) extends in a north-south direction makai of the site, and is currently being widened to four-lanes in two phases. Phase I of the expansion, which will involve road widening from Henry Street to Kealakehe Parkway, is currently underway (as of April 2008). Bids opened for Phase II of the expansion, involving road widening of the area from Kealakehe Parkway to Keāhole Airport in December 2007, with the contract award pending.

Ka'iminani Drive is a County two-lane, two-way roadway that provides mauka-makai access between Queen Ka'ahumanu Highway and Māmalahoa Highway.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

Māmalahoa Highway (State Route 190) is a two-lanes highway that extending in a north-south direction east of the site, with one lane in either direction. Palani Road is a County, two-way, two-lane roadway that extends in a mauka-makai direction from Queen Ka'ahumanu Highway to Māmalahoa Highway.

The existing base conditions on the roadways adjacent to the project. Existing peak levels of traffic are in the morning and late afternoon that coincide with commuter traffic. All of the following discussions refer to peak levels of traffic.

At the intersection of Queen Ka'ahumanu Highway at Palani Road the northbound lane is severely congested with some standing lines on critical approaches. The intersection becomes blocked when the signal does not provide for turning. These conditions occur again in the late afternoon when commuters are returning from work. The intersection of Māmalahoa Highway at Ka'iminani Drive operates at the same level of service as the intersection of Queen Ka'ahumanu Highway and Palani Road during peak hours.

***Potential Impacts and Mitigation Measures***

The construction and use of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension are not anticipated to generate any impacts on roadways and traffic and no mitigation measures are planned.

**4.3 NOISE**

The main sources of noise in the area are aircraft operations at Kona International Airport, Keāhole Power Plant and traffic from Queen Ka'ahumanu Highway. Background ambient noise levels at the site reflect the natural setting and the absence of vehicular traffic and development.

Existing traffic and background ambient noise levels currently do not exceed the U.S. Federal Highway Administration (FHWA) and Hawai'i State Department of Transportation Highways Division (HDOT) noise abatement criteria (Y. Ebisu & Associates, 2005).

***Potential Impacts and Mitigation Measures***

Wil Chee – Planning & Environmental, Inc contracted Y. Ebisu & Associates to conduct an acoustic study for the Main Street Collector Road's 2007 EA. Y. Ebisu & Associates notes that potential short-term construction noise impacts are possible during the project construction period. As construction of the proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension is of a similar activity, and in the same area as the Y. Ebisu study, noise generated can be minimized by using proper mitigating measures such as standard curfew periods, properly muffled equipment, administrative controls and construction barriers. All grading and

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

construction operations shall be performed in conformance with the applicable provisions of the Hawai'i Administrative Rules, Title 11, Chapter 46, Community Noise Control.

#### **4.4 AIR QUALITY**

The project site is located within an area that is exposed to natural pollution from volcanic out-gassing (volcanic haze or vog), which is vented on the other side of a mountain barrier more than 50 miles east of the site. A source of industrial air pollution is Hawai'i Electric Light Company's (HELCO) Keāhole Power Plant, which is approximately 1.5 miles south. Other sources of pollution are vehicular traffic on Queen Ka'ahumanu Highway and Māmalahoa Highway.

##### ***Potential Impacts and Mitigation Measures***

It is anticipated that no State or Federal air quality standards will be violated during or after the construction of the Pālanuanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension. The only anticipated issues related to air quality would be during construction; however, construction activities would be temporary. Long-term negative impacts related to air quality are not expected.

An effective dust control plan will be implemented as necessary. All construction activities will comply with the provisions of Chapter 11-60.1, Hawai'i Administrative Rules, Section 11-60.1-33, Fugitive Dust. Measures to control dust during various phases of construction include:

- Providing an adequate water source at the site prior to start-up construction activities;
- Irrigating the construction site during periods of drought or high winds;
- Landscaping and rapid covering of bare areas, including slopes, starting from the initial grading phase;
- Disturbing only the areas of construction that are in the immediate zone of construction to limit the amount of time that the areas will be subject to erosion;
- Providing adequate dust control measures during weekends, after hours and before daily start-up of construction activities; and
- Installing silt screening in the areas of disturbance.

#### **4.5 VISUAL RESOURCES**

The site is on the lower slopes of Hualālai Volcano. The area is characterized by expanses of open lava lands covered with grass, shrubs and small trees. Views toward the sea look down on the Keāhole Power Plant, the Keāhole water tanks, Keāhole Agricultural Park and Kona International Airport at Keāhole (Figure 8).

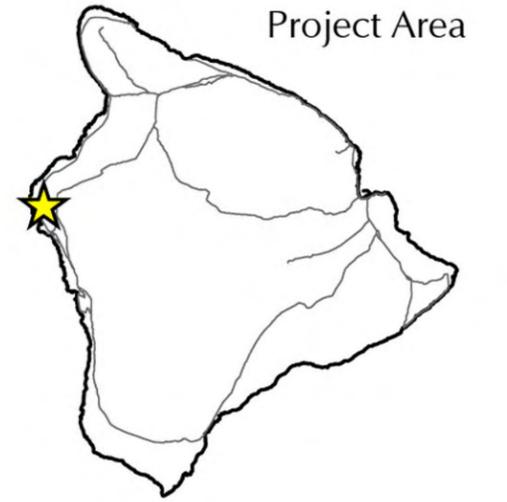
**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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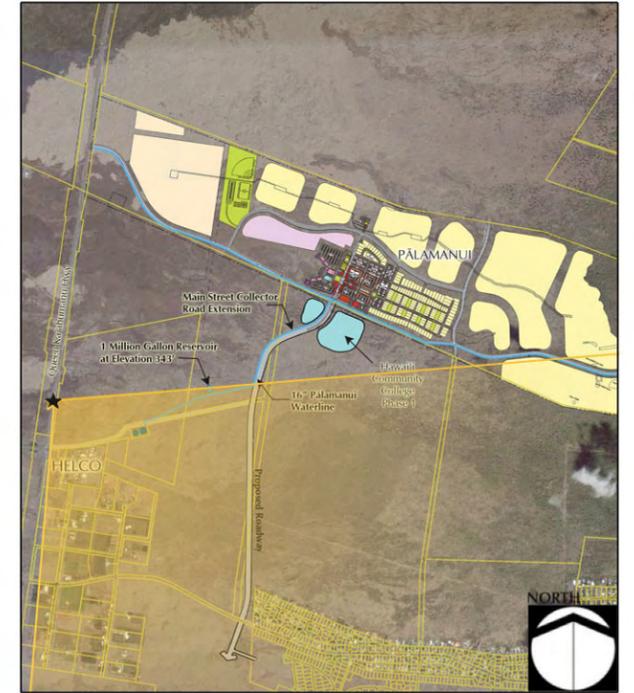
The best views in the vicinity are from the area around the Kona International Airport at Keāhole. From there views encompass the western slopes of Hualālai, the project site and scattered pockets of development along Māmalahoa Highway and Ka’iminani Drive.

***Potential Impacts and Mitigation Measures***

The construction and use of the Pāalamanui Waterline within portions of the Main Street Collector Road is not anticipated to generate any visual impacts and no mitigation measures are planned. However, as the proposed Main Street Collector Road is on the lower slopes of Hualālai it will be visible from the area around the airport and Queen Ka’ahamānu Highway. Once the road is completed it will be visible from the Kona International Airport and Queen Ka’ahumanu Highway until the vegetation grows back along the road bed. At that point all that may be visible may be an occasional vehicle top moving along the road. The visual impact is anticipated be minimal and no mitigation measures will be required.



Approximate View of Photographs



**FIGURE 8**  
 Site Photographs  
**Palamanui Waterline,  
 343-foot Elevation Reservoir and  
 Main Street Collector Road Extension**  
 Palamanui, LLC

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

#### **4.6 SOCIAL & ECONOMIC CHARACTERISTICS**

According to the Census 2000, the population of Hawai'i County numbered 148,677 individuals. The most recent American Community Survey conducted for Hawai'i County in 2006 by the Census Bureau accounted for 171,191 residents, representing a 15% increase in population. Approximately 27% of County residents have obtained a bachelor's degree or higher. The County has 66.8% of its residents actively participating in the workforce, with each household earning a median income of \$55,390 per year.

The proposed project site is located within the County district of North Kona. The most populated region on the west side of the island, North Kona stretches from Keāhole to Waikoloa, and includes major commercial and tourist centers. As of the last census, North Kona had a population of approximately 41,600 residents. That figure is expected to nearly double at the time of the next census in 2010. The North Kona region is in the midst of a tight labor market, with approximately 1,000 vacancies reported at area resorts and hotels. The unemployment rate in West Hawai'i is lower than the rest of the State.

The primary industry in North Kona is tourism. Agriculture (coffee, ranching, etc.) also contributes to the regional economy. The Natural Energy Laboratory of Hawai'i Authority's facilities house biotechnology start-up corporations, creating a small industry in this field.

As North Kona is one of the fastest growing regions in the State of Hawai'i, population predictions for the West Hawai'i region indicate that there is sufficient population to justify the construction of a higher education center and permanent location for the UHCWH. This area proposed for the UHCWH is a logical location because the site is close to the Kona International Airport, high technology developments, residential communities and employment centers in Kailua-Kona and West Hawai'i resorts. The proposed Pāalamanui Waterline and 343-foot Elevation Reservoir will provide water service to both the Pāalamanui Development and the new the UHCWH.

#### ***Potential Impacts and Mitigation Measures***

The proposed Pāalamanui Waterline and 343-foot Elevation Reservoir will provide water service to both the Pāalamanui Development and the UHCWH. The proposed improvements will provide a needed link to the County Department of Water Supply's regional water system near the Kona International Airport. Pāalamanui will provide the funds to construct both the Main Street Collector Road with the new waterline, water tank and temporary facilities to be leased by the UHCWH. This defers the cost that UH would have to absorb for constructing the road and building the temporary facilities.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

The construction of the new waterline within portions of the Main Street Collector Road and 343-foot elevation reservoir will provide jobs during the construction of the waterline and reservoir.

#### **4.7 INFRASTRUCTURE AND UTILITIES**

##### **4.7.1 Water System**

There is no source of potable water or any water on the site and there are no facilities for the transport, disposal and treatment of waste water along the proposed waterline, reservoir and road extension. The closest class AA water body is the Pacific Ocean which is approximately 2.5 miles from the proposed roadway. The project area has no streams, water courses, or ponds. The lack of streams is due to the porosity of the interbedded pāhoehoe and a'a flows that make up the Hualālai volcanic sequence. No surface water directly reaches the coast, or flows into drainage ways that reach the coast.

Precipitation on the slopes of Hualālai at an elevation around 2,000-feet above mean sea level is the source of groundwater for most of the Kona area. Over one third of the rain falls within the 4-5 mile wide belt and most of the annual 30 to 75 inches of rain percolates into the ground and recharges the aquifer (Waimea Water Services, Inc., 2003).

The proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will be located over a portion of the Keauhou Aquifer System. This consists of a lens of fresh water floating on a layer of salt water. Fresh water is found at an elevation of 1,800 feet above mean sea level. The fresh water layer becomes thinner and more saline (higher level of total chlorides) as it approaches sea level. Wells as much as 1.5 miles inland from the coast have been known to produce saline water. Under ideal conditions fresh groundwater flows down gradient from the recharge area at 2,000-feet to sea level.

##### ***Potential Impacts and Mitigation Measures***

The construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will provide water to both the proposed Pāalamanui Development and the UHCWH. The proposed improvements will provide a needed link to the County Department of Water Supply's regional water system above the Kona International Airport.

There is no source of potable water in the immediate area and none will be developed until the proposed Pāalamanui Development begins. During construction of the road, water will be hauled in to control fugitive dust emissions created by construction activities.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

#### **4.7.2 Wastewater System**

There are no wastewater collection or treatment systems in the area at present, as the area is undeveloped.

##### ***Potential Impacts and Mitigation Measures***

The construction and use of the proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will not use any wastewater systems.

#### **4.7.3 Drainage System**

There are no man-made drainage systems in the area, as the area is undeveloped.

