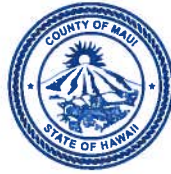


ALAN M. ARAKAWA
Mayor

WILLIAM R. SPENCE
Director

MICHELE CHOUTEAU McLEAN
Deputy Director

FILE COPY



SEP 23 2011

AUG 30 2011

COUNTY OF MAUI
DEPARTMENT OF PLANNING

August 30, 2011

RECEIVED
SEP -8 P3:25
OFC. OF ENVIRONMENTAL
QUALITY CONTROL

Mr. Gary Hooser, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Mr. Hooser:

SUBJECT: FINAL ENVIRONMENTAL ASSESSMENT (EA) FOR THE PROPOSED PULELEHUAKA SUBDIVISION, A 13-LOT SINGLE-FAMILY RESIDENTIAL SUBDIVISION TO BE LOCATED ALONG AINA LANI DRIVE IN PUKALANI, MAUI, HAWAII; TMK: (2) 2-3-008:036 (POR.) (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005)

The Maui Planning Commission, at its regular meeting on August 23, 2011, accepted the Final EA for the subject project, and issued a Finding of No Significant Impact (FONSI). Please publish the Final EA in the **September 23, 2011** Office of Environmental Quality Control (OEQC) Environmental Notice.

We have attached a completed OEQC Publication Form, one (1) hardcopy of the Final EA, and one (1) CD containing the PDF file of the Final EA. If you have any questions, please contact Staff Planner Danny Dias at danny.dias@mauicounty.gov or at (808) 270-7557.

Sincerely,

Handwritten signature of Clayton I. Yoshida in blue ink.

CLAYTON I. YOSHIDA, AICP
Planning Program Administrator

for WILLIAM SPENCE
Planning Director

Attachments

xc: Danny A. Dias, Staff Planner
Leilani Pulmano, Munekiyo & Hiraga, Inc.
Project File (w/ copy of attachment)
General File

WRS:CIY:DAD:rm

K:\WP_DOCS\PLANNING\Cpa\2010\0003_Pulelehuakea Subdivision\OEQC_FEATrans.doc

**Publication Form
The Environmental Notice
Office of Environmental Quality Control**

Instructions: Please submit one hardcopy of the document along with determination letter from the agency. On a compact disk, put an electronic copy of this publication form in MS Word and a PDF of the EA or EIS. Please make sure that your PDF documents are ADA compliant. Mahalo.

Project Name: Pulelehuakea Residential Subdivision (Pukalani)
Applicable Law: Chapter 343, Hawaii Revised Statutes (HRS) Environmental Review
Type of Document: Final Environmental Assessment
Island: Maui
District: Makawao
TMK: (2)2-3-008:036 (portion)
Permits Required: NPDES Permit, as required
Chapter 343, HRS
Community Plan Amendment
Change in Zoning
Subdivision Approval
Grading Permit
Building and Construction Permits

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

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Applicant or Proposing Agency: KG Maui Development, LLC
Address: 175 Paoakalani Avenue, Suite 300
Honolulu, Hawaii 96815
Contact & Phone: Elton Wong, (808) 931-4365

Approving Agency/ Accepting Authority: Maui Planning Commission
Address: 250 South High Street
Wailuku, Hawaii 96793
Contact & Phone: William Spence, Director, (808) 270-7735

Consultant: Munekiyo & Hiraga, Inc.
Address: 305 High Street, Suite 104
Wailuku, Hawaii, 96793
Contact & Phone: Leilani Pulmano, (808) 244-2015

Project Summary: Summary of the direct, indirect, secondary, and cumulative impacts of the proposed action (less than 200 words). Please keep the summary brief and on this one page.

KG Maui Development, LLC (KG) will be seeking a Community Plan Amendment (CPA) to the Makawao-Pukalani-Kula Community Plan's land use map, as well as a County Change in Zoning (CIZ). The principal project component involves the development of the proposed 13-lot Pulelehuakea single-family residential subdivision. Additionally, KG is filing a CPA and a CIZ to downzone existing residential zoned lands within the adjoining Pukalani Country Club Golf Course to be consistent with the underlying existing golf course use. Related improvements include site grading and grubbing, landscaping, relocation of a cart path, installation of utilities and drainage system, and construction of roadways and retaining walls.

The proposed project will involve a commitment of energy, labor, fiscal, and material resources. The proposed project will have limited, unavoidable construction-related impacts including temporary noise-generating and air quality impacts. It should be noted, however, that construction-related impacts will be mitigated through the use of Best Management Practices.

Impacts to cultural and historical sites and properties are not anticipated. There are no anticipated impacts to climate, topography, and soils. There are also no known rare, threatened, or endangered species of flora, fauna, or avifauna located within the project area. No secondary or cumulative impacts are anticipated.

The purpose of the project is to provide additional housing units in the Makawao-Pukalani-Kula region to help meet future demand for market-priced, trade-up housing which is consistent with the surrounding neighborhoods.

Final Environmental Assessment

PROPOSED PULELEHUAKEA RESIDENTIAL SUBDIVISION LOCATED AT PUKALANI, MAUI, HAWAII TMK (2) 2-3-008:036 (por.)

Prepared for:

KG Maui Development, LLC

September 2011

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by Munekiyo & Hiraga, Inc.**



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Executive Summary

Project Name: Proposed Pulelehuakea Residential Subdivision

Type of Document: Final Environmental Assessment

Legal Authority: Chapter 343, Hawaii Revised Statutes

Applicable Trigger: Amendment to the Makawao-Pukalani-Kula Community Plan

Agency Determination: Finding of No Significant Impact

Location: Maui Island
Pukalani, Maui, Hawaii
TMK No. (2) 2-3-008:036 (portion)

Applicant: KG Maui Development, LLC
175 Paoakalani Avenue, Suite 300
Honolulu, Hawaii 96815
Contact: Elton Wong
Phone: (808) 931-4365

Approving Authority: Maui Planning Commission
250 South High Street
Wailuku, Hawaii 96793
Contact: William Spence
Phone: (808) 270-7735

Consultant: Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793
Contact: Leilani Pulmano
Phone: (808) 244-2015

Project Summary: KG Maui Development, LLC (KG) will be seeking a Community Plan Amendment (CPA) to the Makawao-Pukalani-Kula Community Plan's land use map, as well as a County Change in Zoning (CIZ) for land under its ownership in Pukalani, Maui, Hawaii. The principal component of the land use requests involves the CPA and CIZ to enable the development of the proposed 13-lot Pulelehuakea single-family residential subdivision.

Additionally, KG is filing CPA and CIZ applications to downzone existing residential zoned lands within the adjoining Pukalani Country Club Golf Course to be consistent with the underlying existing golf course use.

The amendment to the Makawao-Pukalani-Kula Community Plan triggers compliance with Hawaii Revised Statutes (HRS), Chapter 343 requirements. The Environmental Assessment (EA) evaluates the technical characteristics, environmental impacts and alternatives, as well as advanced findings relative to the significance of proposed project impacts. The EA acts as the primary supporting technical document for the consolidated CPA and CIZ applications. The Approving Agency for the EA is the Maui Planning Commission.

I. PROJECT OVERVIEW

I. PROJECT OVERVIEW

A. PROPERTY LOCATION, EXISTING USE, AND LAND OWNERSHIP

KG Maui Development, LLC (KG) is proposing to develop a residential subdivision and related improvements on approximately 6.0 acres of land (hereafter referred to as the “subdivision site”) and to establish land use designation consistency on 8.4 acres of the Pukalani Country Club Golf Course (hereafter referred to as the “golf course site”) of a 39.2-acre parcel at Tax Map Key (TMK) (2) 2-3-008:036 at Pukalani, Maui, Hawaii. The subdivision site is located between Holes 5, 6, and 7 and the golf course site is located within Holes 6 and 7 of the Pukalani Country Club Golf Course. Collectively, the two (2) sites are hereafter referred to as the “project area”. See **Figure 1** and **Appendix “A”**.

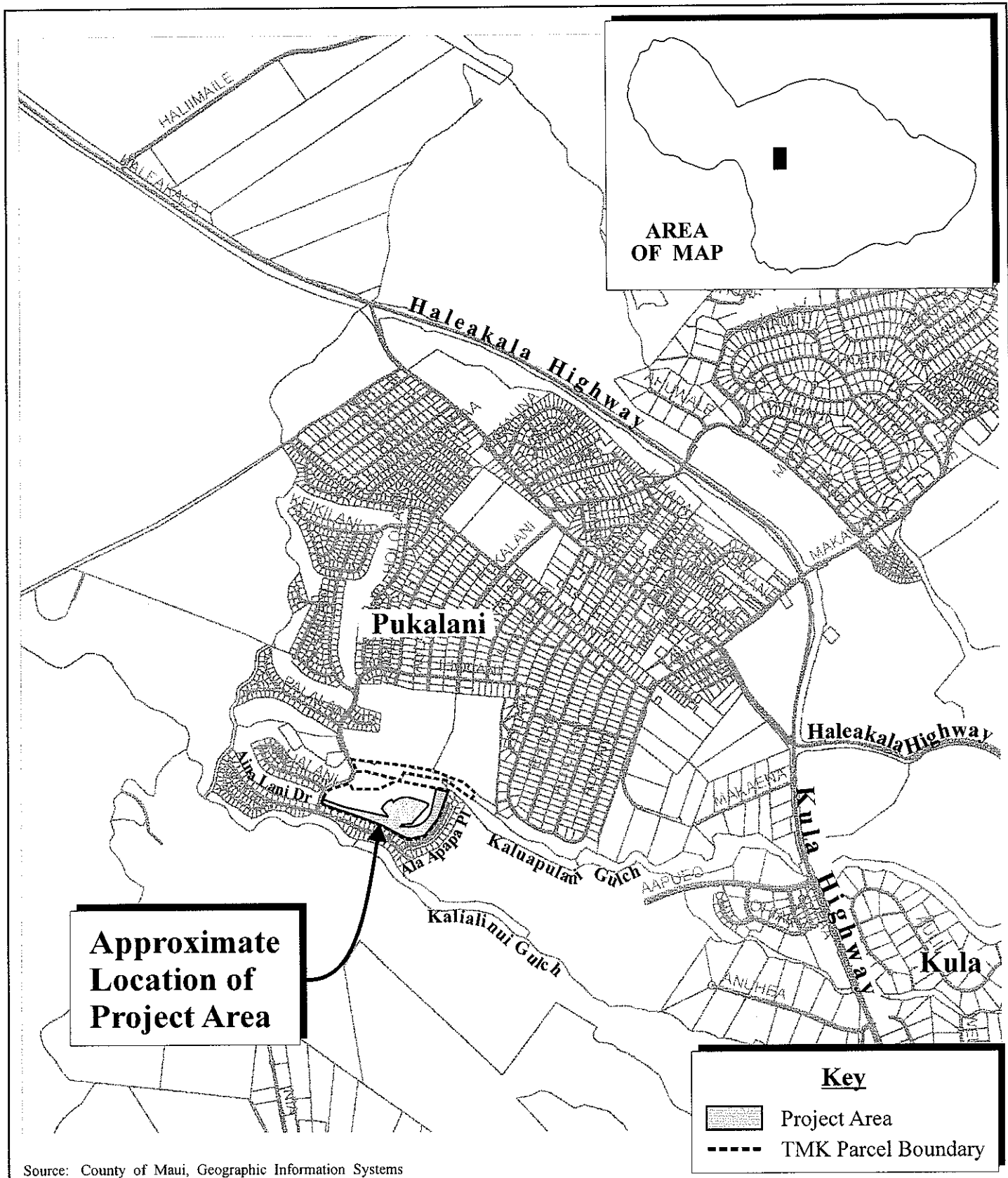
Currently, the subdivision site is vacant, undeveloped land; and the golf course site is within the existing Holes 6 and 7 of the Pukalani Country Club Golf Course.

The entire TMK parcel (2) 2-3-008:036, which includes the project area, is owned by KG.

B. PROPOSED ACTION

The principal component of the land use requests involves the development of the proposed Pulelehuakea Residential Subdivision. The proposed subdivision, identified as Area “A” in **Figure 2**, will provide 13 single-family residential lots ranging from 15,000 to 37,000 square feet. Related improvements will be completed as part of the project implementation, including site grading and grubbing, landscaping, relocation of a cart path, installation of utilities and drainage system, and construction of roadways and retaining walls. No ohana units will be allowed; only one (1) dwelling unit per lot will be permitted.

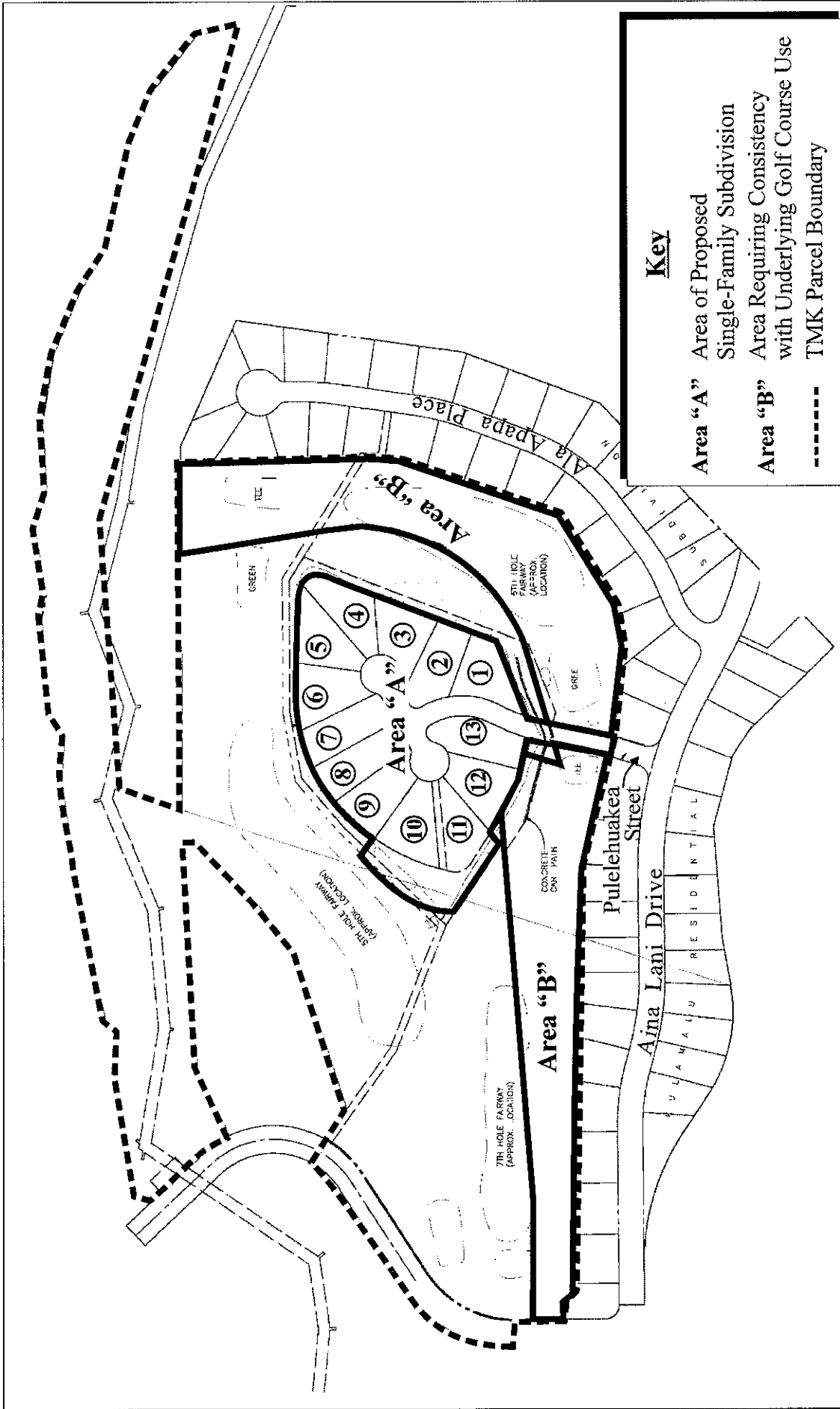
The subdivision site is designated “Urban” for the State Land Use District; “SF, Single-Family Residential”, and “PK (GC), Park (Golf Course)” for Makawao-Pukalani-Kula Community Plan; “D-1, Two-Family Duplex”, “R-1, Residential”, and “PK-4, Golf Course Park Districts” for Maui County Zoning. See **Figure 3** and **Figure 4**. To enable project implementation, Community Plan Amendment (CPA) and Change in Zoning (CIZ) applications will be initiated for the project site. The requested land use changes for the subdivision site are summarized in the **Table 1** below:



Source: County of Maui, Geographic Information Systems

Figure 1 Proposed Pulelehuakea Residential Subdivision NOT TO SCALE
Regional Location Map





Source: Ronald M. Fukumoto Engineering, Inc.

Figure 2 Proposed Pulelehuakea Residential Subdivision

NOT TO SCALE

Preliminary Site Plan



Prepared for: KG Maui Development, LLC

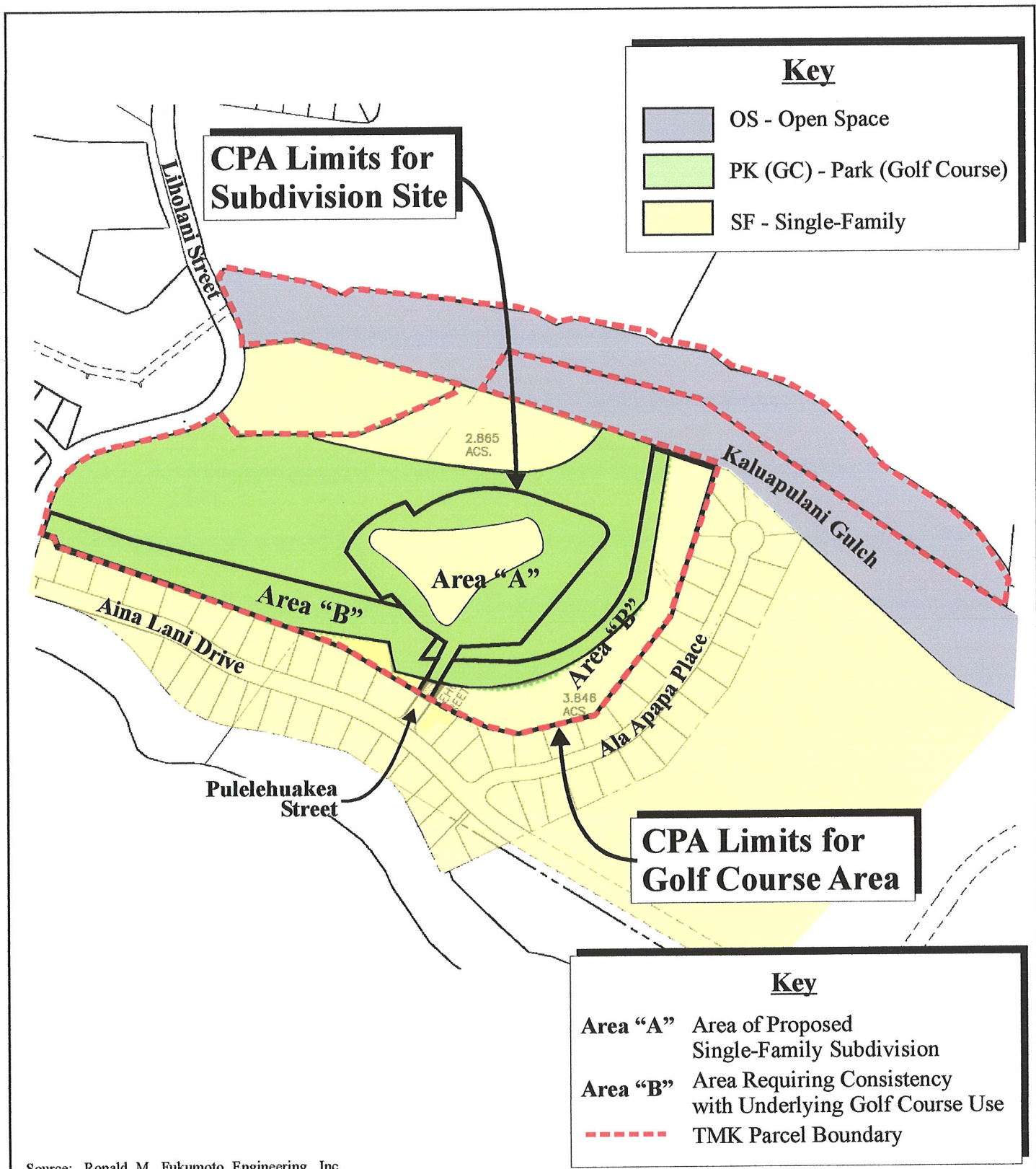
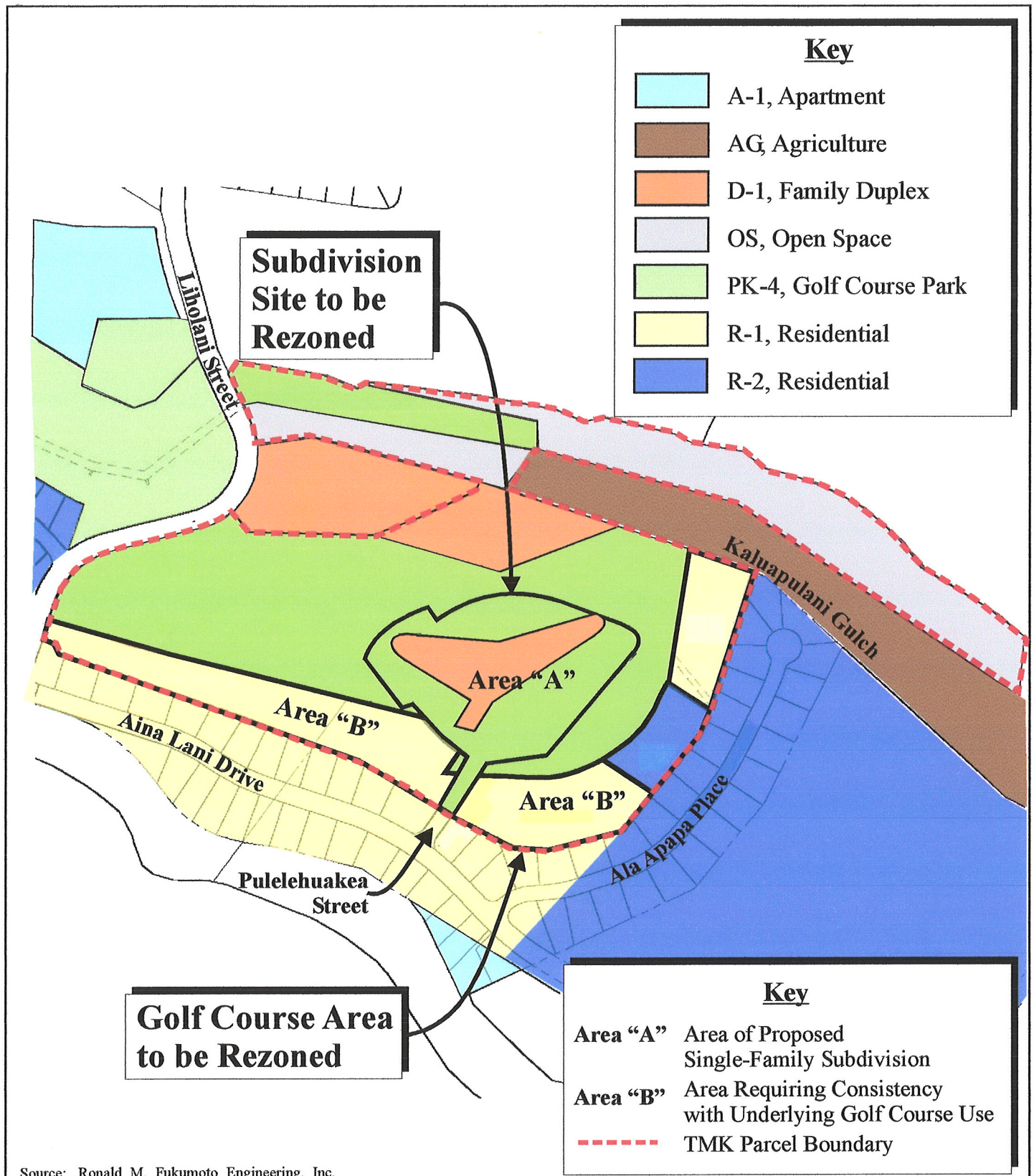


Figure 3 Proposed Pulelehuakea Residential Subdivision
Existing Community Plan Map

NOT TO SCALE





Source: Ronald M. Fukumoto Engineering, Inc.

Figure 4 Proposed Pulelehuakea Residential Subdivision NOT TO SCALE
Existing Zoning Map



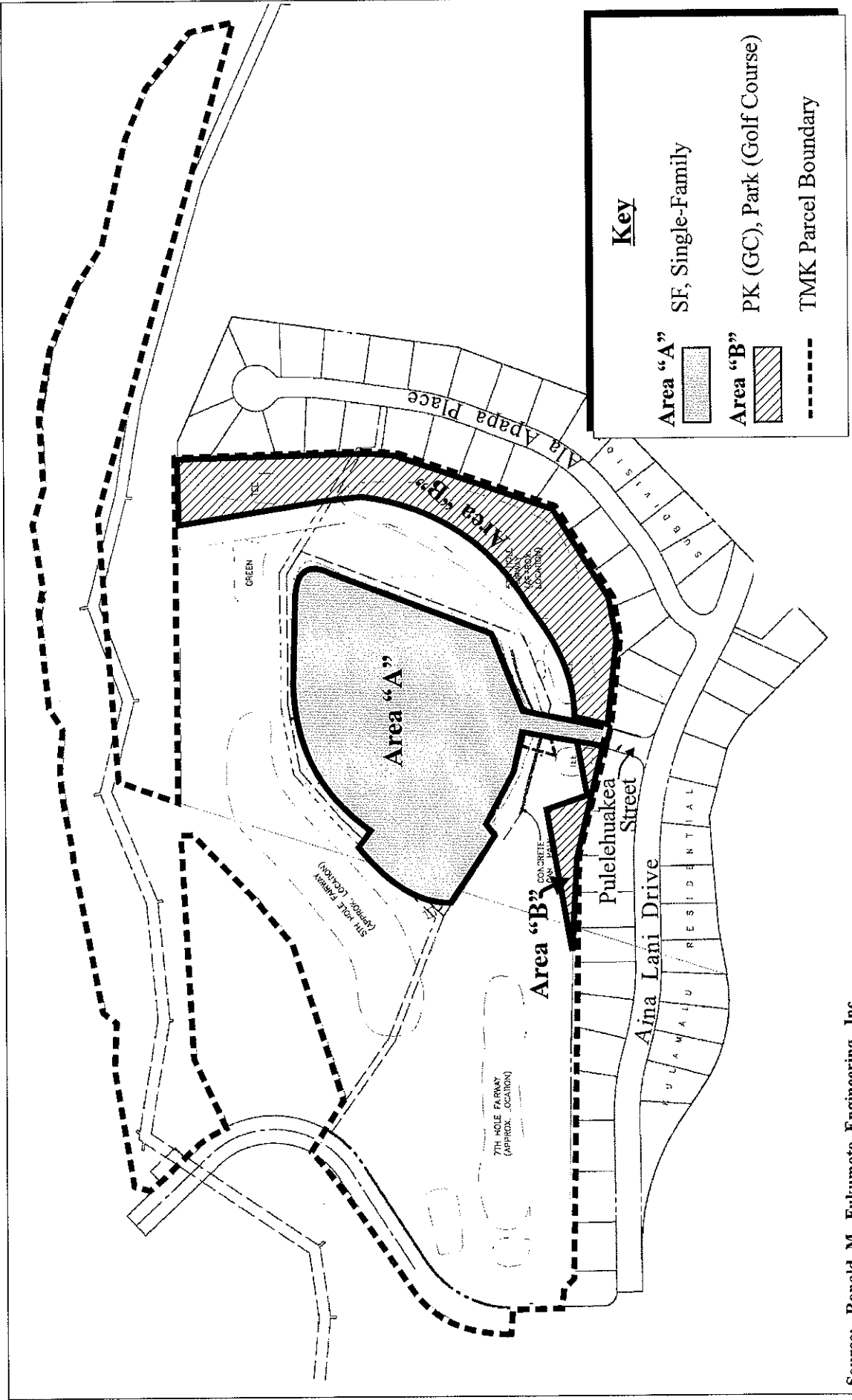
Table 1. Summary of Requested Land Use Changes for Area “A” Subdivision Site

Land Use Designation	Existing	Requested Changes	Acres
State Land Use District	Urban	None	6.0
Makawao-Pukalani-Kula Community Plan	SF, Single-Family PK (GC), Park (Golf Course)	SF, Single Family	
Maui County Zoning	D-1, Two-Family Duplex R-1, Residential PK-4, Golf Course Park District	R-3, Residential	

Additionally, KG is requesting downzoning of existing residential land use designations within the adjacent Pukalani Country Club Golf Course to be consistent with the underlying existing golf course use. The additional CPA and CIZ actions will ensure long-term viability of the Pukalani Country Club Golf Course by establishing land use designation consistency. Approximately 8.4 acres of Hole 6 and Hole 7 (behind homes on Aina Lani Drive and Ala Apapa Place) are currently zoned as “R-1, Residential” and “R-2, Residential” by Maui County. This golf course site is referenced as Area “B” in **Figure 2**, while a portion, approximately 3.8 acres, of Area B is designated “SF, Single-Family Residential” for the Makawao-Pukalani-Kula Community Plan. No improvements are proposed at the golf course site as part of this action. See **Figure 5** and **Figure 6**. **Table 2** below summarizes the golf course land use changes:

Table 2. Summary of Requested Land Use Changes for Area “B” Golf Course Site

Land Use Designation	Existing	Requested Changes	Acres
State Land Use District	Urban	None	0.0
Makawao-Pukalani-Kula Community Plan	SF, Single Family	PK (GC), Park (Golf Course)	3.8
Maui County Zoning	R-1, Residential R-2, Residential	PK-4, Golf Course Park District	8.4



Key

Area "A"		SF, Single-Family
Area "B"		PK (GC), Park (Golf Course)
		TMK Parcel Boundary

Source: Ronald M. Fukumoto Engineering, Inc.

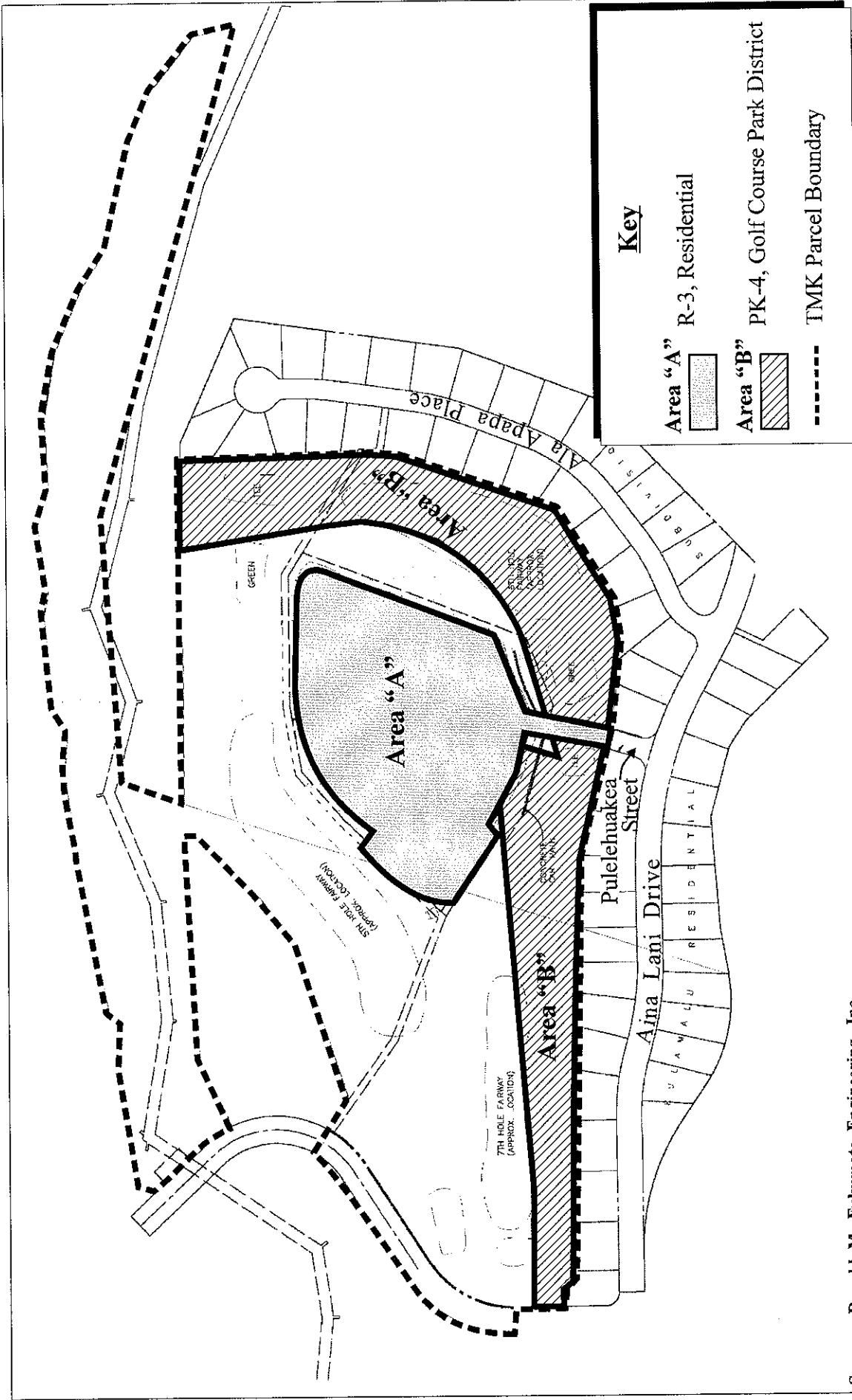
Figure 5 Proposed Pulelehuakea Residential Subdivision

Proposed Community Plan Amendment Area

NOT TO SCALE



Prepared for: KG Maui Development, LLC



Key

- Area "A" R-3, Residential
- Area "B" PK-4, Golf Course Park District
- TMK Parcel Boundary

Source: Ronald M. Fukumoto Engineering, Inc.

Figure 6 Proposed Pulelehuakea Residential Subdivision

NOT TO SCALE

Proposed Change in Zoning Area



Prepared for: KG Maui Development, LLC

KG Holdings/Pokalan:36/step1anCZapp

To summarize, the applicant is seeking to amend the Community Plan to establish a “SF, Single-Family” designation while concurrently seeking a County Change in Zoning to establish the “R-3, Residential” zoning for the subdivision site. Additionally, the golf course site will be downzoned to ensure long-term viability of the Pukalani Country Club Golf Course, ultimately reducing the overall amount of land with residential land use designation by approximately five (5) acres. Refer to **Figures 3 to 6**.

C. PROJECT NEED

According to the Socio-Economic Forecast for the General Plan 2030, population on Maui Island is estimated to increase by approximately 42 percent, with the Makawao-Pukalani-Kula region estimated to increase by approximately 25 percent (Socio-Economic Forecast, June 2006). This increase in population will create a demand for 824 additional housing units in the Makawao-Pukalani-Kula region according to the Draft Maui Island Plan. The proposed subdivision site will increase the supply of available housing for Upcountry residents to help meet this future demand. The proposed subdivision site will provide opportunities for market-priced, trade-up housing which is consistent with the surrounding neighborhoods.

D. REGULATORY CONTEXT AND CHAPTER 343, HAWAII REVISED STATUTES

The amendment to the Makawao-Pukalani-Kula Community Plan triggers compliance with Hawaii Revised Statutes (HRS), Chapter 343 requirements. As such, the processing of an Environmental Assessment (EA) pursuant to Chapter 343, Hawaii Revised Statutes (HRS) and Chapter 200 of Title 11, Department of Health Administrative Rules, Environmental Impact Statement Rules will be required. Therefore, this EA will address technical characteristics, environmental impacts and alternatives, as well as advance findings relative to the significance of proposed project impacts. This EA will act as the primary supporting technical document for the County’s consolidated CPA and CIZ applications. The Approving Agency for the EA is the Maui Planning Commission. The applications will be reviewed by the Maui Planning Commission, which will provide recommendations to the Maui County Council for review and final action.

E. PROJECT IMPLEMENTATION CONSIDERATIONS AND PROJECT SCHEDULE

As mentioned previously, the proposed Pulelehuakea Residential Subdivision will provide 13 single-family lots. The construction of the single-family homes will commence upon receipt of all land entitlements, regulatory permits, and approvals. It is estimated that the entitlements process will take approximately two (2) years to complete, followed by approximately one (1) year for subdivision approval and building permit receipt. Site construction of the subdivision is estimated to commence in 2013 and be completed by 2015.

The golf course site will remain as is. There will be no construction as part of the CPA and CIZ requests to downzone this area in order to establish land use designation consistency on the golf course.

F. LONG-TERM MANAGEMENT

Lot owners and homeowners of the proposed project will be subject to covenants, conditions, and restrictions (CC&Rs) that will provide the framework for long-term management of the subdivision. The CC&Rs will be modeled after the existing CC&Rs for the Kulamalu Homeowners Association to ensure consistency with the surrounding neighborhood. A homeowners association will be formed to administer and enforce the CC&Rs. As indicated previously, the CC&Rs will include a restriction that only one (1) dwelling unit per lot is allowed so that ohana units are prohibited.

G. SUSTAINABLE FEATURES

The proposed subdivision site is proposing a number of sustainable design features as part of the site construction and future home design to reduce green house gas emissions, provide for renewable energy, and reduction of waste. Sustainable features in site construction include Best Management Practices (BMPs) and erosion control plans to reduce pollution from construction activities by controlling soil erosion, sedimentation, and airbourne dust generation. This will include measures, such as dust fencing and drainage swales. Treatment will be through the on-site retention/detention basin.

The site construction company will be required to provide a construction waste management plan with the intent to reduce construction waste prior to site construction.

Outdoor lighting systems will be designed to minimize the light trespass from the site and reduce the development impact on nocturnal environments. This will enhance the opportunities to view the night skies.

The proposed subdivision site will also include water conservation measures by employing high efficiency water fixtures throughout the common areas. Landscape features will be designed to avoid invasive plant species and minimize the demand for water and synthetic chemicals through native and drought tolerate plant selection, mulching, and soil amendments.

Indoor demand for water will also be reduced through design requirements. High efficiency fixtures, including low flow faucets and showerheads will be incorporated as design requirements into the CC&Rs.

In addition, other sustainable features for housing design elements within the CC&Rs will include requirements for reducing energy needs such as using ENERGY STAR rated appliances that meet or exceed the minimum requirement for Annual Fuel Utilization Efficiency ratings. Air conditioners shall also meet or exceed the minimum 14 Seasonal Energy Efficiency Ratio (SEER) ratings. Homes will be required to be properly insulated to keep homes cool during summer months and warm during winter months. Windows can also lower energy costs, therefore, homes will be required to install ENERGY STAR windows with at least two (2) panes and low-e coating.

In terms of energy generation for the individual homes, house/lot packages will include an option for purchasing a photovoltaic array and/or residential wind turbine generator or similar energy generation system. And, all homes will be required to provide solar water heaters. These measures, taken together, will help to reduce green house gas emissions, provide for renewable energy, and reduction of waste.

**II. EXISTING
ENVIRONMENT,
POTENTIAL IMPACTS,
AND MITIGATION
MEASURES**

II. EXISTING ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATION MEASURES

A. PHYSICAL ENVIRONMENT

1. Surrounding Land Uses

a. Existing Conditions

The project area, which comprises of the subdivision site and golf course site (herein referred to as the “project area”), is located in the Pukalani region, a suburban area on the western slopes of Haleakala. The Pukalani area is predominantly residential, with a mixture of commercial, rural and agricultural uses.

The subdivision site is surrounded by Holes 5, 6, and 7 of the Pukalani Country Club Golf Course. Adjacent to the golf course is the Kulamalu Residential Subdivision and Liholani Golf Villas with the Kaluapulani Gulch bordering the larger TMK parcel. Further south is the Kalialinui Gulch. The golf course site is within Holes 6 and 7 of the Pukalani Country Club Golf Course.

Beyond the immediate project areas, less than a mile to the north, is the Pukalani Town Center, a shopping center and office complex, and the Mayor Hannibal Tavares Community Center.

b. Potential Impacts and Mitigation Measures

The proposed land use changes will be compatible with surrounding residential uses within the immediate area. The surrounding area can be characterized as a golf course residential community and the proposed project is fitting with this characterization. Therefore, the proposed Pulelehuakea Residential Subdivision will be compatible with existing surrounding uses.

Furthermore, no changes will occur as part of this application on the golf course site. The action for this area is to keep the golf course use consistent with the underling land use designations.

2. Climate, Topography, and Soil Characteristics

a. Existing Conditions

The Pukalani area is generally cool and equable year round. Average annual rainfall ranges between 40 and 50 inches per year, with most rainfall occurring between the months of October and April. Average temperature ranges from low 70 degrees Fahrenheit in the cooler months to high 70 degrees Fahrenheit in the warmer months (Maui County Data Book, 2008).

Like most areas of the island, northeasterly tradewinds prevail and are more persistent during summer than winter.

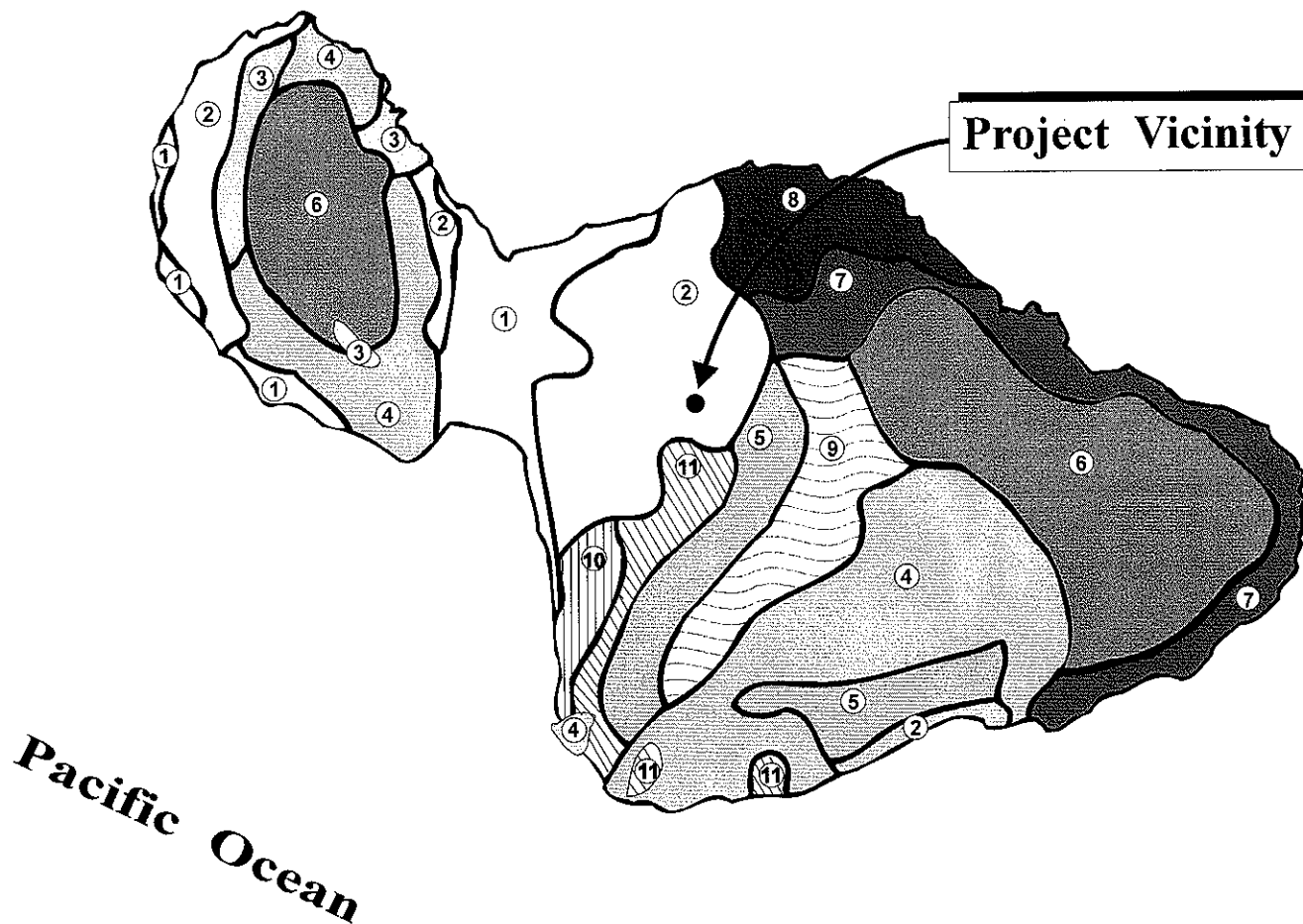
The elevations of the project site range from approximately 1,220 feet to 1,274 feet above mean sea level. The project site generally slopes down from southeast to northwest. The slopes range from 6 to 12 percent throughout the site. See **Appendix "B"**.

Underlying the project site is soils belonging to the Waiakoa-Keahua-Molokai association. See **Figure 7**. This soil association is found on low uplands and consists of moderately steep, well-drained soils that have a moderately fine textured subsoil.

The specific soils consist of Keahua Silty Series: Keahua Silty Clay (KncC) and Keahua Silty Clay Loam (KnB). See **Figure 8**. These well drained soils are generally utilized for pineapple, pasture, and homesites. KncC, with 7 to 15 percent slope, has a dark reddish-brown surface layer of silty clay loam that is about 10 inches thick, moderate permeability, slow to medium runoff, and slight to moderate erosion hazard. While KnB is similar in most characteristics with the differences being 50 inches thick, runoff is slow, and the erosion hazard is slight.

LEGEND

- | | |
|--|-------------------------------------|
| ① Pulehu-Ewa-Jaucas association | ⑦ Hana-Makaalae-Kaitua association |
| ② Waiakoa-Keahua-Molokai association | ⑧ Pauwela-Haiku association |
| ③ Honolua-Olelo association | ⑨ Laumaia-Kaipoi-Olinda association |
| ④ Rock land-Rough mountainous land association | ⑩ Keawakapu-Makena association |
| ⑤ Puu Pa-Kula-Pane association | ⑪ Kamaole-Oanapuka association |
| ⑥ Hydrandepts-Tropaquods association | |



Source: USDA Soil Conservation Service

Figure 7 Proposed Pulelehuakea Residential Subdivision Soil Association Map

NOT TO SCALE



Prepared for: KG Maui Development, LLC

MUNEKIYO & HIRAGA, INC.

KG Holdings\Pukalani\36\SOILS

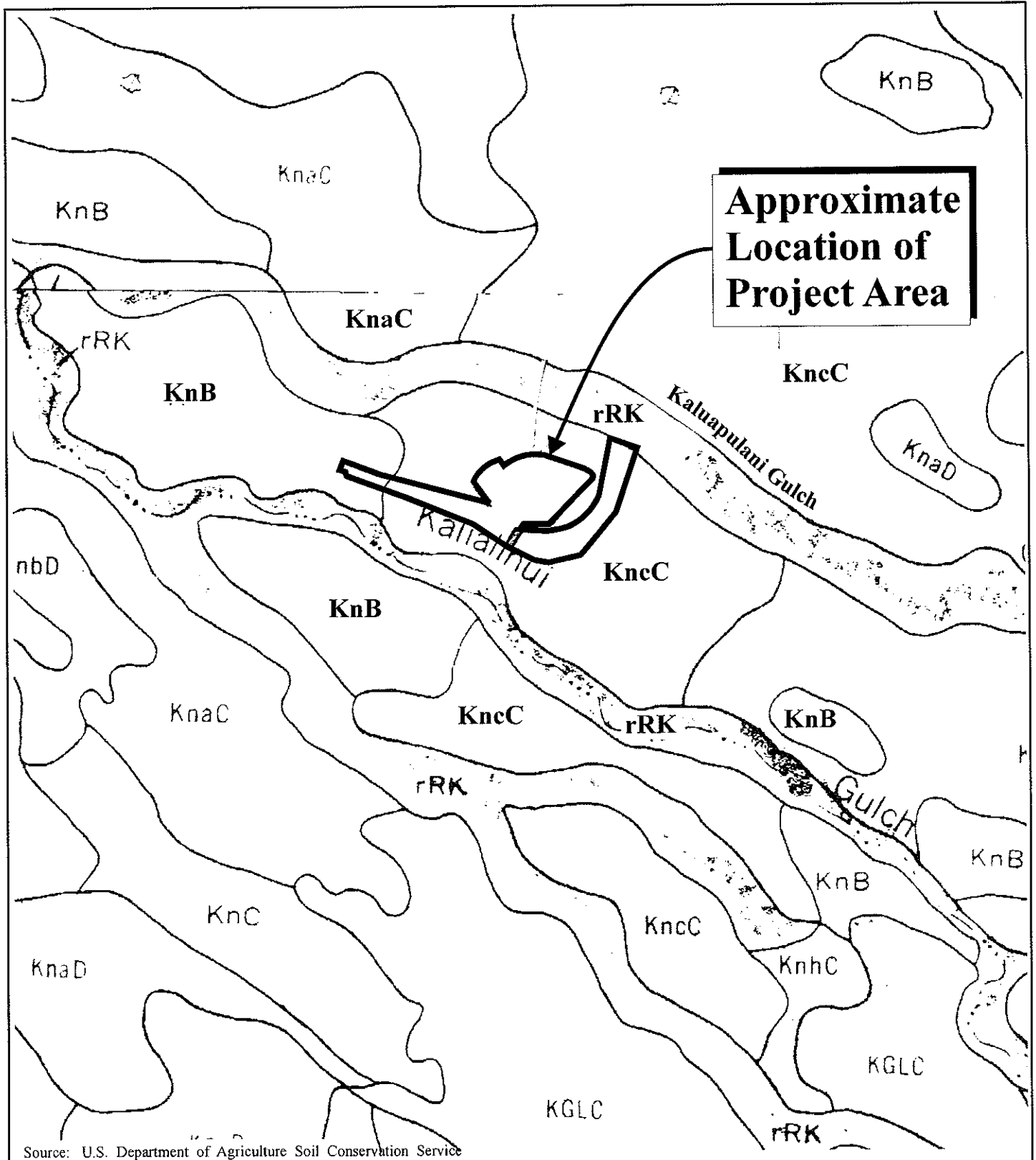


Figure 8 Proposed Pulelehuakea Residential Subdivision Soils Classification Map

NOT TO SCALE



b. Potential Impacts and Mitigation Measures

The proposed project is not anticipated to have any substantial adverse impact on climate, topography, or soil conditions. Project implementation of 13 residential lots are not anticipated to significantly impact the climate patterns in the Pukalani region.

Relative to topography, the applicant intends to utilize the existing slope to site the future homes to provide view planes. In that regard, the goal will be to balance the cut and fill of the sitework for the proposed subdivision to minimize topographic impacts.

The characteristics of soils in the subdivision site will not deter project implementation, as the soils are acceptable for homesites.

In regards to the golf course site, no changes will occur as part of the downzoning.

3. Flood and Tsunami Hazard

a. Existing Conditions

Federal Emergency Management Agency's Flood Insurance Rate Maps for the proposed project area is Zone X, which indicates an area of minimal flooding. Furthermore, the property is located upland, away from tsunami inundation areas.

b. Potential Impacts and Mitigation Measures

The proposed subdivision nor the existing use of the golf site will pose a flood hazard. Drainage improvements are proposed for the subdivision site to ensure surrounding properties are not impacted by the proposed subdivision. Furthermore, the project area is located upland, and there are no threats to the surrounding areas from coastal wave action as it is significantly outside of the tsunami inundation areas.

4. Flora and Fauna

a. Existing Conditions

A Flora and Fauna Study was conducted in May 2010 by Robert Hobdy. See **Appendix "C"**. A walk-through flora survey was completed for the proposed project.

Relative to the biological history, this area once had dry land vegetation consisting of *wiliwili* (*Erythrina sandwicensis*), *aalii* (*Dodonaea viscosa*), *akia* (*Wikstroemia monticola*), and a mixture of other grasses and shrubs. During the 1900's the gentler slopes were farmed with pineapple and cattle grazing was wide spread. These land uses gradually destroyed most of the native species which were replaced by agricultural crops and weeds or by hardy pasture grasses. Today, little remains of the native plants on the ridgetops and the area is dominated by non-native species.

The existing vegetation on the proposed subdivision area consisted of dry grassland with shrubs and few scattered trees. The most abundant species was Guinea grass (*Panicum maximum*) which was found throughout the area. Also common were *koa haole* (*Leucaena leucocephala*) and buffelgrass (*Cenchrus ciliaris*).

A total of 57 plant species were recorded during the survey. Of these 57 plant species, five (5) were native species including the *wiliwili* (*Waltheria indica*) and *koali awahia* (*Ipomoea indica*) which are native to Hawaii, as well as to many other Pacific islands. One (1) species, the *niu* or coconut, was a Polynesian introduction to Hawaii. The remaining species were non-native agricultural weeds, pasture plants, or ornamentals. Refer to **Appendix "C"** for a list of plant species.

A fauna survey was also conducted in conjunction with the flora survey. One (1) mammal species-Axis deer (*Axis axis*)-was observed during the two (2) site visits. Axis deer are normally found in pasture lands and in gulches in and around the Pukalani region. Other mammals that would be expected to be found in this area would be mice (*Mus domesticus*), rats (*Rattus spp.*), mongoose (*Herpestes auropunctatus*), and cats (*Felis catus*).

A special effort was made to look for the endangered Hawaiian hoary bat by making an evening survey of the property. No evidence of such activity was observed though visibility was excellent. Besides visual observation method, an electronic bat detecting device was used to locate the bat; however, no bat activity was detected.

There were moderate birdlife observed in both diversity and numbers for the subdivision area. Ten (10) species of non-native birds were observed, including the common myna, house finch, and northern cardinal. Refer to **Appendix "C"** for a list of bird species. The habitat is not suitable for Hawaii's native forest birds that are normally present at higher elevations. The habitat is also too close to human activities for the *pueo* or Hawaiian owl (*Asio flammeus sandwichensis*) which prefers expanses of open country.

While insects in general were not surveyed, a special examination for the native Blackburn's sphinx moth (*Manduca blackburni*) or their larvae was conducted as this moth has been put on the Federal Endangered Species list. There was no evidence of the moth, their larvae or habitat in the area.

b. Potential Impacts and Mitigation Measures

There were no rare, threatened, or endangered species of flora or fauna on the proposed project area. In regards to the golf course site, no work is proposed as part of the downzoning which would impact the existing conditions of flora and fauna resources. Accordingly, the proposed action is not anticipated to have an adverse impact on the flora and fauna resources.

5. Streams and Wetlands

a. Existing Conditions

There are no wetlands, streams, gulches, or other water bodies on the project area. However, there is a gulch nearby the project site named Kaluapulani Gulch to the north. Kaluapulani Gulch is not listed as a perennial stream in Hawaii Stream Assessment (1990) study.

b. Potential Impacts and Mitigation Measures

The proposed subdivision's runoff will be accommodated onsite and will not be conveyed to Kaluapulani Gulch. In regards to the golf course site, no changes will occur as part of this action. Therefore, the proposed project is not anticipated to have a significant adverse impact to streams, wetlands, gulches, and other water bodies.

6. Archaeological Resources

a. Existing Conditions

An Archaeological Assessment was completed for the subdivision site and golf course site by Scientific Consultant Services, Inc. in December, 2009. See **Appendix "D"**. The purpose of the assessment was to determine the presence or absence of midden deposits, and artifact deposits on the surface of the project area, as well as assess the potential for the presence of subsurface cultural deposits. If sites/historic properties were identified, they were to be evaluated in terms of significance criteria.

As part of the Archaeological Assessment, a discussion of the environmental setting and historical background, a review of archival resources and the results of previous archaeological work conducted in the area were undertaken prior to fieldwork to assess expectations for the project area. Although pre-Contact sites do exist in the area, given the background history of the area as well as present land use, the expectations for finding post-Contact sites were greater than expectations for finding pre-Contact sites. Historic sites (i.e., roads, irrigation features, fences, house sites, etc.) associated with commercial agricultural activities were anticipated; with a very slight chance of encountering agricultural features including terraces, garden/animal enclosures, walls, and mounds. In summary, the estimated probability of documenting historic sites was low; the estimated probability of documenting pre-Contact sites was almost nonexistent.

A full systematic pedestrian survey, providing 100 percent coverage of the subdivision site and affected areas of the golf course was conducted and three (3) stratigraphic trenches were excavated. The archaeological survey found

no surface or subsurface archaeological or cultural artifacts on the subdivision site.

Although a full systematic pedestrian survey was conducted for the golf course site, no stratigraphic trenches were excavated because there were no expectations of finding surface or subsurface sites within the golf course as the landscape has been completely modified for golf course use. See **Appendix “D-1”**.

b. Potential Impacts and Mitigation

Since the Archaeological Assessment conducted for the proposed Pulelehuakea Residential Subdivision site and golf course site did not identify any archaeological sites or cultural artifacts, there is a low likelihood of adversely impacting archaeological or cultural resources. The State Historic Preservation Division (SHPD) has reviewed and approved the archaeological survey, as documented in **Appendix “D-2”**. Furthermore, the existing golf course will not be affected as no changes will occur as part of this action. In the event cultural deposits or human burials are encountered during future construction activity, work will cease in the area of the find and the SHPD and Office of Hawaiian Affairs (OHA) will be contacted to establish appropriate mitigation measures in accordance with Chapter 6E, Hawaii Revised Statutes.

7. Cultural Resources

a. Existing Conditions

A Cultural Impact Assessment was prepared for the applicant by CKM Cultural Resources for the proposed project area. See **Appendix “E”**.

As noted in the assessment, the project site is situated within the *ahupuaa* of Kula and is located in the *ili* of *Aapueo*. Situated on a high, elevated plain within the *ahupuaa*, the *ili* is nestled along ridges and bordered by gulches that would have protected this area and made it a safe place to live. The assessment notes that there are various translations for *Aapueo*. One translation is “the owl’s will”, while another reflects the *aa* rock topography of the area. Most sources, however, believe that *Aapueo* was named after a female deity who once resided in the area.

The vegetation in the Kula and *Aapueo* areas do not flourish as generously as in other *ahupuaa* on Maui. Due to the arid conditions in Kula, *kalo* or taro was not a suitable plant crop. To supplement the need for wetland *kalo*, the *uala* (sweet potato) was grown as an alternative. Sweet potato was just as stable and healthy as *kalo* and required less water to bear fruit, while *kalo* grew best in fields of fresh running water. The *ulu* (*artocarpus incisus*) or breadfruit was also cultivated as a dietary supplement for *kalo*. Another plant found in the Kula area is the *aalii* (*dodonaea*) bush. This hardwood native shrub is indigenous to the islands and grows well in dryer climates. The *aalii* is found at elevations of up to 8,000 feet and in wind-swept, open country. It can also be found in the gulches and area surrounding the project site. One important plant used to construct thatched homes was *Pili* grass (*heterogon contortus*), which used to grow in arid and dusty conditions. The native Hawaiians would group dried clumps of *Pili* grass together to form a waterproof dwelling.

The Cultural Impact Assessment indicates that there is little recorded information about wildlife in the Kula and *Aapueo* areas. It is noted, however, that foreign plants, feral animals, and fowl have invaded these areas and resulted in the destruction of much of the area's natural habitat. As indicated in the assessment, the native owl seldom takes flight in the area. The common barn owl (native to North America), which tends to be more aggressive and has caused a depletion of other native bird and plant species, primarily inhabits the region.

As noted in the Cultural Impact Assessment, the word *Kula* translates to "plain" in the Hawaiian language. While this may not fully describe the topography within this *ahupuaa*, much of its landscape is arid and farming was limited to plant crops that could tolerate hot days and cold evenings. Although the landscape in Kula has changed considerably over the past few centuries, the climate has remained constant. The assessment also notes that many of the culturally significant sites, such as *heiau* and *ahu*, no longer exist due to the "paniolo" (Hawaiian cowboy) age. During this era, much of the land was cleared for cattle ranching activities and *heiau* and *ahu* were plundered without regard for their significance to the area. Later, during the late 1950s and 1960s, population growth in the Kula region further affected data recovery and contributed to the lack of information on culturally significant sites.

To obtain a range of cultural perspectives, interviews were held with several individuals with knowledge and familiarity with the project area. A summary of three (3) of the four (4) interviews follows.

(1) **Frances Lamadora**

Ms. Lamadora stated that she was born in Haliimaile, and when she was a teenager, her family moved to Pukalani. Her home is across the gulch (Makawao area) of the project site. She related that when she was growing up in the area, they used to walk through the gulches, and through the project area. They used to see all kinds of "Hawaiian things" in the gulch, but always remembered what her parents taught them. They were not to touch things, or to be "*niele*" (curious) when they saw anything that belonged to the ancient culture of Hawai'i.

She recalls that her "Tutu" (grandparent) used to tell that the real name for the area that they lived in was Makaeha. Her grandmother used to scold her because they tried to shoot the owls that flew in the area with a slingshot. Her grandmother told her the owl was their *Aumakua* (family god), so she should not harm the owl.

She remembers that there was a *Heiau* (Hawaiian temple) above her home, but she was always told by her parents to stay away from the "stone pile". She does not remember anything about the area being studied, except for the high grass that was growing in the area of the project.

(2) **Hokulani Holt-Padilla**

Ms. Holt-Padilla related that she is aware of the project area, and is familiar with the past cultural history of the area. She did not know of any archaeological sites within the study area. However, she is aware of the gulches and ancient *Heiau* in other areas surrounding the project site.

(3) **Charles Maxwell**

Mr. Maxwell was born in Lahaina, Maui in 1937. Three years later, Mr. Maxwell and his family moved to Kula where he grew up and was raised. From birth until kindergarten, Mr. Maxwell spoke only Hawaiian since that was the only language his parents spoke at home. Through public schooling, Mr. Maxwell learned the English language.

Insofar as the project area is concerned, Mr. Maxwell mentioned that Aapueo Parkway was named after the female owl-goddess who lived in the area. Mr. Maxwell wrote a chant about *Aapueo* which was performed during one of the annual Merrie Monarch Festivals in Hilo. In pre-contact times, Mr. Maxwell mentioned that lands in the project area served as the site for the observance of the *Makahiki*, an annual event held during the months of January and February at which time taxes were collected and festivities were held. Mr. Maxwell also mentioned that gulches in the area once contained adze factories and that evidence suggests that streams flowed within these gulches at one time.

During post-contact times, Mr. Maxwell indicated that the land mauka of the project site (across Kula Highway) was known for having the best sweet potato patches on the island. The sweet potatoes were planted to supply prospectors with food during the California gold rush. Later, with the advent of cattle ranching, Mr. Maxwell mentioned that the indigenous plants and trees in the area were wiped out and the forest line moved higher up the slopes of Haleakala. Without the forests to capture rain clouds and facilitate precipitation, stream flows in the gulches ceased.

In terms of cultural resources, Mr. Maxwell indicated that he is not aware of, nor has he observed, any cultural, gathering, or subsistence practices occurring on lands within the project area. In light of the foregoing, it was noted that the proposed project is not expected to have an adverse impact on native Hawaiian cultural resources, practices, and beliefs.

In summary, and as indicated by the Cultural Impact Assessment, there were no evidence of cultural practices in the project area.

b. Potential Impacts and Mitigation Measures

Based on findings of the Cultural Impact Assessment report and accounts presented by the four (4) interviewees, the proposed action is not anticipated to have an adverse effect on cultural resources, practices, or beliefs since cultural practices are not known to occur within the project area.

8. **Air and Noise Quality**

a. **Existing Conditions**

There are no point sources of airborne emissions in the immediate vicinity of the project area. The air in the Upcountry area is of good quality, with existing airborne pollutants attributable primarily to automobile exhaust from the region's roadways and the occasional harvesting (burning) of sugar cane fields. However, the prevailing tradewinds disperse these pollutants.

Noise generated in the vicinity of the subject property may be attributed to natural conditions (i.e. wind), vehicles traversing nearby neighbor roadways, such as Aina Lani Drive and Liholani Street, and golf-related activity involving the maintenance of the golf operations.

b. **Potential Impacts and Mitigation Measures**

Given the nature of the proposed action, involving development of 13 single-family lots and downzoning of the golf course site, there should be no adverse impacts on air quality or noise conditions. Airborne particulates, including dust, may be generated during site preparation and construction. To minimize dust generation, appropriate construction Best Management Practices (BMPs) will be utilized, such as but not limited to installation of dust fencing and watering of graded areas.

Ambient noise conditions will be temporarily affected by construction activities. Material-transport vehicles and power tools are anticipated to be the dominant source of noise generation during construction. As with air emissions, construction noise will be minimized through use of applicable BMPs. Construction will be limited to daylight work hours and coordination with surrounding neighbors will be undertaken to establish an effective communication protocol.

No physical improvements are proposed for the golf course site as part of the downzoning action.

The proposed action is not anticipated to have adverse impacts on air or noise quality in the vicinity.

9. Scenic and Open Space Resources

a. Existing Conditions

The project area is not located within a scenic view corridor. Central Maui isthmus, West Maui mountains, South Maui region, and northern and southern shorelines are visible from the project site. Haleakala is also visible from the project area.

Upcountry is rural in nature and open space is characteristic of this area. The project area will be developed on currently vacant lands, although the Makawao-Pukalani-Kula Community Plan and County zoning provide for residential uses on a portion of the proposed subdivision site.

b. Potential Impacts and Mitigation Measures

Given the scope of the proposed action, there should be no adverse effect on scenic and open space resources in the area. As previously stated, the project area does not lie within a scenic view corridor. The single-family homes are limited to 30 feet in building height so as not to affect view planes from surrounding neighbors' vantage points. A view analysis study was conducted with the Kulamalu Homeowners Association Subcommittee for the proposed subdivision site. The view analysis consisted of setting a cherry picker bucket at the height of 30 feet and conducting a pedestrian site survey from the neighboring homes with the Kulamalu Subdivision Homeowners Subcommittee. Some neighbors will see the future homes; however, the view planes will not block the views of the ocean horizon. The Kulamalu Subdivision neighbors will be able to see the ocean over the top of the proposed subdivision homes. Additionally, the existing pine trees surrounding the subdivision site is thick and will likely block the views of the future homes from some of the Kulamalu Subdivision neighbors.

The Liholani Golf Villa neighbors will see the future homes of the proposed subdivision, although the views of Haleakala will not be impacted as the mauka view planes will still be visible. However, as a further mitigative measure for view planes, Lots 1 and 2 will be restricted to 25 feet for building heights.

Open space in rural Upcountry is abundant and the project implementation of approximately six (6) acres for 13 single-family lots is not anticipated to negatively impact open space resources for the Upcountry region and is in keeping with the golf course residential character of this region. As previously noted, no improvements are proposed for the golf course site as part of the downzoning action.

10. Beach and Mountain Access

a. Existing Conditions

The project area is located Upcountry and surrounded by an existing golf course. The Cultural Impact Assessment did not indicate any traditional beach or mountain access through the project area.

b. Potential Impacts and Mitigation Measures

Since the project area is located a substantial distance away from coastal areas, there will be no impacts to beach access.

Also, the subject property is surrounded by the existing Pukalani Country Club Golf Course, specifically Holes Nos. 5, 6, and 7. The existing conditions of the surrounding land uses are not conducive for mountain access. Additionally, the Cultural Impact Assessment did not indicate any traditional accessways. Therefore, the proposed project is not anticipated to negatively impact mountain access.

11. Chemicals and Hazardous Materials

a. Existing Conditions

The subdivision site is currently vacant, undeveloped land. There is no existing use of chemicals and fertilizers on the subdivision property. The use of fertilizers and pesticides in the golf course operations is undertaken in strict accordance with all laws, regulations, and manufacturer's specifications. Furthermore, there is no evidence of hazardous materials within the project area.

b. Potential Impacts and Mitigation Measures

Since there is no evidence of chemicals and hazardous materials on the subdivision site, no mitigation measures for chemicals and hazardous materials on the subdivision site are proposed. The proposed subdivision will not require use of chemicals or hazardous materials.

As mentioned previously, the use of fertilizers and pesticides in the golf course operations is undertaken in strict accordance with all laws, regulations, and manufacturer's specifications. As such, there is no evidence of hazardous materials impacting the golf course site.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Community Character

a. Existing Conditions

The Upcountry region includes agricultural, rural, and suburban uses located on the western slope of Haleakala. Pineapple cultivation, smaller independent farming, and cattle ranching are the predominant agricultural activities within the region. The towns of Makawao and Pukalani are the region's main settlement areas and are characterized by a mixture of suburban and rural land uses. The region is home to many individuals who commute to work to other areas of the island. As previously mentioned, the immediate area can be characterized as a residential golf community. The project area is surrounded by the Pukalani Country Club Golf Course.

b. Potential Impacts and Mitigation Measures

The proposed project will be compatible with the community character of Pukalani, as the project will offer large single-family lots in keeping with the characteristics of the nearby residential golf community.

The downzoning request for the golf course site will not affect community character parameters.

2. Population

a. Existing Conditions

Maui County has exhibited relatively strong growth over the past decade with the 2000 population of 128,241, reflecting a 27.6 percent increase over the 1990 population of 100,504. Growth in the County is expected to continue, with resident population projections for the year 2030 projected to be 199,550 (Maui County Planning Department, June 2006).

Just as the County's population continues to grow, the resident population of the Makawao-Pukalani-Kula Community Plan area has also increased. In 2005, the population of the Makawao-Pukalani-Kula region was 23,176 (SMS, June 2006). The resident population in the region is projected to increase to 27,640 in the year 2020 and to 30,872 by the year 2030 (SMS, June 2006). According to the County of Maui, Planning Department's Draft Maui Island Plan, the growth in population would necessitate 824 new housing units in the Upcountry area.

b. Potential Impacts and Mitigation Measures

The proposed subdivision project will provide new housing opportunities to meet projected population growth and the homes will be in keeping with the community character of the surrounding neighborhoods.

3. Economy

a. Existing Conditions

The Makawao-Pukalani-Kula region, with its vast lands of pasture grass, has enabled cattle ranching and alternative ranching activities, such as sheep herding, which contribute to the economy. Pukalani and Makawao consist of commercial and service-based operations. With its fertile soil and cool climate conditions, the Kula region is renowned for produce and flower crops that are exported to domestic and international markets.

The current real property tax rate for the proposed subdivision site is approximately \$1,477.00, assessed at unimproved residential category, while

the Pukalani Country Club Golf Course is approximately \$1,654.00, assessed at the conservation category.

b. Potential Impacts and Mitigation Measures

Short-term economic benefits are anticipated during the construction phase of project implementation. Beyond construction-related spending, given the scope of the proposed action, there should be minimal economic impact on the economy.

The real property taxes for the proposed subdivision site is estimated to be \$52,000.00 based on fiscal year 2010 real property tax rates and assessed valuation of \$1,100,000.00 for house and lot, which includes a homeowner occupied exemption of \$300,000.00.

The real property tax rate for the golf course site is not expected to significantly change since the current assessment category of conservation will remain the same. However, the real property tax rate will adjust based on the assessment value of the underlying golf course.

4. Housing

a. Existing Conditions

As previously discussed, population in the Makawao-Pukalani-Kula region is estimated to increase by approximately 25 percent (Socio-Economic Forecast, June 2006). This increase in population will create a demand for additional 824 housing units in this region according to the Draft Maui Island Plan (MIP). Accordingly, in this region, the Draft MIP calls for the 824 units to be built within lands that are already zoned for residential uses and within lands that are proposed to be included in the new Urban Growth and Rural Growth boundaries.

As required by Maui County Code (MCC) Chapter 2.96, Workforce Housing, the proposed project will be required to provide six (6) workforce housing units or equivalent in-lieu fee or land.

b. Potential Impacts and Mitigation Measures

The proposed subdivision site will increase the supply of available housing for Upcountry residents to meet future demand in this region. The proposed subdivision site will provide opportunities for market-priced, trade-up housing which is consistent with the surrounding neighborhoods.

The downzoning of the existing residential land use designations on the lands within the Pukalani Country Club Golf Course will not negatively affect the supply of future housing availability as four (4) areas are designated by the Draft MIP as Urban Growth Areas - Makawao Makai, Seabury Hall, Pukalani Expansion, and Pukalani Makai. These four (4) areas are identified to provide a total of 731 units of the 824 needed units by 2030 to meet the demand for future housing needs in this region. In addition to these growth areas, current State Land Use Urban designated areas total approximately 1,000 acres in Pukalani only, which potentially allows for new in-fill residential developments. In summary, the in-fill housing potential plus the planned growth areas identified in the Draft MIP, accommodates for future housing needs to meet future demand due to population growth.

The applicant will comply with MCC 2.96 Workforce Housing. One (1) of the alternatives for compliance involves the purchasing of workforce housing credits from Department of Hawaiian Home Lands (DHHL) as allowed by Hawaii Revised Statutes (HRS) Chapter 46-15.1 Housing, County Powers. HRS 46-15.1 allows DHHL to request for workforce housing credits for their projects and allows the credits to be transferable County-wide.

The second alternative is to provide six (6) workforce housing lots onsite.

Once a determination has been reached, a Residential Workforce Housing Agreement will be executed with the County of Maui, Department of Housing and Human Concerns for recordation at the Bureau of Conveyances prior to subdivision approval.

C. PUBLIC SERVICES

1. Police and Fire Protection

a. Existing Conditions

The County of Maui's Police Department is headquartered in Wailuku. The Department consists of several patrol, investigative, and administrative divisions. The Wailuku or Central station, which serves the Haiku, Paia, Makawao, Pukalani, and Kula regions, is situated approximately 11.0 miles northwest of the project area. The nearest police substation is located at the Eddie Tam Memorial Center on Makawao Avenue, approximately 2.5 miles from the project area.

Presently, fire prevention, suppression, and protection for the region is offered by the Department of Fire and Public Safety's Makawao and Kula Stations. The Makawao Station is located on Makawao Avenue, approximately 1.5 miles away from the project site. The Kula Station is located near the Kula Elementary School, approximately 5.0 miles away from the project site.

b. Potential Impacts and Mitigation Measures

Given the relatively minimal amount of additional housing units associated with the proposed subdivision, adverse impacts to police and fire protection services are not anticipated.

2. Medical Facilities

a. Existing Conditions

Maui Memorial Medical Center, the only major medical facility on the island, is located approximately 11.0 miles northwest of the project area. Licensed for 201 beds, this facility provides acute, general, and emergency care services. Several medical/dental offices are located in Pukalani and Makawao to serve the Upcountry region's residents.

Kula Hospital is situated about 10 miles south of the project site. The hospital serves as a long-term care facility that provides Alzheimer's and dementia care services. An out-patient clinic for the area's residents is open for operation from 8:00 a.m. to 4:30 p.m. on weekdays.

Ambulance service is located in Kula near Kula Hospital.

b. Potential Impacts and Mitigation Measures

The proposed 13-lot subdivision will not result in an extension of service area for medical facilities and medical emergency services, nor will it place significant new demand upon these services.

3. Schools

a. Existing Conditions

The State Department of Education (DOE) operates five (5) public schools in Upcountry Maui. They are Pukalani Elementary School, Makawao Elementary School, and Kula Elementary School for grades Kindergarten to 5, Kalama Intermediate School for grades 6 to 8, and King Kekaulike High School for grades 9 to 12.

DOE enrollment and projected enrollment for the schools are presented in **Table 3**.

Table 3. Public School Enrollment Estimates

School	Enrollment 2009-2010 School Year	Projected Enrollment 2011-2012
Pukalani Elementary School (Grades K to 5)	467	404
Makawao Elementary School (Grades K to 5)	419	451
Kula Elementary School (Grades K to 5)	362	405
Kalama Intermediate School (Grades 6 to 8)	729	871
King Kekaulike High School (Grades 9 to 12)	1,059	1,143
Source: State of Hawaii, Department of Education.		

The region is also served by privately operated Haleakala Waldorf School (grades Kindergarten to 8), Seabury Hall (grades 6 to 12), and the Kamehameha Schools Maui Campus (grades Kindergarten to 12).

b. Potential Impacts and Mitigation Measures

The DOE is being consulted through the Chapter 343, HRS environmental assessment review process. The relatively small number of lots associated with the proposed subdivision is not anticipated to create adverse conditions relative to school facilities requirements.

4. Recreational Facilities

a. Existing Conditions

The Pukalani Country Club Golf Course surrounds the project area. In the nearby vicinity of the project area, the Mayor Hannibal Tavares Community Center, located off of Old Haleakala Highway, about 1.0 mile north of the property, includes an aquatics center, playground, baseball, and soccer fields, in addition to the 11,440 square feet community center facility. In the Kulamalu area, there is a park, with a grassed field that can accommodate soccer and Pop Warner football activities. Parks and recreational facilities in the Kula region include the Waiakoa Gymnasium, which is host to youth

basketball games. Kula Park consists of a 10.3-acre ball field, two (2) soccer fields, playground equipment, two (2) picnic tables, a restroom, and two (2) parking areas.

Located along the upper slopes of Haleakala, Polipoli State Park and Haleakala National Park are State and Federal recreational facilities which provide residents with opportunities for hiking, camping, and sightseeing.

b. Potential Impacts and Mitigation Measures

The County of Maui's Department of Parks and Recreation is being consulted through the Chapter 343, HRS environmental assessment review process. The applicant intends to comply with Chapter 18.16.320 of the MCC relating to Parks and Playgrounds, through the payment of in-lieu fees.

5. Solid Waste Disposal

a. Existing Conditions

Solid waste collection and disposal is provided by the County's Department of Environmental Management (DEM) Solid Waste Division. Solid waste generated in the Upcountry region is transported to the Central Maui Landfill off Pulehu Road, approximately 5.5 miles southwest of the project site. Other than the Hana Landfill, the Central Maui Landfill is the only disposal site on the island of Maui that accepts County-hauled residential waste, commercially-hauled waste, and self-hauled waste.

Privately owned facilities, such as the Maui Demolition and Construction Landfill and the Pohakulepo Concrete Recycling Facility, accept solid waste and concrete from demolition and construction activities. These facilities are located at Maalaea, near Honoapiilani Highway's junction with North Kihei Road and Kuihelani Highway. A privately operated, green waste recycling facility is located at the Central Maui Landfill.

b. Potential Impacts and Mitigation Measures

Solid waste generated by the future homes will be collected by the County for disposal at the Central Maui Landfill. Solid waste generated by the 13-lot

subdivision will not adversely affect County services or infrastructure capacities for solid waste.

The design intent of the proposed subdivision site is to balance the cut and fill, thus minimizing construction waste associated with the improvements. Cleared and grubbed materials, from the construction of the proposed improvements, will be disposed for composting use, as practicable. Construction waste which may be generated from building the homes will be recycled or disposed of at the appropriate construction waste disposal location. The site construction company will be required to provide a construction waste management plan with the intent to reduce construction waste. With these solid waste management measures, the contribution of the construction waste to the appropriate landfills will be minimized. Thus, the proposed subdivision site is not anticipated to adversely affect collection or capacity parameters of the County's solid waste system.

There will be no changes to the golf course site as part of the downzoning action and thus no impacts to solid waste facilities and capacity.

6. Transit Programs

a. Maui Bus

The County of Maui currently operates ten (10) fixed routes and four (4) commuter routes on the island of Maui, through the Maui County Department of Transportation (MDOT). The Maui Bus operates seven (7) days per week, 365 days each year, and in general, the fixed routes run from 5:30 a.m. to 9:30 p.m., while the commuter routes run from 5:40 a.m. to 6:30 p.m. One (1) fixed route and one (1) commuter route service Pukalani.

(1) Fixed Routes

In 2004, the County of Maui began funding a limited transit system serving South Maui and Central Maui. The service began with two (2) routes, each at a cost of \$1.00 per boarding. Akina Aloha Tours was the operator at the time. The approximate ridership during the first year of operation was 29,000 boardings.

From 2005 to present, Roberts Hawaii has been the operator of the transit system. Since its inception in 2004, the transit service has grown from two (2) routes to the current ten (10) fixed routes. Ridership has also blossomed in this time, to over 100,000 boardings per month, a considerable increase from 29,000 for the entire year 2004. The transit system currently serves Upcountry, Central, Haiku, West, and South Maui daily. Most routes operate with one hour headways and cost \$1.00 per boarding. Monthly passes are available on all routes.

The closest stop to the proposed project is located at the Pukalani Terrace Shopping Center, approximately two (2) miles away.

(2) Commuter Routes

In addition to the fixed routes which operate over extended hours, the County of Maui offers commuter fixed route bus services designed principally to transport workers from the communities where they reside, to the resort areas of Maui. There are four (4) commuter routes with a route servicing the Makawao-Pukalani area. The Makawao-Kapalua Commuter travels from Makawao through Pukalani, to the Ritz-Carlton Kapalua. The bus stop is located at the Pukalani Community Center. Fares are \$2.00 per boarding and monthly passes are available.

b. Americans with Disabilities Act (ADA) Paratransit

Another component of the County's public bus service is the ADA paratransit program, which is designed to provide increased mobility for disabled individuals. If a person's disability prevents the person from using the fixed route service, the person may apply to utilize the paratransit service. Qualified individuals may be picked up via the paratransit service within three-fourths of a mile of the fixed routes.

c. **Social Services Transportation**

The MDOT funds and manages the Maui County Social Service Transportation Program which is currently managed by Maui Economic Opportunity (MEO). The program utilizes accessible vehicles in its provision of service. In addition, the transportation services provided are complimentary to patrons as the services are fully funded by the County grant. There are two (2) social service transportation programs through this grant.

(1) **Rural Shuttle**

The Rural Shuttle program allows participants access to their medical, shopping, or leisure needs. The service is available to the general public and senior citizens are the heaviest users of this program. Many seniors utilize this service to perform their weekly errands of food shopping, doctors' visits, or banking. The purpose of the program is to provide increased access for individuals who live in rural areas.

(2) **Ala Hou**

The Ala Hou program provides transportation to allow disabled individuals increased mobility. The program operates six (6) days per week, 10:00 a.m. to 2:00 p.m. on weekdays, and 2:30 p.m. to 5:00 p.m. on Saturdays. Disabled individuals may utilize the service for a variety of purposes, including medical, faith worshiping, shopping, banking, and leisure activities. The program's intent is to provide equal access for disabled individuals and to ensure that the lack of personal transportation is not an impediment from continuing active lifestyles.

