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**DRAFT  
ENVIRONMENTAL  
ASSESSMENT**

**KĀWILI STREET  
STUDENT HOUSING PROJECT**

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TMK: (3) 2-4-01:116  
107 West Kāwili Street  
Waiākea Cane Lots, South Hilo, Island of Hawai'i

Prepared for:  
Honpa Hongwanji Hilo Betsuin

Sidney Fuke  
Planning Consultant

July 2008

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**APPENDICES**

**APPENDIX**

- A Letter of Authorization from Landowner
- B *Archaeological Assessment-TMK: (3) 2-4-01:116, Land of Waiakea, South Hilo District, Island of Hawaii*; Haun & Associates, January 2008  
State Historic Preservation Division Letter dated February 19, 2008  
State Historic Preservation Division Letter dated March 17, 2008
- C *Traffic Impact Analysis Report*, TMK: (3) 2-4-01:116, M&E Pacific, Inc., June 2008.  
Note: Standard Appendices A, B, and C were provided in TIAR to DPW and DOT, but are not included in the EA. Appendices are available upon request.
- D Letter from Planning Director Christopher J. Yuen to Dennis J. Hirota, Hawaii Kahi LLC, dated October 24, 2007

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### LIST OF ACRONYMS AND ABBREVIATIONS

ALISH	Agricultural Lands of Importance to the State of Hawai'i
CDP	Census Designated Place
CZM	Hawai'i Coastal Zone Management
DBEDT	State Department of Business Economic Development & Tourism
DEM	Department of Environmental Management
DLNR	State Department of Land and Natural Resources
DOH	State Department of Health
DWS	County of Hawai'i Department of Water Supply
EA	Environmental Assessment
EIS	Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
HAR	Hawai'i Administrative Rules
HCC	Hawai'i Community College
HELCO	Hawai'i Electric Light Company
HHHB	Honpa Hongwanji Hilo Betsuin
HRS	Hawai'i Revised Statutes
LSB	Land Study Bureau
LUC	State Land Use Commission
LUPAG	Land Use Pattern Allocation Guide
mgd	million gallons per day
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination Systems
NRCS	U.S. Department of Agriculture Natural Resources Conservation Services
OEQC	Office of Environmental Quality Control
SHPD	State Historic Preservation Division
SMA	Special Management Area
TIAR	Traffic Impact Analysis Report
TMK	Tax Map Key
UH	University of Hawai'i
UIC	Underground Injection Contro

### HAWAIIAN WORD DEFINITIONS

- Abupua'a* Land division usually extending from the uplands to the sea, so called because the boundary was marked by a heap (*abu*) of stones surmounted by an image of a pig (*pua'a*).
- Mauka* Inland, or directionally towards the mountain

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## **1.0 SUMMARY**

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# KĀWILI STREET STUDENT HOUSING PROJECT

## Draft Environmental Assessment

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### 1.0 SUMMARY

This Draft Environmental Assessment (EA) is prepared in accordance with Chapter 343, *Hawai'i Revised Statutes* (HRS), for the proposed Kāwili Street Student Housing Project (the "Project") at Waiākea, South Hilo, Island of Hawai'i.

<b>Project Name:</b>	Kāwili Street Student Housing Project
<b>Location and Address:</b>	107 West Kāwili Street Island of Hawai'i, Hilo, Waiākea Cane Lots, Hawai'i
<b>Judicial District:</b>	Hawai'i
<b>Landowner:</b>	Honpa Hongwanji Mission of Hawaii
<b>Applicant:</b>	Honpa Hongwanji Hilo Betsuin
<b>Tax Map Key:</b>	(3) 2-4-01:116
<b>Project Area:</b>	4.0± acres
<b>Existing Uses:</b>	Single-family residential dwellings
<b>Proposed Use:</b>	106-unit multi-level student housing facility, maximum 400 beds; multi-level parking structure; related common area amenities
<b>Land Use Designations:</b>	State Land Use: Urban General Plan: Medium Density Urban County Zoning: Single-Family Residential (RS-10) Special Management Area (SMA): Not in SMA
<b>Permits/ Approvals Required:</b>	Compliance with Chapter 343, HRS Change of Zone Plan Approval Grading/Building Permit Driveway Permit/Right-of-Way Construction NPDES Permit Underground Injection Control (UIC) Permit
<b>Chapter 343 Trigger:</b>	Use of State or County lands – County Road Improvements
<b>Approving Agency:</b>	County of Hawai'i Planning Department
<b>Anticipated Determination:</b>	Finding of No Significant Impact (FONSI)

# KĀWILI STREET STUDENT HOUSING PROJECT

## Draft Environmental Assessment

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**Action Requested:** Change of Zone from RS-10 to RM-1.5  
Plan Approval

### **Agencies and Departments Consulted:**

#### County

Department of Environmental Management (DEM) – Wastewater Division  
Department of Public Works – Engineering Division  
Department of Water Supply  
Fire Department  
Planning Department  
Police Department  
Office of Housing and Community Development

#### State

Department of Land and Natural Resources (DLNR), State Historic Preservation  
Division (SHPD)  
University of Hawai'i at Hilo (UH Hilo)

### **Involvement in the Draft EA**

The following identifies individuals and organizations involved in the preparation of the Draft EA and their respective contributions:

Honpa Hongwanji Hilo Betsuin

Sidney Fuke, Planning Consultant  
Project Coordinator

Hawaii Kahi LLC  
Project Facilitator

Place Properties  
Project Developer

Makani Resources, Constance R. Kiriu  
Preliminary Drafting of EA

#### Technical Consultants

Haun & Associates  
M & E Pacific

Archaeological Assessment  
Traffic Impact Analysis Report

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## **2.0 PROJECT DESCRIPTION AND EA PROCESS**

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**KĀWILI STREET STUDENT HOUSING PROJECT**  
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## **2.0 PROJECT DESCRIPTION AND EA PROCESS**

### **2.1 PROJECT LOCATION**

Kāwili Street Student Housing Project (the “Project”) will be located in the City of Hilo in the Waiākea Cane Lots, South Hilo, County of Hawai‘i. Specifically, the 4.0-acre parcel is located on the southern corner of the Kāwili/Kino‘ole Street intersection adjacent to and below the Waiākea High School campus ([Figure 1](#)), and is identified by Tax Map Key (TMK): 2-4-01:116 (the “Property”) ([Figure 2](#)).

### **2.2 LAND OWNERSHIP**

Honpa Hongwanji Mission of Hawaii is the landowner of the Property.

### **2.3 APPLICANT**

Honpa Hongwanji Hilo Betsuin (HHHB), a branch temple of Honpa Hongwanji Mission of Hawaii, is the applicant requesting governmental permits and approvals. HHHB is an eleemosynary Shin Buddhist organization established in 1889. It is the oldest Shin organization in the West. After careful study, HHHB seeks to provide student housing on its Property to meet the needs and demands of the educational community. HHHB has been authorized by the landowner to proceed with all permits and approvals for the project ([Appendix A](#)).

Contact:       Byron Fujimoto, HHHB President  
                  Church Address: 398 Kīlauea Avenue  
  Hilo, Hawai‘i 96720  
                  Church Phone: (808) 961-6677 / Church Fax: (808) 935-9677  
                  President’s Phone: (808) 935-0871

### **2.4 APPROVING AGENCY**

In accordance with Chapter 343, HRS, for private entities, the agency issuing the major permit is the approving agency. In this instance, the County of Hawai‘i Planning Department is the agency responsible for reviewing the Project’s plans for plan approval following the legislative change of zone action.

Contact:       Christopher J. Yuen, Planning Director  
                  101 Pauahi Street, Suite 3  
                  Hilo, Hawai‘i 96720-3034  
                  Phone: (808) 961-8288 / Fax: (808) 961-8742

### **2.5 PLANNING CONSULTANT**

The planning consultant is Sidney Fuke.

Contact:       Sidney Fuke, Planning Consultant  
                  100 Pauahi Street, Suite 212  
                  Hilo, Hawai‘i 96720  
                  Telephone: (808) 969-1522 / Fax: (808) 969-7996

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### 2.6 COMPLIANCE WITH STATE OF HAWAII AND HAWAII COUNTY ENVIRONMENTAL LAWS

The preparation of an Environmental Assessment (EA) is being undertaken to address requirements of Chapter 343, HRS, and the Department of Health's (DOH) Title 11, Chapter 200, HAR, Environmental Impact Statement Rules. Section 343-5, HRS, establishes nine "triggers" that require compliance with these regulations. The trigger for Kāwili Street Student Housing includes, but may not be limited to, the following:

- The use of County land due to proposed highway intersection improvements on Kāwili Street and possible related infrastructure improvements for water, sewer, drainage or other facilities.

While the specific nature of each improvement is not known at this time, the EA is intended to address all current and future instances involving the use of County lands relating to Kāwili Street Student Housing Project.

A finding of no significant impact (FONSI) is anticipated.

The EA will also be used as the County Environmental Report to accompany HHHB's Change of Zone Application in accordance with Chapter 25-1-5, 25-2-42(a), Hawaii County Code, and Rule 14 of the Planning Department relating to County Environmental Reports.

### 2.7 EXISTING AND SURROUNDING USES

**Existing Uses.** The 4.0-acre rectangular Property contains ten single family dwelling rental units, which are surrounded by lawn. Banana plants line portions of the Property's fenced boundaries. Photographs of the Project site are provided in [Figure 3](#). HHHB will be notifying dwelling unit residents of the need to move at least six months prior to removal of the units.

**Surrounding Uses.** Surrounding uses and zonings are identified in [Figure 4](#) as follows:

- South, southwest and southeast: Waiākea High School surrounds the rectangular-shaped Property on its southern, southwestern and southeastern boundaries. The RS-10 zoned parcel is over 90 acres in size, and is identified by TMK: 2-4-01:15. The Waiākea High School lot is under the auspices of the State of Hawaii Department of Education.
- Northwest: Kāwili Street bounds the Property to the northwest. Across Kāwili Street, the Hawaii Island Veterans' Memorial Project is planned on the currently vacant lot, which is leased from the County of Hawaii following its transfer by State Executive Order Nos. 4014 and 4108. The Veterans' Memorial Project was rezoned from Open to RM-1 in 2007, and is identified by TMK: 2-4-57:001.
- North: A 7-Eleven Convenience Store is located across Kāwili Street to the north, is commercial zoned (CN-10), and is identified by TMK: 2-2-26:20.
- East: An abandoned Railroad Right-of-Way abuts the eastern boundary. This right-of-way is under the jurisdiction of the Department of Land and Natural Resources (DLNR).

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- East-Northeast: Residences are established more than 30 feet to the east-northeast direction of the Project site. The lots are zoned RS-10, and are part of the Waiākea Homesteads Houselots.

UH Hilo and the *mauka* campus of the Hawai'i Community College (HCC) are located about 1,000 feet to the west of the Property off Kāwili Street. UH Hilo is a four-year accredited state university having an enrollment of 3,457 students (2007-2008). Its main campus is 115 acres in size with satellite sites housing the UH Hilo Science and Technology Park, Pana'ewa Farm, Pacific Aquaculture and Coastal Resource Center, and China-U.S. Center (to be developed).

HCC is a two-year community college with an estimated enrollment of 2,600 students (Hilo and Kona campuses) situated three blocks away from the Property. HCC offers three degrees and two certificates to its students.

### 2.8 PROJECT DESCRIPTION

The Applicant, Honpa Hongwanji Hilo Betsuin, proposes to lease the Property to an Atlanta-based company, Place Properties, who would design, build, finance and operate a student housing facility called Kāwili Street Student Housing Project. The Project would be financed, in part, with tax-exempt bonds, and managed by private firms working on behalf of a not-for-profit owner.

Kāwili Street Student Housing Project is planned as a 106-unit, maximum 400-bed, three-story rental facility with appurtenant multi-level parking and related common area amenities, such as study areas, computer lab area, club room, fitness room and a game room. The facility would house these uses in one building with a gross building area of 461,000 square feet (apartments=333,400 square feet; parking=127,600 square feet). [Figure 5](#) is a conceptual site plan of the Project.

Place Properties specializes in student and faculty housing and other educational facilities. It currently manages 25,000 student beds on 33 University campuses on the mainland, and has developed over \$500 million in student housing and educational complexes.

Table 1 provides the specific information about the Project:

Unit Clusters	106 Unit Clusters
Unit Mix	24 – 3 bedroom/3 bath unit clusters 82 – 4 bedroom/4 bath unit clusters
Total Beds	400 beds
Total Parking Stalls	400 stalls
Number of Buildings	One
Gross Building Area	Apartments - 333,400 sq. ft. Parking - 127,600 sq. ft.
Building Height	50 feet
Number of Stories	Apartments - 3 stories Parking - 4 stories
Exterior common area amenities	Passive recreational areas

## KĀWILI STREET STUDENT HOUSING PROJECT Draft Environmental Assessment

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All unit clusters (3-bedroom and 4-bedroom types) have kitchens with a dishwasher, a refrigerator with ice maker, a microwave oven, a garbage disposal, a dining counter, a washer-dryer, and furnished living areas. [Figures 6 and 7](#) illustrate a typical layout for 3 bedroom/3 bathroom and 4 bedroom/4 bathroom unit types.

An attached 4-level parking structure would contain 392 parking stalls on deck and 8 parking stalls on grade. The 400 parking stalls proposed for the Project is nearly three times the 133 parking stalls required by the Zoning Code (1.25 stalls per apartment unit).

The student housing facility, including the parking structure, would be built to a maximum height of 50 feet. This height is substantially less than the 120 feet permitted by the requested RM-1.5 zoning. [Figure 8](#) provides a preliminary conceptual elevation plan of the Project from Kāwili Street.

The rental rate is projected to be set at \$975 per month per bed computed on a 12 month average, plus tax. In an academic year, the total rent would be approximately \$8,775. Rent includes all utilities except telephone, premium cable service, internet service, and state gross excise tax. It should be noted that the rental rate is an estimate that may be revised depending upon construction and operating costs at the time of project completion. Each bed in a unit cluster would be rented to the student under separate contract in order to limit the student's contractual liability. The projected rental rate is comparable to the rate proposed by the China-U.S. Center (\$983/month) or charged at UH Manoa's Freer Hall (\$944/month). Bedrooms at the Kāwili Street Student Housing Project would be larger in size, each bedroom would have a private bath, and all unit clusters would have kitchens—differentiating itself from the UH dormitories.

The target market for the Project would be students attending the UH Hilo (primary market) and HCC (secondary market) ([Figure 9](#)).

### 2.9 NEED AND OBJECTIVES OF THE PROPOSED PROJECT

The objective of the Kāwili Street Student Housing Project is to provide apartment housing opportunities to students attending UH Hilo and HCC. There is a shortage of diverse housing stock available for rent close to these institutions. This condition has limited the opportunity for the UH campuses to expand their non-resident student enrollment. For those students who do attend the schools, the lack of housing close to campus forces students to find rental units some distance away, creating a situation where students must drive to school. The Project would assist UH Hilo to reach its strategic planning goal of becoming a premier residential campus that offers a variety of services for students and faculty.

UH Hilo's China-U.S. Center proposes to build an International Hostel comprised of residential halls, visitor suites, and family lodging units to meet the student and visitor housing needs of the campus. The facilities would be built in increments beginning in Phase I and continuing throughout the duration of the project (China-U.S. Center, Final EIS, 2002). Groundbreaking and startup of the Center have been delayed.

The Kāwili Street Student Housing Project will help to service the current housing shortage, and offers an expanded residential dimension to future recruiting efforts when the China-U.S. Center is underway.

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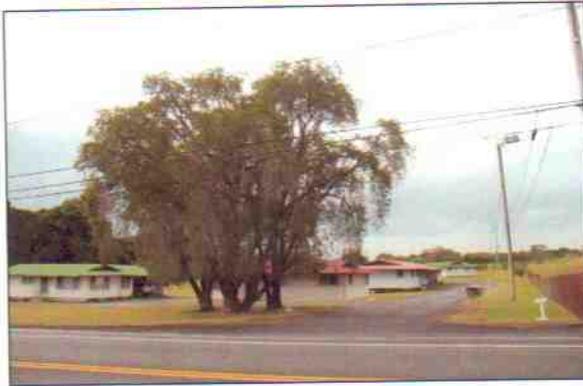
### 2.10 PROJECT SCHEDULE AND COST

Construction of the Kāwili Street Student Housing Project is expected to start promptly after receiving all required government approvals and permits. It is estimated to take 14-16 months for construction. Kāwili Street Student Housing Project is anticipated to be open for occupancy in the year 2011.

The Project, inclusive of off-site infrastructure, is estimated to cost \$40 to \$50 million.

## FIGURE 3

### PROJECT SITE PHOTOGRAPHS



A. View of existing driveway entrance to Property from Kāwili Street



B. View of residences from northern corner of Property. Drywell on DLNR lot. Waiākea High School in background



C. View of residences from rear corner (southeast) of Property looking towards Kāwili Street



D. Homes and cul-de-sac at the rear of Property. Waiākea High School in background



E. View of residences from Kāwili Street. Waiākea High School campus grounds in foreground and to the right

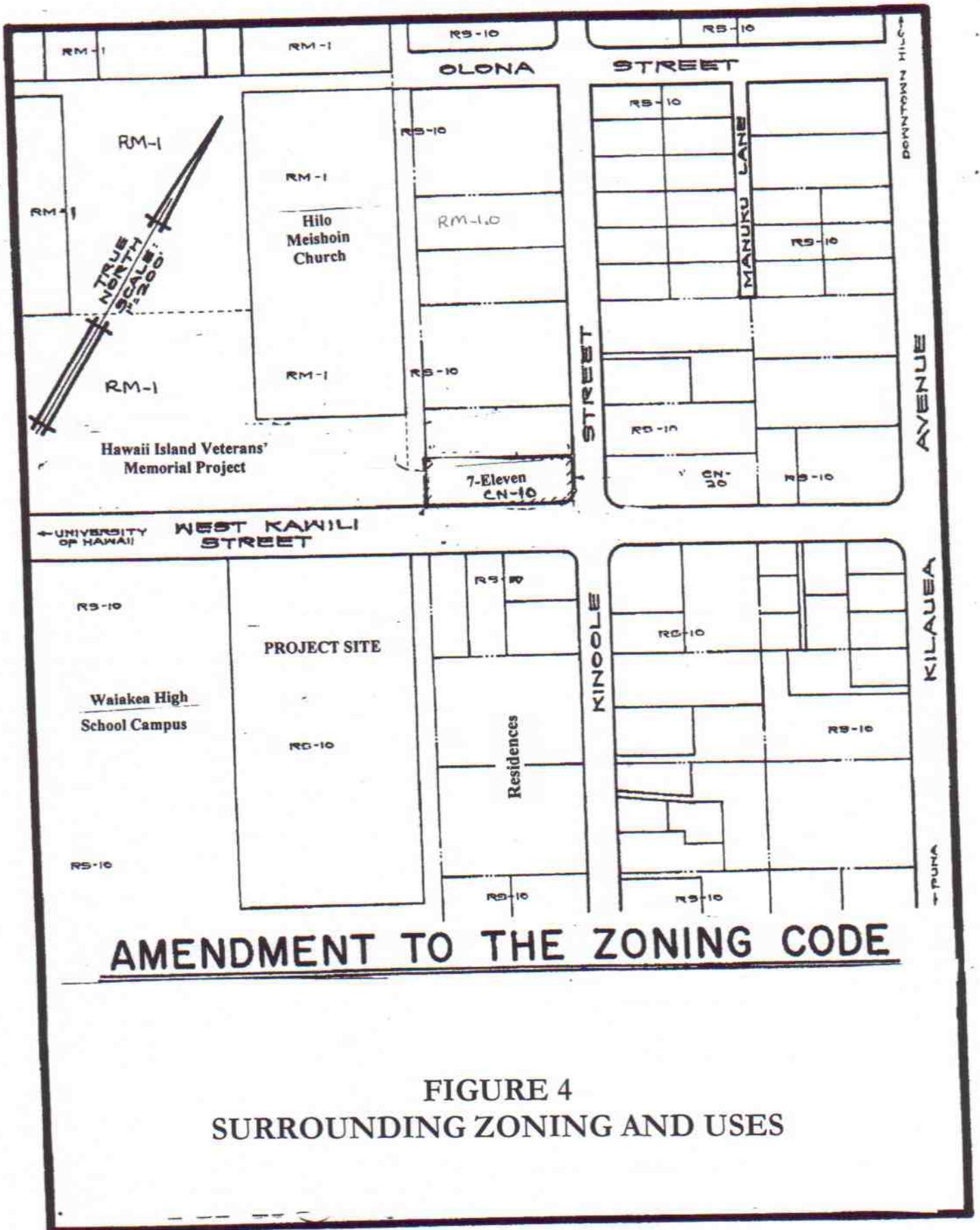


F. Kāwili Street frontage improvements: Swales, fire hydrant, bike lanes

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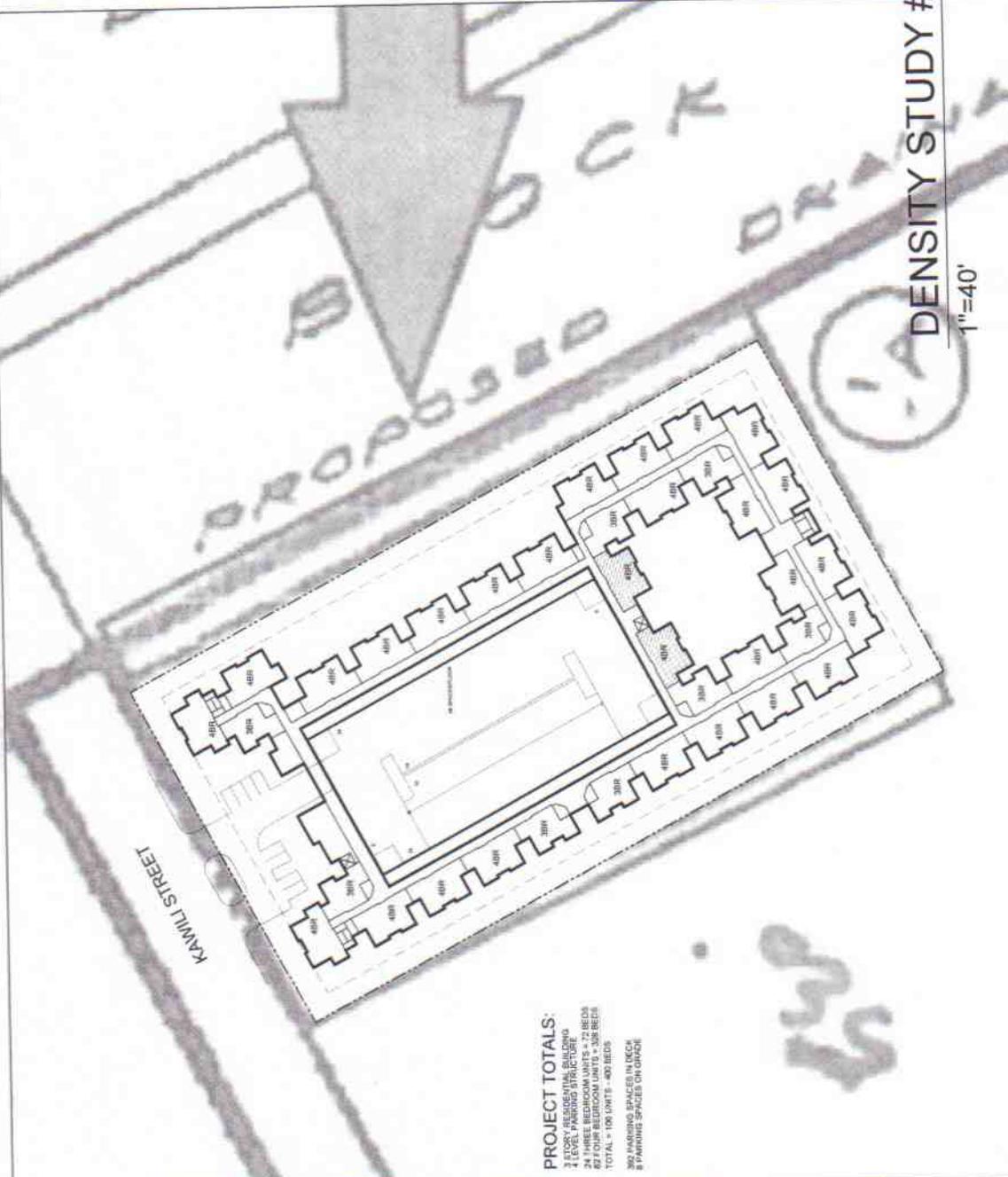
**AMENDMENT TO THE ZONING CODE**

**FIGURE 4  
SURROUNDING ZONING AND USES**

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**PROJECT TOTALS:**  
 3 FLOOR APARTMENT STRUCTURE  
 24 THREE BEDROOM UNITS = 72 BEDS  
 87 FOUR BEDROOM UNITS = 308 BEDS  
 TOTAL = 100 UNITS = 400 BEDS  
 300 WASHING SPACES IN DECK  
 8 PARKING SPACES ON GRASS