##### ***Potential Impacts and Mitigation Measures***

The construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will have minimal effect on any regional drainage system. Drainage along the Main Street Collector Road Extension will be in the forms of retention ponds and dry wells.

#### **4.7.4 Electrical and Communications Systems**

No electrical and communication systems service the undeveloped parcels along the proposed Main Street Collector Road. HELCO has an overhead 69 kilovolt transmission line in a utility easement that runs through the area from Keāhole Substation on Queen Kaʻahumanu Highway to Māmalahoa Highway.

Utility (electricity, cable TV, telephone) connections will be available in the near future for UHCWH and will connect to the project.

##### ***Potential Impacts and Mitigation Measures***

The construction and use of the proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will not use any electrical or communications systems.

#### **4.7.5 Solid Waste**

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

As the sites for the proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension are currently vacant, there is minimal need for a solid waste disposal service. Pāalamanui LLC has submitted a solid waste disposal plan to the County to address the proposed action and adjacent development projects.

***Potential Impacts and Mitigation Measures***

The construction and use of the proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will generate minimal solid waste and no mitigation measures are required.

**4.8 PUBLIC SERVICES AND FACILITIES**

**Police Protection**

The County of Hawai'i Police Department's Kealakehe Station is located just mauka of Queen Ka'ahumanu Highway. The station, which provides service to the North and South Kona Districts, has a force of 56 uniformed officers, with patrol units assigned to each of the three watches within a 24-hour period. There are also substations in Keauhou and Captain Cook for officers from the Kona Station working in those areas (Helber, Hastert & Fee, April 2003).

**Fire Protection**

Fire prevention, suppression and protection services for the region are provided by the Kailua-Kona Fire Station, approximately four miles south of the project site, near the intersection of Palani Avenue and Queen Ka'ahumanu Highway. The station, which serves areas within a 30-mile radius, from Keauhou to the Kona Village Resort, is quipped with a ladder truck, tanker, rescue boat and Emergency Medical Service ambulance. Back-up support to the station is provided by a volunteer-operated fire station located along Māmalahoa Highway. Other fire stations are located in Keauhou, Waikoloa and South Kohala (Helber, Hastert & Fee, April 2003). A nearby fire station at Makalei is proposed for construction in the near future.

**Health Care Services**

The nearest hospital to the project site is the Kona Community Hospital, located on Haukapila Street in Kealakekua, approximately 17 miles southeast of the project site. The 94-bed facility provides acute and long-term care services (Hawai'i Health Systems Corporation, 2006). Other private medical and dental service providers, which have regular hours, are located in the Kailua-Kona region, including a Kaiser Permanente Clinic.

**Recreational Facilities**

Located near the project site is the Old Kona Airport State Park, which has a gymnasium, with a full-sized basketball court, five baseball fields, two soccer fields, two football fields and four tennis courts. Other parks include Kealakekua Bay Historic Park, Kekaha Kai

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

State Park, Keolonāhihi State Historic Park and Nāpoʻopoʻo Beach Park (Helber, Hastert & Fee, April 2003). As part of the Pāalamanui Development, the applicant plans to construct a 20-acre regional park nearby.

***Schools***

Presently, the State of Hawaiʻi Department of Education operates five (5) public schools in the Kealakehe Complex of the Honokaʻa-Kealakehe-Kohala-Konawaena Complex Area. They are: Kealakehe High School (grades 9-12), Kealakehe Intermediate School (grades 6-8), Kealakehe Elementary School (grades K-5), Kahakai Elementary School (grades K-5) and Hōlualoa Elementary School (grades K-5) (State of Hawaiʻi Department of Education, 2006).

There are also three (3) public charter schools in the region: Innovations Public Charter School (PCS) (grades 1-6) located on Queen Kaʻāhumanu Highway in Kailua, Kanu o ka ʻĀina New Century Public Charter School (NCPCS) (grades K-12), which operates out of the Lālāmilo Experiment Station in Waimea and West Hawaiʻi Explorations Academy Public Charter School (grades 7-12) operating at the Natural Energy Laboratory of Hawaiʻi, adjacent to the project site.

***Potential Impacts and Mitigation Measures***

The Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension are accessory facilities and will have only a minor impact any public services or facilities.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

## **5.0 LAND USE CONFORMANCE**

Federal, State and County of Hawai'i land use plans and policies and required permits and approvals relevant to the Pālanuanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension are described below.

### **5.1 FEDERAL**

#### **5.1.1 Endangered Species Act**

The Endangered Species Act of 1973 provides measures used to identify and protect ecosystems that are necessary to sustain an endangered, or threatened species. Under this act, the U.S. Fish and Wildlife Service in the Department of the Interior is responsible for all terrestrial and freshwater species including migratory birds.

**Discussion:** No federally listed endangered, threatened proposed or candidate species or their habitats are found in the area.

#### **5.1.2 Coastal Zone Management Act**

The Coastal Zone Management Act (CZMA) of 1972 provides guidelines for development regulations within the coastal zone (CZ). The State of Hawai'i enacted HRS Chapter 205A in response to the Federal Coastal Act of 1972 and the State of Hawai'i now has delegated the authority to regulate land use in the CZ as Special Management Areas (SMA).

**Discussion:** CZMA program objectives and applicability to the proposed Pālanuanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension is discussed in Section 5.2.2.

### **5.2 STATE OF HAWAII**

#### **5.2.1 State Land Use Law, Chapter 205, Hawai'i Revised Statutes**

The State Land Use Law (Chapter 205, HRS), establishes the State Land Use Commission (LUC) and authorizes this body to designate all lands in the State into one of four districts: Urban, Rural, Agricultural, or Conservation. These districts are defined and mapped by the State Land Use Commission in order to ensure compatibility with neighboring land uses and protection of public health. The project area lies entirely within the Urban District (Figure 9).



**LEGEND**

-  Project Site Boundary
-  Urban
-  Agriculture
-  Conservation

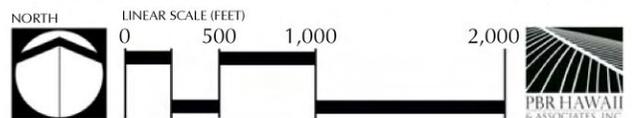
**FIGURE 9**

State Land Use Districts

**Pālamanui Waterline,  
343-foot Elevation Reservoir, and  
Main Street Collector Road Extension**

Pālamanui, LLC

Island of Hawai'i



Source: State Land Use Commission (2007)

Disclaimer: This graphic has been prepared for general planning purposes only



**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

In December 1993, the LUC issued a decision that reclassified over 2,000 acres of state lands from Agricultural and Conservation to Urban district. Urbanization of the area was recommended for the purpose of allocating land for future urban growth in West Hawai'i. This includes the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension parcels and parcels on both the mauka and makai sides of the proposed waterline.

Land uses within the Urban District are governed by the ordinances or regulations of the County in which the Urban District is situated. The proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension are consistent with the County of Hawai'i's zoning ordinances, which are discussed below in Section 5.3.2 (County of Hawai'i Zoning) and are therefore, permitted uses within the Urban District.

### **5.2.2 Coastal Zone Management Act, Chapter 205A, Hawai'i Revised Statutes**

The Coastal Zone Management Area as defined in Chapter 205A, HRS, includes all the lands of the State. As such, the proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will be installed within the Coastal Zone Management Area.

The objectives of the Coastal Zone Management (CZM) Program are to provide the public with recreational opportunities, protect historic resources, protect scenic and open space resources, protect coastal ecosystems, provide facilities for economic development, reduce hazards and manage development. Program objectives and applicability to the proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension are discussed below:

#### **Recreational Resources**

**Objective:**

*Provide coastal recreational opportunities accessible to the public.*

**Policies:**

- (A) *Improve coordination and funding of coastal recreational planning and management; and*
- (B) *Provide adequate, accessible and diverse recreational opportunities in the coastal zone management area by:*
  - (i) *Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas.*
  - (ii) *Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable*

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

- monetary compensation to the state for recreation when replacement is not feasible or desirable;*
- (iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;*
  - (iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation.*
  - (v) Ensuring public recreational use of county, state and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;*
  - (vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect and where feasible, restore the recreational value of coastal waters;*
  - (vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches and artificial reefs for surfing and fishing; and*
  - (viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS.*

**Discussion:** The proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will be located well inland, away from the shoreline; therefore, there will be no effect on existing coastal or inland recreational resources.

### **Historic Resources**

#### **Objective:**

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

#### **Policies:**

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

**Discussion:** The proposed waterline, reservoir and Main Street Collector Road Extension were sited to avoid archaeological sites. Should any unanticipated archaeological or cultural remains be encountered during construction, all work in the immediate vicinity of

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

the find will cease and the State Historic Preservation Division will be contacted for establishment of appropriate mitigation in accordance with Chapter 6E, Hawai'i Revised Statutes.

### **5.2.3 Hawai'i State Plan**

The Hawai'i State Plan, Chapter 226 HRS (1995) provides guidelines for the future growth of the State of Hawai'i. The Hawai'i State Plan identifies goals, objectives, policies and priorities for allocating the state's resources, including public funds, services, human resources, land, energy and water.

**Discussion:** The construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will provide water to the UHCWH (and the proposed Pāalamanui Development). The development of the UHCWH will enable more residents of West Hawaii opportunities and resources for higher education.

## **5.3 COUNTY OF HAWAII PLANS AND CONTROLS**

### **5.3.1 County of Hawai'i General Plan**

County of Hawai'i General Plan (February 2005) is the policy document for the long range comprehensive development of the Island of Hawai'i. It contains the land use maps referred to as "General Plan Land Use Pattern Allocation Guides" (Figure 10).

**Discussion:** The Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension project site is within the area designated as "Urban Expansion" and "University Use" and it provides a segment of the proposed Main Street Collector Road outlined in the General Plan. The General Plan also encourages and supports the development of educational facilities in West Hawai'i, including the UHCWH.

### **5.3.2 County of Hawai'i Zoning**

The proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will pass through portions of land designated as Agricultural A-5a and Open (Figure 11).

**Discussion:** Since the proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension are public facility-type uses, the proposed action would be consistent with the existing zoning.



**LEGEND**

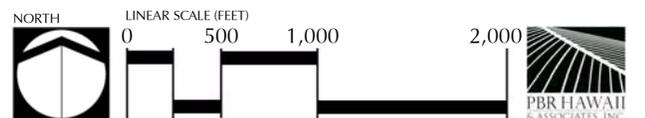
- Project Site Boundary
- Conservation
- Extensive Agriculture
- Important Agricultural Lands
- Low Density Urban
- Open
- Urban Expansion
- University Use

**FIGURE 10**

County of Hawai'i General Plan

**Pālamanui Waterline,  
343-foot Elevation Reservoir, and  
Main Street Collector Road Extension**

Pālamanui, LLC Island of Hawai'i



Source: County of Hawai'i General Plan (2005)  
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**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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**5.3.3 Keāhole to Kailua Development Plan**

The County of Hawai‘i established an overall goal related to objectives for the Keāhole to Kailua Development Plan: "To develop during the next 10 years an efficient, safe and pleasing road network which operates at level of service C over the next 20 years and which interconnects the various land uses within the planning area and accommodates various modes of travel." A modified version of this long-range plan is in the County of Hawai‘i General Plan completed in February 2005.

**Discussion:** The Main Street Collector Road Extension will be connected to the Main Street Collector Road, which will provide a crucial segment of the road network outlined in the Keāhole to Kailua Development Plan.

**5.3.4 West Hawai‘i Regional Plan**

The West Hawai‘i Regional Plan was developed by the Office of State Planning in 1989. It was intended to complement the County of Hawai‘i's General Plan and Community Development Plan to address the regional issues arising from rapid development in the West Hawai‘i area.

**Discussion:** The West Hawai‘i Regional Plan includes the project area in the Kailua-Kona to Keāhole Urban Expansion Planning Area.