A person living in the proposed project looking for alternative transportation options from using a vehicle will need to walk or bike to the closest bus stop located at Pukalani Terrace Shopping Center or, if using the commuter route, Pukalani Community Center. Sidewalks will be provided within the proposed project and would connect to the existing sidewalk within the Kulamalu Subdivision. However,

in the older Pukalani neighborhoods, rural street standards were utilized, meaning no curbs, gutters or sidewalks were installed as part of the street design.

D. INFRASTRUCTURE

1. Roadways

a. Existing Conditions

Access to the project area is off of Aina Lani Drive, a two-lane, two-way private roadway owned and maintained by the Kulamalu Homeowners Association (HOA). There are bike lanes, curbs, gutters, and sidewalks mauka of the Liholani Street intersection. The posted speed limit is 20 miles per hour. The Kulamalu HOA is working with the County of Maui to dedicate this road to the County of Maui.

Liholani Street is a two-lane, two-way County roadway connecting Aina Lani Drive with Pukalani Street. There are curbs and gutters along both sides of the street. There is a sidewalk along the west side of the street only. The posted speed limit is 20 miles per hour.

The intersection of Aina Lani Drive at Liholani Street is a STOP sign controlled T-intersection. There are no separate turn lanes along the approaches.

Old Haleakala Highway is also located in the vicinity. Old Haleakala Highway is a two-lane, County collector road that extends in a northwest-southeast direction and provides a parallel route to Haleakala Highway through Pukalani. Old Haleakala Highway has a posted speed limit of 35 mph.

All traffic will access the project site via Pulelehuakea Street a stub out road along Aina Lani Drive. The nearest intersection to the proposed project driveway is Aina Lani Drive and Liholani Street and is the focal point of the project generated traffic and background traffic.

b. Potential Impacts and Mitigation Measures

A Traffic Impact Assessment Report (TIAR) for the proposed project has been prepared by Phillip Rowell & Associates. See **Appendix “F”**.

Existing traffic volumes at the intersection of Aina Lani Drive and Liholani Street were derived from manual traffic counts performed on April 1, 2010.

There are six (6) Levels-Of-Service (LOS), “A” through “F”, which relate to the driving conditions from best to worst, respectively. In general, LOS “A” represents free-flow conditions with no congestion. LOS “F”, on the other hand, represents severe congestion with stop-and-go conditions. Level-of-Service “D” is typically considered acceptable for peak hour conditions in urban areas.

The results of the level-of-service analysis of existing conditions are summarized in **Table 4**. Shown are the average vehicle delays and levels-of-service of the lane groups. All lane groups operate at Level-of-Service “A”, reflecting good traffic operating conditions and minimal delays.

Table 4. Existing Levels-of-Service Analysis - Aina Lani Drive at Liholani Street

Approach and Movement	AM Peak Hour		PM Peak Hour	
	7:00 am to 8:00 am		3:00 pm to 4:00 pm	
	Delay ¹	LOS ²	Delay ¹	LOS ²
Eastbound Left & Thru Southbound Left & Right	7.5	A	7.3	A
	9.2	A	8.9	A

Source: Phillip Rowell & Associates, 2010.

NOTES:

1. Delay is in seconds per vehicle.
2. LOS denotes Level-of-Service calculated using the operations method described in Highway Capacity Manual: LOS is based on delay.
3. See Attachment D in Appendix “E” for Level-of-Service Calculation Worksheets.

The vehicle trip generation rates are based on the construction of 13 single-family lots. The trip generation calculations are summarized in **Table 5**. As shown, the proposed project will generate three (3) inbound and seven (7) outbound trips during the morning peak hour for a total of 10 trips. During the

afternoon peak hour, the project will generate eight (8) inbound and five (5) outbound trips for a total of 13 trips.

Table 5. Trip Generation Calculations for Proposed Project

Time Period	Direction	Single-Family Detached Housing (LU Code 210)		
		Rate or % ⁽¹⁾	Occupied Units	Trips
AM Peak Hour	Total	0.77	13	10
	In	26%		3
	Out	74%		7
PM Peak Hour	Total	1.02	13	13
	In	64%		8
	Out	36%		5

Source: Phillip Rowell & Associates, 2010.

NOTES:
⁽¹⁾ Institute of Transportation Engineers, Trip Generation, Seventh Edition, 2003.

Existing traffic plus project traffic projections were estimated by superimposing the peak hourly traffic generated by the proposed project on the existing (without project) peak hour traffic projections. This represents a worse-case condition. The traffic projection calculations are shown in **Table 6**.

Table 6. Traffic Projection Calculations Aina Lani Drive at Liholani Street

Approach and Movement		Existing Traffic (2009)		Project Trips		Existing Plus Project	
		AM	PM	AM	PM	AM	PM
North	Right	13	32			13	32
	Left	10	20	3	8	13	28
East	Right	39	17	7	5	46	22
	Thru	0	2			0	2
West	Thru	0	4			0	4
	Left	46	16			46	16
Totals		108	91	10	13	118	104

Source: Phillip Rowell & Associates, 2010.

The results of the existing traffic plus project traffic projections showed the total vehicle trips during the morning peak hour will generate 118 trips and during the afternoon peak hour total vehicle trips will generate 104 trips.

The results of the future level-of-service analysis are summarized in **Table 7**. Shown are the average vehicle delays and the levels-of-service of the lane groups. The analysis concluded that all traffic movements will operate at Level-of-Service “A”, reflecting good operating conditions and minimal delays.

Table 7. 2012 Levels-of-Service Analysis - Aina Lani Drive at Liholani Street

Approach and Movement	AM Peak Hour				PM Peak Hour			
	Without Project		With Project		Without Project		With Project	
	Delay ¹	LOS ²	Delay ¹	LOS ²	Delay ¹	LOS ²	Delay ¹	LOS ²
Eastbound Left & Thru	7.5	A	7.5	A	7.3	A	7.3	A
Southbound Left & Right	9.2	A	9.4	A	9.0	A	9.0	A

Source: Phillip Rowell & Associates, 2010.

NOTES:

1. Delay is in seconds per vehicle.
2. LOS denotes Level-of-Service calculated using the operations method described in Highway Capacity Manual: LOS is based on delay.
3. See Attachment D in Exhibit “E” for Level-of-Service Calculation Worksheets.

An addendum to the TIAR was also conducted to further investigate the following additional intersections:

- Old Haleakala Highway at Pukalani Street
- Pukalani Street at Iolani Street
- Old Haleakala Highway at Makani Road

See **Appendix “F-1”**.

The addendum concluded that intersections of Old Haleakala Highway at Pukalani Street and Pukalani Street at Iolani Street currently operate at unacceptable levels-of-service. To mitigate these existing deficiencies, the

traffic signals at the Old Haleakala Highway at Pukalani Street should be modified to provide protected left turns from eastbound Old Haleakala Highway to southbound Pukalani Street. At Pukalani Street - Iolani Street intersection, the conversion of the intersection from a two-way STOP sign controlled intersection to a four-way STOP controlled intersection will improve the level-of-service to an acceptable level.

The proposed project will generate three (3) inbound and seven (7) outbound trips during the morning peak hour and eight (8) inbound and five (5) outbound trips during the afternoon peak hour. The addition of these trips will have a minimal effect to existing traffic and existing deficiencies; as such, no mitigation is recommended in addition to the improvements required to mitigate existing deficiencies.

In summary, the conclusions of the traffic impact assessment indicated that the proposed project will generate 3 inbound and 7 outbound trips during the morning peak hour. During the afternoon peak hour, the project will generate 8 inbound and 5 outbound trips. The level-of-service analysis concluded that all controlled traffic movements at the study intersection of Aina Lani Drive and Liholani Street will operate at Level-of-Service "A". As all traffic movements at this intersection will operate at Level-of-Service A, no mitigation is recommended.

Based on the traffic engineer's findings, there should be no adverse trip generation or adverse impact associated with traffic operations as a result of the proposed subdivision.

2. Water

a. Existing Conditions

The County of Maui, Department of Water Supply (DWS) provides water service for the area. The water system in the area consists of an 850,000 gallon reservoir and various distribution lines. The 850,000 gallon reservoir, located about 1,800 feet from the subdivision site, provides storage and supplies the distribution system for the area. Twelve-inch distribution lines transport the water from the reservoir to locations on Liholani Street and Aina Lani Drive. The proposed subdivision may connect into an existing 8-inch

waterline along a stub out road, Pulelehuakea Street. There are two (2) fire hydrants on Aina Lani Drive which are approximately 100 feet from the subdivision site.

b. **Potential Impacts and Mitigation Measures**

Water system improvements for the proposed subdivision include 8-inch water lines, fire hydrants, and service laterals. The subdivision site's average daily water demand is anticipated to be approximately 7,800 gallons per day, based on 600 gallons per day for each single-family home. Refer to **Appendix "B"**. Water requirements will be coordinated with the DWS to ensure that adequate supply is available at the time of construction. In addition, calculations for domestic, irrigation, and fire protection will be submitted to the DWS in connection with the processing of the project's building permit application.

It is noted that the DWS provided early comments on the project stating that the *"site is located in an area affected by the finding of inadequate water supply issued on March 16, 1993."* In light of this condition, the applicant has identified the following potential alternatives to address water source constraints.

(1) **Purchase Water Credits**

One (1) of the alternatives is to purchase water resource credits from Dowling Company, Inc. (DCI). DCI has several water resource credits from the County of Maui Upcountry Water System that are transferable. DCI water credits are approximately \$22,000.00 per water meter.

(2) **Connect to Maui County Upcountry Water System**

The applicant is also considering connecting to the Maui County Upcountry Water System. This alternative would entail applying to be included on the Upcountry Water Priority List, and construction of the subdivision can only commence when water source becomes available and the Priority List number is called. Costs and amount of energy required for water source, along with impacts for the additional needs of

the Maui County Upcountry Water System are undetermined at this time as a new source of water is unknown.

(3) **Desalinization**

The applicant is also considering development of a reverse osmosis desalination plant using an existing water well that irrigates the Pukalani Country Club Golf Course. The applicant continues to work with DWS to determine the feasibility of the plant.

The existing water well is slightly brackish, which would require a reverse osmosis desalination plant to generate potable water. The sustainable yield of the source is one (1) million gallon per day (MGD) and the well would yield 0.5 MGD of potable water plus 0.5 MGD of residual water to continue to irrigate the golf course. As previously indicated, the average daily water demand is anticipated to be approximately 7,800 gallons per day. The applicant is proposing to permit, design, and construct the reverse osmosis desalination plant to connect to the DWS Upcountry Water System. The well, reverse osmosis desalination plant, and the underlying lands would be dedicated to the County for ownership and operations of the plant. See **Appendix "G"**.

The applicant's cost to permit, design, and construct the plant would be approximately \$2 to \$2.5 million. The electrical demand to operate the plant would be about 70 kilowatts per 100,000 gallons per day (GPD). The estimated delivered energy cost per 1,000 gallons of water from the plant is about \$4.23, therefore, the estimated cost to deliver 100,000 GPD is about \$423.00.

With respect to aquifer protection considerations, mitigation measures will include pollution prevention as suggested by DWS as the site overlies the Makawao aquifer. The goal is to protect the integrity of surface and groundwater resources. To this end, the following mitigation measures will be

implemented to prevent water pollution related impacts during construction of the subdivision.

- Construction of drainage control features, such as berms and silting basins.
- Maintenance of the drainage control features.
- Retain ground cover until the last possible date.
- Stabilization of denuded areas by sodding or planting as soon as possible.
- Control dust by proper stockpiling and use of non-potable water for dust control.
- Prevent construction products, oil, fuel, and other substances from falling or leaching into the ground by using proper containment and maintenance practices.

In addition to prevention of water pollution during construction, water filtration measures, such as retention/detention basins to allow for percolation, will be incorporated into the drainage system to clean stormwater and protect the integrity of groundwater resources in the Makawao aquifer during long-term occupancy of the homes.

Furthermore, the project will include the following water conservation measures within the subdivision design and purchase agreements for the sale of the lots.

- Low-flow fixtures and devices will be required.
- Once landscaping has been established, landscape watering will be restricted to after 7:00 p.m. at night and before 10:00 a.m. in the morning.
- A landscape guide will be provided for future homeowners that will include climate adapted native plant species with the objective to conserve water and protect the watershed from invasive alien species.

It is noted that there will be no changes to golf course operation associated with the downzoning request for the golf course site.

3. **Wastewater**

a. **Existing Conditions**

The project area is located in the Critical Wastewater Disposal Area as determined by the Maui County Wastewater Advisory Committee according to Department of Health, Wastewater Branch. Thus, no new cesspools are allowed in the area.

Hawaii Water Service Company owns and operates the Pukalani Sewerage Treatment Works, a private wastewater collection and treatment facility that serves the Pukalani Terrace and Country Club development. The collection system consists of gravity sewers, force mains, and pump stations. The collection system carries wastewater to the Pukalani Wastewater Treatment Plant for treatment and disposal.

b. **Potential Impacts and Mitigation Measures**

Wastewater service for the proposed subdivision will be provided by Pukalani Sewerage Treatment Works. Refer to **Appendix "B"**. The proposed subdivision is estimated to generate approximately 4,550 gallons per day of wastewater based on 350 gallons per day per single-family home. Wastewater improvements include offsite and onsite gravity sewers. Improvements consist of 8-inch sewer mains, 6-inch sewer laterals, and manholes. These lines will connect to the existing collection systems adjacent to the project area within Hole 5 of the golf course. The proposed land use entitlements requests are not expected to negatively impact the existing wastewater system capacities or facilities.

4. Drainage

a. Existing Conditions

The elevations of the project site range from approximately 1,220 feet to 1,274 feet above mean sea level. The project site generally slopes down from southeast to northwest. The slopes range from 6 to 12 percent throughout the site.

There are no existing drainage improvements on the subdivision project site. Stormwater runoff sheet flows across the site and through the golf course. Concrete curbs, gutters, and catch basins along Liholani Street collect the stormwater runoff and direct the collected runoff to Kaluapulani Gulch. As mentioned previously, Kaluapulani Gulch is not listed as a perennial stream according to Hawaii Stream Assessment. The existing 50-year, 1-hour peak flow is approximately 8.65 cubic feet per second (cfs). Refer to **Appendix “B”**.

b. Potential Impacts and Mitigation Measures

Based on the County of Maui regulations, the drainage system will be designed to handle a storm with a recurrence interval of 50 years since the drainage area is less than 100 acres. The proposed subdivision will result in an approximate 50-year, 1-hour peak flow of 18.35 cfs which is an increase of 9.70 cfs. The increase in the rate of runoff will be mitigated by construction of a drainage system that includes swales, catch basins, manholes, drain pipes, a culvert, and a detention/retention basin. In general, these improvements will direct offsite runoff around the site and onsite runoff to the detention/retention basin that captures the 9.70 cfs increase in runoff from the proposed project. To prevent offsite runoff from entering the site, cut-off swales will direct offsite flows around the site. A culvert at the entry road on the southerly side of the site will convey offsite flows under the road and to the downstream areas.

As such, the proposed action will not result in increased runoff from existing conditions. Refer to **Appendix “B”**. Therefore, there should be no significant adverse effects on the adjacent or downstream properties.

As previously noted, there are no improvements proposed for the golf course site, and the downzoning request for this site will not affect existing drainage conditions.

It is noted that an analysis was conducted, at the request of the Maui Planning Commission, to provide additional stormwater capacity above the 9.70 cfs increase in runoff from the proposed project. In terms of stormwater runoff capacity, the proposed project is ideally located- surrounded by a golf course. The Pukalani Country Club Golf Course allows for stormwater runoff to percolate into the golf course. There will be no adverse impacts of existing pass-through flows to the golf course.

5. Electrical, Telephone, and CATV

a. Existing Conditions

The distribution system for electrical, telephone, and cable television (CATV) services in the region are provided by Maui Electric Company, Ltd., Hawaiian Telcom, and Oceanic Time Warner Cable, respectively.

b. Potential Impacts and Mitigation Measures

The subdivision project will be served by new underground lines that connect to existing nearby facilities. The utility companies have indicated that services are available for the proposed project. The proposed project is not anticipated to adversely affect electrical or communication systems.

E. CUMULATIVE AND SECONDARY IMPACTS

Cumulative impacts are defined as the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions.

A “secondary impact” or “indirect effect” from the proposed action means:

effects which are caused by the action and are later in time or further removed in distance, but are still reasonable foreseeable.

The proposed subdivision is not part of a larger action. It is noted, however, that the Maui County Council continues to review the draft Maui Island Plan which would delineate urban and rural growth boundaries. The proposed subdivision site and existing Pukalani Country Club Golf Course is within the proposed urban growth boundary for the Makawao-Pukalani-Kula planned growth areas. Other projects within this region, as identified in the draft Maui Island Plan, include the following. See **Table 8**.

Table 8. Proposed Development in the Region

Development	Land Use	Total Units / Acres
Makawao Makai	Residential	90 units
Seabury Hall	Residential and School Facilities	80 units / 73 acres
Pukalani Expansion	Residential	311 units
Pukalani Makai	Residential	250 units
Source: County of Maui, Department of Planning.		

The foregoing developments in the Makawao-Pukalani-Kula region were the basis for analyzing the potential cumulative and secondary impacts related to the development of the subdivision site. It is noted that, although, all of these projects are listed in the draft Maui Island Plan, these projects may not necessarily be constructed. It is further noted that the planning horizon of the draft Maui Island Plan and, thus, the listed projects are for year 2030.

At the time of this writing, the County of Maui, Planning Department is recommending that the draft Maui Island Plan provide for an additional 824 housing units for the Makawao-Pukalani-Kula region. And, as previously indicated, the proposed project area is within the urban growth boundary. The assessment of the cumulative and secondary impacts is undertaken in the context of the draft Maui Island Plan. The proposed subdivision site will provide for a small amount of future housing units that will meet the expected housing demand as indicated by the draft Maui Island Plan.

In regards to the cumulative and secondary impacts to the physical environment, natural environment, socio-economic environment, public services and infrastructure, the draft Maui Island Plan has identified the listed proposed developments, including the proposed subdivision, as future growth areas that balance the population growth and the impacts to the environmental context of the region. And, as discussed in the previous sections, aside from

the direct proposed subdivision impacts, cumulative and secondary impacts are not anticipated to result in significant adverse impacts.

**III. RELATIONSHIP TO
GOVERNMENTAL PLANS,
POLICIES, AND
CONTROLS**

III. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES, AND CONTROLS

A. STATE LAND USE DISTRICTS

The State Land Use Law, Chapter 205, Hawaii Revised Statutes (HRS), is intended to preserve, protect, and encourage the development of lands in the State for uses which are best suited to the public health and welfare for Hawaii's people. All lands in the State are classified into four (4) land use districts by the State Land Use Commission: "Urban", "Agricultural", "Conservation", and "Rural".

The subdivision and golf course sites are situated within the State "Urban" district. See **Figure 9**. By statute, "Urban" districts shall include activities or uses as provided by ordinances or regulations of the County within which the "Urban" district is situated. The proposed subdivision and golf course land use requests are compatible with, and permitted within, the State "Urban" district.

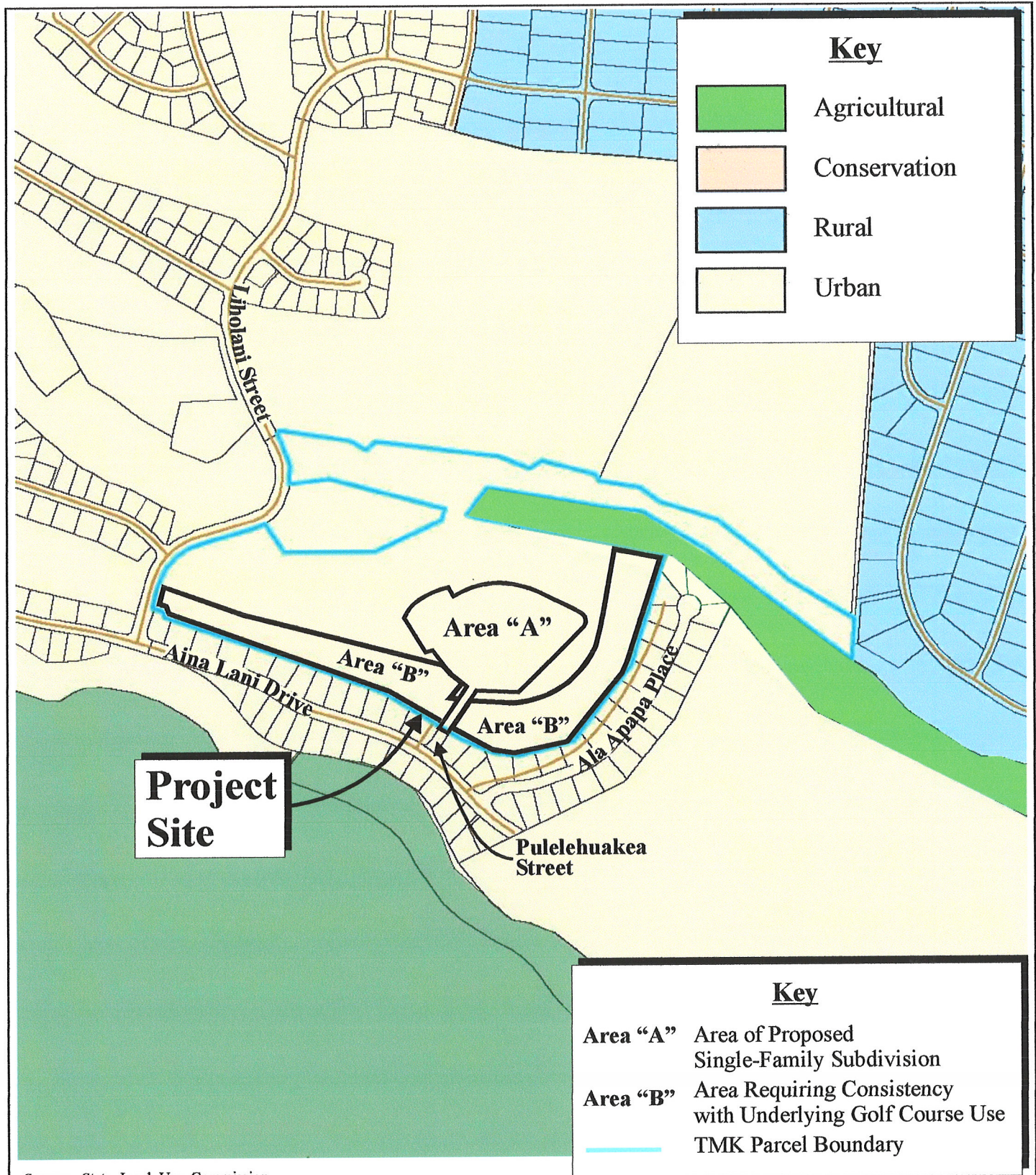
B. HAWAII STATE PLAN

Chapter 226, HRS, also known as the Hawaii State Plan, is a long-range comprehensive plan which serves as a guide for the future long-range development of the State by identifying goals, objectives, policies, and priorities, as well as implementation mechanisms. The proposed action is consistent with the following goals of the Hawaii State Plan.

- A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii's present and future generations.
- Physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life.

Objectives and Policies of the Hawaii State Plan

The proposed action is consistent with the following objectives and policies of the Hawaii State Plan:



Source: State Land Use Commission

Figure 9 Proposed Pulelehuakea Residential Subdivision

NOT TO SCALE

State Land Use Designations



Section 226-5 Objective and policies for population

It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter.

- Manage population growth statewide in a manner that provides increase opportunities for Hawaii's people to pursue their physical, social, and economic aspirations while recognizing the unique needs of each county.
- Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.

Section 226-19 Objectives and policies for socio-cultural advancement-housing

Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:

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

To achieve the housing objectives, it shall be the policy of this State to:

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

C. MAUI COUNTY GENERAL PLAN

As indicated by the Maui County Charter, the purpose of the general plan shall be to:

... indicate desired population and physical development patterns for each island and region within the county; shall address the unique problems and needs of each island and region; shall explain opportunities and the social, economic, and environmental consequences related to potential developments; and shall set forth the desired sequence, patterns and characteristics of future

developments. The general plan shall identify objectives to be achieved, and priorities, policies, and implementing actions to be pursued with respect to population density; land use maps, land use regulations, transportation systems, public and community facility locations, water and sewage systems, visitor destinations, urban design, and other matters related to development.

Chapter 2.80B of the Maui County Code, relating to the General Plan and Community Plans, implements the foregoing Charter provision through enabling legislation which calls for a Countywide Policy Plan and a Maui Island Plan. The Countywide Policy Plan was adopted as Ordinance No. 3732 on March 24, 2010. The Maui Island Plan is currently in the process of review and formulation by the Maui County Council.

With regard to the Countywide Policy Plan, Section 2.80B.030 of the Maui County Code states the following.

The countywide policy plan shall provide broad policies and objectives which portray the desired direction of the County's future. The countywide policy plan shall include:

- 1. A vision for the County;*
- 2. A statement of core themes or principles for the County; and*
- 3. A list of countywide objectives and policies for population, land use, the environment, the economy, and housing.*

Core principles set forth in the Countywide Policy Plan are listed as follows:

1. Excellence in the stewardship of the natural environment and cultural resources;
2. Compassion for and understanding of others;
3. Respect for diversity;
4. Engagement and empowerment of Maui County residents;
5. Honor for all cultural traditions and histories;
6. Consideration of the contributions of past generations as well as the needs of future generations;
7. Commitment to self-sufficiency;
8. Wisdom and balance in decision making;
9. Thoughtful, island appropriate innovation; and

10. Nurturance of the health and well-being of our families and our communities.

Congruent with these core principles, the Countywide Policy Plan identifies goals objectives, policies and implementing actions for pertinent functional planning categories, which are identified as follows:

1. Natural environment
2. Local cultures and traditions
3. Education
4. Social and healthcare services
5. Housing opportunities for residents
6. Local economy
7. Parks and public facilities
8. Transportation options
9. Physical infrastructure
10. Sustainable land use and growth management
11. Good governance

With respect to the proposed Pulelehuakea Residential Subdivision and golf course site land entitlements, the following goals, objectives, policies and implementing actions are illustrative of the project's compliance with the Countywide Policy Plan.

EXPAND HOUSING OPPORTUNITIES FOR RESIDENTS

Goal: Quality, island-appropriate housing will be available to all residents.

- Objective:**
2. Increase the mix of housing types in towns and neighborhoods to promote sustainable land use planning, expand consumer choice, and protect the County's rural and small town character.
 - d. Promote infill housing in urban areas at scales that capitalize on existing infrastructure, lower development costs, and are consistent with existing or desired patterns of development.

PROMOTE SUSTAINABLE LAND USE AND GROWTH MANAGEMENT

Goal: Community character, lifestyles, economies, and natural assets will be preserved by managing growth and using land in a sustainable manner.

- Objective:**
1. Improve land use management and implement a directed-growth strategy.
 - b. Direct urban and rural growth to designated areas.
 - e. Encourage redevelopment and infill in existing communities on lands intended for urban use to protect productive farm land and open-space resources.
 3. Design all developments to be in harmony with the environment and to protect each community's sense of place.
 - c. Protect and enhance the unique architectural and landscape characteristics of each Community Plan Area, small town, and neighborhood.

In summary, the proposed land use requests are consistent with the themes and principles of the Countywide Policy Plan.

D. MAKAWAO-PUKALANI-KULA COMMUNITY PLAN

The project site is located within the Makawao-Pukalani-Kula Community Plan region, one (1) of nine (9) Community Plan regions established in the County of Maui. Planning for each region is guided by the respective community plans, which are designed to implement the Maui County General Plan. Each Community Plan contains recommendations and standards which guide the sequencing, patterns, and characteristics of future development in the region.

The Makawao-Pukalani-Kula Community Plan was adopted by the County of Maui through Ordinance No. 2510, which took effect on July 23, 1996.

Land use guidelines are set forth by the Makawao-Pukalani-Kula Community Plan Land Use Map. The existing Community Plan land use designation for the proposed subdivision area is "SF, Single-Family" and "PK (GC) Park (Golf Course)". Refer to **Figure 3**. The proposed Community Plan land use amendment for the subdivision site is to change the "Park (Golf Course)" designation to "SF, Single Family". To downzone the existing golf course site, the

Community Plan land use amendment is to change the “SF, Single Family” to “PK (GC), Park (Golf Course)”. Refer to **Figure 5**.

The proposed entitlements action is consistent with the following goals, objectives, and policies set forth in the Makawao-Pukalani-Kula Community Plan.

LAND USE

Goal: The maintenance and enhancement of Upcountry’s unique and diverse rural land use character with sensitivity to existing land use patterns, natural resource values, and economic and social needs of the region’s residents.

Objectives and Policies:

6. Encourage new residential developments in areas which are contiguous extensions of, or infills within the established residential pattern, and which do not adversely affect agricultural uses.
8. Preserve and enhance the “country” atmosphere in all communities by maintaining the small-scale, unique and independent character of each of the three sub-regions. “Country” atmosphere is defined by building style, a low density mix of residences, ranches, open spaces, greenways, planting and cultivated lands.
10. Support the development of a regulatory review process which encourages and facilitates public participation in all major land development activities.
16. Recognize the four (4) semi-urban centers of Makawao Town, Pukalani, Haliimaile and Waiakoa Village. Within them, support the following land use and circulation patterns:
 - b. Within Pukalani

Limited multi-family use located adjacent to open space resources and consistent in scale and character with surrounding single-family uses.
21. Ensure an adequate supply of lands designated for residential use to provide opportunity for residents to participate in housing market “trade-ups”.

URBAN DESIGN

Goal: Recognition and preservation of the unique design characteristics of the Makawao, Pukalani and Kula communities in order to enhance Upcountry's man-made environment.

Objectives and Policies:

8. Enforce a two-story or 35-foot height limitation throughout the region, except for public/quasi-public uses such as auditoriums, gymnasiums, and fire stations.

HOUSING

Goal: Housing opportunities for the residents of Makawao-Pukalani-Kula, to include all income and age groups, which are affordable, safe, and environmental and culturally compatible.

5. To establish an efficient settlement pattern, discourage a dispersed pattern of development, thereby reducing public service, infrastructure and maintenance costs.

E. COUNTY ZONING

As described in Chapter I, Project Overview of this EA, the subdivision site is designated "D-1, Two-Family Duplex", "R-1, Residential", and "PK-4, Golf Course Park District" for Maui County Zoning. Refer to **Figure 4**. The requested zoning designation for the subdivision site is to change the aforementioned designations to "R-3, Residential" zoning. For the golf course site, a Change in Zoning (CIZ) is requested to downzone the areas designated as "R-1, Residential" and "R-2, Residential" to "PK-4, Golf Course Park District". Refer to **Figure 6**. The proposed CIZ would establish land use consistency with the designations proposed for the Community Plan Amendment. To enable project implementation, a CIZ application has been prepared for the project area.

A portion of the proposed subdivision area is designated as "D-1, Duplex" which allows approximately 20 duplex units. The proposed development calls for 13 single-family units. The reduced units would have fewer impacts than the currently zoned "D-1, Duplex". Furthermore, single-family homes are more in character with the surrounding neighborhood.

Additionally, the project area is within the Planned Unit Development Pukalani. However, the applicant is not requesting for density bonuses for the project area.

F. COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES

The Hawaii Coastal Zone Management Program (HCZMP), as formalized in Chapter 205A, HRS, establishes objectives and policies for the preservation, protection, and restoration of natural resources of Hawaii's coastal zone. The subject property does not lie within the County of Maui's Special Management Area (SMA).

Although the project is not within the SMA, this section addresses the project's relationship to applicable coastal zone management considerations, as set forth in Chapter 205A, HRS.

1. 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 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 uses 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, and county authorities; and crediting such dedication against the requirements of Section 46-6, HRS.

Response: The proposed subdivision site and golf course site are located upland and away from the coastline. As such, the proposed actions are not expected to impact coastal recreational opportunities or affect existing public access to the shoreline.

2. Historical/Cultural 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 archeological 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.

Response: The archaeological survey of the project area did not locate any archaeological sites or cultural artifacts. The CIA reports that there are no known cultural practices within the project area. Should cultural deposits and/or human burials be inadvertently discovered during earth moving activities, work in the

immediate area of the find shall cease, and the find shall be protected from further disturbance. The SHPD and OHA shall also be immediately notified to establish appropriate mitigation measures pursuant to Chapter 6E, HRS.

3. Scenic and Open Space Resources

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

Policies:

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

Response: The proposed project area is located a significant distance away from the coastline and will not affect coastal scenic resources. Open space in rural Upcountry is abundant and the project implementation of approximately six (6) acres for 13 single-family lots is not anticipated to negatively impact open space resources.

4. Coastal Ecosystem

Objective: Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

- a. Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
- b. Improve the technical basis for natural resource management;
- c. Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

- d. Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
- e. Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Response: Drainage and runoff mitigation measures will be implemented during the construction of subdivision site. In the long term, the proposed land use actions are not expected to adversely impact coastal ecosystems.

5. **Economic Use**

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

Policies:

- a. Concentrate coastal dependent development in appropriate areas;
- b. Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and
- c. Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
 - (i) Use of presently designated locations is not feasible;
 - (ii) Adverse environmental effects are minimized; and
 - (iii) The development is important to the State's economy.

Response: The proposed subdivision and existing golf course are not coastal dependent and are located upland in an area appropriate for residential use. Short-term economic benefits are anticipated during the construction phase. Beyond construction-related spending, there are no anticipated long-term adverse or beneficial economic impacts.

6. **Coastal Hazards**

Objective: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.

Policies:

- a. Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;
- b. Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;
- c. Ensure that developments comply with requirements of the Federal Flood Insurance Program; and
- d. Prevent coastal flooding from inland projects.

Response: The lands proposed for entitlements action lie within an area of minimal flooding and well outside of the tsunami inundation zone. Best Management Practices (BMPs) will be employed to ensure that the subject property and adjoining lands are not subject to new hazards. The proposed actions will not adversely affect downstream and adjoining properties from the effects of flooding and erosion.

7. **Managing Development**

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

Policies:

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

Response: This Environmental Assessment has been prepared for public review in accordance with Chapter 343, HRS, and Chapter 200 of Title 11, Hawaii Administrative Rules, *Environmental Impact Statement Rules*.

Opportunity for review of the proposed action will be available during the various regulatory permit processes involving the Maui Planning Commission and Maui County Council. Furthermore, community informational meetings were held on January 14, 2010, January 20, 2010, March 9, 2010, and March 24, 2010. See **Appendix “H”**. Since then, the applicant has been working with the surrounding neighbors to continue dialogue in addressing issues and concerns.

8. Public Participation

Objective: Stimulate public awareness, education, and participation in coastal management.

Policies:

- a. Promote public involvement in coastal zone management processes;
- b. Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and
- c. Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Response: Opportunities for public awareness, education, and participation are available throughout the environmental and land use regulatory review processes. As mentioned previously, community informational meetings were held on January 14, 2010, January 20, 2010, March 9, 2010, and March 20, 2010. Refer to **Appendix “H”**.

9. Beach Protection

Objective: Protect beaches for public use and recreation.

Policies:

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

Response: The project area is located inland, and away from the shoreline. The proposed actions will not have any impact on shoreline processes.

10. Marine Resources

Objective: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies:

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

Response: Given the location of the proposed project, which is a significant distance from shoreline areas, the proposed actions will not adversely impact coastal marine resources.

In addition to the foregoing objectives and policies, HRS Section 205A-30.5 Prohibitions provide specifications for the limitation of lighting in coastal shoreline areas in relation to the granting of SMA permits:

No special management area use permit or special management area minor permit shall be granted for structures that allow artificial light from floodlights, uplights, or spotlights used for decorative or aesthetic purposes when the light:

- (1) Directly illuminates the shoreline and ocean waters; or*
- (2) Is directed to travel across property boundaries toward the shoreline and ocean waters.*

The project area is not located near the shoreline. In any case, the proposed subdivision lighting design will consider the need for shielding of all lights and use of directional down lighting. The design considerations will mitigate light pollution and prevent lighting from traveling across property boundaries. In addition, construction work hours will be limited to day time hours. Thus, no construction night lights will be utilized. Furthermore, the proposed subdivision will comply with Maui County's Outdoor Lighting regulations as identified in MCC Chapter 20.35, Outdoor Lighting.

**IV. SUMMARY OF
UNAVOIDABLE
ENVIRONMENTAL
IMPACTS**

IV. SUMMARY OF UNAVOIDABLE ENVIRONMENTAL IMPACTS

The proposed action involves land use changes to allow for the following:

1. A 13-lot single-family subdivision,
2. Recognition of the on-going use of the Pukalani Country Club Golf Course.

The proposed construction of the subdivision will have a limited, unavoidable construction-related impact on the environment, as described in Chapter II of this report.

Potential effects include noise-generated impact associated with site preparation and construction activities. In addition, there may be a temporary impact on air quality associated with dust generation and discharge of exhaust from construction equipment. It should be noted, however, that construction-related impacts will be mitigated through the use of Best Management Practices (BMPs).

No significant unavoidable environmental impacts are anticipated with the land entitlements for the golf course site.

No significant, long-term adverse environmental impacts are anticipated as a result of the proposed land use entitlements request and the associated development of the single-family subdivision or the existing golf course operation.

V. ALTERNATIVES TO THE PROPOSED ACTION

V. ALTERNATIVES TO THE PROPOSED ACTION

A. PREFERRED ALTERNATIVE

Under the Preferred Alternative, the proposed subdivision site will provide 13 single-family residential lots on existing vacant land surrounded by the Pukalani Country Club Golf Course. And, the proposed golf course site will downzone existing residential zoning to be consistent with the golf course use.

The proposed subdivision will provide housing opportunities to meet future housing demand in this region for market priced, trade-up homes. A portion of the subdivision site already has land use entitlements for residential housing, as indicated by the “SF, Single-Family” Community Plan designation and the “D-1, Two-Family Duplex” Maui County zoning. However, duplex units would not be compatible in the context of the surrounding neighborhood character.

In regards to the downzoning of the golf course site, this action would make the land use designation consistent to the existing golf course use. There are no changes to the golf course associated with the downzoning. The downzoning of “R-1” and “R-2, Residential” districts to “PK-4, Golf Course Park” district would ensure long-term viability of the Pukalani Country Club Golf Course and would eliminate the opportunity to urbanize the golf course site.

Furthermore, as concluded previously, the proposed project would not have significant, long-term adverse environmental impacts. As such, the proposed project as described in detail in Chapter I, was deemed the preferred alternative for this site.

B. NO ACTION ALTERNATIVE

The proposed subdivision will provide housing opportunities in the Makawao-Pukalani-Kula region. Under the “no action” alternative, the subdivision site would remain vacant and the underlying Community Plan and Maui County zoning would remain for future opportunities to urbanize the existing portion that is zoned “D-1, Duplex” and “R-1 and R-2, Residential”.

The “no action” alternative would not implement a portion of the subdivision’s area intended use for residential housing, as indicated by the “SF, Single-Family” Community Plan designation and the “D-1, Two-Family Duplex” Maui County zoning. This alternative would not produce any housing units. Thus, the “no action” alternative would not address the need for housing in the Makawao-Pukalani-Kula region. According to the County of Maui, Planning Department’s draft Maui Island Plan, the growth in population would necessitate 824 new housing units in the Upcountry area.

Further, the “no action” alternative may not ensure the long-term viability of the Pukalani Country Club Golf Course. The downzoning of “R-1” and “R-2, Residential” districts to “PK-4, Golf Course Park” district on the golf course site would ensure the long-term use for golf course. Without this action, the potential would always be present for urbanization of the current zoned area and thus, reduce the area for a golf course and potentially the playability of the course.

C. DUPLEX UNITS

The “duplex units” alternative would implement the current “SF, Single Family” Community Plan designation and current “D-1, Two-Family Duplex” zoning district for a portion of the subdivision site. According to land use regulations for “D-1, Two-Family Duplex”, potentially up to 20 units could be built in duplex configuration. The “duplex unit” alternative would provide for housing opportunities to meet future population growth in the area.

However, the “duplex units” alternative would create additional environmental impacts and additional demands on infrastructure (e.g. sewer, water, roadways, etc.) and public services as compared to the proposed action of 13 single-family lots. Additionally, the higher density would not be an appropriate density within the surrounding community. The surrounding neighborhoods are predominantly detached single-family units and higher density duplex housing is not an appropriate fit given the community character of the area.

**VI. IRREVERSIBLE AND
IRRETRIEVABLE
COMMITMENTS OF
RESOURCES**

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

As noted previously, the proposed land use actions are not anticipated to have significant adverse environmental effects. Development of the proposed subdivision will involve a commitment of energy, labor, fiscal, and material resources. The use of such resources, when weighed against the expected benefit of future housing to be derived from the project, is not an adverse commitment. Furthermore, the golf course site is also not an adverse commitment since there are no changes associated with the downzoning.

VII. SIGNIFICANCE CRITERIA ASSESSMENT

VII. SIGNIFICANCE CRITERIA ASSESSMENT

The "Significance Criteria", Section 12 of the Administrative Rules, Title 11, Chapter 200, "Environmental Impact Statement Rules", were reviewed and analyzed to determine whether the proposed project will have significant impacts to the environment. The following analysis is provided.

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

The proposed project will not involve an irrevocable commitment to loss or destruction of any natural or cultural resources. There are no long-term adverse impacts on air and visual resources from the proposed project. There are short-term construction-related impacts for air and noise quality, but these will be mitigated through implementation of appropriate Best Management Practices. A view analysis was conducted from the neighboring Kulamalu Subdivision and to protect view planes, Lots 1 and 2 of the proposed subdivision will be limited to a building height of 25 feet.

The project area was formerly used for pasture and was disturbed in connection with Pukalani Country Club Golf Course. The archaeological survey of the subdivision site did not locate any archaeological sites or cultural artifacts. The cultural impact assessment did not find any on-going cultural practices within the project area. Should any cultural artifacts or human remains be encountered during construction, work in the immediate vicinity of the find will cease and the find will be protected from further disturbance. The State Historic Preservation Division will be immediately notified to establish an appropriate mitigation strategy.

Furthermore, there are no changes associated with the downzoning of the golf course site, thus, there will be no irrevocable commitment to loss or destruction of any natural or cultural resources.

2. **Curtails the range of beneficial uses of the environment.**

The proposed actions will not curtail the range of beneficial uses of the environment. There are no anticipated impacts to climate, topography, and soils from the proposed project. There are also no known rare, threatened, or endangered species of flora, fauna, or avifauna located within the project areas. Refer to **Appendix "C"**. Furthermore, the proposed project is a significant distance from the coastline. As such, there will be no adverse impacts to coastal resources anticipated.

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.**

The State's Environmental Policy and Guidelines are set forth in Chapter 344, Hawaii Revised Statutes. The proposed project fosters and promotes the general welfare, creates conditions under which humanity and nature can exist in productive harmony, and fulfill the socio-economic requirements of the people of Hawaii. The proposed action is consistent with the policies and guidelines.

4. **Substantially affects the economic welfare, social welfare, and cultural practices of the community or State.**

In regards to socio-economic welfare, the proposed subdivision site will address the need for housing in the Upcountry area. And, there will be a short-term economic benefit from construction activities.

The cultural impact assessment did not identify any on-going cultural practices occurring within the project area; and as such, cultural practices will not be impacted.

Additionally, there are no changes associated with the downzoning of the golf course site, thus, there will be no effect to economic welfare, social welfare, and cultural practices of the community or State.

5. **Substantially affects public health.**

Given the proposed action of the subdivision site to provide a limited number of new house lots, no adverse impacts to the public's health and welfare are anticipated as a result of the proposed project. Design and construction of the proposed subdivision

will be undertaken in compliance with applicable State and County laws and regulations.

Also, as previously mentioned, there are no changes with the downzoning of the golf course site, thus, there will be no effects to public health.

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

No secondary impacts, such as population changes, are anticipated as a result of the proposed project given the small number of additional housing units and downzoning of the golf course. There are no anticipated adverse effects on public services, such as police, fire, medical, educational, or solid waste collection.

7. **Involves a substantial degradation of environmental quality.**

As previously mentioned, adverse impacts are not anticipated from the proposed project for the natural resources, cultural resources, and the natural environment. The proposed project is not anticipated to have an adverse impact on the environmental quality of the project area.

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

The proposed project does not involve a commitment to larger actions.

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

There are no rare, threatened, or endangered species of flora, fauna, or avifauna or their habitats on the project area. Refer to **Appendix "C"**.

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

The proposed project is not anticipated to have a significant long-term impact on air and water quality or ambient noise levels. There are short-term construction-related impacts for air and noise quality for the subdivision site but these will be mitigated by implementing appropriate Best Management Practices.

Again, there are changes associated with the downzoning of the golf course site, so there are no effects to air or water quality or ambient noise levels.

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 proposed project area is located Upcountry, away from the shoreline, and would not affect environmentally sensitive coastal areas. The project area is not subject to flooding or tsunami inundation. Soils of the project area are not erosion-prone. There are no geologically hazardous lands, estuaries, or coastal waters in proximity to the project area.

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

The project area is not situated in an area identified as a significant scenic vista or view plane in any County and State plans. However, the views from the surrounding homes can be characterized as providing good makai and mauka views for individual surrounding homeowners. As such, a view plane analysis was conducted in collaboration with the Kulamalu Subdivision Homeowners Association. To protect view planes for the surrounding homes, Lots 1 and 2 will be restricted to a building height of 25 feet.

13. **Requires substantial energy consumption.**

In the long term, the single-family homes will generate additional demand for electricity. However, this demand will not be substantial or excessive within the context of the region's overall energy consumption.

Furthermore, there are no changes with the downzoning of the golf course site, thus, there will be no additional energy consumption.

Based on the aforementioned findings, it is concluded that the proposed action results in a Finding of No Significant Impact (FONSI).

VIII. LIST OF PERMITS AND APPROVALS

VIII. LIST OF PERMITS AND APPROVALS

The following permits and approvals are anticipated to be needed for project implementation:

State of Hawaii

1. National Pollutant Discharge Elimination System (NPDES) Permit, as required
2. Community Noise Permit, as required

County of Maui

1. Chapter 343, Hawaii Revised Statutes (HRS) Environmental Review
2. Community Plan Amendment
3. Change in Zoning
4. Subdivision Approval
5. Grading Permit
6. Building Permit
7. Construction Permits

**IX. AGENCIES
CONSULTED DURING THE
PREPARATION OF THE
DRAFT ENVIRONMENTAL
ASSESSMENT; LETTERS
RECEIVED AND
RESPONSES TO
SUBSTANTIVE
COMMENTS**

IX. AGENCIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

The following agencies were consulted during preparation of the Draft Environmental Assessment. Agency comments and responses to substantive comments are also included in this section.

- | | |
|---|--|
| <p>1. Ranae Ganske-Cerizo, Soil Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
210 Imi Kala Street, Suite 209
Wailuku, Hawaii 96793-2100</p> | <p>6. Chiyome Fukino, M.D., Director
State of Hawaii
Department of Health
919 Ala Moana Blvd., Room 300
Honolulu, Hawaii 96814</p> |
| <p>2. George Young
Chief, Regulatory Branch
U.S. Department of the Army
U.S. Army Engineer District, Honolulu
Regulatory Branch
Building 230
Fort Shafter, Hawaii 96858-5440</p> | <p>7. Alec Wong, P.E., Acting Chief
Clean Water Branch
State of Hawaii
Department of Health
919 Ala Moana Blvd., Room 300
Honolulu, Hawaii 96814</p> |
| <p>3. Patrick Leonard
Field Supervisor
U. S. Fish and Wildlife Service
300 Ala Moana Blvd., Rm. 3-122, Box 50088
Honolulu, Hawaii 96813</p> | <p>8. Patti Kitkowski
Acting District Environmental Health
Program Chief
State of Hawaii
Department of Health
54 High Street
Wailuku, Hawaii 96793</p> |
| <p>4. Russ Saito, State Comptroller
Department of Accounting and General
Services
1151 Punchbowl Street, #426
Honolulu, Hawaii 96813</p> | <p>9. Laura Thielen, Director
State of Hawaii
Department of Land and Natural Resources
P.O. Box 2359
Honolulu, Hawaii 96804</p> |
| <p>5. Theodore E. Liu, Director
State of Hawaii
Department of Business, Economic Development
& Tourism
P.O. Box 2359
Honolulu, Hawaii 96804</p> | <p>10. Dr. Puaalaokalani Aiu, Administrator
State of Hawaii
Department of Land and Natural
Resources
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawaii 96707</p> |

- | | |
|--|--|
| <p>11. Patty Conte
State of Hawaii
Department of Land and Natural Resources
State Historic Preservation Division
130 Mahalani Street
Wailuku, Hawaii 96793</p> | <p>20. Lori Tshako, Director
County of Maui
Department of Housing and Human Concerns
One Main Plaza
2200 Main Street, Suite 546
Wailuku, Hawaii 96793</p> |
| <p>12. Katherine Kealoha, Director
Office of Environmental Quality Control
235 S. Beretania Street, Suite 702
Honolulu, Hawaii 96813</p> | <p>21. Tamara Horcajo, Director
County of Maui
Department of Parks and Recreation
700 Halia Nako Street, Unit 2
Wailuku, Hawaii 96793</p> |
| <p>13. Clyde Namuo, Administrator
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813</p> | <p>22. Jeffrey Hunt, Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793</p> |
| <p>14. Abbey Seth Mayer, Director
State of Hawaii
Office of Planning
P. O. Box 2359
Honolulu, Hawaii 96804</p> | <p>23. Gary Yabuta, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawaii 96793</p> |
| <p>15. Dan Davidson, Executive Officer
State of Hawaii
State Land Use Commission
P.O. Box 2359
Honolulu, Hawaii 96804</p> | <p>24. Milton Arakawa, Director
County of Maui
Department of Public Works
200 South High Street
Wailuku, Hawaii 96793</p> |
| <p>16. University of Hawaii at Manoa
Environmental Center
2550 Campus Road, Crawford 317
Honolulu, Hawaii 96822</p> | <p>25. Cheryl Okuma, Director
County of Maui
Department of Environmental Management
One Main Plaza
2200 Main Street, Suite 100
Wailuku, Hawaii 96793</p> |
| <p>17. Deidre Tegarden, Director
County of Maui
Office of Economic Development
2200 Main Street, Suite 305
Wailuku, Hawaii 96793</p> | <p>26. Donald Medeiros, Director
County of Maui
Department of Transportation
200 South High Street
Wailuku, Hawaii 96793</p> |
| <p>18. Gen Iinuma, Administrator
Maui Civil Defense Agency
200 South High Street
Wailuku, Hawaii 96793</p> | <p>27. Jeffrey Eng, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Hawaii 96793</p> |
| <p>19. Jeffrey A. Murray, Fire Chief
County of Maui
Department of Fire and Public Safety
200 Dairy Road
Kahului, Hawaii 96732</p> | <p>28. Greg Kauhi, Manager – Customer Operations
Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawaii 96733</p> |

29. **Oceanic Time Warner Cable**
350 Hoohana Street
Kahului, Hawaii 96733
30. **Hawaiian Telecom**
60 South Church Street
Wailuku, Hawaii 96793
31. **Pukalani Community Association**
P. O. Box 880323
Pukalani, Hawaii 96768
32. **Pukalani Country Club Golf Course**
360 Pukalani Street
Pukalani, Hawaii 96768
33. **Kulamalu Homeowners Association**
c/o Maui Land Broker and Property Management
The Pono Center
62 N. Market Street, Suite 303
Wailuku, Hawaii 96793

REPLY TO
ATTENTION OF:**DEPARTMENT OF THE ARMY**
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96868-5440

March 18, 2010

Regulatory Branch

File No. POH-2010-00051

Munekiyo & Hiraga, Inc.
Attention: Leilani Pulmano
305 High Street, Suite 104
Wailuku, HI 96793

Dear Ms. Pulmano:

We have received your request for the Department of the Army to review and comment on the proposed Pulelehuakea Subdivision, Pukalani, Maui, Hawaii. We have assigned the project the reference number POH-2010-00051. Please cite the reference number in any correspondence with us concerning this project. I have completed my review of the submitted document and have the following comments:

Section 10 of the Rivers and Harbors Act (Section 10) of 1899 requires that a Department of the Army (DA) permit be obtained from the U.S. Army Corps of Engineers (Corps) prior to undertaking any construction, dredging, and other activities occurring in, over, or under navigable waters of the U.S. Section 404 of the Clean Water Act (Section 404) of 1972 (33 U.S.C. 1344) requires that a DA permit be obtained for the discharge (placement) of dredge and/or fill material into waters of the U.S., including wetlands.

Based on our review of the information provided, it appears that no navigable waters of the U.S. are present within the project area. As such, authorization under Section 10 of the Rivers and Harbors Act does not appear to be required for the proposed project. The Corps does not have sufficient information to determine if there are waters of the U.S. present at the project site or if such waters are proposed for impact, which may require authorization under Section 404 of the Clean Water Act.

According to the document submitted, there may be several gulches on or near the project site. No other information regarding the presence or absence of other waters, including drainage ditches or wetlands, is included. When developing the Environmental Assessment, we recommend you include any information regarding any potential waterbody on-site if it may be impacted by the proposed project. Only the Corps of Engineers has authority to determine if any of these features are or are not waters of the U.S. and, potentially subject to regulations under Section 404 of the Clean Water Act.


We encourage the landowner (or the applicant who can demonstrate landowner authorization) to submit a request for a jurisdictional determination for any potential waterbodies. The request should include the aquatic features proposed for impact, flow duration of each feature, and the flow path of each feature into navigable waters. For instance: the unnamed ditch contains flow for two consecutive weeks annually and, from the project impact

site, flows for 800 linear feet before discharging into XYZ Stream. XYZ Stream flows year-round and flows 1,200 feet before discharging into the Pacific Ocean. For wetlands, a delineation conducted in accordance with the Corps of Engineers 1987 Wetland Delineation Manual, should be submitted. We recommend they also include a vicinity map, map of the drainage features and flow paths, and site photographs so the Corps may conduct a jurisdictional determination.

If any of these waterbodies are determined to be waters of the U.S., the applicant will need to obtain authorization from the Corps prior to discharging dredge or fill material into these waterbodies. Fill material may include, but is not limited to: rock, dirt, sand, sandbags, concrete, piping a water of the U.S., or diverting a water of the U.S. into a pipe. Fill can be temporary or permanent. The applicant should contact the Corps to determine if any of the proposed work constitutes a "discharge of fill" and submit an application as necessary. The Corps will then review the application to ensure it complies with all necessary federal laws and is within the public interest. If the fill results in the loss of waters of the U.S. or the waterbodies' associated functions, the applicant may be required to provide compensatory mitigation for any unavoidable impacts. A jurisdictional determination request can be submitted prior to or concurrently with an application.

Please note that you requested comments by March 15, 2010. The Corps of Engineers does not have a timeline for responding to pre-application requests although our goal is to do so in as timely a manner as possible. We recommend you allot a minimum of 30 days, although additional time could be needed, for our agency to submit comments as that goal is more likely to be achieved than 15 days (letter received March 1, 2010). Thank you for contacting us regarding this project and providing us with the opportunity to comment. Should you have any questions, please contact Ms. Amy Klein at (808) 438-7023 or via email at Amy.S.Klein@usace.army.mil.

Sincerely,


for

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



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

July 27, 2010

George Young, P.E.
Chief, Regulatory Branch
Department of Army
U.S. Army Corps of Engineers, Honolulu District
Fort Shafter, Hawaii 96858

SUBJECT: Proposed Pulelehuakea Residential Subdivision and Related Improvements at TMK (2) 2-3-008:036(por.), Pukalani, Maui, Hawaii, POH-2010-00051

Dear Mr. Young:

Thank you for your letter, dated March 18, 2010, providing early consultation comments for the proposed Pulelehuakea Residential Subdivision. On behalf of the applicant, KG Maui Development, LLC, we offer the following information in response to the comments noted in your letter.

There are no gulches on the project site. There are no drainage ditches and wetlands on or nearby the project site. There is a gulch nearby the project site called Kaluapulani Gulch. The Draft Environmental Assessment (EA) will discuss any potential project impacts to the Kaluapulani Gulch.

We appreciate the input provided by your organization. A copy of the Draft EA will be submitted to your office for review and comment. Should you have any questions or further comments, please contact me at (808) 244-2015.

Sincerely,

Leilani Pulmano
Project Manager

LP:lh

cc: Elton Wong, KG Maui Development, LLC
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.

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MAR 18 2010

LINDA LINGLE
GOVERNOR



RUSS K. SAITO
COMPTROLLER

SANDRA L. YAHIRO
DEPUTY COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES

P.O. BOX 119, HONOLULU, HAWAII 96810-0119

MAR 17 2010

(P)1060.0

Ms. Leilani Pulmano, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

Subject: Early Consultation Request for the proposed Pulelehuakea Residential
Subdivision and Related Improvements at TMK (2)2-3-008:036(portion)
Pukalani, Maui, Hawaii

Thank you for the opportunity to provide comments for Early Consultation on the proposed Pulelehuakea Residential Subdivision and Related Improvements, Pukalani, Maui, Hawaii. The project does not impact any of the Department of Accounting and General Services' projects or existing facilities, and we have no comments to offer at this time.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Clarence Kubo of the Public Works Division at 586-0488.

Sincerely,

A handwritten signature in cursive script that reads "Russ K. Saito".

RUSS K. SAITO
State Comptroller

MAR 10 2010

LINDA LINGLE
GOVERNOR OF HAWAII



CHIYOME LEINAALA FUKINO, M.D.
DIRECTOR OF HEALTH

**STATE OF HAWAII
DEPARTMENT OF HEALTH**

P.O. BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to:
LUD-M2 3 008 036
Pulelehuakea Res Subd
ID#344

March 8, 2010

Ms. Leilani Pulmano, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

Subject: Early Consultation Request for the Proposed Pulelehuakea Residential Subdivision and Related Improvements at TMK (2) 2-3-008: 036 (portion), Pukalani, Maui, Hawaii (approx. address: Liholani Street, Makawao 96768)

Thank you for allowing us the opportunity to review the above subject project which is proposing to develop a residential subdivision and related on-site and off-site improvements on approximately 6.003 acres of land. We have the following comments and information on the above subject property:

The subject project is located in the Critical Wastewater Disposal Area as determined by the Maui County Wastewater Advisory Committee. No new cesspools are allowed in the area.

Domestic wastewater treatment and disposal have not been addressed in this early consultation request, therefore we can not offer any substantial comments until treatment disposal have been determined. If possible, we highly recommend that the proposed project connects to the Pukalani Wastewater Treatment Plant to serve their wastewater needs. Otherwise, all wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems." We do reserve the right to review the detailed wastewater plans for conformance to applicable rules.

We further recommend the developer utilize recycled water for irrigation and other non-potable water purposes such as parks, golf courses and other open spaces or landscaping areas. And, any means to reduce green house gas emissions, practice renewable energy and reduce waste is highly recommended.

Should you have any questions, please contact the Planning & Design Section of the Wastewater Branch at (808) 586-4294.

Sincerely,

A handwritten signature in black ink, appearing to read "Sina Pruder".

SINA PRUDER, P.E., ACTING CHIEF
Wastewater Branch

c: City & County of Honolulu, Mr. Jeff Lee
DOH's Environmental Planning Office (EPO 1-3081)
DOH-WWB's Maui Staff - Mr. Roland Tejano



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

July 27, 2010

Sina Pruder, P.E., Acting Chief
Department of Health
State of Hawaii
Wastewater Branch
P.O. Box 3378
Honolulu, Hawaii 96801

SUBJECT: Proposed Pulelehuakea Residential Subdivision and Related Improvements at TMK (2) 2-3-008:036(por.), Pukalani, Maui, Hawaii, LUD-M23008036, ID# 344

Dear Ms. Pruder:

Thank you for your letter, dated March 8, 2010, providing early consultation comments for the proposed Pulelehuakea Residential Subdivision. On behalf of the applicant, KG Maui Development, LLC, we offer the following information in response to the comments noted in your letter.

We acknowledge that the project site is located in the Critical Wastewater Disposal Area as determined by the Maui County Wastewater Advisory Committee; and that no new cesspools are allowed in the area.

The Draft Environmental Assessment (EA) will address the wastewater requirements for the project. The applicant is working with the Pukalani Wastewater Treatment Plant to provide service to the proposed project. We, further acknowledge that the wastewater plans must conform to the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems" and that the Department reserves the right to review the wastewater plans.

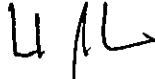
The Pukalani Country Club Golf Course utilizes all of the R-1 water from the Pukalani Wastewater Treatment Plant. Unfortunately, R-1 water is not available for the proposed subdivision.

The Draft EA will include a discussion on reduction of green house gas emission, renewable energy, and reduction of waste.

Sina Pruder, P.E., Acting Chief
July 27, 2010
Page 2

We appreciate the input provided by your organization. A copy of the Draft EA will be submitted to your office for review and comment. Should you have any questions or further comments, please contact me at (808) 244-2015.

Sincerely,

A handwritten signature in black ink, appearing to read 'LP' with a stylized flourish extending to the right.

Leilani Pulmano
Project Manager

LP:lh

cc: Elton Wong, KG Maui Development, LLC
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.

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MAR 12 2010

CHIYOME L. FUKINO, M. D.
DIRECTOR OF HEALTH

LORRIN W. PANG, M. D., M. P. H.
DISTRICT HEALTH OFFICER

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2102

March 11, 2010

Ms. Leilani Pulmano
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii'i 96793

Dear Ms. Pulmano:

Subject: Early Consultation Request for the proposed Pulelehuakea Residential Subdivision and Related Improvements Pukalani, Maui, Hawaii
TMK: (2) 2-3-008:036 (portion)

Thank you for the opportunity to comment on the early consultation. The following comments are offered:

1. National Pollutant Discharge Elimination System (NPDES) permit coverage may be required for this project. The Clean Water Branch should be contacted at 808 586-4309.
2. The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules, Chapter 11-46 "Community Noise Control". A noise permit may be required and should be obtained before the commencement of this project.

It is strongly recommended that the Standard Comments found at the Department's website: <http://hawaii.gov/health/environmental/env-planning/landuse/landuse.html> be reviewed, and any comments specifically applicable to this project should be adhered to.

Ms. Leilani Pulmano
March 11, 2010
Page 2

Should you have any questions, please call me at 808 984-8230 or e-mail me at patricia.kitkowski@doh.hawaii.gov.

Sincerely,

A handwritten signature in cursive script that reads "Patti Kitkowski". The signature is written in black ink and is positioned above the printed name and title.

Patti Kitkowski
Acting District Environmental Health Program Chief



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

July 27, 2010

Patti Kitkowski
Acting District Environment Health Program Chief
State of Hawaii
Department of Health – Maui District Office
54 High Street
Wailuku, Hawaii 96793

SUBJECT: Proposed Pulelehuakea Residential Subdivision and Related Improvements at TMK (2) 2-3-008:036(por.), Pukalani, Maui, Hawaii

Dear Ms. Kitkowski:

Thank you for your letter, dated March 11, 2010, providing early consultation comments for the proposed Pulelehuakea Residential Subdivision. On behalf of the applicant, KG Maui Development, LLC, we offer the following information in response to the comments noted in your letter.

1. The project engineer will coordinate with the Clean Water Branch if a National Pollutant Discharge Elimination System (NPDES) permit is required.
2. We understand that a noise permit should be obtained prior to construction if a noise permit is required for the construction phase of the project.
3. Standard comments that apply to the proposed project will be reviewed and addressed as part of the Draft Environmental Assessment.

Patti Kitkowski
July 27, 2010
Page 27/27/2010

We appreciate the input provided by your organization. A copy of the Draft Environmental Assessment will be submitted to your office for review and comment. Should you have any questions or further comments, please contact me at 244-2015.

Sincerely,



Leilani Pulmano
Project Manager

LP:lh

cc: Elton Wong, KG Maui Development, LLC
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.

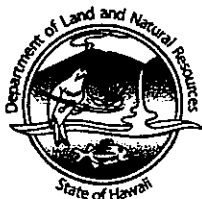
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MAR 16 2010

LINDA LINGLE
GOVERNOR OF HAWAII



Laura H. Thielen
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 15, 2010

Munekiyo & Hiraga, Inc.
305 High Street Suite 104
Wailuku, Hawaii 96793

Attention: Ms. Leilani Pulmano
Project Manager

Ladies and Gentlemen:

Subject: Early Consultation for Proposed Pulehuakea Residential Subdivision and
Related Improvements

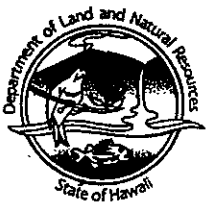
Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR), Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comment.

Other than the comments from Engineering Division, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

A handwritten signature in cursive script, appearing to read "Morris M. Atta".

for Morris M. Atta
Administrator



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 2, 2010

MEMORANDUM

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

RECEIVED
LAND DIVISION
2010 MAR 10 A 9:48
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

FROM: *for* Morris M. Atta *Thalene*
SUBJECT: Early consultation for Proposed Pulelehuakea Residential Subdivision and Related Improvements
LOCATION: Island of Maui
APPLICANT: Munekiyo & Hiraga, Inc.

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by March 10, 2010.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed: *Cy G*
Date: *3/10/10*

**DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION**

LDMorrisAtta
RE: PreConPulelehuakeaSubdivision
Maui.501

COMMENTS

- () We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ____.
- (X) **Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone X. The Flood Insurance Program does not have any regulations for developments within Flood Zone X.**
- () Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ____.
- () Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

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

- () Mr. Robert Sumitomo at (808) 768-8097 or Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.
 - () Mr. Frank DeMarco at (808) 961-8042 of the County of Hawaii, Department of Public Works.
 - () Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
 - () Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.
- () The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.
 - () The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

- () Additional Comments: _____

- () Other: _____

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

Signed: 
CARY S. CHANG, ACTING CHIEF ENGINEER

Date: 3/9/10



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

July 27, 2010

Morris M. Atta, Administrator
Department of Land and Natural Resources
Land Division
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

SUBJECT: Proposed Pulelehuakea Residential Subdivision and Related Improvements at TMK (2) 2-3-008:036(por.), Pukalani, Maui, Hawaii

Dear Mr. Atta:

Thank you for your letter, dated March 15, 2010, providing early consultation comments for the proposed Pulelehuakea Residential Subdivision. On behalf of the applicant, KG Maui Development, LLC, we offer the following information in response to the comment noted in the letter from Engineering Division.

Thank you for confirming that the project site is located in Flood Zone X according to the Flood Insurance Rate Map (FIRM). We understand that the Flood Insurance Program does not have any regulations for developments within Flood Zone X.

We appreciate the input provided by your organization. A copy of the Draft Environmental Assessment (EA) will be submitted to your office for review and comment. Should you have any questions or further comments, please contact me at (808) 244-2015.

Sincerely,

Leilan Pulmano
Project Manager

LP:lh

cc: Elton Wong, KG Maui Development, LLC

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MAR 18 2010

PHONE (808) 594-1888

FAX (808) 594-1865



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

HRD10/4856

March 12, 2010

Leilani Pulmano, Project Manager
Munekiyo&Hiraga, Inc.
305 High Street, Suite 104
Wailuku Hawai'i 96793

RE: Pre-Draft Environmental Assessment consultation
Proposed Pulelehua residential subdivision and related improvements
Pukalani, Island of Maui
Tax Map Key: (2) 2-3-008:036 (por.)

Aloha e Leilani Pulmano,

The Office of Hawaiian Affairs (OHA) is in receipt of your February 25, 2010 letter initiating consultation ahead of a draft environmental assessment (draft EA) to facilitate a proposed Makawao-Pukalani-Kula Community Plan Amendment (CPA) and Change in Zoning (CIZ) applications. The draft EA will address two actions being proposed and/or considered by the landowner of the above mentioned tax map key parcel, KG Maui Development, LLC: 1) a CPA and CIZ application to enable the development of the proposed Pulelehuakea single-family residential development; and 2) a CPA and CIZ application for existing residential zoned lands within the adjoining Pukalani Country Club Golf Course.

The proposed Pulelehuakea residential development will occur on approximately 6.003 acres of land situated between holes 5, 6 and 7 of the existing Pukalani Country Club Golf Course. Thirteen single-family residential lots ranging in size from 15,000 to 37,000 square feet will be developed along with utilities and improvements. The changes that will be requested by the CPA and CIZ applications are detailed in "Table 1" included with your letter.

KG Maui Development, LLC is also considering CPA and CIZ applications for lands that are currently zoned residential and situated within the existing Pukalani Country Club Golf Course. As detailed within your letter, this proposed action will "...ensure long-term viability of the Pukalani Country Club Golf Course by establishing land use designation consistency". The considered changes are detailed in "Table 2" included with your letter.

Leilani Pulmano, Project Manager
Munekiyo&Hiraga, Inc.
March 12, 2010
Page 2 of 2

OHA advocates that a comprehensive review of cultural and archaeological studies related to the proposed Pulelehuakea subdivision project area be conducted to determine whether an archaeological inventory survey is warranted.

Thank you for initiating consultation at this early stage and we look forward to the opportunity to review the draft EA and provide additional comments at that time. Should you have any questions, please contact Keola Lindsey, Lead Advocate-Culture at 594-1904 or keolal@oha.org.

'O wau iho nō me ka 'oia'i'o,



Clyde W. Nāmu'o
Chief Executive Officer

C: OHA-Maui Community Resources Coordinator



MICHAEL T. MUNEKIYO
GWEN DHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

July 27, 2010

Clyde Nāmu`o
Chief Executive Officer
Office of Hawaiian Affairs
State of Hawaii
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

SUBJECT: Proposed Pulelehuakea Residential Subdivision and Related Improvements at TMK (2) 2-3-008:036(por.), Pukalani, Maui, Hawaii

Dear Mr. Nāmu`o:

Thank you for your letter, dated March 12, 2010, providing early consultation comments for the proposed Pulelehuakea Residential Subdivision. On behalf of the applicant, KG Maui Development, LLC, we offer the following information in response to the comments noted in your letter.

Cultural and archaeological studies will be completed for the proposed project site and will be included in the Draft Environmental Assessment (EA) for your future review.

We appreciate the input provided by your organization. A copy of the Draft EA will be submitted to your office for review and comment. Should you have any questions or further comments, please contact me at (808) 244-2015.

Sincerely,

Leilani Pulmano
Project Manager

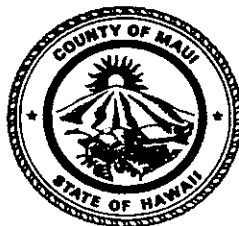
LP:lh

cc: Elton Wong, KG Maui Development, LLC

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APR 13 2010

CHARMAINE TAVARES
Mayor
CHERYL K. OKUMA, Esq.
Director
GREGG KRESGE
Deputy Director



TRACY TAKAMINE, P.E.
Solid Waste Division
DAVID TAYLOR, P.E.
Wastewater Reclamation
Division

**COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT**

2200 MAIN STREET, SUITE 100
WAILUKU, MAUI, HAWAII 96793

April 9, 2010

Ms. Leilani Pulmano
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

Dear Ms. Pulmano,

**SUBJECT: PULELEHUAKEA RESIDENTIAL SUBDIVISION
EARLY CONSULTATION
TMK (2) 2-3-008:036, PUKALANI**

We reviewed the subject application and have the following comments:

1. Solid Waste Division comments:
 - a. None.
2. Wastewater Reclamation Division (WWRD) comments:
 - a. None. There is no County sewer system in the area of the subject property.

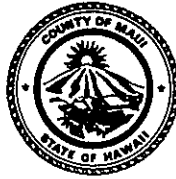
If you have any questions regarding this memorandum, please contact Gregg Kresge at 270-8230.

Sincerely,

A handwritten signature in black ink, appearing to read "Cheryl K. Okuma".

Cheryl K. Okuma, Director

CHARMAINE TAVARES
MAYOR



MAR 09 2010

JEFFREY A. MURRAY
CHIEF

ROBERT M. SHIMADA
DEPUTY CHIEF

COUNTY OF MAUI
DEPARTMENT OF FIRE AND PUBLIC SAFETY
FIRE PREVENTION BUREAU
313 MANEA PLACE
~~780 ALUA STREET~~
WAILUKU, HAWAII 96793
(808) 244-9161
FAX (808) 244-1363

March 5, 2010

Munekiyo & Hiraga, Inc.
Attn: Leilani Pulmano
305 High Street, Suite 104
Wailuku, HI 96793

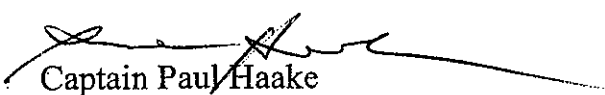
Subject: Early Consultation Request
Proposed Pulelehuakea Subdivision and Related Improvements
Pukalani
TMK: (2) 2-3-008:036

Thank you for the opportunity to comment on this subject. The Fire Prevention Bureau will address the Pulelehua subdivision, Area "A", during the subdivision process. The requirements for road and water supply for fire protection improvements for single-family subdivisions as stated in 16.04B 140 subsection 903.4.2 shall be applied.

Regarding the downsizing of Area "B", there are no objections or comments to this proposed change. This area shall be accessed and served by the improvements for Area "A".

If you have any questions, you may call me at 244-9161 ext. 23 or fax at 244-1363.

Sincerely,


Captain Paul Haake
Fire Prevention Bureau



MICHAEL T. MUNEKIYO
GWEN DHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

July 27, 2010

Chief Jeff Murray
County of Maui
Department of Fire & Public Safety
200 Dairy Road
Kahului, Hawaii 96732

SUBJECT: Proposed Pulelehuakea Residential Subdivision and Related Improvements at TMK (2) 2-3-008:036(por.), Pukalani, Maui, Hawaii

Dear Chief Murray:

Thank you for your letter, dated March 5, 2010, providing early consultation comments for the proposed Pulelehuakea Residential Subdivision. On behalf of the applicant, KG Maui Development, LLC, we offer the following information in response to the comments noted in your letter.

The applicant acknowledges that the Fire Prevention Bureau will review and address the requirements for road and water supply for fire protection improvements during the subdivision process.

We also acknowledge that you have no objections or comments to the downzoning of the golf course area. We would like to clarify that there will be no changes to this golf course area. Thus, fire protection review will likely not be required.

We appreciate the input provided by your organization. A copy of the Draft EA will be submitted to your office for review and comment. Should you have any questions or further comments, please contact me at 244-2015.

Sincerely,

Leilani Pulmano
Project Manager

LP:lh

cc: Elton Wong, KG Maui Development, LLC

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DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
HOUSING DIVISION
COUNTY OF MAUI

MAR 15 2010
CHARMAINE TAVARES
Mayor
LORI TSUHAKO
Director

JO-ANN T. RIDAO
Deputy Director

35 LUNALILO STREET, SUITE 102 • WAILUKU, HAWAII 96793 • PHONE (808) 270-7351 • FAX (808) 270-6284

March 11, 2010

Munekiyo & Hiraga, Inc.
Attention: Leilani Pulmano
Project Manager
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

**SUBJECT: EARLY CONSULTATION REQUEST FOR THE PROPOSED
PULELEHUAKA RESIDENTIAL SUBDIVISION AND
RELATED IMPROVEMENTS AT TMK (2)2-3-008:036 POR,
PUKALANI, MAUI, HAWAII**

Thank you for the opportunity to review and comment on the Early Consultation Request for the above subject subdivision. Based on our review we would like to offer the following comments:

1. The subject project is subject to Chapter 2.96, Maui County Code (MCC), Residential Workforce Housing Policy.
2. KG Maui Development, LLC (KG) is proposing to subdivide one (1) existing lot into thirteen (13) residential lots which will result in twelve (12) new lots.

If more than 50% of the residential lots are offered for sale for more than \$600,000, then KG will be required to provide six (6) (50% x 12) residential workforce housing lots to the income groups specified in Section 2.96.060 of MCC, regardless if the residential workforce housing lots are provided on or off-site of the subject project .

If more than 50% of the residential lots are offered for sale for less than \$600,000, then the KG will be required to provide six (6) (50% x 12) residential workforce housing lots to the income groups specified in Section 2.96.060 MCC, if the residential workforce housing lots are provided off-site of the subject project or provide three (3) (25% x 12) residential workforce housing lots to the income groups specified in Section 2.96.060 of MCC, if the residential lots are provided on-site of the subject project.

TO SUPPORT AND EMPOWER OUR COMMUNITY TO REACH ITS FULLEST POTENTIAL
FOR PERSONAL WELL-BEING AND SELF-RELIANCE

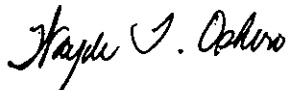
Ms. Leilani Pulmano
March 11, 2010
Page 2 of 2

As a guide the sales price for the residential workforce housing lots will be based on 50% of the total sales price for a housing and lot package listed in the County of Maui's Affordable Sales Price Guidelines for the applicable target income group and at the prevailing interest rate at the time the lots are marketed for sale.

3. The Residential Workforce Housing Agreement for the subject project needs to be fully executed and recorded at the Bureau of Conveyances prior to final subdivision or building permit approval, whichever occurs first.
4. A development subject to a change in zoning condition that requires affordable or residential workforce housing is exempt from Chapter 2.96 MCC, unless the condition expressly allows for the application of the affordable housing or residential workforce housing policy set forth in Chapter 2.96.

Should you have any questions please call Ms. Cara Bohne at (808) 270-5748.

Sincerely



WAYDE T. OSHIRO
Housing Administrator

cc Director Housing and Human Concerns

July 27, 2010

Wayde Oshiro, Housing Administrator
Department of Housing and Human Concerns
County of Maui
35 Lunalilo Street, Suite 102
Wailuku, Hawaii 96793

SUBJECT: Proposed Pulelehuakea Residential Subdivision and Related Improvements at TMK (2) 2-3-008:036(por.), Pukalani, Maui, Hawaii

Dear Mr. Oshiro:

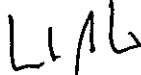
Thank you for your letter, dated March 11, 2010, providing early consultation comments for the proposed Pulelehuakea Residential Subdivision. On behalf of the applicant, KG Maui Development, LLC, we offer the following information in response to the comments noted in your letter.

1. The applicant acknowledges that the proposed project is subject to Chapter 2.96, Maui County Code (MCC) Residential Workforce Housing Policy.
2. The applicant also acknowledges the requirements to provide residential workforce housing lots depending on the sales price of lots and if the residential workforce housing lots will be provided on or off-site.
3. A Residential Workforce Housing Agreement for the proposed project will be fully executed and recorded at the Bureau of Conveyances prior to final subdivision or building permit approval, whichever occurs first.
4. The proposed project is not subject to a change in zoning condition that requires affordable or residential workforce housing, thus the proposed project must comply with Chapter 2.96, MCC.

Wayde Oshiro, Housing Administrator
July 27, 2010
Page 2

We appreciate the input provided by your organization. A copy of the Draft Environmental Assessment will be submitted to your office for review and comment. Should you have any questions or further comments, please contact me at 244-2015.

Sincerely,



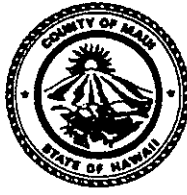
Leilani Pulmano
Project Manager

LP:lh

cc: Elton Wong, KG Maui Development, LLC

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CHARMAINE TAVARES
Mayor



MAR 18 2010

TAMARA HORCAJO
Director

ZACHARY Z. HELM
Deputy Director

(808) 270-7230
Fax (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nako'a Street, Unit 2, Wailuku, Hawaii 96793

March 12, 2010

Leilani Pulmano, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

**RE: Early Consultation Request for the proposed Pulelehuakea Residential Subdivision
and Related Improvements at TMK (2) 2-3-008:036 (portion), Pukalani, Maui, Hawaii**

Dear Ms. Pulmano:

Thank you for the opportunity to review and provide early comment on the Pulelehuakea Residential Subdivision and related improvements in Pukalani.

Upon review of the submitted documents, we have no comment to offer at this time. We would however appreciate being kept apprized of the project as it develops.

Should you have any questions or need of additional information, please feel free to contract me, or Patrick Matsui, Chief of Parks Planning & Development at 808.270.7931.

Sincerely,

A handwritten signature in black ink, appearing to read "Tamara Horcajo".

TAMARA HORCAJO
Director of Parks and Recreation

c: Patrick Matsui, Chief of Parks Planning & Development
Willard Asato, East Maui District Supervisor

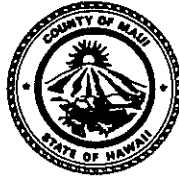
TH:PTM:rh

CHARMAINE TAVARES
Mayor

JEFFREY S. HUNT
Director

KATHLEEN ROSS AOKI
Deputy Director

APR 07 2010



COUNTY OF MAUI
DEPARTMENT OF PLANNING

April 5, 2010

Ms. Leilani Pulmano, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

**SUBJECT: PRE-CONSULTATION COMMENTS REGARDING THE PROPOSED
PULELEHUAKA RESIDENTIAL SUBDIVISION AND RELATED
IMPROVEMENTS, PUKALANI, MAUI, HAWAII; TMK: (2) 2-3-008:036
(POR.) (RFC 2010/0025)**

The Department of Planning (Department) has reviewed your letter dated February 25, 2010, requesting pre-consultation comments in preparation of the Draft Environmental Assessment (EA).

The Department has no substantive comment at this time. The Department encourages the Applicant to meet with the immediate affected community to provide them the opportunity to comment on the proposed action and include said comments in the Draft EA.

If you require further clarification, please contact Staff Planner Gina Flammer by email at gina.flammer@mauicounty.gov or by phone at 270-5780.

Sincerely,

Handwritten signature of Clayton I. Yoshida in black ink.

CLAYTON I. YOSHIDA, AICP
Planning Program Administrator

for JEFFREY S. HUNT, AICP
Planning Director

xc: Gina M. Flammer, Staff Planner
Michael Miyamoto, Deputy Director, Department of Public Works
Project File
General File

JSH:CIY:GMF:sg

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MICHAEL T. MUNEKIYO
GWEN DHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

July 27, 2010

Kathleen R. Aoki, Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

SUBJECT: Proposed Pulelehuakea Residential Subdivision and Related Improvements at TMK (2) 2-3-008:036(por.), Pukalani, Maui, Hawaii

Dear Ms. Aoki:

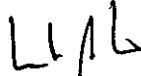
Thank you for your letter, dated April 5, 2010, providing early consultation comments for the proposed Pulelehuakea Residential Subdivision. On behalf of the applicant, KG Maui Development, LLC, we offer the following information in response to the comments noted in your letter.

We have had several meetings with the surrounding neighbors including a community informational meeting on January 21, 2010. Invitees were owners within 500 feet of the project's Tax Map Key parcel plus several community associations and organizations within the surrounding area. Since that initial meeting, we have had several follow up meetings with Kulamalu Homeowners Association Board and Subcommittees to work out mutually agreeable solutions to their concerns of the proposed project. As indicated in your letter, we will summarize the communities' comments in the Draft Environmental Assessment (EA).

Kathleen R. Aoki, Director
July 27, 2010
Page 2

We appreciate the input provided by your organization. A copy of the Draft EA will be submitted to your office for review and comment. Should you have any questions or further comments, please contact me at (808) 244-2015.