**FIGURE 5  
 SITE PLAN**



**ARCHITECT:**  
 NILES BOLTON ASSOCIATES  
 3060 PEACHTREE ROAD  
 SUITE 600  
 ATLANTA, GEORGIA 30305



**DEVELOPER:**  
 PLACE PROPERTIES  
 3445 PEACHTREE ROAD  
 SUITE 1400  
 ATLANTA, GEORGIA 30326

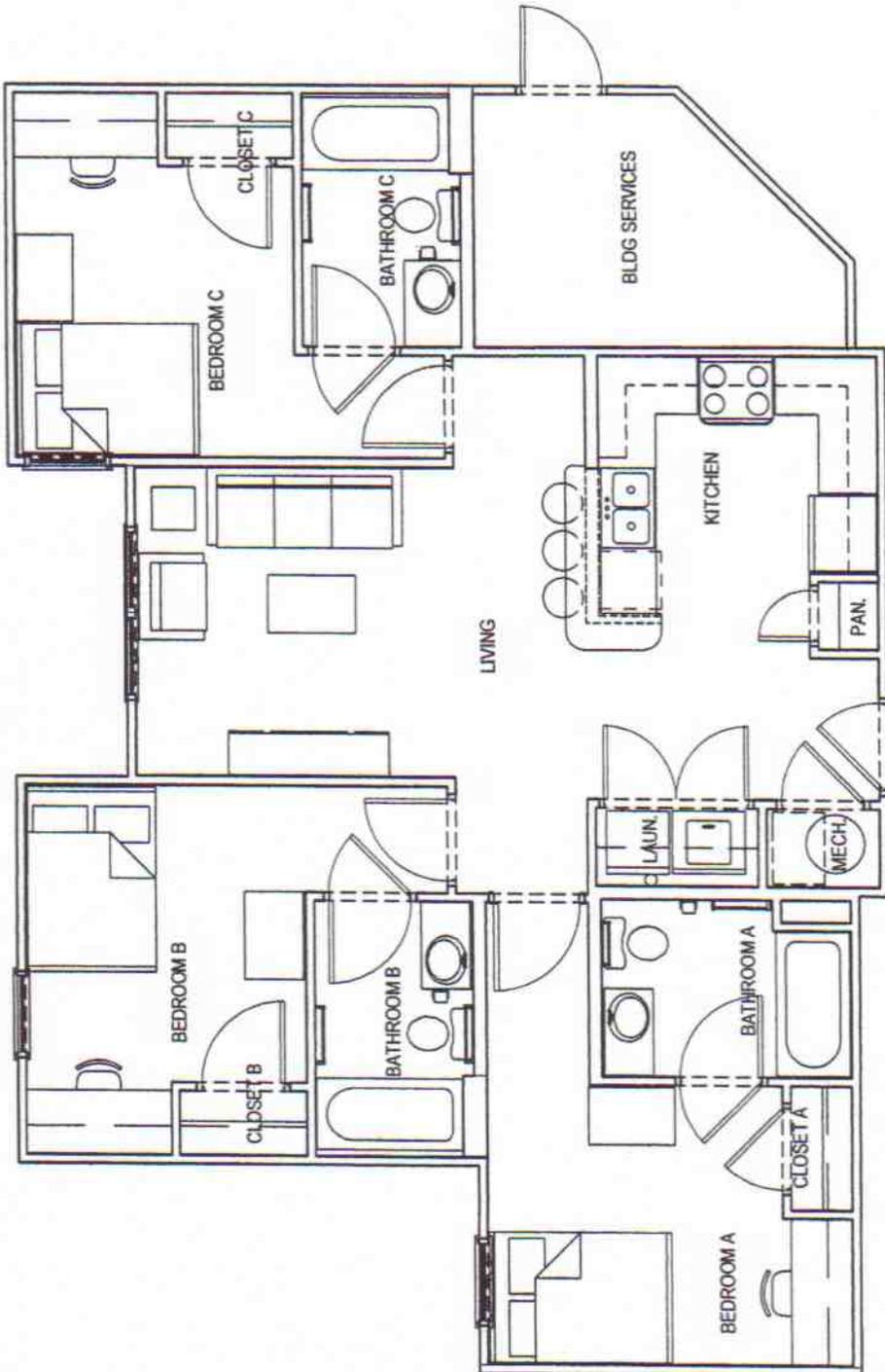


**UNIVERSITY PLACE AT HILO**  
 Hilo, Hawaii  
 October 17, 2006

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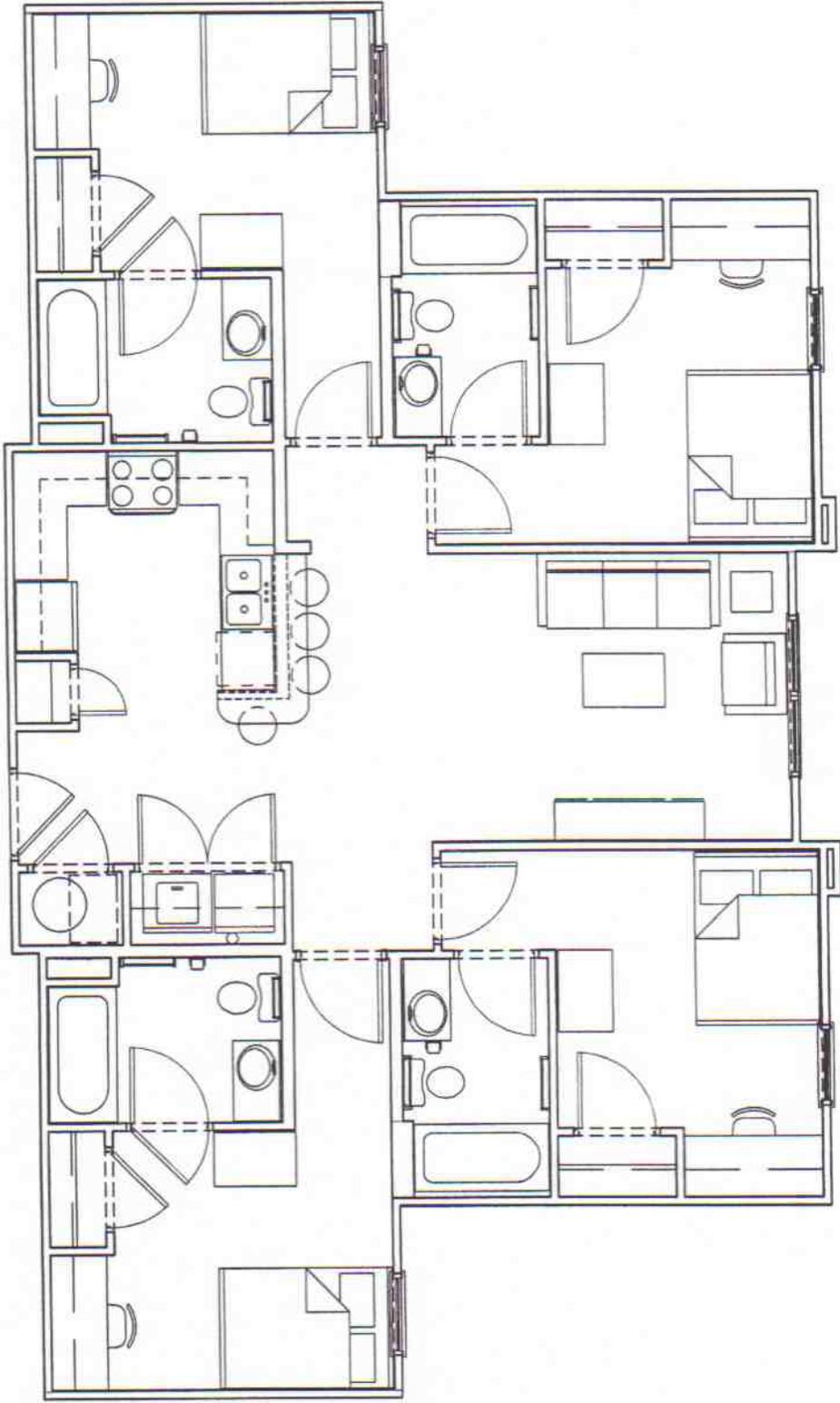


**FIGURE 6**  
**TYPICAL 3 BR CORNER UNIT**

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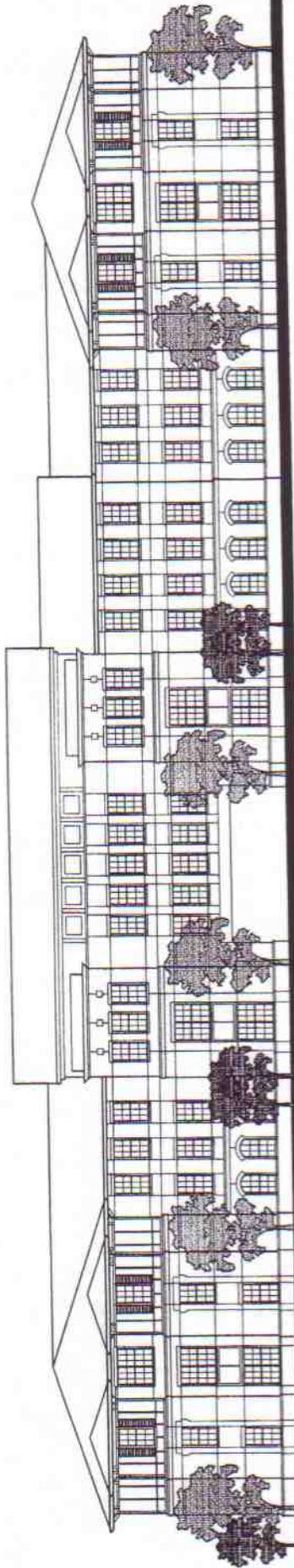


**FIGURE 7**  
**TYPICAL 4 BR UNIT**

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CONCEPTUAL ELEVATION  
VIEW FROM KAWILI STREET

FIGURE 8

UNIVERSITY PLACE AT HILO

Hilo, Hawaii

October 17, 2006



DEVELOPER:  
PLACE PROPERTIES  
3445 PEACHTREE ROAD  
SUITE 1400  
ATLANTA, GEORGIA 30326



ARCHITECT:  
NILES BOLTON ASSOCIATES  
3060 PEACHTREE ROAD  
SUITE 600  
ATLANTA, GEORGIA 30305

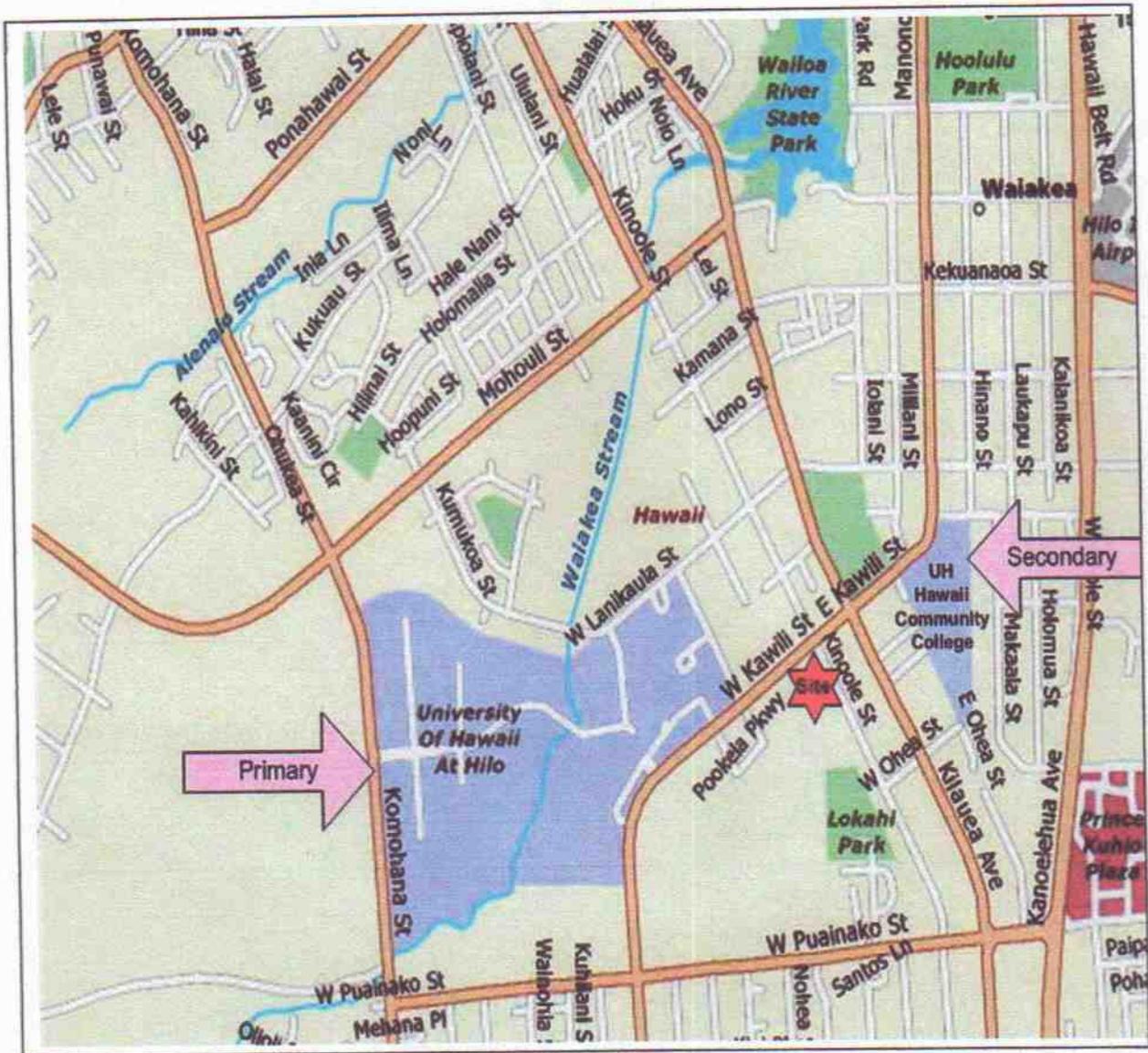
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FIGURE 9

PRIMARY AND SECONDARY TARGET MARKET SERVICE AREAS  
KAWILI STREET STUDENT HOUSING PROJECT



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## **3.0 ALTERNATIVES**

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### 3.0 ALTERNATIVES

The provisions of Title 11, Environmental Impact Statement Rules, Section 11-200-17(f) require an analysis of the alternatives which could attain the objectives of the action, while minimizing potential adverse environmental impacts.

The overall goal of the proposed Project is to expand the existing housing supply for university and community college students by constructing quality accommodations in close proximity to institutions of higher education.

#### 3.1 NO ACTION ALTERNATIVE

The no-action alternative would involve no changes to the HHHB Property, and the ten existing homes would continue to be rented by HHHB.

This alternative would maintain the current student housing supply at present deficient levels. The quality of housing accommodations is one of the major factors a college-bound student considers when choosing a school. Many educational institutions are now successfully using their student-centric designed housing as an attractive recruiting tool. The current student housing situation in Hilo is limited, and students must find their own off-campus living quarters. Because the students live off-campus, there is greater need to drive a car, and to move into areas for transitory residents. This impacts traffic and the older, established communities.

#### 3.2 OTHER ALTERNATIVES CONSIDERED

Other alternatives considered for the Property include housing products for senior citizens, and facilities that further the mission of HHHB.

The prime location of the Property proximate to UH Hilo and HCC is most conducive and compatible to university student housing. It is recognized that there is no retirement community facility in Hilo, but surrounding uses of UH Hilo and Waiākea High School could adversely impact a tranquil senior community.

The alternative of maximizing development of the Property under its current RS-10 zoning would allow seven additional single-family residential homes on the property. Such an alternative would mean that new homes would be built around the existing 10 homes or that the existing homes would be demolished for 17 new homes. Environmental impacts would be less under this alternative. Nevertheless, the cost-benefit of further developing the Property under existing zoning is negligible.

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### 3.3 SELECTED ALTERNATIVE

The highest and best use of the Property given its location close to schools would be greater residential density and/or commercial uses to support the student population. In the long-term, a student housing project would result in a prudent use of land by centralizing the incoming student population close to UH Hilo and HCC. Impacts on roads, water, sewer, and government infrastructure, including transit systems and bikeways, would be reduced.

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## **4.0 ENVIRONMENTAL SETTING, POTENTIAL IMPACTS, AND MITIGATIVE MEASURES**

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## **4.0 ENVIRONMENTAL SETTING, POTENTIAL IMPACTS, AND MITIGATIVE MEASURES**

### **4.1 PHYSICAL ENVIRONMENT**

#### **4.1.1 Climate**

##### *Environmental Setting*

The climate of Hawai'i Island is influenced by its geologic features. The island is dominated by Mauna Loa (13,653-foot summit elevation) and Mauna Kea (13,796-foot summit elevation). The annual rainfall in Hilo averages 128 inches with an average high temperature of 81 degrees Fahrenheit and an average low temperature of 66 degrees Fahrenheit (NOAA 2005).

The tradewinds near the Property are generally more persistent during the summer than in the winter, with stronger winds in the afternoon. The wind pattern for all Hawaiian Islands generally blows in a northeasterly direction. The wind pattern for Hawai'i Island is further influenced by the local mountains, namely Mauna Loa volcano. In the early morning, the prevailing wind pattern pushes out towards the ocean, and in the afternoon, the winds blow from the ocean towards the island. Winds from the south are infrequent occurring only a few days during the year and mostly in winter in association with Kona storms (Juvik and Juvik, 1998).

##### *Potential Impacts and Mitigative Measures*

Kāwili Street Student Housing Project will not have an adverse effect on climatic conditions. No mitigative measures are planned.

#### **4.1.2 Geology**

##### *Environmental Setting*

The Island of Hawai'i is of volcanic origins, and was built by the Mauna Kea, Kohala, Mauna Loa, Kīlauea, and Hualālai volcanoes. The Project site is located on lava flows of Mauna Loa volcano, part of the youngest flows that were present when Polynesian voyagers discovered Hawai'i around 400 A.D. The surface consists of flows of the Ka'u Basalt series from Mauna Loa of age 750 to 1,500 years old (Wolfe and Morris, 1996).

##### *Potential Impacts and Mitigative Measures*

The proposed improvements are not anticipated to impact the geology of the Project site. Appropriate engineering, design, and construction measures will be undertaken to minimize potential erosion due to grading of soils during construction.

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### 4.1.3 Soils

#### *Environmental Setting*

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

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

The NRCS *Soil Survey of the Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lana'i* classifies the soils of the Kāwili Street Student Housing Project site as Ōla'a extremely stony silty clay loam, 0-20% (OID), and Pana'ewa very rocky silty clay loam, 0-10% slopes (PeC).

The Ōla'a soil, formed in volcanic ash, is rapidly permeable, runoff is slow, and erosion hazard is slight. It dehydrates irreversibly into gravel-sized aggregates, has high shrinkage but low swelling potential, has low bearing capacity, high compressibility, low shear strength, low density if compacted, poor workability, and high organic matter. The depth to bedrock is relatively shallow at about 2.5 feet.

The Pana'ewa soil is very dark brown silty clay loam about 12 inches thick in a representative profile. The subsoil is about 4 inches thick and consists of dark-brown very cobbly, silty clay loam, mottled with yellowish red. It is underlain by pāhoehoe lava bedrock. Permeability is rapid, runoff is slow, and the erosion hazard is slight.

#### **Land Study Bureau (LSB) Detailed Land Classification**

The LSB *Detailed Land Classification System* does not classify the soils of the Project site because it falls within an urban area. Urban zones are not rated for agricultural productivity. Further, the Project site is not used for agricultural production except for a few banana plants along the fenced border.

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

The soils of the Project site are classified "Existing Urban Development" under the ALISH system; that is, land which has been developed for urban use.

#### *Potential Impacts and Mitigative Measures*

Impacts to the soils of the site include the potential for soil erosion (although the erosion hazard of the soils on the site is rated as "slight") and the generation of dust during construction. Clearing and grubbing activities will temporarily disturb the soil retention values of the existing vegetation and expose soils to erosional forces. Some wind erosion of soils could occur without

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a proper watering and regrassing program. Heavy rainfall could also cause erosion of soils within disturbed areas of land.

Construction activities will comply with all applicable governmental regulations and rules for erosion control, including the provisions of DOH, Chapter 11-60.1 and Chapter 11-60.1-33, HAR, "Fugitive Dust", and Chapter 10, Hawai'i County Code, relating to "Erosion and Sedimentation."

After construction, establishment of permanent landscaping will provide long-term erosion control.

### 4.1.4 Natural Hazards

#### *Environmental Setting*

Natural hazards impacting the Hawaiian Islands include hurricanes, flooding, tsunamis, volcanic eruptions, and earthquakes.

Devastating hurricanes have twice impacted Hawai'i since 1980; these include Hurricane Iwa in 1982 and Hurricane Iniki in 1992. While it is difficult to predict these natural occurrences, it is reasonable to assume that future events could be likely, given the history of the area.

Flood hazards are primarily identified by the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA) National Flood Insurance Program. According to the FIRM, the Property is designated Zone X, which is outside of the 500-year flood plain, as depicted in Figure 10 (FEMA, FIRM, Panel 880, September 16, 1988).

Tsunamis are large, rapidly moving ocean waves triggered by a major disturbance of the ocean floor, which is usually caused by an earthquake but sometimes can be produced by a submarine landslide or a volcanic eruption. About 50 tsunamis have been reported in the Hawaiian Islands since the early 1800's. Seven caused major damage, and two of these were locally generated. The Project site is not in a tsunami inundation or evacuation area.

The entire Island of Hawai'i is subject to geological hazards, especially lava flows and earthquakes. Volcanic hazard is assessed by the United States Geological Survey on a scale of ascending risk 9 to 1 and Hilo is assessed a risk of 3. This hazard is based on the fact that Mauna Loa is an active volcano. Volcanic Hazard Zone 3 areas have had 1-5 % of land area covered by lava or ash flows since the year 1800, and are at lower risk than Zone 2 areas because of their greater distances from recently active vents and/or because the local topography makes it less likely that flows will cover these areas (Heliker, USGS, 1991).

In Hawai'i most earthquakes are linked to volcanic activity, unlike other areas where a shift in tectonic plates is the cause of an earthquake. Each year thousands of earthquakes occur in Hawai'i, the vast majority of them so small they are detectable only with highly sensitive instruments. However, moderate and disastrous earthquakes have rocked the islands. The Island of Hawai'i is rated Zone 4 Seismic Probability Rating. Zone 4 areas are at risk from major earthquake damage, especially to structures that are poorly designed or built, as the

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6.7-magnitude (Richter) quake of October 15, 2006 has demonstrated. The project site is level and not subject to landslides or other forms of mass wasting or slope movement.

### *Potential Impacts and Mitigation Measures*

Kāwili Street Student Housing Project should not exacerbate any natural hazard conditions. The student housing and parking structure will be built in compliance with all applicable codes and requirements.

An emergency preparedness and response plan will be developed in consultation with the Civil Defense Agency, and student residents will be advised of and will practice the procedures.

### 4.1.5 Flora and Fauna

#### *Environmental Setting*

Kāwili Street Student Housing Project site has been previously grubbed and graded in conjunction with the residential homes on the Property. The Property is comprised of a well-maintained grass lawn with banana plants along the fenced boundaries and two weeping bottlebrush trees (*callistemon viminalis*).

With the exception of exotic bird species, no wildlife species were observed on the Property; however, the intermittent presence of feral cats, mongoose, and rodents is probable. The only native Hawaiian land mammal, the Hawaiian Hoary Bat (*Lasiurus cinereus semotus*), may be present in the area, but the leveled grounds would not be an ideal habitat for this species.

#### *Potential Impacts and Mitigation Measures*

No substantial impacts to flora or fauna would result from the proposed Project. There are no rare, threatened, or endangered species of flora or fauna on the Property.

New landscape plantings will include native plants, such as hāpuʻu, as well as heritage plants such as hibiscus, plumeria and ti. These plantings could serve to attract wildlife to the Property resulting in a positive environmental effect.

## 4.2 HUMAN ENVIRONMENT

### 4.2.1 Historical and Archaeological Resources

#### *Environmental Setting*

An *Archaeological Assessment*, TMK: (3)2-4-01:116, Land of Waiakea, South Hilo District, Island of Hawaiʻi dated January 2008 has been prepared by Alan E. Haun, Ph.D., of the Project site ([Appendix B](#)). The archaeological survey was undertaken to satisfy historic preservation regulatory review requirements of DLNR-State Historic Preservation Division (SHPD). The



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Project area was subjected to 100 percent surface examination. The survey concluded the following:

“No archaeological sites or features and no Land Commission Awards are present within the parcel. As stated, the project area is currently utilized for residences. The relatively level terrain within the parcel indicates that the project area was mechanically leveled prior to the construction of the houses in the 1970s. No further archaeological work is recommended based on the negative survey results.”