**5.3.5 Kona Community Development Plan**

The proposed project falls under the jurisdiction of the Kona Community Development Plan (KCDP). The plan is part of the overall County of Hawai‘i General Plan. These CDPs help the county determine how the County distributes funds, passes laws, governs development, provides roads and public facilities, and generally makes decisions in the area until the year 2015. CDPs essentially translate the broad goals outlined in the County General Plan, into opportunities for implementation. The CDPs also serve as a forum for community input. Once drafted, the CDP will be adopted by the County Council as an ordinance, giving it the force of law.

**Discussion:** The proposed project is consistent with the current pre-final draft of the Kona Community Development Plan released on April 17, 2008. The construction of the Keohokalole Highway (a.k.a. Mid-Level Road) is included in Figure 4-3(a) of the report.

**5.4 LIST OF REQUIRED PERMITS AND APPROVALS**

The following permits will be required as part of the project:

<u>Permit or Approval</u>	<u>Administrating Agency</u>
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**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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Construction Permits (Building, Grading, Paving)	County of Hawai'i Department of Public Works
National Pollutant Discharge Elimination System (NPDES)	State of Hawai'i, Department of Health
Underground Injection Control (UIC)	State of Hawai'i, Department of Health
Water System Construction Plan Approval	County of Hawai'i Department of Water Supply
Consolidation and re-subdivision of rights-of-way	County of Hawai'i Planning Department

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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## **6.0 ALTERNATIVES**

In compliance with the provisions of Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules, Section 11-200-17(f), an environmental assessment must discuss potential alternatives to the proposed action.

Three alternatives were considered: 1) no action; 2) alternative waterline alignment; and 3) alternative waterline size. These alternatives are discussed below:

### No Action

The no-action alternative involves no proposed activity and no change to the status quo. The proposed Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension would not be constructed. There would be no impacts and no mitigation measures. However, the The Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension are being proposed to provide infrastructure support for the Pāalamanui Development and the UHCWH. The waterline will start at the existing County of Hawai'i's Keāhole water tanks (located at the 280-foot elevation). The Keāhole water tanks consist of one 0.5 million gallon tank and one 1 million gallon tank. From the Keāhole water tanks, the waterline will extend mauka through open land, where it will intersect and run within the future Main Street Collector Road right-of-way. The 16-inch waterline connects to existing mauka and makai waterlines and forms an important northern "loop" in the County of Hawai'i DWS' regional system.

### Alternative Waterline Alignment

Originally, the proposed waterline alignment was planned to fall within two narrow subdivided lots: one leading mauka from the existing County of Hawai'i's Keāhole water tanks (located at the 280-foot elevation); and the other lot was subdivided to allow for a regional collector running parallel to and between Queen Ka'ahumanu Highway and Māmalahoa Highway. When archeological resources were later found in both lots, a new alignment for the waterline was identified (with the assistance of an archaeologist). The proposed alignment avoids impacting archaeological resources. The landowner of the affected lots is the State of Hawai'i.

### Alternative Waterline Size

North Kona is one of the fastest growing regions in the State of Hawai'i. Population predictions for the West Hawai'i region indicate that there is sufficient population to justify the construction of a higher education center and permanent location for the UHCWH. The proposed Pāalamanui Waterline and 343-foot Elevation Reservoir will provide water service to both the Pāalamanui

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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Development and the new UHCWH, and also providing a needed link to the County Department of Water Supply's regional water system near the Kona International Airport. A smaller water line was rejected as it would not provide sufficient transmission capacity to meet near-term and long-term water demands for the region.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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## **7.0 FINDINGS, SUPPORTING REASONS AND ANTICIPATED DETERMINATION**

To determine whether the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension may have a significant impact on the physical and human environment, all phases and expected consequences of the proposed project have been evaluated, including potential primary, secondary, short-range, long-range and cumulative impacts. Based on this evaluation, the Approving Agency (State of Hawai'i Department of Land and Natural Resources) is expected to issue a Finding of No Significant Impact (FONSI) for the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension. The supporting rationale for this anticipated finding is presented in this chapter.

### **7.1 PROBABLE IMPACT, INCLUDING CUMULATIVE IMPACTS**

Cumulative impacts are impacts on the environment that result from the action when added to other past, present and foreseeable future actions by other agencies or persons. These cumulative long-term impacts are the need for potable water, more electricity and regional infrastructure. However, these properties have had or will have an EIS prepared and the development of the projects includes appropriate mitigation measures to address any impacts. The following projects are planned for the immediate vicinity of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension (See Figure 12) and they are briefly discussed individually below:

#### *University of Hawai'i Center at West Hawai'i (UHCWH)*

The UHCWH plans a future expansion. This will be beneficial to the entire region by providing educational and employment opportunities. The 2000 EIS for the UHCWH addressed the cumulative impacts in the area (Wil Chee - Planning & Environmental, Inc., 2000).

#### *Pāalamanui - A Hiluhilu Development Project*

Pāalamanui Development, LLC plans to develop the parcel adjacent to the UHCWH property. The Pāalamanui Development includes residential uses, mixed uses, an 18-hole golf course and in conjunction with UHCWH, a University Village Center. A 2004 EIS was prepared that addresses cumulative growth in the area (Group 70 International, Inc., 2004).

#### *Kona International Airport at Keāhole*

The Kona International Airport has a list of long range improvements that are scheduled in phases to be completed by 2015. These projects include expansion of infrastructure to accommodate the growing needs of the airport as well as adding commercial and industrial uses that support airport activities.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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*Department of Hawaiian Home Lands (DHHL) Properties*

DHHL has jurisdiction over a large amount of acreage in the surrounding area that they eventually plan to develop. Various types of uses are included that range from agricultural lots, industrial lots, commercial lots, a golf course and residential units.

*Honokohau Boat Harbor*

DHHL accepted the Kona Kai Ola Final EIS in 2007 for expansion of Honokohau Boat Harbor and a mixed-use development at a site mauka of the Harbor.

*Queen Lili'uokalani Trust (QLT)*

QLT owns 3,500-acres adjacent to Kailua-Kona that includes developed and undeveloped land. Developed areas include shopping centers, light industrial and residential low-rise condominiums. Undeveloped acreage is currently undergoing review for potential land uses and eventual development.

Supporting Infrastructure

To accommodate all the proposed growth additional infrastructure is required. Included are the following projects:

Hawai'i Electric Light Company, Inc. (HELCO) plans for the expansion and improvements to Keāhole Generating Station and the Airport Substation in order to provide for future demands. The EIS for HELCO that addresses the expansion of the HELCO facilities was finalized in January 2005.

Keāhole Reservoir was completed on February 1, 2000 and will provide storage for water. The Hina Lani Drive Water Transmission line and Reservoir was completed in 2001.

Lokahi Subdivision proposes to provide an access road for the Lokahi Subdivision. The proposed road will intersect with Ka'iminani Drive near the Kona Palisades Subdivision providing a north-south segment of the proposed road that will become the new Main Street.

Cumulative Impacts

The previously mentioned projects will likely have an impact on the environment. However, established controls require developers to consider and manage or mitigate any negative long term impacts on the natural environment. Compliance and adherence with established controls are expected to decrease the impact on natural resources.

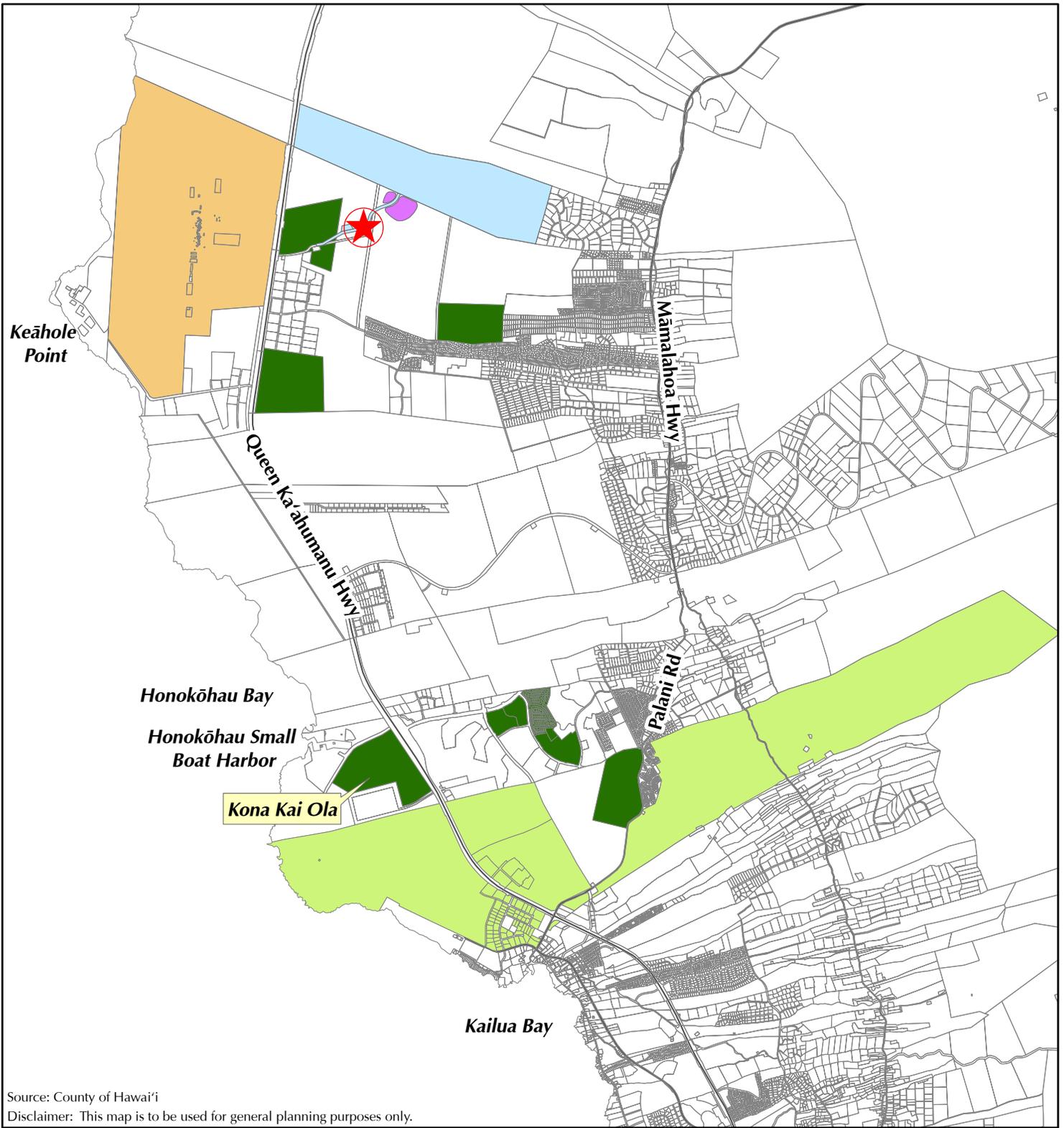
The man-made environment can also be stressed and severely impacted as all of the proposed projects in the region are implemented. Again, the developers must follow established controls and provide appropriate mitigation for project-generated impacts on

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

infrastructure. Many of the proposed developments in the area have already submitted EISs that address the cumulative impacts in the region.

Social-economic impacts resulting from the proposed projects are anticipated to be beneficial. Construction generates employment and economic opportunities. Additional residential areas provide housing, commercial development provides long term employment and the UHCWH provides a much needed higher education facility. All of the projects discussed will result in economic development that will expand employment opportunities for Kailua-Kona residents and provide additional tax revenue to the State and County governments to fund needed public services. Overall, the net cumulative impact is expected to have a positive effect on the Kailua-Kona community.



Source: County of Hawai'i

Disclaimer: This map is to be used for general planning purposes only.

**LEGEND**

-  Project Location
-  Department of Hawaiian Home Lands
-  Queen Lili'uokalani Trust
-  Kona International Airport at Keāhole
-  Palamanui - A Hiluhilu Development Project
-  University of Hawai'i Center at West Hawai'i

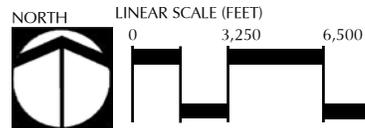
**FIGURE 12**

Surrounding Projects

**Pālanui Waterline,  
343-foot Elevation Reservoir and  
Main Street Collector Road Extension**

Pālanui, LLC

ISLAND OF HAWAII



**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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## **7.2 SIGNIFICANCE CRITERIA**

Based upon the previous information presented in this document the proposed permitting and construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will likely have no significant environmental impacts. This determination is based upon the Significance Criteria outlined in Chapter 343, HRS, and Title 11, Chapter 200, HAR.