Sincerely,



Leilani Pulmano
Project Manager

LP:lh

cc: Elton Wong, KG Maui Development, LLC

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CHARMAINE TAVARES
Mayor

MILTON M. ARAKAWA, A.I.C.P.
Director

MICHAEL M. MIYAMOTO
Deputy Director

Telephone: (808) 270-7845
Fax: (808) 270-7955



MAR 19 2010
RALPH NAGAMINE, L.S., P.E.
Development Services Administration

CARY YAMASHITA, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
200 SOUTH HIGH STREET, ROOM NO. 434
WAILUKU, MAUI, HAWAII 96793

March 17, 2010

Ms. Leilani Pulmano
MUNEKIYO & HIRAGA, INC.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

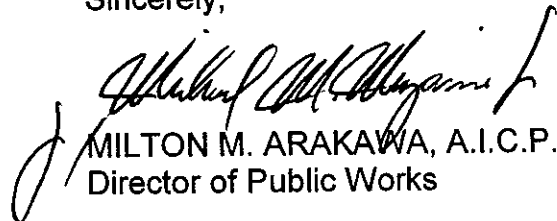
Dear Ms. Pulmano:

**SUBJECT: EARLY CONSULTATION REQUEST FOR
PULELEHUAKEA RESIDENTIAL SUBDIVISION,
PUKALANI, MAUI, HAWAII
TMK: (2) 2-3-008:036**

We reviewed your early consultation request and have no comments to offer at this time.

Please call Michael Miyamoto at 270-7845 if you have any questions regarding this letter.

Sincerely,



MILTON M. ARAKAWA, A.I.C.P.
Director of Public Works

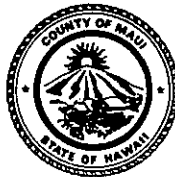
MMA:MMM:jc

xc: Highways Division
Engineering Division

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MAR 05 2010

CHARMAINE TAVARES
MAYOR



DON A. MEDEIROS
Director
WAYNE A. BOTEILHO
Deputy Director
Telephone (808) 270-7511
Facsimile (808) 270-7505

DEPARTMENT OF TRANSPORTATION

COUNTY OF MAUI
200 South High Street
Wailuku, Hawaii, USA 96793-2155

March 3, 2010

Ms. Leilani Pulmano
Munekiyo & Hiraga Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Subject: Early Consultation Request for the Pulelehuakea Residential
Subdivision in Pukalani

Dear Ms. Pulmano,

Thank you for the opportunity to comment on this project. We have no
comments to make at this time.

Please feel free to contact me if you have any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "Don Medeiros".

Don Medeiros
Director

CHARMAINE TAVARES
Mayor



MAR 24 2010
JEFFREY K. ENG
Director

ERIC H. YAMASHIGE, P.E., L.S.
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2155
www.mauiwater.org

March 19, 2010

Munekiyo & Hiraga, Inc.
Attention: Leilani Pulmano, Project Manager
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

RE: Project Name: Proposed Pulelehuakea Residential Subdivision
Applicant: KG Maui Development, LLC
Permit Name: Early Consultation Request
TMK: (2) 2-3-008:036 por. (Pukalani, Maui, Hawaii)

Thank you for the opportunity to comment on this early consultation request.

The following are our comments based on the provided information. Further comments may be made when this application is formally submitted.

Source Availability and Consumption

The project site (site) is served by the Makawao system.

The site is located in an area affected by the finding of inadequate water supply issued on March 16, 1993. The area has insufficient water supply developed for fire protection, domestic and irrigation purposes to take on new or additional services without the detriment to those already in the regulated area. The EA should, therefore, identify sources and potable/non-potable demand for this project.

The site for the proposed subdivision does not have water meters. Further, the applicant for the site is not on the current Upcountry Water Service or priority list. The applicant will have to develop the source, purchase source credits, or apply to have the site property on the priority list.

System Infrastructure

The site is served by a 12-inch waterline fronting the west end of the property on Liholani Street and a 12-inch waterline close to the south end of the property on Aina

"By Water All Things Find Life"



Ms. Leilani Pulmano
Page 2
March 19, 2010

Lani Drive. There are two fire hydrants on Aina Lani Drive which are approximately 100 feet from the project site. However, related water system improvements will be required. During the subdivision approval process, the applicant's plans for water system improvements will be reviewed and approved by our Engineering Division.

During the building permit process, the applicant will be required to submit domestic, irrigation and fire flow calculations to determine water meter capacity and adequate fire protection. Approved fire flow calculation methods currently used by the Department of Water Supply are the "Guidance for Determination of Required Fire Flow" as published by the Insurance Services Office in 1974, 2001 and 2006, or "Fire Flow" as published by the Hawaii Insurance Bureau in 1991.

Storage is provided by the 0.85 million gallon Pukalani Terrace tank southeast of the site.

Pollution Prevention

The site overlies the Makawao aquifer which has a sustainable yield of 7 million gallons per day. The Department of Water Supply's goal is to protect the integrity of surface and groundwater resources. To achieve this, mitigation measures must be implemented to prevent any water pollution related impacts. Best management practices for construction should, therefore, be applied; these are attached to this letter.

Conservation Measures

The Department of Water Supply (DWS) encourages the applicant to consider the following conservation measures in the project design, as well as during construction:

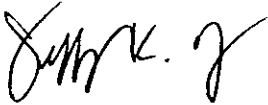
1. Utilize reclaimed or non-potable water for dust control, irrigation and other non-potable uses.
2. Water after 7:00 p.m. at night and before 10:00 a.m. in the morning.
3. Utilize low-flow fixtures and devices - Maui County Code Subsection 16.20A.680 requires the use of low-flow fixtures and devices in faucets, showerheads, urinals, water closets and hose bibs. Even more efficient and consumer tested models are available. Check WaterSense listings at <http://www.epa.gov/watersense/pp/index.htm> for efficient fixture listings when buying or replacing fixtures.
4. Prevent over-Watering by automated systems - Provide rain-sensors on all automated irrigation controllers. Check and reset controllers at least once a month to reflect the monthly changes in evaporation rates at the site. As an alternative, provide more automated, soil-moisture sensors on controllers.
5. Maintain fixtures to prevent leaks - A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons per day.

Ms. Leilani Pulmano
Page 3
March 19, 2010

6. Limit irrigated turf - Low-water use shrubs and ground cover can be equally attractive and require substantially less water than turf.
7. Select climate adapted native plant species for landscaping - Native plants adapted to the area conserve water and protect the watershed from degradation due to invasive alien species.
8. Look for opportunities to conserve water - Here are a few samples: 1) When clearing debris, use a broom instead of a hose and water; 2) Check for leaks in pipes, faucets and toilets.

Should you have any questions, please contact our Water Resources & Planning Division at 244-8550.

Sincerely,



JEFFREY K. ENG, DIRECTOR

ayi

Enclosures: Maui County Planting Plan - Saving Water in the Yard - What and How to
Plant in your Area
Best Management Practices

c: DWS Engineering Division
WRPD Project File

Zone 1

Zone-specific Native and Polynesian plants for Maui County

Type	F Fern	G Grass	Gr Ground Cover	Sh Shrub	P Palm	S Sedge	Tr Tree	V Vine
Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.		
F	<i>Psilotum nudum</i>	moa, moa kula	1'	1'	sea to 3,000'	Dry to Wet		
F	<i>Sadleria cyatheoides</i>	'ama'u, ama'uma'u						
Gr - Sh	<i>Lipochaeta succulenta</i>	nehe	2'	5'	sea to 1,000'	Dry to Wet		
P	<i>Cocos nucifera</i>	coconut, niu	100'	30'	sea to 1,000'	Dry to Wet		
P	<i>Pritchardia arecina</i>	lo'ulu, hawane	40'	10'	1,000' to 3,000'	Dry to Wet		
P	<i>Pritchardia forbesiana</i>	lo'ulu	15'					
P	<i>Pritchardia hillebrandii</i>	lo'ulu, fan palm	25'	15'	sea to 1,000'	Dry to Wet		
S	<i>Mariscus javanicus</i>	marsh cypress, ahua'awa	0.5'	0.5'	sea to 1,000'	Dry to Medium		
Sh	<i>Bidens hillebrandiana</i> ssp. <i>hillebrandiana</i>	ko'oko'olau	1'	2'	sea to 1,000'	Dry to Wet		
Sh	<i>Cordyline fruticosa</i>	ti, ki	6'					
Sh	<i>Hedyotis</i> spp.	au, pilo	3'	2'	1,000' to 3,000'	Dry to Wet		
Sh - Tr	<i>Broussonetia papyrifera</i>	wauke, paper mulberry	8'	6'	sea to 1,000'	Dry to Medium		
Tr	<i>Acacia koa</i>	koa	50' - 100'	40' - 80'	1,500' to 4,000'	Dry to Medium		
Tr	<i>Aleurites moluccana</i>	candlenut, kukui	50'	50'	sea to 3,000'	Medium to Wet		
Tr	<i>Calophyllum inophyllum</i>	kamani, alexandrian laurel	60'	40'	sea to 3,000'	Medium to Wet		
Tr	<i>Charpentiera obovata</i>		15'					
Tr	<i>Cordia subcordata</i>	kou	30'	25'	sea to 1,000'	Dry to Wet		
Tr	<i>Hibiscus furcatus</i>	'akiohala, hau-hele	8'					
Tr	<i>Metrosideros polymorpha</i> var. <i>macrophylla</i>	ohi'a lehua	25'	25'	sea to 1,000'	Dry to Wet		
Tr	<i>Morinda citrifolia</i>	indian mulberry, noni	20'	15'	sea to 1,000'	Dry to Wet		
Tr	<i>Pandanus tectorius</i>	hala, puhala (HALELIST)	35'	25'	sea to 1,000'	Dry to Wet		
V	<i>Alyxia oliviformis</i>	maile	Vine		sea to 6,000'	Medium to Wet		

Zone-specific Native and Polynesian plants for Maui County

Zone 2

TYPE: F Fern G Grass Gr Ground Cover Sh Shrub P Palm S Sedge Tr Tree V Vine

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
F	<i>Psilotum nudum</i>	moa, moa kula	1'	1'	sea to 3,000'	Dry to Wet
F	<i>Sadleria cyatheoides</i>	'ama'u, ama'uma'u				
G	<i>Eragrostis monicola</i>	kalamalo	1'	2'	sea to 3,000'	Dry to Medium
Gr	<i>Ipomoea tuboides</i>	Hawaiian moon flower, 'uala	1'	10'	sea to 3,000'	Dry to Medium
Gr	<i>Peperomia leptostachya</i>	'ala'ala-wai-nui	1'	1'	sea to 3,000'	Dry to Medium
Gr	<i>Plumbago zeylanica</i>	'i'ie'e	1'			
Gr - Sh	<i>Hibiscus calyphyllus</i>	ma'o hau hele, Rock's hibiscus	3'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	<i>Lipochaeta rockii</i>	nehe	2'	2'	sea to 3,000'	Dry to Medium
Sh	<i>Argemone glauca</i> var. <i>decipiens</i>	pua kala	3'	2'	sea to 3,000'	Dry to Medium
Sh	<i>Artemisia mauiensis</i> var. <i>diffusa</i>	Maui wormwood, 'ahinahina	2'	3'	1,000' to higher	Dry to Medium
Sh	<i>Chenopodium oahuense</i>	'aheahea, 'aweoweo	6'		sea to higher	Dry to Medium
Sh	<i>Dianella sandwicensis</i>	'uki	2'	2'	1,000' to higher	Dry to Medium
Sh	<i>Lipochaeta lavarum</i>	nehe	3'	3'	sea to 3,000'	Dry to Medium
Sh	<i>Osteomeles anthyllifolia</i>	'ulei, 'eluehe	4'	6'	sea to 3,000'	Dry to Medium
Sh	<i>Senna gaudichaudii</i>	kolomana	5'	5'	sea to 3,000'	Dry to Medium
Sh	<i>Styphelia tameiameia</i>	pukiawe	6'	6'	1,000' to higher	Dry to Medium
Sh	<i>Vitex rotundifolia</i>	pohinahina	3'	4'	sea to 1,000'	Dry to Medium
Sh - Tr	<i>Myoporum sandwicense</i>	naio, false sandalwood	10'	10'	sea to higher	Dry to Medium
Sh - Tr	<i>Nototrichium sandwicense</i>	kulu'i	8'	8'	sea to 3,000'	Dry to Medium
Sh-Tr	<i>Dodonaea viscosa</i>	'a'all'i'	6'	8'	sea to higher	Dry to Medium
Tr	<i>Acacia koa</i>	koa	50' - 100'	40' - 80'	1,500' to 4,000'	Dry to Medium
Tr	<i>Charpentiera obovata</i>		15'			
Tr	<i>Erythrina sandwicensis</i>	wiliwili	20'	20'	sea to 1,000'	Dry
Tr	<i>Metrosideros polymorpha</i> var. <i>macrophylla</i>	ohi'a lehua	25'	25'	sea to 1,000'	Dry to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 2

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Tr	<i>Nestegis sandwicensis</i>	olopua	15'	15'	1,000' to 3,000'	Dry to Medium
Tr	<i>Pleomele auwahiensis</i>	halapepe	20'			
Tr	<i>Rauvolfia sandwicensis</i>	hao	20'	15'	sea to 3,000'	Dry to Medium
Tr	<i>Santalum ellipticum</i>	coastal sandalwood, 'ili-ahi	8'	8'	sea to 3,000'	Dry to Medium
Tr	<i>Sophora chrysophylla</i>	mamane	15'	15'	1,000' to 3,000'	Medium
V	<i>Alyxia oliviformis</i>	maile	Vine		sea to 6,000'	Medium to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 3

TYPE: F Fern G Grass Gr Ground Cover Sh Shrub P Palm S Sedge Tr Tree V Vine

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
F	<i>Psilotum nudum</i>	moa, moa kula	1'	1'	sea to 3,000'	Dry to Wet
G	<i>Colubrina asiatica</i>	'anapanapa	3'	10'	sea to 1,000'	Dry to Wet
G	<i>Eragrostis monticola</i>	kalamalo	1'	2'	sea to 3,000'	Dry to Medium
G	<i>Eragrostis variabilis</i>	'emo-ia	1'	2'	sea to 3,000'	Dry to Medium
G	<i>Fimbristylis cymosa</i> ssp. <i>spathacea</i>	mau'u'aki'aki fimbriatylis	0.5'	1'	sea to 1,000'	Dry to Medium
Gr	<i>Boerhavia repens</i>	alena	0.5'	4'	sea to 1,000'	Dry to Medium
Gr	<i>Chamaesyce celastroides</i> var. <i>laehiensis</i>	'akoko	2'	3'	sea to 1,000'	Dry to Medium
Gr	<i>Cressa truxillensis</i>	cressa	0.5'	1'	sea to 1,000'	Dry to Medium
Gr	<i>Heliotropium anomalum</i> var. <i>argenteum</i>	hinahina ku kahakai	1'	2'	sea to 1,000'	Dry to Medium
Gr	<i>Ipomoea tuboides</i>	Hawaiian moon flower, uala	1'	10'	sea to 3,000'	Dry to Medium
Gr	<i>Jacquemontia ovalifolia</i> ssp. <i>sandwicensis</i>	pa'u o h'i'ia	0.5'	6'	sea to 1,000'	Dry to Medium
Gr	<i>Lipochaeta integrifolia</i>	nehe	1'	5'	sea to 1,000'	Dry to Medium
Gr	<i>Peperomia leptostachya</i>	'ala'ala-wai-nui	1'	1'	sea to 3,000'	Dry to Medium
Gr	<i>Plumbago zeylanica</i>	'ilie'e	1'			
Gr	<i>Sesuvium portulacastrum</i>	'akulikuli, sea-purslane	0.5'	2'	sea to 1,000'	Dry to Wet
Gr	<i>Sida fallax</i>	'ilima	0.5'	3'	sea to 1,000'	Dry to Medium
Gr	<i>Tephrosia purpurea</i> var. <i>purpurea</i>	'auhuhu	2'	2'	sea to 1,000'	Dry to Medium
Gr - Sh	<i>Hibiscus calyphyllus</i>	ma'o hau hele, Rock's hibiscus	3'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	<i>Lipochaeta rockii</i>	nehe	2'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	<i>Lipochaeta succulenta</i>	nehe	2'	5'	sea to 1,000'	Dry to Wet
Gr - Sh	<i>Lycium sandwicense</i>	'ohelo-kai, 'ae'ae	2'	2'	sea to 1,000'	Dry to Medium
P	<i>Cocos nucifera</i>	coconut, niu	100'	30'		Dry to Wet
P	<i>Pritchardia hillebrandii</i>	'io'ulu, fan palm	25'	15'		Dry to Wet
S	<i>Mariscus javanicus</i>	marsh cypress, 'ahu'awa	0.5'	0.5'	sea to 1,000'	Dry to Medium

Zone 3

Zone-specific Native and Polynesian plants for Maui County

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Sh	<i>Argemone glauca</i> var. <i>decipiens</i>	pua kala	3'	2'	sea to 3,000'	Dry to Medium
Sh	<i>Bidens mauriensis</i>	ko'oko'olau	1'	3'	sea to 1,000'	Dry to Medium
Sh	<i>Bidens menziesii</i> ssp. <i>menziesii</i>	ko'oko'olau	1'	3'		
Sh	<i>Bidens micrantha</i> ssp. <i>micrantha</i>	ko'oko'olau	1'	3'		
Sh	<i>Chenopodium oahuense</i>	'aheahea, aweoweo	6'		sea to higher	Dry to Medium
Sh	<i>Dianella sandwicensis</i>	'uki	2'	2'	1,000' to higher	Dry to Medium
Sh	<i>Gossypium tomentosum</i>	mao, Hawaiian cotton	5'	8'	sea to 1,000'	Dry to Medium
Sh	<i>Hedyotis</i> spp.	au, pilo	3'	2'	1,000' to 3,000'	Dry to Wet
Sh	<i>Lipochaeta lavarum</i>	nehe	3'	3'	sea to 3,000'	Dry to Medium
Sh	<i>Osteomeles anthylioidifolia</i>	'ulei, eluehe	4'	6'	sea to 3,000'	Dry to Medium
Sh	<i>Scaevola sericea</i>	naupaka, naupaka-kahakai	6'	8'	sea to 1,000'	Dry to Medium
Sh	<i>Senna gaudichaudii</i>	kolomana	5'	5'	sea to 3,000'	Dry to Medium
Sh	<i>Solanum nelsonii</i>	'akia, beach solanum	3'	3'	sea to 1,000'	Dry to Medium
Sh	<i>Styphelia lamelameiae</i>	pukiawe	6'	6'	1,000' to higher	Dry to Medium
Sh	<i>Vitex rotundifolia</i>	pohinahina	3'	4'	sea to 1,000'	Dry to Medium
Sh	<i>Wikstroemia uva-ursi kauaiensis kauaiensis</i>	'akia, Molokai osmanthus				
Sh - Tr	<i>Broussonetia papyrifera</i>	wauke, paper mulberry	8'	6'	sea to 1,000'	Dry to Medium
Sh - Tr	<i>Myoporum sandwicense</i>	naio, false sandalwood	10'	10'	sea to higher	Dry to Medium
Sh - Tr	<i>Notofrichium sandwicense</i>	kulu'i	8'	8'	sea to 3,000'	Dry to Medium
Sh - Tr	<i>Dodonaea viscosa</i>	'a ali'i	6'	8'	sea to higher	Dry to Medium
Tr	<i>Aleurites moluccana</i>	candlenut, kukui	50'	50'	sea to 3,000'	Medium to Wet
Tr	<i>Calophyllum inophyllum</i>	kamani, alexandrian laurel	60'	40'	sea to 3,000'	Medium to Wet
Tr	<i>Canthium odoratum</i>	Alahe'e, 'che'e, walahe'e	12'	8'	sea to 3,000'	Dry to Medium
Tr	<i>Cordia subcordata</i>	kou	30'	25'	sea to 1,000'	Dry to Wet
Tr	<i>Diospyros sandwicensis</i>	lama	12'	15'	sea to 3,000'	Dry to Medium
Tr	<i>Erythrina sandwicensis</i>	wiliwili	20'	20'	sea to 1,000'	Dry
Tr	<i>Metrosideros polymorpha</i> var. <i>macrophylla</i>	ohi'a lehua	25'	25'	sea to 1,000'	Dry to Wet

Zone 3

Zone-specific Native and Polynesian plants for Maui County

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Tr	Morinda citrifolia	indian mulberry, noni	20'	15'	sea to 1,000'	Dry to Wet
Tr	Nesoluma polynesianum	keahi	15'	15'	sea to 3,00'	Dry
Tr	Nestegis sandwicensis	olopua	15'	15'	1,000' to 3,000'	Dry to Medium
Tr	Pandanus tectorius	hala, puhala (HALELIST)	35'	25'	sea to 1,000'	Dry to Wet
Tr	Pleomele auwahiensis	halapepe	20'			
Tr	Rauwolfia sandwicensis	hao	20'	15'	sea to 3,000'	Dry to Medium
Tr	Reynoldsia sandwicensis	'ohe makai	20'	20'	1,000' to 3,000'	Dry
Tr	Santalum ellipticum	coastal sandalwood, 'ili-ahi	8'	8'	sea to 3,000'	Dry to Medium
Tr	Thespesia populnea	milo	30'	30'	sea to 3,000'	Dry to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 4

TYPE: F Fern G Grass Gr Ground Cover Sh Shrub S Sedge Tr Tree V Vine

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
F	<i>Psilotum nudum</i>	moa, moa kula	1'	1'	sea to 3,000'	Dry to Wet
F	<i>Sadleria cyatheoides</i>	'ama'u, ama'uma'u	3'	10'	sea to 1,000'	Dry to Wet
G	<i>Colubrina asiatica</i>	'anapanapa	1'	2'	sea to 3,000'	Dry to Medium
G	<i>Eragrostis monticola</i>	Kalamalo	1'	2'	sea to 3,000'	Dry to Medium
G	<i>Eragrostis variabilis</i>	'emo-ia	0.5'	1'	sea to 1,000'	Dry to Medium
G	<i>Fimbristylis cymosa</i> ssp. <i>spathiacea</i>	mau'u'aki'aki fimbriatylis	2'	3'	sea to 1,000'	Dry to Medium
Gr	<i>Chamaesyce celastroides</i> var. <i>laehiensis</i>	'akoko	1'	10'	sea to 3,000'	Dry to Medium
Gr	<i>Ipomoea tuboides</i>	Hawaiian moon flower, 'uala	0.5'	6'	sea to 1,000'	Dry to Medium
Gr	<i>Jacquemontia ovalifolia</i> ssp. <i>sandwicensis</i>	pa'u o hi'iaka	1'	5'	sea to 1,000'	Dry to Medium
Gr	<i>Lipochaeta integrifolia</i>	nehe	1'	1'	sea to 3,000'	Dry to Medium
Gr	<i>Peperomia leptostachya</i>	'ala ala-wai-nui	1'	1'	sea to 3,000'	Dry to Medium
Gr	<i>Plumbago zeylanica</i>	'ille'e	1'	3'	sea to 1,000'	Dry to Medium
Gr	<i>Sida fallax</i>	'ilima	2'	2'	sea to 1,000'	Dry to Medium
Gr	<i>Tephrosia purpurea</i> var. <i>purpurea</i>	'auhuhu	3'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	<i>Hibiscus calyphyllus</i>	ma'o hau'hele, Rock's hibiscus	2'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	<i>Lipochaeta rockii</i>	nehe	2'	5'	sea to 1,000'	Dry to Wet
Gr - Sh	<i>Lipochaeta succulenta</i>	nehe	100'	30'	sea to 1,000'	Dry to Wet
P	<i>Cocos nucifera</i>	cocomut, niu	40'	10'	1,000' to 3,000'	Dry to Wet
P	<i>Pritchardia arecina</i>	lo'ulu, hawane	15'	15'	sea to 1,000'	Dry to Wet
P	<i>Pritchardia forbesiana</i>	lo'ulu	25'	0.5'	sea to 1,000'	Dry to Medium
P	<i>Pritchardia hillebrandii</i>	lo'ulu, fan palm	3'	2'	sea to 3,000'	Dry to Medium
S	<i>Mariscus javanicus</i>	marsh cypress, 'ahu'awa	2'	3'	sea to 3,000'	Dry to Medium
Sh	<i>Argemone glauca</i> var. <i>deciplens</i>	pua'kale	2'	3'	sea to 3,000'	Dry to Medium
Sh	<i>Artemisia australis</i>	'ahinahina	2'	3'	sea to 3,000'	Dry to Medium

Zone 4

Zone-specific Native and Polynesian plants for Maui County

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Sh	<i>Artemisia mauiensis</i> var. <i>diffusa</i>	Maui wormwood, 'ahinahina	2'	3'	1,000' to higher	Dry to Medium
Sh	<i>Bidens hillebrandiana</i> ssp. <i>hillebrandiana</i>	ko'oko'olau	1'	2'	sea to 1,000'	Dry to Wet
Sh	<i>Bidens menziesii</i> ssp. <i>menziesii</i>	ko'oko'olau	1'	3'		
Sh	<i>Bidens micrantha</i> ssp. <i>micrantha</i>	ko'oko'olau	1'	3'		
Sh	<i>Coriyrine fruticosa</i>	ti, ki	6'			
Sh	<i>Dianella sandwicensis</i>	'uki	2'	2'	1,000' to higher	Dry to Medium
Sh	<i>Lipochaeta lavarum</i>	nehe	3'	3'	sea to 3,000'	Dry to Medium
Sh	<i>Osteomeles anthyllifolia</i>	'ulei, eluehe	4'	6'	sea to 3,000'	Dry to Medium
Sh	<i>Scaevola sericea</i>	naupaka, naupaka-kahakai	6'	8'	sea to 1,000'	Dry to Medium
Sh	<i>Solanum nelsonii</i>	'akia, beach solanum	3'	3'	sea to 1,00'	Dry to Medium
Sh	<i>Styphelia lamelameiae</i>	pukiawe	6'	6'	1,000' to higher	Dry to Medium
Sh	<i>Vitex rotundifolia</i>	pohinahina	3'	4'	sea to 1,000'	Dry to Medium
Sh	<i>Wikstroemia uva-ursi</i> <i>kauaiensis</i> <i>kauaiensis</i>	'akia, Molokai osmanthus				
Sh-Tr	<i>Broussonetia papyrifera</i>	wauke, paper mulberry	8'	6'	sea to 1,000'	Dry to Medium
Sh-Tr	<i>Mycoporum sandwicense</i>	nalo, false sandalwood	10'	10'	sea to higher	Dry to Medium
Sh-Tr	<i>Notofrichium sandwicense</i>	kulu'i	8'	8'	sea to 3,000'	Dry to Medium
Sh-Tr	<i>Dodonaea viscosa</i>	'a'alii	6'	8'	sea to higher	Dry to Medium
Tr	<i>Acacia koa</i>	koa	50' - 100'	40' - 80'	1,500' to 4,000'	Dry to Medium
Tr	<i>Aleurites moluccana</i>	candlenut, kukui	50'	50'	sea to 3,000'	Medium to Wet
Tr	<i>Calophyllum inophyllum</i>	kamani, alexandrian laurel	60'	40'	sea to 3,000'	Medium to Wet
Tr	<i>Canthium odoratum</i>	Alahe'e, ohe'e, walahe'e	12'	8'	sea to 3,000'	Dry to Medium
Tr	<i>Charpentiera obovata</i>		15'			
Tr	<i>Cordia subcordata</i>	kou	30'	25'	sea to 1,000'	Dry to Wet
Tr	<i>Diospyros sandwicensis</i>	lama	12'	15'	sea to 3,000'	Dry to Medium
Tr	<i>Hibiscus furcellatus</i>	'akihala, hau-hele	8'			
Tr	<i>Metrosideros polymorpha</i> var. <i>macrophylla</i>	ohi'a lehua	25'	25'	sea to 1,000'	Dry to Wet
Tr	<i>Morinda citrifolia</i>	indian mulberry, noni	20'	15'	sea to 1,000'	Dry to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 4

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Tr	<i>Nestegis sandwicensis</i>	ʻIoopua	15'	15'	1,000' to 3,000'	Dry to Medium
Tr	<i>Pandanus tectorius</i>	hala, puhala (HALELISI)	35'	25'	sea to 1,000'	Dry to Wet
Tr	<i>Pleomele auwahiensis</i>	halapepe	20'			
Tr	<i>Rauvolfia sandwicensis</i>	hao	20'	15'	sea to 3,000'	Dry to Medium
Tr	<i>Santalum ellipticum</i>	coastal sandalwood, 'ili-ahi	8'	8'	sea to 3,000'	Dry to Medium
Tr	<i>Sophora chrysophylla</i>	mamane	15'	15'	1,000' to 3,000'	Medium
Tr	<i>Thespesia populnea</i>	ʻImilo	30'	30'	sea to 3,000'	Dry to Wet
V	<i>Alyxia oliviformis</i>	malle	Vine		sea to 6,000'	Medium to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 5

Type	F Fern	G Grass	Gr Ground Cover	Sh Shrub	P Palm	S Sedge	Tr Tree	V Vine
Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.		
G	<i>Colubrina asiatica</i>	lanapanapa	3'	10'	sea to 1,000'	Dry to Wet		
G	<i>Eragrostis variabilis</i>	emo-iaa	1'	2'	sea to 3,000'	Dry to Medium		
G	<i>Fimbristylis cymosa</i> ssp. <i>spathiacea</i>	mau'aki'aki' fimbriatylis	0.5'	1'	sea to 1,000'	Dry to Medium		
Gr	<i>Boerhavia repens</i>	aiena	0.5'	4'	sea to 1,000'	Dry to Medium		
Gr	<i>Chamaesyce belastroides</i> var. <i>laevis</i>	akoko	2'	3'	sea to 1,000'	Dry to Medium		
Gr	<i>Cressa truxillensis</i>	pressa	0.5'	1'	sea to 1,000'	Dry to Medium		
Gr	<i>Heliotropium anomalum</i> var. <i>argenteum</i>	hinahina ku kahakai	1'	2'	sea to 1,000'	Dry to Medium		
Gr	<i>Jacquemontia ovalifolia</i> ssp. <i>sandwicensis</i>	pa'u o'hi'aka	0.5'	6'	sea to 1,000'	Dry to Medium		
Gr	<i>Lipochaeta integrifolia</i>	nehe	1'	5'	sea to 1,000'	Dry to Medium		
Gr	<i>Sesuvium portulacastrum</i>	akui'kui, saa-purslane	0.5'	2'	sea to 1,000'	Dry to Wet		
Gr	<i>Sida fallax</i>	ilima	0.5'	3'	sea to 1,000'	Dry to Medium		
Gr	<i>Tephrosia purpurea</i> var. <i>purpurea</i>	auhuhu	2'	2'	sea to 1,000'	Dry to Medium		
Gr - Sh	<i>Hibiscus calyphyllus</i>	ma'o hau hele, Rock's hibiscus	3'	2'	sea to 3,000'	Dry to Medium		
Gr - Sh	<i>Lycium sandwicense</i>	'ohelo-kai, 'ae'ae	2'	2'	sea to 1,000'	Dry to Medium		
P	<i>Cocos nucifera</i>	coconut, niu	100'	30'	sea to 1,000'	Dry to Wet		
P	<i>Prichardia hillebrandii</i>	lo'ulu, fan palm	25'	15'	sea to 1,000'	Dry to Wet		
S	<i>Mariscus javanicus</i>	marsh cypress, 'ahu'awa	0.5'	0.5'	sea to 1,000'	Dry to Medium		
Sh	<i>Argemone glauca</i> var. <i>decipiens</i>	pua kala	3'	2'	sea to 3,000'	Dry to Medium		
Sh	<i>Artemisia australis</i>	ahinahina	2'	3'	sea to 3,000'	Dry to Medium		
Sh	<i>Bidens hillebrandiana</i> ssp. <i>hillebrandiana</i>	ko'oko'olau	1'	2'	sea to 1,000'	Dry to Wet		
Sh	<i>Bidens mauiensis</i>	ko'oko'olau	1'	3'	sea to 1,000'	Dry to Medium		
Sh	<i>Chenopodium cahuense</i>	ahae'aea, aweowe'o	6'		sea to higher	Dry to Medium		
Sh	<i>Dianella sandwicensis</i>	'UKI	2'	2'	1,000' to higher	Dry to Medium		
Sh	<i>Gossypium tomentosum</i>	mao, Hawaiian cotton	5'	8'	sea to 1,000'	Dry to Medium		

Zone 5

Zone-specific Native and Polynesian plants for Maui County

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Sh	Hedyotis spp.	au, pilo	3'	2'	1,000' to 3,000'	Dry to Wet
Sh	Lipochaeta lamarum	inehe	3'	3'	sea to 3,000'	Dry to Medium
Sh	Osteomeles anthyllifolia	ulei, aluene	4'	6'	sea to 3,000'	Dry to Medium
Sh	Scaevola sericea	naupaka, naupaka-kahakai	6'	8'	sea to 1,000'	Dry to Medium
Sh	Senna gaudichaudii	kōlōmana	5'	5'	sea to 3,000'	Dry to Medium
Sh	Solanum nelsonii	akia, beach solanum	3'	3'	sea to 1,000'	Dry to Medium
Sh	Vifex rotundifolia	pohinahina	3'	4'	sea to 1,000'	Dry to Medium
Sh	Wikstroemia ova-ursi kauaiensis kauaiensis	akia, Mbokai osmenthus				
Sh-Tr	Myoporum sandwicense	neio, false sandalwood	10'	10'	sea to higher	Dry to Medium
Sh-Tr	Dodonaea viscosa	'e'ali	6'	8'	sea to higher	Dry to Medium
Tr	Aleurites moluccana	candlenut, kukui	50'	50'	sea to 3,000'	Medium to Wet
Tr	Calophyllum inophyllum	kamani, alexandrian laurel	50'	40'	sea to 3,000'	Medium to Wet
Tr	Cordia subcordata	kou	30'	25'	sea to 1,000'	Dry to Wet
Tr	Hibiscus furcillatus	akohala, hau-hele	8'			
Tr	Morinda citrifolia	indian mulberry, noni	20'	15'	sea to 1,000'	Dry to Wet
Tr	Pandanus tectorius	hala, puhala (HALELISI)	35'	25'	sea to 1,000'	Dry to Wet
Tr	Thespesia populnea	milo	30'	30'	sea to 3,000'	Dry to Wet
V	Ipomoea pes-caprae	beach morning glory, pohuehue	1'			

DO NOT PLANT THESE PLANTS !!!

Common name	Scientific name	Plant family
black wattle	<i>Acacia mearnsii</i>	Mimosaceae
blackberry	<i>Rubus argutus</i>	Rosaceae
blue gum	<i>Eucalyptus globulus</i>	Myrtaceae
bocconia	<i>Bocconia frutescens</i>	Papaveraceae
broad-leaved cordia	<i>Cordia alliodora</i>	Boraginaceae
broomsedge, yellow bluestem	<i>Andropogon virginicus</i>	Poaceae
buffelgrass	<i>Cenchrus ciliaris</i>	Poaceae
butterfly bush, smoke bush	<i>Buddleia madagascariensis</i>	Buddleiaceae
cats claw, Mysore thorn, wait-a-bit	<i>Caesalpinia decapetala</i>	Caesalpinaceae
common ironwood	<i>Casuarina equisetifolia</i>	Caesalpinaceae
common velvet grass, Yorkshire fog	<i>Holcus lanatus</i>	Poaceae
fiddlewood	<i>Citharexylum spinosum</i>	Verbenaceae
fire tree, faya tree	<i>Myrica faya</i>	Myricaceae
glorybower	<i>Clerodendrum japonicum</i>	Verbenaceae
hairy cat's ear, gosmore	<i>Hypochoeris radicata</i>	Asteraceae
haole koa	<i>Leucaena leucocephala</i>	Fabaceae
ivy gourd, scarlet-fruited gourd	<i>Coccinia grandis</i>	Cucurbitaceae
juniper berry	<i>Citharexylum caudatum</i>	Verbenaceae
kahili flower	<i>Grevillea banksii</i>	Proteaceae
klu, popinac	<i>Acacia farnesiana</i>	Mimosaceae
logwood, bloodwood tree	<i>Haematoxylon campechianum</i>	Caesalpinaceae
loquat	<i>Eriobotrya japonica</i>	Rosaceae
meadow ricegrass	<i>Ehrharta stipoides</i>	Poaceae
melaleuca	<i>Melaleuca quinquenervia</i>	Myrtaceae
miconia, velvet leaf	<i>Miconia calvenscens</i>	Melastomataceae
narrow-leaved carpetgrass	<i>Axonopus fissifolius</i>	Poaceae
oleaster	<i>Elaeagnus umbellata</i>	Elaeagnaceae
oriental mangrove	<i>Bruguiera gymnorhiza</i>	Rhizophoraceae
padang cassia	<i>Cinnamomum burmannii</i>	Lauraceae
palmgrass	<i>Setaria palmifolia</i>	Poaceae
pearl flower	<i>Heterocentron subtripplinervium</i>	Melastomataceae
quinine tree	<i>Cinchona pubescens</i>	Rubiaceae
satin leaf, cairnifllo	<i>Chrysophyllum oliviforme</i>	Sapotaceae
silkwood, Queensland maple	<i>Flindersia brayleyana</i>	Rutaceae
silky oak, silver oak	<i>Grevillea robusta</i>	Proteaceae
strawberry guava	<i>Psidium cattleianum</i>	Myrtaceae
swamp oak, saltmarsh, longleaf ironwood	<i>Casuarina glauca</i>	Casuarinaceae
sweet vernalgrass	<i>Anthoxanthum odoratum</i>	Poaceae
tree of heaven	<i>Ailanthus altissima</i>	Simaroubaceae
trumpet tree, guarumo	<i>Cecropia obtusifolia</i>	Cecropiaceae
white ginger	<i>Hedychium coronarium</i>	Zingiberaceae
white moho	<i>Heliconia popayanensis</i>	Tiliaceae
yellow ginger	<i>Hedychium flavescens</i>	Zingiberaceae

DO NOT PLANT THESE PLANTS !!!

Common name	Scientific name	Plant family
	<i>Jasminum fluminense</i>	Oleaceae
	<i>Arthrosterma ciliatum</i>	Melastomataceae
	<i>Dissois rotundifolia</i>	Melastomataceae
	<i>Erigeron karvinskianus</i>	Asteraceae
	<i>Eucalyptus robusta</i>	Myrtaceae
	<i>Hedychium gardnerianum</i>	Zingiberaceae
	<i>Juncus pianifolius</i>	Juncaceae
	<i>Lophostemon confertus</i>	Myrtaceae
	<i>Medinilla cumingii</i>	Melastomataceae
	<i>Medinilla magnifica</i>	Melastomataceae
	<i>Medinilla venosa</i>	Melastomataceae
	<i>Melastoma candidum</i>	Melastomataceae
	<i>Melinis minutiflora</i>	Poaceae
	<i>Olea europaea</i>	Melastomataceae
	<i>Oxyspora paniculata</i>	Poaceae
	<i>Panicum maximum</i>	Poaceae
	<i>Paspalum urvillei</i>	Poaceae
	<i>Passiflora edulis</i>	Passifloraceae
	<i>Phormium tenax</i>	Agavaceae
	<i>Pinus taeda</i>	Pinaceae
	<i>Prosopis pallida</i>	Fabaceae
	<i>Pterolepis glomerata</i>	Melastomataceae
	<i>Rhodomyrtus tomentosa</i>	Myrtaceae
	<i>Schefflera actinophylla</i>	Araliaceae
	<i>Syzygium jambos</i>	Myrtaceae
Australian blackwood	<i>Acacia melanoxylon</i>	Mimosaceae
Australian tree fern	<i>Cyathea cooperi</i>	Cyatheaceae
Australian tree fern	<i>Sphaeropteris cooperi</i>	Cyatheaceae
Beggar's tick, Spanish needle	<i>Bidens pilosa</i>	Asteraceae
California grass	<i>Brachiaria mutica</i>	Poaceae
Chinese banyon, Maylayan banyon	<i>Ficus microcarpa</i>	Moraceae
Chinese violet	<i>Asystasia gangetica</i>	Acanthaceae
Christmasberry, Brazilian pepper	<i>Schinus terebinthifolius</i>	Anacardiaceae
Formosan koa	<i>Acacia confusa</i>	Mimosaceae
German ivy	<i>Senecio mikanioides</i>	Asteraceae
Japanese honeysuckle	<i>Lonicera japonica</i>	Caprifoliaceae
Koster's curse	<i>Clerdia hirta</i>	Melastomataceae
Lantana	<i>Lantana camara</i>	Verbenaceae
Mauritius hemp	<i>Furcraea foetida</i>	Agavaceae
Mexican ash, tropical ash	<i>Fraxinus uhdei</i>	Oleaceae
Mexican tulip poppy	<i>Hunnemannia tumarifolia</i>	Papaveraceae
Mules foot, Madagascar tree fern	<i>Angiopteris evecta</i>	Marattiaceae
New Zealand laurel, karakaranut	<i>Corynocarpus laevigatus</i>	Corynocarpaceae
New Zealand tea	<i>Lepospermum scoparium</i>	Myrtaceae
Pampas grass	<i>Cortaderia jubata</i>	Poaceae
Panama rubber tree, Mexican rubber tree	<i>Castilleja elastica</i>	Moraceae
Shoebutton ardisia	<i>Ardisia elliptica</i>	Myrsinaceae
banana poka	<i>Passiflora mollissima</i>	Passifloraceae

Selection

As a general rule, it is best to select the largest and healthiest specimens. However, be sure to note that they are not pot-bound. Smaller, younger plants may result in a low rate of plant survival.¹ When selecting native species, consider the site they are to be planted in, and the space that you have to plant. For example: Mountain species such as koa and maile will not grow well in hot coastal areas exposed to strong ocean breezes. Lowland and coastal species such as wiliwili and Kou require abundant sunshine and porous soil. They will not grow well with frequent cloud cover, high rainfall and heavy soil.

Consider too, the size that the species will grow to be. It is not wise to plant trees that will grow too large.² Overplanting tends to be a big problem in the landscape due to the underestimation of a species' height, width or spread.

A large, dense canopied tree such as the kukui is a good shade tree for a lawn. However, its canopy size and density of shade will limit what can be planted in the surrounding area. Shade cast by a koa and ohia lehua is relatively light and will not inhibit growth beneath it.

Keep seasons in mind when you are selecting your plants. Not all plants look good year round, some plants such as ilima will look scraggly after they have flowered and formed seeds. Avoid planting large areas with only one native plant. Mixing plants which naturally grow together will ensure the garden will look good all year round.³ Looking at natural habitats helps to show how plants grow naturally in the landscape.

When planting an area with a mixed-ecosystem, keep in mind the size and ecological requirements of each plant. Start with the hardiest and most easily grown species, but allow space for fragile ones in subsequent plantings.

Acquiring natives

Plants in their wild habitat must be protected and maintained. It is best and easiest to get your plants from nurseries (see list), or friend's gardens. Obtain proper permits from landowners and make sure you follow a few common sense rules:

- ▶ collect sparingly from each plant or area.
- ▶ some plants are on the state or Federal Endangered Species list. Make sure you get permits (see app. A,B)

¹ K. Nagata, P.6

² K. Nagata, P.9

³ Nagata, P.9

Soil

Once you have selected your site and the plants you wish to establish there, you must look at the soil conditions on the site. Proper soil is necessary for the successful growth of most native plants, which perform poorly in hard pan, clay or adobe soils. If natives are to be planted in these types of soil, it would be wise to dig planting holes several times the size of the rootball and backfill with 50-75% compost.⁴ A large planting hole ensures the development of a strong root system. The plant will have a headstart before the roots penetrate the surrounding poor soil.⁵

It is recommended that native plants not be planted in ground that is more dense than potting soil. If there is no alternative, dig a hole in a mound of soil mixed with volcanic cinder which encourages maximum root development. Fill the hole with water, if the water tends to puddle or drain too slowly, dig a deeper hole until the water does not puddle longer than 1 or 2 minutes.⁶ Well-drained soil is one of the most important things when planting natives as you will see in the next section.

Irrigation

Most natives do very poorly in waterlogged conditions. Do not water if the soil is damp. Water when the soil is dry and the plants are wilting. Once established, a good soaking twice a week should suffice. Deep soaking encourages the development of stronger, and deeper root systems. This is better than frequent and shallow watering which encourage weaker, more shallow root systems.

The following is a watering schedule from Kenneth Nagata's Booklet, *How To Plant A Native Hawaiian Garden*:

<u>WATER REQUIREMENT</u>	<u>WATERING FREQUENCY</u>
Heavy	3x / week
Moderate	2x / week
Light	1x / week

Red clay soils hold more water for a longer period of time than sandy soils do. If your area is very sunny or near a beach, things will dry out faster. Even in the area of one garden, there are parts that will need more or less water. Soils can vary and amount of shade and wind differ. After plants are established (a month or two for most plants, up to a year for some trees), you can back off watering.

⁴ Nagata, p. 6

⁵ Nagata, p. 8

⁶ Nagata, p. 8

Automatic sprinkler systems are expensive to install and must be checked and adjusted regularly. Above-ground systems allow you to monitor how much water is being put out, but you lose a lot due to malfunctioning of sprinkler heads and wind. The most efficient way to save water and make sure your plants get enough water, is to hand-water. This way you are getting our precious water to the right places in the right amounts.⁷

Fertilizer

An all-purpose fertilizer 10-10-10 is adequate for most species. They should be applied at planting time, 3 months later, and 6 months thereafter. Use half the dosage recommended for ornamentals and pay special attention to native ferns which are sensitive to strong fertilizers. Use of organic composts and aged animal manures is suggested instead of chemical fertilizers. In addition, use of cinders for providing trace minerals is strongly recommended.⁸

Natives are plants which were here hundreds of years before the polynesians inhabited the Hawaiian Islands. They were brought here by birds, or survived the harsh ocean conditions to float here. They are well-adapted to Hawaii's varying soil and environmental conditions. This is why they make prime specimens for a xeriscape garden. However, natives will not thrive on their own, especially under harsh conditions. On the other hand, like any other plant, if you over-water and over-fertilize them, they will die. Follow the instructions given to you by the nursery you buy the plant from, or from this booklet. Better yet, buy a book (suggested readings can be found in the bibliography in the back of this pamphlet), read it, and learn more about native plants. I guarantee that you will be pleased with the results.

⁷ Bornhorst, p. 19-20

⁸ Nagata, p. 6

Propagation

There are many ways to propagate and plant-out native Hawaiian species. One of the most thorough and helpful book is Heidi Bornhorst's book, *Growing Native Hawaiian Plants*. The easiest, and best way to obtain natives for the novice gardener is to get them from a reputable nursery (see appendix c). That way all you will have to do is know how to transplant (if necessary) and plant-out when you are ready. These are the two methods I have listed here.

Transplanting

1. Use pots that are one size bigger than the potted plant is in
2. Get your potting medium ready

Good potting medium is a ½, ½ mixture of peat moss and perlite. If the plant is from a dry or coastal area, add chunks of cinder or extra perlite. If it is a wet forest species, add more peat moss or compost. Be aware that peat moss is very acidic and certain plants react severely to acidity.

If the plant is to eventually be planted into the ground, make a mix of equal parts peat moss, perlite, and soil from the area in which the plant is to be planted. Slow-release fertilizer can be mixed into the potting medium.

3. Once pots, potting medium, fertilizer and water are ready, you can begin re-potting. Keep the plant stem at the same depth it was in the original pot. Avoid putting the plant in too large a pot, as the plant may not be able to soak up all the water in the soil and the roots may drown and rot.

Mix potting medium and add slow-release fertilizer at this time. Pre-wet the medium to keep dust down and lessen shock to the plant. Put medium in bottom of pot. Measure for the correct depth in the new pot. Make sure there is from ½ to 2 inches from the top of the pot so the plant can get adequate water. Try to stand the plant upright and center the stem in the middle of the pot.

Water the plant thoroughly after transplanting. A vitamin B-1 transplanting solution can help to lessen the transplant shock. Keep the plant in the same type of environment as it was before, sun or shade. If roots were broken, trim off some of the leaves to compensate for the loss.⁹

Planting out

1. Plant most native Hawaiian plants in a sunny location in soil that is well-drained.
2. Make the planting hole twice as wide as the root ball or present pot, and just as deep. If the soil is clay-like, and drains slowly, mix in some coarse red or bland cinder, coarse perlite or

⁹ Bornhorst, p.20-21

coarse compost. Place some slow-release fertilizer at the bottom of the hole.

3. Carefully remove the plant from the container and place it in the hole.

The top of the soil should be at the same level as the top of the hole, if it is too high or too low, adjust the soil level so that the plant is at the right depth.

4. Water thoroughly after you transplant.

Mulch

Most natives cannot compete with weeds, and therefore must be weeded around constantly in order to thrive. Mulch is a practical alternative, which discourages and prevents weeds from growing.

Hawaii's hot, humid climate leads to the breaking down of organic mulches. Thick organic mulches such as wood chips and leaves, may also be hiding places for pests.

Stone mulches are attractive, permanent and can help to improve soil quality. Red or black cinder, blue rock chips, smooth river rocks and coral chips are some natural choices.¹⁰ Macadamia nut hulls are also easy to find and can make a nice mulch.¹¹

Never pile up mulch right next to the stem or trunk of a plant, keep it a few inches away.

¹⁰ Bornhorst, p. 24

¹¹ Nagata, p. 7

ZONES

The Maui County Planting Plan has compiled a system of 5 zones of plant growth for Maui County. The descriptions of zones and maps for these zones are as follows:

Zone 1:

Wet areas on the windward side of the island. More than 40 inches of rain per year. Higher than 3,000 feet.

Zone 2:

Cool, dry areas in higher elevations (above 1,000 feet). 20 to 40 inches of rain per year.

Zone 3:

Low, drier areas, warm to hot. Less than 20 inches of rain per year. Sea level to 1,000 feet.

Zone 4:

Lower elevations which are wetter due to proximity of mountains. 1,000 to 3,000 feet.

Zone 5:

Salt spray zones in coastal areas on the windward side.

These zones are to be used as a general guide to planting for Maui County. In addition to looking at the maps, read the descriptions of the zones and decide which zone best fits your area. Plants can be listed in more than one zone and can be planted in a variety of conditions. For best results, take notes on the rainfall, wind, sun and salt conditions of your site. Use the zones as a general guide for selection and read about the plants to decide which best fits your needs as far as care and or function.

PLACES TO SEE NATIVES ON MAUI:

The following places propagate native Hawaiian plants from seeds and/or cuttings. Their purpose is to protect and preserve these native plants. Please contact them before going to view the sites, they can provide valuable information and referral to other sources.

1. Hoolawa Farms 575-5099
P O Box 731
Haiku HI 96708
2. The Hawaiian Collection 878-1701
1127 Manu Street
Kula HI 96790
3. Kula Botanical Gardens 878-1715
RR4, Box 228
Kula HI 96790
4. Maui Botanical Gardens 249-2798
Kanaloa Avenue, Kahului
across from stadium
5. Kula Forest Reserve 984-8100
access road at the end of Waipoli Rd
Call the Maui District Office
6. Wailea Point, Private Condominium residence 875-9557
4000 Wailea Alanui, Kihei
public access points at Four Seasons Resort or
Polo Beach
7. Kahanu Gardens, National Tropical Botanical Garden 248-8912
Alau Place, Hana HI 96713
8. Kahului Library Courtyard 873-3097
20 School Street
Kahului HI 96732

PLACES TO BUY NATIVE PLANTS ON MAUI

1. Ho'olawa Farms
Anna Palomino
P O Box 731
Haiku HI 96708
575-5099

* The largest and best collection of natives in the state. They will deliver, but worth the drive to go and see! Will propagate upon request
2. Kahanu Gardens
National Tropical Botanical Garden
Alau Place, Hana
248-8912
3. Kihana Nursery
1708 South Kihei Road
Kihei HI 96753
879-1165
4. Kihei Garden and Landscape
Waiko Road, Wailuku
P O Box 1058
Puunene HI 96784
244-3804
5. Kula Ace Hardware and Nursery
3600 Lower Kula Road
Kula HI 96790
876-0734
* many natives in stock
* get most of their plants from Ho'olawa Farms
* they take special requests
6. Kulamanu Farms - Ann Carter
Kula HI 96790
878-1801
7. Maui Nui Botanical Gardens
Kanaloa Avenue
(Across from stadium)
Kahului HI 96732
249-2798
8. Native Gardenscapes
Robin McMillan
1330 Lower Kimo Drive
Kula HI 96790
870-1421

* grows native plants and installs landscapes including irrigation.
9. Native Hawaiian Tree Source
1630 Piiholo Road
Makawao HI 96768
572-6180
10. Native Nursery, LLC
Jonathan Keyser
250-3341
11. New Moon Enterprises - Pat Bily
47 Kahoea Place
Kula HI 96790
878-2441
12. Waiakoa Tree Farm - Kua Rogoff
Pukalani HI 96768
Cell - 264-4166

Construction

- Limit construction to dry periods.
- Prevent cement products, oil, fuel and other toxic substances from falling or leaching into the ground by using proper containment and maintenance practices.
 - Maintain vehicles and equipment to prevent leakage of oil or other fluids.
 - When painting, avoid spilling of paints, calculate needs to avoid wastes, and if spraying, avoid overspray.
 - When maintaining construction vehicles and equipment, use drip pans, absorbant mats, or other methods to prevent leaks or spills of chemicals onto the ground.
 - Avoid fertilizers and biocides, or apply only during periods of low rainfall to minimize chemical runoff.
 - Make sure that operators are properly trained, know how to clean equipment properly to avoid contamination, and how to separate hazardous materials for disposal.
- Properly and promptly dispose of all loosened and excavated soil and debris material from drainage structure work.
- Retain ground cover until the last possible date.
- Stabilize denuded areas by sodding or planting as soon as possible. Replanting should include soil amendments, fertilizers, and temporary irrigation. Use high seeding rates to ensure rapid stand establishment.
- Keep run-off on site.
 - Construct drainage control features, such as berms, install silting basins where warranted.
 - Maintain drainage structures, detention, silting, and debris basins.
- Control dust by proper stockpiling and use non-potable water for dust control.
- Cover open vehicles carrying soils, gravel or other particulate matter.
- Schedule work only during non-peak and non-seasonal time periods to minimize congestion.
- Direct traffic and install traffic signals to ensure safe travel and minimum delay through the project by vehicles, bicyclists, and pedestrians.
- Control noise by use of mufflers and other sound attenuating measures on excavation and other construction equipment.



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

July 27, 2010

Jeffrey Eng, Director
Department of Water Supply
County of Maui
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Proposed Pulelehuakea Residential Subdivision and Related Improvements at TMK (2) 2-3-008:036(por.), Pukalani, Maui, Hawaii

Dear Mr. Eng:

Thank you for your letter, dated March 19, 2010, providing early consultation comments for the proposed Pulelehuakea Residential Subdivision. On behalf of the applicant, KG Maui Development, LLC, we offer the following information in response to the comments noted in your letter.

Source Availability and Consumption

We acknowledge that the project site is located in an area of "inadequate water supply". The Draft Environmental Assessment (EA) will include a discussion on alternative sources of water and the water demand for the project.

We further acknowledge that the proposed subdivision does not have water meters.

System Infrastructure

We understand that during the subdivision approval process, the plans for the project's water system will be reviewed and approved by the Department's Engineering Division.

We also understand that during the building permit process, domestic irrigation and fire flow calculations are required.

Pollution Prevention

Thank you for the list of best management practices for construction to protect the integrity of surface and groundwater resources. We will incorporate these suggestions into the project and the Draft EA.

Jeffrey Eng, Director
July 27, 2010
Page 2

Conservation Measures

Thank you for the suggestion on conservation measures. The applicant will incorporate these suggestions into the project to the extent practicable.

We appreciate the input provided by your organization. A copy of the Draft EA will be submitted to your office for review and comment. Should you have any questions or further comments, please contact me at 244-2015.

Sincerely,

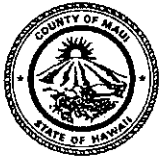


Leilani Pulmano
Project Manager

LP:lh

cc: Elton Wong, KG Maui Development, LLC
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.

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ALAN M. ARAKAWA
MAYOR

OUR REFERENCE
YOUR REFERENCE

POLICE DEPARTMENT

COUNTY OF MAUI

55 MAHALANI STREET DEPT OF PLANNING
WAILUKU, HAWAII 96793 COUNTY OF MAUI
(808) 244-6400 RECEIVED
FAX (808) 244-6411



GARY A. YABUTA
CHIEF OF POLICE

CLAYTON N.Y.W. TOM
DEPUTY CHIEF OF POLICE

'11 MAR -3 A8:39

February 14, 2011

MEMORANDUM

TO : DANNY A. DIAS, STAFF PLANNER
DEPARTMENT OF PLANNING

FROM : GARY A. YABUTA, CHIEF OF POLICE

SUBJECT : I.D. : CPA 2010/003, CIZ 2010/0006, and EA
2010/0005
TMK : (2) 2-3-008:036 (por.)
Project Name : Pulelehuakea Residential Subdivision
(Pukalani)
Applicant : Munekiyo & Hiraga, Inc. on behalf of KG Maui
Development, LLC

'11 MAR -3 A8:39
DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

No recommendation or comment to offer.
 Refer to enclosed comments and/or recommendations.

Thank you for giving us the opportunity to comment on this project.

A. D. Matsuura
Assistant Chief Danny Matsuura
For: GARY A. YABUTA
Chief of Police

Enclosure

COPY

TO : GARY YABUTA, CHIEF OF POLICE, COUNTY OF MAUI
VIA : CHANNELS
FROM : JODY SINGSANK, CAPTAIN, PATROL DIVISION-WAILUKU DISTRICT
SUBJECT : RESPONSE TO AN EARLY CONSULTATION REQUEST FOR THE PROPOSED PULELEHUAKEA RESIDENTIAL SUBDIVISION AND RELATED IMPROVEMENTS

Handwritten signature and date:
3/3/10

This communication is submitted as a response to a request for pre-consultation comments by Munekiyo and Hiraga, Inc., Project Manager Leilani Pulmanol, regarding:

SUBJECT : EARLY CONSULTATION REQUEST FOR THE PROPOSED PULELEHUAKEA RESIDENTIAL SUBDIVISION AND RELATED IMPROVEMENTS

RESPONSE:

In review of the submitted documents, concerns from the police perspective are upon the safety of pedestrian and vehicular movement.

This project will develop a residential subdivision on approximately 6.003 acres of land, located between holes 5,6,7 of the Pukalani Golf Course. Access to the proposed project site will be provided via Aina Lani Drive.

The roadway into the project will need to meet the minimal standards set forth by county codes and state laws. A traffic impact study would be the only means to assess the levels of service in current and future conditions. There are no objections to the progression of the project at this time

Respectfully submitted,

Handwritten signature: Capt. J. Singsank 8467
Capt. Jody K.M. SINGSANK, E-8467
Patrol Division - Wailuku District
03/03/10 1430 hrs.



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

July 27, 2010

Gary Yabuta Chief
County of Maui
Maui Police Department
55 Mahalani Street
Wailuku, Hawaii 96793

SUBJECT: Proposed Pulelehuakea Residential Subdivision and Related Improvements at TMK (2) 2-3-008:036(por.), Pukalani, Maui, Hawaii

Dear Chief Yabuta:

Thank you for your letter, dated March 10, 2010, providing early consultation comments for the proposed Pulelehuakea Residential Subdivision. On behalf of the applicant, KG Maui Development, LLC, we offer the following information in response to the comments noted in Captain Jody K.M. Singsank's letter.

The Draft Environmental Assessment (EA) will provide a traffic impact assessment report that addresses the current and future roadway conditions. The internal roadway design will meet the appropriate roadway standards.

We appreciate the input provided by your organization. A copy of the Draft EA will be submitted to your office for review and comment. Should you have any questions or further comments, please contact me at 244-2015.

Sincerely,

Leilani Pulmano
Project Manager

LP:lh

cc: Elton Wong, KG Maui Development, LLC

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March 11, 2010

Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

ATTN: Leilani Pulmano, Project Manager

SUBJECT: EARLY CONSULTATION REQUEST FOR PROPOSED PULELEHUAKEA RESIDENTIAL
SUBDIVISION AND RELATED IMPROVEMENTS AT TMK (2) 2-3-008:036 (portion)
MAKAWAO, ISLAND OF MAUI
TMK: (2) 2-3-008:036 (portion)
KG MAUI DEVELOPMENT, LLC (applicant)

Dear Ms. Pulmano:

Thank you for providing Hawaiian Telcom Incorporated, the opportunity to comment on the Early Consultation request to seek a Community Plan Amendment (CPA) to the Makawao-Pukalani-Kula community plan's land use map, county Change in Zoning (CIZ) and possible request to downzone the existing residential zoned lands for the proposed Pulelehuakea Residential project for KG Maui Development, in Pukalani, Makawao, on the Island of Maui.

Hawaiian Telcom has no comment on this project at this time.

If there are any questions, please call Sheri Tihada at (808) 242-5258.

Sincerely,

Lynette Yoshida
Senior Manager –
Network Engineering & Planning

C: File (3050 1003-005)
S. Tihada

MAR 03 2010



March 2, 2010

Ms. Leilani Pulmano, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawaii, 96793

Subject: Early Consultation Request for the proposed Pulelehuakea Residential
Subdivision and Related Improvements
Pulelehuakea Street
Pukalani, Maui, Hawaii
Tax Map Key: (2) 2-3-008:036 por.

Dear Ms. Pulmano,

Thank you for allowing us to comment on the Early Consultation Request for the subject project.

In reviewing our records and the information received, Maui Electric Company may be requiring access and electrical easements for our facilities to serve the subject project site. We highly encourage the customer to submit an electrical service request so that services can be provided on a timely basis.

Should you have any questions or concerns, please call me at 871-2341.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kyle Tamori', with a long horizontal line extending to the right.

Kyle Tamori
Staff Engineer



MICHAEL T. MUNEKIYO
GWEN DHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

July 27, 2010

Kyle Tamori, Staff Engineer
Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawaii 96733

SUBJECT: Proposed Pulelehuakea Residential Subdivision and Related Improvements at TMK (2) 2-3-008:036(por.), Pukalani, Maui, Hawaii

Dear Mr. Tamori:

Thank you for your letter, dated March 2, 2010, providing early consultation comments for the proposed Pulelehuakea Residential Subdivision. On behalf of the applicant, KG Maui Development, LLC, we offer the following information in response to the comments noted in your letter.

At the appropriate time in the design and planning process, the applicant will submit an electrical service request to ensure that services can be provided in a timely manner. The applicant also acknowledges that Maui Electric Company, Ltd. may require access and electrical easements for their facilities to serve the proposed project.

We appreciate the input provided by your organization. A copy of the Draft Environmental Assessment will be submitted to your office for review and comment. Should you have any questions or further comments, please contact me at 244-2015.

Sincerely,

Leilani Pulmano
Project Manager

LP:tn

cc: Elton Wong, KG Maui Development, LLC
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.

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**X. AGENCIES
CONSULTED DURING THE
DRAFT ENVIRONMENTAL
ASSESSMENT COMMENT
PERIOD; LETTERS
RECEIVED AND
RESPONSES TO
SUBSTANTIVE
COMMENTS**

X. AGENCIES CONSULTED DURING THE DRAFT ENVIRONMENTAL ASSESSMENT COMMENT PERIOD; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

The following agencies were consulted during preparation of the Final Environmental Assessment. Agency comments and responses to substantive comments are also included in this section.

1. US Army Corps of Engineers
Honolulu District
ATTN: CEPOH-EC-T/J. Dobinchick
Building 223
Fort Shafter, HI 96858-5440
2. U.S. Dept. Of Agriculture, NRCS
Kahului Service Center
77 Hookele St., Suite 202
Kahului, HI 96732
3. U.S. Fish & Wildlife Services
P.O. Box 50167
Honolulu, HI 96850
4. Department of Education
Queen Liliuokalani Building
1390 Miller Street
Honolulu, HI 96813
5. Department of Health
PO Box 3378
Honolulu, HI 96801
6. Department of Health, Maui
54 High Street
Wailuku, Hawaii 96793
7. DLNR-Land, Maui
54 South High Street, Room 101
Wailuku, Hawaii 96793
8. Dept. of Land and Natural Resources
Kalanimoku Building
1151 Punchbowl Street
Honolulu, HI 96813
9. Morgan Davis, Lead Archaeologist
Maui Section
State Historic Preservation Division
130 Mahalani Street
Wailuku, HI 96793
10. State of Hawaii
Office of Hawaiian Affairs
711 Kapiolani Blvd., Suite 500
Honolulu, HI 96813-5249
11. Office of Planning
PO Box 2359
Honolulu, HI 96804
12. Department of Environmental Management
2200 Main Street, Suite 100
Wailuku, Hawaii 96793
Department of Public Works
200 South High Street
Wailuku, Hawaii 96793
13. Department of Fire & Public Safety
200 Dairy Road
Kahului, Hawaii 96732
14. Department of Housing and Human Concerns
2200 Main Street, Suite 546
Wailuku, Hawaii 96793
15. Glenn Correa, Director
County of Maui
Department of Parks and Recreation
700 Halia Nako Street, Unit 2
Wailuku, Hawaii 96793

16. David Goode, Director
County of Maui
Department of Public Works
200 South High Street
Wailuku, Hawaii 96793
17. Department of Water Supply
200 South High Street
Wailuku, Hawaii 96793
18. Maui Police Department
55 Mahalani Street
Wailuku, Hawaii 96793
19. ZAED, Zoning & Enforcement Division
250 South High Street
Wailuku, Hawaii 96793
Department of Parks and Recreation
700 Halia Nako Street, Unit 2
Wailuku, Hawaii 96793
20. Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawaii 96733



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

REPLY TO
ATTENTION OF:

January 25, 2011

DEPT OF PLANNING
COUNTY OF MAUI
File Number POH-2010-00051

Regulatory Branch

County of Maui
Department of Planning
Attention: Danny A. Dias
250 South High Street
Wailuku, Hawaii 96793

11 FEB -1 A8:46

NO PERMIT REQUIRED

11 FEB -1 A8:46
DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

Dear Mr. Dias:

We have received your Draft Environmental Assessment dated January 18, 2011 requesting Department of the Army (DA) review and comment on the proposed Pulelehuakea Residential Subdivision at TMK (2) 2-3-008:036, Pukalani, Island of Maui, Hawaii. We have assigned the project the reference number **POH-2010-00051**. Please cite the reference number in any future correspondence concerning this project. We completed our review of the submitted document pursuant to Section 10 of the Rivers and Harbors Act of 1899 (Section 10) and Section 404 of the Clean Water Act (Section 404) and have determined the review site is absent of waters of the U.S., subject to U.S. Army Corps of Engineers (Corps) jurisdiction.

For your information, Section 10 requires that a DA permit be obtained from the U.S. Army Corps of Engineers (Corps) prior to undertaking any construction, dredging, or other activity occurring in, over, or under or affecting navigable waters of the U.S. For tidal waters, the shoreward limit of the Corps' jurisdiction extends to the Mean High Water Mark. Section 404 requires that a DA permit be obtained for the discharge (placement) of dredged and/or fill material into waters of the U.S., including wetlands. For tidally influenced waters, in the absence of adjacent wetlands, the shoreward limit of the Corps' jurisdiction extends to the High Tide Line, which in Hawai'i may be approximated by reference to the Mean Higher High Water Mark. For non-tidal waters, the lateral limits of the Corps' jurisdiction extend to the Ordinary High Water Mark or the approved delineated boundary of any adjacent wetlands.

Based on the information you submitted, it appears the review area consists entirely of uplands and is absent of waters of the U.S., including adjacent wetlands, subject to Corps jurisdiction. The project site is bounded to the North by Kaluapulani Gulch, with end terminus in the Pacific Ocean and is as such, a water of the U.S., subject to Corps jurisdiction however, we anticipate any proposed development activities will not involve the placement or discharge of dredged and/or fill material into waters of the U.S.; therefore, it appears a **DA permit will not be required**. This determination does not relieve you of the responsibility to obtain any other permits, licenses, or approvals that may be required under County, State, or Federal law for your proposed work. Please refrain from submitting the Final EA to this office for review, as it is not required.

Thank you for contacting us regarding this project and providing us with the opportunity to comment. Should you have any questions, please contact Ms. Jessie Pa'ahana at 808.438.0391 or via e-mail at Jessie.K.Paahana@usace.army.mil. You are encouraged to provide comments on your experience with the Honolulu District Regulatory Branch by accessing our web-based customer survey form at <http://per2.nwp.usace.army.mil/survey.html>.

Sincerely,

A handwritten signature in black ink, appearing to read "George P. Young". The signature is fluid and cursive, with a large loop at the end.

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



MICHAEL T. MUNEKIYO
GWEN OHASHI, HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

May 20, 2011

George P. Young, P.E.
Chief, Regulatory Branch
Department of the Army
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96858-5440

SUBJECT: Response to Comment Letter Regarding Proposed Pulelehuakea Residential Subdivision; TMK (2)2-3-008:036(por.), (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005) (POH-2010-0051)

Dear Mr. Young:

Thank you for your letter of January 25, 2011, providing comments to the Draft Environmental Assessment for the proposed Pulelehuakea residential subdivision project.

On behalf of the applicant, KG Maui Development LLC, we appreciate your review of the document and confirmation that the project is not subject to a Department of Army permit. We note that a Final EA does not need be submitted to your office for further review.

Thank you again for your participation in the Chapter 343, HRS review process.

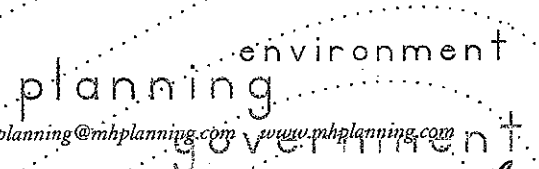
Sincerely,

Leilani Pulmano
Program Manager

LP:lfm

cc: Elton Wong, KG Maui Development, LLC
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.
Danny Dias, Staff Planner, Department of Planning

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United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
2011-TA-0125

Mr. Danny A. Dias
County of Maui, Department of Planning
250 South High Street
Wailuku, HI 96793

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED
FEB 17 2011 11 56

Subject: Early Consultation for the Pulelehuakea Residential Subdivision, Pukalani, Maui

Dear Mr. Dias:

We are in receipt of the Application for Community Plan Amendment, Change in Zoning, and Draft Environmental Assessment (DEA) dated January 18, 2011, for the Pulelehuakea residential subdivision at Pukalani, Maui. We received the DEA on January 25, 2011. The proposed action involves the construction of a 13-lot single family residential subdivision along with related on-site improvements including landscaping, roadways, utilities, drainage system, golf cart path relocation, and retaining walls. The subdivision project lies on six acres of undeveloped land located between the fairways of the Pukalani Country Club.

We reviewed the proposed project pursuant to the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) and the Migratory Bird Treaty Act [16 U.S.C. 703-712]. Our databases, including data compiled by the Hawaii Biodiversity and Mapping Program, indicate the following listed species have been observed in the vicinity of the proposed project: (1) endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*); (2) threatened Newell's shearwater (*Puffinus auricularis newelli*) and endangered Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*) (collectively referred to as seabirds); and (3) endangered Blackburn's sphinx moth (*Manduca blackburni*). We recommend the following measures be incorporated into the project to minimize potential impacts to these species:

1. Although the survey conducted at the project site indicated Hawaiian hoary bats were not found on the property, these animals are known to have large home ranges which may result in this species' intermittent use of the subject property. Hawaiian hoary bats roost in exotic and native woody vegetation at heights greater than 15 feet. If trees or shrubs suitable for bat roosting are cleared during the bat breeding season (April to August), there is a risk that breeding bats could inadvertently be harmed or killed. Young bats, which are incapable of flight, are particularly vulnerable during the bat-birthing and pup-rearing season (May 15 through August 15). To minimize potential impacts to the Hawaiian hoary bat, woody plants



greater than 15 feet tall should not be removed or trimmed between May 15 and August 15 throughout the development and ongoing operation of the proposed project.

2. Seabirds may traverse the project area at night during the breeding season (February 1 through December 15). Outdoor lighting at this project site could result in seabird disorientation, fallout, and injury or mortality. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable. The seabirds are attracted to lights and after circling the lights they may collide with nearby wires, buildings, or other structures or they may land on the ground due to exhaustion. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. To minimize potential project impacts to seabirds during their breeding season, all outdoor lights should be fully shielded so the bulb can only be seen from below bulb height and only in use when necessary. Automatic motion sensor switches and controls should be installed on all outdoor lights and/or lights should be turned off when human activity is not occurring in the lighted area.
3. We note a survey for the Blackburn's sphinx moth and its host plants was conducted at the project site. The survey identified one host plant, tree tobacco (*Nicotiana glauca*), at the project site and reported that the plant was dead, and no Blackburn's sphinx moth or their larvae were observed. We recommend that surveys be conducted for Blackburn's sphinx moth and potential host plants approximately four to eight weeks following significant rainfall and during the wettest portion of the year (November-April). The survey for this project was conducted in May, 2010; therefore we recommend a repeat survey be conducted to ensure that no Blackburn's sphinx moth and its potential host plants are found at the site.

If you have questions regarding this species list or our recommendations, please contact Rachel Rounds, Fish and Wildlife Biologist, Consultation and Technical Assistance Program (phone: 808-792-9400, fax: 808-792-9581).

Sincerely,



for

Loyal Mehrhoff
Field Supervisor



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

May 20, 2011

Loyal Mehrhoff, Field Supervisor
United States Department of the Interior
Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Blvd., Rm. 3-122, Box 50088
Honolulu, Hawaii 96850

SUBJECT: 2011-TA-0125 - Response to Comment Letter Regarding Proposed Pulelehuakea Residential Subdivision; TMK (2)2-3-008:036(por.), (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005)

Dear Mr. Mehrhoff:

Thank you for your letter of February 17, 2011 providing comments on the proposed Pulelehuakea residential subdivision project. On behalf of the applicant, KG Maui Development LLC, we offer the following information, which addresses your comments in the order listed in your letter.

1. We acknowledge your comment that the Hawaiian hoary bats roost in native woody vegetation at heights greater than 15 feet and are most vulnerable during the bat-birthing and pup-rearing season from May 15 through August 15. As such, the applicant confirms that in preparation for construction, any vegetation greater than 15 feet tall will not be removed between the months of May 15 and August 15. In preparation for construction and grading, all vegetation taller than 15 feet will be removed after August 15 and before May 15. With respect to the ongoing operation of the proposed project, the applicant will incorporate these precautionary measures and restrictions on removing any vegetation greater than 15 feet between May 15 and August 15, into the Homeowners Conditions, Covenants and Restrictions in order to protect the Hawaiian hoary bat.
2. The applicant confirms that all common area project lighting will be shielded and directed downward in order to protect seabirds that may traverse the project area at night during the breeding season (February 1 to December 15).
3. We note your recommendation that a survey of the Blackburn's sphinx moth and its host plants be conducted approximately four (4) to eight (8) weeks following significant rainfall and during the wettest portion of the year (November to April)

Loyal Mehrhoff, Field Supervisor
May 20, 2011
Page 2

since the project flora and fauna study was carried out in the month of May. However, since the construction schedule for the project has not been finalized, the applicant will carry out a field survey prior to the start of construction to ensure the Blackburn's sphinx moth and potential host plants will not be adversely impacted by construction activities. If any Blackburn's sphinx moths or their habitat are found, the applicant will contact the Fish and Wildlife Service to determine the appropriate steps necessary to ensure their safety.

Thank you again for your comment letter. A copy of your letter will be included in the Final EA.

Sincerely,



Leilahi Pulmano
Program Manager

LP:lfm

cc: Elton Wong, KG Maui Development, LLC
Danny Dias, Staff Planner, Department of Planning

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STATE OF HAWAII
DEPARTMENT OF EDUCATION

P.O. BOX 2360
HONOLULU, HAWAII 96804

'11 FEB -4 P12:15

OFFICE OF SCHOOL FACILITIES AND SUPPORT SERVICES

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

February 2, 2011

Mr. Danny A. Dias, Staff Planner
Department of Planning, County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Mr. Dias:

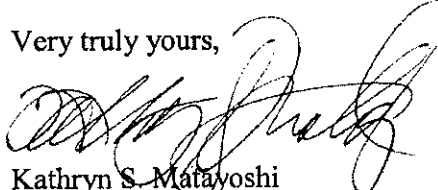
Subject: Pulelehuakea Residential Subdivision (Pukalani), CPA 2010/0003
CIZ 2010/0006, and EA 2010/0005, TMK (2) 2-3-008:036

The Department of Education (DOE) has reviewed the revised community plan amendment and change in zoning applications for the Pulelehuakea Residential Subdivision.

The DOE has no comment to offer.

Thank you for the opportunity to comment. If you have any questions, please call Jeremy Kwock of the Facilities Development Branch at (808) 377-8301.

Very truly yours,


Kathryn S. Matayoshi
Superintendent

KSM:jmb

c: Randolph Moore, Asst. Supt., OSFSS
Bruce Anderson, CAS, Baldwin/Kekaulike/Maui Complex Areas

FEB 09 2011

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



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

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

In reply, please refer to:
File:

LUD 2 2 3 008 036 – ID599
Revised Pulelehuakea Res Subd

February 3, 2011

Mr. Danny A. Dias, Staff Planner
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Mr. Dias:

Subject: Revised Community Plan Amendment and Change in Zoning Applications
Proposed Pulelehuakea Residential Subdivision at Pukalani, Maui, Hawaii
TMK (2) 2-3-008: 036 (portion) approx. 9.784 acres
(approx. address: Liholani Street, Makawao 96768)

Thank you for allowing us the opportunity to review the subject project documents for the proposed development of a 13-lot single family residential subdivision and related on-site and off-site improvements, including landscaping, roadways, utilities, drainage system golf cart path relocation and retaining walls. We have the following comments and information on the subject property:

We have no objections to the proposed development as domestic wastewater will be conveyed to the Pukalani Wastewater Treatment Plant (WWTP) for treatment and disposal. We do encourage the developer to work with Hawaii Water Service Company to utilize recycled water from the Pukalani WWTP for irrigation and other purposes such as dust control during construction.

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems." We do reserve the right to review the detailed wastewater plans for conformance to applicable rules. Should you have any questions, please contact the Planning & Design Section of the Wastewater Branch at (808) 586-4294 or fax to (808) 586-4300.

Sincerely,

A handwritten signature in black ink, appearing to read "Marshall Lum".

MARSHALL LUM, P.E., ACTING CHIEF
Wastewater Branch

LM:cle

c: DOH's Environmental Planning Office (EPO I-3512)
DOH-WWB's Maui Staff – Mr. Roland Tejano
KG Maui Development, LLC
✓Munekiyo & Hiraga, Inc.



MICHAEL T. MUNEKIYO
GWEN HASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

May 20, 2011

Marshall Lum, P.E., Acting Chief
Department of Health
Wastewater Branch
P.O. Box 3378
Honolulu, Hawaii 96801-3378

SUBJECT: Response to Comment Letter Regarding Proposed Pulelehuakea Residential Subdivision; TMK (2) 2-3-008:036(por.), (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005) (LUD 2 2 3 008 036-1059 Revised Pulelehua Residential Subdivision)

Dear Mr. Lum:

Thank you for your letter, dated February 3, 2011, providing comments on the proposed Pulelehuakea residential subdivision project. On behalf of the applicant, KG Maui Development, LLC, we offer the following responses to your comments.

We acknowledge that you have no objections to the proposed project since wastewater will be conveyed to the Pukalani Wastewater Treatment Plant.

In regards to using recycled water, our understanding from Hawaii Water Service Company (HWSC) is that all recycled water is being used for the Pukalani Country Club Golf Course. Nonetheless, the applicant will check with HWSC to see if there may be any excess recycled water for irrigation and dust control during construction.

We further acknowledge that wastewater plans must conform to the Department of Health's Administrative Rules, Chapter 11-62 Wastewater Systems. We note and acknowledge the Wastewater Branch has the right to review the wastewater plans for the proposed project.

Marshall Lum, P.E., Acting Chief
May 20, 2011
Page 2

We appreciate the input provided by your department. Since the Draft EA was already submitted, a copy of your letter will be included as part of the Final EA.

Sincerely,

Handwritten signature of Leilahi Pulmano, consisting of stylized initials 'LPL'.

Leilahi Pulmano
Project Manager

LP:tn

cc: Elton Wong, KG Maui Development, LLC
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.
Danny Dias, Staff Planner, Department of Planning

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NEIL ABERCROMBIE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH
54 HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2102

February 1, 2011

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

LORRIN W. PANG, M.D., M.P.H.
DISTRICT HEALTH OFFICER

In reply, please refer to
File:

11 FEB -2 12:31

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

Mr. William R. Spence
Director
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

Attn: Danny A. Dias

Dear Mr. Spence:

Subject: Pulelehuakea Residential Subdivision (Pukalani)
Applicant: Munekiyo & Hiraga, Inc. on behalf of KG Maui
Development, LLC
Subject I.D.: CPA 2010/0003, CIZ 2010/0006 and EA 2010/0005
TMK: (2) 2-3-008:036 (por.)
Street Address: Along Aina Lani Drive, near holes 5, 6, and 7 of
the Pukalani Golf Course
Project Description: Construction of a 13 lot single family residential
subdivision along with related improvements

Thank you for the opportunity to review this project. We have the following comments to offer:

1. National Pollutant Discharge Elimination System (NPDES) permit coverage maybe required for this project. The Clean Water Branch should be contacted at 808 586-4309.
2. The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules (HAR), Chapter 11-46, "Community Noise Control." A noise permit may be required and should be obtained before the commencement of work.
3. The project must connect to the Pukalani Wastewater Treatment Plant.

Mr. William R. Spence
February 1, 2011
Page 2

It is strongly recommended that the Standard Comments found at the Department's website: <http://hawaii.gov/health/environmental/env-planning/landuse/landuse.html> be reviewed, and any comments specifically applicable to this project should be adhered to.

Sincerely,



Patti Kitkowski
District Environmental Health Program Chief

c EPO



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

May 20, 2011

Patti Kitkowski, District Environmental
Health Program Chief
Department of Health
54 High Street
Wailuku, Hawaii 96793

SUBJECT: Response to Comment Letter Regarding Proposed Pulelehuakea Residential Subdivision; TMK (2)2-3-008:036(por.), (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005)

Dear Ms. Kitkowski:

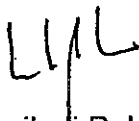
Thank you for your letter of February 1, 2011 providing comments on the proposed Pulelehuakea residential subdivision project. On behalf of the applicant, KG Maui Development LLC, we offer the following information in response to the comments provided.