Letters to Alan Haun dated February 19, 2008 and March 17, 2008 from DLNR-SHPD determined that no historic properties will be affected by the Project because (1) residential development/urbanization has altered the land, (2) previous grubbing/grading has altered the land, and (3) the accepted archaeological assessment prepared by Haun found no historic properties. DLNR-SHPD further approved the *Archaeological Assessment*, concurred with its recommendations, and concluded that the historic preservation review process is “at an end”. Copies of these letters are included in Appendix B of this document.

### *Potential Impacts and Mitigation Measures*

The Project will have no effect on archaeological resources. This conclusion was reached in the *Archaeological Assessment* of the Property prepared by Alan E. Haun, Ph.D., and is based upon the area’s long-standing residential use and prior grading activities.

SHPD concurs with the *Assessment*, and has determined that the historic preservation review process has come to an end.

During construction, should any unanticipated cultural features, deposits, remains, lava tubes, lava blisters/bubbles, or burials be encountered, work in the area will be suspended and SHPD will be immediately notified to determine an appropriate course of action.

### **4.2.2 Cultural Resources**

#### *Environmental Setting*

The *Archaeological Assessment* dated January 2008 by Alan Haun, Ph.D., describes historical background of the Project area, which is situated in the *ahupua’a* of Waiākea, South Hilo. The *ahupua’a* extends from the west side of Hilo Bay to the Puna District inland to approximately the 6,000 foot elevation.

Waiākea is the site of longstanding Hawaiian traditional and legendary accounts. Kulukulu‘a, the chief of the Hilo region who resided in Waiākea, was the first conquest of ‘Umi-a-Liloa in his campaign to unify the districts of Hawai‘i Island. Kamehameha I and his court resided in Hilo in the 1890’s. It is said that Kamehameha built an 800-vessel canoe fleet in Hilo for his planned invasion of Kaua‘i in 1802.

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Waiākea became the site of a missionary station in 1824, which attracted churches and schools to the area. By the end of the 1830's, a sugar cane plantation and mill were established on Ponahawai lands. According to the *Assessment*, 1,400 acres of sugar cane were being cultivated in 1880 expanding to 5,600 acres by the 1890's. Throughout the 1900's, the character of Waiākea gradually transitioned from an agricultural to an urban community. The County's tax map encompassing the Project site refers to this area as Waiākea Cane Lots, reflecting the district's past activities. The sugar industry steadily declined until its ultimate demise in 1997 with the closure of the last sugar operation on the island.

### *Potential Impacts and Mitigation Measures*

To assess the Project's impacts to Hawai'i's culture and traditional and customary rights, archaeological, botanical, and wildlife resources were reviewed. Although it is probable that gathering and other cultural practices, such as agriculture, may have occurred on or in the vicinity of the Property, the completed and accepted archaeological assessment did not identify any religious or spiritual customs. The neighborhood has been urbanized and extensively developed.

No significant negative effects on Hawai'i's cultural resources or an individual's traditional and customary rights are anticipated.

### **4.2.3 Water Resources**

#### *Environmental Setting*

Storm runoff generally sheet flows towards the northern corner of the Property into a drywell on the adjacent DLNR Railroad Right-of-Way. Water discharges to a drainage channel under Kāwili Street.

#### *Potential Impacts and Mitigation Measures*

Any impacts to groundwater quality will be mitigated by a hook-up to the existing municipal sewer system on Kāwili Street. The need for drywells for stormwater disposal (i.e., injection wells) would be evaluated by the DOH underground injection control (UIC) permit program. The site is located above the UIC line, permitting injection wells with the review and approval of the DOH.

### **4.2.4 Air Quality**

#### *Environmental Setting*

Regional and local climate, together with the amount and type of human activity, generally dictate the air quality of a given location. At the site of Kāwili Street Student Housing Project, winds are predominantly trade winds. During the winter, occasional storms may generate winds from the south (Kona winds) for brief periods. When the trade winds or Kona winds are weak or absent, landbreeze-seabreeze circulations may develop.

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Generally, air quality in the vicinity of the Project site is thought to be good and within both State and Federal Air Quality Standards. Air pollution is mainly derived from volcanic emissions of sulfur dioxide, which convert into particulate sulfate and produce a volcanic haze (vog) that occasionally covers the region. Tradewinds keep the Project site relatively free of vog most of the year.

### *Potential Impacts and Mitigation Measures*

It is not anticipated that Kāwili Street Student Housing Project would have significant impacts on the air quality of the community.

State or Federal air quality standards are not expected to be violated during or after the Project has been constructed. On-site construction activities may result in short-term affects to air quality. An effective dust control plan will be implemented for all phases of development. All construction activities will comply with the provisions of DOH Chapter 11-60.1, HAR, Section 11-60.1-33, relating to “Fugitive Dust.” Measures to control dust during various phases of construction include, but are not limited to:

- Minimizing dust from shoulders and access roads;
- Providing adequate dust control measures during weekends, after hours, and before daily start-up of construction activities;
- Providing an adequate water source at the site prior to start-up construction activities;
- Planning phases of construction to: minimize 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;
- Landscaping and rapid covering of bare areas, including slopes, starting from the initial grading phase;
- Controlling dust from debris being hauled away from the Project site.

### **4.2.5 Noise**

#### *Environmental Setting*

The Kāwili Street Student Housing Project site is currently exposed to daytime ambient noise principally from Kāwili Street traffic, wind, birds, the occasional aircraft, and adjacent high school and convenience store activities.

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### *Potential Impacts and Mitigation Measures*

Potential impacts to the acoustic environment will primarily relate to short-term construction activity. It is expected that after the Project is completed, on-going noise-generating activities will increase due to the more intense human activity created by 96 additional dwelling units.

All construction activities will comply with DOH's Chapter 11-46, HAR, Community Noise Control. Proper mitigating measures will be employed to minimize construction-related noise and comply with all federal and state noise control regulations. Increased activity due to construction will be limited to daytime hours and persist only during the construction period. When construction noise exceeds, or is expected to exceed, the DOH's allowable limits, a permit will be obtained from the DOH. Specific permit restrictions for construction activities are:

- No permit shall allow any construction activities that emit noise in excess of the maximum permissible sound levels before 7:00 a.m. and after 6:00 p.m. of the same day, Monday through Friday.
- No permit shall allow any construction activities that would emit noise in excess of the maximum permissible sound levels before 9:00 a.m. and after 6:00 p.m. on Saturday.
- No permit shall allow any construction activities that would emit noise in excess of the maximum permissible sound levels on Sundays and holidays.

The use of pile drivers, hoe rams, jack hammers 25 pounds or larger, high-pressure sprayers, and chain saws may be restricted within the hours of 9:00 a.m. to 5:30 p.m., Monday through Friday. Construction equipment and on-site vehicles or devices requiring an exhaust of gas or air must be equipped with mufflers. In addition, construction vehicles must satisfy the DOH's vehicle noise requirements.

If Waiākea High School is in session when construction occurs, the Project managers will work with school administrators to mitigate construction noise to the extent possible.

The long-term impacts of the Project on noise quality will be attenuated through strategically-placed landscaping in and around the Property, through the design and placement of the housing and parking structure, and the use of building materials.

#### **4.2.6 Scenic Resources**

##### *Environmental Setting*

The Property is not identified in the General Plan as a natural beauty site. The area is characterized by school structures and a commercial office at least three or more stories tall. The proposed senior affordable housing building of the neighboring Hawai'i Island Veterans' Memorial Project is planned to be four stories high.

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### *Potential Impacts and Mitigation Measures*

Kāwili Street Student Housing Project will not impact any natural beauty site listed in the General Plan. The visual setting of the one-story homes will change when it is replaced with the three- to four-story residential housing and parking structure. The use of landscaping elements and building design will mitigate the impacts the Project may have from Kāwili Street, Waiākea High School and homes along Kino'ole Street. The proposed Hawai'i Island Veterans' Memorial Project will be four stories high and several buildings on the Waiākea High School campus are greater than three stories high. Thus, the panorama will not be significantly impacted because of similar tall buildings in the building-scape.

### **4.3 PUBLIC FACILITIES, UTILITIES, AND SERVICES**

#### **4.3.1 Roads and Traffic**

##### *Environmental Setting*

The Project is served by Kāwili Street along its northwest boundary. The Project access driveway at Kāwili Street is expected to be unsignalized using the procedure for analyzing unsignalized intersections. Kāwili Street is a two-lane street with bike-lanes. The major cross street intersections along Kāwili Street that would be affected by project-generated traffic include Kino'ole Street, Kīlauea Avenue, Kapi'olani Street and Puainako Street. Kāwili Street, Kīlauea Avenue, Kino'ole Street, and Kapi'olani Street are County roads classified as major collectors. Puainako Street is a two-lane major State collector road.

A Traffic Impact Analysis Report (TIAR) dated June 2008 has been prepared for the Project by M & E Pacific, Inc., ([Appendix C](#)). The TIAR reported taking traffic turning movement counts at four study intersections to determine existing traffic conditions: Kīlauea Avenue/Kapi'olani Street, Kino'ole Street/Kāwili Street, Kapi'olani Street/Kino'ole Street, and Puainako Street/Kāwili Street.

Roadway improvements in the TIAR study area are planned by the State DOT, the County of Hawai'i and UH Hilo, and are described in the TIAR.

The State DOT is proceeding with the alignment of Puainako Street, which should mitigate projected traffic problems on Puainako Street and Kāwili Street.

The County has initiated a study to improve the traffic operations of several travel corridors on the island, including Kino'ole Street and Kīlauea Avenue. The County's preliminary analysis found that a one-way couplet with Kīlauea Avenue and Kino'ole Street would mitigate traffic conditions and bring about acceptable levels of services at these two intersections.

UH Hilo will be installing traffic signals at its main entrance on Kāwili Street. The project is expected to go out to bid soon.

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The TIAR prepared traffic forecasts for the years 2013, 2018 and 2028 as required by the Concurrency Conditions Ordinance.

### *Potential Impacts and Mitigation Measures*

The TIAR concluded that the Project's location would tend to minimize the need for commuter motor vehicles trips. Further, the TIAR stated that the "proposed project is forecast to generate from 19 trips in the morning peak hour to 109 trips in the afternoon peak hour. The current Hilo roadway network would be able to accommodate the increase in ambient traffic and project generated trips at least to the year 2013. Roadway improvements would be required beyond that year." The improvements include a left-turn lane at the Project driveway when required by the DPW.

The Applicant will comply with the recommendations of the TIAR and the requirements of the DPW. The installation of a left-turn storage lane on Kāwili Street at the Project's entrance will be coordinated with any improvements planned at the Kino'ole Avenue/Kāwili Street intersection and the traffic signal at the University's entrance.

### **4.3.2 Water System**

#### *Environmental Setting*

An 8-inch water transmission line is located on Kāwili Street fronting the Property. This water line is part of the County's Department of Water Supply (DWS) Kawailani/Haihai system. The water line is fed by the Kawailani Reservoir with a capacity of 0.5 million gallons (mg) as well as two Haihai Reservoirs with capacities of 0.1 mg and 0.5 mg.

#### *Potential Impacts and Mitigation Measures*

Initial indication from the DWS is that water is available for domestic service. Water demand of the Project will be estimated based on land use type and water usage per capita. Water demand calculations of the Project will be prepared after design, and the anticipated maximum daily water demand will need to be submitted to DWS for its determination of the facilities charge.

In addition, although the 8-inch water main appears adequate for the average daily water demand, it may be undersized to meet minimum system fire flow requirements. Thus, offsite water system improvements may be required to meet DWS's fire flow requirements by upgrading the Kāwili Street line. The size of the proposed water line, if required, will be confirmed during the design phase.

### **4.3.3 Wastewater System**

#### *Environmental Setting*

An existing 12-inch sewer trunk line is located along the north side of Kāwili Street across the Project site. The sewer system is connected to the County's Hilo Wastewater Treatment Plant located approximately four miles away from the Project site. This system is a 5.0 million gallons

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per day (mgd) secondary treatment plant with an ocean outfall effluent disposal and a collection system of sewage pump stations, force mains and gravity lines, which is owned and operated by the County Department of Environmental Management (DEM) (County 2005).

### *Potential Impacts and Mitigation Measures*

Off-site improvements do not appear to be required since the existing 12-inch sewer line seem to have adequate capacity to serve the Project site. A wastewater flow contribution report will be prepared and submitted for review and approval by the DEM during the design phase of the Project.

#### **4.3.4 Solid Waste**

##### *Environmental Setting*

The Project will generate solid waste and require regular refuse pick up service. Solid waste from the site will be disposed of at the County's South Hilo Landfill on Leilani Street through contracted services by a private company. Recycling activities will be promoted at the Project to reduce the amount deposited into the waste stream.

The South Hilo Landfill is one of two landfill sites owned, operated and maintained by the County of Hawai'i's DEM. The South Hilo Landfill is an unlined landfill, which will reach its capacity in a few years. The County is currently pursuing a plan with multiple phases that aims to keep the landfill open for an estimated two to seven years. Concurrently, the County of Hawai'i is in the process of deciding what waste reduction technology it should pursue given the County Council's recent disagreement of a waste-to-energy proposal.

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

A solid waste management plan will be prepared for review and approval by the DEM. Recycling will be encouraged and integrated into the design of the building to reduce the capacity demands on the landfill.

During construction, whenever practical, solid waste will also be recycled. It will be recommended to contractors that a job-site recycling plan should be developed.

#### **4.3.5 Drainage System**

##### *Environmental Setting*

Ten residences have been constructed on the four-acre Property. The grounds are well-maintained. According to the Flood Insurance Rate Map (FIRM) (Figure 10), the Property is designated as Zone X, which is an area determined to be outside the 500-year flood plain. The site naturally drains through surface flow in a northerly direction towards a drywell located on the adjacent State property. An asphalt swale fronts the property on Kāwili Street draining into a drainage channel on the opposite side of Kāwili Street. Historically, the Project site has been

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the subject of storm-related debris from *mauka* properties, and the State drywell has to be maintained.

### *Potential Impacts and Mitigation Measures*

The onsite drainage system will be designed for a minimum ten-year storm recurrence in accordance with the County's design criteria. The Project will construct drainage systems on site necessary to accommodate the increase in runoff (from current conditions) generated from non-permeable surfaces. Landscaping will be used to control soil erosion and grass areas will be used as filters to reduce sediment transportation.

### **4.3.6 Electric/Communications Systems**

#### *Environmental Setting*

Electrical power is provided by Hawai'i Electric Light Company (HELCO). HELCO's grid serves the proposed Project site with a 12 kilovolt (KV) overhead line that runs from a HELCO substation on Komohana Street. The line runs along Kāwili Street fronting the Property.

The Project will increase demand on the HELCO system. Project demands will be calculated during the design phase and estimated loads will be coordinated with HELCO.

Hawaiian TelCom provides telephone service for this region from a switching board in the Kawaiiani Street Office. The line has the capacity to serve the proposed development.

Adequate electricity and communication systems are available to service the Project. The service lines will connect to these systems through underground conduits on the site.

#### *Potential Impacts and Mitigation Measures*

Electrical, telecommunication and cable television services are provided by privately-owned utility companies regulated by the State Public Utilities Commission. These utility companies are mandated by their respective tariff rules to exercise reasonable diligence and care in maintaining their lines and structures to provide continuous service to their customers. Companies must improve their systems/infrastructures to meet increasing demands. While there will be an increase in the demands to electrical and communication services from the Project, it is anticipated that services will be able to meet these utility demands.

Energy-saving concepts and devices will be encouraged in the design of the Kāwili Street Housing Project. These include, but are not limited to, the following:

- Use of site shading, orientation, and naturally-ventilated areas to reduce cooling load;
- Maximum use of day lighting;
- Use of landscaping for dust control and to minimize heat gain to area.

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### 4.3.7 Recreation Facilities

The City of Hilo is the major urban center in the County with diverse recreational facilities. Nearby County recreational facilities include the Ho'olulu Complex, various community, neighborhood and beach parks, the Hilo Municipal Golf Course, the Pana'ewa Rainforest Zoo, and Andrews and Waiākea Uka gymnasiums. Additionally, UH Hilo offers recreational facilities on campus for its students.

The Kāwili Street Student Housing Project will have fitness and game rooms for its resident students.

#### *Potential Impacts and Mitigation Measures*

The Project will not have a significant impact on the recreational facilities of the County or State. Student residents will use the recreational facilities such as beach parks, gymnasiums, and soccer fields. However, UH Hilo has recreational facilities for its students' use, and the Project will have fitness and game rooms for its residents. This will provide a level of mitigation by directing these activities away from the County and State recreational facilities.

## 4.4 SOCIO-ECONOMIC CHARACTERISTICS

### 4.4.1 Population, Income, Housing

The 2000 Census reported the resident population of Hawai'i County at 148,677. The population of Hilo Census Designated Place (CDP), which includes the Property, is 47,386 persons. Table 2 shows a comparison of the population of Hilo CDP to Hawai'i County as a whole.

In 2006, the County of Hawai'i's population rose to 171,191, a  $\pm 15\%$  increase (DBEDT 2007). The County's population is projected to increase to 176,750 persons by 2010; 203,050 persons by 2020; and 229,700 by 2030 (DBEDT 2004).

The State Department of Business and Economic Development (DBEDT) projects that total personal income in the County of Hawai'i will increase from \$3,133,200,000 in 2000 to \$4,433,800,000 in 2010; 6,120,700,000 in 2020; and \$8,088,300,000 in 2030 (DBEDT 2004).

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**Table 2: Demographic Characteristics, 2000**

Subject	Hilo CDP		Hawai'i County	
	Number	Percent	Number	Percent
TOTAL POPULATION	40,759	100.0	148,677	100.0
AGE				
Under 5 years	2,301	5.6	9,130	6.1
5-17 years	7,764	19.0	29,722	20.0
18-20 years	2,077	5.1	5,836	3.9
21-24 years	2,108	5.2	6,364	4.3
25-44 years	9,928	24.4	38,888	26.2
45-54 years	5,842	14.3	24,452	16.4
55-59 years	2,215	5.4	8,163	5.5
60-64 years	1,701	4.2	6,003	4.0
65-74 years	3,473	8.5	10,923	7.3
75-84 years	2,471	6.1	7,064	4.8
85 and over	879	2.2	2,132	1.4
Median Age (years)	38.6		38.6	
HOUSEHOLDS (by type)				
<b>Total Households</b>	14,577		52,985	
Persons in households	39,368		145,873	
Persons per household	2.70		2.75	
Persons per family	3.19		3.24	

Source: U.S. Census Bureau 2000

In 2000, per average capita income was reported to be \$18,791 in the County of Hawai'i. The per capital income in the Hilo CDP was \$18,220 in 2000 (U.S. Census Bureau 2000). In contrast, per capita income in other regions of the County are listed in [Table 3](#):

**Table 3: Per Capita Income by Census Designated Place, 2000**

Hilo Division	\$18,260
Papaikou-Wailea Division	\$17,102
North Hilo Division	\$14,955
Paauhau-Paauilo Division	\$16,310
Honokaa-Kukuihaele Division	\$19,223
North Kohala Division	\$20,135
South Kohala Division	\$23,194
North Kona Division	\$23,569
South Kona Division	\$20,177
Kau Division	\$14,119
Pahoa-Kalapana Division	\$12,554
Keaau-Mountain View Division	\$14,747

Source: U.S. Census Bureau 2000

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Notably, Hawai'i County experienced the fastest growth in per capital personal income at 3.1 percent annually between 1990 and 2004 compared to the other three counties' growth of 2.8 percent per year (DBEDT 2006).

Statewide housing units increased 26 percent between 1990 and 2005. Hawai'i County registered 49.2 percent increase in housing units compared to Kaua'i County which felt a housing unit growth rate of 55.8 percent. Maui and Honolulu counties followed with 47.5 percent and 16.9 percent, respectively. Housing data does not differentiate between student-type housing and other housing types.

### *Potential Impacts and Mitigation Measures*

The Project, in and of itself, will not increase the population in Hawai'i County. Its 400 residents would be essentially living at the Project because of their enrollment in the UH Hilo or HCC. The Project will provide much-needed housing for those students who are attending these educational institutions.

The addition of rental housing units for students will have a significantly positive impact for the UH Hilo, HCC, and its prospective students. Adequate, diversified, clean housing is an important recruitment tool.

Although not within the 'affordable' range, the proposed rental rates are reasonable in view of the quality of the housing units compared to the China-U.S. Center residential rooms and a dormitory at UH Manoa. If required, HHHB will comply with the affordable housing requirements of the County.

### **4.4.2 Employment**

The County of Hawai'i had an estimated 78,750 civilians who were employed in 2005 ([www.hawaii.gov/dbedt](http://www.hawaii.gov/dbedt)).

The unemployment rate in Hawai'i County has increased 1.3 percent from 3.0 percent to 4.3 percent from April 2007-April 2008. The statewide unemployment rate over the same period grew 0.8 percent from 2.4 to 3.2 percent ([www.hawaii.gov/dbedt](http://www.hawaii.gov/dbedt)).

Construction of the Project will create short-term employment demands in the construction field. Long-term employment at Kāwili Street Housing Project would include building and grounds maintenance workers, a housing or resident manager, and other secondary positions.

### *Potential Impacts and Mitigation Measures*

Employment opportunities will increase during construction and, to a lesser extent, when the Project is operational.

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### 4.4.3 Social and Built Environment

#### *Environmental Setting*

The Project will be built next to residential homes and Waiākea High School, a four-year public high school with an enrollment of about 1,300 students.

#### *Potential Impacts and Mitigation Measures*

The close proximity of the Project to the High School, especially during High School hours, could generate unwelcome access between the facilities. In an effort to control unauthorized entry between the School and Project, a physical barrier, such as heavy landscaping, would be considered in consultation with Waiākea High School and DOE officials.

The nearby homes will be affected in the short-term by construction activity. Strict compliance with applicable State and County noise and construction regulations should afford mitigative relief to the residents. Over the long-term, the siting and design of the Project should alleviate visual and noise impacts coupled with the use of landscaping.

## 4.5 PUBLIC SERVICES

### 4.5.1 Police, Fire, and Emergency Services Protection

Police protective services on the Island of Hawai'i are provided by the Hawai'i County Police Department. Presently, the Project is served by the main police headquarters on Kap'iolani Street.

Fire protection in this area is provided from the Kawaihāni Fire Station, which is a Fire-EMS-Rescue operation, located approximately 1.5 miles from the Project site.

#### *Potential Impacts and Mitigation Measures*

There will be an occasional and unavoidable demand for services as a result of the Project; however, it is believed that the student housing manager and security personnel will be able to address most incidents.

Kāwili Street Housing Project will be designed with fire sprinklers and other fire retardant and mitigation materials and equipment. Residents of the Project would be informed of fire evacuation routes. These measures should help with fire prevention and protection.

### 4.5.2 Health Care

The quasi-public state health care facility closest to the Project is the Hilo Medical Center located at 1190 Waiānuenu Avenue. Hilo Medical Center is a full-service hospital providing emergency care and medivac transport capabilities. Numerous private physicians, clinics, dental clinics, and alternative health providers are established in East Hawai'i.

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### *Potential Impacts and Mitigative Measures*

The Project itself will not generate direct impacts to the health care system in East Hawai'i as students residing there will already be enrolled in UH Hilo and HCC. It is recognized that there is currently a shortage of physicians in specific fields on the island. A multi-faceted public-private partnership is examining the shortage and working towards potential solutions to alleviate the problem. The Project, however, should not substantially contribute to the medical shortage.

#### **4.6 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY.**

Chapter 200 of Title 11, EIS Rules (11-200-17(j)) requires a brief discussion of the “extent to which the proposed action involves tradeoffs between short-term losses and long-term losses, or vice versa, and a discussion of the extent to which the proposed action forecloses future options, narrows the range of beneficial uses of the environment, or poses long-term risks to health or safety....”

The planned improvements are considered to be beneficial uses of the urban environment. The Project is not expected to generate risks to health and safety. The foreclosure of future options is limited since the range of viable uses is limited. Any potential short- and long-term impacts are offset by the planned mitigation measures set forth herein. The area in the vicinity of the Project site is visibly the educational hub in the City of Hilo. The subject parcel, if developed for student housing, will enhance the long-term productivity of the learning environs, which is consistent with the General Plan.

#### **4.7 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF NATURAL RESOURCES THAT WOULD BE INVOLVED IF PROJECT IS IMPLEMENTED**

Chapter 200 of Title 11, EIS Rules (11-200-17(k)) requires the “identification of unavoidable impacts and the extent to which the actions makes use of non-renewable resources during phases of the action, or irreversibly curtails the range of potential uses of the environment....”

The proposed Project will involve (1) industrial resources, such as fuels, construction equipment, labor, and capital; and (2) Project-specific resources, such as natural resources and land. The industrial resources will be used during the construction of the student housing facility and its roads and infrastructure. When the student housing facility is built, it will preclude use of the Property for other uses.