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

All sites located during the Archaeological Assessment conducted by Pacific Legacy in the area of this project site are significant under criteria "d" of the National Historic Preservation Act and will be treated appropriately. The proposed waterline, reservoir and Main Street Collector Road Extension were sited to avoid archaeological sites and lava tubes. There will be no loss or destruction of any other natural or cultural resources.

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

The construction and use of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension are anticipated to have a minimal effect on the environment. Currently, the project area is vacant land and is not serviced by a water system. The construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will provide water to both the proposed Pāalamanui Development and the UHCWH.

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

As proposed the project is in compliance with the State's long-term goals or guidelines as expressed in Chapter 344, HRS.

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

As proposed the project will positively affect the economic and social welfare of the community and state. It will provide jobs during the construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension and it will open up the University's property for the development of a major educational center in North Kona. Jobs will be provided as the UHCWH site is developed and long term employment will increase when the UHCWH is operational. There will be no substantive negative effects from the project.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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- (5) *Substantially affects public health;*

As proposed the construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will have no permanent negative effect on public health, but will result in a beneficial effect through the provision of an important northern “loop” in the County of Hawai‘i DWS regional potable water system.

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

The construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will provide accessory facilities and services to the UHCWH and Pāalamanui Development. There will be long range gradual changes as the UHCWH parcel and the adjacent parcels are developed. These changes are part of the County of Hawai‘i's long range development plans for West Hawai‘i. Impacts were disclosed in previous EISs.

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

The construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will not substantially degrade the environmental quality along the road corridor. Federal, State and County permit conditions will be adhered to that mitigate negative impacts.

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

The construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension are accessory facilities with limited effects on the environment. Both the UHCWH and Pāalamanui Development EISs previously disclosed cumulative effects and associated mitigation measures.

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

No listed, threatened, proposed, or candidate species or their habitats were found in the project area.

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

*Air Quality:*

The construction and use of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension should have no significant impact on the air

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

---

quality, since the construction required will not require large-scale earth movement, the underlying soils are mostly rock, and the winds in the area are relatively light.

*Water Quality:*

The construction and use of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension should have no significant impact on the water quality, since the construction required will not require large-scale earth movement, the underlying soils are mostly rock, and the climate is dry.

*Ambient Noise Levels:*

Potential short-term construction noise impacts are possible during the project construction period at the south end of the project corridor. However, minimizing these types of noise impacts is possible using standard curfew periods, properly muffled equipment, administrative controls and construction barriers as required. Long-term changes in ambient noise should not exceed County, State and Federal standards. The proposed project is not located near any residences or noise-sensitive uses such as schools or hospitals.

*(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 entire Island of Hawai'i is subject to earthquake, so this location is at no greater risk than any other place on the island. Mitigation for seismic activity is included in the Uniform Building Code and the County of Hawai'i Structural Design Standards, including earthquake design provisions.

The Kailua-Kona Area is located in Zone 4 on volcanic hazard maps. Zone 4 includes all of Hualālai where the recurrence intervals of eruptions are in the centuries. There are no mitigation measures for volcanic eruptions.

The proposed facilities are not located in any other sensitive area.

*(12) Substantially affects scenic vistas and view planes identified in county or state plans or studies; or,*

As proposed the construction of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will have no effect on the scenic vista or view planes as identified in county or state plans or studies. The waterline will be located within the road and will not be visible.

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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(13) *Requires substantial energy consumption.*

Only a very small amount of energy will be consumed during the construction phase of the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension to power equipment used to install and construct the waterline, reservoir and road.

### **7.3 ANTICIPATED DETERMINATION**

On the basis of impacts and mitigation measures examined in this document and analyzed under the above criteria, it is anticipated that the Pāalamanui Waterline, 343-foot Elevation Reservoir and Main Street Collector Road Extension will not have a significant effect on the physical or human environments. Pursuant to Chapter 343, HRS, the Approving Agency, which in this case is the State of Hawai'i Department of Land and Natural Resources, expects to issue a Finding of No Significant Impact (FONSI).

**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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**PĀLAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR  
AND MAIN STREET COLLECTOR ROAD EXTENSION  
DRAFT ENVIRONMENTAL ASSESSMENT**

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## Appendix A

# Preconsultation Comments & Responses



LINDA LINGLE  
GOVERNOR OF HAWAII



GENEVIEVE SALMONSON  
DIRECTOR

STATE OF HAWAII  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL  
235 SOUTH BERETANIA STREET  
HONOLULU, HAWAII 96813  
TELEPHONE (808) 586-4185  
FACSIMILE (808) 586-4186  
E-mail: eqc@hawaii.state.hi.us

March 29, 2007

Mr. Vincent Shigekuni  
PBR Hawaii & Associates, Inc.  
1001 Bishop Street, ASB Tower, Suite 650  
Honolulu, Hawaii 96815

Subject: Pre-Consultation For The Palamanui Waterline, 343-Foot Elevation Reservoir,  
And Main Street Collector Road Extension, North Kona, Island of Hawaii

Dear Mr. Shigekuni,

We have received your letter dated March 28, 2007 for the Palamanui waterline and the  
Main street collector road extension.

We have no comments at this time, but reserve the right to further comments when the  
documents are reviewed.

If you have any questions, please feel free to call the office at 586-4185.

Sincerely,

*Genevieve Salmonson*  
Genevieve Salmonson  
Director



April 3, 2007

W. FRANK BRANDT, FASLA  
Chairman

THOMAS WITTEN, ASLA  
President

R. STAN MUNCAN, ASLA  
Executive Vice-President

RUSSELL Y. L. CHUNG, FASLA  
Executive Vice-President

VINCENT SHIGEKUNI  
Vice-President

GRANT T. MURAKAMI, AICP  
Principal

TOM SCHINELL, AICP  
Senior Associate

RAYMOND L. RIGA, ASLA  
Senior Associate

KEVIN K. NISHIKAWA, ASLA  
Associate

KIMMIKAMU YUEN, LEED AP  
Associate

SCOTT A. IKA, ABRIGO  
Associate

SCOTT T. MURAKAMI, ASLA  
Associate

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

SUBJECT: PRE-CONSULTATION FOR THE PALAMANUI  
WATERLINE, 343-FOOT ELEVATION RESERVOIR, AND  
MAIN STREET COLLECTOR ROAD EXTENSION,  
NORTH KONA, ISLAND OF HAWAII DRAFT  
ENVIRONMENTAL ASSESSMENT

Dear Ms. Salmonson,

Thank you for your letter dated March 29, 2007. We acknowledge that the  
Office of Environmental Quality Control has no comments to offer at this time.

Thank you again for your participation in the preparation of the upcoming  
Environmental Assessment. If you have any questions regarding this project,  
please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII

HONOLULU OFFICE  
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30th Floor, Suite 603  
Honolulu, Hawaii 96813-7484  
Tel: (808) 521-5631  
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*Vincent R. Shigekuni*

Vincent R. Shigekuni  
Vice President

HILO OFFICE  
1111 Kapaemahu Street  
Hilo, Hawaii 96720-4262  
Tel: (808) 961-3333  
Fax: (808) 961-4989

Cc: Roger Harris, HiloHilo Development, LLC

WAILUKU OFFICE  
1111 Kapaemahu Street, 4  
Wailuku, Hawaii 96791-1271  
Tel: (808) 242-2878

O:\Jobs\63624\01 Palamanui Waterline EA\Pre-Consultation\Acknowledgment Letters\OECC 4-3-2007.doc

UNDA LINGLE  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
869 PUNCHBOWL STREET  
HONOLULU, HAWAII 96813-5097

April 11, 2007

Mr. Vincent R. Shigekuni, Vice-President  
PBR Hawaii & Associates, Inc.  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, Hawaii 96813-3484

Dear Mr. Shigekuni:

Subject: Draft Environmental Assessment Pre-Consultation  
Palamanui Waterline, 343-foot Elevation Reservoir and  
Main Street Collector Road Extension

Thank you for your pre-consultation notification on the subject three infrastructure projects for the Palamanui land development project and adjacent University of Hawaii West Hawaii site.

Our Department is already on record as a concerned and interested party on the impacts both Palamanui and the University campus will have on our transportation facilities – Queen Kaahumanu Highway, Mamalahoa Highway and Kona International Airport at Keahole. We remain interested in being apprised of the construction and development projects that will form and make up these two planned-communities for our information and/or review.

At this time, based on the map and information provided in your pre-consultation, we anticipate no new direct impacts from the three projects over and above the issues we provided earlier the past two years.

We request that when the draft environmental assessment for the subject infrastructure projects are completed, we receive at least four (4) copies of the assessment report for our information and review, and distribution to our affected operating divisions.

We appreciate your courtesy in making the pre-consultation notice available to us and for the opportunity to provide our comments.

Very truly yours,

  
BARRY FUKUNAGA  
Interim Director of Transportation

BARRY FUKUNAGA  
INTERIM DIRECTOR

Deputy Directors  
FRANCIS PAUL KEBENO  
BREMON T. MURDOKA  
BRUNN H. SENGUCHI

IN REPLY REFER TO:

STP 8.2452



PBR HAWAII  
& ASSOCIATES, INC.

April 18, 2007

Mr. Barry Fukunaga, Interim Director of Transportation  
State of Hawaii  
Department of Transportation  
869 Punchbowl Street  
Honolulu, Hawaii 96813

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R. STAN DUNCAN, ASLA  
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RUSSELL Y. CHONG, FASLA  
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Hilo, Hawaii 96720-1002  
Tel: (808) 961-3333  
Fax: (808) 961-9989

WAILUKU OFFICE

1787 Wai Pa Lopa, Suite 4  
Wailuku, Hawaii 96793-1271  
Tel: (808) 242-2878

SUBJECT: PRE-CONSULTATION FOR THE PALAMANUI WATERLINE, 343-  
FOOT ELEVATION RESERVOIR, AND MAIN STREET COLLECTOR  
ROAD EXTENSION, NORTH KONA, ISLAND OF HAWAII DRAFT  
ENVIRONMENTAL ASSESSMENT

Dear Mr. Fukunaga,

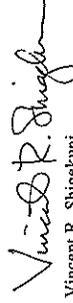
Thank you for your letter dated April 11, 2007 (reference: STP 8.2452). We offer the following responses to your comments:

- We acknowledge that the Department of Transportation is already on record as a concerned and interested party on the impacts both Palamanui and the University campus will have on transportation facilities, specifically, Queen Kaahumanu Highway, Mamalahoa Highway, and Kona International Airport at Keahole.
- We acknowledge that the Department of Transportation remains interested in being apprised of the construction and development projects that will form and make up Palamanui and the University campus for your information and/or review.
- We acknowledge that at this time, based on the map and information provided in the pre-consultation letter, the Department of Transportation anticipates no new direct impacts from the Palamanui Waterline, 343-foot Elevation Reservoir, and Main Street Collector Road Extension over and above the issues the Department of Transportation has provided over the past two years.
- We acknowledge that the Department of Transportation would like to receive at least four (4) copies of the draft environmental assessment.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII



Vincent R. Shigekuni  
Vice President

Cc: Roger Harris, Hiltuhilu Development, LLC

O:\Jobs\262624.01 Palamanui Waterline EA\Pre-Consultation\Acknowledgement Letters\DOT 4-18-2007.doc

Harry Kim  
Mayor



County of Hawaii  
PLANNING DEPARTMENT

101 Paahuli Street, Suite 3 • Hilo, Hawaii 96726-3043  
(808) 961-8288 • FAX (808) 961-8742

Christopher J. Xuen  
Director

Brad Kurokawa, ASLA  
LEED® AP  
Deputy Director

Mr. Vincent Shigekuni, Vice President  
PBR Hawaii  
Page 2  
April 16, 2007

April 16, 2007

Mr. Vincent Shigekuni, Vice President  
PBR Hawaii  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, HI 96813-3484

Dear Mr. Shigekuni:

Pre-Consultation for Draft Environmental Assessment (EA)  
Proposed Palamanui Waterline, 343-foot Elevation Reservoir  
and Main Street Collector Road Extension  
Tax Map Key: 7-3-10:various parcels, Makaula-Kalaoa, North Kona, Hawaii

This is in response to your letter dated March 28, 2007, requesting our comments as part of the pre-consultation process for the Draft EA for the above-referenced proposed project. We provide you with the following comments:

1. The goals, policies, standards and courses of action of the General Plan and the applicability to the proposed project should be discussed in the Draft Environmental Assessment. The document should also include discussion on the project in relations to any regional and/or community plans for the Kona district.
2. The Draft EA should discuss the land use designations, including the General Plan, State Land Use District, and County Zoning District. For your information, the project site is designated as Urban Expansion and University Use by General Plan Land Use Pattern Allocation Guide (LUPAG) Map. It is situated within the State Land Use Urban District and County zoned Open and Agricultural (A-5a). The Draft EA should also include discussions on the surrounding land use designations and uses.