1. The applicant confirms coordination will be carried out with the Clean Water Branch to obtain a National Pollutant Discharge Elimination permit prior to project implementation.
2. The applicant will coordinate with the Department of Health to obtain a Community Noise Permit prior to construction activity, as applicable.
3. The applicant confirms the project will connect to the Pukalani Wastewater Treatment Plant.
4. We have reviewed the standard comments found on your Department's website. We are enclosing a list of applicable comments, as well as the applicant's response to each. See **Exhibit "A"**.

Patti Kitkowski, District Environmental
Health Program Chief
May 20, 2011
Page 2

Thank you again for your comments and participation in the Chapter 343, HRS review process. A copy of your letter will be included in the Final EA.

Sincerely,



Leilani Pulmano
Program Manager

LP:lfm

cc: Elton Wong, KG Maui Development, LLC
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.
Danny Dias, Staff Planner, Department of Planning

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EXHIBIT "A"

REVIEW OF STANDARD COMMENTS RELATING TO STATE ENVIRONMENTAL HEALTH PROGRAMS

Environmental Planning Office

- *Identify the waterbody type and class, as defined in Hawaii Administrative Rules Chapter 11-54 (<http://www.state.hi.us/health/about/rules/11-54.pdf>), of all potentially affected water bodies.*

Response:

There are no streams or wetlands on the project site.

- *Identify any existing National Pollutant Discharge Elimination System (NPDES) permits and related connection permits (issued by permittees) that will govern the management of water that runs off or is discharged from the proposed project site or facility. Please include NPDES and other permit numbers; names of permittees, permitted facilities, and receiving waters (including waterbody type and class as in 1. above); diagrams showing drainage/discharge pathways and outfall locations; and note any permit conditions that may specifically apply to the proposed project*

Response:

There are no existing NPDES permits or related connection permits governing water quality management at the project site.

- *Identify any planning documents, groups, and projects that include specific prescriptions for water quality management at the proposed project site and in the potentially affected waterbodies. Please note those prescriptions that may specifically apply to the proposed project.*

Response:

There are no existing water quality actions being undertaken at the project site.

- *Identify all potentially affected water bodies that appear on the current List of Impaired Waters in Hawaii Prepared under Clean Water Act.*

Response:

There are no potentially affected water bodies that appear on the current List of Impaired Waters.

- *We suggest that each submittal identify and analyze potential project impacts at a watershed scale by considering the potential contribution of the proposed project to cumulative, multi-project watershed effects on hydrology, water quality, and aquatic and riparian ecosystems. We also suggest that each submittal broadly evaluate project alternatives by identifying more than one engineering solution for proposed projects. In particular, we suggest the consideration of "alternative," "soft," and "green" engineering solutions for channel modifications that would provide a more environmentally friendly and aesthetically pleasing channel environment and minimize the destruction of natural landscapes.*

Response:

With implementation of BMPs during construction of the proposed project, it is not expected to significantly adversely impact hydrology, water quality and aquatic and riparian ecosystems in vicinity of the project site. There are no channel modifications proposed as part of the project.

Hazard Evaluation and Emergency Response Office

- *A Phase I Environmental Site Assessment (ESA) should be conducted for developments or redevelopments. If the investigation shows that a release of petroleum, hazardous substance, pollutants or contaminants occurred at the site, the site should be properly characterized through an approved Hawaii State Department of Health (DOH)/Hazard Evaluation and Emergency Response Office (HEER) soil and or groundwater sampling plan. If the site is found to be contaminated, then all removal and remedial actions to clean up hazardous substance or oil releases by past and present owners/tenants must comply with chapter 128D, Environmental Response Law, HRS, and Title 11, Chapter 451, HAR, State Contingency Plan.*

Response:

Since 1980, historically, the land uses within the project site were fallow lands surrounded by the Pukalani Country Club golf course. In this context, the subject property has not been exposed to hazardous substances. Nonetheless, in the event the HEER office determines that a Phase I ESA is needed to be conducted, the applicant will do so.

Clean Air Branch

- *A significant potential for fugitive dust emissions exists during all phases of construction and operations. Proposed activities that occur in proximity to existing residences, businesses, public areas or thoroughfares, exacerbate potential dust problems. It is recommended that a dust control management plan be developed which identifies and addresses all activities that have a potential to generate fugitive dust. The plan, which does not require DOH approval, would help with recognizing and minimizing the dust problems from the proposed project.*

Activities must comply with the provisions of Hawaii Administrative Rules, § 11-60-1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance problems.

The contractor should provide adequate measures to control the fugitive dust from the road areas and during the various phases of construction. Examples of measures that can be implemented to control dust include, but are not limited to, the following:

- a) Planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;*
- b) Providing an adequate water source at the site prior to start-up of construction activities;*
- c) Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;*
- d) Minimizing dust from shoulders and access roads;*
- e) Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and*
- f) Controlling dust from debris being hauled away from the project site.*

Response:

Best Management Practices will be implemented to minimize the potential for dust-related impacts from the construction of the proposed project. Project-related activities will comply with applicable provisions of Section 11-60-1.33, HAR.

Clean Water Branch

- *Any project and its potential impacts to State waters must meet the State's: 1) Antidegradation policy, 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; 2) Designated uses, as determined by the classification of the receiving State waters; and 3) water quality criteria (Hawaii Administrative Rules (HAR), Chapter 11-54).*

Response:

The proposed project will comply with the State's antidegradation, designated uses, and water quality criteria.

- *The Army Corps of Engineers should be contacted at (808) 438-9258 to see if this project requires a 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.*

Response:

The Army Corps of Engineers concluded that the proposed project does not require a Department of the Army permit.

- *National Pollutant Discharge Elimination System (NPDES) permits are required 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, NPDES general permit coverage may be applied for by submitting a Notice of Intent (NOI) form: 1) storm water associated with industrial activities, as defined in Title 40, Code of Federal Regulations, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi); 2) storm water associated with construction activities, including excavation, grading, clearing, demolition, uprooting of vegetation, equipment staging, and storage areas that result in the disturbance of equal to or greater than one (1) acre of total land area*; 3) treated effluent from leaking underground storage tank remedial activities; 4) once through cooling water less than one (1) million gallons per day; 5) hydrotreating water; 6) dewatering effluent; 7) treated effluent from petroleum bulk stations and terminals; 8) treated effluent from well drilling activities; 9) treated effluent from recycled water distribution systems; 10) storm water and certain non-storm water from a small municipal separate storm sewer system; and 11) circulation water from decorative ponds or tanks.*

**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.*

Response:

Coordination will be carried out with Clean Water Branch to obtain a NPDES permit prior to construction, as applicable.

- *A separate NOI form for each type of discharge must be submitted at least 30 calendar 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 calendar days before to 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>.*

Response:

The applicant acknowledges that a separate NOI form must be submitted for each type of discharge at least 30 calendar days prior to the start of discharge activity.

- *For types of wastewater discharges not listed above or wastewater discharging into Class 1 or Class AA waters, you may need to obtain an NPDES individual permit. Class 1 waters include, but is not limited to, all State waters in natural reserves, preserves, sanctuaries, and refuges established by the Department of Land and Natural Resources (DLNR) under Hawaii Revised Statutes (HRS), Chapter 195, or similar reserves for the protection of aquatic life established under HRS, Chapter 195.*

Response:

No discharges into Class 1 or Class AA waters are anticipated.

- *An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge or start of construction activities. The NPDES application forms may be picked up at our office or downloaded from our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html>.*

Response:

The applicant acknowledges that an NPDES individual permit application must be submitted at least 180 calendar days before the commencement of discharge or construction activities.

- *You must also submit a copy of the NOI or NPDES permit application to the State DLNR, 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.*

Response:

The applicant acknowledges that a copy of the NOI or NPDES permit application must be submitted to the SHPD.

- *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.*

Response:

The applicant acknowledges that all discharges related to project construction and operation 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.*

Response:

The applicant acknowledges that compliance with water quality and permitting requirements are subject to Chapter 11-54 and 11-55, HAR.

Solid and Hazardous Waste Branch

- *The state regulations for hazardous waste are in Chapters 11-260 to 11-280, Hawaii Administrative Rules (HAR). These rules apply to the identification, handling, transportation, storage and disposal of regulated hazardous waste. Generators, transporters and treatment, storage and disposal facilities of*

hazardous waste must adhere to these requirements or be subject to fines and penalties.

Response:

The proposed project will comply with applicable requirements of HAR, Chapters 11-260 to 11-280.

- *Generators of solid waste are required to ensure that their wastes are properly delivered to permitted solid waste management facilities. Managers of construction and demolition projects should require their waste contractors to submit disposal receipts and invoices to ensure proper disposal of wastes.*

Response:

Construction waste for the project will be recycled or properly disposed of at an approved construction waste disposal facility. The site construction company will be required to provide a construction waste management plan with the intent to reduce construction waste.

- *HRS Chapter 342G encourages the reduction of waste generation, reuse of discarded materials, and the recycling of solid waste. Businesses, property managers and developers, and government entities are highly encouraged to develop solid waste management plans to ensure proper handling of wastes. Solid waste management plans should also seek to maximize waste diversion and minimize disposal. Such plans should include designated areas to promote the collection of reusable and recyclable materials.*

Response:

Solid waste generated by future homes will be collected by the County for disposal at Central Maui landfill.

Noise, Radiation, and Indoor Air Quality Branch

- *Project activities shall comply with Chapter 11-39 (Air Conditioning and Ventilating), Chapter 11-45 (Radiation Control) and 11-46 (Community Noise Control) of the Administrative Rules of the Department of Health.*

Response:

The proposed project will comply with applicable requirements of HAR, Chapter 11-46, Community Noise Control, HAR, Chapter 11-39, Air Conditioning and Ventilating, and Chapter 11-45, Radiation Control.



Healthy Community Design Smart Growth Checklist

The Hawaii State Department of Health, Built Environment Working Group, recommends that State and County Planning Departments, developers, engineers and other professionals apply healthy built environment principles when they plan or review new developments or redevelopments. Government agencies should lead by example in their own projects. This checklist focuses on public health elements that would be integrated into land use and community planning and design. We ask you to share this list with others to increase community awareness of how to design healthier communities.

Healthy Built Environment Principles:

- Promote fitness through safe walking, biking, and other active transportation through connectivity of planned bikeways and paths with existing and adjacent networks, designing travelways that connect multiple destinations and encourage non-vehicular travel.
- Promote clean air by making transit convenient and comfortable, minimizing petroleum fueled car and truck use, and minimizing fossil energy use.
- Promote a healthy environment by buying green products, reducing, reusing & recycling, and minimizing waste in construction, operations, and demolition.
- Promote fitness and health by encouraging home and community gardens

Healthy Built Environment Best Practices:

Close Proximity to Existing/Future Development and Infrastructure

- Close to roadways, water and sewer service
- Located within growth/redevelopment area
- Walking distance to transit
- Next to or includes food/convenience/retail/services
- Next to or includes employment, recreation, entertainment
- Wide range of housing opportunities

Mix and Balance of Uses

- Multi-use buildings
- Multi-use districts
- Provide employment, housing, neighborhood serving retail/service
- Provide civic, educational, cultural recreation
- Provide street-level uses that maximize pedestrian activity

Site Optimization and Compactness

- Maximize allowable floor-area ratio
- Maximize dwelling unit/acreage density
- Maximize usable open space for gathering and recreation
- Maximize usable open space for home and community gardens
- Locate buildings at minimum setbacks or at "build-to" lines

Accessibility and Mobility Choices Provide:

- Shelters at transit stops and store fronts (e.g. awnings or arcades) and along paths and lanes.
- Pedestrian/bicycle/stroller/wheelchair facilities for and on transit
- Sidewalks, preferably on both sides of the street
- Walking and bike paths separate from roads (e.g. in greenways)
- Bike lanes in roads marked with paint and good signs

Content adapted from *Smart Scorecard for Development Projects* (Congress for New Urbanism and the US Environmental Protection Agency 2002) and *East Garrison Smart Growth Checklist* (Monterey, CA)

(Continued on next page)

Accessibility and Mobility Choices Provide:

- Shared paths & sidewalks marked to separate walkers and bicyclists. (paint, texture, signs)
- Bike racks, stroller storage
- Direct street connections, such as well-marked paths to front doors
- Parking lots & garages behind, above, or below buildings
- Connections to existing or planned parks, open space
- Raised or highly visible crosswalks near schools (paint and signs)
- Ramps, depressed curbs, and periodic breaks in curbs for people with disabilities
- Meet all ADA standards for accessibility

Healthy Designs for Indoor Areas

- Pleasant, wide central stairs provided to encourage walking
- Elevators stop on alternate floors (except ADA elevator)
- Bike/luggage/stroller ramps on stairs
- Indoor bicycle parking provided
- Showers and lockers provided at work sites

Community Context, Site Design, and Visual Appeal

- Preserve or re-use existing buildings/structures when feasible
- Incorporate buildings reflect local historic building materials, styles and/or design
- Include a map of the neighborhood and nearby street connections is included with plans
- Scale and mass of buildings relate to existing neighborhood structures
- Provide open access to all adjacent natural features such as coasts, streams, river-ways, mountains, forests, hiking, trails
- Create coastal, stream, and forest **green-ways** with walking and bike paths to town/village centers, parks, other destinations
- Insure automobile access makes minimum impact on pedestrian/bicyclist experience

- Create or enhance community spaces such as plazas, squares, parks, etc.
- Include open spaces and trails that provide opportunities for physical activity
- Provide play equipment in parks for children
- Include pedestrian/bicyclist-oriented landscaping and lighting

Fine - Grained Block, Pedestrian and Park Network

- Create street networks based on a grid system; avoid cul de sacs
- Incorporate short block lengths
- Design for traffic calming measures in and around residential areas
- Design pedestrian/bicycle systems to link with civic, cultural, retail/service destinations, and other paths
- A variety of park types and sizes

Environmental Quality

- Recycle materials from deconstruction of existing infrastructure
- Maximize energy efficiency of buildings
- Use green building materials when feasible
- Use energy conservation equipment, systems and/or programs
- Use water conservation systems
- Use rainwater on-site - provide storage, infiltration, irrigation
- Use on-site wastewater treatment & reuse or disposal where appropriate
- Use solar energy for heating and electricity
- Use wind energy
- Minimize artificial A/C, energy use, GHG emissions
- Protect, preserve and/or restore any on-site natural features such as steep slopes, wetlands, watersheds
- Create and maintain buffers around natural areas
- Plant native Hawaiian species
- Establish a recycling program for residents/tenants

Variety and Range

- Include a variety of building types and styles
- Include locally owned businesses in project
- Provide a wide-range in pricing structure of units that will be sold or leased
- Insure at least 20% of the units will be priced for very low and moderate incomes
- Provide a variety of densities in both residential and commercial employment units
- Vary set backs
- Vary residential lot size
- Address need for community facilities

Re-Use and Redevelopment Options

- Install utility lines along access roads
- Install utility lines underground
- Master plans to show future/projected streets, blocks and development sites
- Include building types and structures that are adaptable to different uses

Process Collaboration and Predictability of Decisions

- Conduct pre-design workshops/Charrettes with stakeholders, agencies, and the public
- Provide public outreach regarding, input, project vision, goals, and timetable
- Provide a project model that serves as a visual representation of the project
- Contact State and county staff (planning, public works, etc) in all key departments in the planning phase of project development
- Develop Public/Private partnerships
- Align design plans with existing community and general plans

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



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



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

February 15, 2011

'11 FEB 16 12:34

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

Attention: Mr. Danny a. Dias, Staff Planner

Ladies and Gentlemen:

Subject: Pulelehuakea Residential Subdivision (Pukalani)

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

Other than the comments from Engineering Division, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0414. Thank you.

Sincerely,

A handwritten signature in cursive script, appearing to read "Russell Y. Tsuji".

for Russell Y. Tsuji
Administrator



RECEIVED
LAND DIVISION STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

2011 FEB 11 A 10:25 POST OFFICE BOX 621
HONOLULU, HAWAII 96809
Phone: (808) 587-0433
Fax: (808) 587-0455

DEPARTMENT OF LAND &
NATURAL RESOURCES
STATE OF HAWAII
January 19, 2011

MEMORANDUM

TO: **DLNR Agencies:**
 Div. of Aquatic Resources
 Div. of Boating & Ocean Recreation
 Engineering Division
 Div. of Forestry & Wildlife
 Div. of State Parks
 Commission on Water Resource Management
 Office of Conservation & Coastal Lands
 Land Division -

11 JUN 20 PM 10:52 ENGINEERING

FROM: Charlene Unoki, Assistant Administrator
SUBJECT: Revised Community Plan, Amendment and Change in Zoning Applications for Proposed Pulelehuakea Residential Subdivision
LOCATION: Island of Maui
APPLICANT: Munekiyo & Hiraga, Inc. on behalf of KG Maui Development, LLC

Charlene

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by February 10, 2011.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed:
Date: 2/10/11

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/CharleneUnoki

Ref.: RevisedComPlanPulelehuakeaResSub
Maui.532

COMMENTS

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

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

- () Mr. Robert Sumimoto at (808) 523-4254 or Mr. Mario Siu Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.
 - () Mr. Carter Romero at (808) 961-8943 of the County of Hawaii, Department of Public Works.
 - () Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
 - () Ms. Wynne Ushigome at (808) 241-4890 of the County of Kauai, Department of Public Works.
- () The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.
 - () The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.
 - () Additional Comments: _____

- (X) Other: Our previous comments dated March 10, 2010, which was included in the Draft Environmental Assessment, still apply.

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

Signed: 
CARY S. CHANG, CHIEF ENGINEER

Date: 2/10/11



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

May 20, 2011

Russell Y. Tsuji, Administrator
Department of Land and Natural Resources
Land Division
P. O. Box 621
Honolulu, Hawaii 96809

SUBJECT: Response to Comment Letter Regarding Proposed Pulelehuakea Residential Subdivision; TMK (2)2-3-008:036(por.), (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005)

Dear Mr. Tsuji:

Thank you for your letter of February 15, 2011 providing comments on the proposed Pulelehuakea residential subdivision project.

We appreciate your review of the document and your confirmation that the Department's previous comments dated March 10, 2010, which was included in the Draft EA, still apply.

Thank you again for your participation in the Chapter 343, HRS review process. A copy of your letter will be included in the Final EA.

Sincerely,

Leilani Pulmano
Program Manager

LP:lfm

cc: Elton Wong, KG Maui Development, LLC
Danny Dias, Staff Planner, Department of Planning

K:\DATA\KG Holdings\Pukalani\36\DLNR-Land2 response.ltr.doc

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



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



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

'11 MAR -1 P12:03

February 25, 2011

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

Attention: Mr. Danny A. Dias, Staff Planner

Ladies and Gentlemen:

Subject: Pulelehuakea Residential Subdivision (Pukalani)

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

The Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0414. Thank you.

Sincerely,

A handwritten signature in cursive script that reads "Charlene Unoki".

Charlene Unoki
Assistant Administrator

LD

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



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

AMV
SK



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809
Phone: (808) 587-0433
Fax: (808) 587-0455

January 19, 2011

MEMORANDUM

DAR 9626

TO:

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division -



RECEIVED
LAND DIVISION
2011 FEB 25 P 3:11
DEPT. OF LAND AND NATURAL RESOURCES
STATE OF HAWAII

Charlene

FROM: Charlene Unoki, Assistant Administrator
SUBJECT: Revised Community Plan, Amendment and Change in Zoning Applications for Proposed Pulehuakea Residential Subdivision
LOCATION: Island of Maui
APPLICANT: Munekiyo & Hiraga, Inc. on behalf of KG Maui Development, LLC

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by February 10, 2011.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments


- We have no objections.
- We have no comments.
- Comments are attached.

Signed: *[Signature]*
Date: 2/22/11

Post-It® Fax Note	7671	Date	2/22/11	# of pages	2
To	Alton	From	Skippy		
Co./Dept.		Co.			
Phone #	587-0115	Phone #	243-5834		
Fax #	(Email Down)	Fax #	243-5833		

RECEIVED
MAUI
FEB 15 2011
Div. of Aquatic Resources

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawai'i 96793
February 22, 2011

To: Alton Miyasaka, Aquatic Biologist
From:  Skippy Hau, Aquatic Biologist
Subject: Revised Community Plan, Amendment and Change in Zoning
Applications for Proposed Pulelehuakea Residential
Subdivision (DAR 3626)
(Due February 10, 2011 Charlene Unoki, Land, Received Feb. 15)

(P.40) The feasibility of desalinization is being considered.

(P.42) Drainage is calculated for a 50-year, 1-hour peak flow increase to 18.35 cfs. The 9.70 cfs increase should be mitigated by swales, catch basins, manholes, drain pipes, a culvert and a detention/retention basin.

It is hoped that drainage will be directed to vegetation areas and landscaping that will increase water retention and recharge within the project site as much as possible. It could reduce the need for landscape watering or sprinklers.



MICHAEL T. MUNEKIYODO
EWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

May 20, 2011

Charlene Unoki, Assistant Administrator
Department of Land and Natural Resources
Land Division
P. O. Box 621
Honolulu, Hawaii 96809

SUBJECT: Response to Comment Letter Regarding Proposed Pulelehuakea Residential Subdivision; TMK (2)2-3-008:036(por.), (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005)

Dear Ms. Unoki:

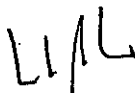
Thank you for your letter of February 25, 2011 providing comments from the Division of Aquatic Resources on the proposed Pulelehuakea residential subdivision project. On behalf of the applicant, KG Maui Development LLC, we offer the following response.

The applicant notes and appreciates your comment regarding directing drainage to vegetated areas and landscaping to increase water retention and recharge within the project site. The proposed drainage system improvements will collect the storm water runoff by way of swales, catch basins, drain pipes, a culvert and a detention/retention basin. The swales will be grass lined and have some water retention and filtration capacity. The detention/retention basin will be located onsite and the water will percolate into the ground to recharge the groundwater. The applicant will also provide a landscape guide to future homeowners that will include climate adapted native plant species with the objective to limit irrigation requirements and conserve water.

Charlene Unoki, Assistant Administrator
May 20, 2011
Page 2

Thank you again for your comments. A copy of your letter will be included in the Final EA.

Sincerely,



Leilani Pulmano
Program Manager

LP:lfm

cc: Elton Wong, KG Maui Development, LLC
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.
Danny Dias, Staff Planner, Department of Planning

K:\DATA\KG Holdings\Pukalani\36\DLNR-LAND response.ltr.doc

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



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

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

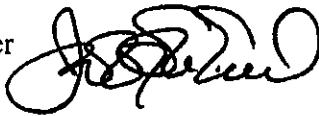
DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

In reply, please refer to:
File:

11 FEB 18 P3:03

February 15, 2011

TO: Danny A. Dias
County of Maui, Department of Planning

FROM: Jeffrey M. Eckerd, Acting Program Manager
Indoor and Radiological Health Branch 

SUBJECT: **Pulelehuakea Residential Subdivision (Pukalani)**
Along Aina Lani Drive, near Holes 5, 6 and 7 of the Pukalani Golf Course

Our comments should be printed as follows:

“Project activities shall comply with the Administrative Rules of the Department of Health:

- Chapter 11-46 Community Noise Control

Should there be any questions, please contact me at 586-4701.



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

May 20, 2011

Jeffrey M. Eckerd, Acting Program Manager
Indoor and Radiological Health Branch
Department of Health
P. O. Box 3378
Honolulu, Hawaii 96801-3378

SUBJECT: Response to Comment Letter Regarding Proposed Pulelehuakea Residential Subdivision; TMK (2)2-3-008:036(por.), (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005)

Dear Mr. Eckerd:

Thank you for your memo of February 15, 2011 providing comments on the proposed Pulelehuakea residential subdivision pProject.

On behalf of the applicant, KG Maui Development LLC, we confirm the project activities will comply with the Administrative Rules of the Department of Health: Chapter 11-46, Community Noise Control. Coordination will be carried out prior to construction for a Community Noise Permit, as applicable.

Thank you again for your comments. A copy of your letter will be included in the Final EA.

Sincerely,

Leilani Pulmano
Program Manager

LP:lfm

cc: Elton Wong, KG Maui Development, LLC
Danny Dias, Staff Planner, Department of Planning

K:\DATA\KG Holdings\Pukalani\36\DOH-IRHB response.ltr.doc



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

HRD11/4856B

February 15, 2011

Danny Dias, Staff Planner
County of Maui-Department of Planning
250 South High Street
Wailuku, Hawai'i 96793

RE: Pulelehuakea Residential Subdivision
Draft Environmental Assessment , Community Plan Amendment and Change in
Zoning
Pukalani, Island of Maui

Aloha e Danny Dias,

The Office of Hawaiian Affairs (OHA) is in receipt of your January 18, 2011 request for comments on a draft environmental assessment (DEA), proposed Makawao-Pukalani-Kula Community Plan Amendment (CPA) and County of Maui Change in Zoning application (CIZ) to support the development of the 13-lot Pulelehuakea Residential Subdivision and related improvements on approximately 6 acres of land (project) in Pukalani on the Island of Maui. The project site is currently undeveloped and is located within the existing Pukalani Country Club Golf Course (country club). The Maui Planning Commission is the approving agency for the DEA, which was prepared by Munekiyo & Hiraga, Inc. (applicant) on behalf of the landowner KG Maui Development, LLC. The final environmental assessment (FEA) will be a primary support document for the subsequent CPA and CIZ which are necessary to facilitate the project.

Two actions are proposed within the CPA. The first action will re-designate existing park/golf course use areas within the project site to single family use. The second action will re-designate certain areas in the country club adjacent to the project site from single family to park/golf course use to provide consistency in land uses. The CIZ consists of two similar actions which seek to ensure proposed land uses are consistent with County of Maui zoning designations.

In our March 12, 2010 letter which responded to a pre-DEA consultation request from the applicant, OHA specifically requested that efforts be completed to assess the impacts of this project on historic and cultural resources. We appreciate that this request was acknowledged and an archaeological assessment (DEA, Appendix C-1) and cultural impact assessment (DEA, Appendix D) for the project conducted. We note that the archaeological assessment did not identify any historic or cultural sites within the project site and has been approved by the

Danny Dias, Staff Planner
County of Maui-Department of Planning
February 15, 2011
Page 2 of 2

Department of Land and Natural Resources-State Historic Preservation Division by letter dated February 12, 2010 (DEA, Appendix C-2).

OHA concurs with the "finding of no significant impact" determination within the DEA and we have no objections to the CPA and CIZ at this time. We appreciate the applicant's commitment to implement water conservation measures and use native and drought tolerant plant species in landscaping designs (DEA, page 10). We note that the County of Maui- Department of Water Supply provided a list of recommended plant species which is contained within the DEA.

Thank you for the opportunity to provide comments. Should you have any questions, please contact Keola Lindsey at 594-1904 or keolal@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Chief Executive Officer

C: OHA Maui Island Community Outreach Coordinator



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

May 20, 2011

Clyde W. Nāmu`o
Chief Executive Officer
Office of Hawaiian Affairs
711 Kapi`olani Boulevard, Suite 500
Honolulu, Hawai`I 96813

SUBJECT: Response to Comment Letter Regarding Proposed Pulelehuakea Residential Subdivision; TMK (2)2-3-008:036(por.), (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005) - HRD11/4856B

Dear Mr. Nāmu`o:

Thank you for your letter of February 15, 2011 providing comments on the proposed Pulelehuakea residential subdivision project.

On behalf of the applicant, KG Maui Development LLC, we acknowledge that the Office of Hawaiian Affairs reviewed the findings of the archaeological assessment and cultural impact assessment which conclude the project will not adversely impact cultural or historic properties.

We appreciate your review of the document and your conveying confirmation that the Office of Hawaiian Affairs concurs with the finding of no significant impact within the Draft EA. We also acknowledge that the Office of Hawaiian Affairs has no objection to the Community Plan Amendment and Change in Zoning applications.

Clyde W. Nāmu`o
May 20, 2011
Page 2

Thank you again for your comment letter. A copy of your letter will be included in the Final EA.

Sincerely,



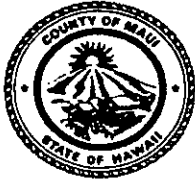
Leilani Pulmano
Program Manager

LP:lfm

cc: Elton Wong, KG Maui Development, LLC
Danny Dias, Staff Planner, Department of Planning

K:\DATA\KG Holdings\IPukalani36\OHA response.ltr.doc

1/7/11



DEPARTMENT OF HOUSING AND HUMAN CONCERNS COUNTY OF MAUI

ALAN M. ARAKAWA Mayor
JO-ANN T. RIDAO Director
JAN SHISHIDO Deputy Director

200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • PHONE (808) 270-7805 • FAX 270-7165 • EMAIL director.hhc@mauicounty.gov

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

Date: January 21, 2011
To: Danny Dias Staff Planner, Department of Planning
From: Jo-Ann T. Ridao, Director of Housing and Human Concerns
Subject: Preliminary Planning Review
Applicability to Residential Workforce Housing Policy
Chapter 2.96, MCC; effective 12/5/2006
Project Name: Pulelehuakea Residential Subdivision (Pukalani)
Applicant: KG Maui Development, LLC
Subject I.D.: CPA 2010/0003, CIZ 2010/0006 & EA 2010/0005
TMK: (2) 2-3-008:036 (por.)
Street Address: Along Aina Lani Drive, near Holes 5,6,&7 of the Pukalani Golf Course
Determination:

Form with checkboxes for 'Not-Applicable', 'Applicable', 'No Exemptions', and 'Exemptions: (2.96.030)' with sub-items B.1 through B.6.

Additional Comments: [X] See comments below [] See Attachment(s)
[] We have NO comment

Need to execute Workforce Housing Agreement prior to final approval.

Reviewed By: [Signature] Date: 1/21/2011



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

May 20, 2011

Jo-Ann T. Ridao, Director
Department of Housing and Human Concerns
200 South High Street
Wailuku, Hawaii 96793

SUBJECT: Response to Comment Letter Regarding Proposed Pulelehuakea Residential Subdivision; TMK (2)2-3-008:036(por.), (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005)

Dear Ms. Ridao:

Thank you for your memo of January 21, 2011 providing comments on the proposed Pulelehuakea residential subdivision project.

The applicant, KG Maui Development, LLC, acknowledges a Workforce Housing Agreement will need to be executed prior to final subdivision approval. The applicant will contact your department to begin discussions on the Workforce Housing Agreement.

Thank you again for your comment letter. A copy of your letter will be included in the Final EA.

Sincerely,

Leilani Pulmano
Program Manager

LP:lfm

cc: Elton Wong, KG Maui Development, LLC
Danny Dias, Staff Planner, Department of Planning

K:\DATA\KG Holdings\Pukalani\36\DHHC response.ltr.doc



AGENCY TRANSMITTAL RESPONSE FORM
FOR DEPARTMENT OF PLANNING, COUNTY OF MAUI

COUNTY OF PLANNING
 COUNTY OF MAUI
 RECEIVED
 JUN 25 2014


AGENCY NAME	Department of Environmental Mgmt.	PHONE	270-8230
PROJECT:	Pulelehuakea Residential Subdivision (Pukalani)		
APPLICANT:	Munekiyo & Hiraga, on behalf of KG Maui Development, LLC		
PERMIT NO:	CPA 2010/0003, CIZ 2010/0006 and EA 2010/0005-14		
TMK:	2-2-3-008-036 (por)		
STREET ADDRESS:	Along Aina Lani Drive, near holes 5, 6, and 7 of Pukalani Golf Course		
PROJECT DESCRIPTION:	Construction of a 13-lot single family residential subdivision along with related improvements.		
SECURITY CODE:			

COMMENTS/RECOMMENDATIONS NO COMMENTS

WASTEWATER RECLAMATION DIVISION COMMENTS

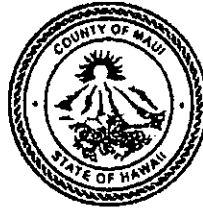
COMMENTS/RECOMMENDATIONS NO COMMENTS

SOLID WASTE DIVISION COMMENTS

Signed:			
----------------	--	--	--

Print Name:	Michael M. Miyamoto	Title:	Deputy Director
--------------------	---------------------	---------------	-----------------

2011 P...
ALAN M. ARAKAWA
MAYOR



JEFFREY A. MURRAY
CHIEF

ROBERT M. SHIMADA
DEPUTY CHIEF

COUNTY OF MAUI JAN 26 10:58
DEPARTMENT OF FIRE AND PUBLIC SAFETY
FIRE PREVENTION BUREAU

DEPT. OF PLANNING
313 MANEA PLACE • WAILUKU, HAWAII 96793
(808) 244-9161 • FAX (808) 244-1000

Date : **January 25, 2011**

To : **Danny A. Dias**
Staff Planner, County of Maui

Project : **Pulelehuakea Residential Subdivision (Pukalani)**
CPA 2010/0003, CIZ 2010/0006, EA 2010/0005
Along Ainalani Drive, Maui, HI

Dear Danny,

Thank you for the opportunity to comment on this subject. At this time, the Fire Prevention Bureau has no comment but will reserve the right to comment during the building permit process. At that time we ask that dwellings have a water supply for fire protection and fire apparatus access improvements that meet the current land-use requirements for single-family subdivisions:

Water supply for fire protection shall have a minimum flow of 1000 gallons per minute for a two-hour duration with hydrant spacing a maximum of 350 feet between hydrants. Dead-ends shall have a hydrant within 175 ft.

Service roads to proposed properties shall have a clear width of 20 feet. Any dead-end roads or cul-de-sacs shall have a clear width of 32 ft., and if greater than 150 ft. in length, shall be provided with an approved fire apparatus turnaround. All turns and required turnarounds shall have an outside turning radius of 35 feet. The maximum grade for the service roads shall not be greater than 14%. *(40.5 O.T.R. for areas with Ladder Trucks)*

If there are any questions or comments, please feel free to contact me at 244-9161 ext. 25.

Sincerely,

Handwritten signature of Kono Davis in black ink.

Kono Davis
Lieutenant, Fire Prevention Bureau



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

May 20, 2011

Kono Davis, Lieutenant
Fire Prevention Bureau
Department of Fire and Public Safety
313 Manea Place
Wailuku, Hawaii 96793

SUBJECT: Response to Comments Regarding Proposed Pulelehuakea Residential Subdivision; TMK (2)2-3-008:036(por.), (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005)

Dear Lieutenant Davis:

Thank you for your memo of January 25, 2011 providing comments on the proposed Pulelehuakea residential subdivision project. On behalf of the applicant, KG Maui Development LLC, we appreciate your review of the applications and your confirmation that the Department has no comment at this time, but will reserve the right to comment on the project during the building permit process.

We note your comments regarding the standards for fire protection and fire apparatus access improvements. This information has been conveyed, by copy of this letter and a copy of your comment letter, to the project civil engineer for consideration during project design.

Kono Davis, Lieutenant
May 20, 2011
Page 2

Thank you again for your comments. A copy of your letter will be included in the Final Environmental Assessment.

Sincerely,



Leilani Pulmano
Program Manager

LP:lfm

cc: Elton Wong, KG Maui Development, LLC
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.
Danny Dias, Staff Planner, Department of Planning

K:\DATA\KG Holdings\Pukalani36\Fire response.ltr.doc

ALAN M. ARAKAWA
Mayor



DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

DEPARTMENT OF WATER SUPPLY DEPT. OF PLANNING
COUNTY OF MAUI COUNTY OF MAUI
200 SOUTH HIGH STREET RECEIVED
WAILUKU, MAUI, HAWAII 96793-2155
www.mauiwater.org

'11 FEB -2 A9 :13

January 27, 2011

Mr. Danny A. Dias, Staff Planner
Department of Planning, County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Mr. Dias:

RE: Project: Proposed Pulelehuakea Residential Subdivision
Applicant: Munekiyo & Hiraga, Inc.
Permit No.: CIZ 2010/0006, CPA 2010/0003, and EA 2010/0005
TMK: (2) 2-3-008:036 (por.)

Thank you for the opportunity to comment on the referenced project.

In a letter dated March 19, 2010, the Department of Water Supply made comments on the proposed project; attached is the letter. We have no additional comments at this time.

Should you have any questions, please contact our Water Resources & Planning Division at 244-8550.

Sincerely,

A handwritten signature in black ink, appearing to read "DTaylor".

David Taylor, P.E., Director

ayi

Attachment: comment letter dated March 19, 2010

c: Leilani Pulmano, Project Manager, Munekiyo & Hiraga, Inc.
DWS Engineering Division
WRPD File

"By Water All Things Find Life"

CHARMAINE TAVARES
Mayor



JEFFREY K. ENG
Director

ERIC H. YAMASHIGE, P.E., L.S.
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2155
www.mauiwater.org

March 19, 2010

Munekiyo & Hiraga, Inc.
Attention: Leilani Pulmano, Project Manager
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

RE: Project Name: Proposed Pulelehuakea Residential Subdivision
Applicant: KG Maui Development, LLC
Permit Name: Early Consultation Request
TMK: (2) 2-3-008:036 por. (Pukalani, Maui, Hawaii)

Thank you for the opportunity to comment on this early consultation request.

The following are our comments based on the provided information. Further comments may be made when this application is formally submitted.

Source Availability and Consumption

The project site (site) is served by the Makawao system.

The site is located in an area affected by the finding of inadequate water supply issued on March 16, 1993. The area has insufficient water supply developed for fire protection, domestic and irrigation purposes to take on new or additional services without the detriment to those already in the regulated area. The EA should, therefore, identify sources and potable/non-potable demand for this project.

The site for the proposed subdivision does not have water meters. Further, the applicant for the site is not on the current Upcountry Water Service or priority list. The applicant will have to develop the source, purchase source credits, or apply to have the site property on the priority list.

System Infrastructure

The site is served by a 12-inch waterline fronting the west end of the property on Liholani Street and a 12-inch waterline close to the south end of the property on Aina

"By Water All Things Find Life"

The Department of Water Supply is an Equal Opportunity provider and employer. To file a complaint of discrimination, write: USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington DC 20250-9410. Or call (202) 720-5964 (voice and TDD)

Printed on recycled paper



3/22/10

Lani Drive. There are two fire hydrants on Aina Lani Drive which are approximately 100 feet from the project site. However, related water system improvements will be required. During the subdivision approval process, the applicant's plans for water system improvements will be reviewed and approved by our Engineering Division.

During the building permit process, the applicant will be required to submit domestic, irrigation and fire flow calculations to determine water meter capacity and adequate fire protection. Approved fire flow calculation methods currently used by the Department of Water Supply are the "Guidance for Determination of Required Fire Flow" as published by the Insurance Services Office in 1974, 2001 and 2006, or "Fire Flow" as published by the Hawaii Insurance Bureau in 1991.

Storage is provided by the 0.85 million gallon Pukalani Terrace tank southeast of the site.

Pollution Prevention

The site overlies the Makawao aquifer which has a sustainable yield of 7 million gallons per day. The Department of Water Supply's goal is to protect the integrity of surface and groundwater resources. To achieve this, mitigation measures must be implemented to prevent any water pollution related impacts. Best management practices for construction should, therefore, be applied; these are attached to this letter.

Conservation Measures

The Department of Water Supply (DWS) encourages the applicant to consider the following conservation measures in the project design, as well as during construction:

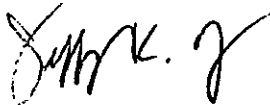
1. Utilize reclaimed or non-potable water for dust control, irrigation and other non-potable uses.
2. Water after 7:00 p.m. at night and before 10:00 a.m. in the morning.
3. Utilize low-flow fixtures and devices - Maui County Code Subsection 16.20A.680 requires the use of low-flow fixtures and devices in faucets, showerheads, urinals, water closets and hose bibs. Even more efficient and consumer tested models are available. Check WaterSense listings at <http://www.epa.gov/watersense/pp/index.htm> for efficient fixture listings when buying or replacing fixtures.
4. Prevent over-Watering by automated systems - Provide rain-sensors on all automated irrigation controllers. Check and reset controllers at least once a month to reflect the monthly changes in evaporation rates at the site. As an alternative, provide more automated, soil-moisture sensors on controllers.
5. Maintain fixtures to prevent leaks - A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons per day.

Ms. Leilani Pulmano
Page 3
March 19, 2010

6. Limit irrigated turf - Low-water use shrubs and ground cover can be equally attractive and require substantially less water than turf.
7. Select climate adapted native plant species for landscaping - Native plants adapted to the area conserve water and protect the watershed from degradation due to invasive alien species.
8. Look for opportunities to conserve water - Here are a few samples: 1) When clearing debris, use a broom instead of a hose and water; 2) Check for leaks in pipes, faucets and toilets.

Should you have any questions, please contact our Water Resources & Planning Division at 244-8550.

Sincerely,



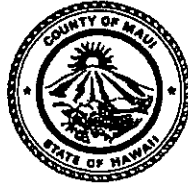
JEFFREY K. ENG, DIRECTOR

ayi

Enclosures: Maui County Planting Plan - Saving Water in the Yard - What and How to Plant in your Area
Best Management Practices

c: DWS Engineering Division
WRPD Project File

ALAN M. ARAKAWA
Mayor



GLENN T. CORREA
Director

PATRICK T. MATSUI
Deputy Director

(808) 270-7230
FAX (808) 270-7934

DEPARTMENT OF PARKS & RECREATION
700 Hali'a Nako'a Street, Unit 2, Wailuku, Hawaii 96793

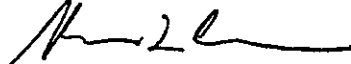
DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

MEMORANDUM

'11 FEB 14 A11 :24

February 7, 2011

MEMO TO: Danny A. Dias, Staff Planner
Department of Planning

FROM: 
Glenn T. Correa, Director

SUBJECT: Pulelehuakea Residential Subdivision (Pukalani)
TMK: (2) 2-3-008:036 (por.)
CPA 2010/0003, CIZ 2010/0006, EA 2010/0005

Thank you for the opportunity to review and comment on the subject actions. We have no objection to be noted at this time.

Our only comment at this time is that the developer will need to satisfy the applicable park dedication requirements in effect at the time of final subdivision approval.

Should you have any questions or need of further comment, please feel free to contact me, or Steve Grogan, Capital Improvements Project Coordinator, at 270-6158, or stephen.grogan@co.maui.hi.us.

c: Robert Halvorson, Chief of Parks Planning & Development, TA

GTC:RH:sg



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

May 20, 2011

Glenn T. Correa, Director
Department of Parks and Recreation
700 Hali`a Nakoa Street, Unit 2
Wailuku, Hawaii 96793

SUBJECT: Response to Comment Letter Regarding Proposed Pulelehuakea Residential Subdivision; TMK (2)2-3-008:036(por.), (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005)

Dear Mr. Correa:

Thank you for your memo of February 7, 2011 providing comments on the proposed Pulelehuakea residential subdivision project.

On behalf of the applicant, KG Maui Development LLC, we acknowledge that the applicant will comply with the applicable park dedication requirements in effect at the time of final subdivision approval. Coordination will be carried out with the Department of Parks and Recreation upon subdivision application to determine applicable park dedication requirements.

Thank you again for your comments. A copy of your letter will be included in the Final EA.

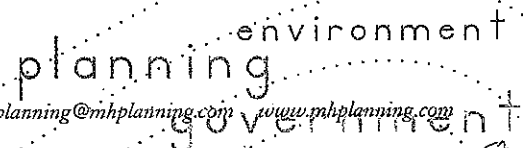
Sincerely,

Leilani Pulmano
Program Manager

LP:lfm

cc: Elton Wong, KG Maui Development, LLC
Danny Dias, Staff Planner, Department of Planning

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ALAN M. ARAKAWA
MAYOR

OUR REFERENCE
YOUR REFERENCE

POLICE DEPARTMENT COUNTY OF MAUI

55 MAHALANI STREET DEPT OF PLANNING
WAILUKU, HAWAII 96793 COUNTY OF MAUI
(808) 244-6400 RECEIVED
FAX (808) 244-6411



GARY A. YABUTA
CHIEF OF POLICE

CLAYTON N.Y.W. TOM
DEPUTY CHIEF OF POLICE

11 MAR -3 A8 :39

February 14, 2011

MEMORANDUM

TO : DANNY A. DIAS, STAFF PLANNER
DEPARTMENT OF PLANNING

FROM : GARY A. YABUTA, CHIEF OF POLICE

SUBJECT : I.D. : CPA 2010/003, CIZ 2010/0006, and EA
2010/0005
TMK : (2) 2-3-008:036 (por.)
Project Name : Pulelehuakea Residential Subdivision
(Pukalani)
Applicant : Munekiyo & Hiraga, Inc. on behalf of KG Maui
Development, LLC

11 MAR -3 A8 :39

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

No recommendation or comment to offer.

Refer to enclosed comments and/or recommendations.

Thank you for giving us the opportunity to comment on this project.

A. D. Matsuura
Assistant Chief Danny Matsuura
For: GARY A. YABUTA
Chief of Police

Enclosure

COPY

TO : GARY YABUTA, CHIEF OF POLICE, COUNTY OF MAUI
VIA : CHANNELS *AC D. Matsumura*
FROM : LAWRENCE PAGADUAN, SERGEANT, PATROL DIVISION-WAILUKU DISTRICT
SUBJECT : RESPONSE FOR COMMENTS REGARDING THE PROPOSED PULELEHUAKEA RESIDENTIAL SUBDIVISION (PUKALANI) *2/9/11*

This communication is submitted as a response to a request for pre-consultation comments by Department of Planning, Danny DIAS, Staff Planner, regarding:

PROJECT : PULELEHUAKEA RESIDENTIAL SUBDIVISION (PUKALANI)
TMK # : (2) 2-3-008: 036 (por.)
PERMIT # : CPA 2010/0003, CIZ 2010/0006, and EA 2010/0005
LOCATION : Along AinaLani Drive, Near Holes 5, 6, and 7 of the Pukalani Golf Course
DESCRIPTION: Construction of a 13-lot single-family residential subdivision along with related improvements

RESPONSE:

In review of the submitted documents, concerns from the police perspective are upon the safety of pedestrian and vehicular movement.

This project entails the construction of a 13-lot single-family residential subdivision along with related improvements upon 9.784 acres of a 39.162-acre parcel currently utilized by vacant land and Pukalani Country Club Golf Course.

EXISTING ROADWAY CONDITION:

Access to the project area is off Aina Lani Drive, a two-lane, two-way private road owned and maintained by the Kulamalu Homeowners Association (HOA). There are bike lanes, curbs, gutters and sidewalks mauka of the Liholani Street intersection. The posted speed limit is 20 miles per hour. Liholani Street is a two-lane, two-way county roadway connecting Aina Lani Drive with Pukalani Street. There are curbs and gutters along both sides of the street. There is a sidewalk along the west side of the street only. The posted speed limit is 20 miles per hour.

The intersection of Aina Lani Drive at Liholani Street is a stop sign controlled T-intersection. There are no separate turn lanes along the approaches.

Old Haleakala Highway is also located in the vicinity. Old Haleakala Highway is a two-lane, County collector road that extends in a northwest-southeast direction and provides a parallel route to Haleakala Highway through Pukalani. Old Haleakala Highway has a posted speed limit of 35 miles per hour.

All traffic will access the project site via Pulelehuakea Street a stub out road along Aina Lani Drive. The nearest intersection to the proposed project driveway is Aina Lani Drive and Liholani Street.

A Traffic Impact Assessment Report for the proposed project has been prepared by Phillip Rowell & Associates. Existing traffic volumes at said intersection were derived from manual traffic counts performed on April 1, 2010.

The conclusions of the traffic impact assessment indicated that the proposed project will generate 3 inbound and 7 outbound trips during the morning peak hour. During the afternoon peak hour, the project will generate 9 inbound and 5 outbound trips. As all Traffic movements will operate at a Level-of-Service "A", no mitigation is recommended, according to the assessment.

There are residences surrounding the project site. It is recommended that during the construction phases, efforts should be made to minimize noise, dust & debris so not to inhibit those whose health and well being may be affected. Adequate traffic control devices and personnel should also be utilized to minimize the impact of heavy equipment and vehicles traveling in and out of the area.

CONCLUSION:

There are no immediate concerns or objections to the progression of this project at this time, from the police standpoint, in regards to pedestrian and vehicular movement. The location of the project is located well within the Residential Areas of Pukalani, where there is very minimal vehicular and pedestrian traffic. No necessary mitigation is foreseen. Although, it is of the utmost importance to be cognizant of any health and safety impacts, directly and indirectly which may arise from this project.

*NO VEHICLE CONCERNS
AT THIS TIME
[Signature]
2/9/11 JOP*

Respectfully submitted,
[Signature]
Sgt Lawrence PAGADUAN E#10218
Patrol Division, District I
February 8, 2011 at 1430 hrs.



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

May 20, 2011

Gary A. Yabuta, Chief of Police
Maui Police Department
55 Mahalani Street
Wailuku, Hawaii 96793

SUBJECT: Response to Comment Letter Regarding Proposed Pulelehuakea Residential Subdivision; TMK (2)2-3-008:036(por.), (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005)

Dear Chief Yabuta:

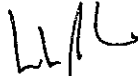
Thank you for your memo of February 14, 2011 providing comments on the proposed Pulelehuakea residential subdivision project.

We note the Maui Police Department has no immediate concerns or objections to the proposed 13-lot single-family residential subdivision with regard to traffic and pedestrian safety. The applicant confirms that during construction, Best Management Practices will be followed to minimize dust and noise impacts to the surrounding residences. Such measures will include, but not be limited to erection of a dust screen to prevent dust from blowing on to adjacent properties and watering disturbed areas as soon as practical and as necessary to minimize wind blown dust. A Community Noise permit will be obtained as applicable to regulate noise generated activities to normal construction periods. A silt fence and temporary drainage basin will be provided during construction to control storm water runoff.

Gary A. Yabuta, Chief of Police
May 20, 2011
Page 2

Thank you again for your comment letter. A copy of your letter will be included in the Final EA.

Sincerely,



Leilani Pulmano
Program Manager

LP:tn

cc: Elton Wong, KG Maui Development, LLC
Danny Dias, Staff Planner, Department of Planning

K:\DATA\KG Holdings\Pukalani\36\MPD response.ltr.doc

ALAN M. ARAKAWA
Mayor

DAVID C. GOODE
Director

ROWENA M. DAGDAG-ANDAYA
Deputy Director

Telephone: (808) 270-7845
Fax: (808) 270-7955



COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
200 SOUTH HIGH STREET, ROOM NO. 434
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Development Services Administration

CARY YAMASHITA, P.E.
Engineering Division

DEPT. OF PUBLIC WORKS
COUNTY OF MAUI
RECEIVED

'11 FEB 10 A9:38

February 7, 2011

MEMO TO: WILLIAM R. SPENCE, PLANNING DIRECTOR

FROM: *David C. Goode* DAVID C. GOODE, DIRECTOR OF PUBLIC WORKS

SUBJECT: **REVISED COMMUNITY PLAN AMENDMENT AND CHANGE IN ZONING APPLICATIONS FOR THE PROPOSED PULELEHUAKA RESIDENTIAL SUBDIVISION; TMK: (2) 2-3-008:036 (POR.) CPA 2010/0003, CIZ 2010/0006, EA 2010/0005**

We reviewed the subject application and have the following comments:

1. The single-family residential subdivision shall provide for curb, gutter and sidewalk on both sides of the subdivision road if such road is intended to be dedicated to the County of Maui.
2. Landscape plantings along the road right of way shall be provided with root barriers.
3. Due to the double cul-de-sac configuration of the roadway, we recommend that there be no parking along the roadway to accommodate the turning movements of emergency vehicles, such as fire engines.
4. If the subdivision road is proposed to be dedicated to the County, all off-site drainage facilities such as the detention/retention basin shall be kept under private ownership and maintenance.
5. Culverts that cross future County road(s) shall be provided with access to the inlet and outlet of the culvert for maintenance work. Access will not be required if the culvert is kept under private ownership and maintenance.

Memo to William R. Spence, Planning Director
February 7, 2011
Page 2

6. The applicant shall be responsible for all required improvements as required by Hawaii Revised Statutes, Maui County Code and rules and regulations.
7. As applicable, construction plans shall be designed in conformance with Hawaii Standard Specifications for Road and Bridge Construction dated 2005 and Standard Details for Public Works Construction, 1984, as amended.
8. As applicable, worksite traffic-control plans/devices shall conform to "Manual on Uniform Traffic Control Devices for Streets and Highways", 2003.

If you have any questions regarding this memorandum, please call Rowena M. Dagdag-Andaya at 270-7845.

DCG:RMDA:ls

xc: Highways Division
Engineering Division

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MICHAEL T. MUNEKIYO
GWEN DHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

May 20, 2011

David C. Goode, Director
Department of Public Works
200 South High Street, Room 434
Wailuku, Hawaii 96793

SUBJECT: Response to Comments Regarding Proposed Pulelehuakea Residential Subdivision; TMK (2)2-3-008:036(por.), (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005)

Dear Goode:

Thank you for your memo of February 7, 2011 providing comments on the proposed Pulelehuakea residential subdivision project. On behalf of the applicant, KG Maui Development LLC, we offer the following information, which addresses your comments in the order listed in your letter.

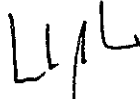
1. The applicant confirms the development will provide for curbs, gutters and sidewalks on both sides of the subdivision road, if such road is dedicated to the County.
2. The applicant confirms landscape plantings along the road right-of-way will be provided with root barriers.
3. The applicant confirms that no parking will be allowed along the roadway to insure turning movements for emergency vehicles will be accommodated.
4. The applicant confirms, if the subdivision road is dedicated to the County, all off-site drainage facilities, such as the detention/retention basin, will be kept under private ownership and maintenance.
5. The applicant confirms that culverts that cross future County road(s) will be provided with access to the inlet and outlet of the culvert for maintenance work. The applicant acknowledges that if the culvert is kept under private ownership then maintenance access to the inlet and outlet will not be required.

David C. Goode, Director
May 20, 2011
Page 2

6. The applicant confirms they will be responsible for all required improvements as required by Hawaii Revised Statutes, Maui County Code and rules and regulations.
7. The applicant confirms construction plans will be designed in conformance with Hawaii Standard Specifications for Road and Bridge Construction dated 2005 and Standard for Public Works Construction, 1984, as amended, as applicable.
8. The applicant confirms worksite traffic-control plans/devices shall conform to "Manual on Uniform Traffic Control Devices for Streets and Highways"; as applicable.

Thank you again for your comments. A copy of your letter will be included in the Final EA.

Sincerely,



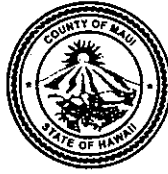
Leilani Pulmano
Program Manager

LP:lfm

cc: Elton Wong, KG Maui Development, LLC
Ronald Fukumoto, Ronald M. Fukumoto Engineering, Inc.
Danny Dias, Staff Planner, Department of Planning

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ALAN M. ARAKAWA
Mayor
WILLIAM R. SPENCE
Director
MICHELE CHOUTEAU McLEAN
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

January 26, 2011

Ms. Leilani Pulmano, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR THE PULELEHUAKEA SUBDIVISION, A 13-LOT SUBDIVISION TO BE LOCATED ALONG AINA LANI DRIVE IN PUKALANI, MAUI, HAWAII; TMK: (2) 2-3-008:036 (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005)

At its regular meeting of January 11, 2011, the Maui Planning Commission reviewed the above-referenced document and provided the following comments:

1. The Final EA should further expand on energy efficiency in the "Sustainable Features" portion of the Project Overview. Please include additional information on the type of energy efficient and energy producing features the Applicant is proposing to include in the project;
2. The Final EA should provide additional information regarding Water in the Impacts and Mitigation section. Please include information on the actual source of water, the cost of the system, the amount of energy used to support such a system, along with any impacts associated with obtaining water for this project;
3. The Final EA should address the housing forecasts for the Upcountry/Pukalani area. Please include an analysis on the effect of future housing availability by downgrading certain portions of the property from Residential to Golf Course;
4. The Final EA should include any information on Archaeological Monitoring or Studies that were previously done on the area of the property being down zoned to Park-Golf Course. If Archaeological Monitoring or Studies were not done in the past, please complete one and include it in the Final EA;
5. The Final EA should include information on how the project, once it is built, will affect the Makawao Aquifer;
6. The Final EA should include information on the current and future Real Property Tax Assessment rates for the project area;

Ms. Leilani Pulmano, Planner
January 26, 2011
Page 2

7. The Final EA should address the work-force housing policy;
8. The Final EA should clearly state the Applicant's intent to construct no more than one (1) dwelling unit per lot;
9. The Final EA should address and include additional information on the terrain of the project site, the anticipated amount of water runoff, and the ability to retain the additional runoff in the event of a storm. In addition, if it is not possible to retain all the runoff on-site, please provide information on its effect to surrounding properties;
10. The Final EA should expand on the traffic portion of the Infrastructure section and include information on the effect this project will have on roadways and intersections near Pukalani School. These roadways include Iolani Street, Pukalani Street, Old Haleakala Highway, and their associated intersections;
11. The Final EA should explicitly point out that the Community Plan Amendment (CPA) and Change in Zoning (CIZ) associated with this project will essentially downgrade the amount of residential land in the area;
12. The Final EA should include information on the nearest public transportation point from the project site and whether it is fully accessible via sidewalks; and
13. The Final EA should include additional aerial photographs and additional close-up aerial photographs of the project site.

Please provide written responses to the above comments in the Final EA. Should you require further clarification, please contact Staff Planner Danny Dias by email at danny.dias@mauicounty.gov or by telephone at (808) 270-7557.

Sincerely,



WILLIAM SPENCE
Planning Director

xc: Clayton I. Yoshida, AICP, Planning Program Administrator
Danny A. Dias, Staff Planner
Project File
General File

WRS:DAD:sa
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MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

May 31, 2011

William Spence, Director
Department of Planning
Attention: Danny Dias
250 South High Street
Wailuku, Hawaii 96793

SUBJECT: Draft Environmental Assessment for the Proposed Pulelehuakea Residential Subdivision, a 13-Lot Subdivision to be Located Along Aina Lani Drive in Pukalani, Maui, Hawaii; TMK (2)2-3-008:036(por.), (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005)

Dear Mr. Spence:

Thank you for your letter, dated January 26, 2011 providing comments from the Maui Planning Commission (Commission) on the Draft Environmental Assessment (EA) for the proposed Pulelehuakea Subdivision. On behalf of the applicant, KG Maui Development LLC, we offer the following responses to the Commission's comments.

Comment No. 1:

The Final EA should further expand on energy efficiency in the "Sustainable Features" portion of the Project Overview. Please include additional information on the type of energy efficient and energy producing features the Applicant is proposing to include in the project;

Response: Further discussion on energy efficiency, including the type of energy efficient and energy producing features being proposed, is provided in the Final EA in Section I. G. Sustainable Features. See **Attachment "A"**.

Comment No. 2:

The Final EA should provide additional information regarding Water in the Impacts and Mitigation section. Please include information on the actual source of water, the cost of the system, the amount of energy used to support such a system, along with any impacts associated with obtaining water for this project;

Response: The Final EA, in Section II.D.2. Water, will be expanded to include additional information on water including the actual source, the cost of the system, and the amount of energy used to support a system along with any impacts associated with the water source. See **Attachment "B"**.

Comment No. 3:

The Final EA should address the housing forecasts for the Upcountry/Pukalani area. Please include an analysis on the effect of future housing availability by downgrading certain portions of the property from Residential to Golf Course;

Response: The Final EA, in Section II.B.4. Housing, addresses the housing forecasts for the Upcountry/Pukalani area including the effect of future housing availability by downgrading certain portions of the property from Residential to Golf Course. See **Attachment "C"**.

Comment No. 4:

The Final EA should include any information on Archaeological Monitoring or Studies that were previously done on the area of the property being down zoned to Park-Golf Course. If Archaeological Monitoring or Studies were not done in the past, please complete one and include it in the Final EA;

Response: The Draft EA included an Archaeological Inventory Study (AIS) for the entire project area, including the area designated to be downzoned in the Pukalani Country Club Golf Course. The Final EA clarifies that the golf course area was also included in the AIS. The AIS concluded that adverse impacts to archaeological resources are not anticipated. Furthermore, State Historic Preservation Division approved the AIS and concurred with its conclusions. Nonetheless, a letter is included in the Final EA from Scientific Consultant Services confirming that the AIS included the golf course area. See **Attachment "D"**.

Comment No. 5:

The Final EA should include information on how the project, once it is built, will affect the Makawao Aquifer;

Response: The Final EA, in Section II.D.2. Water, includes additional information on the long-term effects to the Makawao Aquifer upon project build out. Refer to **Attachment "B"**.

Comment No. 6:

The Final EA should include information on the current and future Real Property Tax Assessment rates for the project area;

Response: The Final EA, in Section II.B.3. Economy, includes information on the current and future projected Real Property Assessment rates for the proposed project. See **Attachment "E"**.

Comment No. 7:

The Final EA should address the work-force housing policy;

Response: The Draft EA addressed the work-force housing policy on page 29 of the Draft EA in Section II.B.4. Housing. Please refer to same section and page in the Final EA.

Comment No. 8:

The Final EA should clearly state the Applicant's intent to construct no more than one (1) dwelling unit per lot;

Response: The Final EA clarifies that the lots will prohibit ohana units and permit only one (1) dwelling unit per lot.

Comment No. 9:

The Final EA should address and include additional information on the terrain of the project site, the anticipated amount of water runoff, and the ability to retain the additional runoff in the event of a storm. In addition, if it is not possible to retain all the runoff on-site, please provide information on its effect to surrounding properties;

Response: To address the Commission's comments, the Final EA, in Section II.D.4. Drainage, further expands on providing additional stormwater runoff capacity and the effects of surround property. See **Attachment "F"**.

Comment No. 10:

The Final EA should expand on the traffic portion of the Infrastructure section and include information on the effect this project will have on roadways and intersections near Pukalani School. These roadways include Iolani Street, Pukalani Street, Old Haleakala Highway, and their associated intersections;

Response: The Final EA, in Section II.D.1. Roadways, expands on the roadways section to include Iolani Street, Pukalani Street, and Old Haleakala Highway. An addendum to the Traffic Impact Assessment Report was completed and is included in the Final EA as Appendix "F-1". See **Attachment "G"**.

Comment No. 11:

The Final EA should explicitly point out that the Community Plan Amendment (CPA) and Change in Zoning (CIZ) associated with this project will essentially downgrade the amount of residential land in the area;

Response: The Final EA clarifies that the project will essentially downgrade the amount of residential land in the area.

Comment No. 12:

The Final EA should include information on the nearest public transportation point from the project site and whether it is fully accessible via sidewalks; and

Response: The Final EA includes information on the nearest public transportation point from the project site and whether it is fully accessible via sidewalks. See **Attachment "H"**.

Comment No. 13:


The Final EA should include additional aerial photographs and additional close-up aerial photographs of the project site.

Response: The Final EA includes additional aerial images in the form of BING aerial maps in Appendix "A".

William Spence, Director
May 31, 2011
Page 5

Again, thank you for the opportunity to respond to the Planning Commission's comments.

Sincerely,



Leilani Pulmano
Program Manager

LP:lfm

Enclosures

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ATTACHMENT A.

Section of Final Environmental Assessment Relating to Sustainable Features

E. PROJECT IMPLEMENTATION CONSIDERATIONS AND PROJECT SCHEDULE

As mentioned previously, the proposed Pulelehuakea Residential Subdivision will provide 13 single-family lots. The construction of the single-family homes will commence upon receipt of all land entitlements, regulatory permits, and approvals. It is estimated that the entitlements process will take approximately two (2) years to complete, followed by approximately one (1) year for subdivision approval and building permit receipt. Site construction of the subdivision is estimated to commence in 2013 and be completed by 2015.

The golf course site will remain as is. There will be no construction as part of the CPA and CIZ requests to downzone this area in order to establish land use designation consistency on the golf course.

F. LONG-TERM MANAGEMENT

Lot owners and homeowners of the proposed project will be subject to covenants, conditions, and restrictions (CC&Rs) that will provide the framework for long-term management of the subdivision. The CC&Rs will be modeled after the existing CC&Rs for the Kulamalu Homeowners Association to ensure consistency with the surrounding neighborhood. A homeowners association will be formed to administer and enforce the CC&Rs. As indicated previously, the CC&Rs will include a restriction that only one (1) dwelling unit per lot is allowed so that ohana units are prohibited.

G. SUSTAINABLE FEATURES

The proposed subdivision site is proposing a number of sustainable design features as part of the site construction and future home design to reduce green house gas emissions, provide for renewable energy, and reduction of waste. Sustainable features in site construction include Best Management Practices (BMPs) and erosion control plans to reduce pollution from construction activities by controlling soil erosion, sedimentation, and airbourne dust generation. This will include measures, such as dust fencing and drainage swales. Treatment will be through the on-site retention/detention basin.

The site construction company will be required to provide a construction waste management plan with the intent to reduce construction waste prior to site construction.

Outdoor lighting systems will be designed to minimize the light trespass from the site and reduce the development impact on nocturnal environments. This will enhance the opportunities to view the night skies.

The proposed subdivision site will also include water conservation measures by employing high efficiency water fixtures throughout the common areas. Landscape features will be designed to avoid invasive plant species and minimize the demand for water and synthetic chemicals through native and drought tolerate plant selection, mulching, and soil amendments.

Indoor demand for water will also be reduced through design requirements. High efficiency fixtures, including low flow faucets and showerheads will be incorporated as design requirements into the CC&Rs.

In addition, other sustainable features for housing design elements within the CC&Rs will include requirements for reducing energy needs such as using ENERGY STAR rated appliances that meet or exceed the minimum requirement for Annual Fuel Utilization Efficiency ratings. Air conditioners shall also meet or exceed the minimum 14 Seasonal Energy Efficiency Ratio (SEER) ratings. Homes will be required to be properly insulated to keep homes cool during summer months and warm during winter months. Windows can also lower energy costs, therefore, homes will be required to install ENERGY STAR windows with at least two (2) panes and low-e coating.

In terms of energy generation for the individual homes, house/lot packages will include an option for purchasing a photovoltaic array and/or residential wind turbine generator or similar energy generation system. And, all homes will be required to provide solar water heaters. These measures, taken together, will help to reduce green house gas emissions, provide for renewable energy, and reduction of waste.

ATTACHMENT B.

Section of Final Environmental Assessment Relating to Water

traffic signals at the Old Haleakala Highway at Pukalani Street should be modified to provide protected left turns from eastbound Old Haleakala Highway to southbound Pukalani Street. At Pukalani Street - Iolani Street intersection, the conversion of the intersection from a two-way STOP sign controlled intersection to a four-way STOP controlled intersection will improve the level-of-service to an acceptable level.

The proposed project will generate three (3) inbound and seven (7) outbound trips during the morning peak hour and eight (8) inbound and five (5) outbound trips during the afternoon peak hour. The addition of these trips will have a minimal effect to existing traffic and existing deficiencies; as such, no mitigation is recommended in addition to the improvements required to mitigate existing deficiencies.

In summary, the conclusions of the traffic impact assessment indicated that the proposed project will generate 3 inbound and 7 outbound trips during the morning peak hour. During the afternoon peak hour, the project will generate 8 inbound and 5 outbound trips. The level-of-service analysis concluded that all controlled traffic movements at the study intersection of Aina Lani Drive and Liholani Street will operate at Level-of-Service "A". As all traffic movements at this intersection will operate at Level-of-Service A, no mitigation is recommended.

Based on the traffic engineer's findings, there should be no adverse trip generation or adverse impact associated with traffic operations as a result of the proposed subdivision.

2. Water

a. Existing Conditions

The County of Maui, Department of Water Supply (DWS) provides water service for the area. The water system in the area consists of an 850,000 gallon reservoir and various distribution lines. The 850,000 gallon reservoir, located about 1,800 feet from the subdivision site, provides storage and supplies the distribution system for the area. Twelve-inch distribution lines transport the water from the reservoir to locations on Liholani Street and Aina Lani Drive. The proposed subdivision may connect into an existing 8-inch

waterline along a stub out road, Pulelehuakea Street. There are two (2) fire hydrants on Aina Lani Drive which are approximately 100 feet from the subdivision site.

b. Potential Impacts and Mitigation Measures

Water system improvements for the proposed subdivision include 8-inch water lines, fire hydrants, and service laterals. The subdivision site's average daily water demand is anticipated to be approximately 7,800 gallons per day, based on 600 gallons per day for each single-family home. Refer to **Appendix "B"**. Water requirements will be coordinated with the DWS to ensure that adequate supply is available at the time of construction. In addition, calculations for domestic, irrigation, and fire protection will be submitted to the DWS in connection with the processing of the project's building permit application.

It is noted that the DWS provided early comments on the project stating that the *"site is located in an area affected by the finding of inadequate water supply issued on March 16, 1993."* In light of this condition, the applicant has identified the following potential alternatives to address water source constraints.

(1) Purchase Water Credits

One (1) of the alternatives is to purchase water resource credits from Dowling Company, Inc. (DCI). DCI has several water resource credits from the County of Maui Upcountry Water System that are transferable. DCI water credits are approximately \$22,000.00 per water meter.

(2) Connect to Maui County Upcountry Water System

The applicant is also considering connecting to the Maui County Upcountry Water System. This alternative would entail applying to be included on the Upcountry Water Priority List, and construction of the subdivision can only commence when water source becomes available and the Priority List number is called. Costs and amount of energy required for water source, along with impacts for the additional needs of

the Maui County Upcountry Water System are undetermined at this time as a new source of water is unknown.

(3) **Desalinization**

The applicant is also considering development of a reverse osmosis desalination plant using an existing water well that irrigates the Pukalani Country Club Golf Course. The applicant continues to work with DWS to determine the feasibility of the plant.

The existing water well is slightly brackish, which would require a reverse osmosis desalination plant to generate potable water. The sustainable yield of the source is one (1) million gallon per day (MGD) and the well would yield 0.5 MGD of potable water plus 0.5 MGD of residual water to continue to irrigate the golf course. As previously indicated, the average daily water demand is anticipated to be approximately 7,800 gallons per day. The applicant is proposing to permit, design, and construct the reverse osmosis desalination plant to connect to the DWS Upcountry Water System. The well, reverse osmosis desalination plant, and the underlying lands would be dedicated to the County for ownership and operations of the plant. See **Appendix "G"**.

The applicant's cost to permit, design, and construct the plant would be approximately \$2 to \$2.5 million. The electrical demand to operate the plant would be about 70 kilowatts per 100,000 gallons per day (GPD). The estimated delivered energy cost per 1,000 gallons of water from the plant is about \$4.23, therefore, the estimated cost to deliver 100,000 GPD is about \$423.00.

With respect to aquifer protection considerations, mitigation measures will include pollution prevention as suggested by DWS as the site overlies the Makawao aquifer. The goal is to protect the integrity of surface and groundwater resources. To this end, the following mitigation measures will be

implemented to prevent water pollution related impacts during construction of the subdivision.

- Construction of drainage control features, such as berms and silting basins.
- Maintenance of the drainage control features.
- Retain ground cover until the last possible date.
- Stabilization of denuded areas by sodding or planting as soon as possible.
- Control dust by proper stockpiling and use of non-potable water for dust control.
- Prevent construction products, oil, fuel, and other substances from falling or leaching into the ground by using proper containment and maintenance practices.

In addition to prevention of water pollution during construction, water filtration measures, such as retention/detention basins to allow for percolation, will be incorporated into the drainage system to clean stormwater and protect the integrity of groundwater resources in the Makawao aquifer during long-term occupancy of the homes.

Furthermore, the project will include the following water conservation measures within the subdivision design and purchase agreements for the sale of the lots.

- Low-flow fixtures and devices will be required.
- Once landscaping has been established, landscape watering will be restricted to after 7:00 p.m. at night and before 10:00 a.m. in the morning.
- A landscape guide will be provided for future homeowners that will include climate adapted native plant species with the objective to conserve water and protect the watershed from invasive alien species.

It is noted that there will be no changes to golf course operation associated with the downzoning request for the golf course site.

3. **Wastewater**

a. **Existing Conditions**

The project area is located in the Critical Wastewater Disposal Area as determined by the Maui County Wastewater Advisory Committee according to Department of Health, Wastewater Branch. Thus, no new cesspools are allowed in the area.

Hawaii Water Service Company owns and operates the Pukalani Sewerage Treatment Works, a private wastewater collection and treatment facility that serves the Pukalani Terrace and Country Club development. The collection system consists of gravity sewers, force mains, and pump stations. The collection system carries wastewater to the Pukalani Wastewater Treatment Plant for treatment and disposal.

b. **Potential Impacts and Mitigation Measures**

Wastewater service for the proposed subdivision will be provided by Pukalani Sewerage Treatment Works. Refer to **Appendix "B"**. The proposed subdivision is estimated to generate approximately 4,550 gallons per day of wastewater based on 350 gallons per day per single-family home. Wastewater improvements include offsite and onsite gravity sewers. Improvements consist of 8-inch sewer mains, 6-inch sewer laterals, and manholes. These lines will connect to the existing collection systems adjacent to the project area within Hole 5 of the golf course. The proposed land use entitlements requests are not expected to negatively impact the existing wastewater system capacities or facilities.

ATTACHMENT C.

Section of Final Environmental Assessment Relating to Housing

the Pukalani Country Club Golf Course is approximately \$1,654.00, assessed at the conservation category.

b. Potential Impacts and Mitigation Measures

Short-term economic benefits are anticipated during the construction phase of project implementation. Beyond construction-related spending, given the scope of the proposed action, there should be minimal economic impact on the economy.

The real property taxes for the proposed subdivision site is estimated to be \$52,000.00 based on fiscal year 2010 real property tax rates and assessed valuation of \$1,100,000.00 for house and lot, which includes a homeowner occupied exemption of \$300,000.00.

The real property tax rate for the golf course site is not expected to significantly change since the current assessment category of conservation will remain the same. However, the real property tax rate will adjust based on the assessment value of the underlying golf course.

4. Housing

a. Existing Conditions

As previously discussed, population in the Makawao-Pukalani-Kula region is estimated to increase by approximately 25 percent (Socio-Economic Forecast, June 2006). This increase in population will create a demand for additional 824 housing units in this region according to the Draft Maui Island Plan (MIP). Accordingly, in this region, the Draft MIP calls for the 824 units to be built within lands that are already zoned for residential uses and within lands that are proposed to be included in the new Urban Growth and Rural Growth boundaries.

As required by Maui County Code (MCC) Chapter 2.96, Workforce Housing, the proposed project will be required to provide six (6) workforce housing units or equivalent in-lieu fee or land.

b. Potential Impacts and Mitigation Measures

The proposed subdivision site will increase the supply of available housing for Upcountry residents to meet future demand in this region. The proposed subdivision site will provide opportunities for market-priced, trade-up housing which is consistent with the surrounding neighborhoods.

The downzoning of the existing residential land use designations on the lands within the Pukalani Country Club Golf Course will not negatively affect the supply of future housing availability as four (4) areas are designated by the Draft MIP as Urban Growth Areas - Makawao Makai, Seabury Hall, Pukalani Expansion, and Pukalani Makai. These four (4) areas are identified to provide a total of 731 units of the 824 needed units by 2030 to meet the demand for future housing needs in this region. In addition to these growth areas, current State Land Use Urban designated areas total approximately 1,000 acres in Pukalani only, which potentially allows for new in-fill residential developments. In summary, the in-fill housing potential plus the planned growth areas identified in the Draft MIP, accommodates for future housing needs to meet future demand due to population growth.

The applicant will comply with MCC 2.96 Workforce Housing. One (1) of the alternatives for compliance involves the purchasing of workforce housing credits from Department of Hawaiian Home Lands (DHHL) as allowed by Hawaii Revised Statutes (HRS) Chapter 46-15.1 Housing, County Powers. HRS 46-15.1 allows DHHL to request for workforce housing credits for their projects and allows the credits to be transferable County-wide.

The second alternative is to provide six (6) workforce housing lots onsite.

Once a determination has been reached, a Residential Workforce Housing Agreement will be executed with the County of Maui, Department of Housing and Human Concerns for recordation at the Bureau of Conveyances prior to subdivision approval.

ATTACHMENT D.

Section of Final Environmental Assessment Relating to Archaeology

b. Potential Impacts and Mitigation Measures

The proposed subdivision's runoff will be accommodated onsite and will not be conveyed to Kaluapulani Gulch. In regards to the golf course site, no changes will occur as part of this action. Therefore, the proposed project is not anticipated to have a significant adverse impact to streams, wetlands, gulches, and other water bodies.

6. Archaeological Resources

a. Existing Conditions

An Archaeological Assessment was completed for the subdivision site and golf course site by Scientific Consultant Services, Inc. in December, 2009. See **Appendix "D"**. The purpose of the assessment was to determine the presence or absence of midden deposits, and artifact deposits on the surface of the project area, as well as assess the potential for the presence of subsurface cultural deposits. If sites/historic properties were identified, they were to be evaluated in terms of significance criteria.

As part of the Archaeological Assessment, a discussion of the environmental setting and historical background, a review of archival resources and the results of previous archaeological work conducted in the area were undertaken prior to fieldwork to assess expectations for the project area. Although pre-Contact sites do exist in the area, given the background history of the area as well as present land use, the expectations for finding post-Contact sites were greater than expectations for finding pre-Contact sites. Historic sites (i.e., roads, irrigation features, fences, house sites, etc.) associated with commercial agricultural activities were anticipated; with a very slight chance of encountering agricultural features including terraces, garden/animal enclosures, walls, and mounds. In summary, the estimated probability of documenting historic sites was low; the estimated probability of documenting pre-Contact sites was almost nonexistent.

A full systematic pedestrian survey, providing 100 percent coverage of the subdivision site and affected areas of the golf course was conducted and three (3) stratigraphic trenches were excavated. The archaeological survey found

no surface or subsurface archaeological or cultural artifacts on the subdivision site.

Although a full systematic pedestrian survey was conducted for the golf course site, no stratigraphic trenches were excavated because there were no expectations of finding surface or subsurface sites within the golf course as the landscape has been completely modified for golf course use. See **Appendix “D-1”**.

b. Potential Impacts and Mitigation

Since the Archaeological Assessment conducted for the proposed Pulelehuakea Residential Subdivision site and golf course site did not identify any archaeological sites or cultural artifacts, there is a low likelihood of adversely impacting archaeological or cultural resources. The State Historic Preservation Division (SHPD) has reviewed and approved the archaeological survey, as documented in **Appendix “D-2”**. Furthermore, the existing golf course will not be affected as no changes will occur as part of this action. In the event cultural deposits or human burials are encountered during future construction activity, work will cease in the area of the find and the SHPD and Office of Hawaiian Affairs (OHA) will be contacted to establish appropriate mitigation measures in accordance with Chapter 6E, Hawaii Revised Statutes.

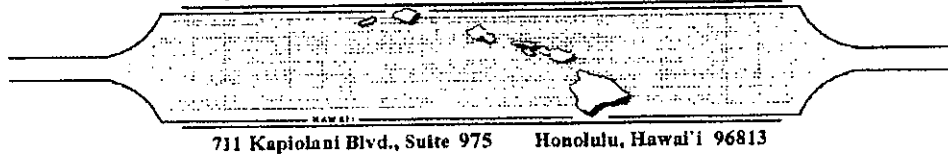
7. Cultural Resources

a. Existing Conditions

A Cultural Impact Assessment was prepared for the applicant by CKM Cultural Resources for the proposed project area. See **Appendix “E”**.

As noted in the assessment, the project site is situated within the *ahupuaa* of Kula and is located in the *ili* of *Aapueo*. Situated on a high, elevated plain within the *ahupuaa*, the *ili* is nestled along ridges and bordered by gulches that would have protected this area and made it a safe place to live. The assessment notes that there are various translations for *Aapueo*. One translation is “the owl’s will”, while another reflects the *aa* rock topography of the area. Most sources, however, believe that *Aapueo* was named after a female deity who once resided in the area.

SCIENTIFIC CONSULTANT SERVICES, Inc.



Elton Wong
Kobayashi Group
1288 Ala Moana Blvd., Suite 201
Honolulu, Hawaii 96814

January 13, 2011

Re: **Archaeological Survey of the Proposed Pulelehuakea Residential Subdivision,
Pukalani, Maui [TMK: (2) 2-3-08:36 por. and 2-3-09:39]**

Dear Mr. Wong:

Scientific Consultant Services, Inc. (SCS) conducted Archaeological Inventory Survey of the project area composing your proposed Pulelehuakea Subdivision in Pukalani, Maui. The survey included full pedestrian survey of the project area as well as subsurface testing. The report for the Inventory Survey was submitted to the State Historic Preservation Division (SHPD) on January 13, 2010 and accepted by the SHPD on February 12, 2010. The only condition attached to the letter was the call for Archaeological Monitoring during ground altering activities on a portion of the northern, 30-acre parcel.

Recently, during your attendance at a Maui Planning Commission meeting (January 12, 2011), a commissioner requested that a portion labeled "B" on an exhibit, currently being used as a golf fairway, be surveyed. This area was, in fact, surveyed during the original Archaeological Inventory Survey. To access the smaller 6-acre portion of the project area, the archaeological field crew gained access through the "B" area. They also walked both fairways, prior to golfers playing on the course. There were no expectations for finding surface sites in the fairways as the landscape has been completely modified for the golf course in this section.

Given that area "B" is an active fairway, there are no known archaeological sites/historic properties occurring in the fairways themselves. This area was not subsurface testing previously because it would have severely disrupted golf course activities. There are no sites in the two, massively modified fairways. In addition, the Inventory Survey did not lead to the identified of any sites, even through the excavation of thirteen (13) long trenches.

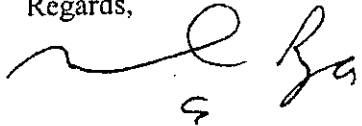
In the event area "B" is used for construction in the future and ground altering work will occur, Archaeological Monitoring will be conducted to assess the presence/absence of sites in subterranean contexts.

Please feel free to contact me at your convenience (597-1182; mike@scshawaii.com) if you have any additional questions about the archaeological work for the Pulelehuakea project area.

Ph: 808-597-1182 SCS... SERVING ALL YOUR ARCHAEOLOGICAL NEEDS Fax: 808-597-1193

Neighbor Island Offices • Hawai'i Island • Maui • Kaua'i

Regards,

A handwritten signature in black ink, appearing to read 'Michael Dega'. The signature is fluid and cursive, with a large initial 'M' and a distinct 'Dega' at the end.

Michael Dega, Ph.D.
Senior Archaeologist
SCS, Inc.

ATTACHMENT E.

Section of Final Environmental Assessment Relating to Real Property Taxes

2. Population

a. Existing Conditions

Maui County has exhibited relatively strong growth over the past decade with the 2000 population of 128,241, reflecting a 27.6 percent increase over the 1990 population of 100,504. Growth in the County is expected to continue, with resident population projections for the year 2030 projected to be 199,550 (Maui County Planning Department, June 2006).