The commitment of these resources should be evaluated in light of expected benefits to the community resulting from the Project. Housing opportunities offered and the employment generated by the Project give good reason for the requested change to a more intensive residential use of the Property.

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The development of a 106-unit student housing project near the university complex will increase demand on potable water source and will contribute modestly to regional demands on public services, such as police and fire protection. However, siting the Project within walking distance from UHH and HCC will maximize the existing urban roads, bike lanes, public transit bus route, and utilities.

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## **5.0 RELATIONSHIP TO PLANS, POLICIES, AND CONTROLS**

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## **5.0 RELATIONSHIP TO PLANS, POLICIES, AND CONTROLS**

### **5.1 STATE OF HAWAII**

#### **5.1.1 Chapter 343, HRS**

Compliance with Chapter 343, HRS, is required as described in Section 2.6 of this Draft EA.

#### **5.1.2 State Land Use Law Chapter 205, HRS**

The State Land Use Law (Chapter 205, HRS) establishes the State LUC, and gives the LUC the authority to designate all lands in the State into one of four districts: Urban, Rural, Agriculture, or Conservation. The Project is entirely within the Urban district. The proposed Project is consistent with the purpose of the Urban district.

#### **5.1.3 Coastal Zone Management Act, Chapter 205A, HRS**

The Coastal Zone Management (CZM) Area as defined in Chapter 205A, HRS, includes all the lands of the State. As such, Kāwili Street Student Housing Project is within the CZM Area.

The Project is consistent with the Economic objective to “[p]rovide public or private facilities and improvements important to the State’s economy in suitable locations.” Kāwili Street Student Housing Project will provide 106 private apartment units with 400 beds; thereby adding to the housing inventory of the area. The Property is not a coastal parcel. The other objectives relating to coastal hazards, ecosystems, beach protection, and marine resources would not be applicable.

#### **5.1.4 Hawai‘i State Plan, Chapter 226, HRS**

The Hawai‘i State Plan (Chapter 226, HRS), establishes a set of themes, goals, and objectives, and policies that serve as long-range guidelines for the growth and development of the State.

The State Plan lists three “Overall Themes” relating to: (1) individual and family self-sufficiency; (2) social and economic mobility; and (3) community or social well-being. These themes are viewed as “basic functions of society” and goals toward which government must strive (§226-3). To guarantee the elements of choice and mobility embodied in the three themes, The State Plan states three goals:

- (1) A strong, viable economy, characterized by stability, diversity and growth that enable fulfillment of the needs and expectations of Hawai‘i’s present and future generations.

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- (2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.
- (3) Physical, social and economic responsibility of caring and of participation in community life (§226-4).

*Discussion:* The Project will provide a supportive rental housing component to the community's higher education systems. Project development and construction would contribute toward the attainment of the goals by providing direct and indirect construction-related employment opportunities; generating increased State and County tax revenues; contributing towards the stability, growth, and diversity of local and regional economies; and will enhance the physical environment by appropriate design, architecture, and landscaping.

### Objectives and Policies for Socio-Cultural Advancement – Housing (§226-19)

- Objective: (2) The orderly development of residential areas sensitive to community needs and other land uses.
- Policies: (1) Effectively accommodate the housing needs of Hawai'i's people.  
(5) 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 uses.  
(7) Foster a variety of lifestyles traditional to Hawai'i through design and maintenance of neighborhoods that reflect the cultures and values of the community.

*Discussion:* The Project specifically addresses Objective (2), and is fully supportive and consistent with the above-stated policies. There is currently a shortage of student housing rentals close to UH Hilo and HCC. The Project will fulfill the needs of a segment of the population that would like to live in a facility for students close to school.

## 5.2 COUNTY OF HAWAI'I

### 5.2.1 General Plan of the County of Hawai'i

The *County of Hawai'i Charter* (2000), as amended, requires that the County's General Plan contain a statement of development objectives, standards, and principles with respect to the most desirable use of land for residential, recreational, agricultural, commercial, industrial, and other purposes. The statement must be consistent with proper conservation of natural resources and the preservation of the island's natural beauty and historical sites, desirable density of population, system of thoroughfares, open spaces, public buildings and utilities, public housing projects, drainage facilities, and air pollution.

The Land Use Pattern Allocation Guide (LUPAG) Map of the *County of Hawai'i General Plan* 2005, as amended, designates the entire Project site as Medium Density Urban. This LUPAG

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determination is set forth in a letter dated October 24, 2007 from Planning Director Christopher J. Yuen to Dennis I. Hirota, Hawaii Kahi LLC ([Appendix D](#)). The Medium Density Urban designation permits village and neighborhood commercial, single family and multiple family residential up to 35 units per acre.

The elements of the General Plan most applicable to the Project are listed below, followed by a discussion of the consistency of the proposed Project with the relevant goals, policies, and standards of each element.

### 5.2.1.1 Economic Element

#### GOALS:

- (d) Provide an economic environment that allows new, expanded, or improved economic opportunities that are compatible with the County's cultural, natural and social environment.
- (f) Strive for diversification of the economy by strengthening existing industries and attracting new endeavors.
- (h) Promote and develop the island of Hawai'i into a unique scientific and cultural model, where economic gains are in balance with social and physical amenities. Development should be reviewed on the basis of total impact on the residents of the County, not only in terms of immediate short-term economic benefits.

#### POLICIES:

- (f) Support all levels of educational, employment and training opportunities and institutions.

#### SOUTH HILO COURSES OF ACTION

- (a) Support the development of a master plan for lands within the vicinity of the University of Hawaii at Hilo to incorporate a "college town" concept utilizing an appropriate mixture of residential, commercial and other land uses to complement the university's infrastructure.

*Discussion:* The Project is consistent with the Economic goals, policies, and courses of action by strengthening our higher educational system through private housing units around a "college town" concept on Kāwili. The Project will complement the University's and County's infrastructure, which are adequate to support the Project.

### 5.2.1.2 Housing

#### GOALS

- (a) Attain safe, sanitary, and livable housing for the residents of the County of Hawai'i.

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- (b) Attain a diversity of socio-economic housing mix throughout the different parts of the County.
- (c) Maintain a housing supply that allows a variety of choices.
- (g) Ensure that housing is available to all persons regardless of age, sex, marital status, ethnic background, and income.

### POLICIES

- (a) Encourage a volume of construction and rehabilitation of housing sufficient to meet growth needs and correct existing deficiencies.
- (y) Aid and encourage the development of a wide variety of housing to achieve a diversity of socio-economic housing mix.

### STANDARDS

Housing standards shall consist of and comply with:

- (a) Building Code
- (b) Electrical Code
- (c) Plumbing Code
- (d) Zoning Code
- (e) Subdivision Code
- (f) Standards of the single-family and multiple residential land use elements.

#### 5.2.1.3 Environmental Quality

##### GOALS

- (a) Define the most desirable use of land within the County that achieves an ecological balance providing residents and visitors the quality of life and an environment in which the natural resources of the island are viable and sustainable.
- (b) Maintain and, if feasible, improve the existing environmental quality of the island.
- (c) Control pollution.

##### POLICIES

- (a) Take positive action to further maintain the quality of the environment.
- (d) Encourage the concept of recycling agricultural, industrial, and municipal waste material.

*Discussion:* The Project site does not contain important cultural or natural resources, and construction would not degrade environmental quality. Energy conservation design and measures, and a recycling program would be adopted.

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### 5.2.1.4 Flooding and Natural Hazards

#### GOALS

- (a) Protect human life.
- (b) Prevent damage to man-made improvements.
- (c) Control pollution.
- (d) Reduce surface water and sediment runoff.
- (f) Maximize soil and water conservation.

#### POLICIES

- (g) Development-generated runoff shall be disposed of in a manner acceptable to the Department of Public Works and in compliance with all State and Federal laws.
- (q) Consider natural hazards in all land use planning and permitting.

#### STANDARDS

- (a) "Storm Drainage Standards," County of Hawai'i, October, 1970, and as revised.
- (b) Applicable standards and regulations of Chapter 27, "Flood Control," of the Hawai'i County Code.
- (c) Applicable standards and regulations of FEMA.
- (d) Applicable standards and regulations of Chapter 10, "Erosion and Sedimentation Control," of the Hawai'i County Code.

*Discussion:* The Project will be designed to protect the public welfare in compliance with County standards. Runoff will be disposed of in a manner meeting with the approval of County DPW.

### 5.2.1.5 Historic Sites

#### GOALS

- (a) Protect, restore, and enhance the sites, buildings, and objects of significant historical and cultural importance to Hawai'i.

#### POLICIES

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

*Discussion:* Based upon an *Archaeological Assessment* described in Chapter 4.2.1 of this report, SHPD has determined that no historic properties will be affected. Similarly, the Project should

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not have an impact on culturally or historically significant traditions or practices given the urbanization of the area and the existing residential uses on the Property since the 1970's.

### 5.2.1.6 Public Facilities

#### SOUTH HILO COURSES OF ACTION – EDUCATION

- (a) Participate in the development of student and faculty housing for the university and other joint-use facilities.

*Discussion:* This Project is in line with the South Hilo Course of Action by contributing to the university facilities through private development of student housing.

### 5.2.1.7 Land Use

#### GOALS

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

#### POLICIES

- (a) Zone urban- type of uses in areas with ease of access to community services and employment centers and with adequate public utilities and facilities.
- (c) Allocate appropriate requested zoning in accordance with the existing or projected needs of neighborhood, community, region and County.
- (j) Encourage urban development within existing zoned areas already served by basic infrastructure, or close to such areas, instead of scattered development.

#### STANDARDS

- (a) Zoning requests shall be reviewed with respect to General Plan designation, district goals, regional plans, State Land Use District, compatibility with adjacent zoned uses, availability of public services and utilities, access, and public need.

#### MULTIPLE RESIDENTIAL GOALS

- (a) To provide for multiple residential developments that maximize convenience for the occupants.
- (b) To provide for suitable living environments that accommodate the physical, social and economic needs of the island residents.
- (c) To enhance the overall quality of life in our residential communities.

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### MULTIPLE RESIDENTIAL POLICIES

- (a) Appropriately zoned lands shall be allocated in the demand for multiple residential dwellings increases. These areas shall be allocated with respect to places of employment, shopping facilities, educational, recreational and cultural facilities, and public facilities and utilities.
- (h) Require developers to provide basic infrastructure necessary for development.

### MULTIPLE RESIDENTIAL STANDARDS

- (e) Development shall be located in areas where public utilities can be economically provided at a level adequate to meet the demand for the concentrated service.
- (f) Recreational area and/or facilities shall be considered in multiple residential development.

### SOUTH HILO COURSES OF ACTION

- (b) Appropriately zoned lands shall be allocated as the need for multiple residential development increases.

*Discussion:* The Project site is in the Medium Density Urban District on the General Plan LUPAG map. A change of zone is requested to RM-1.5 to allow the development of the much-needed student housing units.

The Project centralizes rental housing in the urban area where infrastructure systems, such as water, sewer, roads, and utilities, are available or can be brought up to standards to meet the Project demands. Official bicycle lanes, mass transit routes, and pedestrian walkways support the Project site due to its close proximity to UH Hilo. The location of the Project close to the University campus coupled with the amenities proposed within the Project, delivers maximum convenience for its occupants.

#### 5.2.2 Special Management Area (SMA)

The Project site is not within the County's SMA.

#### 5.2.3 County Zoning

Kāwili Street Student Housing Project site is zoned Single-Family Residential (RS-10) as illustrated in [Figure 4](#). The Applicant will submit a change of zone application from RS-10 to Multiple-Family Residential (RM-1.5) to allow the proposed residential living at the density proposed. Student housing is a permitted use in the RM-1.5 zoning district. [Figure 11](#) provides a list of permitted uses in the RM zoning district, height limits, and other zoning regulations. Kāwili Street Student Housing will comply with all regulations and requirements of the RM district, if approved.

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### *Discussion*

The Property is in the State Land Use Urban District and is designated as Medium Density Urban on the General Plan LUPAG Map. A change of zone is requested to RM-1.5 to allow the development of much-needed student housing on the Project site. The proposed 106 student housing units are consistent with the LUPAG designation of Medium Density Urban uses.

The construction of Kāwili Street Student Housing in very close proximity to UH Hilo and HCC embodies the over-arching goals, policies, standards and courses of action stated above. That is, focusing housing in urban areas with adequate urban infrastructure and with compatible land uses while providing a diversified social mix in the community.

The requested change of zone to RM-1.5 would be consistent with RM and CN rezonings granted in the vicinity. Figure 4 illustrates the zoning and land use pattern of surrounding properties in the neighborhood.

Kāwili Street Student Housing project will not result in substantial adverse impact upon the surrounding area, community or region. It will provide long, overdue rental housing opportunities to UH Hilo and HCC students. The prospect of a greater housing inventory will help to promote UH Hilo as a residential campus, and will offer a convenience not currently available to HCC students.

All utilities, including water, sewer, electric, and telephone systems, are available to the site. Kāwili Street will require left-turn storage lane improvements. These will be coordinated with any improvements at the intersection of Kino'ole Avenue/Kāwili Street and the eventual traffic signal at the University entrance.

### **5.3 SUMMARY OF PERMITS AND APPROVALS**

In addition to a change of zone, the following permits and approvals to establish Kāwili Street Student Housing will be required, but may not be limited to:

- Plan Approval
- Grading Permit
- Right-of-Way Construction
- Driveway Permit
- Building Permits
- National Pollutant Discharge Elimination System (NPDES)
- Underground Injection Control (UIC)

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**FIGURE 11**

**HAWAII COUNTY CODE: MULTIPLE-FAMILY RESIDENTIAL DISTRICT**

**Division 3. RM, Multiple-Family Residential Districts.**

**Section 25-5-30. Purpose and applicability.**

The RM (multiple-family residential) district provides for medium and high density residential use. It covers areas with full community facilities and services. It may occupy transition areas between commercial or industrial areas and other districts of less intense land use.

**Section 25-5-31. Designation and density of RM districts.**

- (a) Each RM (multiple-family residential) district shall be designated on the zoning map by the symbol "RM" followed by a number which indicates the required land area, in thousands of square feet, for each dwelling unit or for each separate rentable unit in the case of boarding, rooming, or lodging houses, fraternity or sorority houses.
- (b) In case any of the permitted uses have dormitories, two beds shall be equivalent to one separate rentable unit for purposes related to the required land area in the RM district.
- (c) The maximum density designation in the RM district shall be .75 or seven hundred fifty square feet of land area per dwelling unit or separate rentable unit.
- (d) In the RM district the following density designations shall be used: .75, 1, 1.5, 2, 2.5, 3, 3.5, 4 and upward in 0.5 increments.

**Section 25-5-32. Permitted uses.**

- (a) The following uses shall be permitted in the RM district:
  - (1) Adult day care homes.
  - (2) Bed and breakfast establishments, as permitted under section 25-4-7.
  - (3) Boarding facilities, rooming, or lodging houses.
  - (4) Cemeteries and mausoleums, as permitted under chapter 6, article 1 of this Code.
  - (5) Commercial or personal service uses, on a small scale, as approved by the director, provided that the total gross floor area does not exceed one thousand two hundred square feet and a maximum of five employees.
  - (6) Community buildings, as permitted under section 25-4-11.
  - (7) Crop production.
  - (8) Dwellings, double-family or duplex.
  - (9) Dwellings, multiple-family.
  - (10) Dwellings, single-family.
  - (11) Family child care homes.
  - (12) Group living facilities.
  - (13) Home occupations, as permitted under section 25-4-13.
  - (14) Meeting facilities.
  - (15) Model homes, as permitted under section 25-4-8.
  - (16) Neighborhood parks, playgrounds, tennis courts, swimming pools, and similar neighborhood recreational areas and uses.
  - (17) Public uses and structures, as permitted under section 25-4-11.
  - (18) Temporary real estate offices, as permitted under section 25-4-8.
  - (19) Time share units situated in any of the following:
    - (A) Areas designated as resort under the general plan land use pattern allocation guide (LUPAG) map.

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(B) Areas determined by the director to be within resort areas identified by the general plan land use element, except for retreat resort areas.

(C) Areas determined for such use by the council, by resolution.

(20) Utility substations, as permitted under section 25-4-11.

(b) In addition to those uses permitted under subsection (a) above, the following uses may be permitted in the RM district, provided that a use permit is issued for each use:

(1) Care homes.

(2) Churches, temples and synagogues.

(3) Crematoriums.

(4) Day care centers.

(5) Golf courses and related golf course uses, including golf driving ranges, golf maintenance buildings and golf club houses.

(6) Hospitals, sanitariums, old age, convalescent, nursing and rest homes.

(7) Major outdoor amusement and recreation facilities.

(8) Mortuaries.

(9) Schools.

(10) Telecommunication antennas and towers.

(11) Yacht harbors and boating facilities.

(c) Buildings and uses normally considered directly accessory to the uses permitted in this section shall also be permitted in the RM district.

### **Section 25-5-33. Height limit.**

(a) In areas in the County outside of the City of Hilo, the height limit in the RM district shall be forty-five feet.

(b) In the City of Hilo, the height limit in the RM district shall be one hundred twenty feet.

### **Section 25-5-36. Minimum yards.**

Minimum yards in the RM district shall be as follows:

(1) Front and rear yards, twenty feet; and

(2) Side yards, eight feet for a one-story building, plus an additional two feet for each additional story.

### **Section 25-5-37. Landscaping.**

Landscaping shall be provided on a minimum of twenty percent of the total land area of any building site in the RM district, except for lots containing only one single-family dwelling and accessory buildings. Parking areas shall not be included within the area required for landscaping on any building site.

### **Section 25-5-38. Other regulations.**

(a) There may be more than one main building on any building site in the RM district.

(b) Distance between main buildings on the same building site in the RM district shall be at least fifteen feet.

(c) Plan approval shall be required for all new buildings and additions to existing buildings in the RM district, except for construction of one single-family dwelling and any accessory buildings per lot.

(d) Exceptions to the regulations for the RM district regarding heights, building site areas, building site average widths and yards, may be approved by the director within a planned unit development.

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## **6.0 FINDINGS AND DETERMINATION**

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## **6.0 FINDINGS AND DETERMINATION**

To determine whether the proposed action may have a significant impact on the environment, every phase and expected consequences, both primary and secondary, and the cumulative as well as short- and long-term effects have been examined. Based on the research evaluated and the studies performed, a finding of no significant impact is anticipated as summarized below.

### **6.1 SIGNIFICANCE CRITERIA**

- (1) Is not likely to involve an irrevocable commitment to natural, archaeological, or cultural resources

The Project site is within the former “Waiākea Cane Lots” and currently contains ten residences. The archaeological assessment found no archaeological sites or features, and has been mechanically leveled prior to the construction of the homes in the 1970s. The Property has been assessed for natural and cultural resources, and findings confirm that the construction of the Project will not cause a loss of natural, archaeological, or cultural resources.

- (2) May increase the range of beneficial uses of the environment

The Property is surrounded by urban development on all sides and is situated close to the UH Hilo and HCC. The construction of student housing will augment the current, limited availability of housing units for this segment of the population; thus, increasing the range of beneficial uses of the Project site.

- (3) Will not conflict with the State and County’s long term environmental policies, goals and guidelines

The Kāwili Street Housing Project is consistent with the 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 Project will provide much-needed housing for students, and will, by its close proximity to the institutions of higher education, reduce traffic and other stresses to the City’s infrastructure. Implementing the Project will strengthen the concept of Hilo as a “college town,” a Course of Action in the General Plan.

- (4) May positively affect the economic or social welfare of the community or State

Providing additional student housing units to the market will assist the community and the students by concentrating student activity near the university and college. There will be a growing synergy between UH Hilo and the public, which evolves into a “college town” setting—improving the economic and social welfare of the community and, ultimately, the State.

## KAWILI STREET STUDENT HOUSING PROJECT Draft Environmental Assessment

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- (5) Will not substantially affect public health

Short-term impacts of the Project on air and noise quality levels are not anticipated to be significant, and mitigation measures will be in place to minimize any effects on public health. The Applicant will work with Waiākea High School administrators to curtail construction noise during school hours.

When the Project is completed, public health will not be substantially affected by the additional residential units.

- (6) Will involve secondary impacts such as effects on public facilities

Kāwili Street Student Housing Project should not significantly generate secondary impacts to public facilities, such as water, roads, wastewater, and parks. The primary generators, UH Hilo and HCC, will continue its efforts to recruit students. Secondary impacts on public infrastructure and facilities will not be generated to any greater degree than will already occur with the students living elsewhere. Concentrating the student population will help to moderate such impacts.

- (7) Is not likely to involve substantial degradation of environmental quality

The Kāwili Street Student Housing Project will not involve substantial degradation of environmental quality as it has already been leveled, and has no critical environmental attributes. While there will be short-term construction impacts on noise and air; best management practices will be invoked to reduce noise and air pollution.

- (8) Cumulatively will not have considerable effect upon the environment and will not involve a commitment for larger actions

This Environmental Assessment is prepared to assess the effect of the Project individually and cumulatively. The addition of one left-turn storage lane on Kāwili Street, a County road, is proposed to mitigate the level of service on Kāwili Street beyond the year 2013. In the long-term, future improvements to Puainako and the County's study of the Kīlauea and Kino'ole travel corridors signify that proper planning is occurring to address regional traffic. Locally, the addition of a traffic signal at the entrance of UH Hilo with Kāwili Street is planned.

The remaining findings of the Environmental Assessment conclude that impacts are minimal, and can be mitigated by implementing measures described in this document.

- (9) Does not substantially affect a rare, threatened, or endangered species or its habitat

The Project site contains residences that were built in the mid-1970's. The land has been leveled, and is not a habitat for any rare, threatened, or endangered species.

- (10) Will not be detrimental to air or water quality or ambient noise levels

## KĀWILI STREET STUDENT HOUSING PROJECT Draft Environmental Assessment

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Kāwili Street Student Housing Project will not include any significant sources of air emissions or noise levels that would violate existing federal or state standards. Construction activities will impact air and noise quality; but the impacts will be limited by construction practices (e.g., mufflers, water trucks, construction during daylight hours only, etc.) Best Management Practices will be implemented for environmental protection throughout Project development.

- (11) Will not affect environmentally sensitive areas such as a flood plain and tsunami zone

The Project is not in a flood plain, a coastal area, or an erosion-prone zone. It is a significant distance from the ocean and other bodies of water. Thus, Kāwili Street Student Housing Project will not affect environmentally-sensitive areas.

- (12) Will not substantially affect scenic vistas and view planes identified in county or state plans or studies

No scenic vistas, view planes or exceptional trees identified in the General Plan, the County Code, or other plans or studies will be affected by the Project. Visual impacts of the Project to surrounding properties will be mitigated through the use of landscaping and sensitive design. The Project will be constructed to a height of 50 feet—less than half the height limit of 120 feet for the City of Hilo. Adjacent buildings on the Waiākea High School campus and, eventually, the Hawai'i Island Veterans' Memorial Project are or will be taller.

- (13) Will result in additional energy consumption over current levels

The construction and operation of the Project will consume energy. Energy and water conservation measures could be instituted through design and technologies, such as solar water heating, energy-saving lighting/ventilation/appliances, and water saving features. Students will also be encouraged to practice conservation.

### 6.2 DETERMINATION

Chapter 343, HRS, and Title 11, Chapter 200, HAR, DOH, "Environmental Impact Statement" require an Environmental Assessment for any proposed use of County lands. In the case of the Kāwili Street Student Housing Project, a left-turn lane on Kāwili Street is warranted in the year 2013. If water and sewer lines require upgrade, the Project will be 'using' these County lands as well.

In considering the significance of potential environmental effects, the sum of effects on the quality of the environment was considered and the overall and cumulative effects of the action were evaluated. Every phase of the proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short- and long-term effects of the action were considered. Implementation of the proposed action would result in no significant adverse

**KAWILI STREET STUDENT HOUSING PROJECT**  
**Draft Environmental Assessment**

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impacts as defined by HRS, while resulting in such positive impacts as providing essential student housing in close proximity to the university and college campuses.

As a result, it is determined that the proposed action will not significantly impact the environment, based on the significance criteria listed in 11-20-12 of the Environmental Impact Statement Rules. Therefore, a "Finding of No Significant Impact" (FONSI) is anticipated for this Project.