3. The project site is not located within the County's Special Management Area (SMA).
4. The Draft EA should clearly discuss the proposed project, the needs for the project, project construction timeline and include detailed maps of the proposed structures and improvements of the proposed project.

Thank you for the opportunity to provide comments for the Pre-Consultation. Should you have any questions, please feel free to contact Alice Kawaha of this department at 961-8288, Ext. 203.

Sincerely,

  
CHRISTOPHER J. XUEN  
Planning Director

AK.cd

p:\wpwind\0allice\w\l\pbr\shigekuni\PalamanuiWaterline

cc: Mr. Bennett Mark, Planning Department – Kona Office



April 19, 2007

Mr. Chris Yuen, Director  
Planning Department  
101 Pauahi Street, Suite 3  
Hilo, Hawaii 96720

**SUBJECT: PRE-CONSULTATION FOR THE PALAMANUJ WATERLINE,  
343-FOOT ELEVATION RESERVOIR, AND MAIN STREET  
COLLECTOR ROAD EXTENSION, NORTH KONA, ISLAND OF  
HAWAII DRAFT ENVIRONMENTAL ASSESSMENT**

Dear Mr. Yuen,

Thank you for your letter dated April 16, 2007. We offer the following responses to your comments:

1. We acknowledge that the goals, policies, standards and course of action of the General Plan and the applicability to the project should be discussed in the Draft Environmental Assessment. Also, the Draft Environmental Assessment will discuss any regional and/or community plans for the Kona district.
2. We acknowledge that the Draft EA should discuss land use designations, including the General Plan, State Land Use District, and County Zoning District. The Draft EA will also include discussions on the surrounding land use designations and uses.
3. Thank you for the information that the project site is not located within the County's Special Management Area.
4. We acknowledge that the Draft EA should clearly discuss the project, the needs for the project, construction timeline and include detailed maps of the proposed structures and improvements of the project.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII

*Vincent R. Shigekuni*  
Vincent R. Shigekuni, Vice President

cc: Roger Harris, Hiihiihii Development, LLC

O:\62626262\4-01 Palamanu Waterline EA\Pre-Consultation\Acknowledge Letters\Planning 4-19-2007.doc

W FRANK BRANDEY, FASLA  
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Principal

TOM SCHELL, AICP  
Senior Associate

RAYMOND T. UEDA, ASLA  
Senior Associate

KUWIK K. NISHIKAWA, ASLA  
Associate

KIMI MIKAMAI YUEN, LEED AP  
Associate

SCOTT AIKKA-BRIGG  
Associate

SCOTT MURAKAMI, ASLA  
Associate

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Fax: (808) 961-9889

**WAILUKU OFFICE**  
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Tel: (808) 242-2878



Harry Kim  
Mayor

Barbara Bell  
Director  
Nelson Ho  
Deputy Director

**County of Hawaii**  
**DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**  
25 Aupuni Street • Hilo, Hawaii 96720-4252  
(808) 961-8083 • Fax (808) 961-8086  
[http://co.hawaii.hi.us/directory/dir\\_cnmvmg.htm](http://co.hawaii.hi.us/directory/dir_cnmvmg.htm)

April 18, 2007

Mr. Vincent R. Shigekuni  
Vice President  
PBR Hawaii  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, HI 96813-3484

**SUBJECT: PRE-CONSULTATION FOR THE PALAMANUJ WATERLINE, 343-  
FOOT ELEVATION RESERVOIR, AND MAIN STREET COLLECTOR  
ROAD EXTENSION, NORTH KONA, ISLAND OF HAWAII DRAFT  
ENVIRONMENTAL ASSESSMENT**

Dear Mr. Shigekuni,

We have no comments to offer regarding the subject draft Environmental Assessment.  
Thank you for allowing us the opportunity to review and comment on this project.

Sincerely,

*Barbara Bell*

Barbara Bell  
DIRECTOR

Hawaii County is an equal opportunity provider and employer.

9-361A







DEPARTMENT OF THE ARMY  
U. S. ARMY ENGINEER DISTRICT, HONOLULU  
FT. SHAFTER, HAWAII 96858-5440

REPLY TO  
ATTENTION OF

Regulatory Branch

Vincent R. Shigekuni  
PBR Hawaii & Associates, Inc.  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, HI 96813-3484

Dear Mr. Shigekuni:

This is in response to your letter dated March 28, 2007 for comments for the proposed Palamanui Waterline, the 343-foot elevation reservoir, and the Main Street collector road extension in North Kona, Hawaii Island, Hawaii (TMKs: (3) 7-3-10-43; 7-3-10: 33 (por.), 3p (por.), 40 (por.), 42 (por.), 43, 44 (por.), and 45 (por.)). We have reviewed the information you provided under the Corps' authority to issue Department of the Army (DA) permits pursuant to Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 USC 403) and Section 404 of the Clean Water Act (CWA) (33 USC 1344).

Based on the information provided and available resources, we have determined the subject parcels and the surrounding vicinities are absent of waters of the U.S. subject to our jurisdiction. We also anticipate activities related to the proposed project will not involve the placement of dredged and/or fill material into waters of the U.S., including adjacent wetlands. Based on this understanding, a DA permit is not required.

If, however, it should be determined that work or activities related to the proposed project will involve the discharge or placement of dredged or fill material into the waters of the U.S., you are to contact the project manager assigned below for project re-evaluation and permit determination.

Should you have any questions regarding this jurisdictional determination, please contact Ms. Joy Anamizu by phone at 808-438-7023, or [joy.n.anamizu@usace.army.mil](mailto:joy.n.anamizu@usace.army.mil) and refer to the file number above regarding this project.

Sincerely,

George P. Young, P.E.  
Chief, Regulatory Branch

File No. POH-2007-134

April 23, 2007



April 27, 2007

W. FRANK BIKANDU, PASLA  
Chairman

THOMAS WITTEN, ASLA  
President

R. STAN DUNCAN, ASLA  
Executive Vice-President

RUSSELL L. CHUNG, PASLA  
Executive Vice-President

VINCENT SHIGEKUNI  
Vice-President

GRANT T. MURAKAMI, AICP  
Principal

TOM SCHNELL, AICP  
Senior Associate

RAYMOND T. HIGA, ASLA  
Senior Associate

KEVIN S. NISHIKAWA, ASLA  
Associate

KIMIKAWA YUEN, LEED AP  
Associate

SCOTT ALIKA, AIRRGO  
Associate

SCOTT MURAKAMI, ASLA  
Associate

Mr. George P. Young, P.E.  
Chief, Regulatory Branch  
U.S. Army Engineer District, Honolulu  
Ft. Shafter, Hawaii 96858

**SUBJECT: PRE-CONSULTATION FOR THE PALAMANUI WATERLINE,  
343-FOOT ELEVATION RESERVOIR, AND MAIN STREET  
COLLECTOR ROAD EXTENSION, NORTH KONA, ISLAND OF  
HAWAII DRAFT ENVIRONMENTAL ASSESSMENT**

Dear Mr. Young,

Thank you for your letter dated April 23, 2007 (File Number POH-2007-134). We acknowledge that a DA permit is not required; however, if work or activities related to the proposed project involves the discharge or placement of dredged or fill materials into the waters of the U.S., the project manager will be notified for project re-evaluation and permit determination.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII

Vincent R. Shigekuni  
Vice President

cc: Roger Harris, Hiliuhilu Development, LLC

HONOLULU OFFICE  
1001 Bishop Street  
ASB Tower, Suite 650  
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1287 Wailuku Loop, Suite 1  
Wailuku, Hawaii 96791-1271  
Tel: (808) 342-2578

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

In reply, please refer to:  
EPO-07-073

May 3, 2007

Mr. Vincent Shigekuni  
PBR Hawaii  
ASB Tower, Suite 650  
1001 Bishop Street  
Honolulu, Hawaii 96813

Dear Mr. Shigekuni:

**SUBJECT:** Pre-consultation for the Proposed Palamanui Waterline, 343-foot Elevation Reservoir, and Main Street Collector Road Extension, North Kona, Island of Hawaii, Hawaii  
TMK: (3) 7-3-010: 43

Thank you for allowing us to review and comment on the subject documents. The documents were routed to the various branches of the Department of Health (DOH) Environmental Health Administration. We have the following Clean Water Branch and General comments.

Clean Water Branch

Please note that our review is based solely on the information provided in the subject document and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at <http://www.hawaii.gov/health/environmental/env-planning/landuse/cwb-standardcomment.pdf>.

1. Any project and its potential impacts to State waters must meet the following criteria:
  - a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.
  - b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.
  - c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).
2. Please call the Army Corps of Engineers at (808) 438-9258 to see if this project requires a

Mr. Shigekuni  
May 3, 2007  
Page 2

3. Department of the Army (DA) permit. Permits may be required for work performed in, over, and under navigable waters of the United States. Projects requiring a DA permit also require a Section 401 Water Quality Certification (WQC) from our office.

4. You are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form:

a. Storm water associated with construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the start of the construction activities.

b. Hydro-testing water.

c. Construction dewatering effluent.

You must submit a separate NOI form for each type of discharge at least 30 days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 days before the start of construction activities. The NOI forms may be picked up at our office or downloaded from our website at: <http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html>.

5. You must also submit a copy of the NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the CWB that SHPD has or is in the process of evaluating your project. Please submit a copy of your request for review by SHPD or SHPD's determination letter for the project along with your NOI or NPDES permit application, as applicable.

6. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation.



Mr. Shigekuni  
May 3, 2007  
Page 3

If you have any questions, please visit our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/index.html>, or contact the Engineering Section, CWB, at 586-4309.

General

We strongly recommend that you review all of the Standard Comments on our website: [www.state.hi.us/health/environmental/env-planning/landuse/landuse.html](http://www.state.hi.us/health/environmental/env-planning/landuse/landuse.html). Any comments specifically applicable to this project should be adhered to.

If there are any questions about these comments please contact Jiakai Liu with the Environmental Planning Office at 586-4346.