Just as the County's population continues to grow, the resident population of the Makawao-Pukalani-Kula Community Plan area has also increased. In 2005, the population of the Makawao-Pukalani-Kula region was 23,176 (SMS, June 2006). The resident population in the region is projected to increase to 27,640 in the year 2020 and to 30,872 by the year 2030 (SMS, June 2006). According to the County of Maui, Planning Department's Draft Maui Island Plan, the growth in population would necessitate 824 new housing units in the Upcountry area.

b. Potential Impacts and Mitigation Measures

The proposed subdivision project will provide new housing opportunities to meet projected population growth and the homes will be in keeping with the community character of the surrounding neighborhoods.

3. Economy

a. Existing Conditions

The Makawao-Pukalani-Kula region, with its vast lands of pasture grass, has enabled cattle ranching and alternative ranching activities, such as sheep herding, which contribute to the economy. Pukalani and Makawao consist of commercial and service-based operations. With its fertile soil and cool climate conditions, the Kula region is renowned for produce and flower crops that are exported to domestic and international markets.

The current real property tax rate for the proposed subdivision site is approximately \$1,477.00, assessed at unimproved residential category, while

the Pukalani Country Club Golf Course is approximately \$1,654.00, assessed at the conservation category.

b. Potential Impacts and Mitigation Measures

Short-term economic benefits are anticipated during the construction phase of project implementation. Beyond construction-related spending, given the scope of the proposed action, there should be minimal economic impact on the economy.

The real property taxes for the proposed subdivision site is estimated to be \$52,000.00 based on fiscal year 2010 real property tax rates and assessed valuation of \$1,100,000.00 for house and lot, which includes a homeowner occupied exemption of \$300,000.00.

The real property tax rate for the golf course site is not expected to significantly change since the current assessment category of conservation will remain the same. However, the real property tax rate will adjust based on the assessment value of the underlying golf course.

4. Housing

a. Existing Conditions

As previously discussed, population in the Makawao-Pukalani-Kula region is estimated to increase by approximately 25 percent (Socio-Economic Forecast, June 2006). This increase in population will create a demand for additional 824 housing units in this region according to the Draft Maui Island Plan (MIP). Accordingly, in this region, the Draft MIP calls for the 824 units to be built within lands that are already zoned for residential uses and within lands that are proposed to be included in the new Urban Growth and Rural Growth boundaries.

As required by Maui County Code (MCC) Chapter 2.96, Workforce Housing, the proposed project will be required to provide six (6) workforce housing units or equivalent in-lieu fee or land.

ATTACHMENT F.

Section of Final Environmental Assessment Relating to Drainage

4. Drainage

a. Existing Conditions

The elevations of the project site range from approximately 1,220 feet to 1,274 feet above mean sea level. The project site generally slopes down from southeast to northwest. The slopes range from 6 to 12 percent throughout the site.

There are no existing drainage improvements on the subdivision project site. Stormwater runoff sheet flows across the site and through the golf course. Concrete curbs, gutters, and catch basins along Liholani Street collect the stormwater runoff and direct the collected runoff to Kaluapulani Gulch. As mentioned previously, Kaluapulani Gulch is not listed as a perennial stream according to Hawaii Stream Assessment. The existing 50-year, 1-hour peak flow is approximately 8.65 cubic feet per second (cfs). Refer to **Appendix "B"**.

b. Potential Impacts and Mitigation Measures

Based on the County of Maui regulations, the drainage system will be designed to handle a storm with a recurrence interval of 50 years since the drainage area is less than 100 acres. The proposed subdivision will result in an approximate 50-year, 1-hour peak flow of 18.35 cfs which is an increase of 9.70 cfs. The increase in the rate of runoff will be mitigated by construction of a drainage system that includes swales, catch basins, manholes, drain pipes, a culvert, and a detention/retention basin. In general, these improvements will direct offsite runoff around the site and onsite runoff to the detention/retention basin that captures the 9.70 cfs increase in runoff from the proposed project. To prevent offsite runoff from entering the site, cut-off swales will direct offsite flows around the site. A culvert at the entry road on the southerly side of the site will convey offsite flows under the road and to the downstream areas.

As such, the proposed action will not result in increased runoff from existing conditions. Refer to **Appendix "B"**. Therefore, there should be no significant adverse effects on the adjacent or downstream properties.

As previously noted, there are no improvements proposed for the golf course site, and the downzoning request for this site will not affect existing drainage conditions.

It is noted that an analysis was conducted, at the request of the Maui Planning Commission, to provide additional stormwater capacity above the 9.70 cfs increase in runoff from the proposed project. In terms of stormwater runoff capacity, the proposed project is ideally located- surrounded by a golf course. The Pukalani Country Club Golf Course allows for stormwater runoff to percolate into the golf course. There will be no adverse impacts of existing pass-through flows to the golf course.

5. Electrical, Telephone, and CATV

a. Existing Conditions

The distribution system for electrical, telephone, and cable television (CATV) services in the region are provided by Maui Electric Company, Ltd., Hawaiian Telcom, and Oceanic Time Warner Cable, respectively.

b. Potential Impacts and Mitigation Measures

The subdivision project will be served by new underground lines that connect to existing nearby facilities. The utility companies have indicated that services are available for the proposed project. The proposed project is not anticipated to adversely affect electrical or communication systems.

E. CUMULATIVE AND SECONDARY IMPACTS

Cumulative impacts are defined as the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions.

A “secondary impact” or “indirect effect” from the proposed action means:

effects which are caused by the action and are later in time or further removed in distance, but are still reasonable foreseeable.

ATTACHMENT G.

Section of Final Environmental Assessment Relating to Traffic

in the older Pukalani neighborhoods, rural street standards were utilized, meaning no curbs, gutters or sidewalks were installed as part of the street design.

D. INFRASTRUCTURE

1. Roadways

a. Existing Conditions

Access to the project area is off of Aina Lani Drive, a two-lane, two-way private roadway owned and maintained by the Kulamalu Homeowners Association (HOA). There are bike lanes, curbs, gutters, and sidewalks mauka of the Liholani Street intersection. The posted speed limit is 20 miles per hour. The Kulamalu HOA is working with the County of Maui to dedicate this road to the County of Maui.

Liholani Street is a two-lane, two-way County roadway connecting Aina Lani Drive with Pukalani Street. There are curbs and gutters along both sides of the street. There is a sidewalk along the west side of the street only. The posted speed limit is 20 miles per hour.

The intersection of Aina Lani Drive at Liholani Street is a STOP sign controlled T-intersection. There are no separate turn lanes along the approaches.

Old Haleakala Highway is also located in the vicinity. Old Haleakala Highway is a two-lane, County collector road that extends in a northwest-southeast direction and provides a parallel route to Haleakala Highway through Pukalani. Old Haleakala Highway has a posted speed limit of 35 mph.

All traffic will access the project site via Pulelehuakea Street a stub out road along Aina Lani Drive. The nearest intersection to the proposed project driveway is Aina Lani Drive and Liholani Street and is the focal point of the project generated traffic and background traffic.

b. Potential Impacts and Mitigation Measures

A Traffic Impact Assessment Report (TIAR) for the proposed project has been prepared by Phillip Rowell & Associates. See **Appendix “F”**.

Existing traffic volumes at the intersection of Aina Lani Drive and Liholani Street were derived from manual traffic counts performed on April 1, 2010.

There are six (6) Levels-Of-Service (LOS), “A” through “F”, which relate to the driving conditions from best to worst, respectively. In general, LOS “A” represents free-flow conditions with no congestion. LOS “F”, on the other hand, represents severe congestion with stop-and-go conditions. Level-of-Service “D” is typically considered acceptable for peak hour conditions in urban areas.

The results of the level-of-service analysis of existing conditions are summarized in **Table 4**. Shown are the average vehicle delays and levels-of-service of the lane groups. All lane groups operate at Level-of-Service “A”, reflecting good traffic operating conditions and minimal delays.

Table 4. Existing Levels-of-Service Analysis - Aina Lani Drive at Liholani Street

Approach and Movement	AM Peak Hour		PM Peak Hour	
	7:00 am to 8:00 am		3:00 pm to 4:00 pm	
	Delay ¹	LOS ²	Delay ¹	LOS ²
Eastbound Left & Thru	7.5	A	7.3	A
Southbound Left & Right	9.2	A	8.9	A

Source: Phillip Rowell & Associates, 2010.

NOTES:

1. Delay is in seconds per vehicle.
2. LOS denotes Level-of-Service calculated using the operations method described in Highway Capacity Manual: LOS is based on delay.
3. See Attachment D in Appendix “E” for Level-of-Service Calculation Worksheets.

The vehicle trip generation rates are based on the construction of 13 single-family lots. The trip generation calculations are summarized in **Table 5**. As shown, the proposed project will generate three (3) inbound and seven (7) outbound trips during the morning peak hour for a total of 10 trips. During the

afternoon peak hour, the project will generate eight (8) inbound and five (5) outbound trips for a total of 13 trips.

Table 5. Trip Generation Calculations for Proposed Project

Time Period	Direction	Single-Family Detached Housing (LU Code 210)		
		Rate or % ⁽¹⁾	Occupied Units	Trips
AM Peak Hour	Total	0.77	13	10
	In	26%		3
	Out	74%		7
PM Peak Hour	Total	1.02	13	13
	In	64%		8
	Out	36%		5

Source: Phillip Rowell & Associates, 2010.

NOTES:
⁽¹⁾ Institute of Transportation Engineers, Trip Generation, Seventh Edition, 2003.

Existing traffic plus project traffic projections were estimated by superimposing the peak hourly traffic generated by the proposed project on the existing (without project) peak hour traffic projections. This represents a worse-case condition. The traffic projection calculations are shown in **Table 6**.

Table 6. Traffic Projection Calculations Aina Lani Drive at Liholani Street

Approach and Movement		Existing Traffic (2009)		Project Trips		Existing Plus Project	
		AM	PM	AM	PM	AM	PM
North	Right	13	32			13	32
	Left	10	20	3	8	13	28
East	Right	39	17	7	5	46	22
	Thru	0	2			0	2
West	Thru	0	4			0	4
	Left	46	16			46	16
Totals		108	91	10	13	118	104

Source: Phillip Rowell & Associates, 2010.

The results of the existing traffic plus project traffic projections showed the total vehicle trips during the morning peak hour will generate 118 trips and during the afternoon peak hour total vehicle trips will generate 104 trips.

The results of the future level-of-service analysis are summarized in **Table 7**. Shown are the average vehicle delays and the levels-of-service of the lane groups. The analysis concluded that all traffic movements will operate at Level-of-Service “A”, reflecting good operating conditions and minimal delays.

Table 7. 2012 Levels-of-Service Analysis - Aina Lani Drive at Liholani Street

Approach and Movement	AM Peak Hour				PM Peak Hour			
	Without Project		With Project		Without Project		With Project	
	Delay ¹	LOS ²	Delay ¹	LOS ²	Delay ¹	LOS ²	Delay ¹	LOS ²
Eastbound Left & Thru	7.5	A	7.5	A	7.3	A	7.3	A
Southbound Left & Right	9.2	A	9.4	A	9.0	A	9.0	A

Source: Phillip Rowell & Associates, 2010.

NOTES:

1. Delay is in seconds per vehicle.
2. LOS denotes Level-of-Service calculated using the operations method described in Highway Capacity Manual: LOS is based on delay.
3. See Attachment D in Exhibit “E” for Level-of-Service Calculation Worksheets.

An addendum to the TIAR was also conducted to further investigate the following additional intersections:

- Old Haleakala Highway at Pukalani Street
- Pukalani Street at Iolani Street
- Old Haleakala Highway at Makani Road

See **Appendix “F-1”**.

The addendum concluded that intersections of Old Haleakala Highway at Pukalani Street and Pukalani Street at Iolani Street currently operate at unacceptable levels-of-service. To mitigate these existing deficiencies, the

traffic signals at the Old Haleakala Highway at Pukalani Street should be modified to provide protected left turns from eastbound Old Haleakala Highway to southbound Pukalani Street. At Pukalani Street - Iolani Street intersection, the conversion of the intersection from a two-way STOP sign controlled intersection to a four-way STOP controlled intersection will improve the level-of-service to an acceptable level.

The proposed project will generate three (3) inbound and seven (7) outbound trips during the morning peak hour and eight (8) inbound and five (5) outbound trips during the afternoon peak hour. The addition of these trips will have a minimal effect to existing traffic and existing deficiencies; as such, no mitigation is recommended in addition to the improvements required to mitigate existing deficiencies.

In summary, the conclusions of the traffic impact assessment indicated that the proposed project will generate 3 inbound and 7 outbound trips during the morning peak hour. During the afternoon peak hour, the project will generate 8 inbound and 5 outbound trips. The level-of-service analysis concluded that all controlled traffic movements at the study intersection of Aina Lani Drive and Liholani Street will operate at Level-of-Service "A". As all traffic movements at this intersection will operate at Level-of-Service A, no mitigation is recommended.

Based on the traffic engineer's findings, there should be no adverse trip generation or adverse impact associated with traffic operations as a result of the proposed subdivision.

2. Water

a. Existing Conditions

The County of Maui, Department of Water Supply (DWS) provides water service for the area. The water system in the area consists of an 850,000 gallon reservoir and various distribution lines. The 850,000 gallon reservoir, located about 1,800 feet from the subdivision site, provides storage and supplies the distribution system for the area. Twelve-inch distribution lines transport the water from the reservoir to locations on Liholani Street and Aina Lani Drive. The proposed subdivision may connect into an existing 8-inch

ATTACHMENT H.

Section of Final Environmental Assessment Relating to Public Transportation

subdivision will not adversely affect County services or infrastructure capacities for solid waste.

The design intent of the proposed subdivision site is to balance the cut and fill, thus minimizing construction waste associated with the improvements. Cleared and grubbed materials, from the construction of the proposed improvements, will be disposed for composting use, as practicable. Construction waste which may be generated from building the homes will be recycled or disposed of at the appropriate construction waste disposal location. The site construction company will be required to provide a construction waste management plan with the intent to reduce construction waste. With these solid waste management measures, the contribution of the construction waste to the appropriate landfills will be minimized. Thus, the proposed subdivision site is not anticipated to adversely affect collection or capacity parameters of the County's solid waste system.

There will be no changes to the golf course site as part of the downzoning action and thus no impacts to solid waste facilities and capacity.

6. Transit Programs

a. Maui Bus

The County of Maui currently operates ten (10) fixed routes and four (4) commuter routes on the island of Maui, through the Maui County Department of Transportation (MDOT). The Maui Bus operates seven (7) days per week, 365 days each year, and in general, the fixed routes run from 5:30 a.m. to 9:30 p.m., while the commuter routes run from 5:40 a.m. to 6:30 p.m. One (1) fixed route and one (1) commuter route service Pukalani.

(1) Fixed Routes

In 2004, the County of Maui began funding a limited transit system serving South Maui and Central Maui. The service began with two (2) routes, each at a cost of \$1.00 per boarding. Akina Aloha Tours was the operator at the time. The approximate ridership during the first year of operation was 29,000 boardings.

From 2005 to present, Roberts Hawaii has been the operator of the transit system. Since its inception in 2004, the transit service has grown from two (2) routes to the current ten (10) fixed routes. Ridership has also blossomed in this time, to over 100,000 boardings per month, a considerable increase from 29,000 for the entire year 2004. The transit system currently serves Upcountry, Central, Haiku, West, and South Maui daily. Most routes operate with one hour headways and cost \$1.00 per boarding. Monthly passes are available on all routes.

The closest stop to the proposed project is located at the Pukalani Terrace Shopping Center, approximately two (2) miles away.

(2) Commuter Routes

In addition to the fixed routes which operate over extended hours, the County of Maui offers commuter fixed route bus services designed principally to transport workers from the communities where they reside, to the resort areas of Maui. There are four (4) commuter routes with a route servicing the Makawao-Pukalani area. The Makawao-Kapalua Commuter travels from Makawao through Pukalani, to the Ritz-Carlton Kapalua. The bus stop is located at the Pukalani Community Center. Fares are \$2.00 per boarding and monthly passes are available.

b. Americans with Disabilities Act (ADA) Paratransit

Another component of the County's public bus service is the ADA paratransit program, which is designed to provide increased mobility for disabled individuals. If a person's disability prevents the person from using the fixed route service, the person may apply to utilize the paratransit service. Qualified individuals may be picked up via the paratransit service within three-fourths of a mile of the fixed routes.

c. **Social Services Transportation**

The MDOT funds and manages the Maui County Social Service Transportation Program which is currently managed by Maui Economic Opportunity (MEO). The program utilizes accessible vehicles in its provision of service. In addition, the transportation services provided are complimentary to patrons as the services are fully funded by the County grant. There are two (2) social service transportation programs through this grant.

(1) **Rural Shuttle**

The Rural Shuttle program allows participants access to their medical, shopping, or leisure needs. The service is available to the general public and senior citizens are the heaviest users of this program. Many seniors utilize this service to perform their weekly errands of food shopping, doctors' visits, or banking. The purpose of the program is to provide increased access for individuals who live in rural areas.

(2) **Ala Hou**

The Ala Hou program provides transportation to allow disabled individuals increased mobility. The program operates six (6) days per week, 10:00 a.m. to 2:00 p.m. on weekdays, and 2:30 p.m. to 5:00 p.m. on Saturdays. Disabled individuals may utilize the service for a variety of purposes, including medical, faith worshipping, shopping, banking, and leisure activities. The program's intent is to provide equal access for disabled individuals and to ensure that the lack of personal transportation is not an impediment from continuing active lifestyles.

A person living in the proposed project looking for alternative transportation options from using a vehicle will need to walk or bike to the closest bus stop located at Pukalani Terrace Shopping Center or, if using the commuter route, Pukalani Community Center. Sidewalks will be provided within the proposed project and would connect to the existing sidewalk within the Kulamalu Subdivision. However,

in the older Pukalani neighborhoods, rural street standards were utilized, meaning no curbs, gutters or sidewalks were installed as part of the street design.

D. INFRASTRUCTURE

1. Roadways

a. Existing Conditions

Access to the project area is off of Aina Lani Drive, a two-lane, two-way private roadway owned and maintained by the Kulamalu Homeowners Association (HOA). There are bike lanes, curbs, gutters, and sidewalks mauka of the Liholani Street intersection. The posted speed limit is 20 miles per hour. The Kulamalu HOA is working with the County of Maui to dedicate this road to the County of Maui.

Liholani Street is a two-lane, two-way County roadway connecting Aina Lani Drive with Pukalani Street. There are curbs and gutters along both sides of the street. There is a sidewalk along the west side of the street only. The posted speed limit is 20 miles per hour.

The intersection of Aina Lani Drive at Liholani Street is a STOP sign controlled T-intersection. There are no separate turn lanes along the approaches.

Old Haleakala Highway is also located in the vicinity. Old Haleakala Highway is a two-lane, County collector road that extends in a northwest-southeast direction and provides a parallel route to Haleakala Highway through Pukalani. Old Haleakala Highway has a posted speed limit of 35 mph.

All traffic will access the project site via Pulelehuakea Street a stub out road along Aina Lani Drive. The nearest intersection to the proposed project driveway is Aina Lani Drive and Liholani Street and is the focal point of the project generated traffic and background traffic.

JAN 24 2011



January 20, 2011

Ms. Leilani Pulmano, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawaii, 96793

Subject: Pulelehuakea Residential Subdivision – Community Plan Amendment, Change in Zoning, and Draft Environmental Assessment (CPA 2010/0003, CIZ 2010/0006, EA 2010/0005)
Pulelehuakea Street
Pukalani, Maui, Hawaii
Tax Map Key: (2) 2-3-008:036 por.

Dear Ms. Pulmano,

Thank you for allowing us to comment on the Community Plan Amendment, Change in Zoning, and Draft Environmental Assessment for the subject project.

In reviewing our records and the information received, Maui Electric Company has no additional comments to the subject project at this time.

Should you have any questions or concerns, please call me at 871-2341.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kyle Tamori', with a long horizontal flourish extending to the right.

Kyle Tamori
Staff Engineer

XI. REFERENCES

XI. REFERENCES

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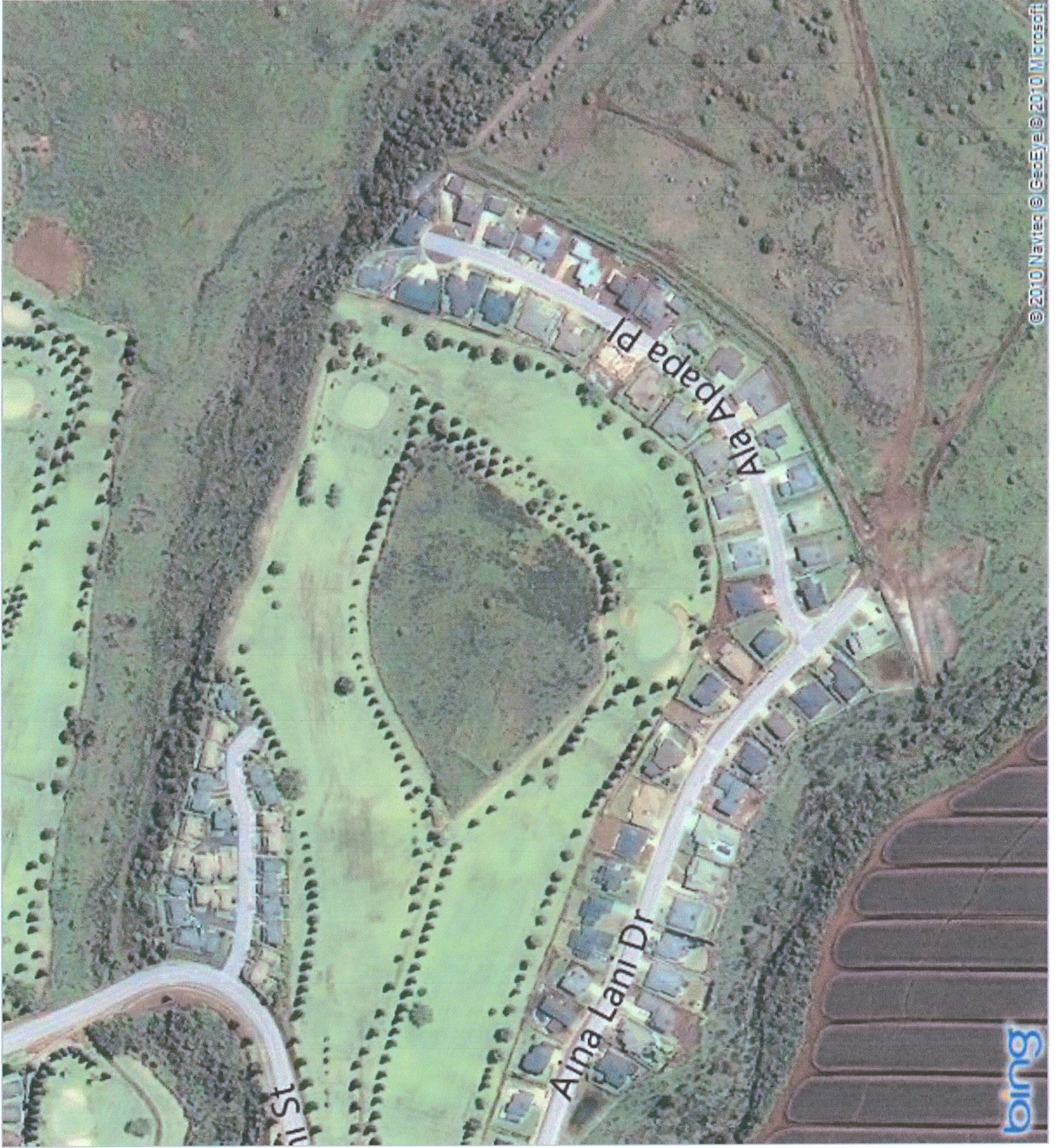
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APPENDIX A.

Bing Maps Aerial Maps



© 2010 Navteq © GeoEye © 2010 Microsoft



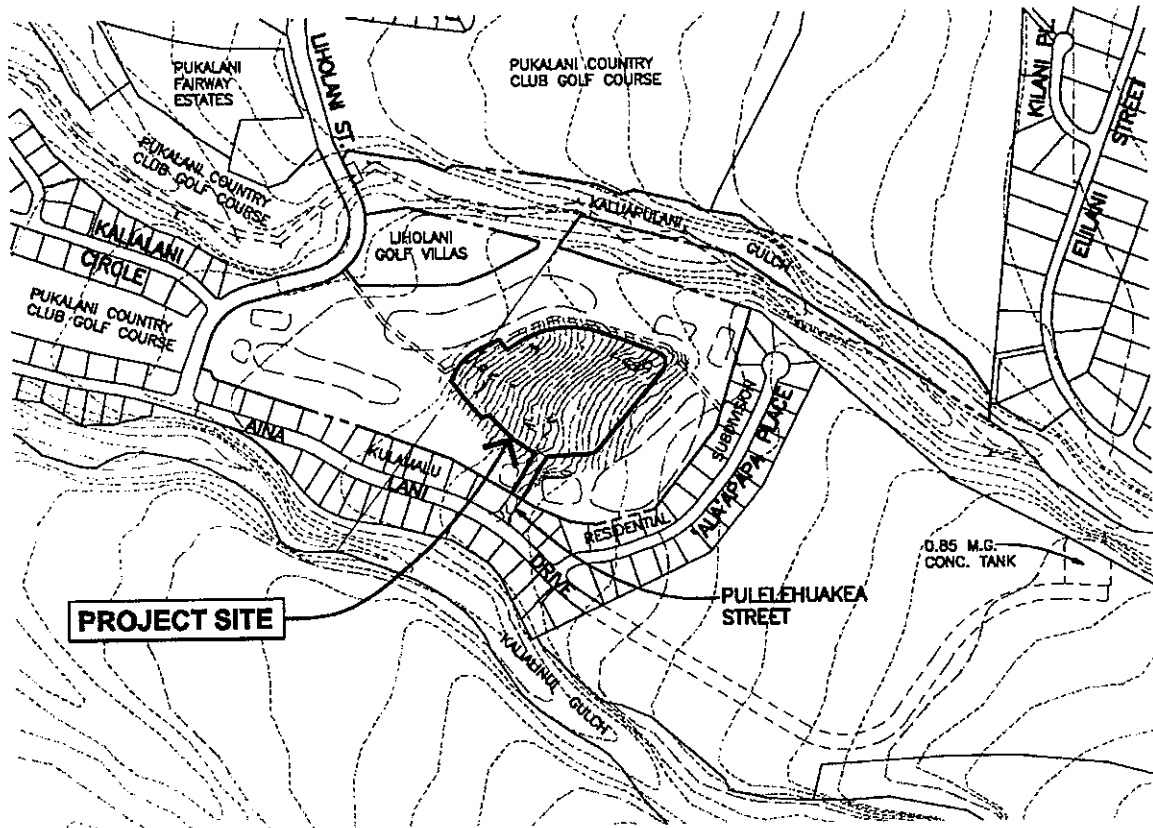
APPENDIX B.

Preliminary Engineering Report

PRELIMINARY ENGINEERING REPORT

For Pulelehuakea Subdivision

Pukalani, Maui, Hawaii
Tax Map Key (2) 2-3-008:036



Project:

Pulelehuakea Subdivision
Pukalani, Maui, Hawaii

Client:

KG Holdings, LLC
1288 Ala Moana Boulevard, Suite 201
Honolulu, Hawaii, 96814
Phone: (808) 525-1508
Fax: (808) 524-0766

Date:

December 11, 2009

Consultant: **RFE**

Ronald M. Fukumoto Engineering, Inc.
1721 Wili Pa Loop, Suite 203
Wailuku, Hawaii 96793
Phone: (808) 242-8611
Fax: (808) 244-7510
E-Mail: office@rfemaui.com

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I. PURPOSE

The purpose of this report is to evaluate the effects of the project on existing infrastructure for inclusion in an assessment for land use entitlement applications. This report will review the water system, wastewater system, and electrical, telephone, and cable television systems serving the project. This report will also provide an analysis of existing and proposed drainage systems. The drainage analysis will describe existing drainage conditions, present preliminary grading and drainage plans, and provide drainage design information for incorporation into the final designs.

II. PROJECT DESCRIPTION

A. General Location

The project involves an initial subdivision to create a parcel for development of a 13-lot single-family residential subdivision in Pukalani, Maui. The site is a part of the Pukalani Terrace and Country Club development. The initial work consists of subdividing the 6.003-acre development site from a 39.163-acre larger parcel, designated on the tax maps as Tax Map Key (2) 2-3-008:036. The larger parcel includes the development site, surrounding golf holes, and portions of Kaluapulani Gulch. (See Figure 1 – Location Map (USGS Map), page 6; Figure 2 – Vicinity Map (Tax Map), page 7; and Figure 4 – Regional Topographic Map, page 9.)

The development site is surrounded by the 5th, 6th, and 7th golf holes of the Pukalani Country Club Golf Course. Liholani Street adjoins the westerly side of the larger parcel, Kulamalu Residential Subdivision adjoins the southerly and easterly sides of the larger parcel, and Liholani Golf Villas and Kaluapulani Gulch adjoin the northerly side of the larger parcel.

B. Project Components

The project includes construction of on-site and off-site improvements for a 13-lot single-family residential subdivision. Improvements include a 600-foot long T-shaped cul-de-sac street and site improvements. Site improvements include clearing and grubbing, site grading, paving, relocation of a cart path, relocation of a tee box and green, landscape plantings, and site utilities. Site utilities include water, wastewater, drainage, and electrical systems.

III. WATER SYSTEM

The County of Maui provides water service for the area. The water system in the area consists of an 850,000-gallon reservoir and various distribution lines. The 850,000-gallon reservoir located about 1,800 feet southeast of the project, provides storage and supplies the distribution system in the area. Twelve-inch distribution lines transport the water from the reservoir to the service areas. The project will tap into an existing 8-inch

line along Pulelehuakea Street.

Preliminary data indicates that the existing water system can handle the domestic and fire protection demands of this project. The projects anticipated average daily water demand is 7,800 gallons per day, based on 600 gallons per day for each dwelling unit multiplied by 13 units. For single-family residential zoning, the required fire flow, duration, and fire hydrant spacing are 1,000 gallons per minute, 2 hours, and 350 feet, respectively.

Water system improvements for this project include 8-inch water lines, fire hydrants, and service laterals.

IV. WASTEWATER SYSTEM

Hawaii Water Service Company owns and operates the Pukalani Sewerage Treatment Works, a private wastewater collection and treatment facility that serves the Pukalani Terrace and Country Club development. The collection system consists of gravity sewers, force mains, and pump stations. The collection system carries wastewater to the Pukalani Wastewater Treatment Plant for treatment and disposal.

Preliminary data indicates that the existing collection system and treatment facility can handle the wastewater flows produced by this project. The project's anticipated average wastewater flow is 4,550 gallons per day. This total is based on 350 gallons per day for each main dwelling multiplied by 13 units.

Wastewater improvements for this project include off-site and on-site gravity sewers. Improvements consist of 8-inch sewer mains, 6-inch sewer laterals, and manholes. These lines will connect to the existing collection system that runs through the larger parcel.

V. ELECTRICAL, TELEPHONE & CABLE TELEVISION SYSTEMS

Maui Electric Company, Hawaiian Telcom, and Oceanic Time Warner Cable provide electrical, telephone, and cable television service for the area. These utility companies confirmed that services are available for the project. The project will be served by new underground lines that connect to existing nearby facilities. The new electrical system will branch off of the lines that now deliver power to the Kulamalu Residential Subdivision. Similarly, the new telephone system and new cable television system will also branch off of the lines serving the adjoining subdivision.

VI. DRAINAGE SYSTEM

A. Topography

The topographic map shows existing ground contours and improvements of the on-site areas. (See Figure 5 - Topographic Map, page 10). Additional information of the adjoining parcels is shown on the overall topographic map. (See Figure 4 - Regional Topo-

graphic Map, page 9).

The site is undeveloped land with various trees, scrub vegetation, and grasses. The elevations of the site range from about 1,274 feet above mean sea level to 1,220 feet above mean sea level. The site generally slopes down from southeast to northwest. The slopes range from 6 to 12 percent throughout the site.

B. Soil

According to the Soil Conservation Service, the on-site soil is Keahua silty clay, 7 to 15 percent slopes (KncC). The Keahua series consist of well-drained soils on uplands on the island of Maui. The survey characterizes the soil as having a dark reddish-brown silty clay loam surface layer approximately 10 inches thick, moderate permeability, slow to medium runoff, and slight to moderate erosion hazard. (See Figure 3 – Soil Map, page 8.)

C. Flood and Tsunami Hazard

The flood insurance rate map of the area shows there are no flood hazard areas on the site. The flood insurance rate map designates the site as Zone X, an area subject to minimal flooding. (See Appendix A - Flood Hazard Assessment Report.)

D. Existing Drainage Improvements

There are no drainage improvements on the site. Storm runoff sheet flows across the site and through the golf course. Concrete curbs, gutters, and catch basins along Liholani Street collect the storm runoff and direct the collected runoff to Kaluapulani Gulch. (See Figure 6 - Drainage Area Map - Existing, page 11.)

E. Proposed Drainage Improvements

Proposed drainage improvements include swales, catch basins, manholes, drain pipes, a culvert, and a detention/retention (D/R) basin. In general, these improvements will direct off-site runoff around the site and on-site runoff to the D/R basin to mitigate the increase due to the project. (See Figure 8 – Preliminary Grading and Drainage Plan, page 13.)

The existing paved roadway, 'Ala'papa Place, forms the upper limit of the off-site drainage areas. From this upper limit, runoff from portions of the Kulamalu Residential Subdivision flows across the golf course and towards the proposed subdivision. To prevent this runoff from entering the site, cut-off swales will direct off-site flows around the site. A culvert at the entry road on the southerly side of the site will convey off-site flows under the road and to the downstream areas. (See Figure 7 - Drainage Area Map – Developed, page 12.)

The on-site drainage system consists of swales, catch basins, manholes, drain pipes, and a grassed, shallow, open pond D/R basin. The on-site system will collect runoff and direct it to the D/R basin. The basin will keep post development flow rates and volumes at pre-

development levels. (See Figure 8 – Preliminary Grading and Drainage Plan, page 13.)

The County Standards require the use of a 50-year, 1-hour rainfall for computing volumes and rates of flow.

Drainage improvements that involve transmission of storm flows will conform to the "Rules for the Design of Storm Drainage Facilities in the County of Maui." The rules will be applied to the sizing and spacing of inlets and manholes, and sizing of drain lines, channels, and culverts. Based on the County rules, the drainage system will be designed to handle a storm with a recurrence interval of 50 years since the drainage area is less than 100 acres.

The following is a summary of hydrologic design data for on-site area. (See Appendix B - Preliminary Drainage Information.)

<u>Item</u>	<u>Existing</u>	<u>Developed</u>
Drainage Area	6.00 acres	6.00 acres
50-year, 1-hour Rainfall	2.8 inches	2.8 inches
50-year, 1-hour Peak Flow	8.65 cfs	18.35 cfs

The increase in the rate of runoff and volume of runoff will be mitigated by constructing the D/R basin. The D/R basin will collect runoff, regulate the outflow of runoff, and retain a portion of the collected runoff. As shown in the preliminary computations, a detention volume of 9,540 cubic feet is required to reduce the peak outflow from 18.35 cubic feet per second to 8.65 cubic feet per second. Also as shown in the preliminary computations, a retention volume of 12,850 cubic feet is required to keep runoff volumes at pre-development levels.

The following is a summary of preliminary design data for the drainage D/R basin. These figures are subject to adjustment as the designs are further refined.

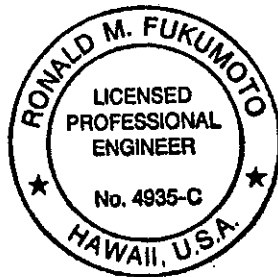
Detention Volume	9,540 cubic feet
Retention Volume	12,850 cubic feet
Flow Rate In	18.35 cubic feet per second
Flow Rate Out	8.65 cubic feet per second

F. Conclusion

There will be no adverse effects on the adjacent or downstream properties due to this project. This conclusion is based on maintaining peak discharge rates and volumes at pre-development levels.

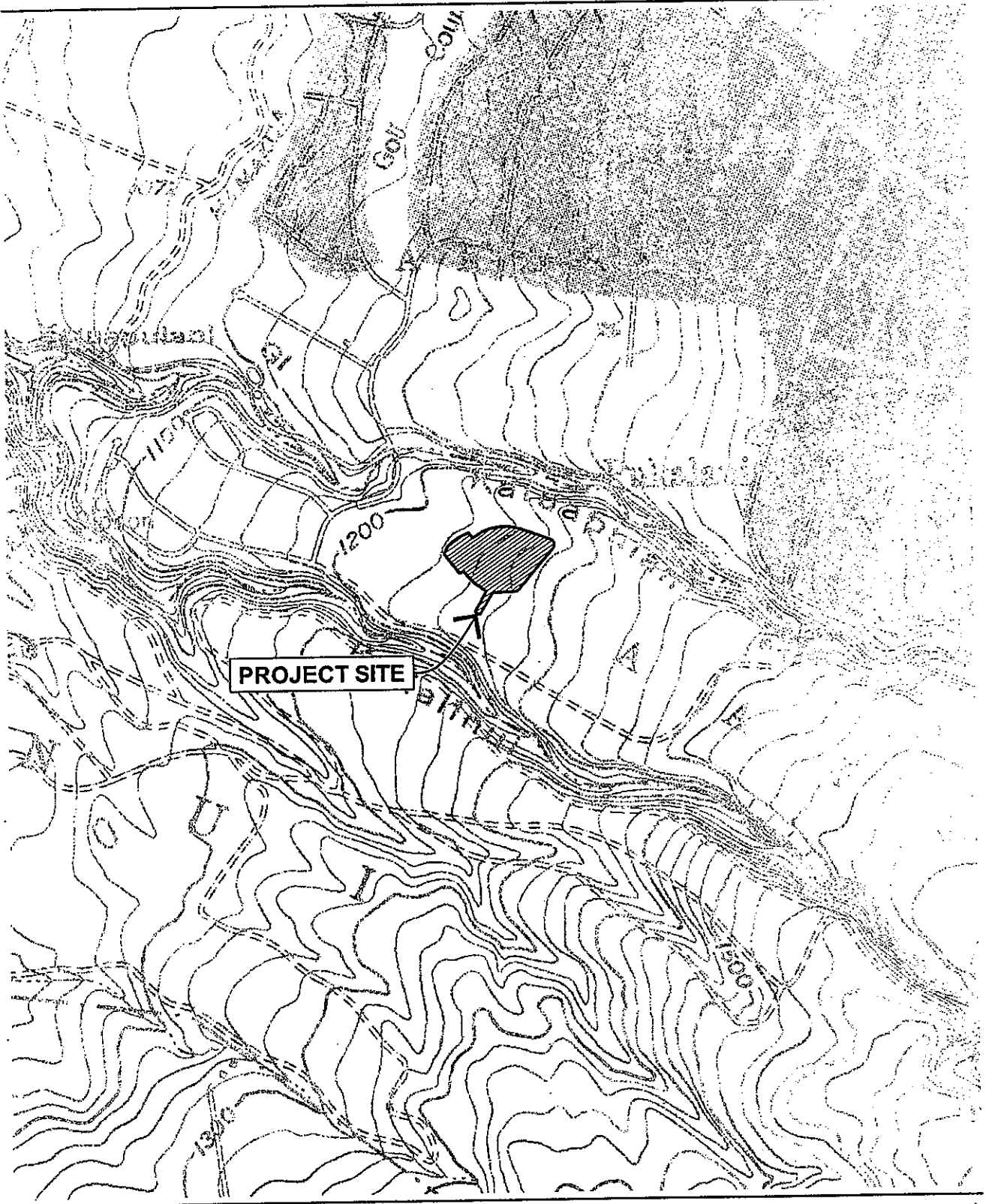
VII. REFERENCES

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7. U. S. Department of Agriculture, Soil Conservation Service, *Urban Hydrology for Small Watersheds*, Technical Release 55, Second Edition, Washington, D.C., June 1986.
8. U. S. Department of Commerce, Weather Bureau, *Rainfall-Frequency Atlas of the Hawaiian Islands for Areas to 200 Square Miles, Durations to 24 Hours, and Return Periods from 1 to 100 Years*, Technical Paper No. 43, Washington, D.C., 1962.



This work was prepared by
me or under my supervision.

Ronald M. Fukumoto



LOCATION MAP (USGS MAP)

SCALE IN FEET



NORTH

Figure 1

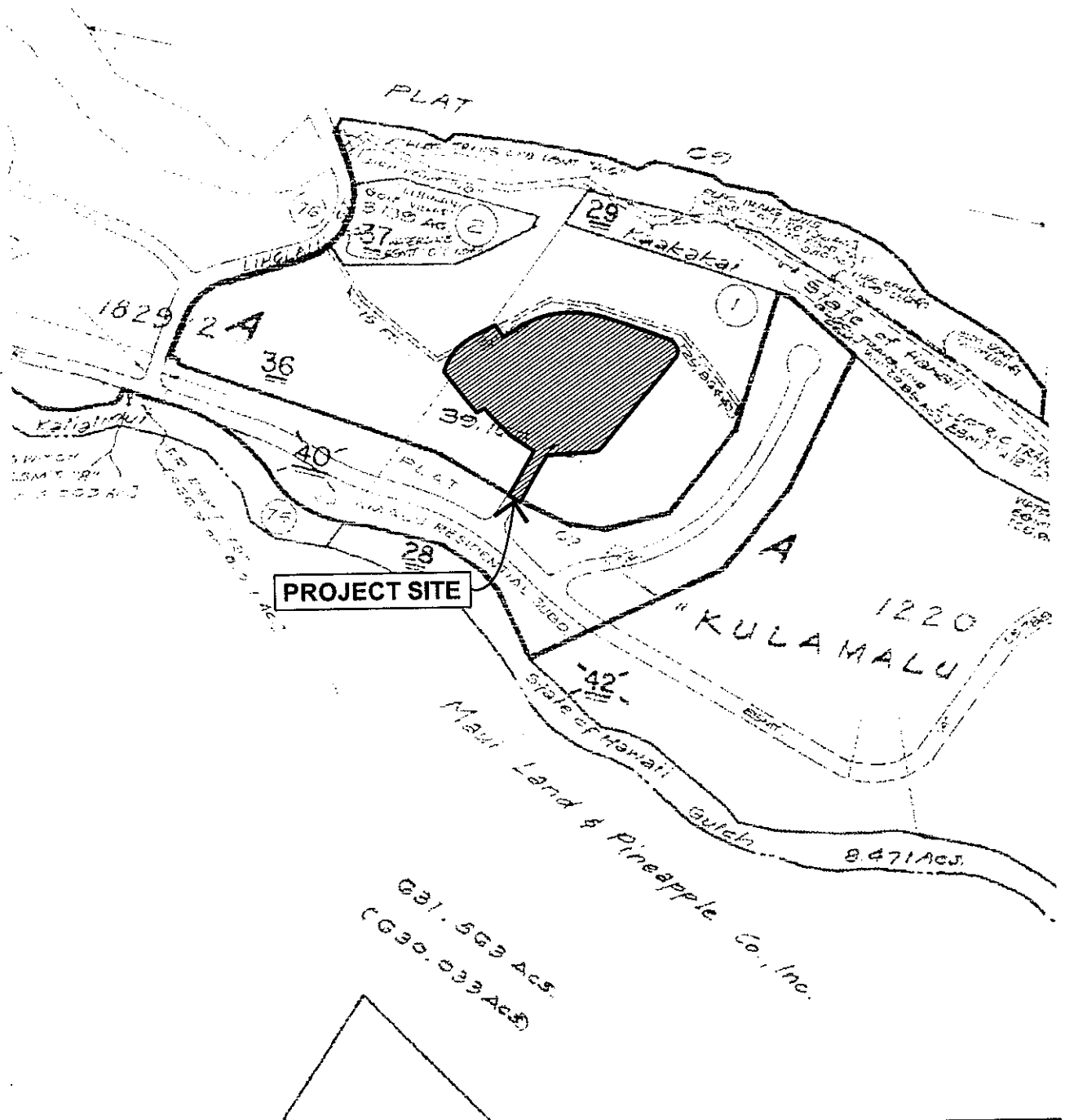
SOURCES: USGS PUU O KALI QUADRANGLE MAP & USGS PAIA QUADRANGLE MAP



PREPARED FOR: KG HOLDINGS LLC

PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.

PRELIMINARY ENGINEERING REPORT FOR PULELEHUAKEA SUBDIVISION



VICINITY MAP (TAX MAP)

SCALE IN FEET



NORTH

Figure 2

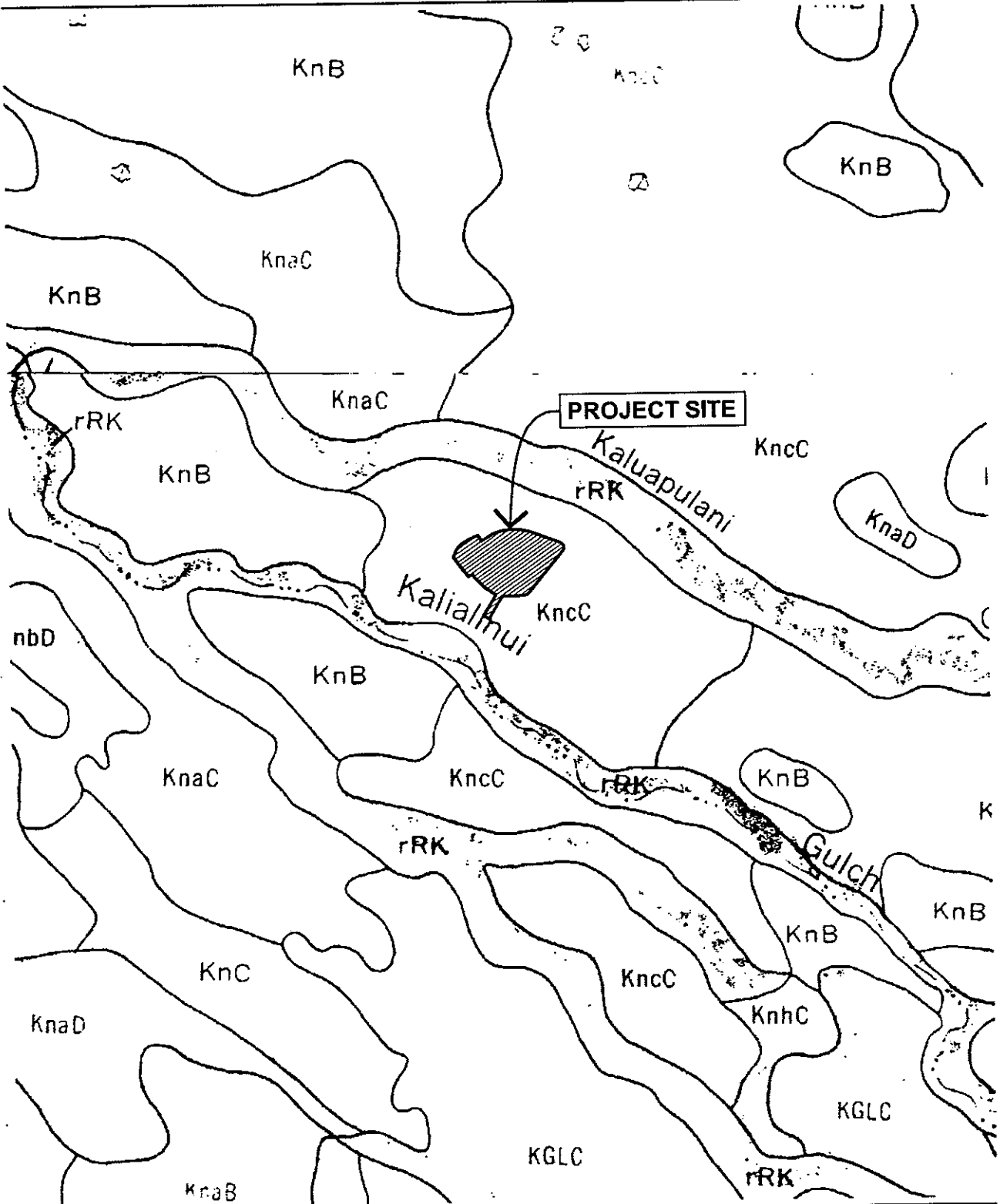
SOURCE: TAX MAP KEY: (2) 2-3-008:POR. 036



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SOIL MAP

SCALE IN FEET

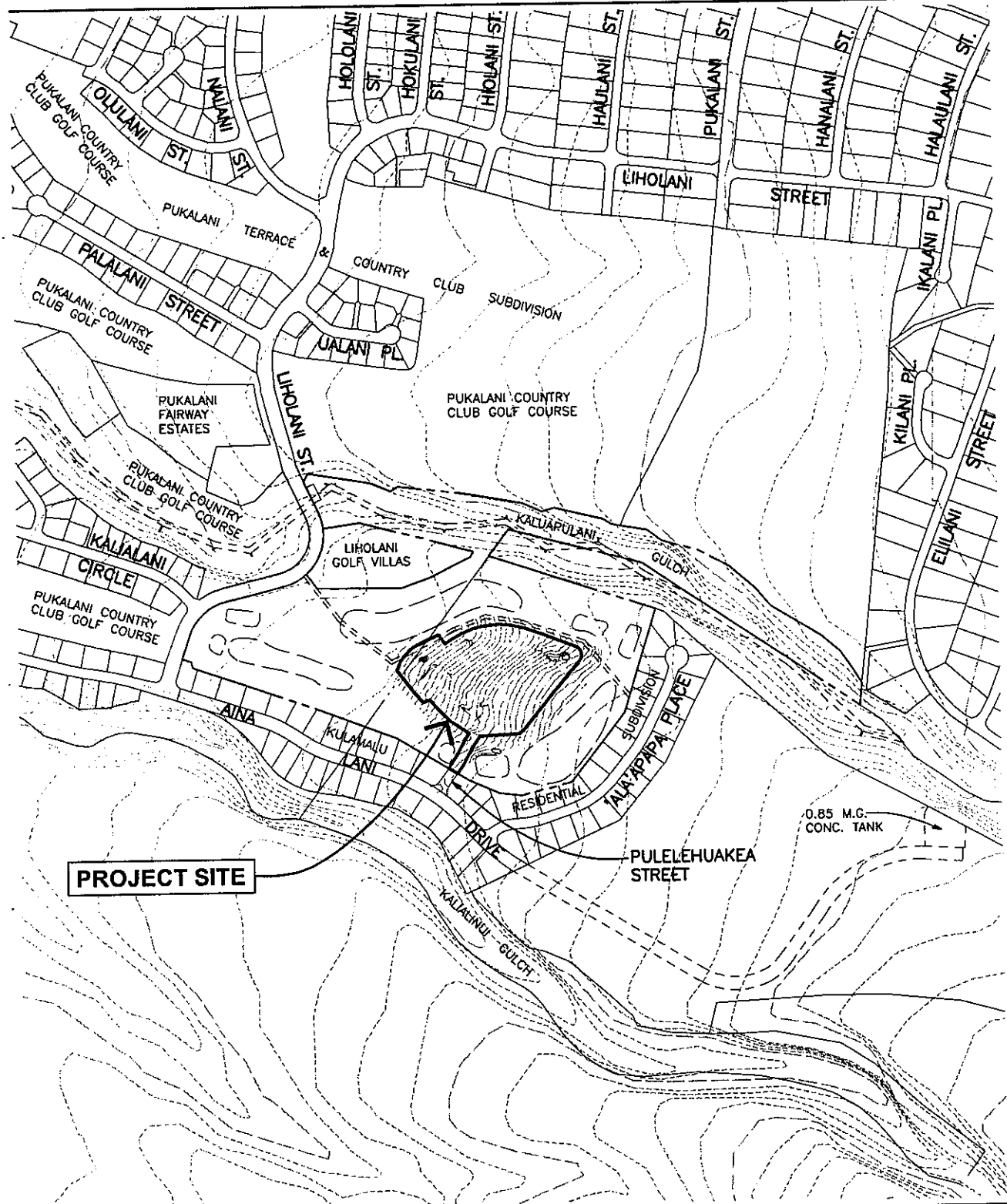


NORTH

Figure 3

SOURCE: SOIL SURVEY





REGIONAL TOPOGRAPHIC MAP

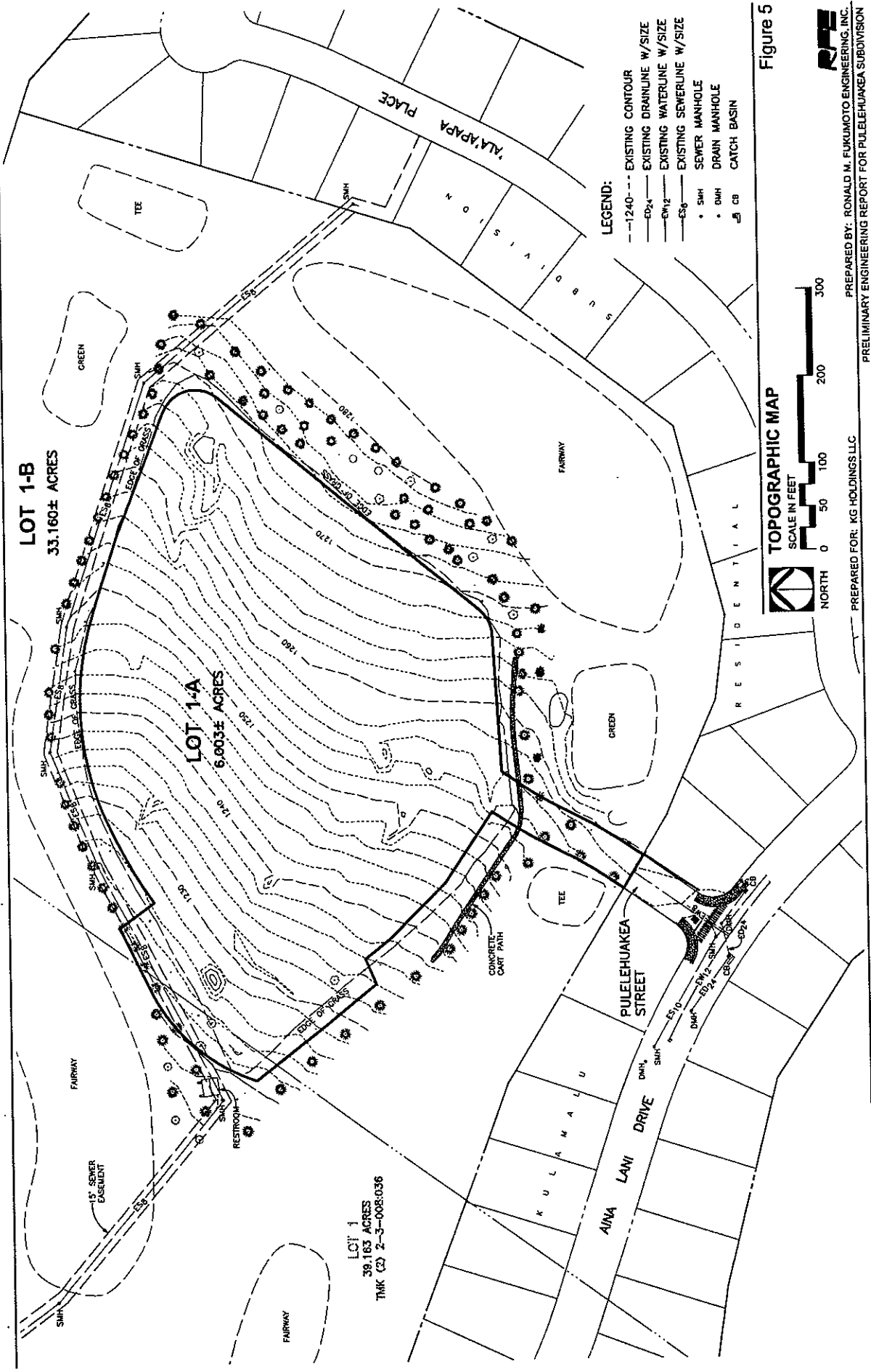
SCALE IN FEET



NORTH

Figure 4





- LEGEND:**
- - - 1240 - - - EXISTING CONTOUR
 - - - E-D24 - - - EXISTING DRAINLINE W/SIZE
 - - - E-W12 - - - EXISTING WATERLINE W/SIZE
 - - - E-S3 - - - EXISTING SEWERLINE W/SIZE
 - SMH • SEWER MANHOLE
 - DMH • DRAIN MANHOLE
 - ▭ CB CATCH BASIN

Figure 5

TOPOGRAPHIC MAP
SCALE IN FEET
NORTH 0 50 100 200 300

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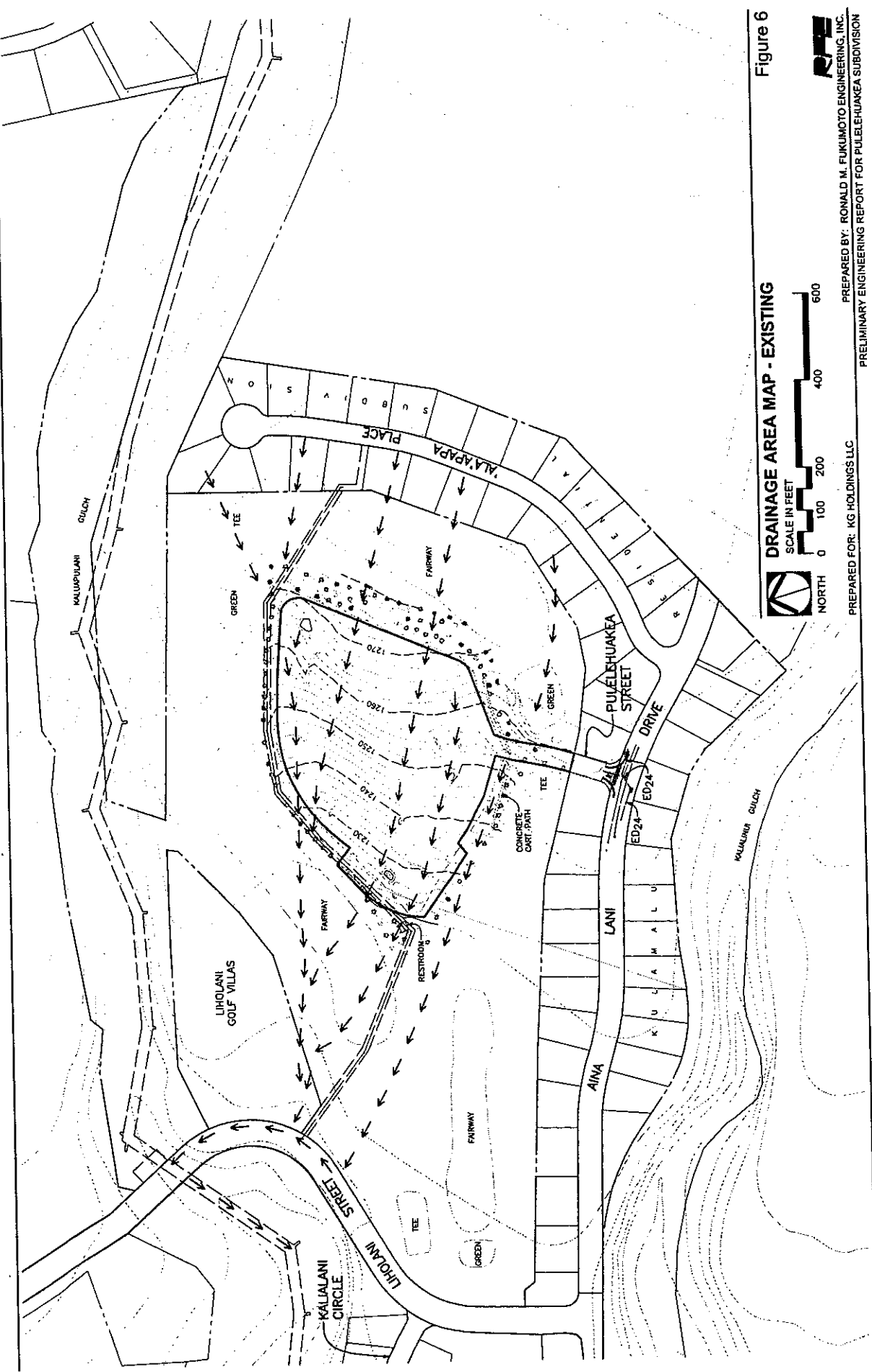


Figure 6

DRAINAGE AREA MAP - EXISTING

SCALE IN FEET

NORTH 0 100 200 400 600

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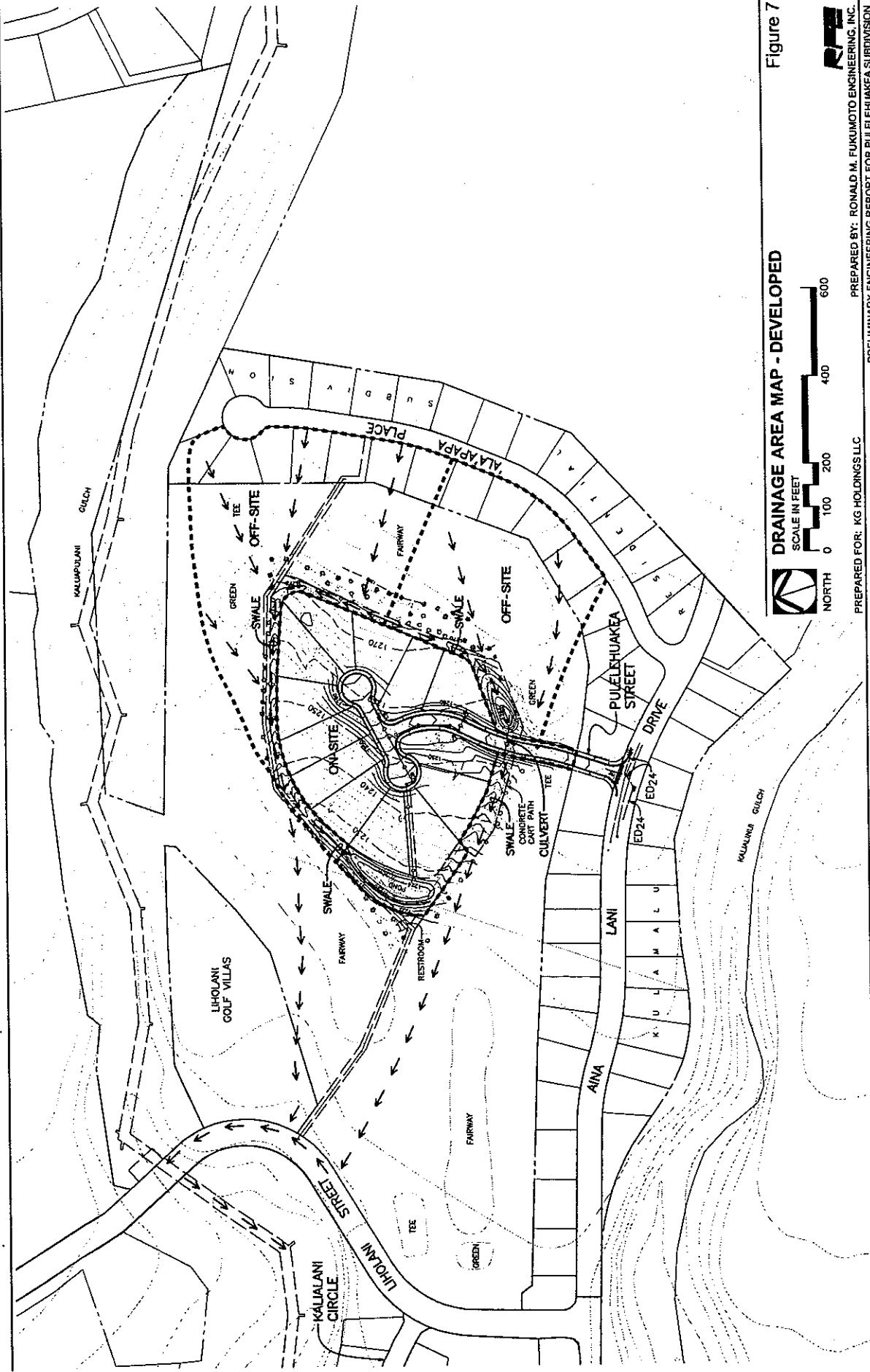
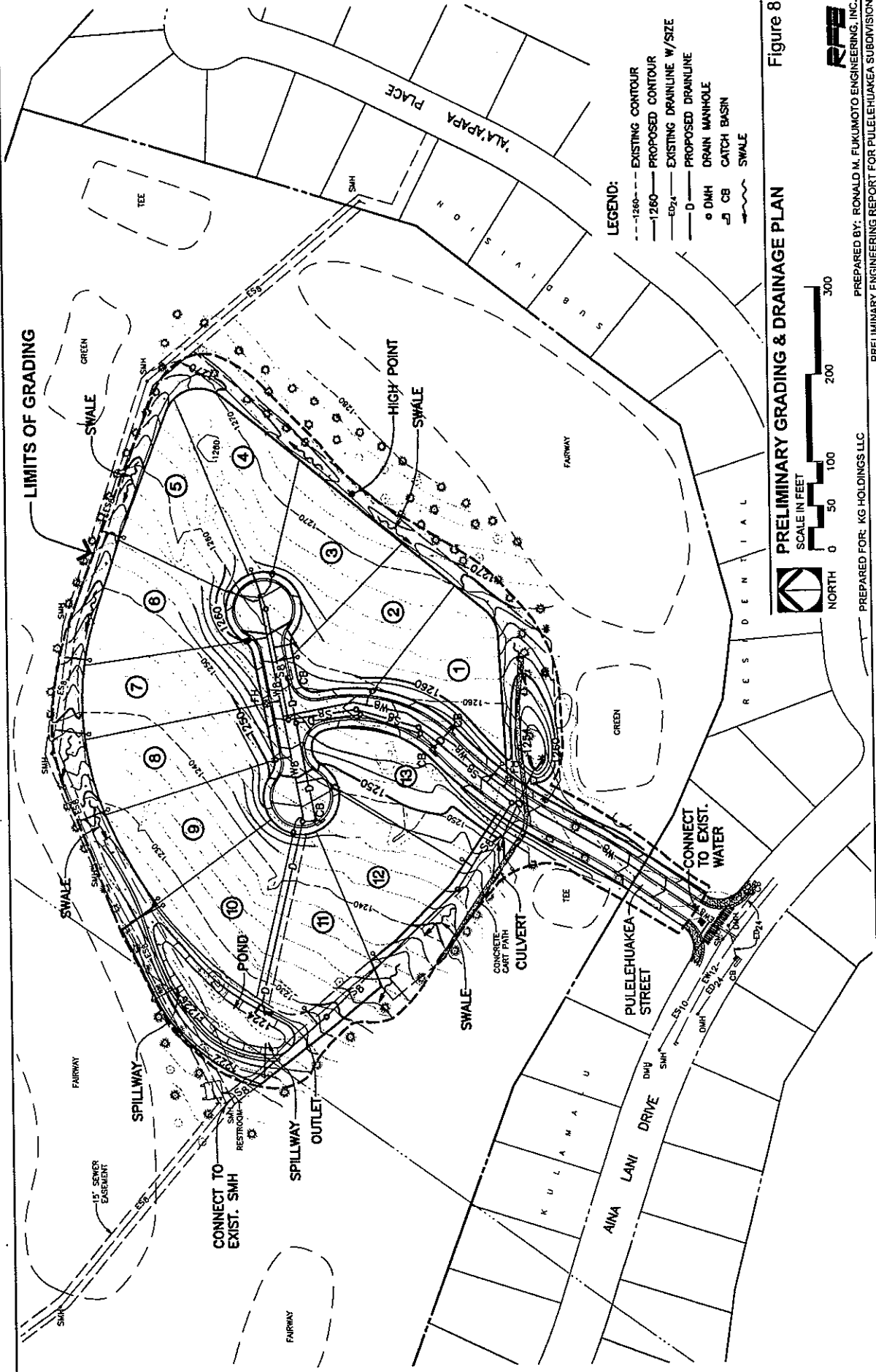


Figure 7

DRAINAGE AREA MAP - DEVELOPED
 SCALE IN FEET
 NORTH 0 100 200 400 600



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- LEGEND:**
- - - 1260 - - - EXISTING CONTOUR
 - - - 1260 - - - PROPOSED CONTOUR
 - E₂ 4 - EXISTING DRAINLINE W/ SIZE
 - D - PROPOSED DRAINLINE
 - DMH DRAIN MANHOLE
 - ⊔ CB CATCH BASIN
 - ~ SWALE



PRELIMINARY GRADING & DRAINAGE PLAN

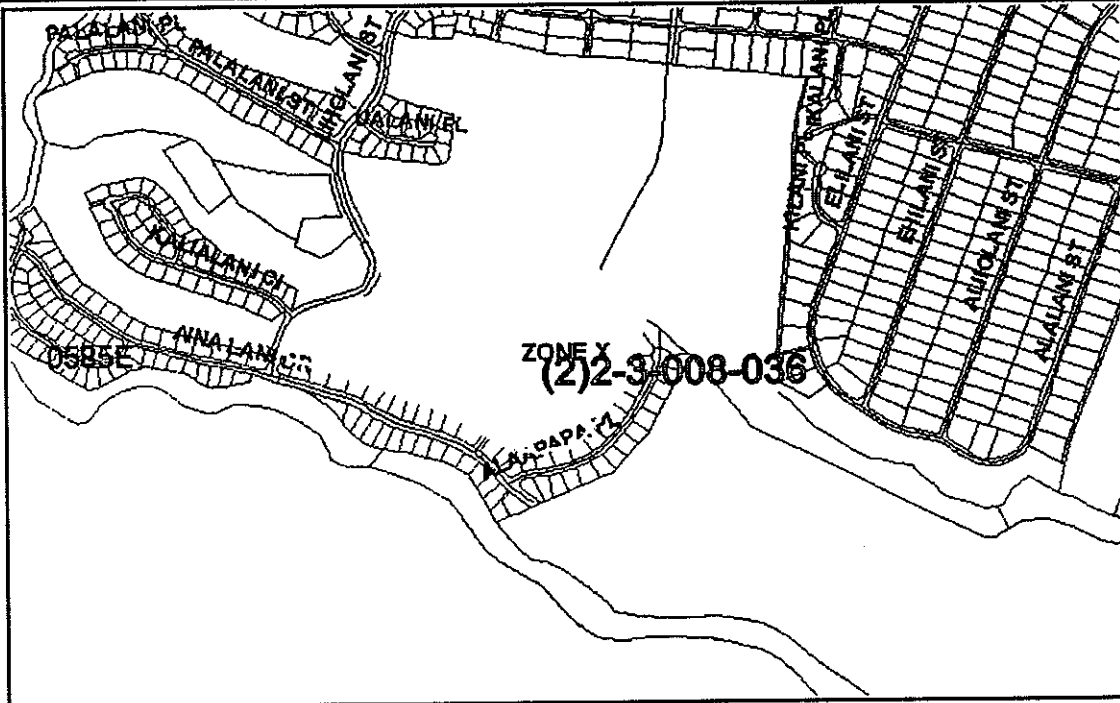
Figure 8

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 PRELIMINARY ENGINEERING REPORT FOR PULELEHUAKA SUBDIVISION



FLOOD HAZARD ASSESSMENT REPORT

State of Hawaii
FLOOD HAZARD ASSESSMENT REPORT



NATIONAL FLOOD INSURANCE PROGRAM

<p>What flood hazard zones are shown on FEMA's Flood Insurance Rate Map and what do they mean?</p> <p>Zones VE and V1-V30: Areas along coasts subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action. Base Flood Elevation (BFEs) derived from detail hydraulic analyses are shown within these zones. Mandatory flood insurance purchase requirements apply.</p> <p>Zone A: Areas subject to inundation by the 1-percent-annual-chance flood event. Because detailed hydraulic analyses have not been performed, no BFEs or flood depths are shown. Mandatory flood insurance purchase requirements apply.</p> <p>Zones AE and A1-A30: Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. BFEs are shown within these zones. Mandatory flood insurance purchase requirements apply.</p> <p>Zone AH: Areas subject to inundation by the 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. BFEs derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements apply.</p> <p>Zones B, C, and X: Areas identified as areas of moderate or minimal hazard from the principal source of flood in the area. However, buildings in these zones could be flooded by severe, concentrated rainfall coupled with inadequate local drainage systems. Flood insurance is available in participating communities but is not required by regulation in these zones.</p> <p>Zone D: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.</p>	<table border="1"> <tr> <th colspan="2">PROPERTY INFORMATION</th> </tr> <tr> <td>COUNTY:</td> <td>MAUI</td> </tr> <tr> <td>TMK NO:</td> <td>(2)2-3-008-036</td> </tr> <tr> <td>SITE ADDRESS:</td> <td>LIHOLANI ST</td> </tr> <tr> <td>FEMA FIRM PANEL(S):</td> <td>1500030585E</td> </tr> <tr> <td>PANEL EFFECTIVE DATE(S):</td> <td>SEPTEMBER 25, 2009</td> </tr> <tr> <td>FIRM INDEX DATE:</td> <td>SEPTEMBER 25, 2009</td> </tr> <tr> <td>LETTER OF MAP CHANGE(S):</td> <td>NONE</td> </tr> <tr> <td>PARCEL DATA FROM:</td> <td>APRIL 2009</td> </tr> <tr> <td>IMAGERY DATA FROM:</td> <td>MAY 2005</td> </tr> <tr> <th colspan="2">IMPORTANT PHONE NUMBERS</th> </tr> <tr> <td>County NFIP Coordinator County of Maui Francis Cerizo, CFM</td> <td>(808) 270-7771</td> </tr> <tr> <td>State NFIP Coordinator Carol Tyau-Beam, P.E., CFM</td> <td>(808) 587-0267</td> </tr> <tr> <td colspan="2"> <p><i>Disclaimer: The Department of Land and Natural Resources assumes no responsibility arising from the use of the information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the Department of Land and Natural Resources from any liability, which may arise from its use.</i></p> <p><i>Preliminary DFIRM Disclaimer: If this map has been identified as "PRELIMINARY", please note that it is being provided for commenting purposes only and is not to be used for official/legal decisions or regulatory compliance.</i></p> </td> </tr> </table>	PROPERTY INFORMATION		COUNTY:	MAUI	TMK NO:	(2)2-3-008-036	SITE ADDRESS:	LIHOLANI ST	FEMA FIRM PANEL(S):	1500030585E	PANEL EFFECTIVE DATE(S):	SEPTEMBER 25, 2009	FIRM INDEX DATE:	SEPTEMBER 25, 2009	LETTER OF MAP CHANGE(S):	NONE	PARCEL DATA FROM:	APRIL 2009	IMAGERY DATA FROM:	MAY 2005	IMPORTANT PHONE NUMBERS		County NFIP Coordinator County of Maui Francis Cerizo, CFM	(808) 270-7771	State NFIP Coordinator Carol Tyau-Beam, P.E., CFM	(808) 587-0267	<p><i>Disclaimer: The Department of Land and Natural Resources assumes no responsibility arising from the use of the information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the Department of Land and Natural Resources from any liability, which may arise from its use.</i></p> <p><i>Preliminary DFIRM Disclaimer: If this map has been identified as "PRELIMINARY", please note that it is being provided for commenting purposes only and is not to be used for official/legal decisions or regulatory compliance.</i></p>	
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PRELIMINARY DRAINAGE INFORMATION

A. RUNOFF COEFFICIENT

1. Existing Conditions

Infiltration – medium	0.07
Relief – rolling (5%-15%)	0.03
Vegetal Cover – Good	0.03
Development Type – Agricultural	<u>0.15</u>
$C =$	0.28

2. Developed Conditions

Infiltration – medium	0.07
Relief – rolling (5%-15%)	0.03
Vegetal Cover – Good	0.03
Development Type – Residential	<u>0.40</u>
$C =$	0.53

B. RECURRENCE INTERVAL & RAINFALL

1. Recurrence interval $T_m = 50$ years (due to sump conditions)
2. One-hour rainfall $I_{50} = 2.8$ inches

C. TIME OF CONCENTRATION

1. Existing Conditions $T_c = 15$ minutes
2. Developed Conditions $T_c = 10$ minutes

D. EXISTING RUNOFF (Rational Method)

1. $C = 0.28$
2. $i = 2.8 \times 1.84 = 5.15$
3. $a = 6.00$ acres
4. $Q = C i a = 0.28 \times 5.15 \times 6.00 = 8.65$ cfs

E. DEVELOPED RUNOFF (Rational Method)

1. $C = 0.53$
2. $i = 2.8 \times 2.06 = 5.77$
3. $a = 6.00$ acres
4. $Q = C i a = 0.53 \times 5.77 \times 6.00 = 18.35$ cfs

F. INCREASE DUE TO DEVELOPMENT (Rational Method)

1. $\Delta Q = 18.35 - 8.65 = 9.70$ cfs (for 50-year, 1-hour storm)

G. CURVE NUMBER (CN) COMPUTATION

1. Existing

Open Space	CN = 61	Area = 6.00 acres
------------	---------	-------------------
2. Developed

Open Space	CN = 61	Area = 3.6 acres
Building, Parking, & Walkways	CN = 98	Area = 2.4 acres

$$CN = [(61 \times 3.6) + (98 \times 2.4)/6.00] = 76$$

H. RAINFALL DATA

1. 50-year, 1-hour $P = 2.8$ inches

I. RETENTION VOLUME

1. 50-year, 1-hour

- a. Existing - 6.00 acres

$$S = (1000/CN) - 10 = (1000/61) - 10 = 6.39$$

$$Q = (P - 0.2S)^2 / (P + 0.8S) = (2.8 - 0.2 \times 6.39)^2 / (2.8 + 0.8 \times 6.39) = 0.29 \text{ inch}$$

$$\text{Volume} = (0.29/12) \times 6.00 \times 43,560 = 6,316 \text{ cu. ft.}$$

- b. Developed - 6.00 acres

$$S = (1000/CN) - 10 = (1000/76) - 10 = 3.16$$

$$Q = (P - 0.2S)^2 / (P + 0.8S) = (2.8 - 0.2 \times 3.16)^2 / (2.8 + 0.8 \times 3.16) = 0.88 \text{ inch}$$

$$\text{Volume} = (0.88/12) \times 6.00 \times 43,560 = 19,166 \text{ cu. ft.}$$

- c. Increase due to development

$$\Delta V = 19,166 - 6,316 = 12,850 \text{ cubic feet}$$

J. DETENTION VOLUME

RATIONAL METHOD DETENTION BASIN SIZING

Design Data

Drainage Area = A =	6.00	acres
Developed Runoff Coefficient = C =	0.53	
Design Storm =	50	year
One Hour Rainfall = i =	2.80	inches
Present Peak Discharge = Q_{OUT} =	8.65	cfs
Developed Peak Discharge = Q_{IN} =	18.35	cfs
Q_{OUT} / Q_{IN} =	0.47	
Outflow Adjustment Coefficient = k =	0.86	

Storm Duration, minutes	Correction Factor	Rainfall Intensity, in./hr.	Runoff Volume, cu. ft.	Outflow Volume, cu. ft.	Storage Volume, cu. ft.
T	f	$I = fi$	$CIAT$	$kQ_{OUT}T$	(4) - (5)
(1)	(2)	(3)	(4)	(5)	(6)
1.0	8.5512	23.943	4,606	446	4,160
2.0	4.7169	13.207	5,082	893	4,189
3.0	3.4759	9.733	5,617	1,339	4,278
4.0	2.8858	8.080	6,218	1,785	4,433
5.0	2.5575	7.161	6,889	2,232	4,657
6.0	2.3605	6.609	7,629	2,678	4,951
7.0	2.2374	6.265	8,437	3,124	5,313
8.0	2.1578	6.042	9,299	3,571	5,728
9.0	2.1025	5.887	10,193	4,017	6,176

10.0	2.0576	5.761	11,084	4,463	6,621
11.0	2.0135	5.638	11,931	4,910	7,021
12.0	1.9689	5.513	12,728	5,356	7,372
13.0	1.9244	5.388	13,477	5,802	7,675
14.0	1.8807	5.266	14,184	6,249	7,935
15.0	1.8381	5.147	14,853	6,695	8,158
16.0	1.7971	5.032	15,489	7,141	8,348
17.0	1.7578	4.922	16,098	7,588	8,510
18.0	1.7205	4.817	16,683	8,034	8,649
19.0	1.6855	4.719	17,251	8,480	8,771
20.0	1.6529	4.628	17,808	8,927	8,881
21.0	1.6227	4.544	18,357	9,373	8,984
22.0	1.5946	4.465	18,898	9,819	9,079
23.0	1.5684	4.392	19,432	10,266	9,166
24.0	1.5438	4.323	19,959	10,712	9,247
25.0	1.5206	4.258	20,478	11,159	9,319
26.0	1.4986	4.196	20,989	11,605	9,384
27.0	1.4775	4.137	21,490	12,051	9,439
28.0	1.4572	4.080	21,979	12,498	9,481
29.0	1.4376	4.025	22,458	12,944	9,514
30.0	1.4184	3.972	22,922	13,390	9,532
30.9	1.4016	3.924	23,330	13,792	9,538
31.0	1.3997	3.919	23,374	13,837	9,537
32.0	1.3814	3.868	23,813	14,283	9,530
33.0	1.3635	3.818	24,239	14,729	9,510
34.0	1.3459	3.769	24,651	15,176	9,475
35.0	1.3287	3.720	25,052	15,622	9,430
36.0	1.3118	3.673	25,440	16,068	9,372
37.0	1.2953	3.627	25,817	16,515	9,302
38.0	1.2808	3.586	26,218	16,961	9,257
39.0	1.2634	3.538	26,543	17,407	9,136
40.0	1.2479	3.494	26,889	17,854	9,035

peak

Required Detention Volume = 9,538 \approx 9,540 cubic feet to reduce developed flow from 18.35 cfs to pre-development flow of 8.65 cfs.

K. DETENTION/RETENTION BASIN SIZING

Compute required size of D/R basin consisting of a pond. The total required volume = 12,850 (retention) + 9,540 (detention) = 22,390 cubic feet.

APPENDIX C.

Flora and Fauna Study

FLORA AND FAUNA STUDY
for the
PULELEHUAKEA RESIDENTIAL SUBDIVISION PROJECT
PUKALANI, MAUI, HAWAII

by

ROBERT W. HOBDY
ENVIRONMENTAL CONSULTANT
Kokomo, Maui
May 2010

Prepared for: KG Maui Development, LLC.

**FLORA AND FAUNA STUDY
PULELEHUAKEA RESIDENTIAL SUBDIVISION PROJECT
PUKALANI, MAUI, HAWAII**

INTRODUCTION

The Pulelehuakea Residential Subdivision Project lies on 6.003 acres of undeveloped land (TMK (2) 2-3-08:036 por.) located between fairways of the Pukalani Country Club on a gently sloping ridgetop between Kaluapulani and Kalialinui Gulches. This study was initiated by the owners in fulfillment of environmental requirements of the planning process.