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**7.0 AGENCIES, ORGANIZATIONS,  
AND INDIVIDUALS TO BE  
CONSULTED**

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**KAWILI STREET STUDENT HOUSING PROJECT**  
**Draft Environmental Assessment**

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**7.0 AGENCIES, ORGANIZATIONS, AND  
INDIVIDUALS TO BE CONSULTED**

The preparation of the Draft EA and its review by affected federal, state and county agencies, organizations and members within the community will include the following:

**7.1 APPROVING AGENCY**

County of Hawai'i Planning Department

**7.2 COUNTY OF HAWAI'I**

Civil Defense Agency  
Department of Environmental Management (2 copies)  
Department of Finance – Property Management Division  
Department of Parks and Recreation  
Department of Public Works (4 copies)  
Department of Research and Development  
Department of Water Supply  
Fire Department  
Hawai'i County Council (9 copies)  
Office of Housing and Community Development  
Office of the Mayor  
Police Department

**7.3 STATE OF HAWAI'I**

Department of Business, Economic Development and Tourism-Planning Office  
Department of Education  
Department of Land and Natural Resources (5 copies))  
Department of Land and Natural Resources-State Historic Preservation Division  
Department of Health (3 copies)  
Department of Health-Office of Environmental Quality Control (4 copies)  
Department of Transportation-Highways Division  
Hawai'i Community College  
Office of Hawaiian Affairs  
State of Hawai'i, Island of Hawai'i Representative Jerry Chang  
State of Hawai'i, Island of Hawai'i Representative Clifton Tsuji  
State of Hawai'i, Island of Hawai'i Senator Lorraine Inouye  
State of Hawai'i Island of Hawai'i Senator Russell Kokubun  
University of Hawai'i at Hilo  
Waiākea High School

**7.4 FEDERAL**

U.S. Senator Daniel K. Inouye  
U.S. Senator Daniel Akaka  
U.S. Representative Mazie Hirono

**KAWILI STREET STUDENT HOUSING PROJECT**  
**Draft Environmental Assessment**

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**7.5 LIBRARIES**

Hilo Public Library  
UH Hilo Library

**7.6 PRIVATE**

The Gas Company  
Hawai'i Electric Light Company  
Hawaiian Telcom  
Other entities as may be identified

**7.7 COMMUNITY**

Hawai'i Island Veterans' Memorial, Inc.  
Organizations or individuals as may be identified

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## **8.0 REFERENCES**

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**KAWILI STREET STUDENT HOUSING PROJECT**  
**Draft Environmental Assessment**

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## **8.0 REFERENCES**

Baker, H.L. et al., *Detailed Land Classification, Island of Hawaii*. Land Study Bureau, University of Hawai'i, 1965.

County of Hawai'i (2005) *General Plan of the County of Hawai'i 2005. As Amended*, Hilo, Hawai'i.

Haun & Associates, *Archaeological Assessment, TMK: (3) 2-4-01:116, Land of Waiakea, South Hilo District, Island of Hawaii*, January 2008.

Hawai'i Department of Labor and Industrial Relations, "Current Unemployment Rates."

Hawai'i State Department of Agriculture, *Agricultural Lands of Importance to the State of Hawaii*. Honolulu, Hawai'i, 1977.

Heliker, C., *Volcanic and Seismic Hazards of the Island of Hawaii: U.S. Geological Survey*, 1991.

Juvik, Sonia P. & James O. Juvik, eds., *Atlas of Hawaii*. 3<sup>rd</sup> Edition. Honolulu: University of Hawaii Press, Honolulu, 1998.

M&E Pacific, Inc., *Honpa Hongwanji Hilo Betsuin Student Housing Project, Traffic Impact Analysis Report, TMK: 2-4-01:116*, June 2008.

Macdonald, Gordon A., Agatin T. Tabbot, Frank L. Peterson (1983) *Volcanoes Under the Sea: The Geology of Hawaii*. University of Hawaii Press, Honolulu.

Ohashi, Yukie, *Hawaii Island Veterans' Memorial Project, Final Environmental Assessment*, July 2006.

State Department of Business and Economic Development and Tourism, *County Social, Business and Economic Trends in Hawaii: 1990-2005, December 2006*, Honolulu, Hawai'i.

Terry, Ron and SSFM International, *China-U.S. Center, Final Environmental Impact Statement*, March 2002.

U.S. Department of Agriculture Soil Conservation Service. *Island of Hawaii, State of Hawaii*, 1972.

### **INTERNET WEBSITES**

[http://gis.hawaiianfip.org/nfip\\_gis/](http://gis.hawaiianfip.org/nfip_gis/)

<http://www.uhh.hawaii.edu>

<http://www.hawaii.hawaii.edu>

<http://www.en.wikipedia.org>

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# APPENDICES

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**APPENDIX A**

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***LETTER OF AUTHORIZATION  
FROM LANDOWNER***

Headquarters



## HONPA HONGWANJI MISSION OF HAWAII

1727 PALI HIGHWAY / HONOLULU, HAWAII 96813 / PH: 522-9200 / FAX: 522-9209

June 26, 2008

TO WHOM IT MAY CONCERN:

The purpose of this letter is to inform you that **Honpa Hongwanji Mission of Hawaii**, owner of property identified by TMK: (3) 2-4-01:116, has authorized its branch temple **Honpa Hongwanji Hilo Betsuin** to proceed with the development, environmental processing, legislative approval, permitting and other necessary approvals to effectuate its plans for a student housing project on TMK: (3) 2-4-01:116.

Sincerely,

A handwritten signature in black ink, appearing to read 'Alton Miyamoto'.

Alton Miyamoto, President  
Honpa Hongwanji Mission of Hawaii

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## **APPENDIX B**

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### ***ARCHAEOLOGICAL ASSESSMENT***

Haun & Associates

January 2008

### ***SHPD LETTER***

February 19, 2008

### ***SHPD LETTER***

March 17, 2008

# **ARCHAEOLOGICAL ASSESSMENT**

**TMK: (3) 2-4-01:116**

**LAND OF WAIAKEA**

**SOUTH HILO DISTRICT**

**ISLAND OF HAWAI'I**

## **Haun & Associates**

Archaeological, Cultural, and Historical Resource Management Services  
HCR 1 Box 4730, Keaau, Hawaii 96749 Phone: 982-7755 Fax: 982-6343

**ARCHAEOLOGICAL ASSESSMENT**

**TMK: (3) 2-4-01:116**

**LAND OF WAIAKEA**

**SOUTH HILO DISTRICT**

**ISLAND OF HAWAI'I**

By:

Alan E. Haun, Ph.D.

Prepared for:

Honpa Hongwanji Hilo Betsuin  
c/o Mr. Sydney Fuke  
100 Pauahi Street, Suite 212  
Hilo, Hawaii 96720

January 2008

**Haun & Associates**

Archaeological, Cultural, and Historical Resource Management Services  
HCR 1 Box 4730, Keaau, Hawaii 96749 Phone: 982-7755 Fax: 982-6343

## Introduction

At the request of Mr. Sydney Fuke on behalf of Honpa Hongwanji Hilo Betsuin, Haun & Associates has prepared an archaeological assessment for a c. 4.0-acre parcel located in the Land of Waiakea, South Hilo District, Island of Hawai'i (Figure 1 and 2). The objective of the survey was to satisfy historic preservation regulatory review requirements of the Department of Land and Natural Resources-Historic Preservation Division (DLNR-SHPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 13, State Historic Preservation Rules (2003).

No archaeological sites or features were identified during the survey, therefore the project is documented as an archaeological assessment pursuant to Chapter 13-284-5(5A). As required, this report contains a description of the project area, field methods and background research.

## Project Area Description

The project area consists of a rectangular-shaped c. 4.0-acre parcel that varies in elevation from c. 59 to 78 ft, bordered by Kawili Street to the northwest, by the Waiakea Education Complex to the southwest and southeast and by occupied homes to the northeast. A paved road extends to the southeast from Kawili Street into the parcel, providing access to ten existing houses that are present within the project area (Figure 3 and 4). These houses were occupied at the time of the present study. According to the current landowner, the houses were constructed in the 1970's. The remainder of the project area is comprised of a maintained grass lawn (Figure 5).

The terrain within the project area is relatively level and the soil is comprised of Keaukaha extremely rocky muck on 6-20% slopes (Sato et al. 1973: Sheet Number 74). According to Sato et al., this soil occurs near the city of Hilo and is comprised of a thin surface layer of very dark brown muck over paohoe lava bedrock (1973:57). This soil evidences a rapid permeability, a medium runoff and a slight erosional hazard. Sato et al. (1973:27) indicates that much of this soil type is in native forest with some areas having been cleared for pasture and sugarcane. Wolfe and Morris (2001) indicate that the lava flows within the project area originated from Mauna Loa Volcano deposited 750 to 1,500 years ago. The rainfall in the vicinity of the project area ranges from 150 to 155 inches per year (Juvik and Juvik 1998:57).

## Field Methods

The field work portion of the project was conducted on January 29, 2008 by Alan Haun, Ph.D. The field work portion of the project required 0.5 labor day to complete. The project area was subjected to 100% surface examination. No archaeological sites or features were identified.

## Background Research

The project area is situated in the *ahupua'a* of Waiakea in South Hilo District. The *ahupua'a* is one of the largest in the district covering over 95,000 acres. The *ahupua'a* extends along the coast from the west side of Hilo Bay to the Puna District boundary and inland to approximately 6,000 ft elevation. Much of the following is summarized from *Hilo Bay: A Chronological History* (Kelly et al. 1981), an extensive and thorough compendium of historical information about Hilo including Waiakea.

Hawaiian traditional and legendary accounts attest to the longstanding importance of Waiakea. The chief of the Hilo region, Kulukulu'a, who resided in Waiakea, was the first conquest of 'Umi-a-Liloa in his campaign to unify the districts of Hawaii Island. Hilo with its large bay, fishponds, wet taro fields, and abundant freshwater was a population center for commoners and royalty. Kamehameha I and his court resided in Hilo in the 1890s. In preparation for his planned invasion of Kauai in 1802, Kamehameha built a canoe fleet at Hilo, reportedly consisting of 800 vessels.

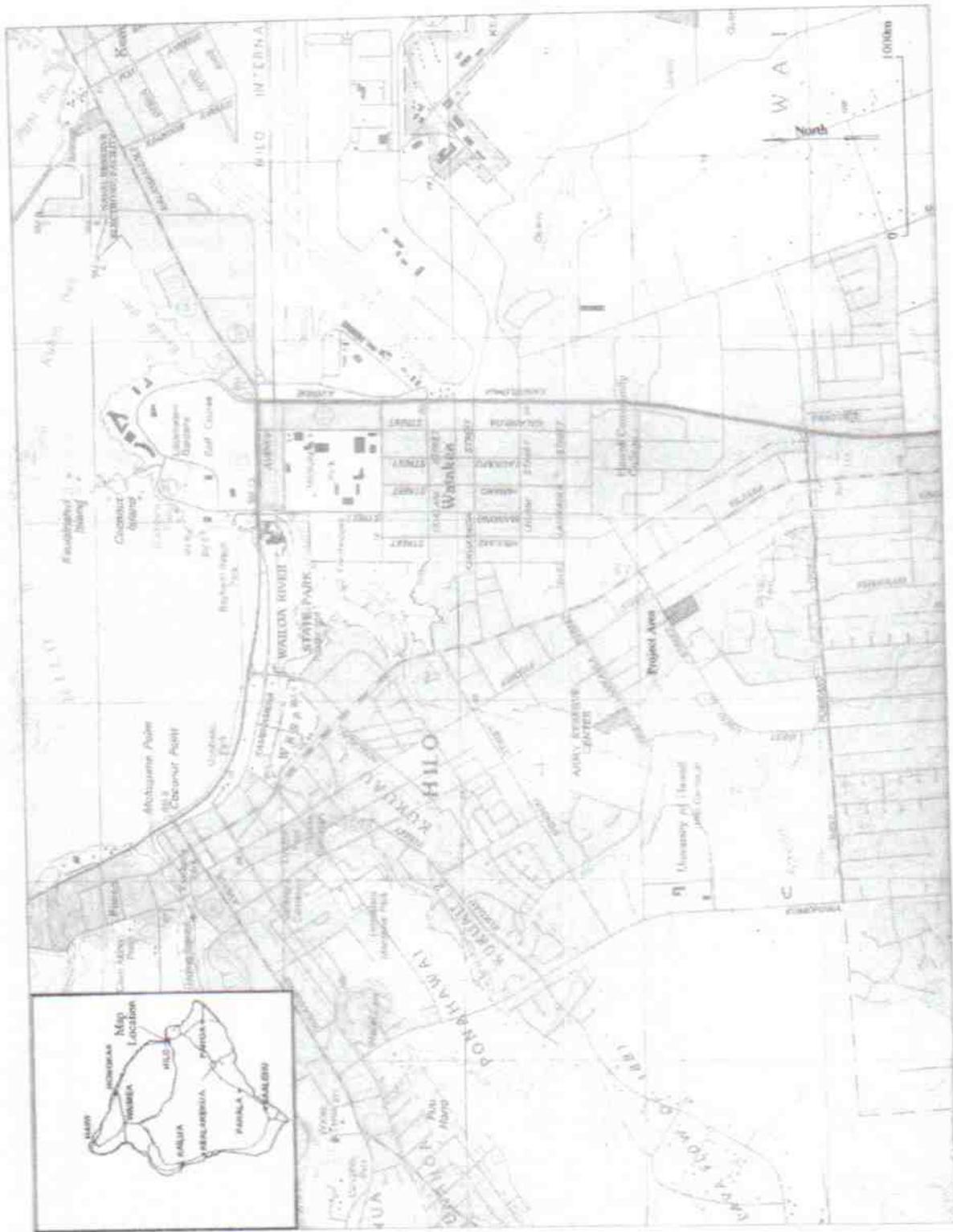


Figure 1. Portion of USGS Hilo Quadrangle showing Project Area

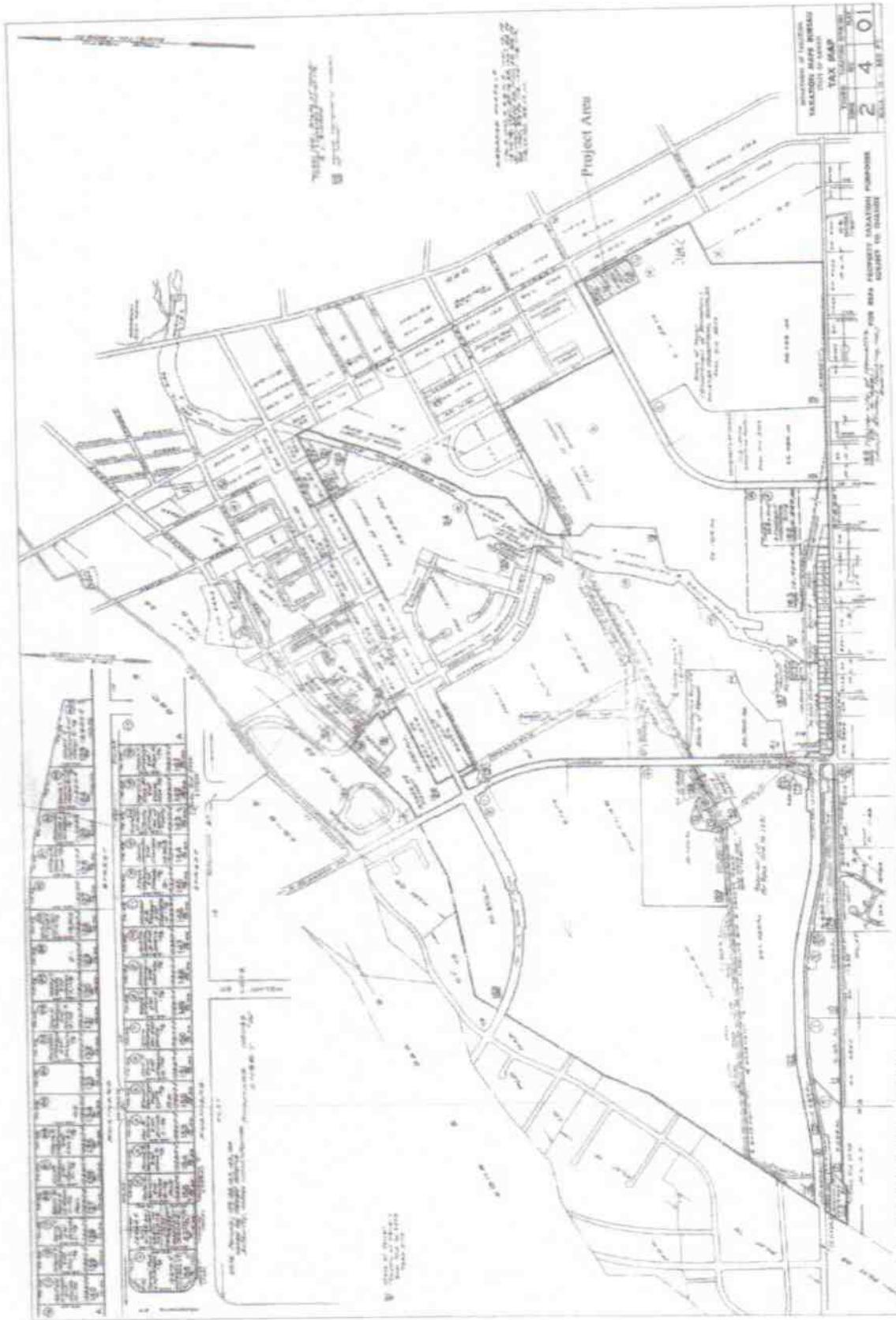


Figure 2. Tax Map Key 2-4-01 showing Project Area



Figure 3. Project Area Overview (from VirtualEarth.com)



Figure 4. Existing Houses, view to northeast



Figure 5. Lawn Area, view to south-southwest

In 1824, a missionary station was established in Waiakea. Soon after, churches and schools were established. Whalers began stopping at Hilo in the mid-1820s. In the 1830s, a sawmill was built, and two stores were opened. By the end of the decade, a sugar cane plantation and mill were established on Ponahawai lands. By 1857, there were three sugar cane mills in the Hilo area. Large tracts of land were put in cane cultivation and sugar cane was also grown by individuals around their houses. A sugar mill was established in Waiakea at the inland end of Waiakea Fishpond in the late 1870s. By 1880, 1,400 acres of sugar cane were in cultivation and by the end of the decade over 5,600 acres were cultivated. In the 1900s, the population of Hilo grew dramatically with the expansion of sugar cane cultivation, pineapple production, the timber industry, and other commercial developments.

McEldowney (1979) used limited site inventory and historic documentary evidence to develop a traditional Hawaiian land use and settlement pattern model for the Hilo area. The model consists of five elevation-defined zones: Coastal Settlement, Upland Agricultural, Lower Forest, Rainforest, and Sub-Alpine or Montane. The Coastal Settlement Zone extended approximately 0.5 miles inland from the shoreline between sea level and 50 ft elevation. The zone was the most densely populated with both permanent and temporary habitations, high status chiefly residences, and *heiau*. Settlements were concentrated at Hilo Bay and sheltered bays and coves.

The Upland Agricultural Zone was situated between approximately 50 ft and 1,500 ft elevation. Settlement in the zone consisted of scattered residences among economically beneficial trees and agricultural plots of dryland taro and bananas. Lava tubes were utilized for shelter. A pattern of shifting cultivation is believed to have converted the original forest cover to parkland of grass and scattered groves of trees. Wetland cultivation of taro occurred along streams.

The Lower Forest Zone ranged from 1,500 ft to 2,500 ft elevation. Timber and other forest resources such as medicinal plants, *olona*, and birds were gathered from the zone. Site types consisted of temporary habitations, trails, shrines, and minor agricultural features in forest clearings and along streams. Sites in the Rainforest Zone (2,500-5,000 ft elevation) and Sub-alpine or Montane Zone (5,000-9,000 ft) were limited to trails and associated temporary habitations. These zones were used for intra-island travel and gathering of valued resources including hardwoods, birds, and stone for tool making.

The project area is situated within the lower portion of McEldowney's Upland Agricultural Zone where scattered residences and agricultural plots were situated in prehistoric to early historic times. Historic site types in the project area vicinity likely included plantation agriculture-related features and residences.

## FINDINGS

No archaeological sites or features and no Land Commission Awards are present within the parcel. As stated, the project area is currently utilized for residences. The relatively level terrain within the parcel indicates that the project area was mechanically leveled prior to the construction of the houses in the 1970s. No further archaeological work is recommended based on the negative survey results.

## REFERENCES

DLNR (Department of Land and Natural Resources)

- 2003 Hawaii Administrative Rules, Title 13. Dept. of Land and Natural Resources, Subtitle 13, State Historic Preservation Division Rules.

Juvik, S.P. and J.O. Juvik (editors)

- 1998 *Atlas of Hawaii*, Third Edition. University of Hawaii Press. Honolulu.

Kelly, M., B. Nakamura and D.B. Barrere

- 1981 Hilo Bay: A Chronological History, Land and Water Use in the Hilo Bay Area, Island of Hawaii. Prepared for U.S. Army Engineer District, Honolulu.

McEldowney, H.

- 1979 Archaeological and Historical Literature Search and Research Design: Lava Flow Control Study, Hilo, Hawaii. Prepared for the U.S. Army Engineer District, Honolulu. Department of Anthropology. Bishop Museum.

Sato, H.H., W. Ikeda, R. Paeth, R. Smythe, and M. Takehiro, Jr.

- 1973 *Soil Survey of the Island of Hawaii, State of Hawaii*. U.S. Department of Agriculture, Soil Conservation Service and University of Hawaii Agricultural Experiment Station. Washington, D.C.: Government Printing Office.

Wolfe, E.W., and J. Morris

- 2001 Geologic Map of the Island of Hawaii. U.S. Department of the Interior, U.S. Geological Survey. Miscellaneous Investigations Series.

3/4/08 577

LINDA LINGLE  
OFFICER OF RECORD



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION  
601 KAMOKILA BOULEVARD, ROOM 555  
KAPOLEI, HAWAII 96707

LAURA B. THORLEN  
CLERK FOR  
BOARD OF LAND AND NATURAL RESOURCES  
CLERK FOR WATER RESOURCES MANAGEMENT

RUSSELL Y. TSUIH  
PROTOTYPY

KEN C. KAWABARA  
PLANNING SECTION - WATER

AGENCY REPORTS  
REGULATORY AND COMPLIANCE  
REGULATORY COMPLIANCE AND  
CLAIMS OF WATER RESOURCES MANAGEMENT  
OFFICE OF LAND AND NATURAL RESOURCES  
REGULATION AND SURVEILLANCE DIVISION  
ENGINEERING

PROPERTY APPRAISAL  
HISTORIC PRESERVATION  
CLERK FOR LAND RESOURCES  
LAND  
STATE POLICE

February 19, 2008

Alan E. Haun, Ph.D.  
Haun & Associates  
HCR 1 Box 4730  
Keaau, Hawaii 96749

LOG NO: 2008.  
DOC NO: 0802MD42  
Archaeology

Dear Dr Haun:

**SUBJECT: Chapter 6E-42 Historic Preservation Review –  
Request for “No Historic Properties Affected” for a 4.0 acre parcel  
Waiakea Ahupua`a, South Hilo District, Island of Hawai`i  
TMK: (3) 2-4-01:116**

Thank you for the opportunity to comment on the aforementioned project.

We determine that **no historic properties will be affected** by this undertaking because:

- Intensive cultivation has altered the land
- Residential development/urbanization has altered the land
- Previous grubbing/grading has altered the land
- An accepted archaeological inventory survey (AIS) found no historic properties
- SHPD previously reviewed this project and mitigation has been completed
- Other: *An accepted archaeological assessment prepared for Mr. Sydney Fuke on behalf of Honpa Hongwanji Hilo Besuin (Huan project no. 570, submitted to SHPD on February 12, 2008) found no historic properties*

In the event that historic resources, including human skeletal remains, lava tubes, and lava blisters/bubbles are identified during the construction activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance, and the State Historic Preservation Division, Hawaii Island Section, needs to be contacted immediately at (808) 896-0514.

Please contact Morgan Davis at (808) 896-0514 if you have any questions or concerns regarding this letter.

Aloha,

Nancy McMahon, Acting Archaeology Branch Chief  
State Historic Preservation Division

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

RUSSELL V. TSUI  
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  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

March 17, 2008

Alan Haun, Ph.D.  
Haun and Associates, Inc.  
HCR 1 Box 4730  
Kea'au, HI 96749

LOG NO: 2008.1103  
DOC NO: 0803TS15  
Archaeology

Dear Dr. Haun:

**SUBJECT: Chapter 6E-42 Historic Preservation Review –  
Archaeological Assessment for Honpa Hongwanji Hilo Betsuin  
Waiakea Ahupua'a, South Hilo District, Island of Hawai'i  
TMK: (3) 2-4-01:116**

Thank you for the opportunity to comment on the aforementioned project by Haun and Associates, Inc. (Haun 2008), which we received on February 15, 2008.

This archaeological assessment reports on the survey of 4.0 acres. No archaeological sites or features were identified. The project area is heavily urbanized and was likely graded in the 1970's.

The background section is adequate for the scope of this project and the inventory methods are acceptable. These and the accompanying illustrations and photographs meet the requirements of Hawaii Administrative Rules, Chapter 13-276-5(a) and (c).

We approve of the report as final, concur with its recommendations and conclude that the historic preservation review process is at an end.

Please contact Assistant Hawaii Island Archaeologist, Tim Scheffler ((808) 981-2979 or, timothy.e.scheffler@hawaii.gov) if you have any questions or concerns regarding this letter.

Aloha,

A handwritten signature in cursive script that reads "Nancy McMahon".