Sincerely,

KELVIN H. SUNADA, MANAGER  
Environmental Planning Office

c: EPO  
CWB

May 18, 2007

Mr. Kelvin H. Sunada, Manager  
Environmental Planning Office  
State of Hawaii, Department of Health  
P.O. Box 3378  
Honolulu, Hawaii 96801-3378  
Attn: Mr. Jiakai Liu

W. FRANK BRANDT, PASLA  
Chairman

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VINCENT SHIGEKUNI  
Vice-President

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Principal

TONI SCHINELL, NCP  
Senior Associate

RAYMOND Y. HIGA, ASLA  
Senior Associate

KEVIN E. NISHIKAWA, ASLA  
Associate

KIMUKAMI YUEN, LEED AP  
Associate

SCOTT ALIKA ARRIGO  
Associate

SCOTT MURAKAMI, ASLA  
Associate

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E-mail: [envplanning@pbrhawaii.com](mailto:envplanning@pbrhawaii.com)

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Fax: (808) 961-1989

WAILUKU OFFICE

1285 Wili Wili Loop, Suite 4  
Wailuku, Hawaii 96793-1271  
Tel: (808) 242-2878

**SUBJECT: PRE-CONSULTATION FOR THE PALAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR, AND MAIN STREET COLLECTOR ROAD EXTENSION, NORTH KONA, ISLAND OF HAWAII DRAFT ENVIRONMENTAL ASSESSMENT**

Dear Mr. Sunada,

Thank you for your letter dated May 3, 2007 (your reference number: EPO-07-073). We have reviewed your letter and offer the following responses to your comments:

- All phases of the proposed project will comply with all State policies, including the anti-degradation policy (HAR, Section 11-54-1.1), designated uses (HAR, Section 11-54-3), and water quality criteria (HAR, Sections 11-54-4 through 11-54-8).
- The Department of the Army was sent a pre-consultation letter and in their response they indicated that a DA permit would not be required.
- We acknowledge that a NPDES permit for discharges of wastewater, including storm water runoff, into State surface waters is required before the start of the construction activities.
- We acknowledge that a copy of the NOI or NPDES permit application must be submitted to SHPD. An archaeological Inventory Survey is being prepared and will be transmitted to SHPD for its review.
- We acknowledge that all discharges related to the project construction or operation activities must comply with the State's Water Quality Standards.
- As recommended, the Standard Comments on the Department of Health website (<http://www.state.hi.us/health/environmental/env-planning/landuse/landuse.html>) have been reviewed and will be adhered to as applicable.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me at 521-5631.

Sincerely,

Vincent R. Shigekuni, Vice President

cc: Roger Harris, HiloHulu Development, LLC

Harry Kim  
Mayor



Darryl J. Oliveira  
Fire Chief  
Glen P.I. Honda  
Deputy Fire Chief

County of Hawaii  
HAWAII FIRE DEPARTMENT  
25 Aupuni Street • Suite 103 • Hilo, Hawaii 96720  
(808) 981-8394 • Fax: (808) 981-2037

May 7, 2007

Vincent Shigekuni  
PBR Hawaii—Hilo Office  
101 Aupuni Street, Suite 310  
Hilo, Hawaii 96720

SUBJECT: PRE-ENVIRONMENTAL ASSESSMENT CONSULTATION  
PALAMANUI WATERLINE, 343-FOOT ELEVATION RESERVOIR, AND  
MAIN STREET COLLECTOR ROAD EXTENSION  
NORTH KONA

We have no comments to offer at this time in reference to the above-mentioned Pre-  
Environmental Assessment Consultation.

DARRYL OLIVEIRA  
Fire Chief

PBW:ipc



Hawaii's County is an Equal Opportunity Provider and Employer.



May 16, 2007

W. FRANK BRANDT, FASIA  
Chairman

THOMAS WITTEN, ASLA  
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R. STAN DUNCAN, ASLA  
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RUSSELL Y. CHUNG, FASIA  
Executive Vice-President

VINCENT SHIGEKUNI  
Vice-President

GRANT T. MURAKAMI, AICP  
Principal

TOM SCINELL, AICP  
Senior Associate

RAYMOND T. HIGA, ASLA  
Senior Associate

KEVIN K. NISHIKAWA, ASLA  
Associate

KIMI MIKAMI YUEN, LEED AP  
Associate

SCOTT ALIKA ARRIGO  
Associate

SCOTT MURAKAMI, ASLA  
Associate

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WAILUKU OFFICE  
1787 Wai Pa Loop, Suite 4  
Wailuku, Hawaii 96793-1271  
Tel: (808) 242-2878

Mr. Darryl J. Oliveira, Fire Chief  
County of Hawaii  
Hawaii Fire Department  
25 Aupuni Street, Room 103  
Hilo, Hawaii 96720

SUBJECT: PRE-CONSULTATION FOR THE PALAMANUI WATERLINE, 343-  
FOOT ELEVATION RESERVOIR, AND MAIN STREET COLLECTOR  
ROAD EXTENSION, NORTH KONA, ISLAND OF HAWAII DRAFT  
ENVIRONMENTAL ASSESSMENT

Dear Chief Oliveira,

Thank you for your letter dated May 7, 2007. We acknowledge that the Fire  
Department has no comments to offer at this time.

Thank you again for your participation in the preparation of the upcoming  
Environmental Assessment. If you have any questions regarding this project,  
please do not hesitate to contact me at 521-5631.

Sincerely,

PBR HAWAII

Vincent R. Shigekuni  
Vice President

cc: Roger Harris, HiloHulu Development, LLC

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**Appendix B**

**Biological Resources Survey**



## **Botanical Survey for the proposed Palama Nui Access Road**

Prepared by Patrick Hart, PhD  
April 12, 2007

## Introduction

This report describes the results of a botanical survey of an approximately 45 acre portion of land within TMK #'s 7-02-05:01, 7-03-10:33, 7-03-10:39, 7-03-10:42, 7-03-10:43, 7-03-10:44, and 7-03-10:45 within the district of North Kona, Hawai'i Island. This land is located on approximately 1500-3000 year old lava flows from Hualalai Volcano (Wolfe and Morris 1996) at elevations ranging from approximately 50-100 meters. The survey was undertaken at the request of Hiluhilu Development LLC to supply information for an Environmental Assessment for the development of an access road to an adjacent development.

## Purpose and Methodology

The objectives of the survey were to 1) locate and map all threatened and endangered plant species present on the proposed project site; 2) list all plant species encountered; and 3) describe the vegetation.

Fieldwork was conducted on December 30, 2006. Transects were walked from the lower to upper boundaries of the project site at 25 meter intervals. Plant species were identified in the field and, as necessary, collected and keyed out in the laboratory. Nomenclature of flowering plants generally follows Wagner et al. (1990) and supplements, and nomenclature of ferns and fern allies follows Palmer (2003).

## Results

### Current Vegetation and Flora of the Area

A total of four endemic, four indigenous, and seven introduced plant species were detected in the survey area (Table 1). No State or Federally listed threatened or endangered species were detected, however, maiapilo (*Capparis sandwichiana*), a federally listed Species of Concern (SOC) was relatively common. In addition, two individuals of the rare but unlisted maua (*Xylosma hawaiiense*) were present, but these trees were previously noted and mapped during past surveys in an adjacent area (Hart 2003).

Most of the property consisted of nearly barren lava flows, grasslands of introduced fountain grass (*Pennisetum setaceum*), and scattered native and introduced shrubs and trees. The rather sparse herb layer in these grasslands primarily consisted of the indigenous uhaloa (*Waltheria indica*), and the introduced partridge pea (*Chamaecrista nictitans*). Other introduced plants included haole koa (*Leucaena leucocephala*), indigo (*Indigofera suffruticosa*), and *Pluchea carolinensis*, which were present as low growing shrubs. Native

shrubs included the locally abundant 'a'ali'i (*Dodonea viscosa*) and the previously mentioned maiapilo. Native trees such as lama (*Diospyros sandwicensis*), naio (*Myoporum sandwicense*), and alahe'e (*Psydrax odoratum*), were scattered in very low densities throughout the area.

## Discussion and recommended mitigation measures

In recent centuries the project area was likely dominated by Pili grass (*Heteropogon contortus*) with only scattered native shrubs and trees due to the low annual rainfall. Humans have substantially altered the vegetation of much of the property, either directly (eg. clearing for farming and ranching) or indirectly (eg. introduction of cattle and goats, introduction of alien plants, and fire) and very little original vegetation remains. However, the project could easily improve the existing habitat through the outplanting of native plants along the proposed roadway. In particular, landowners should consider maiapilo and wiliwili trees (*Erythrina sandwicensis*), although any native plants that naturally occur in the area could be used. In addition, landowners should consider aligning the access road in a way that would minimize the destruction of any of the few remaining native trees in the area.

**Table 1.** List of Alien (A), Indigenous (I), and Endemic (E) plant species found during the survey.

Scientific Name	Family	Common Name	Life Form	Status
<i>Capparis sandwichiana</i>	Capparaceae	Maiapilo	Shrub	E
<i>Chamaecrista nictitans</i>	Fabaceae	Partridge pea	Herb	A
<i>Diospyros sandwicensis</i>	Ebenaceae	Lama	Tree	E
<i>Dodonea viscosa</i>	Sapindaceae	'A'ali'i	Shrub	I
<i>Indigofera suffruticosa</i>	Fabaceae	Indigo	Shrub	A
<i>Lantana camara</i>	Verbenaceae	Lantana	Shrub	A
<i>Leucaena leucocephala</i>	Fabaceae	Haole koa	Tree	A
<i>Myoporum sandwicense</i>	Myoporaceae	Naio	Tree	I
<i>Nephrolepis exaltata</i> <i>subsp. hawaiiensis</i>	Nephrolepidaceae	Ni'ani'au	Fern	E
<i>Pennisetum setaceum</i>	Poaceae	Fountain grass	Grass	A
<i>Pluchea carolinensis</i>	Asteraceae	Sourbush	Shrub	A
<i>Psydrax odoratum</i>	Rubiaceae	Alahe'e	Tree	I
<i>Schinus terebinthifolius</i>	Anacardiaceae	Christmasberry	Tree	A
<i>Waltheria indica</i>	Sterculiaceae	Uhaloa	Herb	I
<i>Xylosma hawaiiense</i>	Flacourtiaceae	Maua	Tree	E

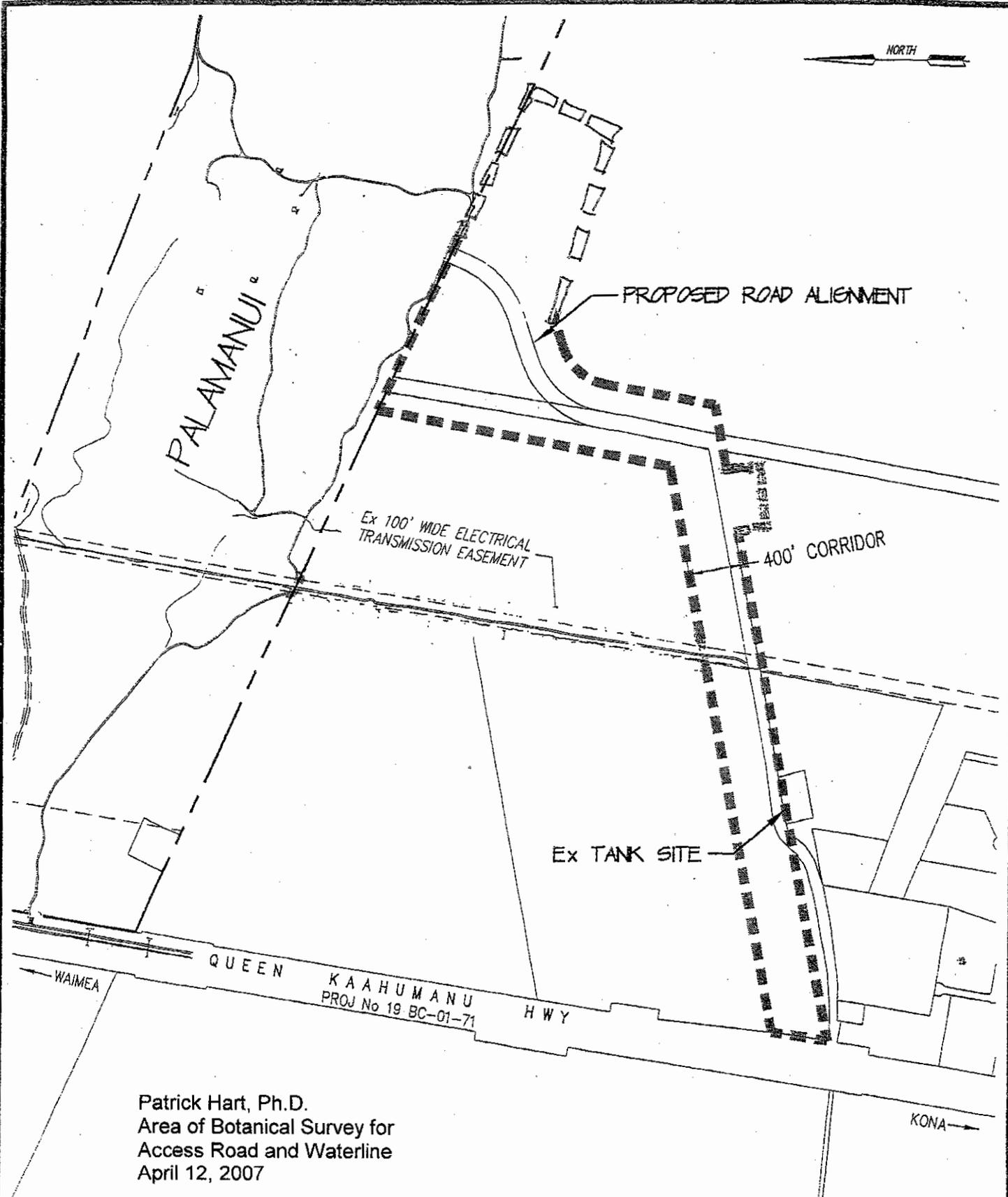
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Patrick Hart, Ph.D.  
 Area of Botanical Survey for  
 Access Road and Waterline  
 April 12, 2007