SITE DESCRIPTION

The property consists of former agricultural land that has long stood idle. Today it is embedded within golf course fairways within a large residential community between elevations of 1,240 feet and 1,360 feet above sea level. Vegetation is mostly dry grassland and brush with a few scattered trees. Soils are entirely Keahua Silty Clay, 7 – 15% slopes (KncC) which is a deep, dark reddish-brown soil developed from igneous rock that has an erosion hazard that is slight to moderate (Foote et al). Rainfall averages 30 inches per year with the bulk falling during the winter months (Armstrong, 1983).

BIOLOGICAL HISTORY

This area once had dryland vegetation consisting of wiliwili (*Erythrina sandwicensis*), 'a'ali'i (*Dodonaea viscosa*), 'akia (*Wikstroemia monticola*) and a mixture of other grasses and shrubs and with a few larger trees in the gulches.

During the 1900's the gentler slopes were farmed with pineapple and cattle grazing was wide spread. These land uses gradually destroyed most of the native species which were replaced by agricultural crops and weeds or by hardy pasture grasses. Today little remains of the native plants on the ridgetops and the area is dominated by non-native species.

SURVEY OBJECTIVES

This report summarizes the findings of a flora and fauna survey of the proposed Pulelehuakea Residential Subdivision Project which was conducted in May 2010. The objectives of the survey were to:

1. Document what plant, bird and mammal species occur on the property or may likely occur in the existing habitat.
2. Document the status and abundance of each species.
3. Determine the presence or likely occurrence of any native flora and fauna, particularly any that are Federally listed as Threatened or Endangered. If such occur, identify what features of the habitat may be essential for these species.
4. Determine if the project area contains any special habitats which if lost or altered might result in a significant negative impact on the flora and fauna in this part of the island.
5. Note which aspects of the proposed development pose significant concerns for plants or for wildlife and recommend measures that would mitigate or avoid these problems.

BOTANICAL SURVEY REPORT

SURVEY METHODS

A walk-through botanical survey method was used to cover all parts of this property. Notes were made on plant species, distribution and abundance as well as on terrain and substrate.

DESCRIPTION OF THE VEGETATION

The vegetation on the property consists of a dry grassland with shrubs and a few scattered trees. The most abundant species was Guinea grass (*Panicum maximum*) which was found throughout the property. Also common were koa haole (*Leucaena leucocephala*) and buffelgrass (*Cenchrus ciliaris*).

A total of 57 plant species were recorded during the survey. Of these 5 were native species including the wiliwili (*Waltheria indica*) and koali awahia (*Ipomoea indica*) which are native to Hawaii as well as to many other Pacific islands. One species the niu or coconut was a Polynesian introduction to Hawaii. The remaining 51 species were non-native agricultural weeds, pasture plants or ornamentals.

DISCUSSION AND RECOMMENDATIONS

The vegetation throughout the property is dominated by a wide array of non-native plant species, none of which are of any particular interest or concern. The 5 native plants were all rare on the property, but are all widespread in Hawaii and fairly common.

No federally listed Endangered or Threatened native plants (USFWS, 2009) were encountered during the survey, nor were any species that are candidates for such status found. No special habitats or rare plant communities were seen either.

Because of the above situation, there is little of botanical concern and the proposed development is not expected to have a significant negative impact on the botanical resources in this part of Maui. No particular recommendations regarding the botanical resources are deemed appropriate or necessary.

PLANT SPECIES LIST

Following is a checklist of all those vascular plant species inventoried during the field studies. Plant families are arranged alphabetically within each of three groups: Conifers, Monocots and Dicots. Taxonomy and nomenclature of the Conifers are in accordance with Staples & Herbst (2005) while the flowering plants (Monocots and Dicots) are in accordance with Wagner et al. (1999).

For each species, the following information is provided:

1. Scientific name with author citation
2. Common English or Hawaiian name.
3. Bio-geographical status. The following symbols are used:
 - endemic = native only to the Hawaiian Islands; not naturally occurring anywhere else in the world.
 - indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).
 - non-native = all those plants brought to the islands intentionally or accidentally after western contact.
 - polynesian = all those plants brought to the islands by the Hawaiians during the course of their migrations.
4. Abundance of each species within the project area:
 - abundant = forming a major part of the vegetation within the project area.
 - common = widely scattered throughout the area or locally abundant within a portion of it.
 - uncommon = scattered sparsely throughout the area or occurring in a few small patches.
 - rare = only a few isolated individuals within the project area.

SCIENTIFIC NAME

COMMON NAME

STATUS

ABUNDANCE

CONIFERS

ARAUCARIACEAE (Araucaria Family)

<i>Araucaria columnaris</i> (G. Forster) J.D. Hooker	Cook-pine	non-native	uncommon
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MONOCOTS

ARECACEAE (Palm Family)

<i>Cocos nucifera</i> L.	Niu, coconut	Polynesian	rare
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CYPERACEAE (Sedge Family)

<i>Kyllingia brevifolia</i>	kilio'opu	non-native	rare
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POACEAE (Grass Family)

<i>Cenchrus ciliaris</i> L.	buffelgrass	non-native	common
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<i>Chloris virgata</i> Sw.	feather fingergrass	non-native	rare
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<i>Cynodon dactylon</i> (L.) Gaertn.	Bermuda grass	non-native	uncommon
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<i>Eleusine indica</i> (L.) Gaertn.	wiregrass	non-native	rare
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<i>Eragrostis amabilis</i> (L.) Wight & Arnott	Japanese lovegrass	non-native	rare
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<i>Melinis repens</i> (Willd.) Zizka	Natal redtop	non-native	rare
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<i>Panicum maximum</i> Jacquin	Guinea grass	non-native	abundant
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<i>Pennisetum clandestinum</i> Chiov.	Kikuyu grass	non-native	rare
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<i>Setaria verticillata</i> (L.) P. Beauv.	bristly foxtail	non-native	rare
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DICOTS

AMARANTHACEAE (Amaranth Family)

<i>Amaranthus spinosus</i> L.	spiny amaranth	non-native	rare
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<i>Chenopodium carinatum</i> R. Br.	keeled goosefoot	non-native	rare
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<i>Salsola tragus</i> L.	Russian thistle	non-native	rare
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APOCYNACEAE (Dogbane Family)

<i>Asclepias physocarpa</i> (E. Meyen) Schlecter	balloon plant	non-native	rare
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ASTERACEAE (Sunflower Family)

<i>Bidens pilosa</i> L.	Spanish needle	non-native	rare
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<i>Cirsium vulgare</i> (Savi) Ten.	bull thistle	non-native	rare
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<i>Conyza bonariensis</i> (L.) Cronq.	hairy horseweed	non-native	rare
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<i>Gamochaeta purpurea</i> (L.) Cabrera	purple cudweed	non-native	rare
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<i>Heterotheca grandiflora</i> Nutt.	telegraph weed	non-native	rare
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<i>Pluchea carolinensis</i> (Jacq.) G. Don	sourbush	non-native	rare
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<i>Senecio madagascariensis</i> Poir.	fireweed	non-native	uncommon
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<i>Sonchus oleraceus</i> L.	pualele	non-native	rare
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<i>Verbesina encelioides</i> (Cav.) Benth.&Hook.	golden crown-beard	non-native	uncommon
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BRASSICACEAE (Mustard Family)

<i>Hirschfieldia incana</i> (L.) Lag.-Fos.	black mustard	non-native	rare
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<i>Raphanus raphanistrum</i> L.	wild radish	non-native	rare
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CACTACEAE (Cactus Family)

<i>Opuntia ficus-indica</i> (L.) Mill.	panini	non-native	rare
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CARYOPHYLLACEAE (Pink Family)

<i>Polycarpon tetraphyllum</i> (L.) L.	four-leaved allseed	non-native	rare
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SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
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CONVOLVULACEAE (Morning Glory Family)

<i>Ipomoea indica</i> (J. Burm.) Merr.	koali awahia	indigenous	rare
<i>Merremia aegyptia</i> (L.) Urb.	hairy merremia	non-native	rare

EUPHORBIACEAE (Spurge Family)

<i>Ricinus communis</i> L.	Castor bean	non-native	rare
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FABACEAE (Pea Family)

<i>Chamaecrista nictitans</i> (L.) Moench	partridge pea	non-native	uncommon
<i>Crotalaria incana</i> L.	fuzzy rattlepod	non-native	uncommon
<i>Crotalaria pallida</i> Aiton	smooth rattlepod	non-native	rare
<i>Desmanthus pernambucanus</i> (L.) Thellung	slender mimosa	non-native	rare
<i>Desmodium tortuosum</i> (Sw.) DC.	Florida beggarweed	non-native	rare
<i>Erythrina sandwicensis</i> Degener	wiliwili	endemic	rare
<i>Indigofera hendecaphylla</i> Jacq.	creeping indigo	non-native	rare
<i>Indigofera suffruticosa</i> Mill.	inikö	non-native	rare
<i>Leucaena leucocephala</i> (Lam.) de Wit	koa haole	non-native	common
<i>Macroptilium lathyroides</i> (L.) Urb.	wild bean	non-native	uncommon
<i>Medicago lupulina</i> L.	black medick	non-native	rare
<i>Melilotus indica</i> (L.) All.	sweet clover	non-native	rare
<i>Prosopis pallida</i> (Humb. & Bonpl.ex Willd.) Kunth	kiawe	non-native	rare

LAMIACEAE (Mint Family)

<i>Leonotis nepetifolia</i> (L.) R. Br.	lion's ear	non-native	rare
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MALVACEAE (Mallow Family)

<i>Abutilon grandifolium</i> (Willd.) Sw.	hairy abutilon	non-native	rare
<i>Malva parviflora</i> L.	cheese weed	non-native	uncommon
<i>Malvastrum coromandelianum</i> (L.) Garcke	false mallow	non-native	rare
<i>Sida fallax</i> Walp.	'ilima	indigenous	rare
<i>Waltheria indica</i> L.	'uhaloa	indigenous	rare

PLANTAGINACEAE (Plantain Family)

<i>Plantago lanceolata</i> L.	narrow leaved plantain	non-native	rare
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PROTEACEAE (Protea Family)

<i>Grevillea robusta</i> A. Cunn.ex R.Br.	silk oak	non-native	rare
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SAPINDACEAE (Soapberry Family)

<i>Dodonaea viscosa</i> Jacq.	'a'ali'i	indigenous	rare
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SOLANACEAE (Nightshade Family)

<i>Nicandra physalodes</i> (L.) Gaertn.	apple of Peru	non-native	rare
<i>Nicotiana glauca</i> R. C. Graham	tree tobacco	non-native	rare

VERBENACEAE (Verbena Family)

<i>Lantana camara</i> L.	lantana	non-native	uncommon
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FAUNA SURVEY REPORT

SURVEY METHODS

A walk-through survey method was conducted in conjunction with the botanical survey. All parts of the project area were covered. Field observations were made with the aid of binoculars and by listening to vocalizations. Notes were made on species, abundance, activities and location as well as observations of trails, tracks scat and signs of feeding. In addition an evening visit was made to the area to record crepuscular activities and vocalizations and to see if there was any evidence of occurrence of the Endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*) in the area.

RESULTS

MAMMALS

Sign of just one mammal species was observed during two site visits. Taxonomy and nomenclature follow Tomich (1986).

Axis deer (*Axis axis*) – Abundant old sign of deer was found throughout the property, although none was recent. Deer are found in pasture lands and in gulches around Pukalani. They usually move about and feed at night.

Other mammals one could expect to see in this habitat include mice (*Mus domesticus*), rats (*Rattus* spp.), mongoose (*Herpestes auropunctatus*) and cats (*Felis catus*). Mice and rats feed on seeds, fruits and herbaceous vegetation, and mongoose and cats prey on these rodents and birds.

A special effort was made to look for the Endangered Hawaiian hoary bat by making an evening survey of the property. When present in an area they can be easily identified as they forage for insects, their distinctive flight patterns clearly visible in the glow of twilight. No evidence of such activity was observed though visibility was excellent. In addition an electronic bat detecting device (Batbox IIID) was employed, set to the frequency of 28,000 hertz which these bats are known to use for echolocation. No bat activity was detected using this device either.

BIRDS

There was moderate birdlife in both diversity and numbers on this dry property. Ten species of non-native birds were observed during two site visits. Taxonomy and nomenclature follow American Ornithologists' Union (2005).

Common myna (*Acridotheres tristis*) – Several pairs of mynas were seen on and around this property.

House Finch (*Carpodacus mexicanus*) – A few flocks of these finches were seen and heard calling around the property.

Northern cardinal (*Cardinalis cardinalis*) – Several of these bright red cardinals were seen and heard calling from brush and trees.

House sparrow (*Passer domesticus*) – A few small flocks of these sparrows were seen and heard chattering in shrubs on the property.

Spotted dove (*Streptopelia chinensis*) – A few of these large doves were seen perched in trees or flying overhead.

Zebra dove (*Geopelia striata*) – A few small groups of these doves were seen feeding on the ground in small openings.

Japanese white-eye (*Zosterops japonicus*) – A few of these small green birds were seen and heard making their high-pitched chattering calls.

African silverbill (*Lonchura cantans*) – One small flock of these silverbills was seen in a koa haole thicket.

Gray francolin (*Francolinus pondicerianus*) – One francolin was heard making its distinctive rolling call from the grassland.

Red-crested cardinal (*Paroaria coronata*) – One of these bright red-headed cardinals was seen on the edge of the property.

A few other non-native birds might commonly be seen in and around this property, but the habitat is not suitable for Hawaii's native forest birds that are presently restricted to native forests at higher elevations beyond the range of mosquitoes and the lethal avian diseases they carry and for which our native birds have no immunity. The habitat is also too close to human activities for the pueo or Hawaiian owl (*Asio flammeus sandwichensis*) which prefers expanses of open country.

INSECTS

While insects in general were not tallied, they were abundant throughout the area and fueled the bird life observed. One native Sphingid moth, Blackburn's sphinx moth (*Manduca blackburni*) has been put on the Federal Endangered species list and this designation requires special focus (USFWS 2000). Blackburn's sphinx moth is known to occur in parts of East Maui and Central Maui but is not presently known from Pukalani and Kula. Its native host plants are species of 'Aiea (*Nothocestrum* spp.) and non-native alternative host plants are tobacco (*Nicotiana tabacum*) and tree tobacco (*Nicotiana glauca*). One dead tree tobacco plant was found on the property, and no Blackburn's sphinx moth or their larvae were observed.

CONCLUSIONS AND RECOMMENDATIONS

All of the mammals, birds and insects found on this property were non-native species that are of no particular conservation interest or concern. No fauna species were found that are federally listed Endangered or Threatened species.

No special fauna habitats or communities were identified on the property either. The proposed development of this property is not expected to have a significant negative impact on the fauna resources in this part of Maui.

ANIMAL SPECIES LIST

Following is a checklist of the animal species inventoried during the field work. Animal species are arranged in descending abundance within two groups: Mammals and Birds. For each species the following information is provided:

1. Common name
2. Scientific name
3. Bio-geographical status. The following symbols are used:
 - endemic = native only to Hawaii; not naturally occurring anywhere else in the world.
 - indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).
 - migratory = all species that spend part of their annual life cycle in Hawaii and part of it elsewhere. Migrant birds typically spend their spring and summer months breeding in the arctic and their fall and winter months in Hawaii.

 - non-native = all those animals brought to Hawaii intentionally or accidentally after western contact.
4. Abundance of each species within the project area:
 - abundant = many flocks or individuals seen throughout the area at all times of day.
 - common = a few flocks or well scattered individuals throughout the area.
 - uncommon = only one flock or several individuals seen within the project area.
 - rare = only one or two seen within the project area.

COMMON NAME	SCIENTIFIC NAME	STATUS	ABUNDANCE
MAMMALS			
Axis deer	<i>Axis axis</i>	non-native	uncommon
BIRDS			
Common myna	<i>Acridotheres tristis</i>	non-native	common
House finch	<i>Carpodacus mexicanus</i>	non-native	common
Northern cardinal	<i>Cardinalis cardinalis</i>	non-native	common
House sparrow	<i>Passer domesticus</i>	non-native	common
Zebra dove	<i>Geopelia striata</i>	non-native	uncommon
Spotted dove	<i>Streptopelia chinensis</i>	non-native	uncommon
Japanese white-eye	<i>Zosterops japonicus</i>	non-native	uncommon
African silverbill	<i>Lonchura cantans</i>	non-native	rare
Gray francolin	<i>Francolinus pondicerianus</i>	non-native	rare
Red-crowned cardinal	<i>Paroaria coronata</i>	non-native	rare

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APPENDIX D.

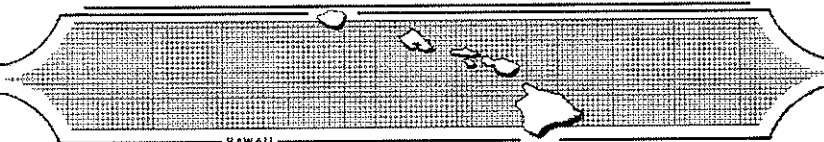
Archaeological Inventory Survey

**AN ARCHAEOLOGICAL ASSESSMENT
ON APPROXIMATELY 36 ACRES FOR
A RESIDENTIAL SUBDIVISION IN PUKALANI
A'APUEO AND MAKA'EHA AHUPUA'A, MAKAWAO DISTRICT
ISLAND OF MAUI, HAWAII
[TMK: (2) 2-3-08:36 por. and 2-3-09:39]**

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December 2009

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INTRODUCTION

At the request of KG Holdings, LLC, Scientific Consultant Services, Inc. (SCS) conducted an Archaeological Inventory Survey (AIS) on two parcels of land totaling approximately 36-acres for a residential subdivision in Pukalani, `A`apueo and Maka`eha Ahupua`a, District of Makawao, Island of Maui, Hawai`i [TMK: (2) 2-3-08:36 por. and (2) 2-3-09:39] (Figures 1, 2, and 3). Fieldwork was conducted by SCS archaeologists Ian Bassford, B.A. and David Perzinski, B.A., on October 25-27, 2009 under the direction of Robert L. Spear, Ph.D (Principle Investigator). While Inventory Survey-level investigations were completed, this report is being written as an Archaeological Assessment because fieldwork did not find any cultural material of historic significance.

The overall purpose of the project was to determine the presence or absence of architecture, midden deposits, and artifact deposits on the surface of the project area, as well as assess the potential for the presence of subsurface cultural deposits. If sites/historic properties were identified, they were to be evaluated in terms of significance criteria. To address the potential for any subsurface sites, eleven trenches were mechanically excavated to aid in identifying any intact subsurface sites and/or cultural layers. No sites were identified in subsurface contexts as well. Extensive alteration by historic and modern grading and grubbing, as explained more so below, appears to have significantly altered the natural topography of the parcels.

ENVIRONMENTAL SETTING

PROJECT AREA LOCATION

The project area consists of two parcels of land with a total area of approximately 36-acres. The northern parcel is roughly rectangular in shape and bounded by the Pukalani Golf Course Parking Lot to the west, residential housing to the north and east, and Kaluapulani Gulch to the south, covering an area of 30.457-acres. The parcel is situated on an east/west running slope at an elevation of 1400-1480 feet at a distance of 10.35 km from the coastline. The southern parcel is irregular in shape and is bounded by the 5th, 6th and 7th holes. This parcel is located at an elevation of 1220-1280 feet and is situated 10.50 km inland.

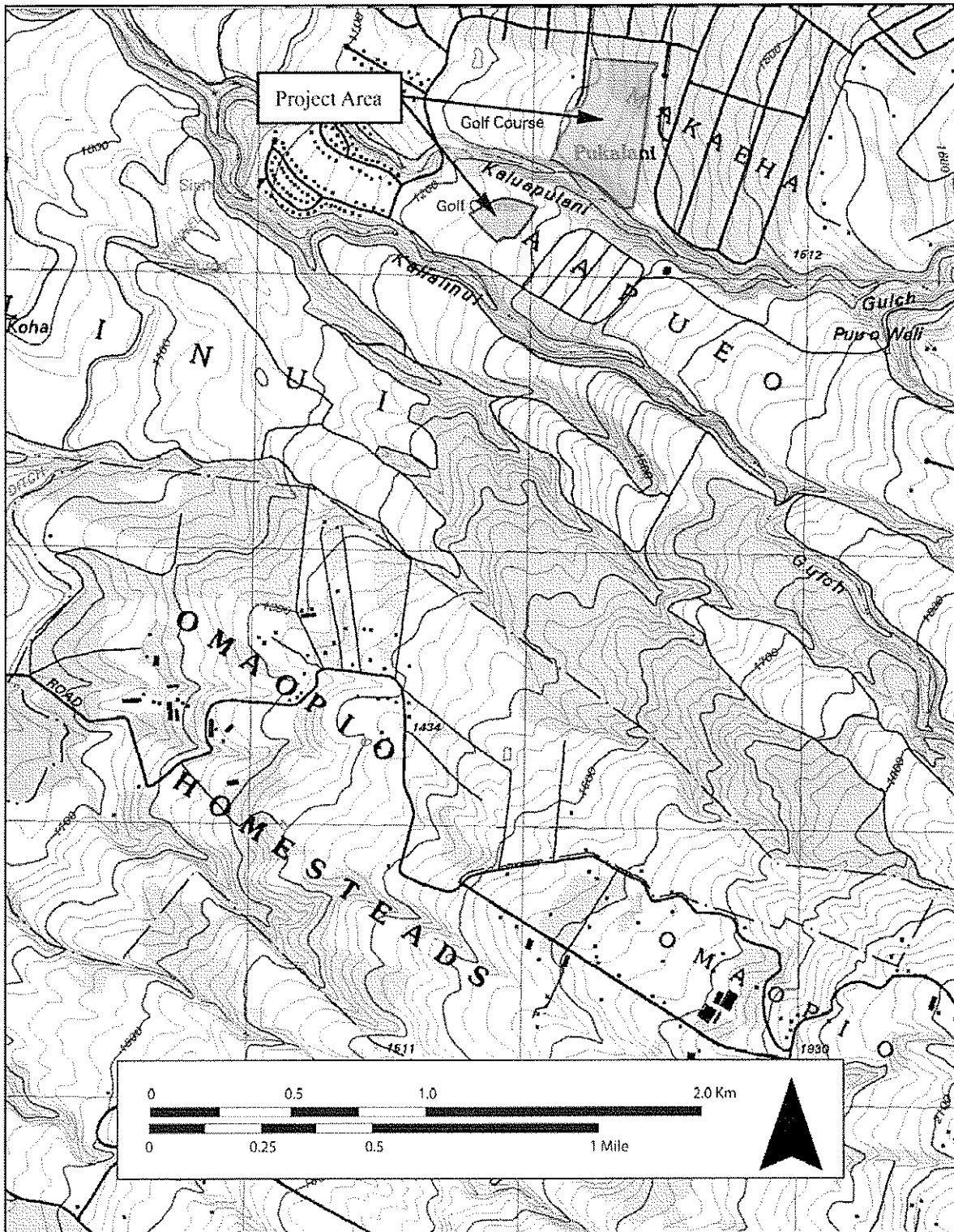


Figure 1: USGS Topographic Map Showing Location of Project Area



Figure 2: TMK: (2) 2-3-08 Showing Location of Southern Parcel.

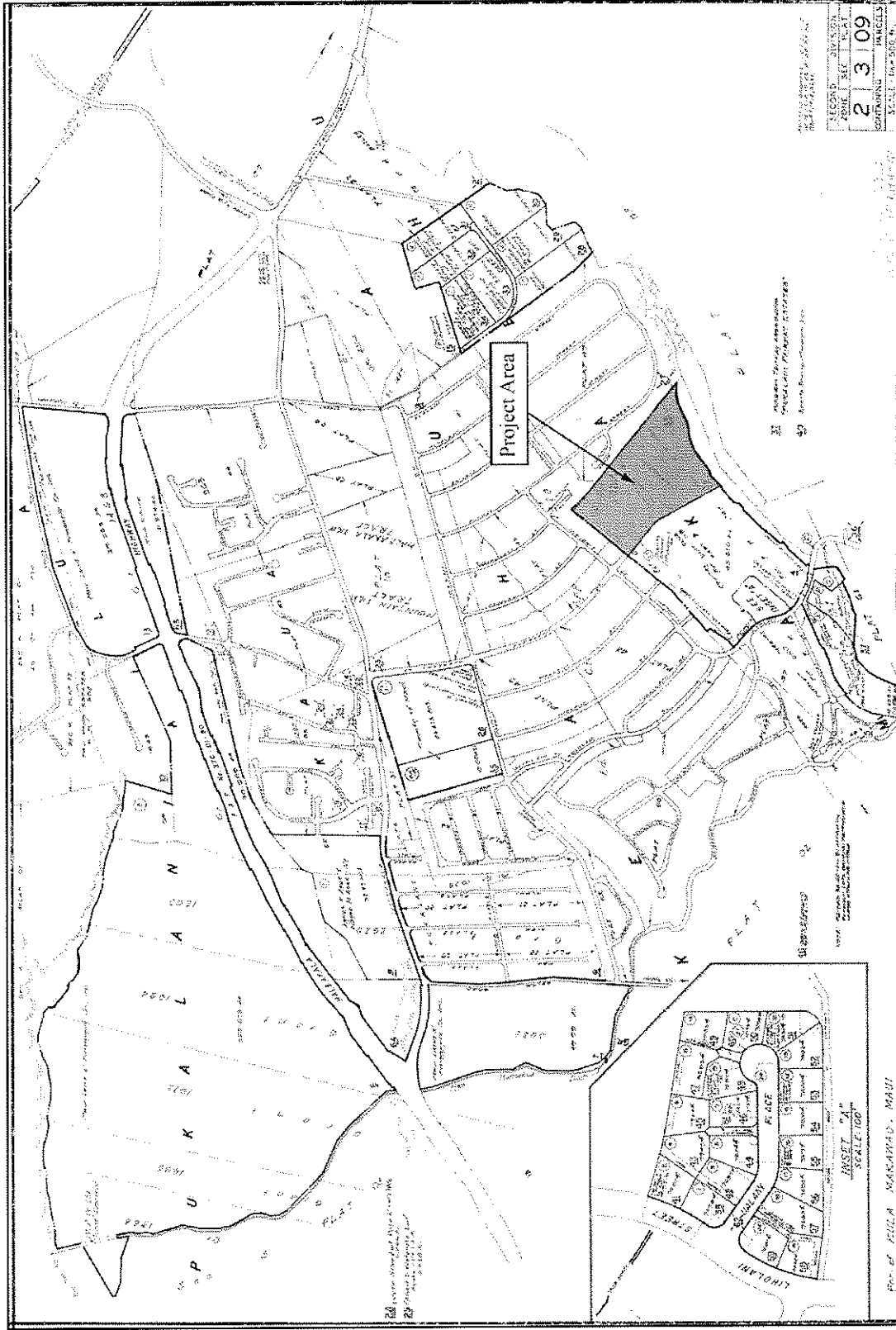


Figure 3: TMK (2) 2-3-09:39 Showing Location of Northern Parcel.

SOILS

Soils found within the project area are a part of the Keahua Series and are defined as Keahua silty clay, 7 to 15 percent slopes (KncC). These well drained soils were generally utilized for pineapple, pasture and homesites, with slow to medium runoff (Foote *et al.* 1972). The surface layer of Keahua Series soils are dark reddish-brown, with weak, very fine granular structure. Since the mid 19th century, agricultural and ranching activities have occurred in this area and within the last 50 years, mechanical grading activities have also altered the natural landscape. As a result, these land disturbances have altered the natural erosion patterns of the area.

RAINFALL

The project area is located on the northwestern slope of Haleakalā within East Maui. The area is subject to an average annual rainfall of about 76 to 152 centimeters (30–60 inches) (Armstrong 1983: 62). The wettest months fall between October and April and the rainfall flows northward. When northeast trade winds blow, the area receives a higher level of precipitation than when southerly, drier Kona winds blow.

VEGETATION

The project area is situated on fallow pineapple fields, last cultivated c. 1970. As a result, only introduced, invasive species are present. The vegetation is dominated by molasses grass (*Melinis minutiflora*), castor bean (*Ricinus communis*), and koa haole (*Leucaena leucocephala*). No native or endemic species were observed.

HISTORICAL BACKGROUND

TRADITIONAL LAND TENURE

According to Kamakau (1961), traditional Hawaiian land tenure was a system formed in order to care for the land. Around the fourteenth century, various individual island *mō`ī* (king/monarch) believed the land should be surveyed and permanently marked in order to institute a boundary system that would settle disputes between neighboring *ali`i* (chiefs). A *kahuna* (priest/expert) named Kālaika`ōhia is said to have carved the land into districts (*moku*) and numerous smaller divisions (*i.e.*: *ahupua`a*, *okana* (district/subdistrict), *ili* (subdivision), *etc.*) were coordinated. *Ahupua`a* land divisions vary in size, but generally encompass land from the mountain to the sea, thereby allowing access to marine and mountain resources.

The idea of holding land was not synonymous with owning it, but more like a trusteeship between the caretakers and the nature gods Lono and Kane (Handy & Handy 1972:41). The

ahupua`a is the most well known of all traditional land divisions and is still relevant today. Traditionally, the areas were governed by a designated caretaker (*konohiki*) and those residing within the region had designated access to all mountain and marine resources. Chinen (1961) explains that all chiefs and commoners were entitled to a portion of the mountain and marine resources.

Makawao District has changed significantly and the district boundary seems to expand with time. The establishment of new governmental forms in the mid-nineteenth century brought changes to the names and boundaries of old district divisions. Prior to 1848, the current Makawao District consisted of four traditional districts that included Honua`ula, Kula, Hāmākuapoko, and Hāmākualoa (Kame`eleihiwa 1992: 241). Presumably, each of those districts contained numerous *ahupua`a* that still retain the same name.

TRADITIONAL AND MYTHOLOGICAL ACCOUNTS

Place names in the area may help trace ancient Hawaiian perspectives toward individual areas. The district of *Makawao* literally translates to “forest beginning” (Pukui, *et al.* 1974:142). According to Sterling (1998: 99), the name *makawao* was derived from cloud formations in the area; *makao* means ‘to be afraid’ and *wao* means ‘a cloud.’ *Maka`eha* (*ahupua`a*) means “sore eye” and Pukalani translates as “heavenly gates” (Pukui, *et al.* 1974:34 and 193). Pukui, *et al.* (1974: 193) also note that the original name of Pukalani may have been “Pu`u-ka-lani”, or “hill of the heavens”, perhaps describing the afternoon cloud formations over the area. The place names of political entities were often derived from legends, significant events, or land features. The project area is situated within *Maka`eha* and `A`apueo *ahupua`a*. An example of this is the story of `A`apueo, the owl.

According to legend, a female owl lived in the upland of Kula during the reign of Kanenenuiakawaikalua (n.d.). A man named Kapoi from Wailuku smashed her eggs inciting a battle between the owls and the people of Wailuku. `A`apueo found revenge for the destruction of her eggs at the death of Kanenenuiakawaikalua during the battle (Uaua 1871:2). Thus, the origin of the name of one of the *ahupua`a* in this project area.

The sacred site of Pu`u Pane (southeast of the project area) is located in the *ahupua`a* of `A`apueo. Located on a crest of a hill, east of Haleakala Highway at approximately 2573 feet amsl, Pu`u Pane was described by M. Manu in an article in *Kuoko`a* (Feb 23, 1884 in Sterling, 1998). Manu stated that Pu`u Pane was declared by Kihapi`ilani as sacred and no commoner could climb the hill because it was a *heiau* for the high chiefs of Maui from ancient times to

Kihapi`ilani. A *kahuna* lived at `A`apueo to guard the hill. Several one-course high basalt rock alignments were identified on the hill in 1973 and may be the remains of the religious structure.

A small land division named Kohoilo located between Maka`eha-Keahua and `A`apueo Ahupua`a appears on a map surveyed between 1872-1879 by W. D. Alexander and M. D. Monsarrat. Within this section is a hill named Pu`u o Weli. Although distinctive in form, no traditional references were found associated with it except that it was included in Grant No.1829 held by an individual named Keawe in the 19th century.

In the uplands of the Kula District, at elevations higher than *c.* 1,000 feet above mean annual sea level, traditional agriculture was based on dryland field systems. Handy and Handy (1972: 488) write:

The great bulk and altitude of Haleakala makes its southern flank practically a water less desert, and the southeast and west flanks relatively dry, so that there were no *lo`i* (pond fields) cultivation at all. The arid country below the west and south slopes of Haleakala, including Kula, Honua`ula, Kahikinui, and Kaupo, were dependent on sweet potato.

Handy and Handy (1972:131) also describe the planting methods in the drier sections of Kula:

Where potatoes are planted in crumbling lava with humus, as on eastern Maui and in Kona, Hawaii, the soil is softened and heaped carelessly in little pockets and patches using favorable spots on slopes. The crumbling porous lava gives ample aeration without much mounding.

THE MAHELE

During the historic period, extreme modification to traditional land tenure occurred throughout all of the Hawaiian Islands. Kame`eleihiwa (1992: 209), states that the Makawao District was the first area in Hawai`i to experiment with land sales. In January 1846, land was made available for eventual ownership to the commoners (*maka`ainana*). According to Chinen (1961), land was sold for \$1.00 per acre; this would mark the beginning of land grants. Experimental lots purchased by Hawaiians ranged from five to ten acres, each with a total land area of approximately 900 acres. If applicants met all of the requirements (and were notified of the procedures), they eventually received the title to their land.

The transition from traditional Hawaiian communal land use to private ownership and division was commonly referred to as the *Māhele* (Division). The Māhele of 1848 set the stage for vast changes to land holdings within the islands as it introduced the foreign (western) concept of land ownership to the Islands. Although it remains a complex issue, many scholars believe that in order to protect Hawaiian sovereignty from foreign powers, Kamehameha III was forced to establish laws changing the traditional Hawaiian economy to that of a market economy (Kuykendall Vol. I, 1938:145 footnote 47, 152, 165–166, 170; Daws 1968:111; Kelly 1983:45; Kame`eleihiwa 1992:169–170, 176).

For natives that had been cultivating and living on the lands, lengthy and costly procedures enabled them to possibly claim some of the plots. The first Land Commission was formed in 1845, during which time all individuals holding land were required to submit their claims or forfeit their lands. Once lands were made available and private ownership was instituted the *maka`āinana* (commoners) were able to claim the plots on which they had been cultivating and living, if they had been made aware of the foreign procedures (*kuleana* lands, Land Commission Awards, LCA). These claims could not include any previously cultivated or presently fallow land, *`okipū* (on O`ahu), stream fisheries or many other resources necessary for traditional survival (Kelly 1983; Kame`eleihiwa 1992:295; Kirch and Sahlins 1992). If occupation could be established through the testimony of two witnesses, the petitioners were awarded the claimed Land Commission Award (LCA), issued a Royal Patent number (RP), and could then take possession of the property (Chinen 1961: 16).

The land that *maka`āinana* received was less than one percent of total lands, all of which needed to be surveyed. A total of 88,000 people submitted 14,195 requests for land and of these only 8,421 were awarded. (Kame`eleihiwa 1992: 295). In 1850, it became legal for foreigners to purchase land and they received large portions for diminutive prices. At this time, many Native Hawaiians lost access to their lands due to mortgage default.

According to the Waiihona `Aina Database, an online record of Hawaiian landholdings, no LCAs were awarded in the project area.

HISTORIC PERIOD

Much like the rest of Maui, Makawao District was a site of sugar and pineapple production. However, cattle ranching became a prominent position of employment and adopted lifestyle. Livestock was introduced to the Hawaiian Islands in 1793 when Captain Vancouver transported cattle and sheep aboard his ship the *Discovery* with the intention of giving the four cows, two bulls, four ewes, and two rams to Kamehameha I as a gift of goodwill. The rough seas

and intense heat of the journey took its toll on the health of the cattle and several of the animals died. In order to ensure that the cattle population would increase, a ten year *kapu* (ban) was placed on slaughtering them. Eventually the cattle did increase in number to the point of becoming a dangerous nuisance. As they were allowed to roam wild, gardens were destroyed and the Native Hawaiians were terrified of being attacked. Managing and controlling the unruly animals became a necessity. In order to solve this problem Kamehameha I employed “a varied crew with unsavory reputations who had immigrated to the islands to escape their pasts” as *bullock hunters* to capture the animals (Cowan-Smith and Stone 1988:8).

Things were about to change in 1803 when Captain Richard Cleveland and his partner Captain William Shaler introduced horses to the Islands. These men brought aboard their ship, the HMS *Lelia Byrd*, several horses including a stallion and a mare with foal which they presented as gifts to Kamehameha. Soon the horses, like the cattle, were roaming freely across the Islands. The horses (*lio*) adapted rapidly to the rough terrain where the cattle grazed and “their ability to work the livestock [did not] go unnoticed” (Cowan-Smith and Stone 1988:12).

Around 1830, Kamehameha III brought Mexican *vacqueros* from Vera Cruz to the Big Island to teach the local men how to rope and handle the animals. As the cattle and horse populations proliferated, the animals were transferred to the various Hawaiian Islands and the *vacqueros*, which now included local cowboys, were needed on the outer islands.

In addition to cattle ranching, agricultural activities were pursued. Despite claims that “the soil in this area of Maui grows rocks” (Fredericksen, *et al.* 1991: 05) due to the many areas of exposed bedrock and scattered boulders and gravels in the surrounding fields, oral accounts of historic agricultural endeavors listed crops such as sweet potato (*ʻuala*; *Ipomoea batatas*), potatoes, corn, beans, and wheat, which had expanded exponentially in the first half of the nineteenth century (Fredericksen *et al.* 1991: 03–05; Sterling 1998: 99; Bartholomew 1994: 120). The area which had once been “developed as an agricultural and stock-raising area” had expanded “into pineapple upon the formation of the Pukalani Dairy and Pineapple Company in 1907” (Bartholomew 1994: 121). By the nineteenth century, sugarcane and pineapple proved profitable crops; patches of the crops still exist in the upcountry areas today.

MODERN USE

In 1970 Pukalani Golf Course was constructed, dramatically altering the surrounding landscape. Prior to the development of the land and surrounding parcels, the current project area was under intensive pineapple cultivation.

PREVIOUS ARCHAEOLOGICAL RESEARCH

Several archaeological surveys have been conducted in the vicinity of the current project area. Figure 4 illustrates the overlap of surveys and identified sites located in the vicinity of the project area. Figure 5 shows archaeological research associated with the Pukalani Highlands property located approximately 1 km northeast of the current study parcels.

In 1973, Connelly re-identified Site 50-50-05-1062 under the direction of Bernice Pauahi Bishop Museum. The area consisted of a traditional petroglyph site containing at least 87 glyphs within the northern section of Kaluapulani Gulch. Site -1062 is located west of Kula Highway near the present upcountry location of Kamehameha Schools. The site was relocated as part of an Archaeological Reconnaissance Survey for the proposed Kīhei to Kula Road corridors (Folk *et al.* 1999).

Bordner, in affiliation with the Environmental Impact Statement Corporation, conducted a Reconnaissance Survey of the proposed Makawao Subdivision (1980). The project area, which was located between Kailua Gulch and Apana Road, was said to have been a plantation camp. However, no archaeological surface remains were located during the survey and no further work was recommended.

Donham (1990), in association with Paul H. Rosendahl Inc. (PHRI), conducted an Archaeological Inventory Survey for five potential upcountry Maui High School sites in Hali`imaile, Hoku`ula, Kailua and Maka`eha Ahupua`a, Makawao District. Historic materials and traditional Hawaiian artifacts were discovered during this project: Parcel 1 contained ceramic shards; Parcel 2 contained a horseshoe and metal; Parcel 3 contained water-worn coral and marine shell; and Parcel 4 contained four lithic artifacts and a ceramic shard. Even though cultural remains were located on some of the investigated parcels, no State Site Numbers were issued for any of the findings. No further work was recommended for Parcels 1–3 and 5; however, further research was warranted for Parcel 4.

Donham (1991) performed an Archaeological Field Inspection of petroglyphs located near the Kula 200 Subdivision. The petroglyphs were identified on a vertical rock face along the north section of Kaluapulani Gulch, the same location as Site 50-50-05-1062. At least 32 additional individual rock drawings were recorded across a section of 20 meters.

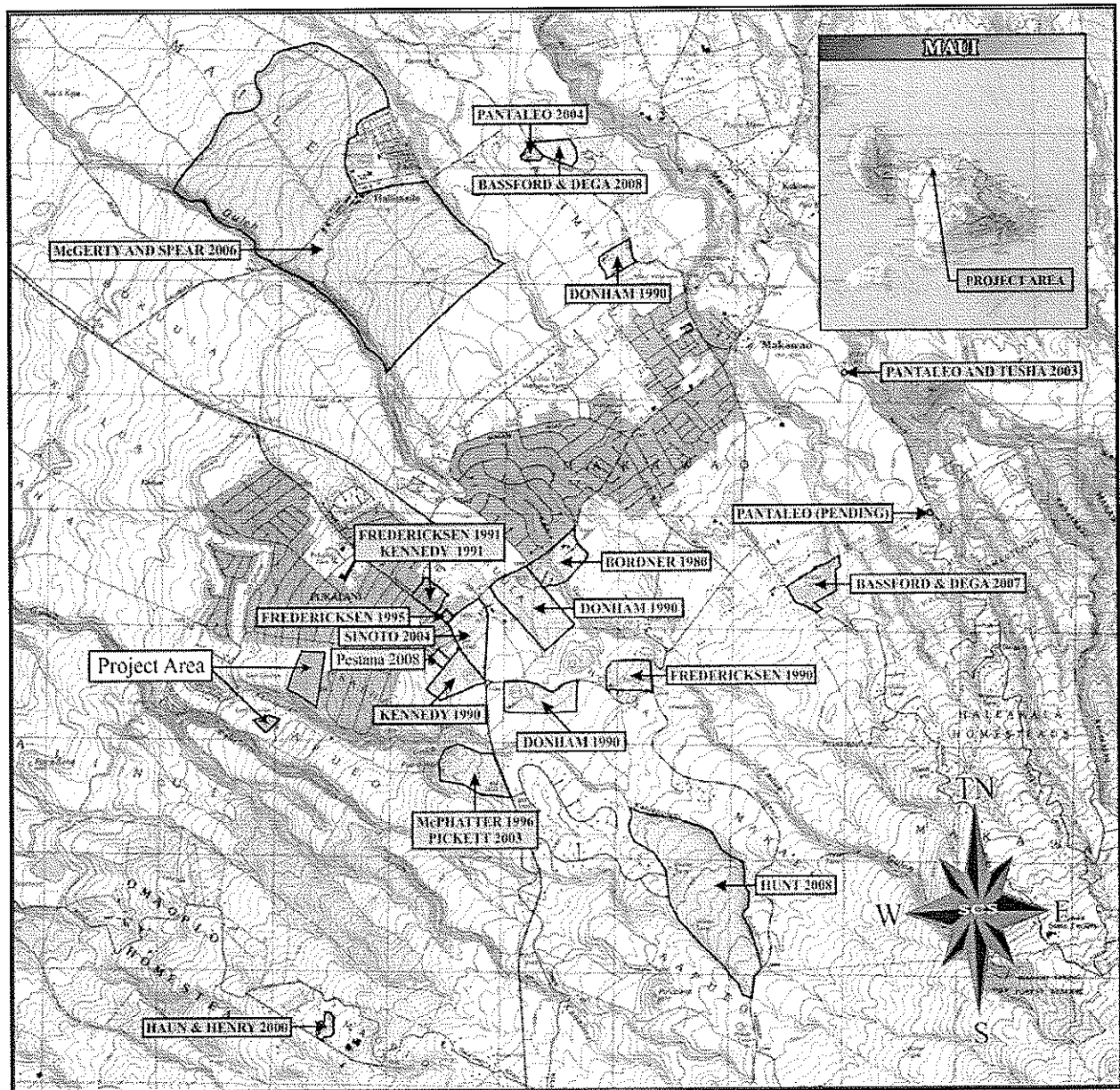


Figure 4: USGS Topographic Map Showing Locations of Previous Archaeological Research.

Xamanek Researches conducted an Archaeological Inventory Survey in Hoku`ula Ahupua`a, Makawao District (Fredericksen and Fredericksen 1995). A rock aggregation was recorded and issued SIHP Site Number 50-50-05-3929. Testing resulted in the discovery of historic materials including metal, bottle glass, agricultural sheeting, cut animal bone, and ceramics. Traditional Hawaiian artifacts consisted of *kukui* nut (*Aleurites moluccana*), water-worm pebbles (*ili`ili* stones) and marine shell. No additional archaeological work was required for the site.

Xamanek Researches conducted an Archaeological Inventory Survey for the Kulamalu water tank and water line improvements in Hoku`ula Ahupua`a, Makawao District (Fredericksen and Fredericksen 1999). Five archaeological sites were identified and each was issued a SIHP Site number. Site 50-50-10-4677 through -4681 consisted of two historic retaining walls, two shelter caves and a probable historic grave site. The sites were not to be affected by the proposed work and no further investigations were deemed necessary.

PHRI conducted an Archaeological Inventory Survey for the proposed Pukalani Terrace Subdivision III in `A`apueo Ahupua`a, Makawao District (McPhatter *et al.* 1996). During this survey, additional petroglyph panels were documented in Kaluapulani Gulch. The glyphs are located on the south bank of the gulch and were issued Site 50-50-05-4179. There was also a rock wall identified (Site 50-50-05-4180) and agricultural terraces (Site 50-50-05-4181). No additional work was required for the wall and terraces; however, permanent preservation was recommended for the petroglyph panel.

Aki Sinoto Consulting completed an Archaeological Inventory Survey of the proposed Upcountry Town Center (Sinoto and Pantaleo 2002). The historic Corn Mill Camp was identified and issued Site Number 50-50-06-5169. Anything associated with the historic camp was recommended for permanent preservation.

Archaeological Services Hawai`i, LLC recorded a Chinese Cemetery while monitoring the construction of Kulamalu Commercial Subdivision in `A`apueo Ahupua`a. No archaeologist was on site during the excavations; however, a construction supervisor contacted the archaeological firm upon the discovery of disturbed human bones. The site contained coffin and burial pits, burning episodes, animal burial, associated historic glass bottles and beads. The site was slated for permanent preservation (Pickett and Pantaleo 2003).

Archaeological Services Hawai'i, LLC recently recorded a human burial during trench excavations along an access road in a pineapple field. However, no archaeologist was on site during the trench excavations and a Maui Pineapple Company Field Supervisor contacted the state upon the discovery of human bones. The burial was partially disturbed and later re-interred and slated for permanent preservation. Maui Pineapple Company re-routed the trench to go around the burial, and it is presently marked with an upright basalt stone.

Pantaleo and Tusha (2003) completed an Archaeological Inventory Survey for the proposed Pi'iholo water well (TMK 2-4-12: portion of 6). Nothing of archaeological significance was identified.

Pantaleo (2004) prepared an Archaeological Inventory Survey report of the Taylor-Fewell subdivision and Grove Ranch Agricultural Subdivision in Hāli'imaile [TMK: (2)-2-4-1-:004, 019]. Two archaeological sites were given numbers 50-50-06-5554 and -5555. The sites consisted of a Portuguese ferno (Site -5554) and a historic cattle scale (Site -5555). Since historic remains were encountered, Archaeological Monitoring was recommended.

In 2006, SCS conducted an archaeological inventory survey of 180 acres of land approximately 3 km southeast of the current project area. Systematic pedestrian survey of the project area led to the identification of four single-feature archaeological sites, all of which were located in a northern fork of Kalialinui Gulch (upslope of current study area). The sites have been designated as State Site No. 50-50-11-6214 (modified outcrop), State Site No. 50-50-11-6215 (L-shaped wall), and State Site No. 50-50-11-6216 (wall), and State Site No. 50-50-11-6216 (wall). In addition, 18 backhoe trenches were excavated on the tablelands of the project area during which no sites or cultural deposits were identified.

PUKALANI HIGHLANDS PROPERTY

In March 1991, an Archaeological Inventory Survey for the proposed Pukalani Highlands Property was completed by Archaeological Consultants of Hawai'i, Inc. (TMK: 2-3-44: 20) (Kennedy 1991). A total of three structures were recorded; four test units were excavated. According to Kennedy, evidence collected suggested the structures (referred to as "mounds") were pre-Contact as all historic materials (e.g., wire, nails, bovine teeth, a plastic bottle) were all collected at least 14 cm above the base of the structures and because the rock walls were stacked and faced, rather than being reinforced by concrete.

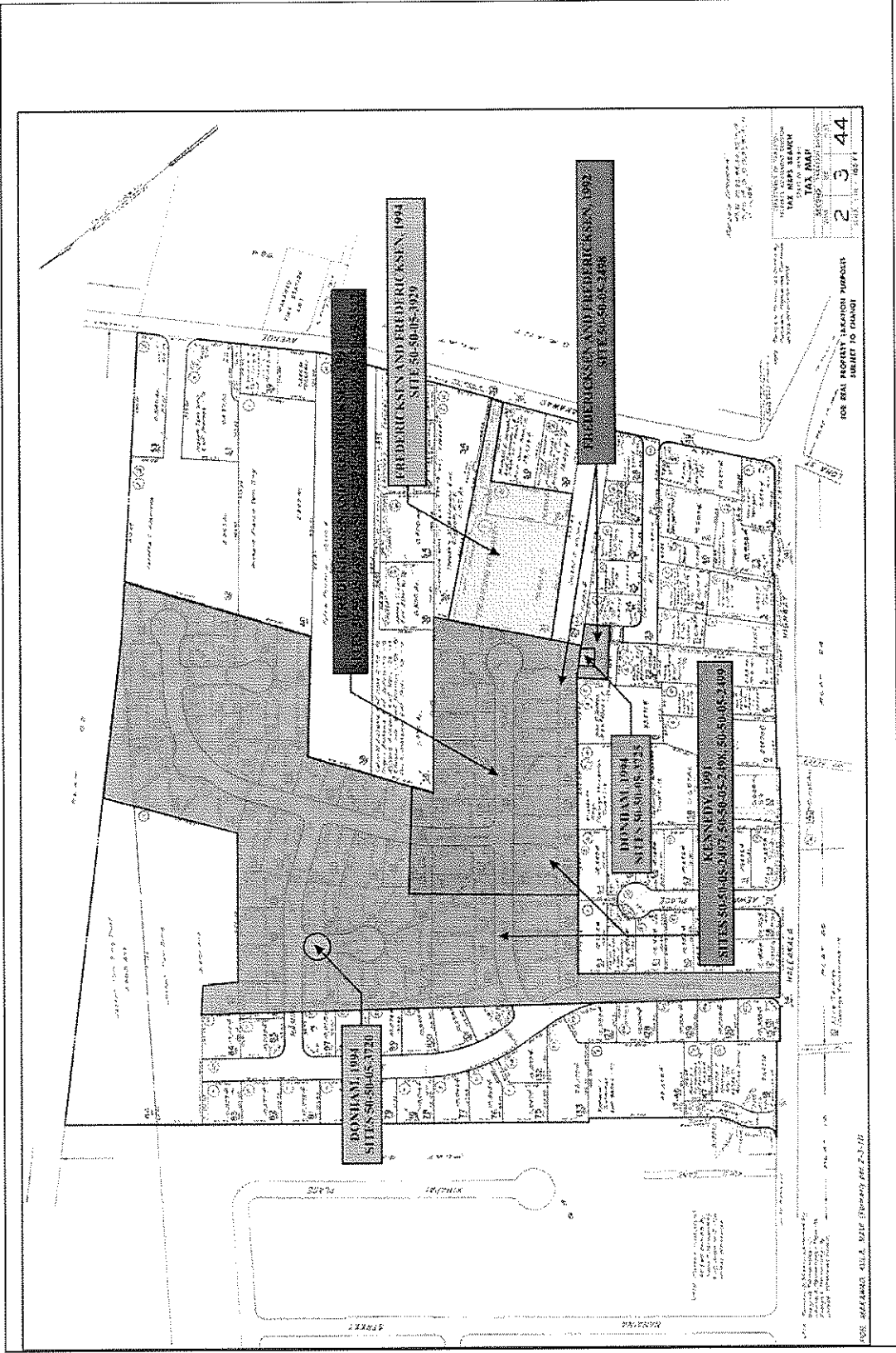


Figure 5: Previous Archaeological Studies in TMK 2-3-44.

Site 50-50-05-2497 was concluded to be a *heiau* (shrine, temple) due to the structure's formal construction, while Site 50-50-05-2499, not as well constructed as Site -2497, was determined to be a burial due to its close proximity to Sites -2497 and 50-50-05-2498. Oral accounts of the structure and its formal construction led Kennedy to conclude that Site -2498 was a *heiau*. Volcanic glass considered to be prehistoric was found below historic materials. In addition, coral found on the platform and in a test unit furthered the belief that the site was a *heiau*, "for there are ethnographic accounts of fist sized chunks of coral being brought to and used as offerings on such structures" (Kennedy 1991: 27). Preservation efforts were recommended for Site -2497 due to its excellent condition and cultural value; Data Recovery was recommended for Sites -2498 and -2499 due to their potential to yield cultural data (and also an examination of the stone wall, which is absent from Kennedy's report).

Sites -2497, -2498, and -2499 continued to be of interest and generated much controversy. In June 1991, Xamanek Researchers tested Site -2499; preliminary excavations suggested the feature was the result of modern agricultural clearing activities (Fredericksen, *et al.* 1991). The stone alignment, absent from Kennedy's 1991 report, was deemed State Site 50-50-05-3527. The alignment was composed of "angular, quarried rocks intermixed with boulders and cobbles" (*ibid.*: 07). A 2.0 by 3.0 m area 5.0 m north of Site -2497 was cleared and a small piece of coral, some concrete, and rusty metal pieces was recovered. Pieces of a concrete irrigation flume were found west of Site -2497. A trench *makai* of the bedrock at Site -2499 was excavated in order to determine if the feature covered an old lava tube which might contain a burial. Pre-Contact artifacts were recovered: a round stone, possibly "crude or unfinished *pohaku hu* (a rock used to snare birds, according to Brigham in Fredericksen, *et al.* 1991: 08), charcoal, several coral chunks, *kukui* (candlenut tree; *Aleurites moluccana*) shell fragments, an adze tip, two polished adze flakes, basalt flakes, and a possible hammerstone and polishing stone.

Historic artifacts were also noted: metal nails, cut bovine bone, glass sherds, rusty metal, and wire. Xamanek Researchers concluded that Site -2499 is not a lava tube and that the mix of artifacts infers activities from both pre- and post-Contact eras. Radiocarbon dating from Site -2498 was dated at 1540 to 1680; Site -2499 returned a date of 1620 to 1750. The location may have been chosen as a "repository of stones because it is an outcrop of rock which could not be utilized in other ways" (*ibid.*: 10). Oral histories of the area confirmed agricultural cultivation and clearing occurred for many years "in recent times" (*ibid.*). It was recommended that further excavation on the *mauka* sides of Sites -2497 and -2498 was needed to obtain more data and that

the placement and location of the two sites was “problematic” – they may be historic clearing piles, pre-Contact religious structures, or a combination of prehistoric and historic sites.

In January 1992, Xamanek Researchers began “dismantling work at Site 2498” (Fredericksen and Fredericksen 1992: 02). More historic articles and a charcoal layer were encountered. Bone was hit by a dozer and the disarticulated remains of seven individuals were identified and disinterred. One adult coffin burial was determined to be a primary interment, all others (three adults, two infant, and one child) were secondary interments; brought from “somewhere else” (*ibid*: 14). After conferring with SHPD, the remains were moved to Lot 60, which was located on an easement that could not be developed. Monitoring and further excavation were recommended in order to explore the site and stone alignment further.

Excavations occurred at Site 50-50-05-3929, a rock aggregation at TMK: 2-3-44: 31 (Fredericksen and Fredericksen 1994). Modern trash material was noted: rusty metal, plastic, black plastic mulch associated with historic agricultural practices, and bottle glass. No significant finds were made; no further work was recommended.

In February 1994, the SHPD and Maui/Lāna`i Island Burial Council (MLIBC) was notified of an inadvertent discovery of human skeletal remains at the Pukalani Highlands Subdivision (TMK: 2-3-44: 19). The remains (Site 50-50-05-3520) were uncovered when a section of a trench wall collapsed: “The disposition of the remains *in situ* indicated that the elements were not articulated and that the burial had been disturbed prior to its recent exposure during construction” (Donham 1994: 01). Due to the location of the remains in an area of likely future disturbance, the decision was made to relocate the remains to Site 50-50-05-3725. Historic period fragments not associated with the burial were also present. Scattered charcoal was interpreted more as a by-product of crop burning (*i.e.*, sugarcane).

Xamanek Researchers summarize other sites in the vicinity of the project area (Fredericksen and Fredericksen 1994) include Site 50-50-05-3426, an agricultural clearing pile from the historic period, as suggested by the presence of black plastic, common in cultivation pursuits. Site -3527 was a stone feature; it was believed to be part of the roadway, perhaps Paku Lane. In May of 1990, Kennedy identified a stone feature, which he determined to be a *heiau*, in a pineapple field (Site 50-50-05-2701). Excavations outside of the feature included volcanic glass, basalt flakes, and *kukui* nut shells. Radiocarbon dating suggested a construction sate of 1620 to 1770.

Previous documentation regarding Site 50-50-10-2701 (the previously-discussed *heiau*) required further investigation on the land parcel. Archaeological Services Hawai'i, LLC conducted an Archaeological Inventory Survey of the Kualono Residential Subdivision in Pukalani (Pantaleo 2004). A total of 26 backhoe trenches were excavated and no culturally significant findings were encountered during subsurface testing. Approximately 2.5 acres were set aside from the proposed development in order to preserve the site. Archaeological Monitoring was recommended.

In all, a survey of previous archaeological undertakings in the area suggest that this area of upcountry Maui may have been utilized in pre-Contact times—with use that extended into the historic period. The gathering of upland resources in traditional times seems more likely, rather than more permanent habitation and agricultural practices, like those in the Kēōkea-Waiohuli areas. Although habitation is suggested by the presence of petroglyphs and ceremonial structures, more evidence is needed to support this claim, especially in the Pukalani area.

SURVEY EXPECTATIONS

A review of archival resources and the results of previous archaeological work conducted in the area were undertaken prior to fieldwork to assess expectations for the project area. Although pre-Contact sites do exist in the area, given the background history of the area as well as present land use, the expectations for finding post-Contact sites were greater than expectations for finding pre-Contact sites. Historic sites (*i.e.*, roads, irrigation features, fences, house sites, etc.) associated with commercial agricultural activities were anticipated; with a very slight chance of encountering agricultural features including terraces, garden/animal enclosures, walls, and mounds. In summary, the estimated probability of documenting historic sites was low; the estimated probability of documenting pre-Contact sites was almost nonexistent.

METHODOLOGY

Two field tasks were completed during the archaeological assessment of the approximate 36-acre study area. These included a systemic, 100% pedestrian survey and backhoe subsurface testing to document any possible buried cultural layers or materials. Fieldwork was conducted on October 25-27 by SCS archaeologists David Perzinski, B.A. and Ian Bassford, B.A. (Field Supervisor) under the overall direction of Robert L. Spear, Ph.D., Principle Investigator.

First, a full systematic pedestrian survey, providing 100 percent coverage of the entire project area was conducted in sweeps 5 meters apart, depending on vegetation density and terrain, in order to identify any archaeological structures or surface scatters and to assess geographical and topographical features. Second, 13 stratigraphic trenches were mechanically

excavated with a backhoe to record the stratigraphic sequence and to possibly identify any subsurface sites. All thirteen trenches were recorded for their stratigraphic content and photographed. The stratigraphy of the trenches was thoroughly documented, using the *Munsell Soil Color Charts* (1990) to identify structure and color of subsurface strata. Due to the extremely uneven terrain, backhoe trenching was not possible in the northern half of the northern portion of the project area (Figures 6, 7, 8, and 9).

FIELD RESULTS

No new sites, surface features, or midden scatters were identified during the pedestrian portion of the AIS. The entire project area was subjected to a 100% pedestrian survey and 13 mechanically excavated trenches were examined to determine the presence or absence of subsurface cultural materials or layers.

The pedestrian survey was conducted on both the northern and southern project areas (see Figure 6). The northern half of the larger, northern portion of the project area is heavily vegetated with abundant construction debris, push piles, steel pipe, and green waste and was inaccessible to the backhoe. It appeared that the debris and push piles were associated with construction of the residential housing and golf course, though it is also likely that the area was used as a dump for area residents. The southern half of the northern project area was relatively flat, with thick *koa haole* and invasive grass covering the entire area.

Across both portions of the project area, the subsurface stratigraphic sequence consisted of a previously disturbed "till" zone approximately 50 cm deep overlying the naturally occurring silty clay. No traditionally Hawaiian cultural materials were encountered, with only modern debris (plastic sheeting, golf balls) encountered within the trenches. Because of the similarity of the strata encountered across the project area, the following text describes three of the trenches excavated within the project area that serve to represent the whole variation.

In the northern portion of the project area, Trench 1 consisted of a 40-50 cm thick layer of dark brown (10 YR 3/3) hard silty loam that represents the agricultural "till" zone (Figures 10 and 11). The stratum contained abundant pebbles, roots and rootlets with an abrupt and wavy lower boundary. Stratum II consisted of dark brown (10 YR 3/3) hard, bouldery and cobbly, sterile silty clay. This description also applies to Trenches 2, 5 and 10. Trench 6, excavated in the south central portion of the northern project area consisted of a 40-50 cm thick layer of dark brown (10 YR 3/3) hard silty loam that again represents the agricultural "till" zone (Figure 12). Stratum II consisted of very dark gray (7.5 YR 3/1) silt loam with weak, fine granular structure. The stratum was sterile with only few roots and rootlets and decomposing bedrock encountered within the stratum. This description also applies to Trenches 3, 4, 7, 8 and 9.



Figure 6: Aerial View of Study Areas Showing Location of Trenches with Yellow Line Demarcating Area of Terrain Inaccessible to the Backhoe. Only the area north of this yellow line will be subject to Archaeological Monitoring once development commences.



Figure 7: View Northeast from Center of Northern Project Area Showing Dense Vegetation and Construction Debris.

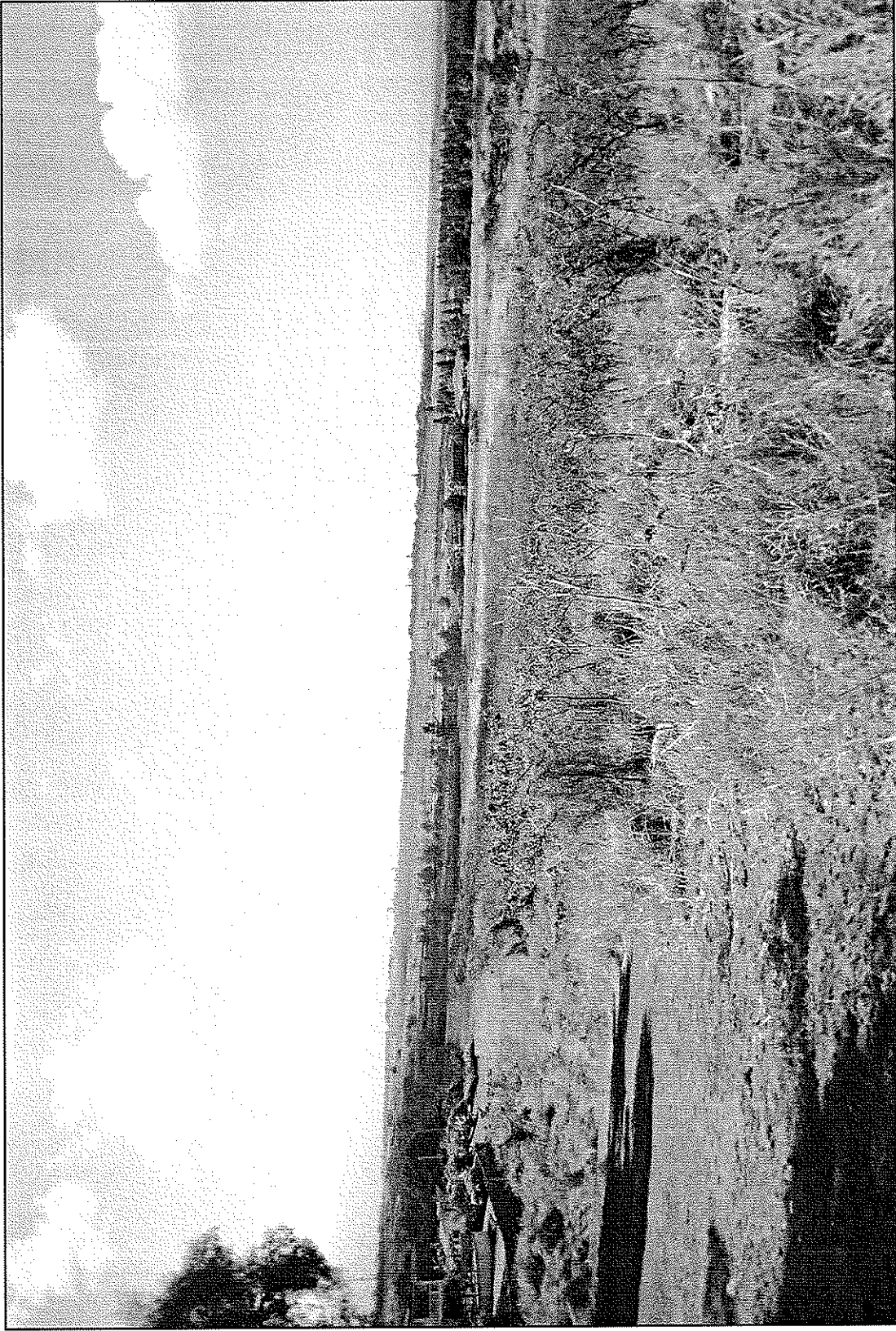


Figure 8: View South from Northeastern Corner of Northern Project Area.



Figure 9: View West of Southern Project Area.

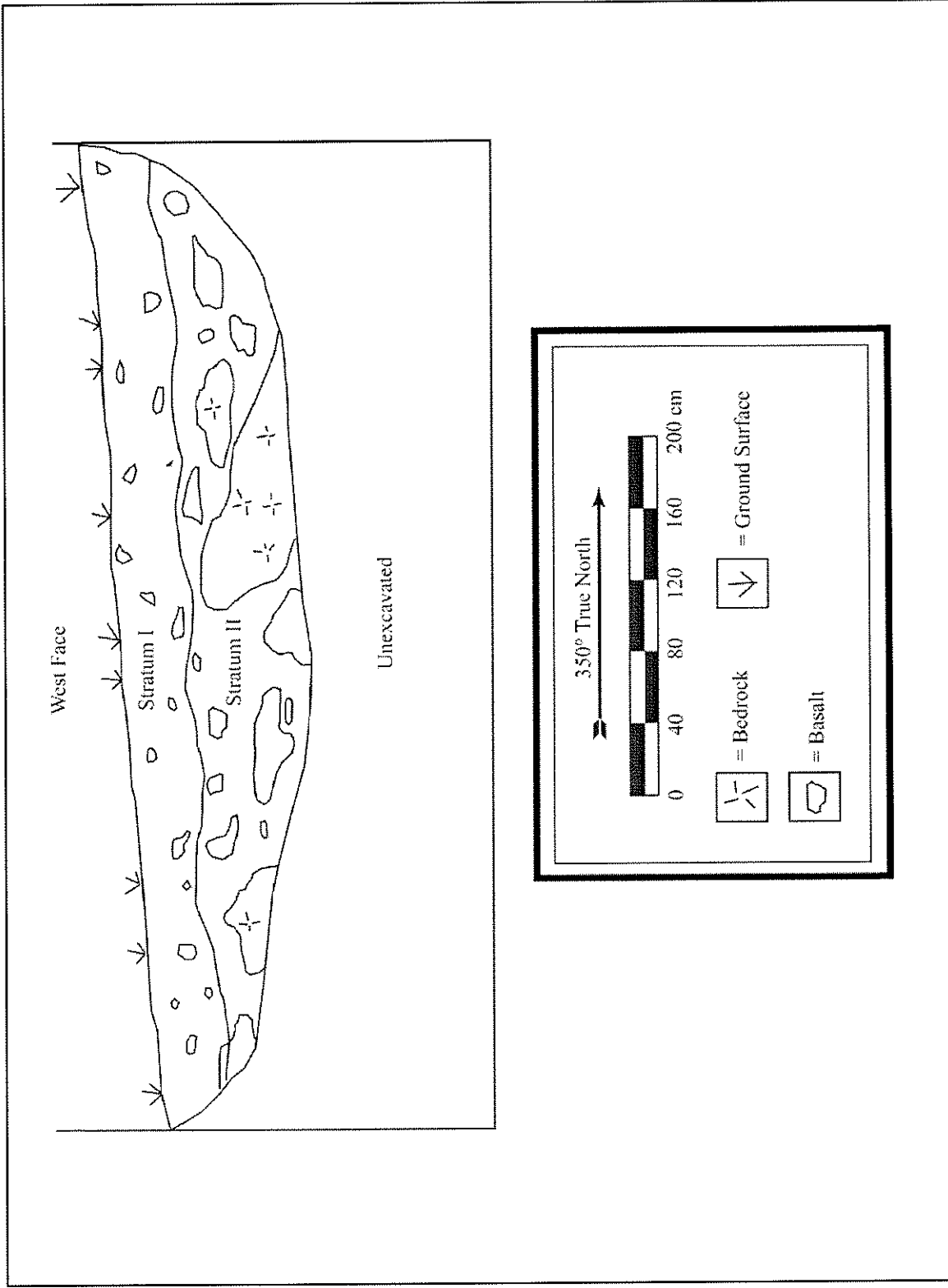


Figure 10: Profile of Trench 1 in Southwest Corner of Northern Project Area Showing Stratigraphic Sequence.



Figure 11: View West of Trench 1 Showing Sterile Strata (note clumpy Stratum I “till” zone from previous agriculture use).

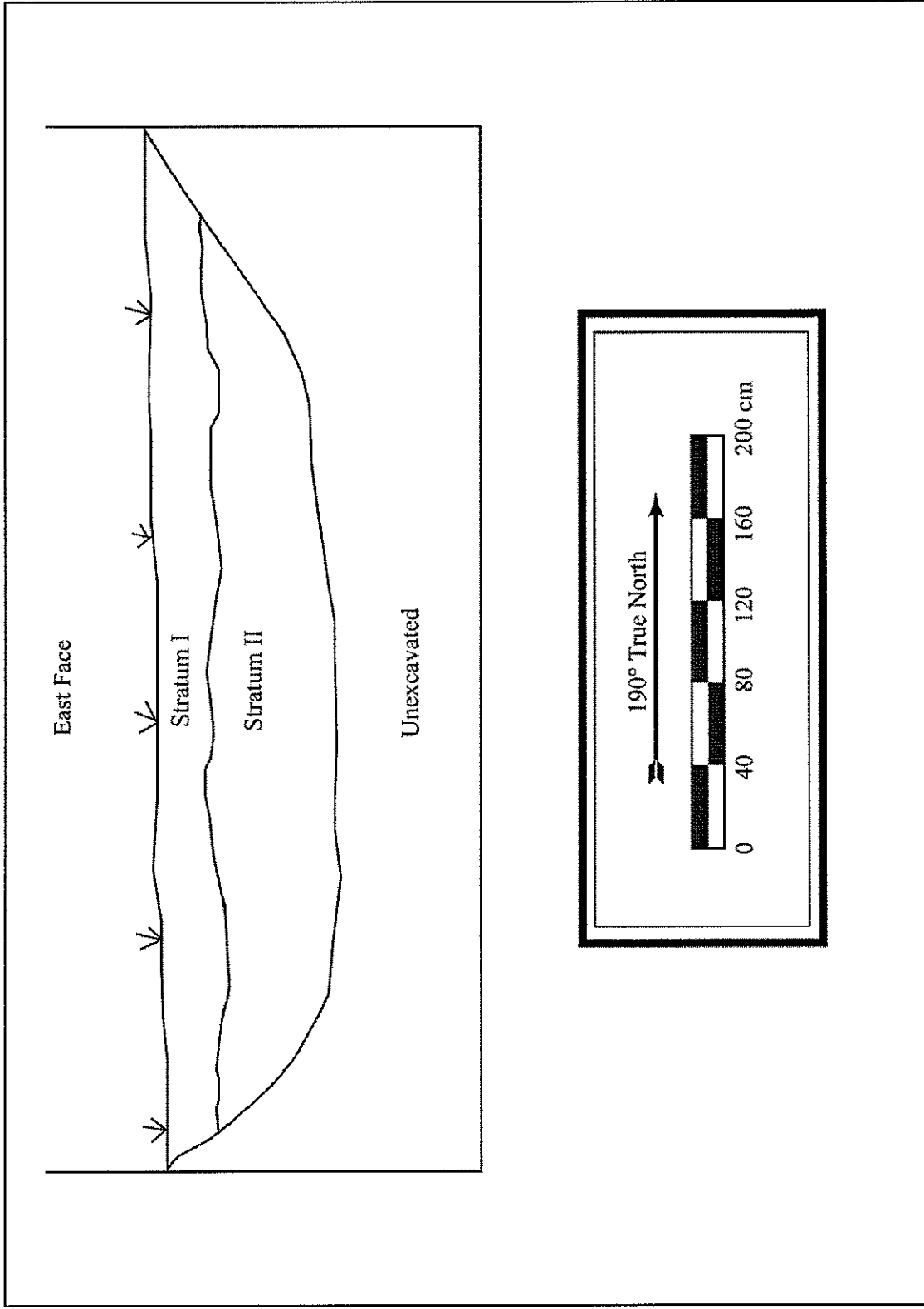


Figure 12: Profile of Trench 6 in South-central Portion of Northern Project Area Showing Stratigraphic Sequence.

In the smaller, southern portion of the project area, three trenches, all identical in their stratigraphic sequence, were excavated (see Figure 6). Trenches 11-13 had Stratum I consisting of dark reddish brown (5 YR 3/3) structureless silt and silt loam with black plastic sheeting inclusions and a clear and smooth lower boundary (Figure 13). SCS interprets that Stratum I represents the former “till” zone of former pineapple cultivation. Stratum II consisted of dark reddish brown (5 YR 3/4) silty clay with strong, fine to medium granular structure. The stratum was sterile and likely represents the naturally occurring deposit.

In sum, no cultural materials or layers were encountered during subsurface testing. Previous grading and dumping activities for the golf course and surrounding residential areas likely destroyed any surface deposits and possibly any near surface cultural deposits or artifacts.

CONCLUSIONS

No surface or subsurface cultural remains were identified during this AIS fieldwork. A 100% pedestrian survey and the excavation of 13 backhoe trenches within the parcel did not lead to the identification of surface features or subsurface sites or layers. Modern-era clearing and grading in the parcel for the golf course and a surrounding residential community likely removed any previously existing surface sites and destroyed or altered subsurface deposits—if they existed within the project area.

SCS estimates, based on this Archaeological Assessment, that the proposed development has a low likelihood of adversely impacting any historic properties. Though no subsurface historic properties were encountered within this project area, the presence of human remains and a *heiau* encountered less than 1 km away suggests that finding subsurface historic properties in this area remains possible. SCS test excavations recorded no subsurface features within 13 trenches in the southern parcel portions, and revealed a degree of prior earth disturbance that would render subsurface deposits unlikely. Additionally, the volume of tested ground was deemed sufficient to safely say that no further archaeological work is required within tested portions of the project area.

However, the northern half of the larger, northern portion of the project area is heavily vegetated with abundant construction debris, push piles, steel pipe, and green waste; and was inaccessible to the test excavation backhoe. Therefore, due to the low probability, yet remaining possibility of future finds here, Archaeological Monitoring is recommended during all ground disturbing activity within this particular section of the project area (see Figure 6). SCS recommends an Archaeological Monitoring Plan be SHPD-approved prior to any earth moving on the parcels.

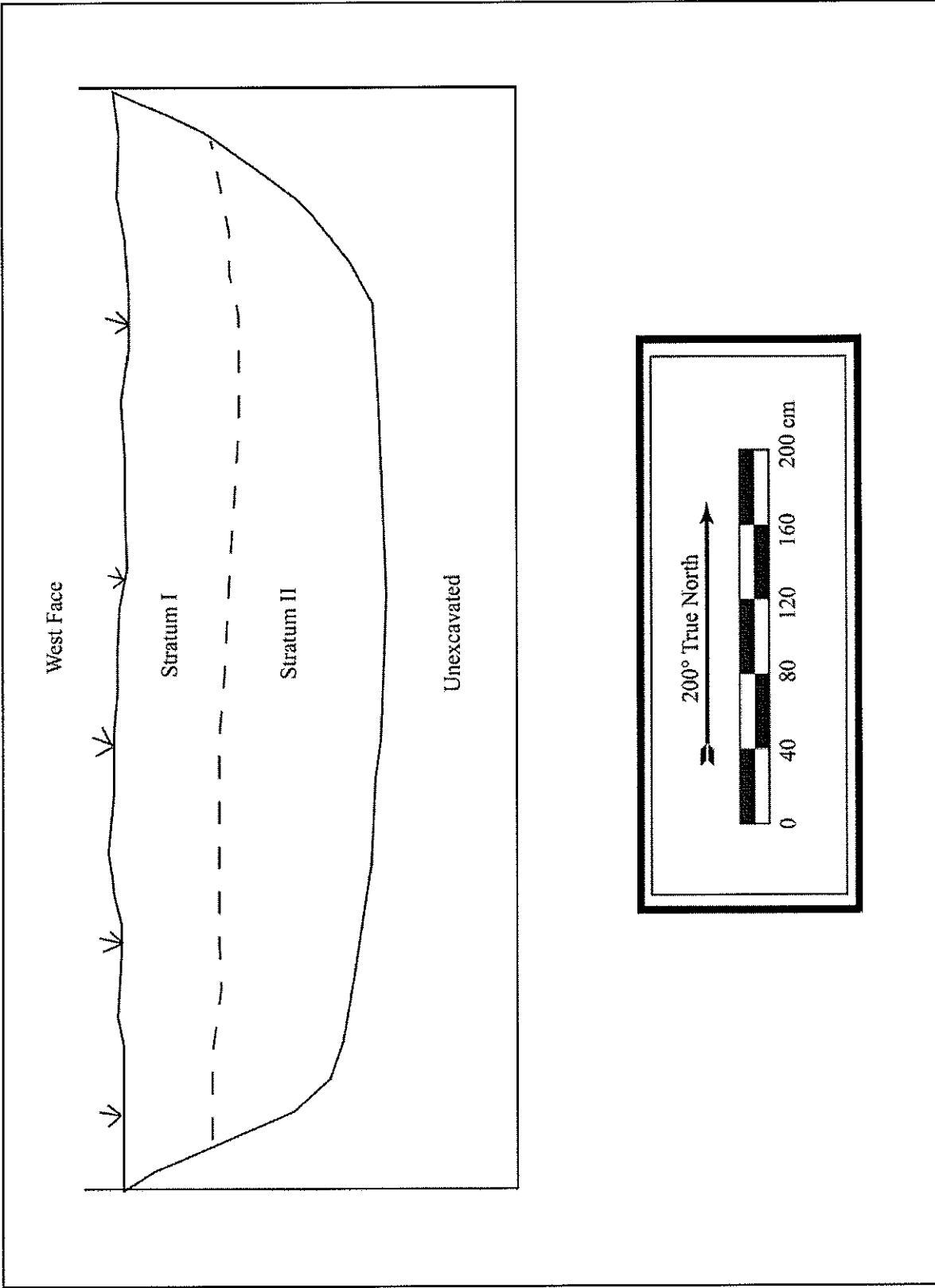


Figure 13: Profile of Trench 11 in West Portion of Southern Project Area Showing Stratigraphic Sequence.

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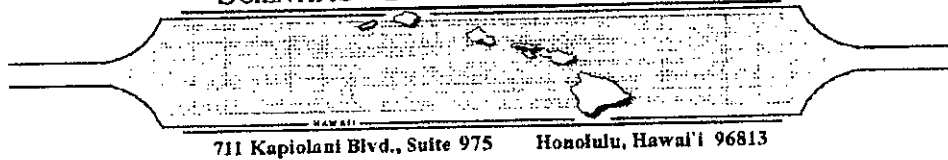
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Appendix D-1.

Scientific Consultant Services, Inc. Letter Regarding Golf Course Site

SCIENTIFIC CONSULTANT SERVICES, Inc.



Elton Wong
Kobayashi Group
1288 Ala Moana Blvd., Suite 201
Honolulu, Hawaii 96814

January 13, 2011

**Re: Archaeological Survey of the Proposed Pulelehuakea Residential Subdivision,
Pukalani, Maui [TMK: (2) 2-3-08:36 por. and 2-3-09:39]**

Dear Mr. Wong:

Scientific Consultant Services, Inc. (SCS) conducted Archaeological Inventory Survey of the project area composing your proposed Pulelehuakea Subdivision in Pukalani, Maui. The survey included full pedestrian survey of the project area as well as subsurface testing. The report for the Inventory Survey was submitted to the State Historic Preservation Division (SHPD) on January 13, 2010 and accepted by the SHPD on February 12, 2010. The only condition attached to the letter was the call for Archaeological Monitoring during ground altering activities on a portion of the northern, 30-acre parcel.

Recently, during your attendance at a Maui Planning Commission meeting (January 12, 2011), a commissioner requested that a portion labeled "B" on an exhibit, currently being used as a golf fairway, be surveyed. This area was, in fact, surveyed during the original Archaeological Inventory Survey. To access the smaller 6-acre portion of the project area, the archaeological field crew gained access through the "B" area. They also walked both fairways, prior to golfers playing on the course. There were no expectations for finding surface sites in the fairways as the landscape has been completely modified for the golf course in this section.

Given that area "B" is an active fairway, there are no known archaeological sites/historic properties occurring in the fairways themselves. This area was not subsurface testing previously because it would have severely disrupted golf course activities. There are no sites in the two, massively modified fairways. In addition, the Inventory Survey did not lead to the identified of any sites, even through the excavation of thirteen (13) long trenches.

In the event area "B" is used for construction in the future and ground altering work will occur, Archaeological Monitoring will be conducted to assess the presence/absence of sites in subterranean contexts.

Please feel free to contact me at your convenience (597-1182; mike@scshawaii.com) if you have any additional questions about the archaeological work for the Pulelehuakea project area.

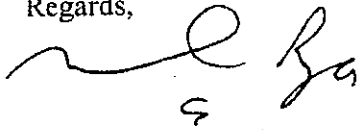
Ph: 808-597-1182

SCS... SERVING ALL YOUR ARCHAEOLOGICAL NEEDS

Fax: 808-597-1193

Neighbor Island Offices • Hawai'i Island • Maui • Kaua'i

Regards,

A handwritten signature in black ink, appearing to read 'M. Dega', with a small 'S' written below the first part of the signature.

Michael Dega, Ph.D.
Senior Archaeologist
SCS, Inc.

APPENDIX D-2.