Nancy McMahon, Acting Archaeology Branch Chief  
State Historic Preservation Division

TS

✓ cc- Mr. Sydney Fuke, 100 Pauahi Street, Suite 212, Hilo, HI 96720

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## APPENDIX C

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### ***TRAFFIC IMPACT ANALYSIS REPORT***

M & E Pacific, Inc.

June 2008

(Note: Standard Appendices A, B and C were provided in TLAR to DPW and DOT, but are not included in this EA. Appendices are available upon request.)

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# Traffic Impact Analysis Report

for

## Honpa Hongwanji Hilo Betsuin Student Housing Project

Hilo, Island of Hawai'i, Hawai'i

Tax Map Key Number (3)2-4-001: 116

**JUNE 2008**

*Prepared for:*

Sidney Fuke Planning Consultant  
100 Pauahi Street, Suite 212  
Hilo, Hawai'i 96720

*Prepared by:*

**M&E Pacific, Inc.**

METCALF&EDDY | AECOM

Davies Pacific Center, 841 Bishop Street  
Suite 1900, Honolulu, Hawai'i 96813

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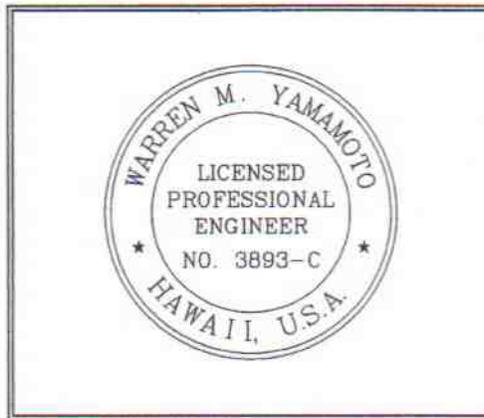
# Honpa Hongwanji Hilo Betsuin Student Housing Project

Hilo, Island of Hawai'i, Hawai'i

## Traffic Impact Analysis Report

TMK: (3)2-4-001:116

June 2008



Expiration Date:  
April 30, 2010

*This Traffic Impact Analysis Report has been conducted and prepared by the undersigned professional engineer licensed in the State of Hawai'i in accordance with the best practices of the industry.*

Signature  
M & E Pacific, Inc.  
METCALF & EDDY | AECOM

26 JUN 2008

Date

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**TRAFFIC IMPACT ANALYSIS REPORT**  
for the  
**HONPA HONGWANJI HILO BETSUIN**  
**STUDENT HOUSING PROJECT**

A student housing project is being proposed in Hilo, Hawai'i, adjacent to the University of Hawai'i at Hilo. This report documents a study that was conducted to identify the traffic impacts of the proposed project and to recommend any mitigating measures.

### **PROJECT DESCRIPTION**

The Honpa Hongwanji Hilo Betsuin is proposing a student housing project in Hilo, Hawai'i, which would include 106 units with a maximum of 400 beds. There would be 400 parking stalls provided for residents, staff, and guests. The project site is on a 5.0 acre lot on the south side of Kawili Street between Kapiolani Street and Kino'ole Street as shown on **Figure 1**. The project site is identified as Tax Map Key (3)2-4-001:116. The project site is located in proximity to the University of Hawai'i at Hilo and the *mauka* campus of Hawai'i Community College. The Manono (*makai*) campus of Hawai'i Community College is located three blocks northeast on Kawili Street. The Waiakea High School is located immediately southwest of the project site.

The proposed project is expected to be ready for occupancy by 2011. The project site currently has 8-10 single family dwelling units. The proposed project will require rezoning and must comply with the Concurrency Conditions of County of Hawai'i Ordinance No. 07-99. To comply with the forecasting requirements of the ordinance, traffic forecasts were prepared for 2013, 2018, and 2028 study years.

Project residents and employees would access the Hilo roadway system from a single driveway onto Kawili Street. They would then use Kawili Street to access the other Hilo streets. The major cross street intersections along Kawili Street that could be affected by project generated traffic include Kilauea Avenue, Kino'ole Street, Kapiolani Street and Puainako Street. **Figure 1**, Location Map, shows the project site in relationship to the four study intersections.

## **EXISTING CONDITIONS**

A survey of the existing roadway and traffic conditions was made in February 2008.

### **Existing Roadways**

The roadways of interest in the project area are Kawili Street, Kilauea Avenue, Kino'ole Street, Kapiolani Street, and Puainako Street. The first four roadways are two-lane County roadways classified as major collectors while Puainako Street is a two-lane State major collector roadway.

West Kawili Street generally runs east to west in the vicinity of the project site. The roadway continues north as Manono Street in the vicinity of Hawai'i Community College (Manono campus). East Kawili Street runs east-west from Manono Street to Kanoelehua Avenue. West Kawili Street turns south past Waiakea High School and becomes Iwalani Street south of Puainako Street. The posted speed limit on Kawili Street between Kino'ole Street and Puainako Street is 25 miles per hour. There are bike route signs on the north side of Kawili Street. The main entrance to the University of Hawai'i at Hilo campus is located several hundred feet west of the Kapiolani Street intersection.

Kilauea Avenue and Kino'ole Street generally run north to south through the study area and serve as commuter routes to downtown Hilo. Kapiolani Street runs north to south between Kawili Street and West Lanikaula Street and forms the east boundary of the University of Hawai'i at Hilo campus. The southern terminus of Kapiolani Street serves as an access roadway for Waiakea High School.

East and West Puainako Street is a multi-lane roadway between Railroad Avenue and Kilauea Avenue. West Puainako Street continues as a two-lane roadway west of Kilauea Avenue until it terminates at Komohana Street. West Puainako Street was extended to Kaumana Drive in about 2002 to provide residents of Kaumana and across island travelers with an alternate access route to the south and west sections of Hilo. The intersection of this new roadway section with Komohana Street is several hundred feet north of the current intersection with West Puainako Street.

Each of the study intersections on Kawili Street are signalized. The Kilauea Avenue and Kapiolani Street intersections have a left turn lane and a through/right turn lane on each approach and are controlled by an eight phase traffic timing plan with protected/permitted left turns from all approaches. The Kino'ole Street intersection has a left turn lane and a through/right turn lane on the Kawili Street approaches and only a single lane on the Kino'ole Street approaches. This intersection is controlled by a six phase traffic timing plan with protected/permitted left turns from Kawili Street only. The Kapiolani Street and Kino'ole Street traffic signals have special timing plans that come on for short periods to handle the surge in traffic from Waiakea High School that occurs during the morning and mid-afternoon periods.

The Puainako Street intersection has single lane approaches on the two Puainako Street and Iwalani Street approaches. The southbound Kawili Street approach has through/left turn lane and right turn lanes. This intersection is controlled by a two phase traffic signal plan.

#### Traffic Volumes

Traffic turning movement counts were taken at the four study intersections from February 12-19, 2008, to determine existing traffic conditions. Traffic counts were taken during the morning (6:30 to 8:30 AM), mid-afternoon when school let out (2:00 to 3:15 PM), and afternoon (3:30 to 5:30 PM) peak periods. Traffic turning movement counts require a traffic surveyor to observe traffic flow and record the movements of each vehicle crossing the intersection as through or turning movements by 15 minute intervals. The worksheets for these traffic counts are included in **Appendix A**.

The morning (labeled as AM), mid-afternoon, and afternoon (labeled as PM) peak hour counts are shown on **Figure 2**, with volumes rounded to the nearest five vehicles per hour (vph). The morning and mid-afternoon counts reflect the impact of the surge in school traffic.

The main direction of travel on Kawili Street in the morning peak hour is north/eastbound towards the two school campuses, about even in both directions during the mid-afternoon when the high school lets out, and becomes south/westbound in the afternoon peak hour. Long traffic queues were observed on eastbound Kawili Street from Kapiolani Street in the morning peak hour. Similarly, the main direction of travel on Kilauea Avenue and Kino'ole Street is northbound in the morning peak hour, about even in both directions during the mid-afternoon, and southbound in the afternoon peak hour. The traffic volumes on Kawili Street are higher than the volumes on Kino'ole Street during all three peak hours, and slightly lower than or equal to the volumes on Kilauea Avenue. The traffic volumes on Kilauea Avenue are higher than those for Kino'ole Street.

The westbound direction of travel on Puainako Street is higher than the eastbound direction for all three peak hours, with very high movements entering Kawili Street from the other three approaches during the morning peak hour. There are high traffic volumes leaving and entering the high school (northbound) approach of Kapiolani Street during the morning and mid-afternoon peak hours, and higher volumes leaving the university-oriented (southbound) approach in the afternoon peak hour. The current traffic operations at the four study intersections are discussed in the **Level of Service Analysis** section.

The State of Hawai'i Department of Transportation (State DOT) used to take traffic counts every two years at selected roadway sections on the island of Hawai'i under their previous counting program. Several of these count stations are in the study area: 18-AA at the Puainako Street/Kawili Street intersection, 18-E at the Puainako Street/Kilauea Avenue intersection, and 18-Y at the Puainako Street/Kino'ole Street intersection. These count stations provide a history of daily traffic counts over a ten year period. Two of these counts were supplemented by traffic counts taken in 2006 under the new traffic counting program.

At the Puainako Street/Kawili Street intersection, five daily traffic volumes were available for the ten year period from 1994 to 2004, with data for the year 2000 not

reported. The data shown on **Figure 3** gives the historical trend of daily traffic at this location on the north leg of Kawili Street and the *makai* leg of Puainako Street. The graph shows a gradual decrease (13%) of traffic on Kawili Street from 1994 to 2004. Daily two-way traffic volumes on Puainako Street increased 16% in 10 years for an annual compound growth rate of 1.5%. The daily traffic volumes on Kino'ole Street and Kilauea Avenue have increased about 8% in the 10 year interval from 1996 to 2006 for an annual growth rate of 0.8%.

The pattern of hourly traffic volumes on Kawili Street north of Puainako Street on April 13, 2005, is shown in tabular and graph form on **Figure 4**. The northbound traffic flow has a steep one hour peak at 7:00 AM, and has two smaller afternoon peaks between 1:00 to 2:00 PM and at 4:00 PM. The southbound traffic gradually increases throughout the day, peaking at 2:00 PM and between 4:00 to 5:00 PM. The initial afternoon peaks for both directions of travel correspond to the end of the high school day.

The pattern of hourly traffic volumes on Kino'ole Street south of Kawili Street on May 30, 2006, is shown in tabular and graph form on **Figure 5**. The northbound traffic flow towards downtown Hilo has a one hour peak at 7:00 AM, and gradually decreases until reaching a smaller mid-afternoon peak at 2:00 PM. The southbound traffic has a small peak at 7:00 AM and gradually reaches afternoon peaks at 2:00 PM and between 4:00 to 5:00 PM.

### **PROPOSED ROADWAY IMPROVEMENTS**

The State DOT, County of Hawai'i, and the University of Hawai'i at Hilo have several roadway improvements planned in the study area.

The State DOT has been involved with the Puainako Street Extension project for several years. This project has widened and improved the roadway section between Kanoelehua Avenue and Kilauea Avenue to accommodate the traffic generated by the commercial centers in the area and further improvements are being made. The State

DOT opened the Puainako Street Extension from Komohana Street to Kaumana Drive in 2002. They are now working on realigning the roadway section between Komohana Street and Kawili Street to the north. This realignment would continue the Extension alignment *makai* and would allow the existing roadway, which has residences on both sides, to become a local street. The FY 2008-2013 Financially Constrained Statewide Transportation Improvement Program (STIP) shows right-of-way acquisition for this project programmed in FY 2013. The State DOT expects this section of roadway to be opened by the 2018 forecast year of this study. Future project phases would involve widening the existing alignment of Puainako Street from Kawili Street to Kilauea Avenue.

The County of Hawai'i has initiated a study to improve the traffic operations of several travel corridors on the island, including Kino'ole Street and Kilauea Avenue. Alternatives which could be studied include roadway widening and dieting, creating a one way couplet with Kino'ole Street and Kilauea Avenue, and better traffic signal progression.

The University of Hawai'i at Hilo is installing traffic signals at its main entrance on Kawili Street. The project is expected to go out to bid soon.

### **TRAFFIC FORECASTS**

The proposed project is scheduled for occupancy in about 2011. To comply with the forecast year requirements of the Concurrency Conditions Ordinance, traffic forecasts were prepared for the years 2013, 2018, and 2028. During the 20 year period from the 2008 traffic count date, ambient traffic on the area roadways can be expected to increase due to regional growth and new projects in the area. The traffic that would be generated from the proposed project was added to the ambient traffic forecast to obtain the total with project traffic forecasts for the three study forecast years.

### Ambient Traffic Forecast

Ambient traffic on the study area roadways will increase due to regional growth in the adjoining areas and new projects in the study area. Three sources of traffic increases were assumed:

- General traffic growth on the study area roadways would increase at the same rate as the population growth forecast by the Hawai'i County General Plan.
- The through traffic on Puainako Street would increase at a higher rate due to traffic diverted to the Puainako Street Extension.
- The proposed China-U.S. Center at the University of Hawai'i at Hilo would be the only major new project in the study area. Although several new projects are being planned by the University of Hawai'i at Hilo, most of them are on the *mauka* portion of the campus that would not have much access to the study area roadways. Traffic from these other new projects was assumed to be part of the general traffic growth.

In lieu of traffic forecasts from the current long range transportation plan, it was assumed that area traffic would increase at the same rate as the population growth. The current General Plan forecasts that population in the South Hilo District will increase from 46,273 in 2005 to 49,791 in 2020, a 7.6% increase in 15 years. Extrapolating this 0.5% annual growth rate to 20 years, the following growth factors were calculated:

YEAR	GROWTH FACTOR
2008	1.000
2013	1.025
2018	1.050
2028	1.102

The current traffic volumes shown on **Figure 2** were increased by these factors to obtain the initial traffic forecasts for the three forecast years. The 7.6% population growth rate for South Hilo is lower than the 36% island-wide growth rate forecast in the General Plan.

Traffic volumes on Puainako Street are expected to increase at a higher rate than on other streets due to traffic diversion. The Traffic Impact Analysis Report for the Proposed Puainako Street Extension (February 1997) prepared by The Traffic Management Consultant predicted that traffic on the recently completed Puainako Street Extension would increase faster than the other roadways in the area due to traffic being diverted away from the existing route of Kaumana Drive/Waianuenue Avenue. Therefore, the existing through traffic volumes on Puainako Street were increased by the 1.5% annual growth rate observed over the past 10 years per **Figure 3**, resulting in the following growth factors:

YEAR	GROWTH FACTOR
2008	1.000
2013	1.077
2018	1.159
2028	1.340

The only major project expected in the study area is the proposed China-U.S. Center which would be situated on the southeast side of Kawili Street across from the University of Hawai'i at Hilo campus. The implementation date and development schedule of this project are not known at this time. Based on the brief information provided, it was assumed that the dormitory component of the project would be implemented by 2013 and the China-U.S. Center would be fully implemented by 2018. Traffic forecasts of project generated traffic from the Traffic Impact Analysis Report for China-U.S. Center at UH-Hilo (April 2002) by Phillip Rowell and Associates were utilized. The 2013 traffic assignment assumed the traffic generated by the international hostel consisted of 600 student housing (dormitory beds), 50 visitor suites, and 20 family units (apartments). The 2018 and 2028 traffic assignments were based on the completed China-U.S. Center project. Since traffic assignments were made only for the morning and afternoon peak hours, a mid-afternoon traffic assignment was developed for this study based on 80% of the afternoon traffic volumes.

The trip generation step forecasts the volume of vehicle trips that would be generated by the proposed project during the three study peak hours. The proposed student housing project would be located in an ideal location in proximity to the University of Hawaii at Hilo and the Hawaii Community College that would tend to minimize the need for "commuter" motor vehicle trips. The Institute of Transportation Engineers Trip Generation (Seventh Edition, 2003) has trip generation equations and rates to calculate the number of AM and PM peak hour trips that would be generated by various land uses. However, the report does not have trip generation rates for college student dormitories. Therefore, it was assumed that the proposed housing would have similar trip generating characteristics as the on-campus housing. A traffic count of inbound and outbound vehicles was taken on February 20, 2008, of the Hale Kanilehua parking lot on the University of Hawaii at Hilo campus. The worksheet for this traffic count is

The traditional three-step process of trip generation, trip distribution, and trip assignment was used to forecast future traffic that would be generated by the proposed project. The trip generation step forecasts the number of new trips that would be produced in each of the three study periods. The trip distribution step allocates these new trips by direction of travel. Finally, the trip assignment step assigns the trips to the specific turning movements at the study intersections.

#### Project Generated Traffic

#### **Analysis section.**

The three components of ambient traffic growth were combined for each of this study's three forecast years. The 2013 ambient traffic forecast is shown on **Figure 6**, the 2018 traffic forecast on **Figure 7**, and the 2028 traffic forecast on **Figure 8**, with volumes rounded to the nearest five vph. The traffic operations for the ambient forecast conditions at the four study intersections are discussed in the **Level of Service Analysis** section.

The Rowell study assigned project generated eastbound traffic only as far as the University of Hawaii at Hilo main entrance. These traffic volumes were assigned to the Kapiolani Street, Kino'ole Street, and Kilauea Avenue intersections in proportion to the existing traffic patterns in each study peak hour.

The two afternoon rates are much higher than the morning rate, and the afternoon peak hour rate exceeds 1 trip per unit. It is surmised that the morning rates are low since students are mostly attending classes. The rates in the afternoon periods are higher since students are engaged in personal trips. The proportion of inbound and outbound trips is almost equal for all three periods. Based on these rates, the proposed student housing project is forecast to generate 19 trips in the morning peak, 89 trips in the mid-afternoon, and 109 trips in the afternoon peak. The number of trips generated by the proposed project was assumed to remain constant for each of the three forecast years. The trip distribution step divides the generated trips by directions of travel to/from the project site(s). The project generated trips were distributed in proportion to the existing traffic volumes and were assigned to the study area network. The results of the traffic assignment analysis are shown on **Figure 9**, with the volumes not rounded.

PERCENT BY DIRECTION	TRIPS/UNIT		PEAK HOUR
	INBOUND	OUTBOUND	
Morning	43%	47%	0.18
Mid-Afternoon	56%	44%	0.84
Afternoon	53%	47%	1.03

included in **Appendix A**. This parking lot was selected for this count since it is the only parking lot on campus used exclusively by dormitory residents according to a University of Hawai'i at Hilo official. The traffic count results were used to obtain an estimate of trip generation rates for dormitory units and the proportion of inbound/outbound trips in each of the three study peak hours. Trip generation rates were based on 38 units (150 beds). The trip generation rates for the proposed student housing is expected to be similar since it would be located in the same general area next to the university and community college. The resultant trip generation rates and the proportion of inbound/outbound trips in each peak hour are summarized below:

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (Seconds/Vehicle)
A	< 10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	> 80.1

as follows:

The four study intersections are currently signalized. The methodology for analyzing signalized intersections calculates the levels of service for individual movements, approaches and the intersection as a whole based on the average stopped delay per vehicle. The results range from level of service A (best with average delays less than ten seconds) to F (worst with average delays longer than 80 seconds), described

unsignalized intersections, etc. The concept of level of service is used to quantify the quality of traffic flow on roadway facilities. The Transportation Research Board (TRB) has developed procedures to calculate level of service value(s) by measuring traffic volumes against the capacities of different types of roadway facilities. Their Highway Capacity Manual 2000 (HCM2000) describes the various procedures developed for freeways, highways, signalized and

### LEVEL OF SERVICE ANALYSIS

nearest five vph.

The project generated traffic assignment volumes from **Figure 9** were added to the ambient traffic forecasts on **Figures 6 to 8** to obtain the total with project traffic forecasts. The 2013 total with project traffic forecasts are shown on **Figure 10**. The 2018 total with project traffic forecasts are shown on **Figure 11**. The 2028 total with project traffic forecasts are shown on **Figure 12**. The traffic volumes are rounded to the

### Total Forecast Volumes

County of Hawai'i considers levels of service A to D as acceptable for signalized intersections, with levels of service E and F indicating the need for mitigating measures. For signalized intersections, the major streets can be designed to have a higher level of service than the minor streets or turning lanes. Level of service E conditions are sometimes tolerated for minor traffic movements such as left turn movements if they maintain acceptable levels of service on the major street.

The results of the level of service analysis for the four signalized study intersections on Kawili Street are shown on **Tables 1, 2, 5, and 6**. Each table is for a single intersection and includes the results for the AM (morning), mid-afternoon, and PM (afternoon) peak hours for the intersection as a whole, each approach of the intersection, and the left turn and through/right turn movements of each approach. The results are shown for the 2008 existing conditions and the years 2013, 2018, and 2028 forecasts, with ambient, excluding project results and total with project results for each forecast year. The specific results data shown for each year includes the level of service (LOS), average stopped delay (DEL), and volume/capacity ratio (V/C), which is a percentage utilization of the traffic signal green time given the entire intersection and each movement. The results for the Kilauea Avenue and Kapiolani Street intersections were split onto two pages due to the large number of movements and approaches at the intersection.

The results for the Kilauea Avenue intersection are shown on **Table 1**. The intersection is currently operating at level of service C in the morning and mid-afternoon peak hours with acceptable levels of service D or better on all approaches and movements. The intersection is currently operating at level of service D in the afternoon peak hour with the Kawili Street westbound through/right turn lane operating at level of service E. The PM peak hour has the highest volumes of the three studied peak hours with high southbound commuter volumes conflicting with westbound traffic on Kawili Street. The intersection is forecast to operate at similar levels of service in year 2013 without the proposed project if timing plan adjustments are made. The traffic from the proposed project would cause the AM peak hour intersection level of service to change from C to D, while the levels of service for the other two peak hours would remain the same if more green time is given to the Kawili Street approaches.

The Kilauea Avenue intersection level of service is forecast to be at D for all three study peak hours for the 2018 ambient conditions, although several movements would be at levels of service E and F in the PM peak hour. The traffic signal timings would have to be adjusted so that the level of service for the intersection as a whole would remain at the threshold level of service D. The small amount of traffic generated by the proposed project would be sufficient to worsen the intersection level of service to E in the afternoon peak hour, which implies the need for mitigating measures. The results for the year 2028 forecasts are similar. The intersection would operate at level of service D during the morning and mid-afternoon peak hours with or without the project, but would operate at level of service E in the PM peak hour for both ambient and total with project forecasts. These results indicate that mitigating measures would be required by the year 2108 with project conditions.

The results for the Kinole Street intersection on **Table 2** show that it is currently operating at level of service C in all three study periods despite the lack of left turn lanes on Kinole Street. The westbound approach of Kawili Street is at level of service E in the AM peak hour since most of the green time is currently allocated to Kinole Street. As with Kilauea Avenue intersection, the highest traffic volumes and conflicts occur during the PM peak hour. This intersection would operate at level of service C in the AM and mid-afternoon peak hours and at level of service D in the PM peak hours for both ambient and total with project conditions in 2013 if more green time were given to Kawili Street.

The Kinole Street intersection is forecast to operate at level of service C in the morning peak hour and level of service D in the mid-afternoon and afternoon peak hours for the 2018 ambient conditions, with the Kinole Street northbound approach at level of service E in both periods. The additional traffic from the proposed project would not change intersection levels of service in the morning and mid-afternoon peak hours but the PM peak hour level of service would change to E, which indicates the need for mitigating measures. The intersection is forecast to operate at levels of service C, D and E for the 2028 ambient AM, mid-afternoon and PM peak hours, respectively. The additional traffic generated by the proposed project would not change these levels of

service, although there would be increases in delay and the Kawili Street westbound approach would become level of service F. These results have the same implications as at Kilaua Avenue, that mitigating measures would be required at the Kinole Street intersection by 2018.

The County of Hawaii has initiated a study to improve traffic operations on Kilaua Avenue and Kinole Street. One of the alternatives being studied is to create a one-way couplet with these two streets, which was assumed as a mitigating measure for this study. The 2018 and 2028 ambient and total with project traffic forecasts from **Figures 7, 8, 11, and 12** were adjusted to simulate a one way couplet. The resultant traffic forecasts are shown on **Figures 13, 14, 15, and 16**, respectively. These traffic volumes were then analyzed with the methodology for analyzing signalized intersections. The northbound approach of Kilaua Avenue was assumed to have two through lanes and one left turn lane while the southbound approach of Kinole Street was assumed to have two through lanes. Left turns from Kawili Street would be made from a separate left turn lane with protected/permitted movements.

The results for 2018 and 2028 at the Kilaua Avenue intersection are shown on **Table 3**. The intersection is forecast to improve to level of service C for both forecast years in all three peak hours, implying acceptable traffic operating conditions. The results for the Kinole Street intersection are shown on **Table 4**. The intersection is forecast to operate at level of service C in the morning peak hour with ambient traffic for both forecast years, and at level of service D with the total with traffic forecast. The intersection is forecast to operate at level of service D in the mid-afternoon and afternoon peak hours with ambient and total with project forecasts for both forecast years. This intersection is forecast to operate at a lower but still acceptable level of service because of the high volumes of traffic that must use the single lane approach of eastbound Kawili Street.