**Right of Entry Map**

Palamanui  
 TMK: (3) 7-2-05: 1  
 Kau, North Kona  
 Island of Hawaii, Hawaii

SCALE: 1" = 1000'±



**Appendix C**

**Archaeological Survey**



## RECHTMAN CONSULTING, LLC

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e-mail: bob@rechtmanconsulting.com

ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL STUDIES

June 27, 2007

RC-0494

Melanie Chinen  
Administrator  
DLNR-SHPD  
Kakuhewea Building, Room 555  
601 Kamokila Blvd.  
Kapolei, HI 96707

Dear Melanie:

At the request of Roger Harris, on behalf of Hiluhilu Development, Rechtman Consulting, LLC has prepared this request for determination of "no historic properties affected" associated with the establishment of a waterline, tank site, and access road to service the Palamanui/University of Hawaii development areas in Kaū, Maka'ula, and Hale'ōhi'u *ahupua'a*, North Kona District, Island of Hawai'i. The proposed waterline and access road will traverse Maka'ula, Hale'ōhi'u, Hamanamana, and Kalaoa *ahupua'a* on state-owned (DHHL and DLNR) land (TMKs: 3-7-3-10:33, 39, 42) (Figures 1, 2, and 3). The study area is situated *mauka* of Queen Ka'ahumanu Highway, north of Kaiminani Drive, and ranges in elevation from 260 feet (79 meters) to 440 (134 meters) feet above sea level. This general area is located on a Hualālai flow dating between 1,500 and 3,000 years old (Wolfe and Morris 1996). Vegetation within the project area consists almost entirely of fountain grass (*Pennisetum sectaceum*) and the terrain is broken *pāhoehoe* (Figures 4 and 5). A substantial lava tube system is known to exist in this area, a portion of which that is *mauka* of the present study area was recorded as SIHP Site 15298/15302 and contains burials and other culturally significant resources (Cleghorn 1998). One of the goals of the current archaeological fieldwork was to identify a corridor for the waterline and access road that avoids impacting this lava tube system. To that end, the surface and subsurface expressions of the tube system were field identified, and the proposed development corridor was situated to the north of the extent of the tube system. In the course of identifying the subsurface extent of the tubes, one subsurface archaeological feature was encountered. This is a cache of four wooden *kapa* beaters within a decaying gourd (Figures 6 and 7). This feature, being within the subsurface extension of SIHP Site 15298/15302, is not within the current study area. However, the feature was documented and its discovery was reported to DLNR-SHPD, along with an expression of concern for the protection of this feature from potential impact resulting from on-going illegal activities (mechanical and hand rock harvesting, and *pakalolo* cultivation) in the immediate vicinity of the finds. A second, surface feature, a single petroglyph (Figure 8), was also observed to be present outside of the current study area.

A detailed culture-history from legendary times to the Historic Period for this precise portion of Kekaha is presented by Maly and Kalima (1993), and indicates that the current project area was not heavily occupied or used during Precontact times and became part of large granted lease holdings during historic times. There were no *kuleana* awarded in the study area during the *Māhele*. There have been several archaeological studies (Ching 1970, 1971; Ching and Rosendahl 1968; Clark et al. 2004; Cleghorn 1998; Davis 1977; Head and Rosendahl 1993; Rosendahl 1973, 1990; Schilz et al. 1990) conducted in the general vicinity of the current project area location. Given the culture-historical background and the results of previous archaeological studies, the archaeological expectations for the current project area include possible trails, petroglyphs, dryland agricultural features, temporary habitation sites, and lava tubes containing burial and habitation features.

The fieldwork to define a study corridor was conducted January 9-12, 2007, and the field survey of the 200-foot wide study corridor was conducted on April 25-26, 2007. All fieldwork was done under the supervision of Robert B. Rechtman, Ph.D., and the field crew included J. David Nelson, B.A., Chris Hand, B.A., Ashton Dircks, B.A., and Johnny Dudoit, B.A. The field investigators thoroughly examined the 200-foot wide study corridor; ground visibility was excellent. No archaeological resources were observed within the study area and the likelihood of encountering subsurface resources is extremely remote. Based on these negative findings, on behalf of our client, we are requesting that DLNR-SHPD issue a written determination of "no historic properties affected" in accordance with HAR 13§13-284-5(b)1.

Should you require further information, or wish to visit the study area, please contact me directly.

Respectfully,



Bob Rechtman, Ph.D.  
Principal Archaeologist

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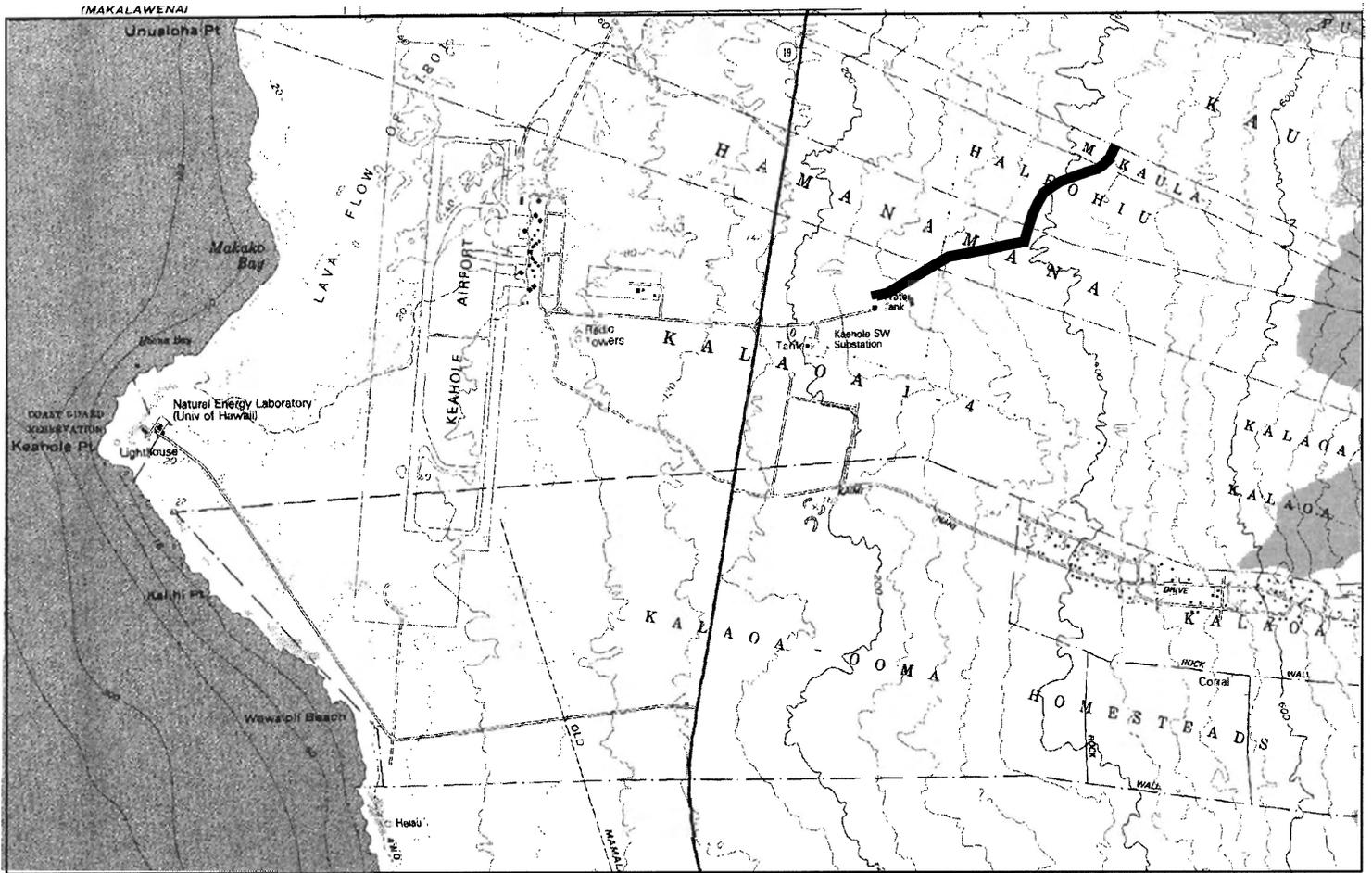


Figure 1. Project area location.

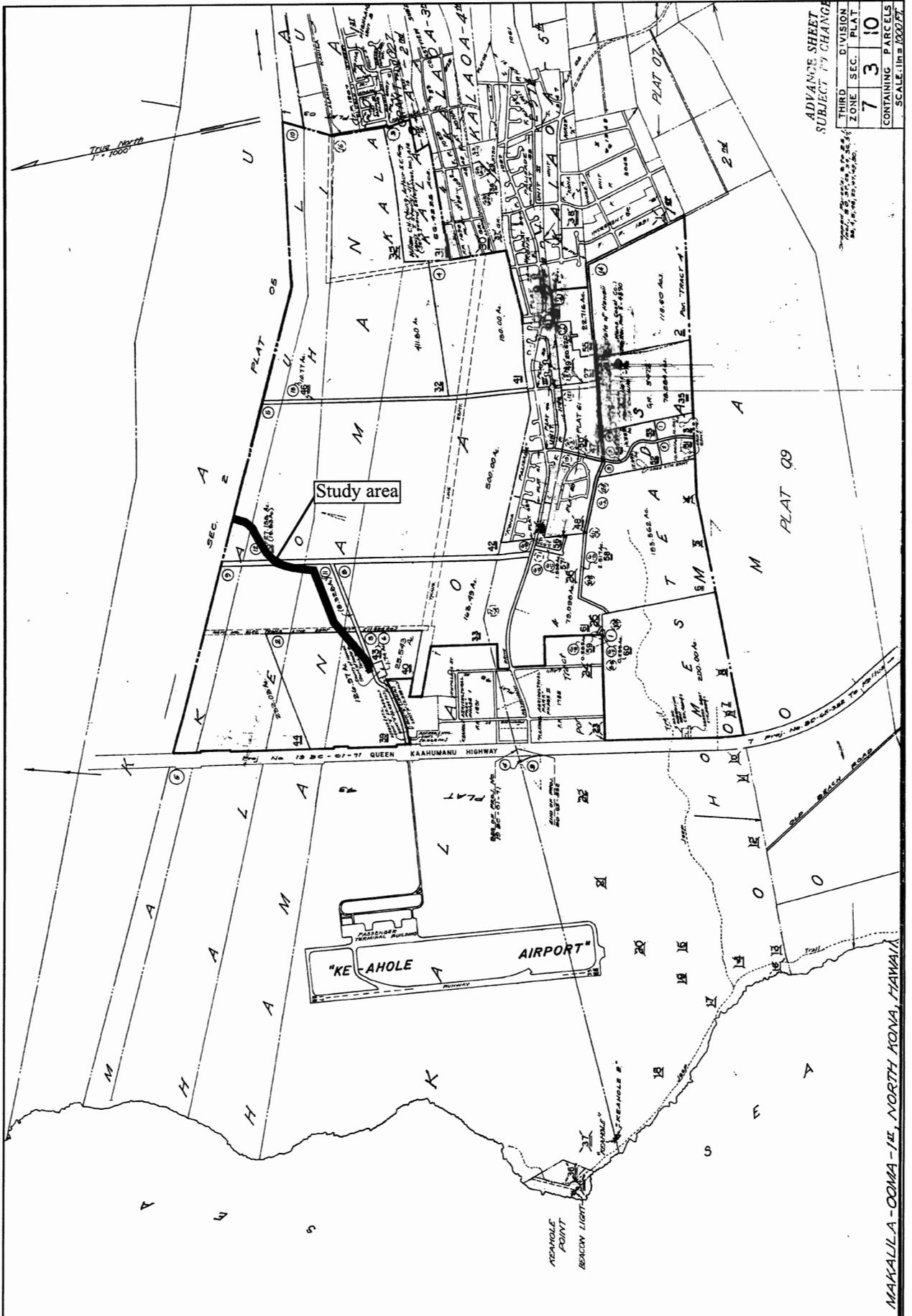


Figure 2. Tax Map Key (TMK):3-7-3-010 showing study area.