State Historic Preservation Division Approval Letter

SCS
1096

LINDA LINGLE
GOVERNOR OF HAWAII



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

LAURA B. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

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

February 12, 2010

Robert L. Spear, Ph.D.
Scientific Consultant Services, Inc.
711 Kapiolani Boulevard, Suite 975
Honolulu, Hawai'i 96813
shpdreply@scshawaii.com

LOG NO: 2010.1139
DOC NO: 1002PC08
Archaeology

SUBJECT: Chapter 6E-42 Historic Preservation Review – REVISED Archaeological Assessment Report for Approximately 36 Acre Residential Subdivision A'apueo/Maka'eha Ahupua'a, Makawao District, Island of Maui
TMK: (2) 2-3-008:036 por.; (2) 2-3-009:039

Thank you for the opportunity to review this revised report, which our staff received in PDF format on February 2 (Perzinski and Spear): *An Archaeological Assessment on Approximately 36 Acres for a Residential Subdivision...* Scientific Consultant Services, Inc.

The report was first reviewed by SHPD staff on January 30 (SHPD LOG NO: 2010.0198; DOC NO: 1001PC30), resulting in two requested revisions.

The survey area as described in the report is comprised of a 5.5 acre portion of TMK (2) 2-3-008:036 and the entirety of TMK (2) 2-3-009:039 (30.457 acres). Both parcels are owned by KG Maui Development, LLC. Fieldwork, undertaken between October 25 and 27 of 2009, was comprised of a 100% pedestrian survey of the project area and 13 mechanically excavated trenches to examine subsurface stratigraphy. The survey conducted for the current project produced no new or previously recorded surface visible culturally significant historic properties, effectively turning the inventory survey into an assessment.

The report now contains the required information as specified in HAR §13-276-5 regarding the documentation of inventory level fieldwork in general and is acceptable.

Regardless of the absence of culturally or historically significant properties within the bounds of the project area, we agree that precautionary archaeological monitoring is warranted during future ground altering disturbance in the portion of the project area not subject to subsurface testing. Please note that this recommendation will require the submission of an appropriately prepared *monitoring plan* to this office for review and acceptance prior to such work commencing.

Robert L. Spear, Ph.D.

TMKs: (2) 2-3-008:036 por. and (2) 2-3-009:039 REVISED Archaeological Assessment

Page 2 of 2

Now that the archaeological inventory report has been accepted pursuant to HAR §13-276, please send one hardcopy, clearly marked **FINAL** (*the revised electronic copy does not need to be sent again*) to the attention of "SHPD Library" at the Kapolei SHPD office.

Aloha,

A handwritten signature in cursive script that reads "Nancy A. McMahon".

Nancy McMahon, Deputy SHPO/State Archaeologist
State Historic Preservation Division

c: Jeff Hunt, Director, Dept. of Planning, FAX (808) 270-7634
Maui CRC, Dept. of Planning, 250 S. High Street, Wailuku, Hawai'i 96793

APPENDIX E.

Cultural Impact Assessment

'A'apueo I Ka La'i

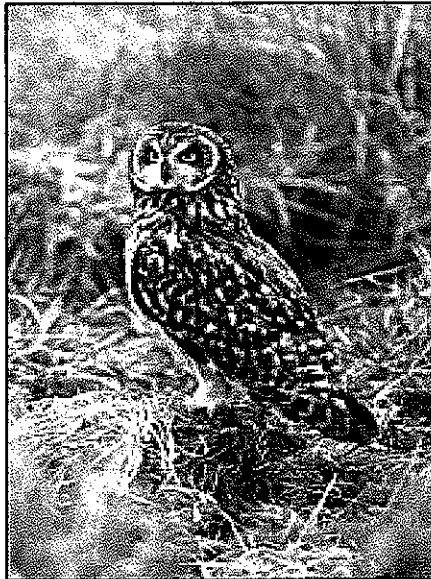
(A'apueo in Tranquility)

FINAL REPORT

*Pulelehuakea Residential Subdivision and Related
Improvements at TMK (2)2-3-008:03 'A'apueo, Pukalani, Maui
Hawaii*

Owned by:

*KG MAUI DEVELOPMENT LLC, 1288Alamoana Blvd. Suite
201, Honolulu Hawaii, 96814*



Pueo (Hawaiian Owl)

Asio flammeus sandwicensis

Prepared for:

**Munekiyo & Hiraga, Inc., 305 High St. Suite 104, Wailuku, HI.
96793**

Prepared by:

**CKM Cultural Resources LLC, 157 Alea Place, Pukalani Maui,
96768, (808) 573803**

'A'apueo I Ka La'i

('A'apueo in Tranquility)

Prepared for:

**Munekiyo & Hiraga, Inc., 305 High St. Suite 104, Wailuku, HI.
96793**

Prepared by:

**CKM Cultural Resources LLC, 157 Alea Place, Pukalani Maui,
96768, (808) 573803**

INTRODUCTION

MAY 27,2010

INTRODUCTION – EIA KA LĀ HIKI

Scope:

The scope of this report will be to compile various historical, cultural, and topographical accounts and facts of 'A'apueo and its adjacent *ahupua'a*.¹ With only a few exceptions, direct references to 'A'apueo are meager. Therefore, the following description of the project area is derived from topographical, cultural, and usage descriptions of the more general areas of Kula. The report will be;

(1) In accordance with O.E.Q.C. guidelines, the study will describe resources having cultural value, and will describe potential impacts from further development along with measures that could be employed to mitigate those impacts. The contractor will coordinate with the archeologist characterizing the site to evaluate the cultural significance of historic and prehistoric resources identified during an archeological

¹ 'Ahupua'a: Land divisions. Much of the information of this compilation will also derive from the adjacent land divisions due to the lack of written and contextual information based on various written and noted sources.

inventory, and will assist in the development of a general preservation plan for those resources.

(2) It will also include a Traditional Practices Assessment that will meet the assessment requirements of O.E.Q.C. and O.H.A. for cultural impacts. Specifically, the document will address potential effects on Hawai'i's culture, and traditional and customary rights, as described in the legislation known as Act 50, 2000.

Specific Area of Research:

This project site shall be identified as TMK (2)2-3-008:036. The property is located between Holes 5, 6, and 7 of the Pukalani, Country Club Golf Course. It will be a 23 lot subdivision. This said lot resides in the ahupua'a of Kula and in the 'ili² of 'A'apueo.

'A'apueo: 'A'apueo is a unique 'ili, and has a distinct topographical position. 'A'apueo is nestled on ridges, which would have made this area a safe area to live.

A kahuna once lived in 'A'apueo, and his sole responsibility was to protect a heiau that was built on Pu'upane hill, in the Kula ahupua'a. While Kihapi'ilani and his wife stayed at 'A'apueo, they came in contact with this kahuna, who then gave the King and Queen a tour of the ahupua'a.

Many surrounding 'ili within Kula are either adjacent or perpendicular to the said property.

Surrounding 'Ili within Kula:

There are many 'ili within the ahupua'a of Kula which stretch from the shoreline to the peak of the mountain. 'A'apueo is located on a high elevated plain of this ahupua'a. This 'ili is surrounded by other 'ili, such as Maka'eha (separated by Kalialinui gulch), Ōma'opio, Keahua, Kailua, and many other 'ili'ili³.

Maka'eha: (Lit. sore eyes) Maka'eha is rich with heritage. Much of the upper plains of the Kula region were dry and arid. This had left only a few options for the types of plants that could be cultivated here, and it was the home to one of the best plants that could handle such arid conditions. This area was the home to King Kihapi'ilani's mala 'uala (Sweet Potato Garden). Maka'eha is now called "Pukalani". It takes its name from a hill in the Makulekailua⁴ area, which is called "Pu'ukalani (lit. meaning; "Hill to heaven").

² 'Ili: Land section within a specific land division.

³ 'Ili'ili: Smaller Land Sections within a specific land division and land section.

⁴ Makulekailua (old Kailua), located below what is now Pukalani, above Keahua.

Pu'upane: (Lit. hill of answers) Pu'upane resides within the district of Kula. This hill was decreed by a ruling chief of Maui to be sacred. No commoner ascended this hill, for it was a heiau⁵ for the high chiefs of Maui, stretching from ancient times until Kihapi'ilani's arrival upon the hill of Pu'upane. A certain *kahuna*⁶ lived at 'A'apueo to make certain that no commoner ascended Pu'upane, and allowed only those who were sanctified to do so.

Ōma'opio: (Lit. whistling thrush) Ōma'opio has four registered heiau and numerous ahu⁷. Located at Ōma'opio is a heiau named Mo'omuku⁸. This extensive heiau measured some ninety feet by one hundred and eight feet. Another registered heiau is Mahia heiau, located more to the north than Mo'omuku. This heiau is also smaller than Mo'omuku, at thirty-two feet by forty-one feet. Po'ohinahale heiau is located on the opposite side of Mahia heiau. This may also be the same heiau that is called Kaunuopahu, however the only living informant gave the name Po'ohinahale.

⁵ Heiau: Sacred place of worship of various gods.

⁶ Kahuna: Spiritual Priest. (Lit. keeper of the secret)

⁷ Ahu: Personal platforms of which commoners and royalty alike created to heed offerings to various gods and guardians.

⁸ When translated Mo'omuku means "dissected lizard."

'A'apueo: The female deity:

The completion of this report cannot be achieved without the mention of 'A'apueo. In various translations, the term 'A'apueo could mean "the owl's wail." The place name could also reflect the topography of the area, which is encompassed by the 'a'a rock. However, most sources believe the place was named after a female deity. A female by the name of 'A'apueo once resided in this area, and 'til this day the area bears the name 'A'apueo.

Lifestyle:

The word Kula in Hawaiian translates to plain. While this may barely describe some of the topographical features of this ahupua'a, much of its landscape is dry and arid. Therefore, farming was limited to plants that were tolerable to cold evenings and hot tempered days. Although the landscape of Kula has changed considerably over the past two to three hundred years, the climate has remained constant. The scene for most of the landscape was farming families.

It was often documented that the people of Kula were incompetent. This was due to the fact that the people of Kula were not accustomed to the ways of the ocean. Families that lived near the ocean, and those who frequented the shores, mocked the people of Kula who lacked experience in the ocean lifestyle. Therefore, those who lacked the experience needed to master the familiarities of the ocean were deemed incompetent.

Today, Kula is a rapidly changing community, being very different from its scene ten years ago. The area is still largely agriculturally zoned. However, the demand for the suburban lifestyle shows its price, at nearly one million dollars for a choice lot. Its hillsides are abundant with wild deer that were introduced within the last 3 decades, and which is the cause of mass erosion and crop damage to the surrounding areas and farms of Kula.

Many of the culturally significant sights, such as heiau and ahu, are no longer existent due primarily to the "paniolo" age⁹. During this era, much of the land was cleared for the industrially driven use of cattle ranching. Heiau and ahu were plundered without regard for its significance to the area. As mentioned earlier, the ahupua'a of Kula had many heiau and ahu located in 'ili such as Ōma'opio. During the late 1950's and 1960's, the conceptualized "suburbia" became the dream place to live, and thus begin the influx of homes and population in Kula. This left little recovery of what had already been destroyed by the paniolo era. Fifty years ago, a Cultural Impact Statement was not an issue, and neither was the significance of documenting Hawaiian antiquities. This is the reason for the lack of information of such items.

⁹ Paniolo Age: The era of cowboy influx in the Kula region.

Native Plant Growth:

The vegetation in the Kula and 'A'apueo area do not flourish as generously as various other ahupua'a on Maui.

Every aspect of the traditional lifestyle was closely interconnected with the life forms of these islands. The saying, "He Hawai'i Au" – I am Hawai'i – reveals this basic truth: the people and their environment are one. All of the needs of the population (which numbered nearly as many as those who inhabit Hawai'i today) were provided for abundantly from the life of the land and ocean, created by the stored energy of the sun, and materializing in multitudes of useful and beautiful forms.

Due to the geographic location, as the most isolated land in the world (5,000 miles from the nearest continent), the Hawaiian archipelago evolved incredibly diverse and unique ecosystems, with myriad species of flora and fauna found nowhere else on the planet.

A well-known tree is the sandalwood (*Santalum freycinetianum*), known in Hawaiian as 'Iliahi. The wood was traditionally used to scent kapa cloth. It was sometimes used to make 'ukeke (a musical bow), the only traditional Hawaiian stringed instrument. The leaves and wood of sandalwood trees were also used medicinally, often in combination with 'awa and other woods. One type of sandalwood, of the lanaiense variety, occurs near the peak of Kula's boundaries. With a red flower, it is found only on East Maui and Lāna'i, and is an endangered species. Only around 100 plants survive today, with a population found on the south slope of Kula.

Other medicinal plants from this area include the 'Ahina Kuahiwi (*Gunnera petaloidea*), also known as the Ka'ape'ape or 'Ape'ape, and the Mau'u La'ili (*sisyrinchium acre*), a crawling grass (native iris) found on Kula's highest point. The Mau'u La'ili is used to treat skin disorders.

The durable wood of the golden-flowered lacy Mamane or Kolomona tree (*sophora chrysophylla*) was utilized to make o'o (digging sticks), house poles, and hōlua sleds.

Most of Kula's landscape is in a fairly dry and arid state, and thus, most plants do not do well in places like these. However, Kula provided a well-balanced dirt, as known today for producing the famous "Maui Onion."

Due to the dry conditions, kalo or taro was not a suitable crop to plant. To supplement the need of wet land kalo, the 'uala (sweet potato) was grown as an alternative. Many sources point to the example of Kihapi'ilani's potato patch in Maka'eha. Sweet potato was just as stable and healthy as kalo, yet required less water to fruit, whereas the kalo grew best in fields of fresh running water.

Another plant that may have grown in this area, to supplement the need of kalo, is 'ulu (*artocarpus incisus*) or breadfruit. According to "Native Planters in Old Hawai'i: Their life, lore, and environment," written by E.S. Handy et al. explicates, "...early voyagers noted extensive planting of breadfruit along the southern and leeward coast..." Although this statement singles out the Southern and leeward coasts, which are the dryer areas of the island, Kula still made a perfect place for 'ulu to flourish because of its arid plains.

Another blossoming plant that has resided in this area is the 'a'ali'i (*dodonaea viscosa*) bush. This hard wood native shrub is indigenous to the islands. This plant also grows well in dryer climates. Ranging in heights of one to thirty feet, this shrub/tree is found growing at elevations of up to 8,000 feet, and in wind-swept open country. It is found today in the gulches and surrounding area of this site.

One essential plant used to construct thatched homes was the Pili grass (*heterogon contortus*). This grass was also quite common in these areas because of the climate conditions. Pili liked to grow in arid and dusty conditions. The Hawaiian people would bunch dried clumps of grass together to create a waterproofed house.

Wildlife:

There is little recorded information about the wildlife in the Kula/'A'apueo region. However, today the area is infested with foreign plants, wild feral, and fowl. This has left much of Kula's natural habitat destroyed.

In 'A'apueo's own region, seldom does the native owl take flight. It is the common barn owl, native to North America, which primarily inhabits the region. The common barn owls tend to be more aggressive in nature, which has caused depletion in other native birds and native plant species.

Informant's interviews



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Blessings, Weddings, Lectures
and Ho'oponopono

IMINA I KA NA'AUAO E PAU I KA MAOUI IMEA
(Seeking the knowledge to push us forward)

INTERVIEW FORM

NAME - PRINTED: EARL N LAMADORA

SIGNATURE: *Earl N Lamadora*

ADDRESS: 3550 HALEAKALA HWY
PUKALANI, HI 96768

TELEPHONE: 572-7341 572-7261

PLACE OF INTERVIEW: 157 Aiea Place, Pukalani

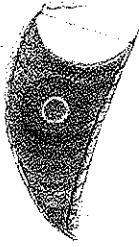
DATE & TIME OF INTERVIEW: 3/5/03 - 9:10 AM

INTERVIEWER: Charles K. Maxwell Sr.

I understand that my statement will be used in a public document and it is my understanding that before it is published, I will have a chance to see it and make corrections if needed. INITIAL: ENL

INTERVIEWERS SIGNATURE: *[Signature]*
DATE & TIME: 3/5/03 - 10:30 AM

Kahu Charles Kauluwehi Maxwell, Sr.
157 Aiea Place - Pukalani, Maui, HI 96768
Phone: (808) 572-8038 - Fax: (808) 572-0602 - Cell: 870-3345
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IMINA I KA NA'ALAO E PAHU IA MAKOE IMUA
(Seeking the knowledge to push us forward)

INTERVIEW FORM

NAME - PRINTED: FRANCES K. LAMADORA

SIGNATURE: Frances K Lamadora

ADDRESS: 3550 HALEAKALA HWY
PUKALANI, HI 96768

TELEPHONE: 572-7341

PLACE OF INTERVIEW: 157 Aiea Pl, Pukalani

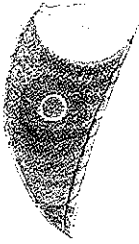
DATE & TIME OF INTERVIEW: 3/5/03 - 9:10 AM

INTERVIEWER: Charles K. Maxwell Sr.

I understand that my statement will be used in a public document and it is my understanding that before it is published, I will have a chance to see it and make corrections if needed. **INITIAL:** KL

INTERVIEWERS SIGNATURE: [Signature]
DATE & TIME: 3/5/03 - 10:30 AM

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and Ho'oponopono

IMINA I KA NA'AUAO E PAHU IA MAKOU IMI'A
(Seeking the knowledge to push us forward)

INTERVIEW FORM

NAME - PRINTED: Hokulani Holt-Padilla

SIGNATURE: *Hokulani Holt-Padilla*

ADDRESS: 659 Pohala St., Wailuku 96793

TELEPHONE: 244-9569

PLACE OF INTERVIEW: Maui Arts & Cultural

DATE & TIME OF INTERVIEW: 3/10/03 11:00 am.

INTERVIEWER: Charles K. Maxwell Sr.

I understand that my statement will be used in a public document and it is my understanding that before it is published, I will have a chance to see it and make corrections if needed. INITIAL: *HP*

INTERVIEWERS SIGNATURE: *[Signature]*

DATE & TIME: 3/10/03

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'A'apueo I Ka La'i

(A'apueo in Tranquility)

INFORMANTS INTERVIEWS

DATE, TIME & PLACE OF INTERVIEW

March 5th 2003 at 9:00am., interviewed at 157 Alea Place, Pukalani, Maui, HI.

Mrs. Frances Lani Kalani Lamadora

Born 1927 Hali'imaile, Maui

Housewife

3550 Haleakalā Hwy., Pukalani, Maui, HI. 96768

Interviewed at my home. She stated that she was born in Hali'imaile, and when she was a teenager, her family moved to Pukalani. Her home is across the gulch (Makawao area) of the project site. She related that when she was growing up in the area, they used to walk through the gulches, and through the project area. They used to see all kinds of "Hawaiian things" in the gulch, but always remembered what her parents taught them. They were not to touch things, or to be "niele" (curious) when they saw anything that belonged to the ancient culture of Hawai'i.

She recalls that her "Tutu" (grandparent) used to tell her that the real name for the area that they lived in was Maka'eha. Her grandmother used to scold her because they tried to shoot the owls that flew in the area with a slingshot. Her grandmother told her the owl was their Aūmakua (family god), so she should not harm the owl.

She remembers that there was a Heiau (Hawaiian temple) above her home, but she was always told by her parents to stay away from the "stone pile". She does not remember anything about the area being studied, except for the high grass that was growing in the area of the project.

March 5th 2003 at 9:15 am., interviewed at 157 Alea Place, Pukalani, Maui, HI.

Earl N. Lamadora, 30 years old.

Baker – Komoda's Bakery

3550 Haleakala Hwy., Pukalani, Maui, HI. 96768

Interviewed at my home. He stated that he did not know much about the area around his home, and he was always told by his mother not to disturb anything that

belonged to the Hawaiian people. He was born in the house that they are living in now. He had nothing further to add. At no time did he see or hear of any cultural gathering in the project site.

March 10th, 2003 at 11:00am., interviewed at the Maui Arts and Cultural Center

**Hökūlani Holt-Padilla
Cultural Specialist- Maui Arts & Cultural Center
659 Pahala St., Wailuku, Maui, HI. 96793**

Interviewed at her office. Related that she is aware of the project area, and is familiar with the past cultural history of the area. She did not know of any archaeological sites within the study area. However, she is aware of the gulches and ancient Heiau in other areas surrounding the project site.

Note: “Mr. Tadaki of Munekiyo & Hiraga, Inc. initially interviewed me for this report, then the cultural assessment was turned over to CKM Cultural Resources, with Kahu Charles K. Maxwell Sr., writing this report. Because this interview is important for this report, it is submitted with Mr. Tadaki as the interviewer.” Certain corrections were made using the Hawaiian Font to the original draft

Interview with: Kahu Charles Kauluwehi Maxwell Sr.

**Interviewed by: Glenn Tadaki, Planner
Munekiyo & Hiraga, Inc.**

Date: January 29, 2003 at 11:00am., interviewed at office of Munekiyo & Hiraga, Inc., 305 High St. Suite 104, Wailuku, HI. 96793

Kahu (Reverend) Charles Kauluwehi Maxwell Sr. is an ordained Hawaiian priest and a spiritual healer, as well as a well-known cultural practitioner, teacher, lecturer, and resource consultant. He is also an author, songwriter, and host of his own local radio and television shows, as well as the manager of the Pukalani Hula Hale and the executive director of Hui ‘Ai Pōhaku Inc., a non-profit organization for the preservation of Hawaiian Culture and Spirituality. In addition, Charles presently serves as the Chair of the Maui/Lanai Island Burial Council, and the Maui member/past chair of the Hawai‘i Advisory Committee to the U.S. Civil Rights Commission, and a Hawaiian member of the State Shark Task Force. He is also the Hawaiian Cultural Advisory to the Maui Ocean Center.

Charles was born in Lahaina, Maui, in 1937. Three years later, Charles and his family moved to Kula, where he grew up and was raised. From birth until kindergarten, Charles spoke only Hawaiian, because that was the only language his parents spoke at home. Through public schooling, Charles learned the English language.

As the youngest family member, Charles' parents taught him much about Hawaiian cultural practices, including religious ceremonies for reintering ancient Hawaiian remains. From the age of 19, Charles handled the reinterment of inadvertently discovered ancient remains.

As a teen, Charles would go into Haleakala Crater to hunt and camp. During one of his trips, he discovered a cave containing an akua ka'ai (sacred image). The information he gained broadened his understanding of the Hawaiian Culture. This experience, and many others after that, have led to his becoming a member of the State Cave Task Force, which advances the knowledge of burial caves and protects their sacredness for the Hawaiian people.

For 15 years, Charles served as an officer with the Maui Police Department, with 5 of those years being on the island of Molokai. In 1974, Charles retired due to injuries sustained in the line of duty.

After being injured, Charles did a lot of research on all phases of the Hawaiian culture, including oral history interviews with Kūpuna (elders). He also became very active in community affairs associated with native Hawaiian rights and culture. For example, Charles served as the first president of the A.L.O.H.A. (Aboriginal Lands of Hawaiian Ancestry) Association and journeyed to Washington D.C. to seek reparations from the federal government for the overthrow of the Hawaiian Monarchy. In 1976, Charles organized and led the first native Hawaiian occupation of Kaho'olawe, to protest the use of the island as a bombing range by the U.S. Navy. Charles was also instrumental in establishing guidelines for subsistence practices for the island, based on ancient Hawaiian methods of fishing. In 1991, when a tiger shark fatally attacked a woman swimming at Olowalu, Charles spearheaded efforts to successfully halt a shark eradication program, on the basis that the shark was the "Aūmakua" (personal god) to some of the Hawaiian families. Charles currently serves as the Hawaiian advisor to the State Shark Task Force. In 1997, Charles spearheaded a drive to stop the selling of t-shirts and other trinkets in Iao Valley. Later, he lobbied the legislator to create laws to put a halt on all sales in State Parks. This law is now in existence.

In regards to the project area, Charles believed that 'A'pueo Parkway was named after the female owl-goddess who lived in the area. Charles wrote a chant about 'A'apueo, which was performed during the annual Merrie Monarch Festivals in Hilo.

In pre-contact times, Charles mentioned that lands in the project area served as the site for the observance of the Makahiki, an annual event held during the months of

January and February. During this time, taxes were collected and festivities held. Charles also mentioned that gulches in the area once contained adze factories, and evidence suggests that streams flowed within these gulches at one time.

During post-contact times, Charles indicated that the land, Mauka of the project site (across Kula Highway), was known for having the best sweet potato patches on the island. The sweet potatoes were planted to supply prospectors with food during the

California gold rush. Later, with the advent of cattle ranching, Charles mentioned that the indigenous plants and trees in the area were wiped out, and the forest line was moved further up the slopes of Haleakalā. Without the forests to capture rain clouds and facilitate precipitation, the flowing streams in the gulches ceased to be.

In terms of cultural resources, Charles indicated that he was not aware of, nor had observed, any cultural practices, gathering, or subsistence practices occurring on the land within the project area. In light of the foregoing, the proposed project is not expected to have any adverse impact on native Hawaiian cultural resources, practices and beliefs.

Topographic maps and overview of project area

Conclusion:

Much of 'A'apueo's history lacks in quantitative measures; therefore it is extremely difficult to extract the details of a lifestyle unfamiliar to those of today. The natural habitat is inundated with foreign forest shrubbery and various other plants brought in to "beautify" certain landscapes. An abundance of cactus plants can be seen thriving in the landscape.

The two gulches that sit on either side of the ridge largely protect 'A'apueo. History tells us that this feature was the reason 'A'apueo was a place of great refuge and home to many kahuna who guarded a special heiau with reverence.

Much of Kula's natural and indigenous landscape barely exists. The thinking then, should be to reverse the impact on the land, such as planting shrubs native to the area, desecrate the land as little as possible, and to stop the use of tactics such as those of the "paniolo era". More cautious approaches to certain areas are solutions to the vitality of our Hawai'i.

From all indication, this project will not affect the fauna, flora or endangered species, because it was already impacted by prior agricultural disturbances which occurred on this project area many years ago.

Because of the prior disturbance, no cultural or archeological properties were found for preservation on this project site. In the 6.0 acre project area, no evidence of past or present use for Hawaiian cultural practices, resources, or beliefs were found in the study area.

That does not mean that this area is free of Hawaiian cultural association. The property is surrounded by gulches (Kalialinui and Kaluapulani) on both sides, which happen to contain the best petroglyphs in the State Of Hawai'i. Members of the Polynesian Voyaging Society took rubbings from petroglyphs of a canoe, and used it to fashion the sail for the Hōkule'a (a Hawaiian double-hulled sailing canoe).

An archeological survey was completed of this area in 1996, by McPhater and Rosendahl of PHRI, and no sites were found on this property.

There are no areas of impact from the proposed construction on this site, so mitigation measures are not necessary. This study area does not pose an impact on access rights by Native Hawaiians that would require the use of this area for cultural and spiritual purposes.

'A'apueo I Ka La'i

('A'apueo in Tranquility)

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Paul H. Rosendahl, Ph.D., Archaeological Reconnaissance Survey 44 Acre Pukalani Terrace Subdivision 111.

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Regional location Map

APPENDIX F.

Traffic Impact Assessment Report

Phillip Rowell and Associates

47-273 'D' Hui Iwa Street Kaneohe, Hawaii 96744 Phone: (808) 239-8206 FAX: (808) 239-4175 Email: prowell@hawaiiantel.net

April 28, 2010

Leilani Pulmano
Munekiyo & Hiraga, Inc.
305 Hugh Street, Suite 104
Wailuku, Maui, HI 96793

Re: Traffic Impact Assessment Report
Pukalani Parcel 36
TMK: 2-3-008:036

Dear Leilani:

Phillip Rowell and Associates have completed the following Traffic Impact Assessment Report (TIAR) for a proposed single-family development. The following report is presented in the following format:

- A. Project Location and Description
- B. Purpose and Objective of Study
- C. Methodology
- D. Description of Existing Streets and Intersection Controls
- E. Existing Peak Hour Traffic Volumes
- F. Level-of-Service Concept
- G. Existing Levels-of-Service
- H. Project Trip Generation
- I. Background Plus Project Traffic Projections
- J. Impact Analysis of Background Plus Project Conditions
- K. Mitigation
- L. Summary and Conclusions

A. Project Location and Description

The proposed project is located along the north side of Aina Lani Drive and east of Liholani Street. The parcel is within the boundary of the Pukalani Country Club.

Access to and egress from the project will be via an existing intersection along the north side of Aina Lani Drive. The project will consist of 13 single-family residential units.

The location map and site plan provided by the Client is provided as Attachment A.

The site is currently vacant.

All traffic will access and egress the project site via the intersection of Aina Lani Drive at Liholani Street. This is the nearest intersection to the proposed project driveway and is the focal point of project generated traffic and background traffic generated by the residential development immediately adjacent to the project.

B. Purpose and Objective of Study

1. Quantify and describe the traffic related characteristics of the proposed project.
2. Identify potential deficiencies adjacent to the project that will impact traffic operations in the vicinity of the proposed project.

C. Methodology

1. *Define the Study Area*

The first step in defining the study area was to estimate the number of peak hour trips that the proposed project will generate. It was estimated that the project will generate ten (10) trips during the morning peak hour and thirteen (13) trips during the afternoon peak hour. This implies that the scope of the traffic assessment should be limited to an "access location and design review" analysis as described by the Institute of Transportation Engineers¹. Accordingly, the traffic impact assessment is limited to the intersections of the Aina Lani Drive at Liholani Street and Aina Lani Drive at the project driveway.

2. *Analyze Existing Traffic Conditions*

Existing traffic volumes at the intersection of Aina Lani Drive at Liholani Street were estimated from manual traffic counts performed during the morning and afternoon peak periods by the Consultant. These counts were conducted on Thursday, April 1, 2010. Traffic at the intersection of Aina Lani Drive at the project driveway were estimated from the counts.

3. *Estimate Horizon Year Background Traffic Projections*

Background traffic conditions are defined as future traffic conditions without the proposed project. The design horizon year does not necessarily represent the project completion date of that phase. It is a date for which future background traffic projections were estimated. For this project, we have used a design, or horizon, year of 2012. It is estimated that background growth between 2009 and 2012 will be negligible as the surrounding area is fully developed and there is no through traffic along Aina Lani Drive or Liholani Street that would increase as a result of regional traffic growth. Accordingly, it was assumed that 2012 background traffic volumes will be comparable to 2010 traffic volumes.

4. *Estimate Project-Related Traffic Characteristics*

The number peak-hour trips that the proposed project will generate was estimated using standard trip generation procedures described in the *Trip Generation Handbook*² and data provided in *Trip Generation*³. These are the standard references used for trip generation studies in Hawaii.

¹ Institute of Transportation Engineers, Transportation and Land Development, Washington, D.C., page 3-6

² *Trip Generation Handbook*, Institute of Transportation Engineers, Washington, D.C., 1998

³ *Trip Generation*, Institute of Transportation Engineers, Washington, D.C., 2003

5. *Analyze Project Related Traffic Impacts*

The project-related traffic was then superimposed on background traffic volumes. The traffic impacts of the project were assessed by analyzing the levels-of-service. The purpose of this analysis was to identify potential operational deficiencies at the project driveway.

D. Description of Existing Streets and Intersection Controls

Aina Lani Drive is a two-lane, two-way private street with an east-west orientation. Adjacent development along both sides is single-family residential and there are bike lanes along both sides of the street east of Liholani Street. There are curbs, gutters and sidewalks along both sides of the street. The posted speed limit is 20 miles per hour.

Liholani Street is also a two-lane, two-way County roadway connecting Aina Lani Drive with Pukalani Street and which connects to Old Haleakala Highway. There are curbs and gutters along both sides of the street. There is a sidewalk along the west side of the street only. The posted speed limit is 20 miles per hour.

The intersection of Aina Lani Drive at Liholani Street is a STOP sign controlled T-intersection. There are no separate turn lanes along the approaches. A schematic drawing of this intersection is provided as Attachment B.

Sight distances appear to be acceptable but should be confirmed by the project's civil engineer.

E. Existing Peak Hour Traffic Volumes

Existing peak hour traffic volumes were estimated from manual traffic counts and are also summarized on Attachment B.

1. No buses, trucks and other large vehicles were observed during the traffic counts.
2. No mopeds or bicycles were observed during the counts.
3. No pedestrian activity was noted.

The traffic count summary worksheets are provided as Attachment C.

F. Level-of-Service Concept

"Level-of-Service" is a term which denotes any of an infinite number of combinations of traffic operating conditions that may occur on a given lane or roadway when it is subjected to various traffic volumes. Level-of-service (LOS) is a qualitative measure of the effect of a number of factors which include space, speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

There are six levels-of-service, A through F, which relate to the driving conditions from best to worst, respectively. The characteristics of traffic operations for each level-of-service are summarized in Table 1. In general, LOS A represents free-flow conditions with no congestion. LOS F, on the other hand, represents severe congestion with stop-and-go conditions. *Level-of-service D is typically considered acceptable for peak hour conditions in urban areas.*⁴

Corresponding to each level-of-service shown in the table is a volume/capacity ratio. This is the ratio of either existing or projected traffic volumes to the capacity of the intersection. Capacity is defined as the maximum number of vehicles that can be accommodated by the roadway during a specified period of time. The capacity of a particular roadway is dependent upon its physical characteristics such as the number of lanes, the operational characteristics of the roadway (one-way, two-way, turn prohibitions, bus stops, etc.), the type of traffic using the roadway (trucks, buses, etc.) and turning movements.

Table 1 Level-of-Service Definitions for Signalized Intersections⁽¹⁾

Level of Service	Interpretation	Volume-to-Capacity Ratio ⁽²⁾	Stopped Delay (Seconds)
A, B	Uncongested operations; all vehicles clear in a single cycle.	0.000-0.700	<20.0
C	Light congestion; occasional backups on critical approaches	0.701-0.800	20.1-35.0
D	Congestion on critical approaches but intersection functional. Vehicles must wait through more than one cycle during short periods. No long standing lines formed.	0.801-0.900	35.1-55.0
E	Severe congestion with some standing lines on critical approaches. Blockage of intersection may occur if signal does not provide protected turning movements.	0.901-1.000	55.1-80.0
F	Total breakdown with stop-and-go operation	>1.001	>80.0

Notes:
(1) Source: *Highway Capacity Manual*, 2000.
(2) This is the ratio of the calculated critical volume to Level-of-Service E Capacity.

Like signalized intersections, the operating conditions of intersections controlled by stop signs can be classified by a level-of-service from A to F. However, the method for determining level-of-service for unsignalized intersections is based on the use of gaps in traffic on the major street by vehicles crossing or turning through that stream. Specifically, the capacity of the controlled legs of an intersection is based on two factors: 1) the distribution of gaps in the major street traffic stream, and 2) driver judgement in selecting gaps through which to execute a desired maneuver. The criteria for level-of-service at an unsignalized intersection is therefore based on delay of each turning movement. Table 2 summarizes the definitions for level-of-service and the corresponding delay.

⁴ Institute of Transportation Engineers, *Transportation Impact Analyses for Site Development: A Recommended Practice*, 2006, page 60

Table 2 Level-of-Service Definitions for Unsignalized Intersections⁽¹⁾

Level-of-Service	Expected Delay to Minor Street Traffic	Delay (Seconds)
A	Little or no delay	<10.0
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	See note (2) below	>50.1

Notes:

(1) Source: *Highway Capacity Manual*, 2000.

(2) When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement of the intersection.

G. Existing Levels-of-Service

The results of the level-of-service analysis of existing conditions are summarized in Table 3. Shown are the average vehicle delays and levels-of-service of the controlled lane groups. The methodology for unsignalized intersections does not calculate delays and levels-of-service of uncontrolled lane groups as uncontrolled lane groups are free flowing and therefore have no delay. All controlled lane groups operate at Level-of-Service A, which is the highest level-of-service. This implies very good traffic operating conditions and minimal delays.

Table 3 Existing Levels-of-Service Analysis - Aina Lani Drive at Liholani Street

Approach and Movement	AM Peak Hour		PM Peak Hour	
	7:00 am to 8:00 am		3:00 pm to 4:00 pm	
	Delay	LOS	Delay	LOS
Eastbound Left & Thru	7.5	A	7.3	A
Southbound Left & Right	9.2	A	8.9	A

NOTES:

1. Delay is in seconds per vehicle.

2. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

3. See Attachment D for Level-of-Service Calculation Worksheets.

H. Project Trip Generation

Future traffic volumes generated by a project are typically estimated using the methodology described in the *Trip Generation Handbook*⁵ and data provided in *Trip Generation*⁶. This method uses trip generation rates to estimate the number of trips that the project will generate during the peak hours of the project and along the adjacent street

The proposed action is the construction of thirteen (13) single-family dwelling units. The trip generation rates are based on the number of dwelling units. The trip generation calculations are summarized in Table 4. As shown, the proposed project will generate 3 inbound and 7 outbound trips during the morning peak hour. During the afternoon peak hour, the project will generate 8 inbound and 5 outbound trips.

⁵ Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., 1998, p. 7-12

⁶ Institute of Transportation Engineers, *Trip Generation*, 7th Edition, Washington, D.C., 2003

Table 4 Trip Generation Calculations for Proposed Project

Time Period	Direction	Single-Family Detached Housing (LU Code 210)		
		Rate or % ⁽¹⁾	Occupied Units	Trips
AM Peak Hour	Total	0.77	13	10
	In	26%		3
	Out	74%		7
PM Peak Hour	Total	1.02		13
	In	64%		8
	Out	36%		5

NOTES:
(1) Institute of Transportation Engineers, *Trip Generation*, Seventh Edition, 2003.

As project generated traffic and existing traffic using the intersection of Aina Lani Drive at Liholani Street are both residential, it was assumed that traffic patterns of traffic generated by the proposed project will be comparable to the traffic patterns of traffic generated by the existing residential development along Aina Lani Drive east of Liholani Street. The approach and departure distribution and the resulting project trip assignments are shown in Attachment E.

I. Background Plus Project Projections

Background plus project traffic projections were estimated by superimposing the peak hourly traffic generated by the proposed project on the background (without project) peak hour traffic projections. This assumes that the peak hourly trips generated by the project coincide with the peak hour of the adjacent street. This represents a worse-case condition as it assumes that the peak hours of all the intersection approaches and the peak hour of the study project coincide. The traffic projection calculations are shown as Tables 5 and 6. The resulting background plus project peak hour traffic projections are shown in Attachment E.

**Table 5 Traffic Projection Calculations
Aina Lani Drive at Liholani Street**

Approach and Movement		Existing Background (2009)		Project Trips		Background Plus Project	
		AM	PM	AM	PM	AM	PM
North	Right	13	32			13	32
	Left	10	20	3	8	13	28
East	Right	39	17	7	5	46	22
	Thru	0	2			0	2
West	Thru	0	4			0	4
	Left	46	16			46	16
Totals		108	91	10	13	118	104

**Table 6 Traffic Projection Calculations
Aina Lani Drive at Project Driveway**

Approach and Movement		Existing Background (2009)		Project Trips		Background Plus Project	
		AM	PM	AM	PM	AM	PM
North	Right			7	5	7	5
	Left					0	0
East	Right					0	0
	Thru	25	12			25	12
West	Thru	7	15			7	15
	Left			3	8	3	8
Totals		32	27	10	13	42	40

J. Traffic Impact Analysis

Level-of-Service Analysis

1. The *Highway Capacity Software* (HCS) package was used to perform level-of-service analyses. This package uses the methodology described in the *Highway Capacity Manual*.
2. We have used the Institute of Transportation Engineers standard that a Level-of-Service D is the minimum acceptable level-of-service and that the criteria is applicable to the overall intersection. If project generated traffic causes the level-of-service to drop below Level-of-Service D, then mitigation should be provided to improve the level-of-service to Level-of-Service C or better. Minor movements, such as left turns and side street approaches may operate at Level-of-Service E for short periods. "Level-of-Service E is sometimes tolerated for minor movements such as left turns when there are no feasible mitigating measures or if it helps maintain the main through movements at acceptable levels-of-service."
3. As the *Highway Capacity Manual* defines level-of-service by delay, we have used the same definitions.

The results of the level-of-service analysis are summarized in Tables 7 and 8. Shown are the peak hourly traffic volumes and the average vehicle delays and the levels-of-service of the lane groups. The analysis concluded that all traffic movements will operate at Level-of-Service A, which implies good operating conditions and minimal delays.

Table 7 2012 Levels-of-Service Analysis - Aina Lani Drive at Liholani Street

Approach and Movement	AM Peak Hour				PM Peak Hour			
	Without Project		With Project		Without Project		With Project	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Eastbound Left & Thru	7.5	A	7.5	A	7.3	A	7.3	A
Southbound Left & Right	9.2	A	9.4	A	9.0	A	9.0	A

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. Delay is in seconds per vehicle.
3. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.
4. See Attachment F for Level-of-Service Calculation Worksheets.

Table 8 2012 Levels-of-Service Analysis - Aina Lani Drive at Project Driveway

Approach and Movement	AM Peak Hour		PM Peak Hour	
	With Project		With Project	
Eastbound Left & Thru	7.3	A	7.2	A
Southbound Left & Right	8.5	A	8.4	A

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. Delay is in seconds per vehicle.
3. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.
4. See Attachment F for Level-of-Service Calculation Worksheets.

J. Mitigation

Level-of-Service D is generally considered to be the minimum acceptable peak hour level-of-service for urban intersections.⁷ As all controlled traffic movements will operate at Level-of-Service A, no mitigation is recommended.

L. Summary and Conclusions

The conclusions of the traffic impact assessment are:

1. The proposed project is located along the north side of Aina Lani Drive and east of Liholani Street. The parcel is within the boundary of the Pukalani Country Club. Access to and egress from the project will be via an existing intersection along the north side of Aina Lani Drive. The project will consist of thirteen (13) single-family residential units.
2. The proposed project will generate 3 inbound and 7 outbound trips during the morning peak hour. During the afternoon peak hour, the project will generate 8 inbound and 5 outbound trips.
3. The level-of-service analysis concluded that all controlled traffic movements will operate at Level-of-Service A, which implies good operating conditions and minimal delays. As all controlled traffic movements will operate at Level-of-Service A, no mitigation is recommended.
4. The project's civil engineer should confirm adequate sight distances at both study intersections.

Respectfully submitted,
PHILLIP ROWELL AND ASSOCIATES



Phillip J. Rowell, P.E.
Principal

⁷ Institute of Traffic Engineers *Transportation Impact Analyses for Site Development, A Recommended Practice*, Washington, D.C., 2006, p 60.

List of Attachments

- A. Project Location and Site Plan Provided By Client
- B. Existing Conditions - Aina Lani Drive at Liholani Street
- C. Traffic Count Summary Worksheets
- D. Existing Levels-of-Service Worksheets
- E. Project Trip Assignments and 2012 Background Plus Project Peak Hour Traffic Projections
- F. 2012 Levels-of-Service Worksheets



Attachment A

**PROJECT LOCATION AND SITE PLAN PROVIDED BY
CLIENT**

10-23-95



TRUE NORTH
SCALE: 1" = 100'

GOLF COURSE
PARCEL C
23.3 ACS.
PARCEL D
6.0 ACS.

PARCEL B
13.0 ACS.

44' WIDE
ACCESS ESMT.

PARCEL A
270.0 ACS.

**PUKALANI TERRACE AND
COUNTRY CLUB SUBDIVISION UNIT III**

NTS

EXHIBIT A

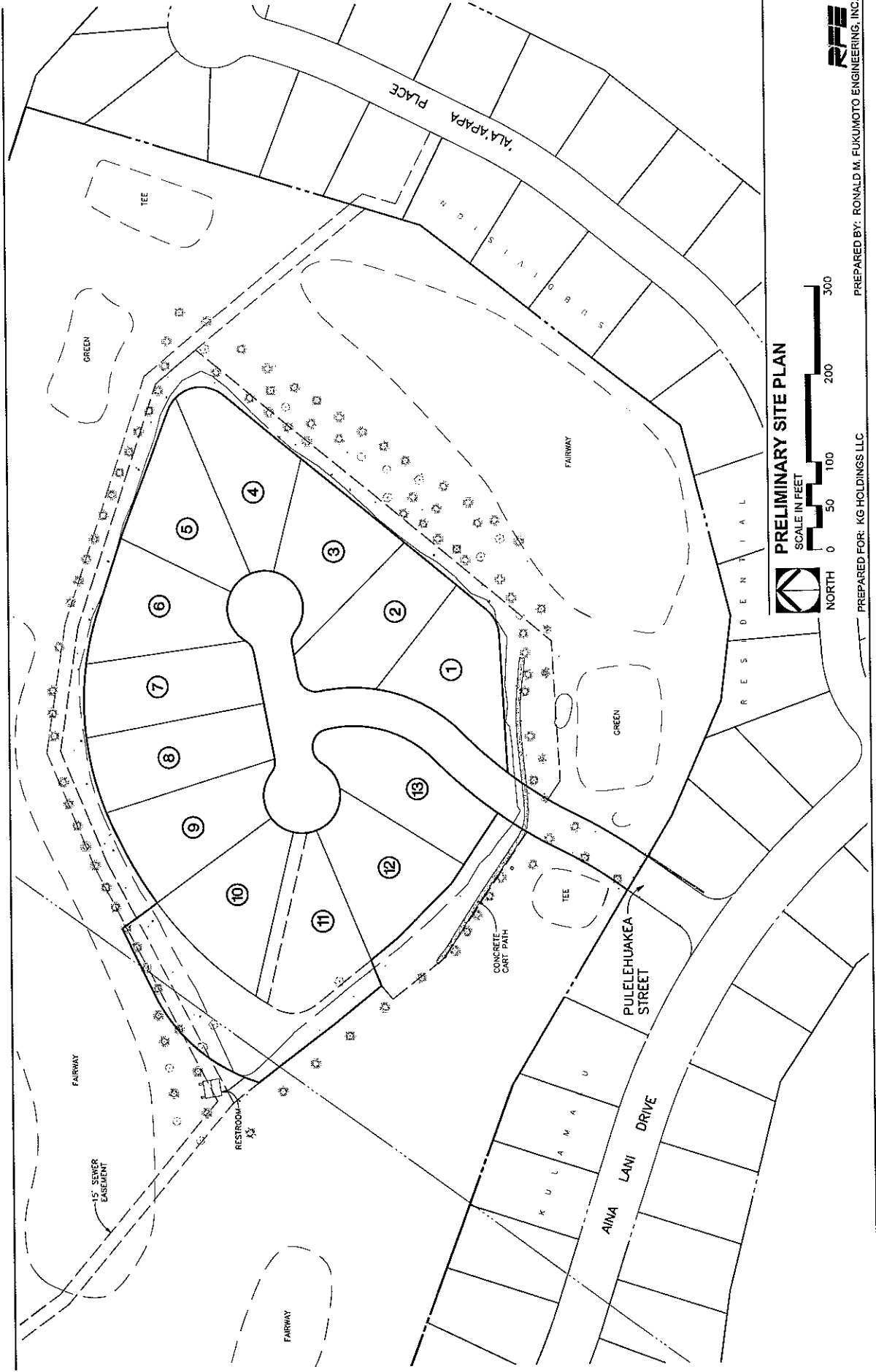
PREPARED FOR: SPORTS SHINKO (PUKALANI) CO., LTD.

AND
DOWLING COMPANY
P.O. BOX 1417
WAILUKU, HAWAII 96793
TEL.: (808) 214-1500
FAX: (808) 212-2777

ATA **AUSTIN, TSUTSUMI & ASSOCIATES, INC.** • CIVIL ENGINEERS • SURVEYORS
1871 WILI PA LOOP SUITE A • WAILUKU, MAUI, HAWAII 96793

PUKA_EXD/WZ/RRF

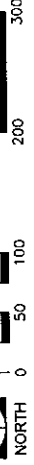
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PRELIMINARY SITE PLAN



SCALE IN FEET

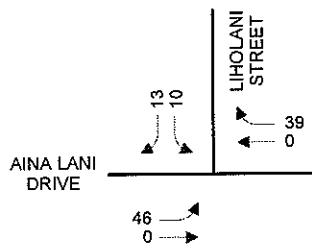


PREPARED FOR: KG HOLDINGS LLC

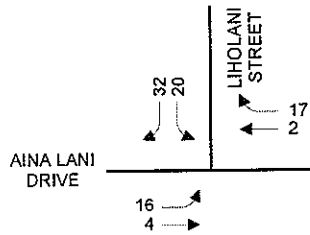
PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.



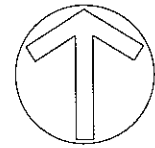




AM PEAK HOUR
(7:00 AM TO 8:00 AM)

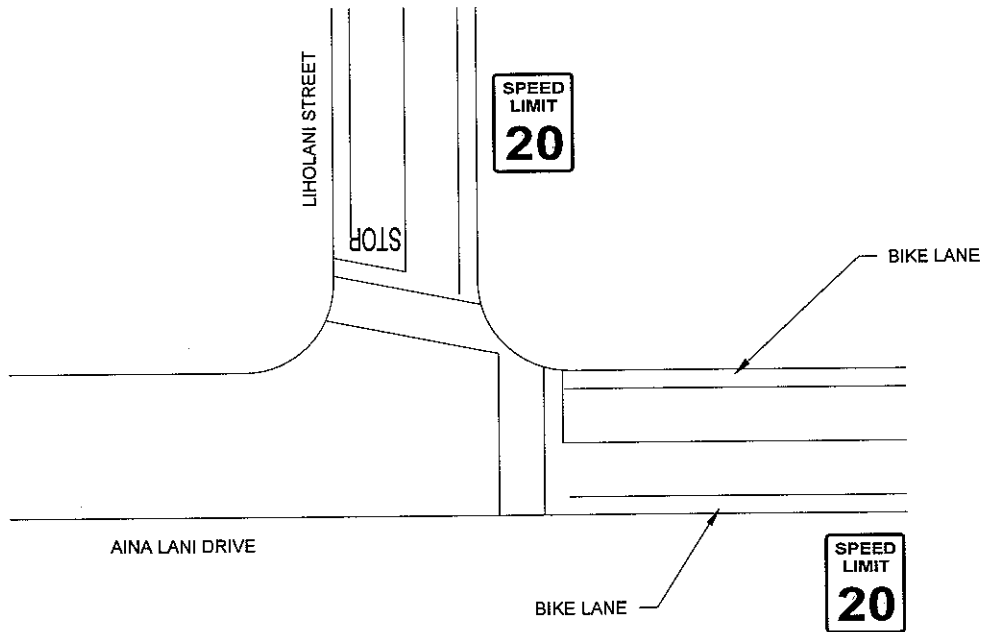


PM PEAK HOUR
(3:00 PM TO 4:00 PM)



NOMINAL NORTH

2010 PEAK HOUR TRAFFIC VOLUMES



Attachment B
EXISTING CONDITIONS
AINA LANI DRIVE AT LIHOLANI STREET



Attachment C
TRAFFIC COUNT SUMMARY WORKSHEETS

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Pukalani Parcel 36
 INTERSECTION: Liholani Street at Aina Lani Drive
 DAY & DATE: Thursday, April 1, 2010
 START TIME: 6:30 am
 END TIME: 8:30 am

15-Minute Volumes Beginning at:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
1	6:30 am	2		0	8	0						0	12	22
2	6:45 am	4		0	5	0						0	10	19
3	7:00 am	1		1	10	0						0	12	24
4	7:15 am	5		1	7	0						0	16	29
5	7:30 am	0		2	16	0						0	7	25
6	7:45 am	7		6	6	0						0	11	30
7	8:00 am	0		5	3	0						0	4	12
8	8:15 am	3		0	5	0						0	8	16
9	8:30 am													0
10	8:45 am													0
11	9:00 am													0
12	9:15 am													0
13	9:30 am													0
14	9:45 am													0
Maximum:		7		6	16	0						0	16	30

Hourly Volume of Each Movement

6:30 am	7:30 am	12	0	2	30	0	0	0	0	0	0	0	50	94
6:45 am	7:45 am	10	0	4	38	0	0	0	0	0	0	0	45	97
7:00 am	8:00 am	13	0	10	39	0	0	0	0	0	0	0	46	108
7:15 am	8:15 am	12	0	14	32	0	0	0	0	0	0	0	38	96
7:30 am	8:30 am	10	0	13	30	0	0	0	0	0	0	0	30	83
7:45 am	8:45 am													
8:00 am	9:00 am													
8:15 am	9:15 am													
8:30 am	9:30 am													
8:45 am	9:45 am													
9:00 am	10:00 am													
Peak Hour Volume		13	0	10	39	0	0	0	0	0	0	0	46	108
Peak Hour Factor:		0.46	0.00	0.42	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72	0.90
Total Arrivals			23			39			0				46	
Total Departures			85			10			0				13	
Total			108			49			0				59	

TRAFFIC COUNT SUMMARY WORKSHEET

PROJECT: Pukalani Parcel 36
 INTERSECTION: Liholani Street at Aina Lani Drive
 DAY & DATE: Thursday, April 1, 2010
 START TIME: 3:00 pm
 END TIME: 6:00 pm

15-Minute Volumes Beginning at:

Interval	Start Time	North Approach			East Approach			South Approach			West Approach			Totals
		1	2	3	4	5	6	7	8	9	10	11	12	
1	3:00 pm	10		6	6	1					3	3	29	
2	3:15 pm	8		5	4	1					0	6	24	
3	3:30 pm	10		5	4	0					1	3	23	
4	3:45 pm	4		4	3	0					0	4	15	
5	4:00 pm	8		5	3	0					0	5	21	
6	4:15 pm	8		4	3	1					1	2	19	
7	4:30 pm	12		8	4	0					1	5	30	
8	4:45 pm	9		4	3	0					0	2	18	
9	5:00 pm	8		6	2	0					0	1	17	
10	5:15 pm	4		8	2	0					0	4	18	
11	5:30 pm	11		4	3	0					0	4	22	
12	5:45 pm	8		3	2	0					0	5	18	
13	6:00 pm												0	
14	6:15 pm												0	
Maximum:		12		8	6	1					3	6	30	

Hourly Volume of Each Movement

3:00 pm	4:00 pm	32	0	20	17	2	0	0	0	0	0	4	16	91
3:15 pm	4:15 pm	30	0	19	14	1	0	0	0	0	0	1	18	83
3:30 pm	4:30 pm	30	0	18	13	1	0	0	0	0	0	2	14	78
3:45 pm	4:45 pm	32	0	21	13	1	0	0	0	0	0	2	16	85
4:00 pm	5:00 pm	37	0	21	13	1	0	0	0	0	0	2	14	88
4:15 pm	5:15 pm													
4:30 pm	5:30 pm													
4:45 pm	5:45 pm													
5:00 pm	6:00 pm													
5:15 pm	6:15 pm													
5:30 pm	6:30 pm													
Peak Hour Volume		32	0	20	17	2	0	0	0	0	0	4	16	91
Peak Hour Factor:		0.67	0.00	0.63	0.71	0.50	0.00	0.00	0.00	0.00	0.00	0.33	0.67	0.76
Total Arrivals			52			19			0			20		
Total Departures			33			24			0			34		
Total			85			43			0			54		

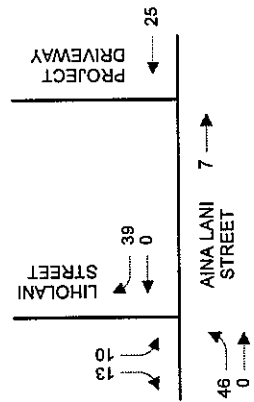


Attachment D
EXISTING LEVELS-OF-SERVICE WORKSHEETS

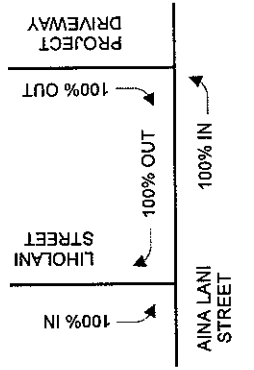
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General Information				Site Information				
Analyst	PJR			Intersection	Case1am.Int1			
Agency/Co.	PRA			Jurisdiction				
Date Performed	4/13/2010			Analysis Year	2010			
Analysis Time Period	AM Peak Hour							
Project Description Pukalani Parcel 36								
East/West Street: Aina Lani Drive				North/South Street: Liholani Street				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	46	0			0	39		
Peak-Hour Factor, PHF	0.72	1.00	1.00	1.00	1.00	0.39		
Hourly Flow Rate, HFR (veh/h)	63	0	0	0	0	100		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT						TR	
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				10		13		
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.42	1.00	0.46		
Hourly Flow Rate, HFR (veh/h)	0	0	0	23	0	28		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach	N			N				
Storage	0			0				
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration				LR				
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT					LR		
v (veh/h)	63						51	
C (m) (veh/h)	1505						900	
v/c	0.04						0.06	
95% queue length	0.13						0.18	
Control Delay (s/veh)	7.5						9.2	
LOS	A					A		
Approach Delay (s/veh)	--	--				9.2		
Approach LOS	--					A		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case1pm.Int1			
Agency/Co.	PRA			Jurisdiction				
Date Performed	4/13/2010			Analysis Year	2010			
Analysis Time Period	PM Peak Hour							
Project Description Pukalani Parcel 36								
East/West Street: Aina Lani Drive				North/South Street: Liholani Street				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	16	4			2	17		
Peak-Hour Factor, PHF	0.67	0.33	1.00	1.00	0.50	0.71		
Hourly Flow Rate, HFR (veh/h)	23	12	0	0	4	23		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				20		32		
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.63	1.00	0.67		
Hourly Flow Rate, HFR (veh/h)	0	0	0	31	0	47		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	23						78	
C (m) (veh/h)	1600						1005	
v/c	0.01						0.08	
95% queue length	0.04						0.25	
Control Delay (s/veh)	7.3						8.9	
LOS	A						A	
Approach Delay (s/veh)	--	--					8.9	
Approach LOS	--	--					A	

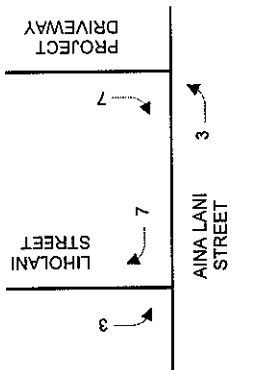




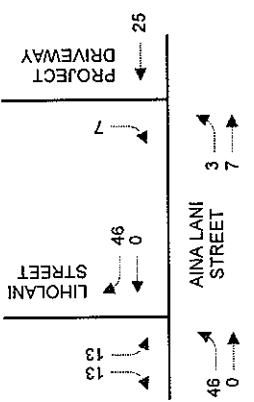
EXISTING (2010)
AM PEAK HOUR VOLUMES



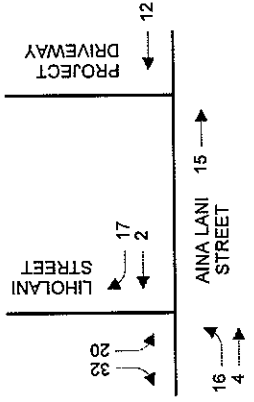
AM PROJECT TRIP
DISTRIBUTION



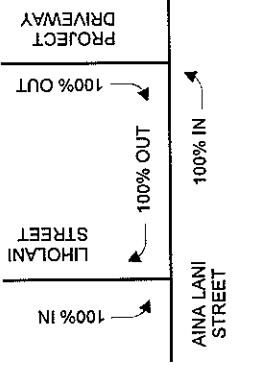
AM PEAK HOUR PROJECT
TRIP ASSIGNMENTS



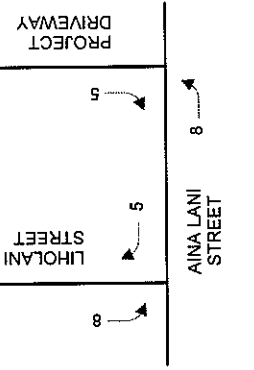
2012 BACKGROUND
PLUS PROJECT
AM PEAK HOUR PROJECTIONS



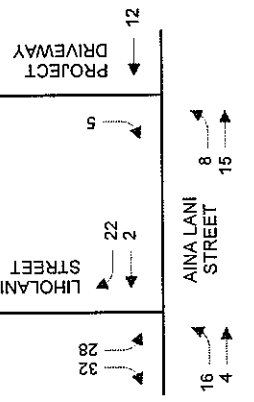
EXISTING (2010)
PM PEAK HOUR VOLUMES



PM PROJECT TRIP
DISTRIBUTION



PM PEAK HOUR PROJECT
TRIP ASSIGNMENTS



2012 BACKGROUND
PLUS PROJECT
PM PEAK HOUR PROJECTIONS

Attachment E
PROJECT TRIP ASSIGNMENTS AND
2012 BACKGROUND PLUS PROJECT TRAFFIC PROJECTIONS

Attachment F
2012 LEVELS-OF-SERVICE WORKSHEETS

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case3am.Int1			
Agency/Co.	PRA			Jurisdiction				
Date Performed	4/13/2010			Analysis Year	Background Plus Project			
Analysis Time Period	AM Peak Hour							
Project Description Pukalani Parcel 36								
East/West Street: Aina Lani Drive				North/South Street: Liholani Street				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	46	0			0	46		
Peak-Hour Factor, PHF	0.72	1.00	1.00	1.00	1.00	0.39		
Hourly Flow Rate, HFR (veh/h)	63	0	0	0	0	117		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT						TR	
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				13		13		
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.42	1.00	0.46		
Hourly Flow Rate, HFR (veh/h)	0	0	0	30	0	28		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration				LR				
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT					LR		
v (veh/h)	63						58	
C (m) (veh/h)	1484						875	
v/c	0.04						0.07	
95% queue length	0.13						0.21	
Control Delay (s/veh)	7.5						9.4	
LOS	A						A	
Approach Delay (s/veh)	--	--					9.4	
Approach LOS	--	--					A	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case3am.Int2			
Agency/Co.	PRA			Jurisdiction				
Date Performed	4/13/2010			Analysis Year	Background Plus Project			
Analysis Time Period	AM Peak Hour							
Project Description Pukalani Parcel 36								
East/West Street: Aina Lani Drive				North/South Street: Driveway				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	3	7			25	0		
Peak-Hour Factor, PHF	0.42	0.42	1.00	1.00	0.61	0.39		
Hourly Flow Rate, HFR (veh/h)	7	16	0	0	40	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT			TR				
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				0		7		
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.50	1.00	0.50		
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	14		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration				LR				
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT					LR		
v (veh/h)	7					14		
C (m) (veh/h)	1583					1037		
v/c	0.00					0.01		
95% queue length	0.01					0.04		
Control Delay (s/veh)	7.3					8.5		
LOS	A					A		
Approach Delay (s/veh)	--	--				8.5		
Approach LOS	--	--				A		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case3pm.Int1			
Agency/Co.	PRA			Jurisdiction				
Date Performed	4/13/2010			Analysis Year	Background Plus Project			
Analysis Time Period	PM Peak Hour							
Project Description Pukalani Parcel 36								
East/West Street: Aina Lani Drive				North/South Street: Liholani Street				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	16	4			2	22		
Peak-Hour Factor, PHF	0.67	0.33	1.00	1.00	0.50	0.71		
Hourly Flow Rate, HFR (veh/h)	23	12	0	0	4	30		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				28		32		
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.63	1.00	0.67		
Hourly Flow Rate, HFR (veh/h)	0	0	0	44	0	47		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	23						91	
C (m) (veh/h)	1591						988	
v/c	0.01						0.09	
95% queue length	0.04						0.30	
Control Delay (s/veh)	7.3						9.0	
LOS	A						A	
Approach Delay (s/veh)	--	--					9.0	
Approach LOS	--	--					A	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	PJR			Intersection	Case3pm.Int2			
Agency/Co.	PRA			Jurisdiction				
Date Performed	4/13/2010			Analysis Year	Background Plus Project			
Analysis Time Period	PM Peak Hour							
Project Description Pukalani Parcel 36								
East/West Street: Aina Lani Drive				North/South Street: Liholani Street				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	8	15			12	0		
Peak-Hour Factor, PHF	0.63	0.63	1.00	1.00	0.71	0.71		
Hourly Flow Rate, HFR (veh/h)	12	23	0	0	16	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				0		5		
Peak-Hour Factor, PHF	1.00	1.00	1.00	0.63	1.00	0.67		
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	7		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	12						7	
C (m) (veh/h)	1615						1069	
v/c	0.01						0.01	
95% queue length	0.02						0.02	
Control Delay (s/veh)	7.2						8.4	
LOS	A						A	
Approach Delay (s/veh)	--	--					8.4	
Approach LOS	--	--					A	

APPENDIX F-1.

Addendum to Traffic Impact Assessment Report

Phillip Rowell and Associates

47-273 'D' Hui Iwa Street Kaneohe, Hawaii 96744 Phone: (808) 239-8206 FAX: (808) 239-4175 Email: prowell@hawaiiantel.net

April 18, 2011

Leilani Pulmano
Munekiyo & Hiraga, Inc.
305 Hugh Street, Suite 104
Wailuku, Maui, HI 96793

Re: Traffic Impact Assessment Report - Addendum
Pukalani Parcel 36
TMK: 2-3-008:036

Dear Leilani:

The following is an addendum to the Traffic Impact Assessment Report (TIAR) for the proposed Pukalani Parcel 36, a proposed single-family development within the Pukalani Golf Course in the Pukalani area of Maui. This addendum was prepared in response to comments from the Maui Planning Commission on January 11, 2011. A copy of the comments is provided as Attachment A.

The following report is presented in the following format:

- A. Project Location and Description
- B. Purpose and Objective of Study
- C. Methodology
- D. Description of Existing Streets and Intersection Controls
- E. Existing Peak Hour Traffic Volumes
- F. Level-of-Service Concept
- G. Existing Levels-of-Service
- H. Existing Deficiencies
- I. Project Trip Generation
- J. Background Plus Project Traffic Projections
- K. Impact Analysis of Background Plus Project Conditions
- L. Mitigation
- M. Summary and Conclusions

A. Project Location and Description

The proposed project is located along the north side of Aina Lani Drive and east of Liholani Street. The parcel is within the boundary of the Pukalani Country Club. The project will consist of 13 single-family residential units. The location map and site plan provided by the Client is provided as Attachment B.

The site is currently vacant.

Access to and egress from the project will be via an existing intersection along the north side of Aina Lani Drive.

All traffic will access and egress the project site via the intersection of Aina Lani Drive at Liholani Street. This is the nearest intersection to the proposed project driveway and is the focal point of project generated traffic and background traffic generated by the residential development immediately adjacent to the project. Traffic from outside the immediate area of the project must approach this intersection via Liholani Street, Pukalani Street and Old Haleakala Highway.

B. Purpose and Objective of Study

As previously noted, this report is an addendum to the TIAR for the project and is prepared in response to comments from the Maui Planning Commission. The previous TIAR assessed the impact of the proposed project at the intersection of Aina Lani Street at Liholani Street. In response to the comments received, the study area was expanded to include additional intersections between the project and Old Haleakala Highway. Therefore, the addendum assesses and discusses that traffic impacts of the proposed project at these additional intersections only. For a discussion of the traffic impacts at the intersections of Aina Lani Street at Liholani Street and at the project driveway along Aina Lani Street, refer to the previous TIAR, a copy of which is attached.

C. Methodology

1. Define the Study Area

The first step in defining the study area was to estimate the number of peak hour trips that the proposed project will generate. It was estimated that the project will generate ten (10) trips during the morning peak hour and thirteen (13) trips during the afternoon peak hour. This implies that the scope of the traffic assessment should be limited to an "access location and design review" analysis as described by the Institute of Transportation Engineers¹. Accordingly, the traffic impact assessment was originally limited to the intersections of the Aina Lani Drive at Liholani Street and Aina Lani Drive at the project driveway. In response to comments from the Maui Planning Commission, this addendum assesses the traffic impacts of the project at the following additional intersections:

- a. Old Haleakala Highway at Pukalani Street
- b. Pukalani Street at Iolani Street
- c. Old Haleakala Highway at Makani Road

2. Analyze Existing Traffic Conditions

Existing traffic volumes at the study intersections were estimated from manual traffic counts performed during May and June, 2009.²

¹ Institute of Transportation Engineers, Transportation and Land Development, Washington, D.C., page 3-6

² Phillip Rowell and Associates, *TIAR for Kauhale Lani*, January 2010

3. *Estimate Horizon Year Background Traffic Projections*

Background traffic conditions are defined as future traffic conditions without the proposed project. The design horizon year does not necessarily represent the project completion date of that phase. It is a date for which future background traffic projections were estimated. For this project, we have used a design, or horizon, year of 2012. It is estimated that background growth between 2009 and 2012 will be negligible as the surrounding area is fully developed and we are not aware of any new development projects that would generate traffic that would impact the study intersections between now and the design year. Accordingly, it was assumed that 2012 background traffic volumes will be comparable to 2009 and 2010 traffic volumes.

4. *Estimate Project-Related Traffic Characteristics*

The number peak-hour trips that the proposed project will generate was estimated using standard trip generation procedures described in the *Trip Generation Handbook*³ and data provided in *Trip Generation*⁴. These are the standard references used for trip generation studies in Hawaii.

5. *Analyze Project Related Traffic Impacts*

The project-related traffic was then superimposed on background traffic volumes. The traffic impacts of the project were assessed by analyzing the changes of the levels-of-service. The purpose of this analysis was to identify potential operational deficiencies at the project driveway.

D. Description of Existing Streets and Intersection Controls

The existing intersection configurations and right-of-way controls are summarized on Attachment C.

E. Existing Peak Hour Traffic Volumes

Existing peak hour traffic volumes were estimated from manual traffic counts obtained during May and June of 2009. These counts are summarized on Attachment C.

1. No buses, trucks and other large vehicles were observed during the traffic counts.
2. No mopeds or bicycles were observed during the counts.
3. No pedestrian activity was noted.

³ *Trip Generation Handbook*, Institute of Transportation Engineers, Washington, D.C., 1998

⁴ *Trip Generation*, Institute of Transportation Engineers, Washington, D.C., 2003

F. Level-of-Service Concept

"Level-of-Service" is a term which denotes any of an infinite number of combinations of traffic operating conditions that may occur on a given lane or roadway when it is subjected to various traffic volumes. Level-of-service (LOS) is a qualitative measure of the effect of a number of factors which include space, speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

There are six levels-of-service, A through F, which relate to the driving conditions from best to worst, respectively. The characteristics of traffic operations for each level-of-service are summarized in Table 1. In general, LOS A represents free-flow conditions with no congestion. LOS F, on the other hand, represents severe congestion with stop-and-go conditions. *Level-of-service D is typically considered acceptable for peak hour conditions in urban areas.*⁵

Corresponding to each level-of-service shown in the table is a volume/capacity ratio. This is the ratio of either existing or projected traffic volumes to the capacity of the intersection. Capacity is defined as the maximum number of vehicles that can be accommodated by the roadway during a specified period of time. The capacity of a particular roadway is dependent upon its physical characteristics such as the number of lanes, the operational characteristics of the roadway (one-way, two-way, turn prohibitions, bus stops, etc.), the type of traffic using the roadway (trucks, buses, etc.) and turning movements.

Table 1 Level-of-Service Definitions for Signalized Intersections⁽¹⁾

Level of Service	Interpretation	Volume-to-Capacity Ratio ⁽²⁾	Stopped Delay (Seconds)
A, B	Uncongested operations; all vehicles clear in a single cycle.	0.000-0.700	<20.0
C	Light congestion; occasional backups on critical approaches	0.701-0.800	20.1-35.0
D	Congestion on critical approaches but intersection functional. Vehicles must wait through more than one cycle during short periods. No long standing lines formed.	0.801-0.900	35.1-55.0
E	Severe congestion with some standing lines on critical approaches. Blockage of intersection may occur if signal does not provide protected turning movements.	0.901-1.000	55.1-80.0
F	Total breakdown with stop-and-go operation	>1.001	>80.0

Notes:
(1) Source: *Highway Capacity Manual*, 2000.
(2) This is the ratio of the calculated critical volume to Level-of-Service E Capacity.

Like signalized intersections, the operating conditions of intersections controlled by stop signs can be classified by a level-of-service from A to F. However, the method for determining level-of-service for unsignalized intersections is based on the use of gaps in traffic on the major street by vehicles crossing or turning through that stream. Specifically, the capacity of the controlled legs of an intersection is based on two factors: 1) the distribution of gaps in the major street traffic stream, and

⁵ Institute of Transportation Engineers, *Transportation Impact Analyses for Site Development: A Recommended Practice*, 2006, page 60

2) driver judgement in selecting gaps through which to execute a desired maneuver. The criteria for level-of-service at an unsignalized intersection is therefore based on delay of each turning movement. Table 2 summarizes the definitions for level-of-service and the corresponding delay.

Table 2 Level-of-Service Definitions for Unsignalized Intersections⁽¹⁾

Level-of-Service	Expected Delay to Minor Street Traffic	Delay (Seconds)
A	Little or no delay	<10.0
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	See note (2) below	>50.1

Notes:

- (1) Source: *Highway Capacity Manual*, 2000.
(2) When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement of the intersection.

G. Existing Levels-of-Service

The results of the existing level-of-service analysis of the intersection of Old Haleakala Highway at Pukalani Street are summarized in Table 3. Shown are the volume-to-capacity ratio, average vehicle delays and levels-of-service of the controlled lane groups. The intersection operates at Level-of-Service B during the morning peak hour and the afternoon peak hour. All movements operate at Level-of-Service C, or better. However, the afternoon peak hour volume-to-capacity ratio is 1.00, indicating that the intersection is operating at capacity and, therefore, cannot accommodate additional traffic.

Table 3 Existing (2009) Levels-of-Service - Signalized Intersections

Intersection, Approach and Movement	AM Peak Hour			PM Peak Hour		
	V/C ¹	Delay ²	LOS ³	V/C	Delay	LOS
Old Haleakala Highway at Pukalani Street	0.78	15.3	B	1.00	19.0	B
Eastbound Thru	0.41	19.8	B	0.60	25.3	C
Eastbound Right	0.18	18.5	B	0.39	22.4	C
Westbound Left	0.72	19.2	B	0.69	15.4	B
Westbound Thru	0.29	11.9	B	0.14	9.2	A
Northbound Left	0.68	15.3	B	0.40	18.1	B
Northbound Right	0.20	8.6	A	0.29	16.8	B

NOTES:

- (1) V/C denotes volume-to-capacity ratio.
(2) Delay in seconds per vehicle.
(3) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.
(4) See Attachment D for level-of-service worksheets.

The results of the existing level-of-service analysis of the unsignalized intersections are summarized in Table 4. Shown are the average vehicle delays and levels-of-service of the controlled lane groups. The methodology for unsignalized intersections does not calculate delays and levels-of-service of uncontrolled lane groups as uncontrolled lane groups are free flowing and therefore have no delay.

Table 4 Existing (2009) Levels-of-Service - Unsignalized Intersection

Intersection, Approach and Movement	AM Peak Hour		PM Peak Hour	
	Delay ¹	LOS ²	Delay	LOS
<i>Pukalani Street at Iolani Street</i>				
Eastbound Left, Thru & Right	226.9	F	38.2	E
Westbound Left, Thru & Right	15.3	C	11.7	B
Northbound Left, Thru & Right	0.3	A	0.4	A
Southbound Left & Thru	3.0	A	5.0	A
<i>Old Haleakala Highway at Makani Road</i>				
Eastbound Left	9.4	A	8.4	A
Southbound Left	22.2	C	17.1	C
Southbound Right	13.8	B	10.9	B

NOTES:
(1) Delay in seconds per vehicle.
(2) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.
(3) Delay calculations for the AM peak hour could not be calculated as all movements are free-flowing except the northbound to eastbound right turn, which is a negligible number of vehicles during the AM peak hour.
(4) See Attachment D for level-of-service worksheets.

The eastbound approach of Iolani Street at Pukalani Street operates at Level-of-Service F during the morning peak hour and Level-of-Service E during the afternoon peak hour. The remaining movements operate at Level-of-Service C, or better.

All movements at the intersection of Old Haleakala Highway at Makani Road operate at Level-of-Service C, or better.

H. Existing Deficiencies

We have used the Institute of Transportation Engineers standard that Level-of-Service D is the minimum acceptable Level-of-Service. For signalized intersections, this criteria is applicable to the overall intersection rather than each controlled lane group. Minor movements, such as left turns, and minor side street approaches may operate at Level-of-Service E for short periods of time during the peak hours so that the overall intersection and major movements along the major highway will operate at Level-of-Service D, or better. All volume-to-capacity ratios should also be less than 1.00. A volume-to-capacity ratio equal to or greater than 1.00 implies that the intersection or lane group operates at or over capacity.

A standard has not been established for unsignalized intersections. Therefore, we have used a standard that Level-of-Service D is an acceptable level-of-service for any major controlled lane groups, such as left turns from a major street to a minor street. Side street approaches may operate at Level-of-Service E or F for short periods of time. This is determined from the delays of the individual lane groups. If the delay of any of the side street approaches appears to be so long that it will affect the overall level-of-service of the intersection, then mitigation measures should be accessed.

Using this standard, the intersections of Old Haleakala Highway at Pukalani Street and Pukalani Street at Iolani Street operate at an unacceptable level-of-service.

Old Haleakala Highway at Pukalani Street

The overall intersection volume-to-capacity ratio is 1.00 during the afternoon peak hour. The high volume-to-capacity ratio is the result of heavy eastbound to southbound right turns during the afternoon peak hour. To mitigate this condition, it is recommended that a right turn arrow be provided to allow protected eastbound to southbound right turns concurrent with the northbound to westbound left turn phase. As shown in Table 5, the resulting intersection volume-to-capacity ratio will be 0.72 and the resulting level-of-service will be Level-of-Service B.

Table 5 Mitigation Analysis - Intersection of Old Haleakala Highway at Pukalani Street

Intersection, Approach and Movement	Without Mitigation						With Mitigation					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
	V/C ¹	Delay ²	LOS ³	V/C	Delay	LOS	V/C ¹	Delay ²	LOS ³	V/C	Delay	LOS
Old Haleakala Hwy at Pukalani St	0.78	15.3	B	1.00	19.0	B	0.69	12.7	B	0.72	14.9	B
Eastbound Thru	0.41	19.8	B	0.60	25.3	C	0.41	19.8	B	0.68	28.5	C
Eastbound Right	0.18	18.5	B	0.39	22.4	C	0.18	2.2	A	0.47	7.4	A
Westbound Left	0.72	19.2	B	0.69	15.4	B	0.72	19.2	B	0.71	16.8	B
Westbound Thru	0.29	11.9	B	0.14	9.2	A	0.29	11.9	B	0.15	9.5	A
Northbound Left	0.68	15.3	B	0.40	18.1	B	0.68	15.3	B	0.39	16.6	B
Northbound Right	0.20	8.6	A	0.29	16.8	B	0.20	8.6	A	0.30	15.5	B

NOTES:

- (1) V/C denotes volume-to-capacity ratio.
- (2) Delay in seconds per vehicle.
- (3) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.

Pukalani Street at Iolani Street

The eastbound approach of this intersection operates at Level-of-Service F during the morning peak hour and Level-of-Service E during the afternoon peak hour. The delay of the eastbound approach is approximately three and a half minutes, indicating that this delay is excessive.

There are three alternatives to mitigate the unacceptable level-of-service. The first is to convert the intersection from a two-way stop sign controlled intersection to a four-way stop sign controlled intersection. As a four-way stop sign controlled intersection, all approaches will operate at Level-of-Service D, or better. See Table 6.

The second alternative is to convert the intersection to a roundabout. As a roundabout, all intersection approaches will operate at Level-of-Service A.

The third and last alternative is to install traffic signals. As a signalized intersection, the intersection will operate at Level-of-Service B during the morning peak hour and Level-of-Service A during the afternoon peak hour. Traffic signals are expensive and require continual maintenance.

For purposes of preparing this TIAR, it is assumed that the intersection will be converted from a two-way STOP sign controlled intersection to a four-way STOP sign controlled intersection.

Table 6 Mitigation Analysis - Intersection of Pukalani Street at Iolani Street

Intersection, Approach and Movement	Without Mitigation				With Mitigation (4-Way Stop)				With Mitigation (Roundabout)			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay ¹	LOS ²	Delay	LOS	Delay	LOS	Delay	LOS	V/C	LOS	V/C	LOS
Pukalani Street at Iolani Street												
Eastbound Left, Thru & Right	226.9	F	38.2	E	27.4	D	12.4	B	0.35	A	0.24	A
Westbound Left, Thru & Right	15.3	C	11.7	B	14.2	B	9.9	A	0.29	A	0.14	A
Northbound Left, Thru & Right	0.3	A	0.4	A	24.0	C	10.3	B	0.43	A	0.14	A
Southbound Left & Thru	3.0	A	5.0	A								
Southbound Left, Thru & Right					16.2	C	12.1	B	0.38	A	0.54	A

NOTES:
(1) Delay in seconds per vehicle.
(2) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.

I. Project Trip Generation

Future traffic volumes generated by a project are typically estimated using the methodology described in the *Trip Generation Handbook*⁶ and data provided in *Trip Generation*⁷. This method uses trip generation rates to estimate the number of trips that the project will generate during the peak hours of the project and along the adjacent street

The proposed action is the construction of thirteen (13) single-family dwelling units. The trip generation rates are based on the number of dwelling units. The trip generation calculations are summarized in Table 7. As shown, the proposed project will generate 3 inbound and 7 outbound trips during the morning peak hour. During the afternoon peak hour, the project will generate 8 inbound and 5 outbound trips.

Table 7 Trip Generation Calculations for Proposed Project

Time Period	Direction	Single-Family Detached Housing (LU Code 210)		
		Rate or % ⁽¹⁾	Occupied Units	Trips
AM Peak Hour	Total	0.77	13	10
	In	26%		3
	Out	74%		7
PM Peak Hour	Total	1.02		13
	In	64%		8
	Out	36%		5

NOTES:
(1) Institute of Transportation Engineers, *Trip Generation*, Seventh Edition, 2003.

It was assumed that traffic patterns of traffic generated by the proposed project will be comparable to the existing traffic patterns of the study intersections. The approach and departure distribution and the resulting project trip assignments are shown in Attachment E.

⁶ Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., 1998, p. 7-12

⁷ Institute of Transportation Engineers, *Trip Generation*, 7th Edition, Washington, D.C., 2003

J. Background Plus Project Projections

Background plus project traffic projections were estimated by superimposing the peak hourly traffic generated by the proposed project on the background (without project) peak hour traffic projections. This assumes that the peak hourly trips generated by the project coincide with the peak hour of the adjacent street. This represents a worse-case condition as it assumes that the peak hours of all the intersection and the peak hour of the study project coincide. The traffic projection calculations are shown as Tables 8, 9 and 10. The resulting background plus project peak hour traffic projections are shown in Attachment E.