The results for the Kapiolani Street intersection on **Table 5** show that it is currently operating at an acceptable level of service C in all three study peak hours. The intersection would continue to operate at level of service C in all three peak hours for

2013 and 2018 with and without the proposed project. The intersection would continue to operate at level of service C in all three peak hours for the 2028 ambient forecast. The additional traffic from the proposed project would change mid-afternoon and PM peak hour intersection levels of service to D, which is still considered acceptable. These results indicate that the Kapiolani Street intersection would not require mitigation in the future but would have to be monitored for the school traffic.

The results for the Puainako Street intersection are shown on **Table 6**. The intersection is currently operating at level of service C in the morning and afternoon peak hours, and at level of service B in the mid-afternoon peak hour, indicating acceptable traffic operations all day. The intersection is forecast to operate at level of service D in the 2013 ambient AM peak hours and at level of service C in the mid-afternoon and PM peak hours, although two movements show level of service E. The additional traffic from the proposed project is not expected to change these levels of service, indicating that the proposed project would not have an adverse traffic impact for year 2013. The intersection is forecast to operate at levels of service E and F for the year 2018 ambient forecasts when the proposed China-U.S. Center at University of Hawaii at Hilo was assumed to become fully occupied, indicating unacceptable conditions. Hence, the current Puainako Street intersection is expected to be adequate until the China-U.S. Center becomes fully occupied.

The State DOT expects to have the realigned Puainako Street project in place by 2018 so that there would be a new east-west roadway with a larger intersection, and the current roadway would become a local residential street. The 2018 and 2028 traffic assignment forecasts were analyzed with the new intersection design with the results shown on **Table 7**. The new intersection is forecast to operate at level of service C for all three study periods in 2018 and 2028 for ambient and total with project forecasts. The realigned roadway and its new intersection would adequately accommodate the future travel needs of the proposed China-U.S. Center at University of Hawaii at Hilo and the proposed project.

The project access driveway to the proposed project is expected to be unsignalized. The procedure used for analyzing unsignalized intersections calculates vehicle delays and levels of service based on the distribution of gaps in traffic on the major street and driver judgment in selecting gaps through which to execute turns. For two-way stop intersections where only the minor street traffic is controlled by a stop sign, levels of service are calculated for the critical turning movements including outbound movements from the stop-controlled approach and left turns from the major street to the minor street. The procedure does not calculate an overall intersection level of service.

The Highway Capacity Manual defines the relationship between level of service and delay (in seconds/vehicle) for unsignalized intersections as shown below:

LEVEL OF SERVICE	DELAY (Seconds/Vehicle)
A	< 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	> 50.1

The County of Hawai'i considers levels of service A to D as acceptable for unsignalized intersections. Level of service F (with average delays longer than 50 seconds) is considered undesirable for unsignalized intersections and would indicate the possible need for mitigation.

The results of the unsignalized intersection analysis are shown on **Table 8**. The table shows the level of service and average delay for the outbound movement from the proposed project and the left turn movement into the project from Kawili Street. This information is shown for the three forecast years and the three peak hours.

During the morning peak hour when the proposed project is expected to generate the least number of trips, the outbound movement from the project is forecast to be at level of service C for all three forecast years. During the mid-afternoon peak hour, the

outbound movement is forecast to be at level of service C in 2013 and change to level D by 2018. During the afternoon peak hour when the proposed project is expected to generate the most trips, the outbound movement is forecast to be at level of service C in 2013 and change to level E by 2018. The left turn movement into the proposed project from Kawili Street is forecast to operate at level of service A for all three peak hours in all three forecast years. The above results would indicate no adverse traffic impacts from traffic generated by the proposed project.

### **SEPARATE LEFT TURN LANE ANALYSIS**

The purpose of a separate turn lane is to remove a turning vehicle from the main through flow of traffic. This is done to improve traffic operations and for traffic safety reasons. While it would be desirable to have left turn lanes at every intersection, the American Association of State Highway and Transportation Officials (AASHTO) handbook A Policy on Geometric Design of Highways and Streets states that, "Left turn facilities should be established on roadways where traffic volumes are high enough or where safety considerations are sufficient to warrant them. Local conditions and the cost of right-of-way often influence the type of intersection selected as well as many other design details." The cost of constructing a left turn lane has to be balanced against the benefits of reduced delay and accidents. The handbook provides a table as a guide for determining whether a left turn lane is warranted, based on the hourly advancing and opposing volumes, percent of left turns in the advancing volume, and vehicle operating speed. The table values for a 40 mph operating speed form the basis for the Federal Highway Administration's left turn warrant guide, which is subsequently discussed. There is no specific standard or rule used on a national basis; therefore, many jurisdictions have developed their own guidelines or adopted specific guidelines for determining whether a left turn lane is warranted.

The County of Hawaii uses "Figure 8, Volume Warrants for Left Turn Lanes" from the Federal Highway Administration (FHWA) Guidelines for the Control of Direct Access to Arterial Highways, Report No. FHWA-RD-76-86 (1975), as their guideline for determining left turn lane warrants. This guideline is presented as a graph that uses

hourly advancing and opposing volumes, and the percent of left turns in the advancing volume from the previously discussed AASHTO handbook as input variables. It is based on the above AASHTO guidelines for a 40 mph operating speed. The PM peak hour total with project forecast traffic volumes from **Figures 10** (2013) and **11** (2018) were charted on the FHWA Figure 8 and the results are shown on **Figure 17**. In addition, the current 2008 volumes from **Figure 2** were also plotted which would simulate conditions if the proposed project were implemented today. The left turn lane warrant analysis was limited to the PM peak hour volumes since the highest volumes of left turns occur in this period.

**Figure 17** shows the intersecting lines for 2008, 2013, and 2018 climbing toward the upper right hand of the chart as traffic volumes increase in future years. The percentage of left turns decreases from 9% in 2008 to 8% in 2013 and 7% in 2018 as the constant number of left turns becomes a smaller part of increasing advancing through volumes. The above percentages are to the right of the "5% Left Turn in V<sub>a</sub>" line of **Figure 17**, indicating that a separate left turn is warranted for the PM peak hour conditions.

## CONCLUSIONS

The proposed student housing project would be located in an ideal location in proximity to the University of Hawai'i at Hilo and the Hawaii Community College that would tend to minimize the need for "commuter" motor vehicle trips. The proposed project is forecast to generate from 19 trips in the morning peak hour to 109 trips in the afternoon peak hour. The current Hilo roadway network would be able to accommodate the increase in ambient traffic and project generated trips at least to the year 2013. Roadway improvements would be required beyond that year. The County of Hawai'i has initiated a study to improve traffic operations on several corridors on the island, including Kilauea Avenue and Kino'ole Street. This study conducted a preliminary analysis of a one-way couplet with the two streets and found that it would mitigate traffic conditions and bring about acceptable levels of service at these two intersections. The State of Hawai'i Department of Transportation is proceeding with the Puainako Street realignment project which should mitigate projected traffic problems on that street and Kawili Street.

## *References*

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## References

1. *A Policy on Geometric Design of Highways and Streets, 5<sup>th</sup> Edition*, American Association of State Highway and Transportation Officials (AASHTO), 2004.
2. *County of Hawai'i General Plan*, February 2005.
3. *Highway Capacity Analysis Program, Version 1*, Catalina Engineering, Inc., 2003.
4. *Highway Capacity Manual*, Transportation Research Board, National Research Council, Washington, D.C., 2000 Edition.
5. Statewide Transportation Improvement Program, FY 2008 through 2013 (FFY 2012-2013 Informative only), State of Hawai'i Department of Transportation, revised September 2007.
6. *Technical Guidelines for the Control of Direct Access to Arterial Highways*, Federal Highway Administration (FHWA), Report No. FHWA-RD-76-86, Volume I and Volume 2, Washington, D.C., 1975.
7. *Traffic Impact Analysis Report for China-U.S. Center at UH-Hilo*, Phillip Rowell and Associates, April 2002.
8. *Traffic Impact Analysis Report for the Proposed Puainako Street Extension, The Traffic Management Consultant*, February 1997.

## *Figures*

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I:\Projects\Hawaii\00011570\_Files\_Honpa\TMPA\_V000\Design\Report\Figure 1\_Location\_Map.dwg  
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 PLOT DATE: June 26, 2008 @ 11:09:19 am

**STATE OF HAWAII**



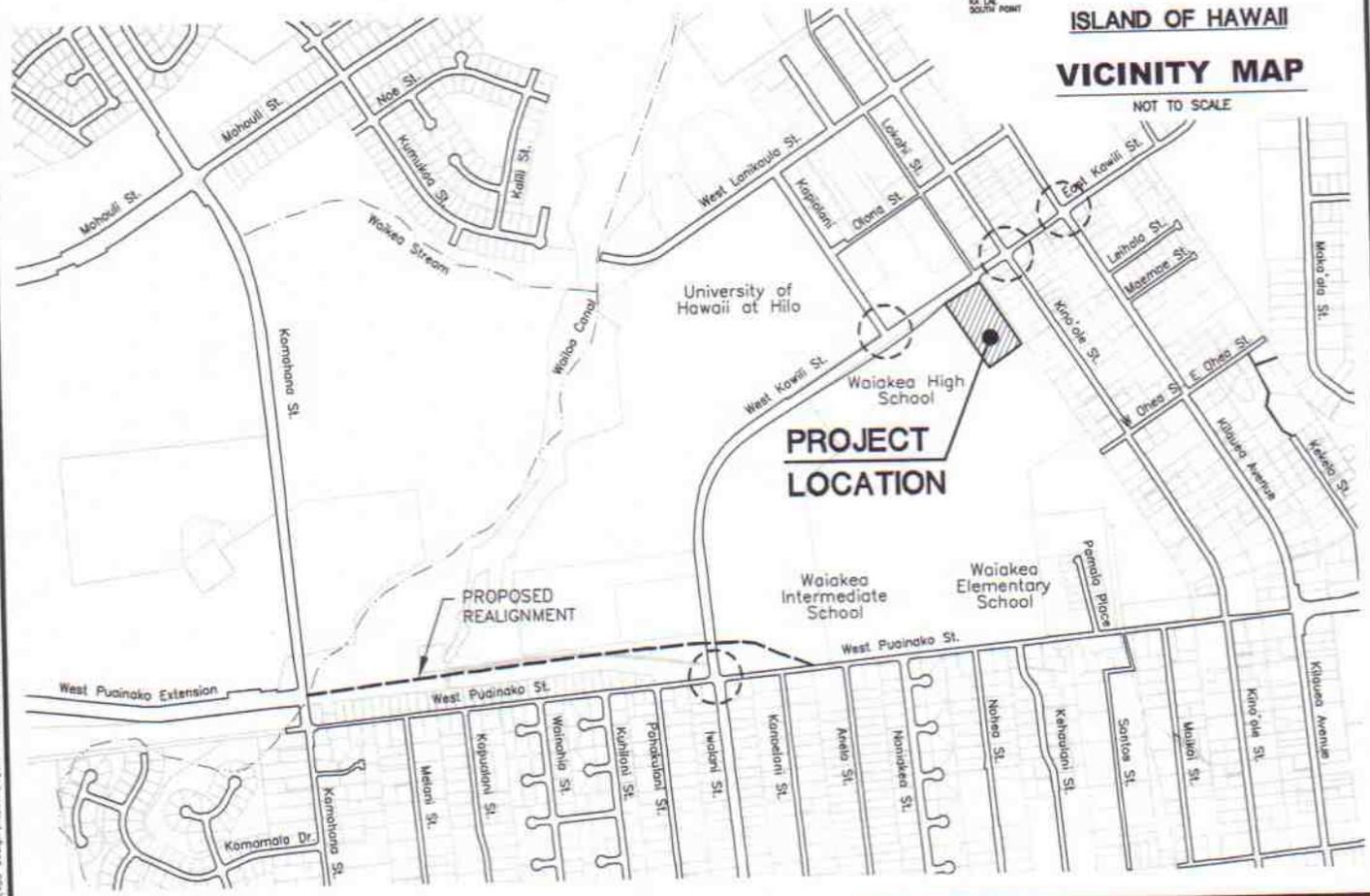
**ISLAND OF HAWAII**

**VICINITY MAP**

NOT TO SCALE



**PROJECT LOCATION**



**LOCATION MAP**

NOT TO SCALE

**M&E Pacific, Inc.**

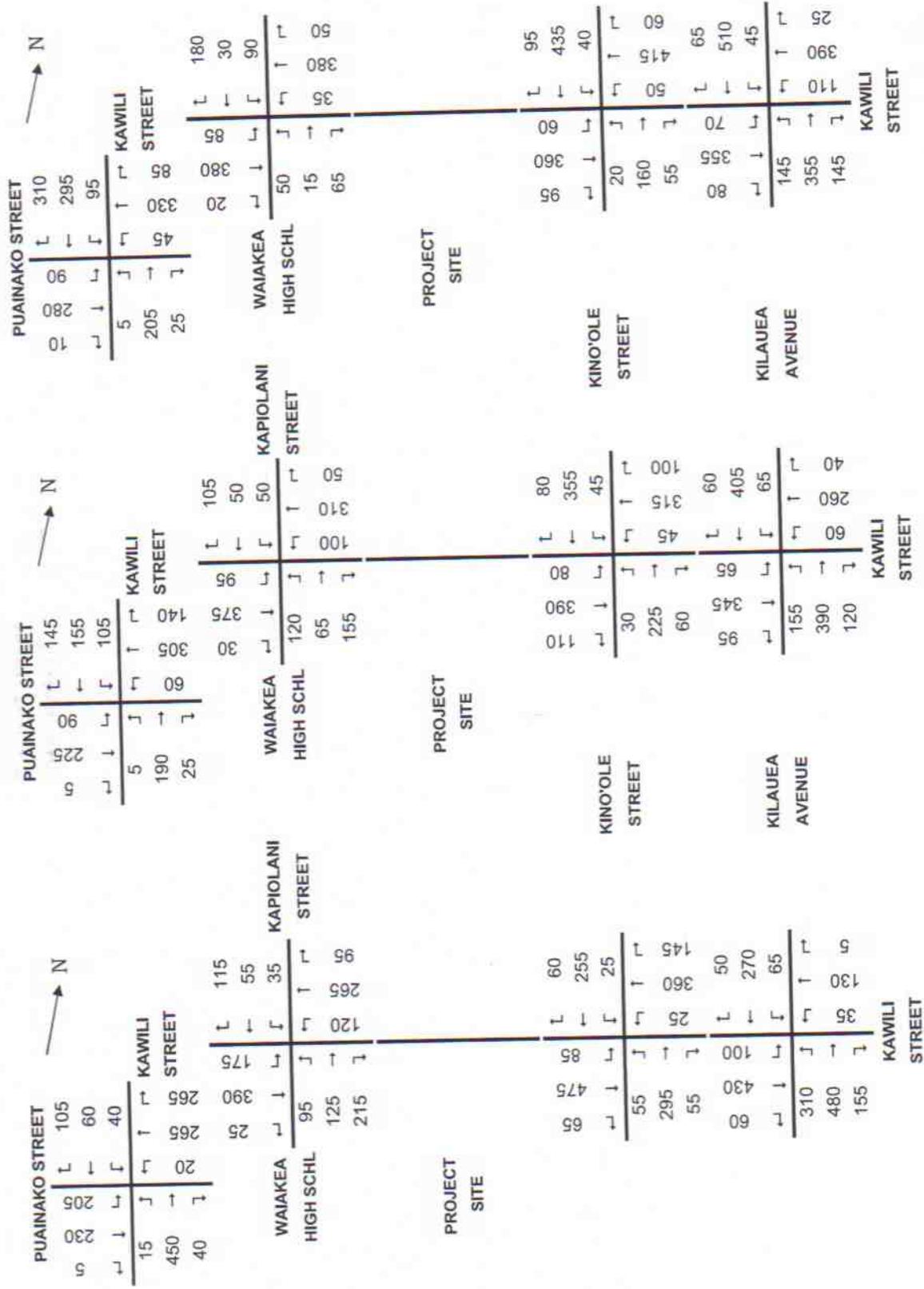
METCALF & EDDY | AECOM

DAVIES PACIFIC CTR, STE 1900 · 841 BISHOP ST, HONOLULU, HAWAII 96813

**Figure 1  
Location Map**

Traffic Impact Analysis Report  
 Honpa Hongwanji Hilo Betsuin Student Housing Project  
 June 2008

STUDY INTERSECTIONS

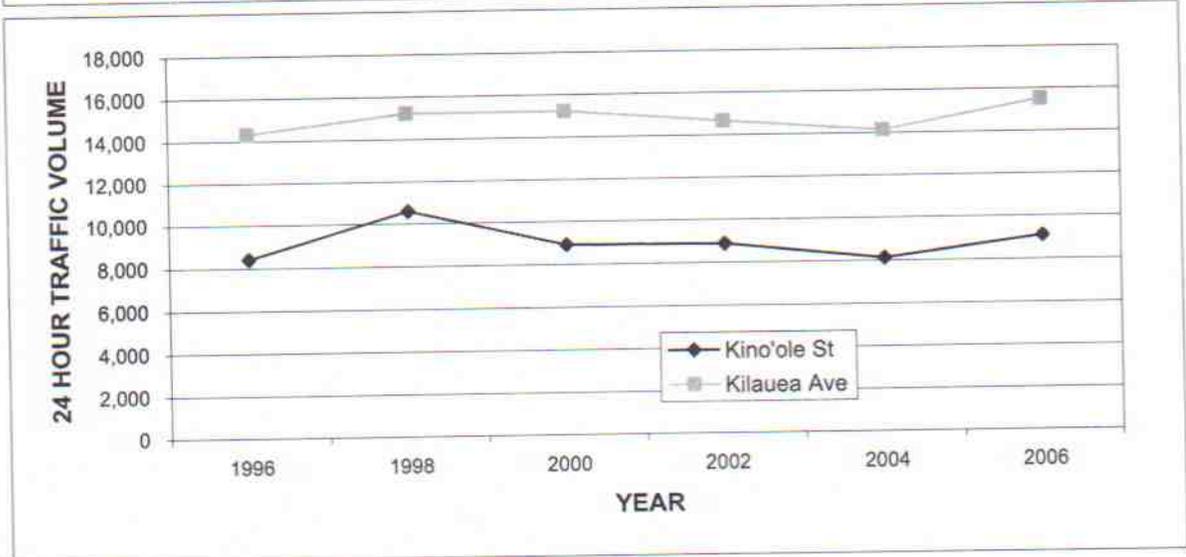
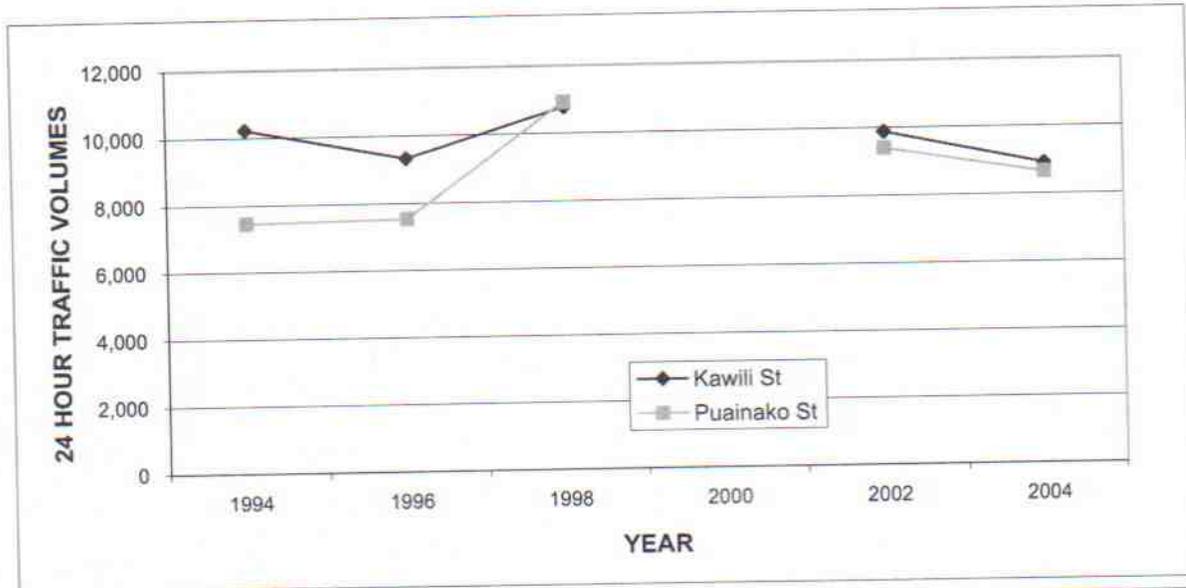


TWO-WAY DAILY TRAFFIC VOLUMES		
YEAR	Kawili North of Puainako	Puainako West of Kawili
1994	10,228	7,460
1996	9,330	7,538
1998	10,775	10,928
2000		
2002	9,886	9,401
2004	8,910	8,650

Source: State of Hawaii Department of Transportation  
Station 18-AA Puainako St at Kawili St

TWO-WAY DAILY TRAFFIC VOLUMES		
YEAR	Kino'ole North of Puainako	Kilauea North of Puainako
1996	8,399	14,319
1998	10,604	15,232
2000	8,908	15,238
2002	8,866	14,666
2004	8,113	14,145
2006	9,100	15,529

Source: State of Hawaii Department of Transportation  
Station 18-Y Puainako St at Kinoole St  
Station 18-E Puainako St at Kilauea Ave



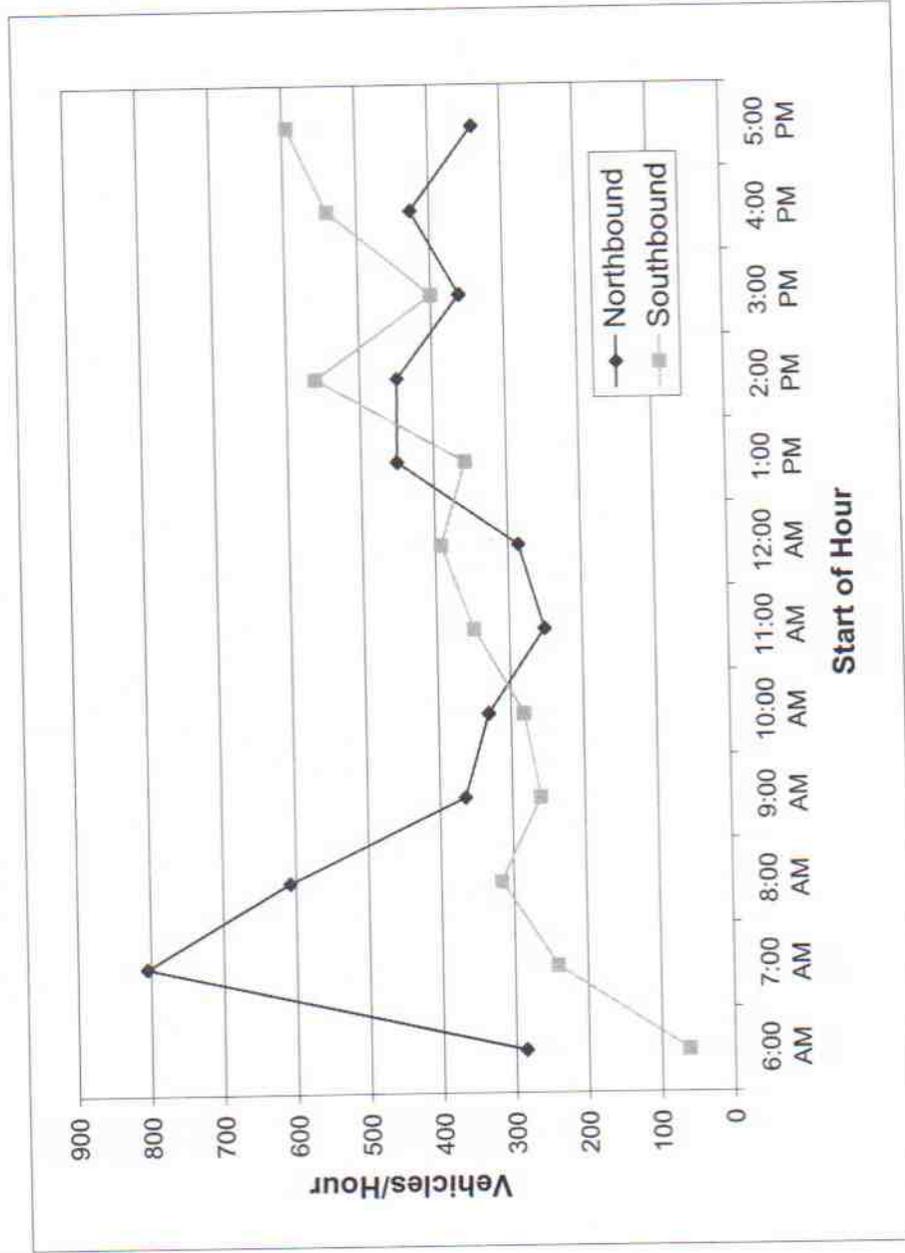
**HISTORICAL TREND IN DAILY TRAFFIC VOLUMES  
ON HILO STREETS IN VICINITY OF PROJECT SITE  
FIGURE 3**