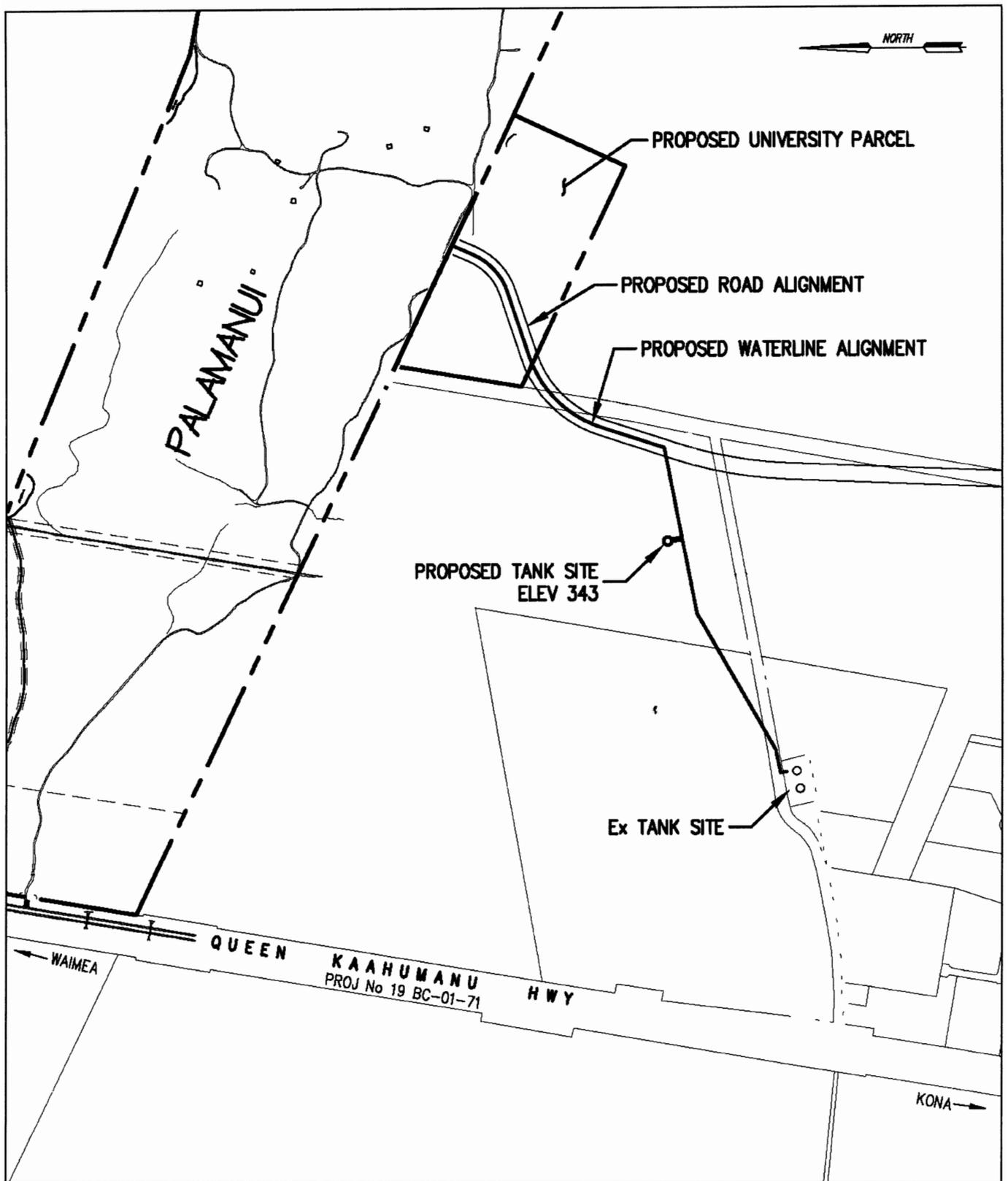


Figure 3. Detail map of study area.

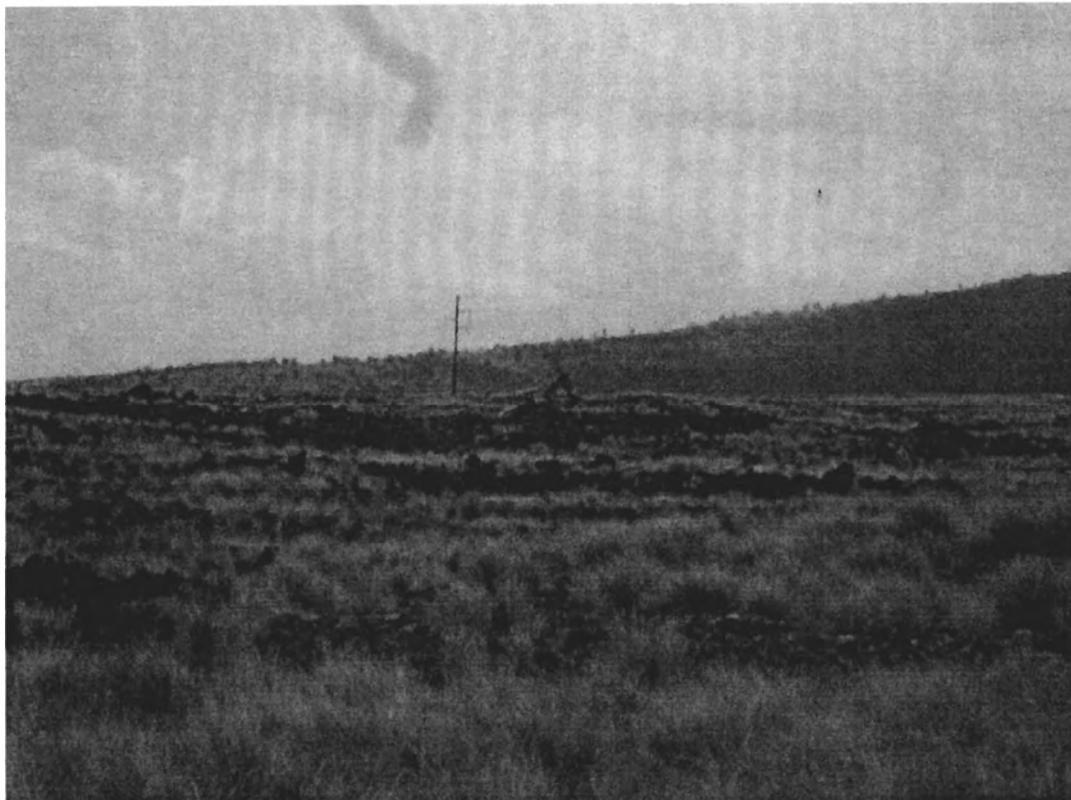


Figure 4. View of study area, note backhoe in center of photo, illegally “harvesting” rock.



Figure 5. Typical vegetation cover and *pāhoehoe* terrain.

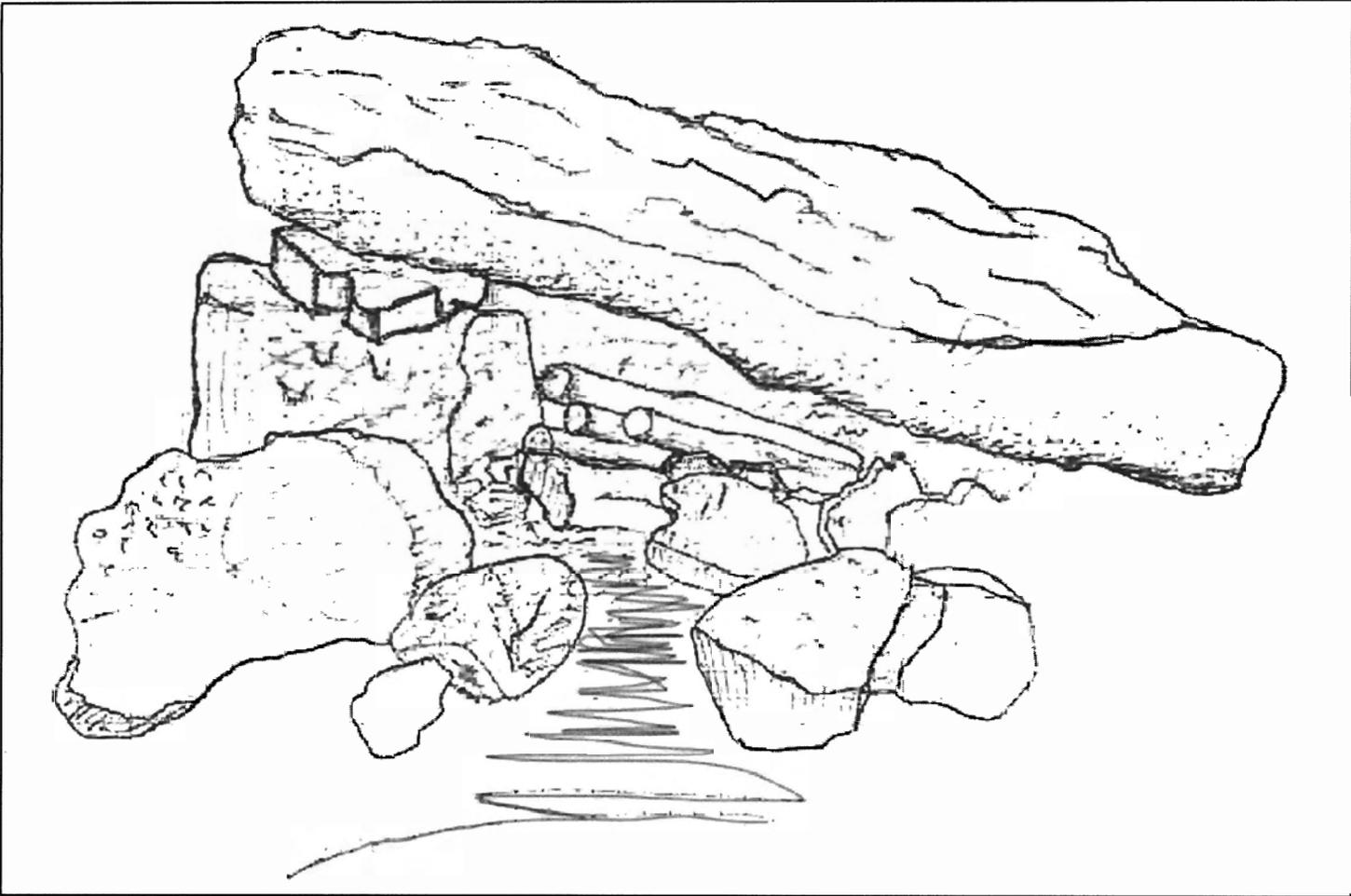


Figure 6. Sketch of *kapa* beater and gourd feature within lava tube SHIP Site 15298/15302.



Figure 7. *Kapa* beater and gourd feature within lava tube SHIP Site 15298/15302.



Figure 8. Petroglyph observed to the south of the current study area along the edge of a collapsed portion of the overall lava tube site SIHP 15298/15302.