Table 8 Traffic Projections Pukalani Street at Old Haleakala Highway

Approach and Movement		Existing Background (2009)		Project Trips		Background Plus Project	
		AM	PM	AM	PM	AM	PM
East	Right	185	125			185	125
	Left	285	340	1	4	286	344
South	Right	285	430	1	2	286	432
	Left	530	245	3	3	533	248
West	Right	265	570	1	4	266	574
	Thru	130	265			130	265
Totals		1680	1975	6	13	1686	1988

Table 9 Traffic Projections Pukalani Street at Iolani Street

Approach and Movement		Existing Background (2009)		Project Trips		Background Plus Project	
		AM	PM	AM	PM	AM	PM
North	Right	290	335			290	335
	Thru	65	90	2	8	67	98
	Left	35	140			35	140
East	Right	130	95			130	95
	Thru	40	15			40	15
	Left	0	5			0	5
South	Right	0	5			0	5
	Thru	310	100	5	5	315	105
	Left	10	5	2		12	5
West	Right	5	5	1		6	5
	Thru	40	30			40	30
	Left	300	170			300	170
Totals		1225	995	10	13	1235	1008

Table 10 Traffic Projections Makani Road at Old Haleakala Highway

Approach and Movement		Existing Background (2009)		Project Trips		Background Plus Project	
		AM	PM	AM	PM	AM	PM
North	Right	30	20			30	20
	Left	100	75	0	2	100	77
East	Right	110	100	2	2	112	102
	Thru	575	335	1	1	576	336
West	Thru	110	200	1	2	111	202
	Left	20	40			20	40
Totals		945	770	4	7	949	777

K. Traffic Impact Analysis

Level-of-Service Analysis

1. The *Highway Capacity Software (HCS)* package was used to perform level-of-service analyses. This package uses the methodology described in the *Highway Capacity Manual*.
2. We have used the standards discussed in Section H of this report.
3. As the *Highway Capacity Manual* defines level-of-service by delay, we have used the same definitions.

Old Haleakala Highway at Pukalani Street

The results of the level-of-service analysis of the intersection of Old Haleakala Highway at Pukalani Street is summarized in Table 11.

Overall, the intersection will operate at Level-of-Service B during both peak periods, without and with project generated traffic, and all volume-to-capacity ratios are less than 1.00. The levels-of-service of all movements are unchanged as a result of project generated traffic and all movements will operate at Level-of-Service C, or better, during both peak periods.

Table 11 Level-of-Service Analysis - Old Haleakala Highway at Pukalani Street

Approach and Movement	AM Peak Hour						PM Peak Hour					
	2012 Background Without Project			2012 Background With Project			2012 Background Without Project			2012 Background With Project		
	V/C ⁽²⁾	Delay ⁽³⁾	LOS ⁽⁴⁾	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Intersection Total	0.69	12.7	B	0.69	12.8	B	0.72	14.9	B	0.73	14.2	B
Eastbound Thru	0.41	19.8	B	0.41	19.8	B	0.68	28.5	C	0.60	25.2	C
Eastbound Right	0.18	2.2	A	0.18	2.2	A	0.47	7.4	A	0.48	5.5	A
Westbound Left	0.72	19.2	B	0.72	19.3	B	0.71	16.8	B	0.69	15.6	B
Westbound Thru	0.29	11.9	B	0.29	11.9	B	0.15	9.5	A	0.14	9.2	A
Northbound Left	0.68	15.3	B	0.69	15.4	B	0.39	16.6	B	0.41	18.3	B
Northbound Right	0.20	8.6	A	0.20	8.6	A	0.30	15.5	B	0.30	17.0	B

NOTES:

1. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
2. Delay is in seconds per vehicle.
3. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.
4. See Attachment F for Level-of-Service worksheets.

Pukalani Street at Iolani Street

The results of the level-of-service analysis of the intersection of Pukalani Street at Iolani Street are summarized in Table 12. The levels-of-service shown incorporate the improvements discussed earlier, which is the conversion of the intersection to a four-way STOP sign controlled intersection. During the morning peak hour, all controlled movements will operate at Level-of-Service D, or better. During the afternoon peak hour, all controlled movements will operate at Level-of-Service C, or better.

Table 12 Level-of-Service Analysis - Pukalani Street at Iolani Street

Peak Hour, Approach and Movement	AM Peak Hour				PM Peak Hour			
	2012 Background Without Project		2012 Background With Project		2012 Background Without Project		2012 Background With Project	
	Delay ⁽²⁾	LOS ⁽⁴⁾	Delay	LOS	Delay	LOS	Delay	LOS
Eastbound Left, Thru & Right	27.4	D	30.8	D	12.4	B	12.8	B
Westbound Left, Thru & Right	14.2	B	15.1	C	9.9	A	10.1	B
Northbound Left, Thru & Right	24.0	C	27.2	D	10.3	B	10.5	B
Southbound Left, Thru & Right	16.2	C	25.9	D	12.1	B	15.9	C

- NOTES:
1. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
 2. Delay is in seconds per vehicle.
 3. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.
 4. See Appendix F for Level-of-Service worksheets.

Old Haleakala Highway at Makani Road

The results of the level-of-service analysis of the intersection of Old Haleakala Highway at Makani Road is summarized in Table 13. All movements will operate at Level-of-Service C, or better.

Table 13 Level-of-Service Analysis - Old Haleakala Highway at Makani Road

Peak Hour, Approach and Movement	AM Peak Hour				PM Peak Hour			
	2012 Background Without Project		2012 Background With Project		2012 Background Without Project		2012 Background With Project	
	Delay ⁽²⁾	LOS ⁽⁴⁾	Delay	LOS	Delay	LOS	Delay	LOS
Eastbound Left	9.4	A	7.9	A	8.4	A	8.5	A
Southbound Left	22.2	C	12.6	B	17.1	C	17.3	C
Southbound Right	13.8	B	9.8	A	10.9	B	10.9	B

- NOTES:
1. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
 2. Delay is in seconds per vehicle.
 3. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.
 4. See Attachment F for Level-of-Service worksheets.

L. Mitigation

Level-of-Service D is generally considered to be the minimum acceptable peak hour level-of-service for urban intersections.⁸ As all controlled traffic movements will operate at Level-of-Service D or better, no mitigation is recommended in addition to the improvements required to mitigate existing deficiencies.

⁸ Institute of Traffic Engineers *Transportation Impact Analyses for Site Development, A Recommended Practice*, Washington, D.C., 2006, p 60.

M. Summary and Conclusions

The conclusions of the traffic impact assessment are:

1. The proposed project is located along the north side of Aina Lani Drive and east of Liholani Street. The parcel is within the boundary of the Pukalani Country Club. Access to and egress from the project will be via an existing intersection along the north side of Aina Lani Drive. The project will consist of thirteen (13) single-family residential units.
2. A level-of-service analysis was performed for the intersections of Old Haleakala Highway at Pukalani Street, Pukalani Street at Iolani Street and Old Haleakala Highway at Makani Road. The level-of-service analysis concluded that the intersections of Old Haleakala Highway at Pukalani Street and Pukalani Street at Iolani Street currently operate at unacceptable levels-of-service.
3. The traffic signals at intersection of Old Haleakala Highway at Pukalani Street should be modified to provide protected left turns from eastbound Old Haleakala Highway to southbound Pukalani Street. This will reduce the afternoon volume-to-capacity ratio from 1.00 to 0.72.
4. The westbound approach of Iolani Street at Pukalani Street currently operates at Level-of-Service F during the morning peak hour. Conversion of the intersection from a two-way STOP sign controlled intersection to a four-way STOP controlled intersection will improve the level-of-service from Level-of-Service F to Level-of-Service D.
5. The proposed project will generate 3 inbound and 7 outbound trips during the morning peak hour. During the afternoon peak hour, the project will generate 8 inbound and 5 outbound trips.
6. Level-of-Service D is generally considered to be the minimum acceptable peak hour level-of-service for urban intersections.⁹ As all controlled traffic movements will operate at Level-of-Service D or better, no mitigation is recommended in addition to the improvements required to mitigate existing deficiencies.

Respectfully submitted,
PHILLIP ROWELL AND ASSOCIATES



Phillip J. Rowell, P.E.
Principal

⁹ Institute of Traffic Engineers *Transportation Impact Analyses for Site Development, A Recommended Practice*, Washington, D.C., 2006, p 60.

List of Attachments

- A. Comment Letter from Maui Planning Commission
- B. Project Location and Site Plan Provided By Client
- C. Existing Lane configurations, Right-of-Way Controls and Peak Hour Traffic Volumes
- D. Level-of-Service Worksheets for Existing Conditions
- E. Project Trip Assignments and 2012 Peak Hour Traffic Projections
- F. Level-of-Service Worksheets for 2012 Conditions

Attachment A

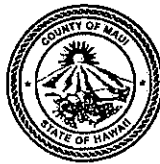
COMMENT LETTER FROM MAUI PLANNING
COMMISSION

FEB 01 11 2011

ALAN M. ARAKAWA
Mayor

WILLIAM R. SPENCE
Director

MICHELE CHOUTEAU McLEAN
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

January 26, 2011

Ms. Leilani Pulmano, Planner
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Ms. Pulmano:

**SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR THE
PULELEHUAKEA SUBDIVISION, A 13-LOT SUBDIVISION TO BE
LOCATED ALONG AINA LANI DRIVE IN PUKALANI, MAUI, HAWAII;
TMK: (2) 2-3-008:036 (CPA 2010/0003) (CIZ 2010/0006) (EA 2010/0005)**

At its regular meeting of January 11, 2011, the Maui Planning Commission reviewed the above-referenced document and provided the following comments:

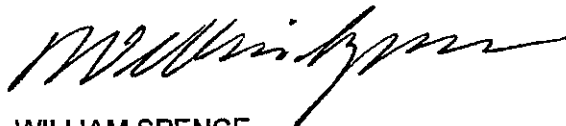
1. The Final EA should further expand on energy efficiency in the "Sustainable Features" portion of the Project Overview. Please include additional information on the type of energy efficient and energy producing features the Applicant is proposing to include in the project;
2. The Final EA should provide additional information regarding Water in the Impacts and Mitigation section. Please include information on the actual source of water, the cost of the system, the amount of energy used to support such a system, along with any impacts associated with obtaining water for this project;
3. The Final EA should address the housing forecasts for the Upcountry/Pukalani area. Please include an analysis on the effect of future housing availability by downgrading certain portions of the property from Residential to Golf Course;
4. The Final EA should include any information on Archaeological Monitoring or Studies that were previously done on the area of the property being down zoned to Park-Golf Course. If Archaeological Monitoring or Studies were not done in the past, please complete one and include it in the Final EA;
5. The Final EA should include information on how the project, once it is built, will affect the Makawao Aquifer;
6. The Final EA should include information on the current and future Real Property Tax Assessment rates for the project area;

Ms. Leilani Pulmano, Planner
January 26, 2011
Page 2

7. The Final EA should address the work-force housing policy;
8. The Final EA should clearly state the Applicant's intent to construct no more than one (1) dwelling unit per lot;
9. The Final EA should address and include additional information on the terrain of the project site, the anticipated amount of water runoff, and the ability to retain the additional runoff in the event of a storm. In addition, if it is not possible to retain all the runoff on-site, please provide information on its effect to surrounding properties;
10. The Final EA should expand on the traffic portion of the Infrastructure section and include information on the effect this project will have on roadways and intersections near Pukalani School. These roadways include Iolani Street, Pukalani Street, Old Haleakala Highway, and their associated intersections;
11. The Final EA should explicitly point out that the Community Plan Amendment (CPA) and Change in Zoning (CIZ) associated with this project will essentially downgrade the amount of residential land in the area;
12. The Final EA should include information on the nearest public transportation point from the project site and whether it is fully accessible via sidewalks; and
13. The Final EA should include additional aerial photographs and additional close-up aerial photographs of the project site.

Please provide written responses to the above comments in the Final EA. Should you require further clarification, please contact Staff Planner Danny Dias by email at danny.dias@mauicounty.gov or by telephone at (808) 270-7557.

Sincerely,



WILLIAM SPENCE
Planning Director

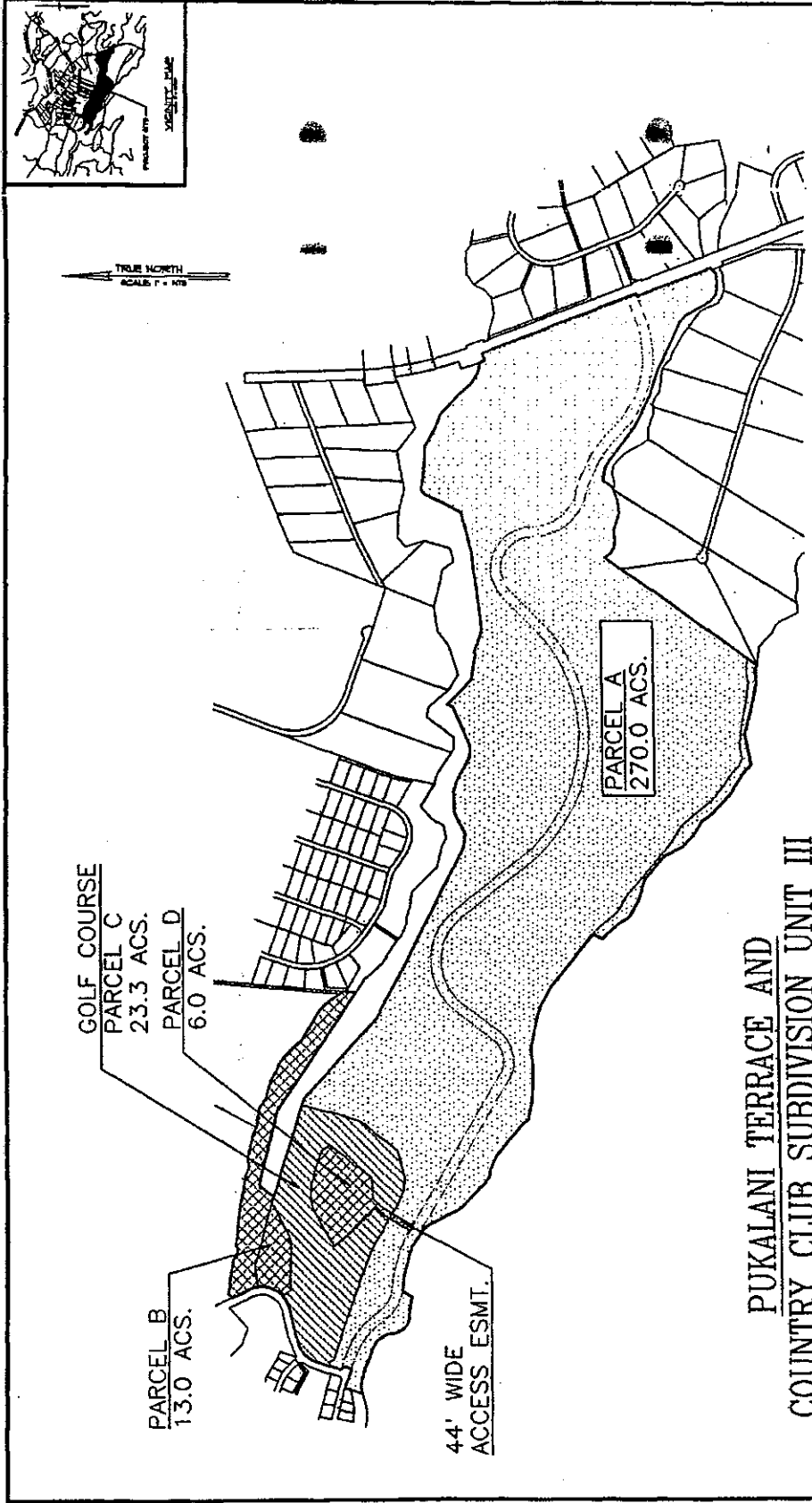
xc: Clayton I. Yoshida, AICP, Planning Program Administrator
Danny A. Dias, Staff Planner
Project File
General File

WRS:DAD:sa
K:\WP_DOCS\PLANNING\Cpa\2010\0003_Pulelehuakea Subdivision\MPCcomments.doc

Attachment B

**PROJECT LOCATION AND SITE PLAN PROVIDED BY
CLIENT**

10-23-95



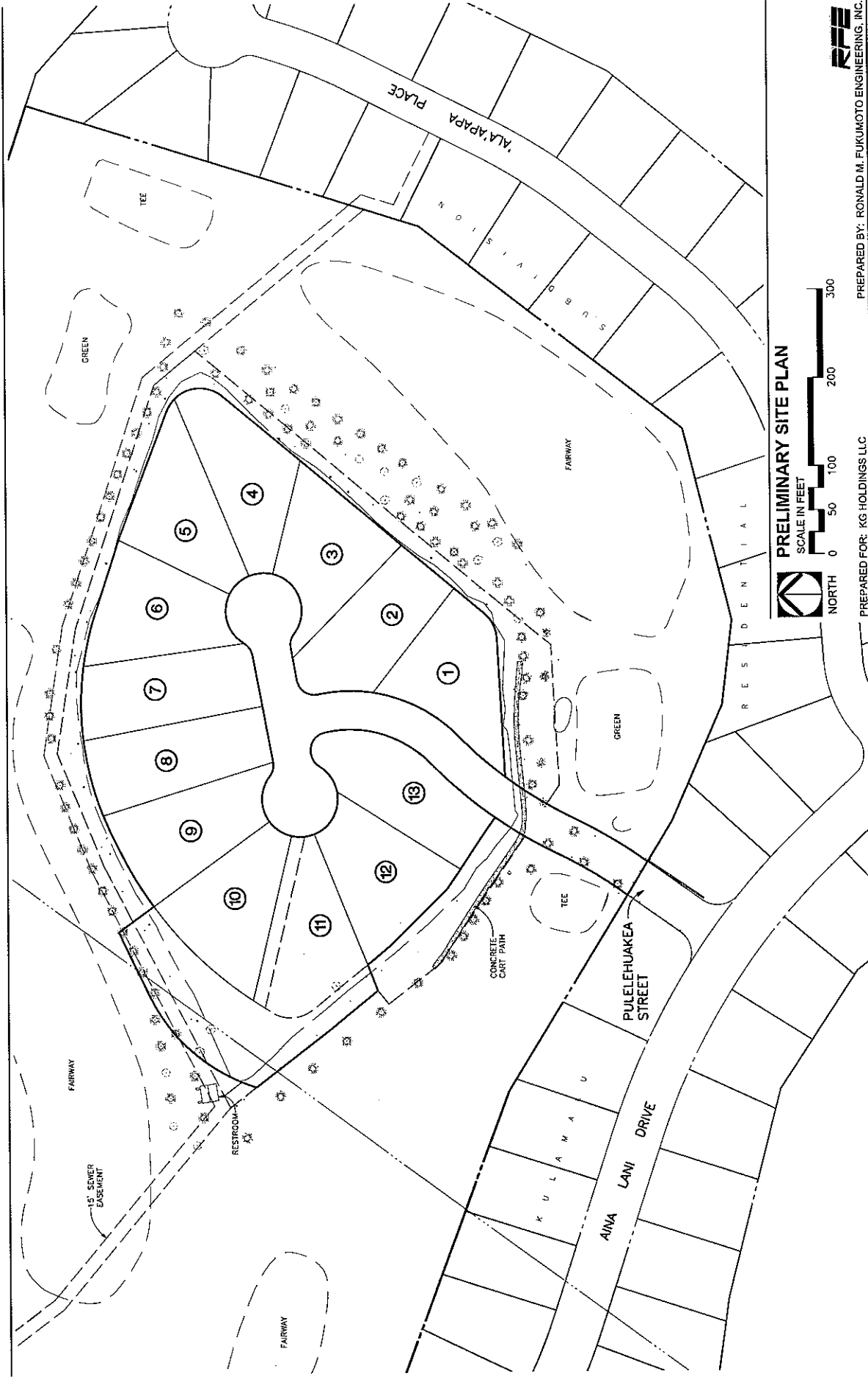
**PUKALANI TERRACE AND
COUNTRY CLUB SUBDIVISION UNIT III**

NTS

PREPARED FOR: SPORTS SHINKO (PUKALANI) CO., LTD.
AND
DOWLING COMPANY
P.O. BOX 1417
WAILUKU, HAWAII 96793
TEL: (808) 214-1500
FAX: (808) 212-2777

EXHIBIT A

A 09548



PRELIMINARY SITE PLAN

SCALE IN FEET



NORTH

PREPARED FOR: KG HOLDINGS LLC

PREPARED BY: RONALD M. FUKUMOTO ENGINEERING, INC.



R E S I D E N T I A L

AUA'APAPA PLACE

PULELEHUAKEA STREET

AINA LANI DRIVE

KULA'AMA U

15" SEWER BASEMENT

RESTROOM

CONCRETE CART PATH

GREEN

GREEN

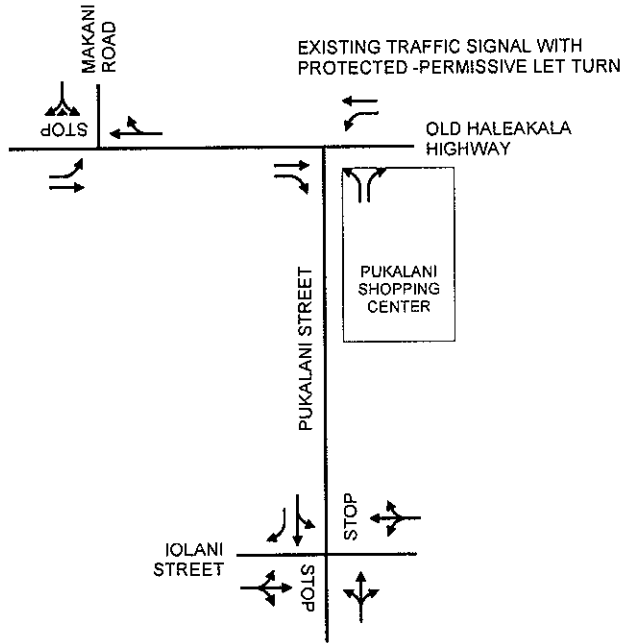
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FAIRWAY

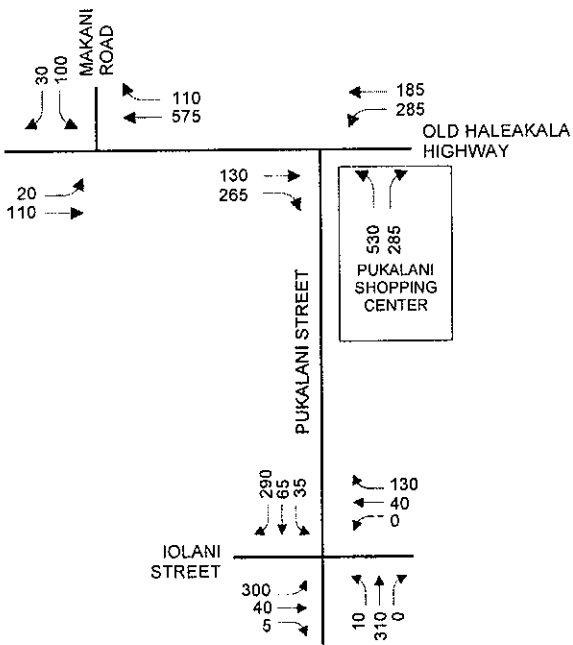
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FAIRWAY

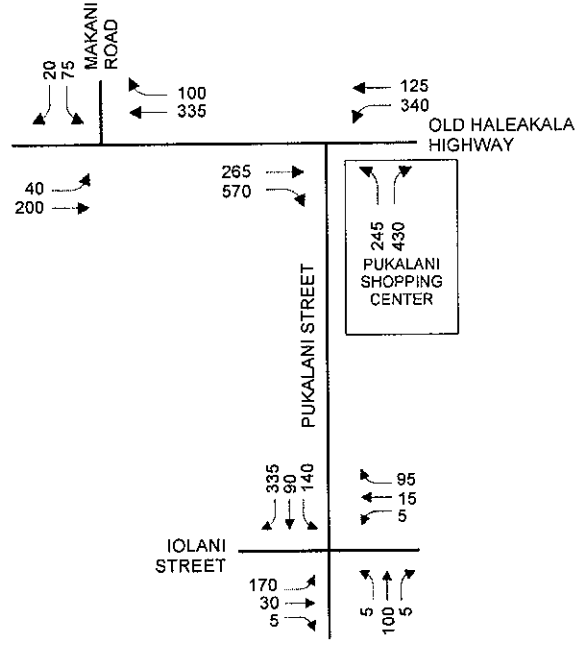
SUBDIVISION



EXISTING LANE CONFIGURATIONS AND RIGHT-OF-WAY CONTROLS



EXISTING AM PEAK HOUR TRAFFIC VOLUMES



EXISTING PM PEAK HOUR TRAFFIC VOLUME

Attachment C
EXISTING LANE CONFIGURATIONS AND
PEAK HOUR TRAFFIC VOLUMES



Attachment D

LEVEL-OF-SERVICE WORKSHEETS FOR EXISTING
CONDITIONS

HCM Unsignalized Intersection Capacity Analysis
 4: IOLANI STREET & PUKALANI STREET

3/11/2011



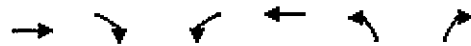
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	300	40	5	0	40	130	10	310	0	35	65	290
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	326	43	5	0	43	141	11	337	0	38	71	315
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)												1269
pX, platoon unblocked												
vC, conflicting volume	668	505	71	533	821	337	386			337		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	668	505	71	533	821	337	386			337		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	90	99	100	85	80	99			97		
cM capacity (veh/h)	256	451	992	409	297	705	1173			1222		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	375	185	348	109	315
Volume Left	326	0	11	38	0
Volume Right	5	141	0	0	315
cSH	272	533	1173	1222	1700
Volume to Capacity	1.38	0.35	0.01	0.03	0.19
Queue Length 95th (ft)	497	38	1	2	0
Control Delay (s)	226.9	15.3	0.3	3.0	0.0
Lane LOS	F	C	A	A	
Approach Delay (s)	226.9	15.3	0.3	0.8	
Approach LOS	F	C			

Intersection Summary			
Average Delay		66.4	
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
 5: OLD HALEAKALA HIGHWAY & PUKALANI STREET

3/11/2011



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖	↗	↘	↙	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.47	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	880	1863	1770	1583
Volume (vph)	130	265	285	185	530	285
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	288	310	201	576	310
RTOR Reduction (vph)	0	235	0	0	0	163
Lane Group Flow (vph)	141	53	310	201	576	147
Turn Type		Perm	pm+pt		Perm	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	9.7	9.7	19.7	19.7	25.1	25.1
Effective Green, g (s)	9.7	9.7	19.7	19.7	25.1	25.1
Actuated g/C Ratio	0.18	0.18	0.37	0.37	0.48	0.48
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	342	291	429	695	841	753
v/s Ratio Prot	0.08		c0.08	0.11	c0.33	
v/s Ratio Perm		0.18	0.19			0.20
v/c Ratio	0.41	0.18	0.72	0.29	0.68	0.20
Uniform Delay, d1	19.0	18.2	13.3	11.6	10.8	8.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.3	5.9	0.2	4.5	0.6
Delay (s)	19.8	18.5	19.2	11.9	15.3	8.6
Level of Service	B	B	B	B	B	A
Approach Delay (s)	18.9			16.3	12.9	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	52.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 6: OLD HALEAKALA HIGHWAY & MAKANI ROAD

3/11/2011



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↖	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	20	110	575	110	100	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	120	625	120	109	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)	281					
pX, platoon unblocked	0.97				0.97	0.97
vC, conflicting volume	745				848	685
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	737				843	676
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				66	93
cM capacity (veh/h)	844				316	441
Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2	
Volume Total	22	120	745	109	33	
Volume Left	22	0	0	109	0	
Volume Right	0	0	120	0	33	
cSH	844	1700	1700	316	441	
Volume to Capacity	0.03	0.07	0.44	0.34	0.07	
Queue Length 95th (ft)	2	0	0	37	6	
Control Delay (s)	9.4	0.0	0.0	22.2	13.8	
Lane LOS	A			C	B	
Approach Delay (s)	1.4		0.0	20.3		
Approach LOS				C		
Intersection Summary						
Average Delay	3.0					
Intersection Capacity Utilization	49.1%					
ICU Level of Service	A					
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 4: IOLANI STREET & PUKALANI STREET

3/11/2011



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	170	30	5	5	15	95	5	100	5	140	90	335
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	185	33	5	5	16	103	5	109	5	152	98	364
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None					None						
Median storage veh												
Upstream signal (ft)												1269
pX, platoon unblocked												
vC, conflicting volume	636	527	98	546	889	111	462				114	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	636	527	98	546	889	111	462				114	
iC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
iC, 2 stage (s)												
iF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	39	92	99	99	94	89	100				90	
cM capacity (veh/h)	304	407	958	384	252	942	1099				1475	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total	223	125	120	250	364							
Volume Left	185	5	5	152	0							
Volume Right	5	103	5	0	364							
cSH	321	663	1099	1475	1700							
Volume to Capacity	0.69	0.19	0.00	0.10	0.21							
Queue Length 95th (ft)	122	17	0	9	0							
Control Delay (s)	38.2	11.7	0.4	5.0	0.0							
Lane LOS	E	B	A	A								
Approach Delay (s)	38.2	11.7	0.4	2.0								
Approach LOS	E	B										
Intersection Summary												
Average Delay			10.4									
Intersection Capacity Utilization			43.8%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
 5: OLD HALEAKALA HIGHWAY & PUKALANI STREET

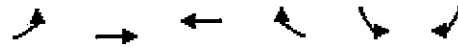
3/11/2011



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.32	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	595	1863	1770	1583
Volume (vph)	265	570	340	125	245	430
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	288	620	370	136	266	467
RTOR Reduction (vph)	0	461	0	0	0	292
Lane Group Flow (vph)	288	159	370	136	266	175
Turn Type	Perm pm+pt		Perm		Perm	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	18.2	18.2	36.3	36.3	26.6	26.6
Effective Green, g (s)	18.2	18.2	36.3	36.3	26.6	26.6
Actuated g/C Ratio	0.26	0.26	0.51	0.51	0.38	0.38
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	478	406	538	954	664	594
v/s Ratio Prot	0.15		0.14	0.07	0.15	
v/s Ratio Perm		0.39	0.22			0.29
v/c Ratio	0.60	0.39	0.69	0.14	0.40	0.29
Uniform Delay, d1	23.2	21.8	11.8	9.1	16.3	15.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.6	3.6	0.1	1.8	1.3
Delay (s)	25.3	22.4	15.4	9.2	18.1	16.8
Level of Service	C	C	B	A	B	B
Approach Delay (s)	23.3			13.7	17.3	
Approach LOS	C			B	B	
Intersection Summary						
HCM Average Control Delay	19.0		HCM Level of Service		B	
HCM Volume to Capacity ratio	1.00		Sum of lost time (s)		12.0	
Actuated Cycle Length (s)	70.9		ICU Level of Service		B	
Intersection Capacity Utilization	60.8%					
Analysis Period (min)	15					
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis
 6: OLD HALEAKALA HIGHWAY & MAKANI ROAD

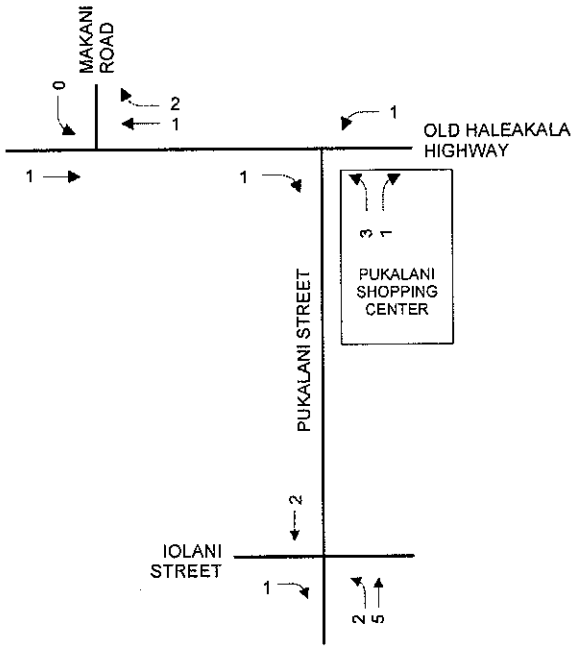
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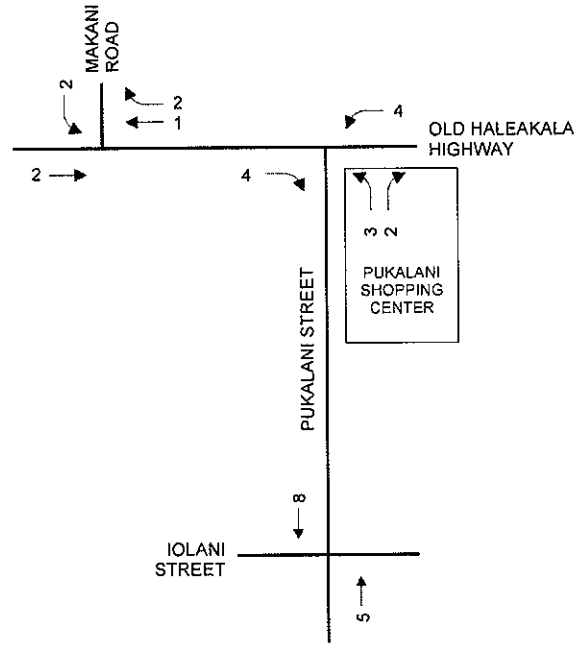
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↱		↰	↱
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	40	200	335	100	75	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	217	364	109	82	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type: None						
Median storage (veh)						
Upstream signal (ft): 281						
pX, platoon unblocked						
vC, conflicting volume	473				723	418
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	473				723	418
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				78	97
cM capacity (veh/h)	1089				377	635

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	43	217	473	82	22
Volume Left	43	0	0	82	0
Volume Right	0	0	109	0	22
cSH	1089	1700	1700	377	635
Volume to Capacity	0.04	0.13	0.28	0.22	0.03
Queue Length 95th (ft)	3	0	0	20	3
Control Delay (s)	8.4	0.0	0.0	17.1	10.9
Lane LOS	A			C	B
Approach Delay (s)	1.4		0.0	15.8	
Approach LOS				C	

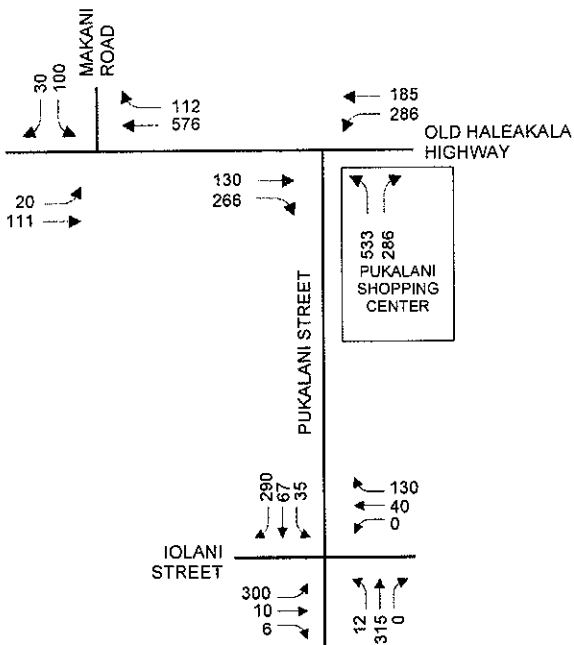
Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		



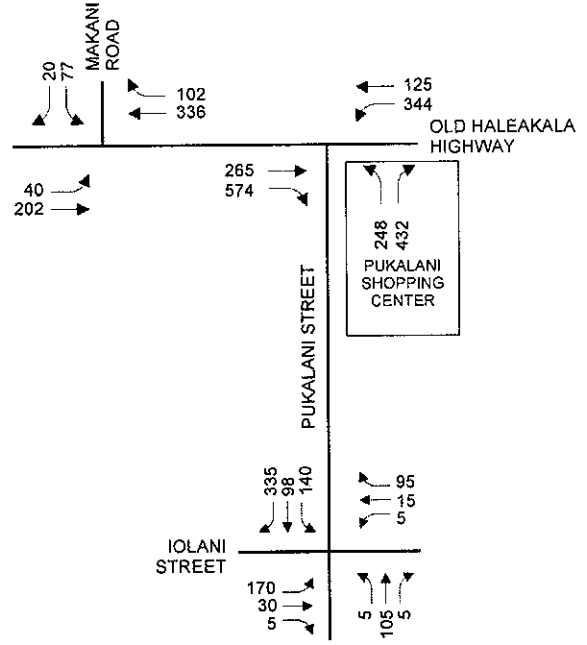
AM PEAK HOUR TRIP ASSIGNMENTS



PM PEAK HOUR TRIP ASSIGNMENTS



2012 AM PEAK HOUR TRAFFIC PROJECTIONS



2012 PM PEAK HOUR TRAFFIC PROJECTIONS

**Attachment E
PROJECT TRIP ASSIGNMENTS AND
2012 PEAK HOUR TRAFFIC PROJECTIONS**

Attachment F
LEVEL-OF-SERVICE WORKSHEETS FOR 2012
CONDITIONS

HCM Unsignalized Intersection Capacity Analysis
 4: IOLANI STREET & PUKALANI STREET

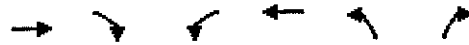
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	↕
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	300	40	6	0	40	130	12	315	0	35	67	290
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	326	43	7	0	43	141	13	342	0	38	73	315
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total (vph)	376	185	355	38	388							
Volume Left (vph)	326	0	13	38	0							
Volume Right (vph)	7	141	0	0	315							
Hadj (s)	0.20	-0.42	0.04	0.53	-0.53							
Departure Headway (s)	7.4	7.5	7.3	8.1	7.0							
Degree Utilization, x	0.77	0.38	0.72	0.09	0.76							
Capacity (veh/h)	463	390	457	420	487							
Control Delay (s)	30.8	15.1	27.2	10.7	27.4							
Approach Delay (s)	30.8	15.1	27.2	25.9								
Approach LOS	D	C	D	D								
Intersection Summary												
Delay			26.1									
HCM Level of Service			D									
Intersection Capacity Utilization			65.5%		ICU Level of Service		C					
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
 5: OLD HALEAKALA HIGHWAY & PUKALANI STREET

3/11/2011



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.47	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	880	1863	1770	1583
Volume (vph)	130	266	286	185	533	286
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	289	311	201	579	311
RTOR Reduction (vph)	0	75	0	0	0	163
Lane Group Flow (vph)	141	214	311	201	579	148
Turn Type	pt+ov		pm+pt		Perm	
Protected Phases	2	2	8	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	9.7	38.8	19.7	19.7	25.1	25.1
Effective Green, g (s)	9.7	38.8	19.7	19.7	25.1	25.1
Actuated g/C Ratio	0.18	0.73	0.37	0.37	0.48	0.48
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	342	1163	429	695	841	753
v/s Ratio Prot	0.08	0.18	c0.08	0.11	c0.33	
v/s Ratio Perm			c0.19			0.20
v/c Ratio	0.41	0.18	0.72	0.29	0.69	0.20
Uniform Delay, d1	19.0	2.1	13.3	11.6	10.8	8.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.1	6.0	0.2	4.6	0.6
Delay (s)	19.8	2.2	19.3	11.9	15.4	8.6
Level of Service	B	A	B	B	B	A
Approach Delay (s)	8.0			16.4	13.0	
Approach LOS	A			B	B	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	52.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 6: OLD HALEAKALA HIGHWAY & MAKANI ROAD

3/11/2011



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↖	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	20	111	176	112	100	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	121	191	122	109	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			281			
pX, platoon unblocked						
vC, conflicting volume	313				416	252
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	313				416	252
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				81	96
cM capacity (veh/h)	1247				582	786

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	22	121	313	109	33
Volume Left	22	0	0	109	0
Volume Right	0	0	122	0	33
cSH	1247	1700	1700	582	786
Volume to Capacity	0.02	0.07	0.18	0.19	0.04
Queue Length 95th (ft)	1	0	0	17	3
Control Delay (s)	7.9	0.0	0.0	12.6	9.8
Lane LOS	A			B	A
Approach Delay (s)	1.2		0.0	11.9	
Approach LOS				B	

Intersection Summary			
Average Delay		3.1	
Intersection Capacity Utilization		28.8%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 4: IOLANI STREET & PUKALANI STREET

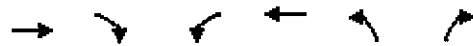
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	↕
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	170	30	5	5	15	95	5	105	5	140	98	335
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	185	33	5	5	16	103	5	114	5	152	107	364
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total (vph)	223	125	125	152	471							
Volume Left (vph)	185	5	5	152	0							
Volume Right (vph)	5	103	5	0	364							
Hadj (s)	0.19	-0.45	0.02	0.53	-0.51							
Departure Headway (s)	6.1	5.7	6.0	6.3	5.2							
Degree Utilization, x	0.38	0.20	0.21	0.27	0.69							
Capacity (veh/h)	548	559	543	553	663							
Control Delay (s)	12.8	10.1	10.5	10.4	17.7							
Approach Delay (s)	12.8	10.1	10.5	15.9								
Approach LOS	B	B	B	C								
Intersection Summary												
Delay			14.0									
HCM Level of Service			B									
Intersection Capacity Utilization			50.4%		ICU Level of Service	A						
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
 5: OLD HALEAKALA HIGHWAY & PUKALANI STREET

3/11/2011



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.32	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	597	1863	1770	1583
Volume (vph)	265	574	344	125	248	436
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	288	624	374	136	270	474
RTOR Reduction (vph)	0	98	0	0	0	297
Lane Group Flow (vph)	288	526	374	136	270	177
Turn Type		pt+ov	pm+pt			Perm
Protected Phases	2	2	8	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	18.3	48.9	36.5	36.5	26.6	26.6
Effective Green, g (s)	18.3	48.9	36.5	36.5	26.6	26.6
Actuated g/C Ratio	0.26	0.69	0.51	0.51	0.37	0.37
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	480	1089	541	956	662	592
v/s Ratio Prot	0.15	0.39	c0.14	0.07	0.15	
v/s Ratio Perm			c0.22			0.30
v/c Ratio	0.60	0.48	0.69	0.14	0.41	0.30
Uniform Delay, d1	23.2	5.2	11.8	9.1	16.4	15.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.3	3.8	0.1	1.9	1.3
Delay (s)	25.2	5.5	15.6	9.2	18.3	17.0
Level of Service	C	A	B	A	B	B
Approach Delay (s)	11.7			13.9	17.5	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	71.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
 6: OLD HALEAKALA HIGHWAY & MAKANI ROAD

3/11/2011



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	↷
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	40	202	336	102	77	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	220	365	111	84	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	476				727	421
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	476				727	421
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				78	97
cM capacity (veh/h)	1086				375	633

Direction, Lane #	EB 1	EB 2	WB 1	SB 1	SB 2
Volume Total	43	220	476	84	22
Volume Left	43	0	0	84	0
Volume Right	0	0	111	0	22
cSH	1086	1700	1700	375	633
Volume to Capacity	0.04	0.13	0.28	0.22	0.03
Queue Length 95th (ft)	3	0	0	21	3
Control Delay (s)	8.5	0.0	0.0	17.3	10.9
Lane LOS	A			C	B
Approach Delay (s)	1.4		0.0	16.0	
Approach LOS				C	

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

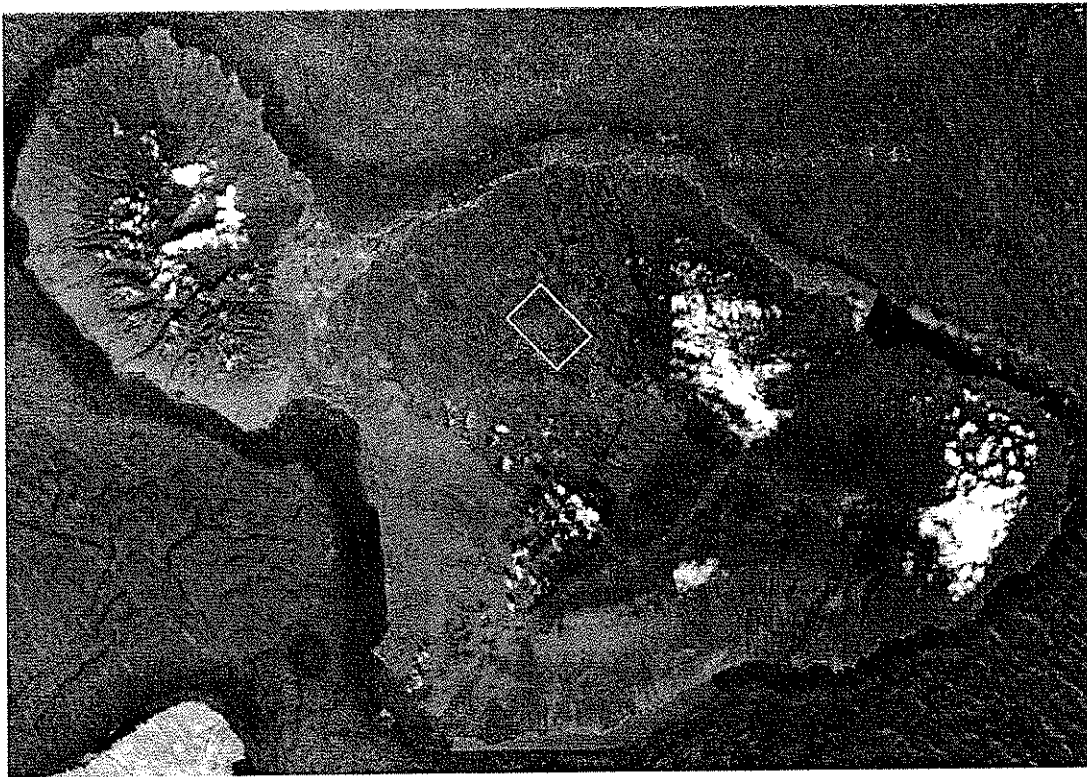
APPENDIX G.

Proposed Pukalani Reverse Osmosis Plant



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e-mail wauono@wvs-us.com

Proposed Pukalani Reverse Osmosis Plant January 2010



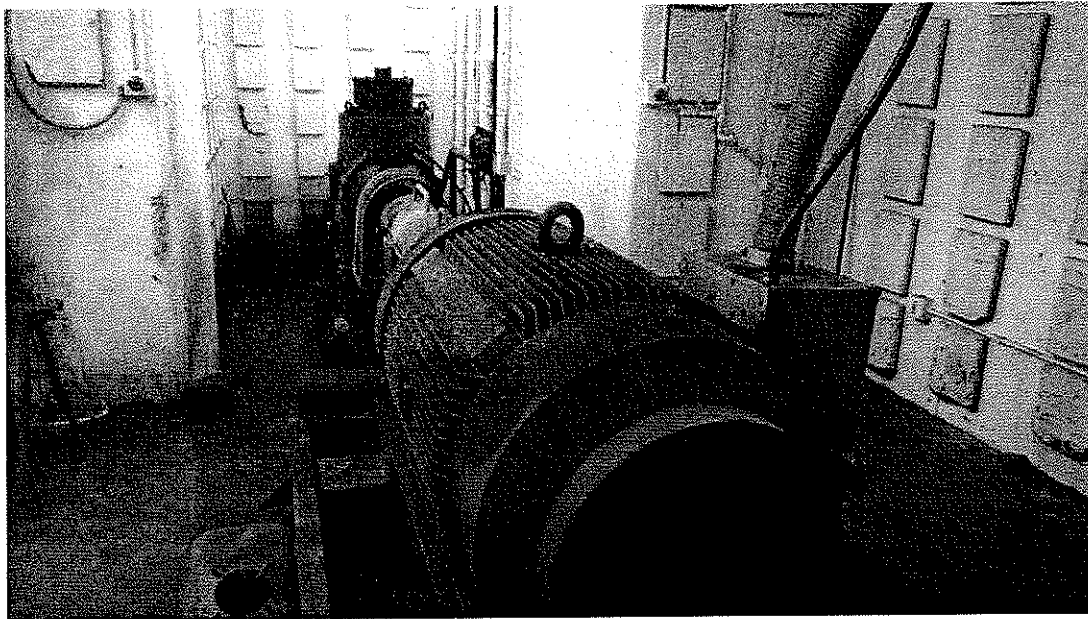
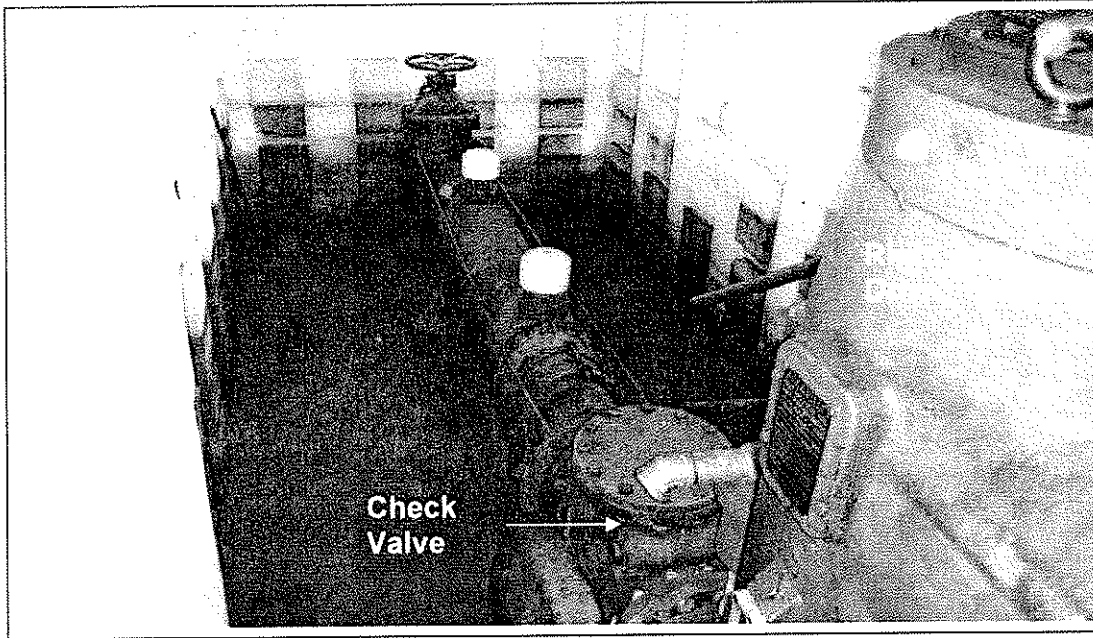
Location Map

K.G. Holdings, LLC., (KG), is proposing to add approximately 78 new lots on TMK parcels (2) 2-3-009-039 and 2-3-008-036 as shown on the attached map . An estimated 100,000 gallons per day of additional potable water supply will be needed to serve the expansion of Pukalani Village.



Because the quantity of water cannot justify by a new well source of such small magnitude, KG is considering the use of the existing irrigation well (5021-01- see map) at elevation 1080' to provide the needed supply. Preliminary sampling shows the well to produce slightly brackish water with about 450 milligrams per liter (mg/l) chloride and 1200 mg/l total dissolved solids.

According to a report in 2002, the well pumps at a rate of 698 gallons per minute (gpm) for 12 hours nightly, 6 days per week. A 450 horsepower motor is connected to a right angle drive, oil lubricated deep well pump (see photos) which operates on a timer.

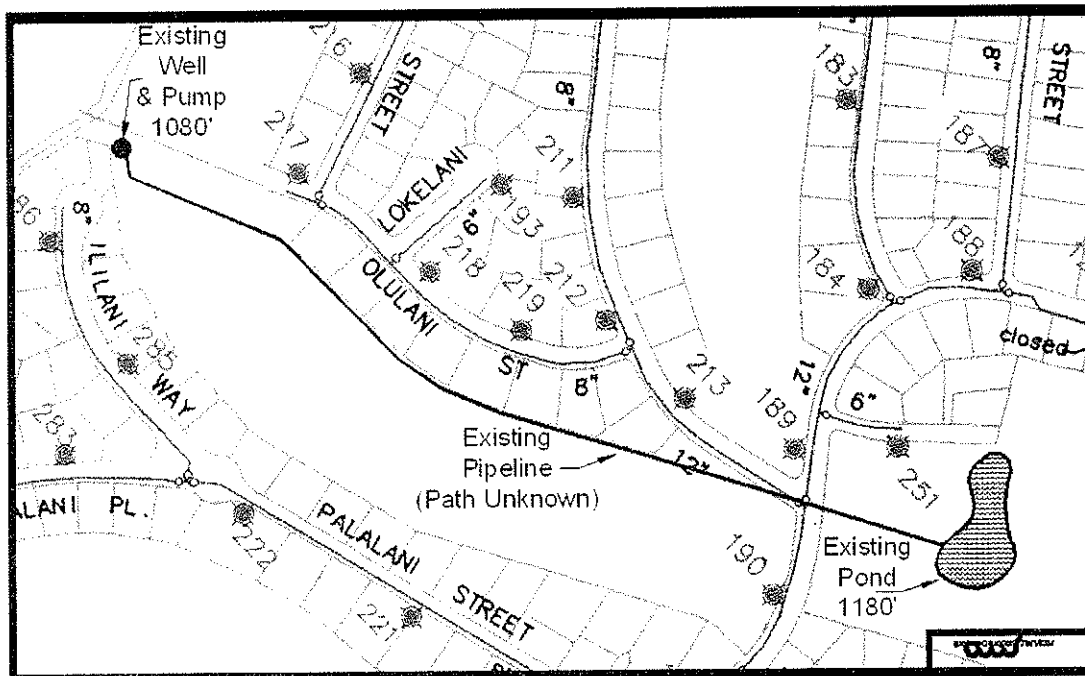


This study is proposes to locate a 100,000 gallon per day (gpd) reverse osmosis desalting plant within the existing golf course adjacent to the well. Water from the well would be diverted to the RO plant at a rate of 280 gpm to produce potable water at a rate of 140 gpm during the night hours of operation.

The existing pipe line from the well to the upper lake would be severed and the well will pump into a new pond located at elevation 1120' via open air discharge. Irrigation water from the new pond would then be pumped to the upper lake with new boosters.

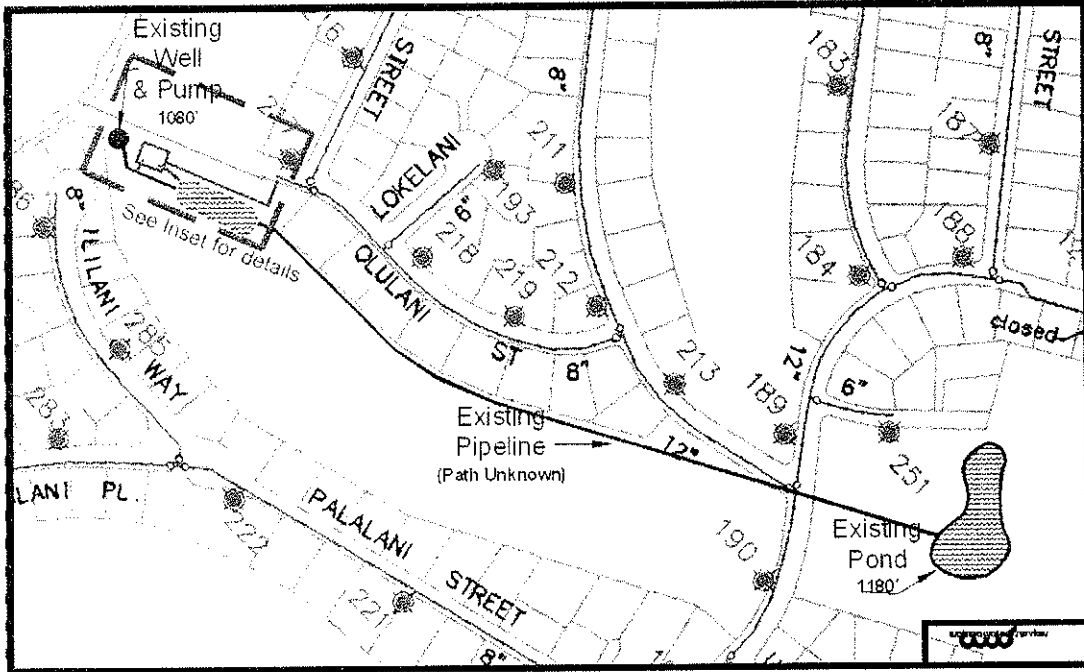
A pipe line "T" will be installed on the existing pump line from the well. Water will be diverted with a solenoid operated valve and enter through a charcoal filter (to remove any residual lube oil) and thence through RO pre-filters. A small 1500 gallon tank will receive the filtered water and booster pumps will operate two trains of reverse osmosis membranes at a pressure of 300 psi. The product water (potable – TDS@ 350 mg/l) will then be disinfected via UV (ultraviolet) system and chlorine will be injected at a residual rate of 1 ppm (part per million) prior to entering a nearby 8 inch DWS water main at a pressure of 150 psi. This pressure will be controlled by the 850,000 gallon reservoir located at spill way elevation of 1433.5'

Existing Layout Showing DWS Pipelines

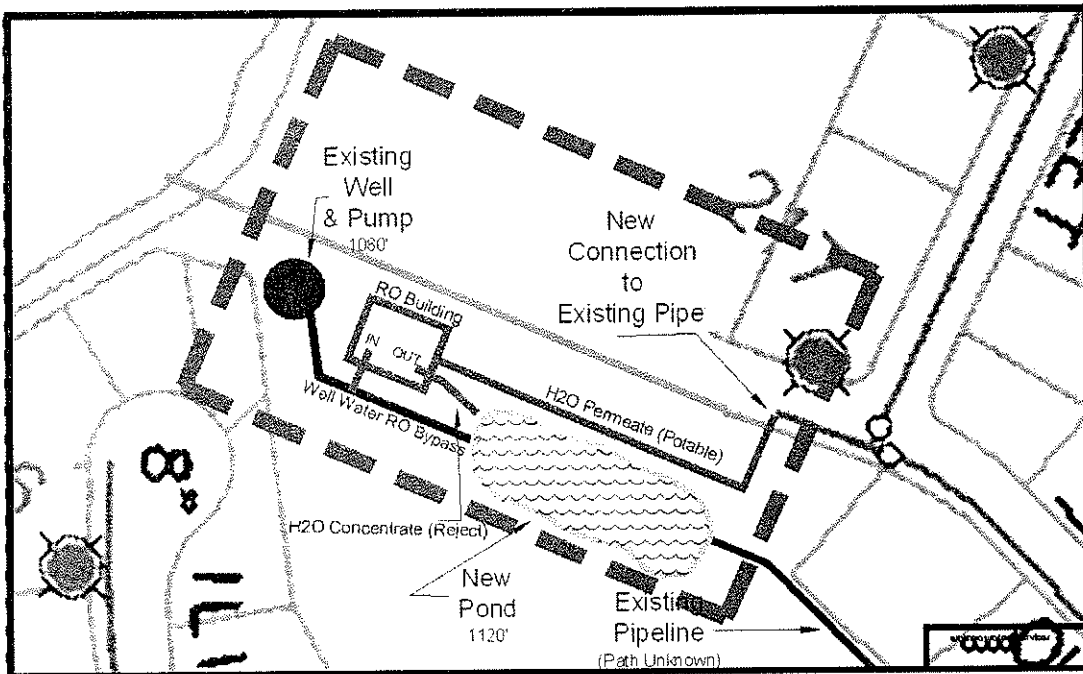


<p>LEGEND</p> <ul style="list-style-type: none"> WATER STORAGE TANK (IN USE) WATER STORAGE TANK (NOT IN USE) WATERLINE 16"-42" WATERLINE 6"-12" WATERLINE 1"-4" VALVE 	<ul style="list-style-type: none"> FIRE HYDRANTS MAINTAINED BY D.W.S. PRIVATE FIRE HYDRANTS MAINTAINED BY OTHERS STANDPIPES MAINTAINED BY D.W.S. PRIVATE WATERLINE PRESSURE REDUCING VALVE PUMP DOUBLE CHECK DETECTOR ASSEMBLY
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Proposed Plan

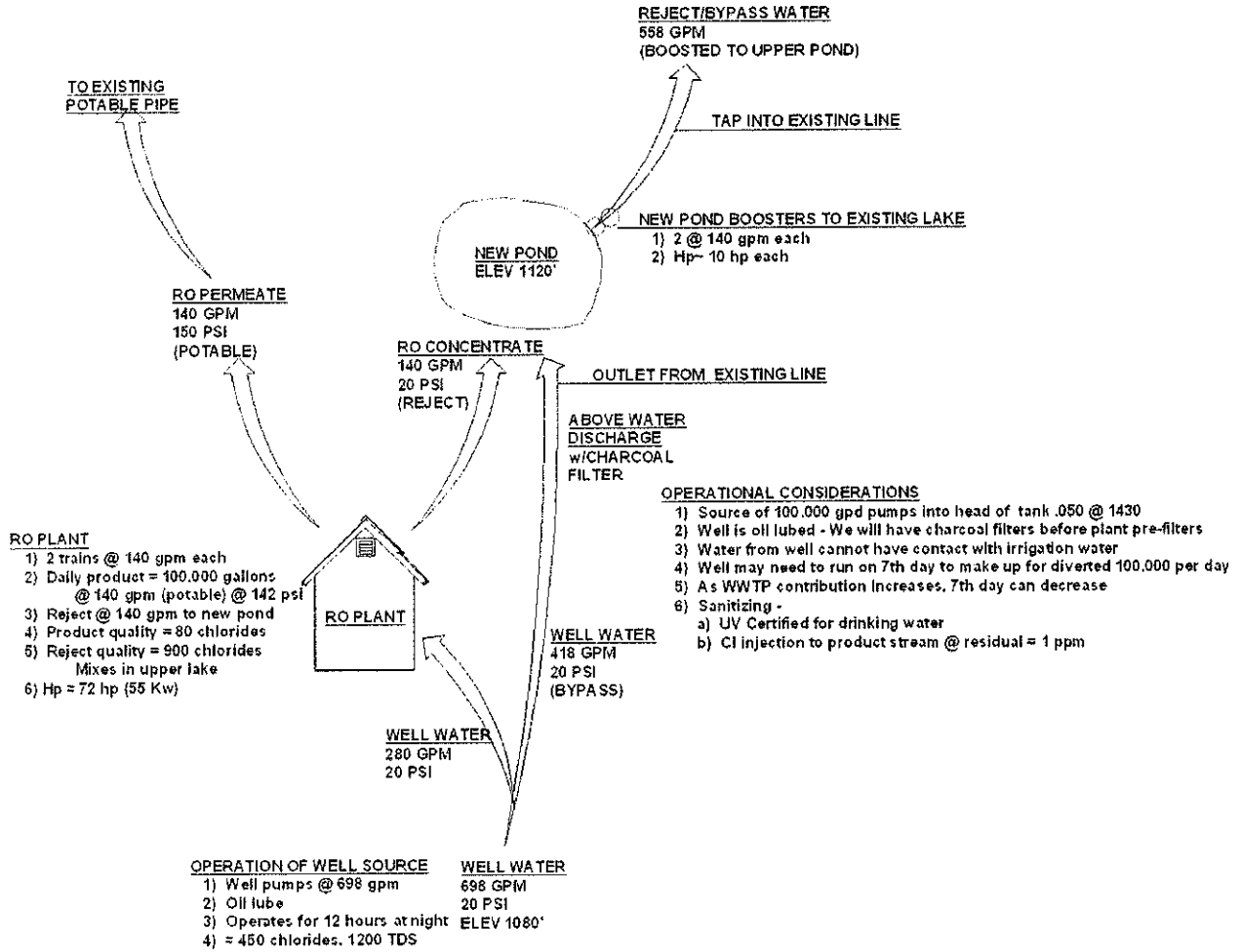


Inset



Water rejected from the plant will be piped to the new 1120' elevation pond. It is anticipated that the salinity of the reject water will be about 900 mg/l chlorides. This water will then re-mix with the direct discharge from the well which will result in an increase in salinity to about 540 mg/l, which is well within the tolerance of the golf course grass.

Pukalani RO Schematic



The new electrical demand will be about 55 KW for the RO facility and 15KW for the booster from the new pond. The estimated delivered energy cost/1000 gallons of the RO water combined with the new booster and the proportion of the well capacity will be:

- RO operation \$1.80
- Well percentage \$1.93
- Pond Booster \$.50

In order to make up for water diverted to potable from the irrigation supply, It may be necessary operate the well for night 7. In addition, during periods of heavy rainfall, the well may have to be operated just for the potable supply or made up from other DWS sources. This could also be made up by anticipating the weather and leaving space in the lower pond near the WWTP.

The proposed RO plant operation will be designed to be automated and monitored remotely (recommended), either within the jurisdiction of the DWS or by a private contractor. It is noted that a similar plant is operating in Kihei on a private system and a number of similar plants operate for both drinking water and irrigation supply in Hawaii County.

It would be appropriate to house the proposed RO system in a small building with a 10' entry at both ends. Dimensions will be about 30' x14' The building may also require a small laboratory and restroom depending on how it is to be serviced. All of the major equipment will be skid mounted. Noise attenuation must be considered in the building setting and design.

APPENDIX H.

Reports of Community Meetings



MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

March 8, 2010

MEETING MEMORANDUM

Date of Meeting: January 14, 2010

From: Leilani Pulmano, Project Manager

Subject: Proposed Pulelehuakea Residential Subdivision

Participants: Carl Van Zweden, *Kulamalu Homeowners Association Board President (with IRS)*
Phyllis Bisordi, *Board Member*
Kathleen Biros, *Board Member*
Joseph Blackburn, II, *Maui Land Broker and Property Management*
Elton Wong, *KG Holdings, LLC*
Leilani Pulamo, *Munekiyo & Hiraga, Inc.*
Michael Munekiyo, *Munekiyo & Hiraga, Inc.*

Meeting Purpose: Early Consultation with Board of Kulamalu Homeowners Association

Elton Wong explained the project, entitlement plan and schedule. The Board's concerns and comments were the following:

1. Carl Van Zweden's number 1 concern is that the Kulamalu side of Aina Lani Drive and Ala Apapa Place were not dedicated to the County. All the inspections were done and approved. The issue is a sewer easement. Dowling's attorney, Tom Welch, is working with Maui County's Corporation Counsel. The Board did not fully understand the issue but is frustrated with the length of time it is taking.
2. Carl Van Zweden's concern with the roadway dedication is that the proposed project's construction would damage the improvements. Elton expressed that construction is 18 to 24 months off so they had time to work on the dedication. If not dedicated by that time, a construction deposit to fix any repairs could be provided.

3. Elton Wong explained the location of the utility connections.
4. The Board does not want ohana units which sometimes turn to rentals. The Board felt that renters do not follow the CC&Rs.
5. The Board inquired about the "building restrictions and CC&Rs". Elton Wong responded that it has not been formulated but would be interested in the Kulamalu HOA's CC&Rs or better. Joe Blackburn will provide Kulamalu's CC&Rs and design guidelines.
6. The Board wants a time limit for homeowners to build their homes. Kulamalu had 3 years from the time of sale to build their home or homeowners would be fined.
7. Construction disturbances were discussed – hours of work, bad workers, dust, etc.
8. Kathleen Biros was concerned about the loss of views. Elton suggested that a view plane analysis be completed.
9. Carl Van Zweden recognized there was zoned property on the golf course side of the Kulamalu homes and they would want to ensure that nothing gets built there.
10. The Board members want to be kept informed as project progresses.
11. In general, the Board seemed supportive.



Leilani Pulmano, Project Manager

LP:lfm

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MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

February 11, 2010

MEETING MEMORANDUM

Date of Meeting: January 20, 2010 (6:00 p.m.)

From: Leilani Pulmano, Project Manager

Subject: Proposed Pulelehuakea Residential Subdivision

Participants: Leilani Pulmano & Michael Munekiyo - Munekiyo & Hiraga, Inc.
Elton Wong – KG Holdings, LLC
Ron Huffman – Pukalani Country Club Golf Course
There were about 30 homeowners in the audience primarily from the Kulamalu Subdivision and Liholani Villas

Meeting Purpose: Early Consultation with Homeowners within 500 Feet of the Project Site

Leilani explained the project, entitlement plan and schedule to the audience. Then there were questions and answers. Below are questions, comments, and responses.

1. Elton mentioned that the project team met with the Smith and Nason families individually. A neighbor asked what the Smith and Nason's concerns were. We replied that construction damage and disturbances were pointed out as areas of concerns.
2. A neighbor asked to be kept informed and to broaden the invitation to a larger area of Pukalani.
3. A neighbor asked about the size of the lots which ranges from 15,000 to 37,000 square feet.
4. A neighbor asked where the utilities would be connected, which brought up the water source issue. There is rationing in the Upcountry area which should lead to a building moratorium because of lack of water. We responded that we were considering buying water credits from Dowling Company, a developer, and working on other options.
5. A neighbor asked about sewer capacity and thought that there were some restrictions. We replied that the sewage treatment plant was expanding and that we would check on any restrictions.

6. A neighbor expressed concerns about stormwater runoff. We explained the proposed drainage system.
7. Views were an important issue. A neighbor suggested restricting the proposed building heights to one story. We replied that a view plane study would need to be done.
8. A neighbor proposed that the project's access road come up between the two fairways and not through the Kulamalu Residences. We replied that it was much less feasible and that we had an easement over the Aina Lani Drive, which some homeowners agreed we had.
9. We talked about cutting trees on the Golf Course and one neighbor asked why has he not be able to get a tree cut. He later spoke to Ron directly about his situation.
10. A neighbor asked Ron about the plans to rebuild the golf course club house and felt this needed to be done before the proposed project.
11. A neighbor wanted to understand how sales would work. We explained that all options are available at this time such as, but not limited to:
 - a. KG Holdings sells entire parcel to one builder.
 - b. KG Holdings sells individual parcels.
 - c. KG Holdings sells individual parcels and approve builders to build the homes.
12. A follow up question was why do the entitlement now when there is no market. We replied that this is the time to get ready for the next upswing.
13. Phyllis Bisordi pointed out the zoned property on the golf course side of the Kulamalu homes along Ala Apapa Place and the neighbors would want to ensure that nothing gets built there by rezoning it to PK, GC Park (Golf Course). A neighbor requested that it be done at the same time as the project's change in zoning.
14. A neighbor requested us to do some research on the litigation between Sports Shinko & KG Holdings regarding parcels of land.

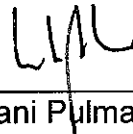
Construction Related Comments

15. A neighbor wanted to know what the construction hours would be. It was noted that construction hours could be limited and could be in the project's CC&R's. Construction should be 8 to 10 months in duration for the subdivision.
16. A neighbor wanted to know if a dust fence would be erected. We responded in the affirmative.
17. A neighbor wanted to know the extent of construction and the grading. We replied that import and export of material would be limited; the current grades fall nicely.
18. We said that we would provide a construction contact phone number for 24-hour access.

Homeowner Related Issues

19. A neighbor asked if the CC&Rs were developed. We replied no, but we would be reviewing Kulamalu's CC&Rs.

20. A neighbor wanted there to be a time limit for homeowners to build their homes. Kulamalu had 3 years to build their home or be fined. We said that it would be considered. A few wanted this provision included in the CC&Rs.
21. The #1 concern is the Kulamalu side of Aina Lani Drive and Ala Apapa Place were not dedicated to the County. We could not fully address the issue since we did not understand the extent of the issue.
22. The concern is Kulamalu HOA owned roadway could be damaged by the project construction. We expressed that construction is several months off so they had time to work on the dedication. If not dedicated by that time, we could talk about a construction deposit to fix any repairs. We also added that the new homeowners could be part of the Kulamalu HOA that could distribute costs over more homeowners; however getting an annexation could be difficult because of votes needed to approve.
23. A neighbor asked about ohana units. We replied that ohana units could be restricted.



Leilani Pulmano, Project Manager

LP:tn

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MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

March 19, 2010

MEETING MEMORANDUM

Date of Meeting: March 9, 2010
From: Leilani Pulmano, Project Manager
Subject: Proposed Pulelehuakea Residential Subdivision
Participants: Members of the Kulamalu Homeowners Association Subcommittee

John Biros, 33 Ala Apapa Place, 808.573.9139
Richard Bisordi, 47 Ala Apapa Place, 808.214.5552
Boyd Mossman, 121 Ala Apapa Place, 808.244.2121
Bob Randolph, 2917 Aina Lani Drive
Carl Van Zweden, 3036 Aina Lani Drive

Elton Wong, KG Holdings, LLC
Leilani Pulmano, Munekiyo & Hiraga, Inc.

Meeting Purpose: Continue discussion with the members of the Kulamalu Homeowners Association (HOA) Subcommittee for the proposed project regarding HOA concerns.

1. Views

The subcommittee was concerned about view planes and view corridors. E. Wong explained that ribbons were tied to the pine trees, closest to the Kulamalu homes, adjacent to the project site, at 30 feet (orange ribbons) and 40 feet (yellow ribbons), to get a better understanding of the view planes. Unfortunately, the ribbons did not give a clear picture of the potential view planes. First, the ribbons should have been set at 20 feet and 30 feet. Second, the elevations were based on the golf course elevations. Third, the elevations for some of the Kulamalu homes are higher than the golf course elevations.

E. Wong stated that a cherry picker set at 30 feet may produce better results. He will inform the subcommittee when the cherry picker will be available. The subcommittee requested to be included on the view plane walk through.

A discussion on the differences between view planes and view corridors ensued. The group agreed that view planes would take a higher priority than view corridors as view corridors can be subjective to each Kulamalu homeowner.

In regards to protection of views, E. Wong expressed that the view plane analysis must first be completed to get a better understanding of the impacts. He stated that restrictions could be placed on the proposed project to protect views. To that end, he requested that a memorandum of understanding (MOU) be developed to outline the HOA's request for protection of views in return for the support of the proposed project.

2. Roadway Dedication to County

C. Van Zweden provided an update on the roadway dedication. He stated that the County has requested another inspection of the improvements. Once the inspection has been completed, the roadway dedication agreement with the County can move forward.

C. Van Zweden expressed the homeowners' concern on the HOA's liability of the roadway if it is not dedicated to the County. He requested that the proposed project share liability and costs of repairs and maintenance for the roadway if the roadway is not dedicated. He also requested that a construction deposit be provided if the roadway is not dedicated at the time of construction. E. Wong responded by asking that a MOU be established to outline each parties rights and obligations.

3. Downzoning

The subcommittee requested that the proposed project include the downzoning of the residential zoned areas on the golf course fronting homes along Aina Lani Drive and Ala Apapa Place as part of the Community Plan Amendment (CPA) and Change in Zoning (CIZ) applications. E. Wong responded by asking that this request be added in the MOU in return for support of the project.

4. Sewer Treatment Plant Capacity

As a follow up to the January 20, 2010 community meeting, E. Wong stated that the Pukalani Sewer Treatment Plant has plans to increase capacity and will be able to provide service to the proposed project.

5. Sports Shinko Litigation

As a follow up to the January 20, 2010 community meeting, E. Wong stated that the Sports Shinko litigation was settled in favor of Kobayashi.

6. Water

C. Van Zweden inquired about the availability of water. E. Wong stated that the County is not providing water to the proposed project. A water source will need to be identified during subdivision process. He stated that he is looking into a new water source or there is a potential to purchase water credits from Dowling Company, Inc.

7. Trees

The subcommittee wanted to confirm that there may be an opportunity for trees to be removed or trimmed. E. Wong stated that this issue will need to be discussed with the Pukalani Country Club Golf Course. B. Mossman requested that trees in front of his home not be removed as he prefers "tree" views. The subcommittee was divided on the issue of removing trees.

8. Drainage

C. Van Zweden inquired about a 37,000 square feet lot. E. Wong explained that this lot included a retention basin to hold any increased runoff. The basin would be maintained by the proposed project's association.

9. Utility Connections

C. Van Zweden inquired about the utility connections. L. Pulmano explained the majority of the utility connections are located in the stub out street that accesses the proposed project. The sewer connection is within the golf course.

C. Van Zweden's concern regards the construction of the connections and the resulting repairs to the road to get it back up to standards. E. Wong confirmed that any roadway damage due to construction will be repaired by the proposed project.

10. Three Year Building Restriction

E. Wong explained that this restriction may be too onerous. The subcommittee didn't think that this was a significant issue.

11. MOU

The subcommittee is looking for some assurances on the roadway issues, view planes, and downzoning. E. Wong suggested that a MOU be written that could be recorded and run with the land to provide assurances in exchange for the HOA's support of the proposed project. The subcommittee will send a list of issues to E. Wong that they would like the MOU to address. Once the list is received, E. Wong will draft the MOU.



Leilani Pulmano, Project Manager

LP:tn

cc: Elton Wong, KG Holdings, LLC
Joseph Blackburn, Maui Land Broker & Property Management
Boyd Mossman, Kulamalu HOA Subcommittee

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MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY

April 5, 2010

MEETING MEMORANDUM

Date of Meeting: March 24, 2010

From: Leilani Pulmano, Project Manager

Subject: Pulelehuakea Residential Subdivision

Participants: Board Appointed Kulamalu HOA Members - Boyd Mossman, John Biros, Robert Bisordi and Robert Randolph
Elton Wong – Kobayashi Group
Leilani Pulmano - Munekiyo & Hiraga, Inc.

Meeting Purpose: View Planes Analysis from the Surrounding Homes

The group walked the lots and agreed that only a few homes would be impacted by the proposed subdivision homes – two (2) lots in particular, Biros (33 Ala Apapa Place) and Bisordi (47 Ala Apapa Place).

The makai views were not impacted for the other homes on Ala Apapa Place because the homes rose in elevation or the pine trees were the predominant views. For the homes that had tree views, there were still view corridors around the proposed project site.

The ocean views for homes below 33 Ala Apapa Place was south of the proposed project.

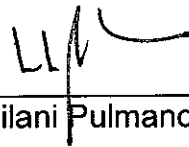
The cherry picker was placed at certain locations within the subdivision plan. See the attached location map. The cherry picker was placed 30 feet above existing grade to the top of the bucket.

The view from Bisordi's home (47 Ala Apapa Place) was slightly impacted by the cherry picker. The cherry picker blocked a small portion of the shoreline when placed at location A.

The views from Biros' home (33 Ala Apapa Place) were not impacted by the cherry picker in locations A, B, and C. At locations B and C, the cherry picker was just visible behind a cluster of trees.

Robert Bisordi asked if the homes on Lots 1 and 2 could be limited to 25 feet in height.

L. Pulmano took pictures of the views from the cherry picker. She said there are great bi-coastal views at 15 to 20 feet (second story) at Locations A and B.



Leilani Pulmano, Project Manager

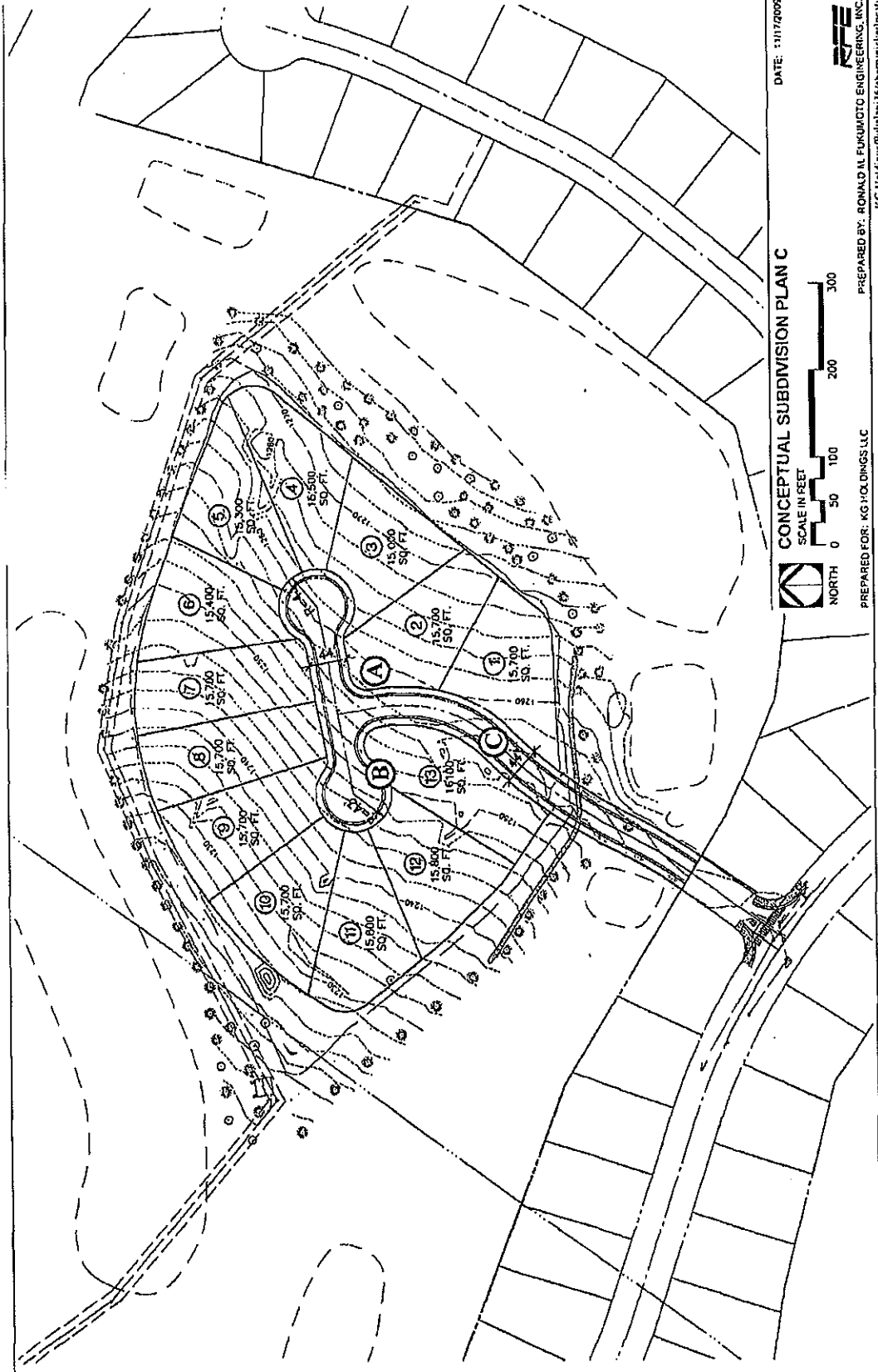
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Attachment

cc: Elton Wong, Kobayashi Group

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**Approximate Location of Cherry Picker Placed at
30' Above Grade to Top of Bucket
(March 24, 2010)**



DATE: 11/17/2009
CONCEPTUAL SUBDIVISION PLAN C
 SCALE IN FEET
 NORTH 0 50 100 200 300
 PREPARED FOR: KG HOLDINGS LLC
 PREPARED BY: RONALD AL. FUKUMOTO ENGINEERING, INC.
 RFE
 KG Holdings\Putahan\16cherry\p16cherry\kcblocan