# HOURLY TRAFFIC VOLUMES ON KAWILI STREET

North of Puainako Street  
April 13, 2005

Source: State of Hawaii Department of Transportation

Start of Hour	Vehicles/Hour	
	North Bound	South Bound
6:00 AM	286	62
7:00 AM	805	241
8:00 AM	608	317
9:00 AM	365	261
10:00 AM	331	282
11:00 AM	252	349
12:00 AM	286	392
1:00 PM	451	357
2:00 PM	449	561
3:00 PM	361	400
4:00 PM	426	541
5:00 PM	340	594



HOURLY TRAFFIC VOLUMES ON KAWILI STREET NORTH OF PUAINAKO STREET  
FIGURE 4

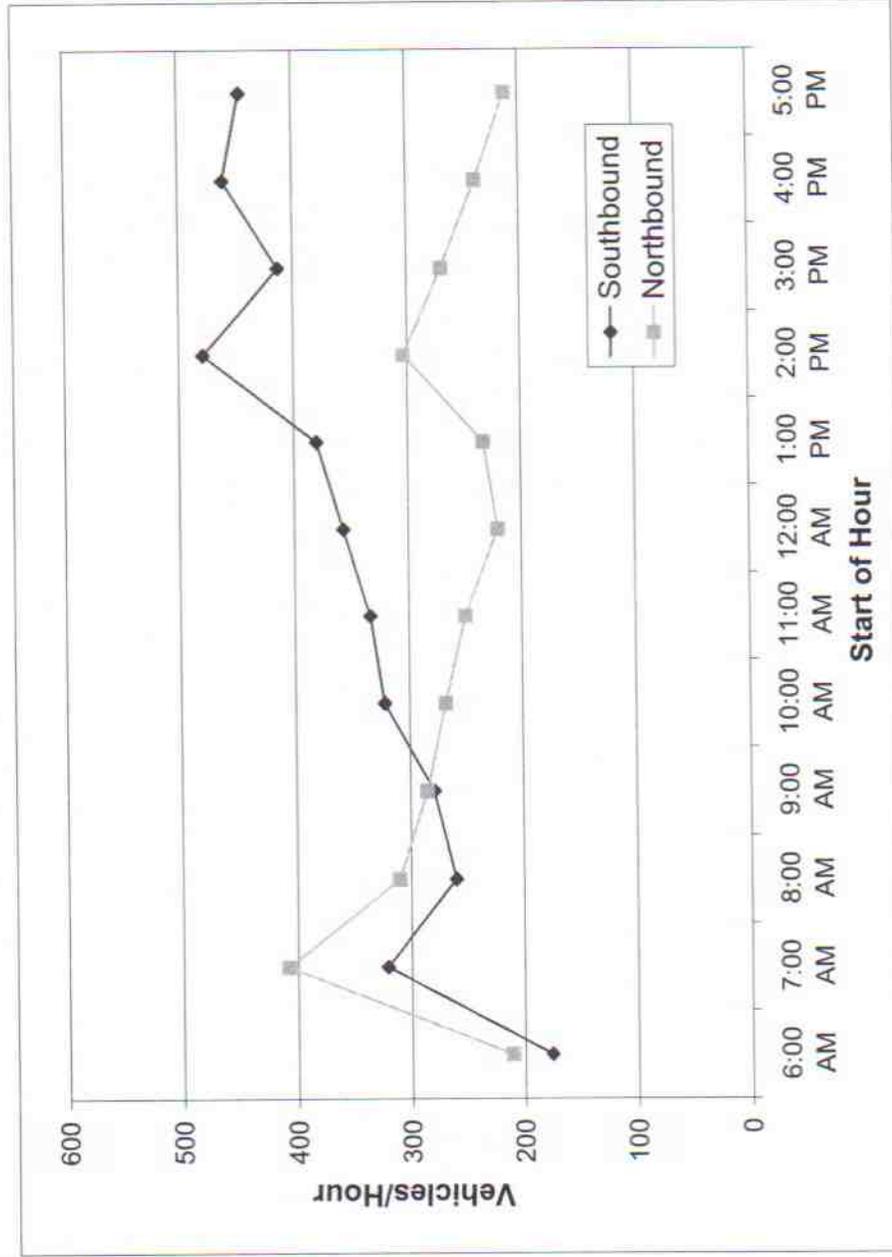
# HOURLY TRAFFIC VOLUMES ON KINO'OLE STREET

South of Kawili Street

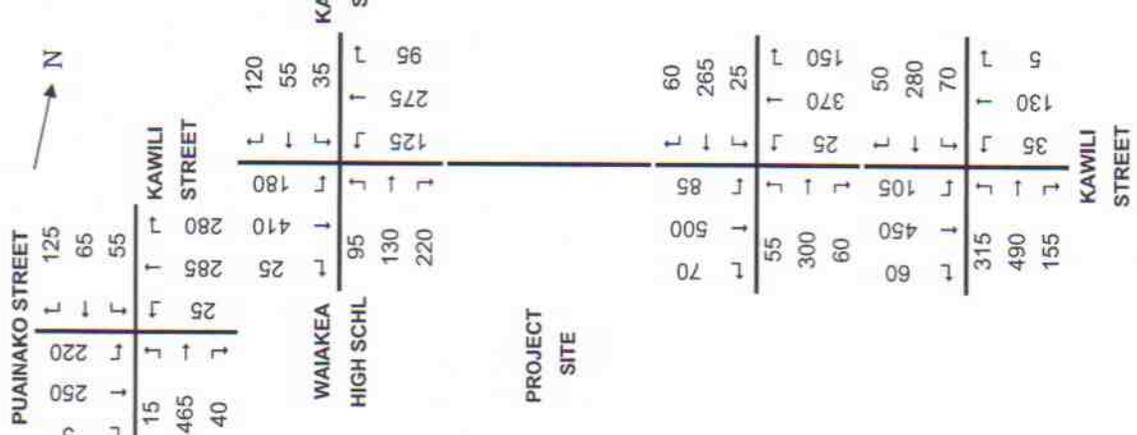
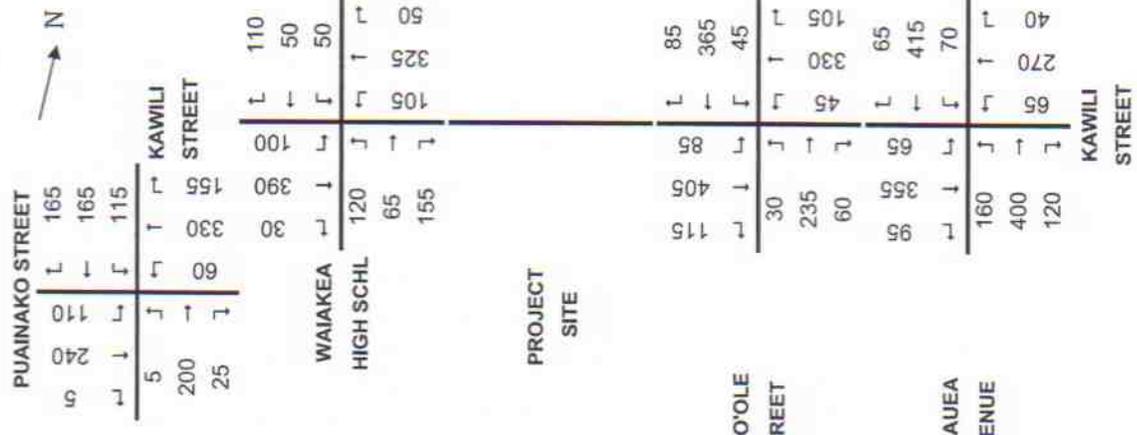
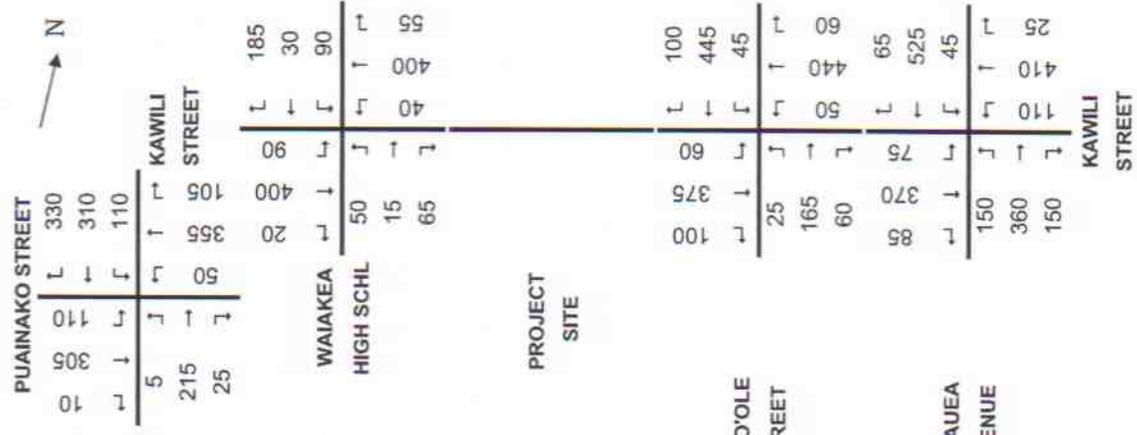
May 30, 2006

Source: State of Hawaii Department of Transportation

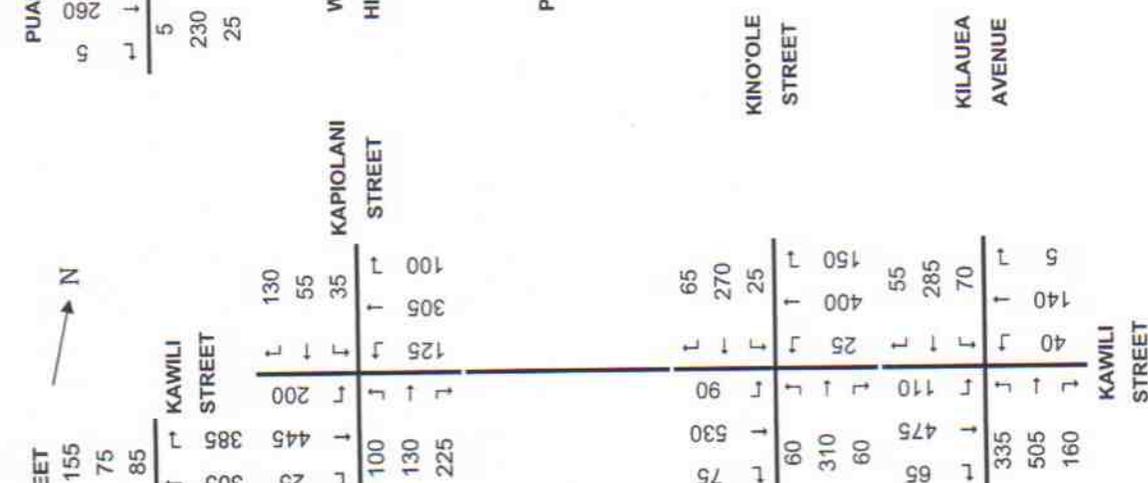
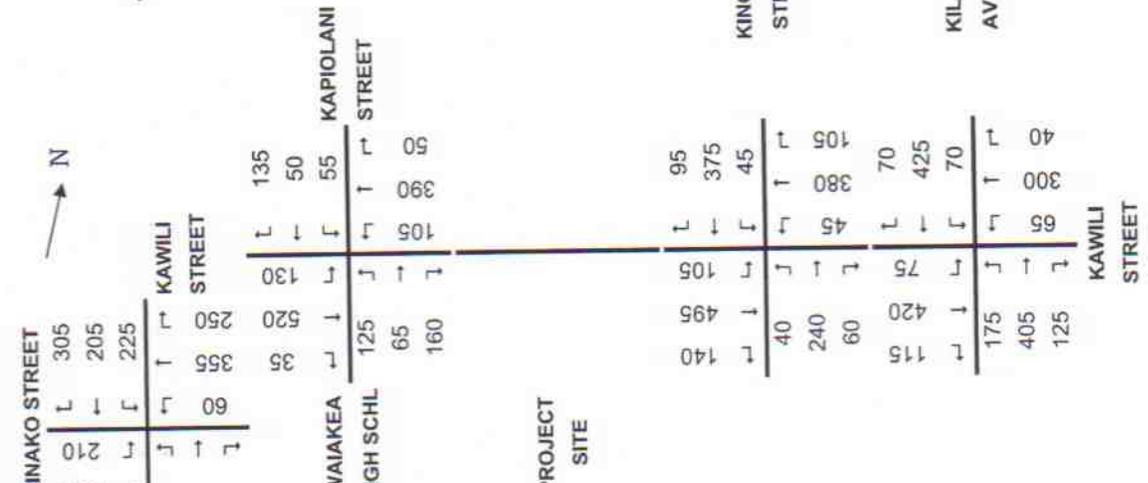
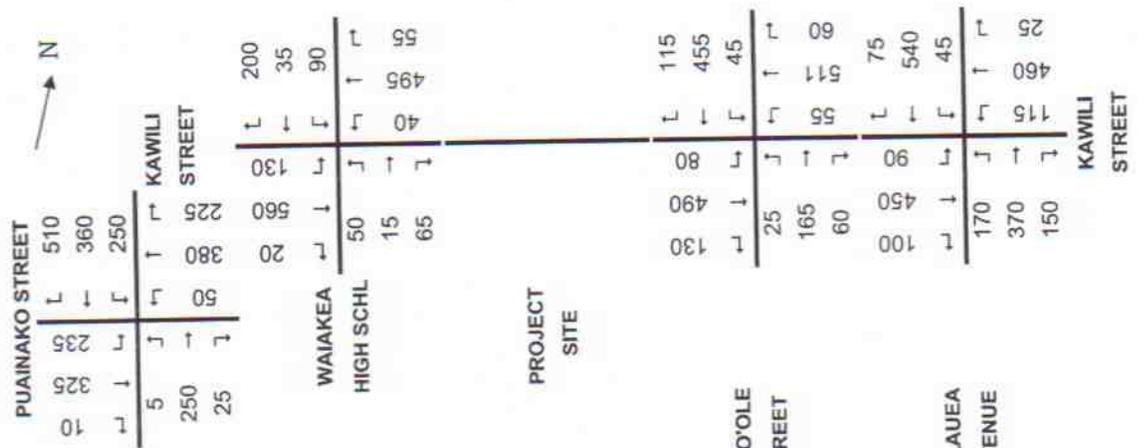
Start of Hour	Vehicles/Hour	
	South Bound	North Bound
6:00 AM	176	211
7:00 AM	321	408
8:00 AM	260	310
9:00 AM	279	285
10:00 AM	322	268
11:00 AM	334	250
12:00 AM	357	221
1:00 PM	380	233
2:00 PM	479	303
3:00 PM	413	269
4:00 PM	461	239
5:00 PM	446	212



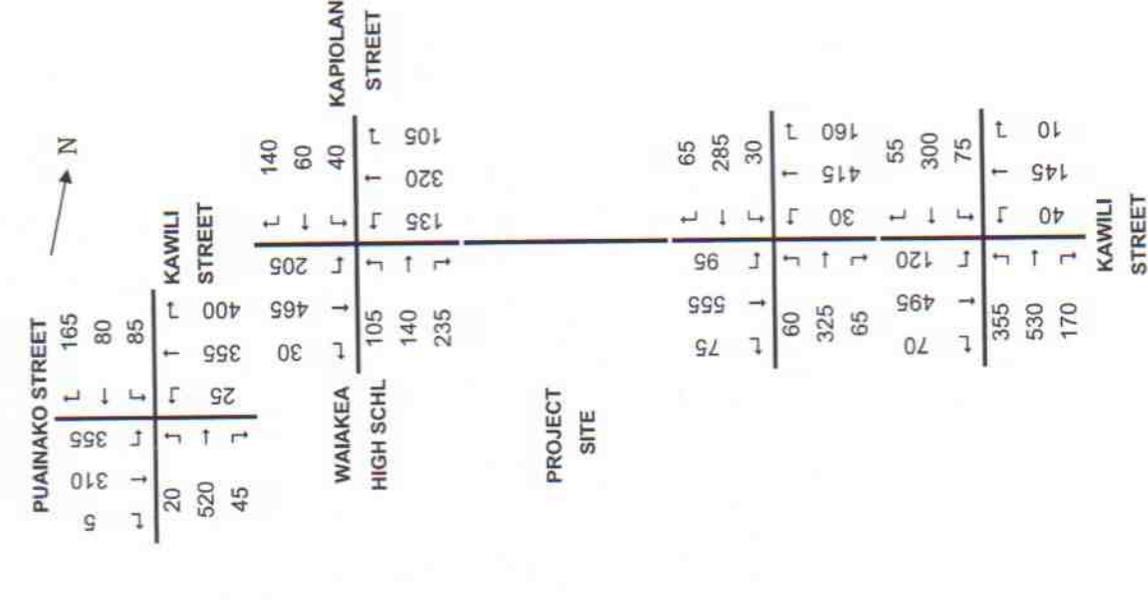
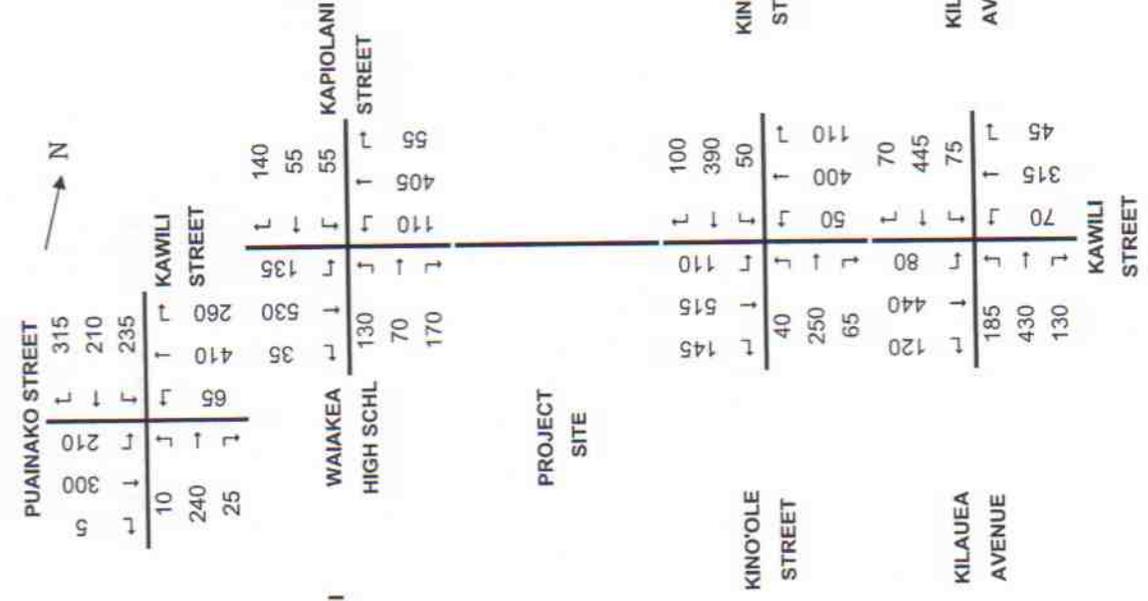
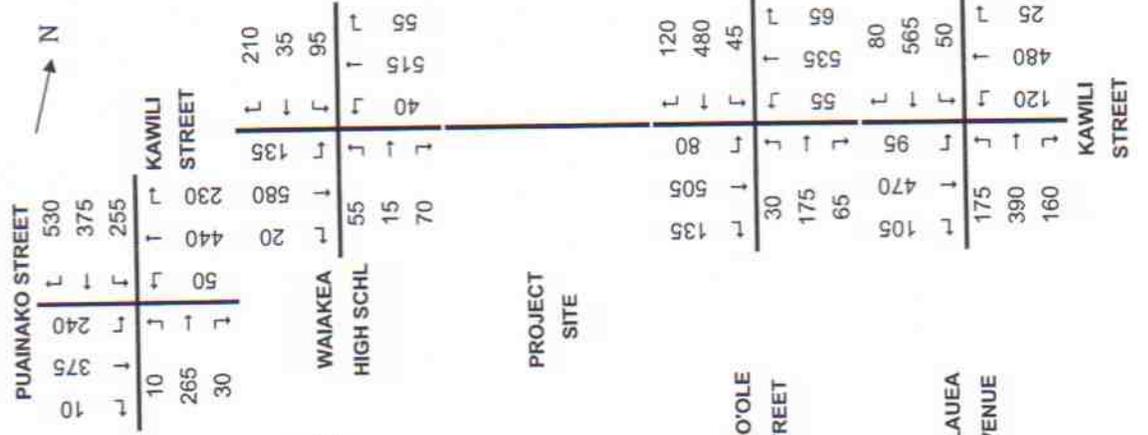
HOURLY TRAFFIC VOLUMES ON KINO'OLE STREET SOUTH OF KAWILI STREET  
FIGURE 5



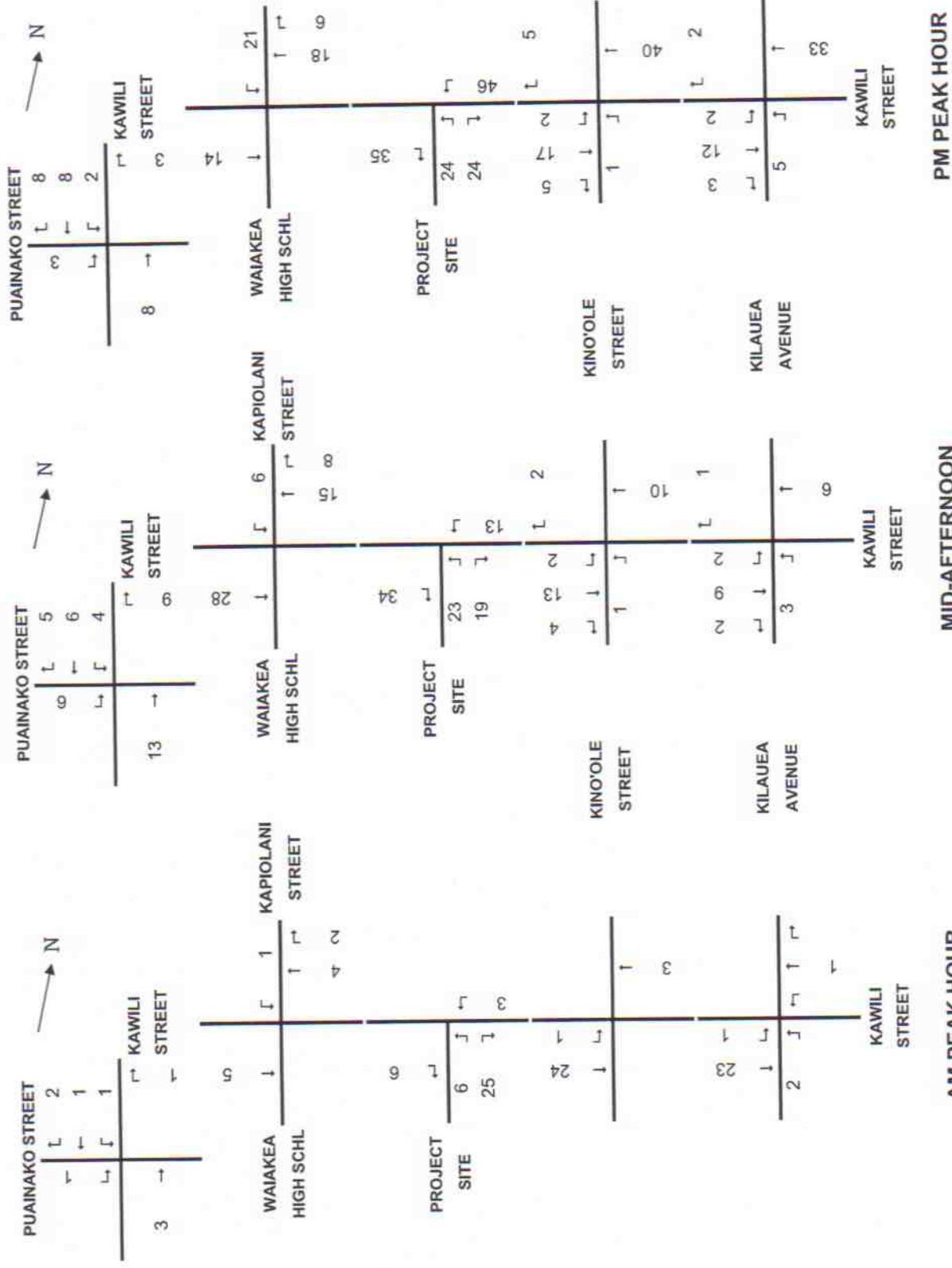
2013 AMBIENT TRAFFIC FORECAST  
FIGURE 6



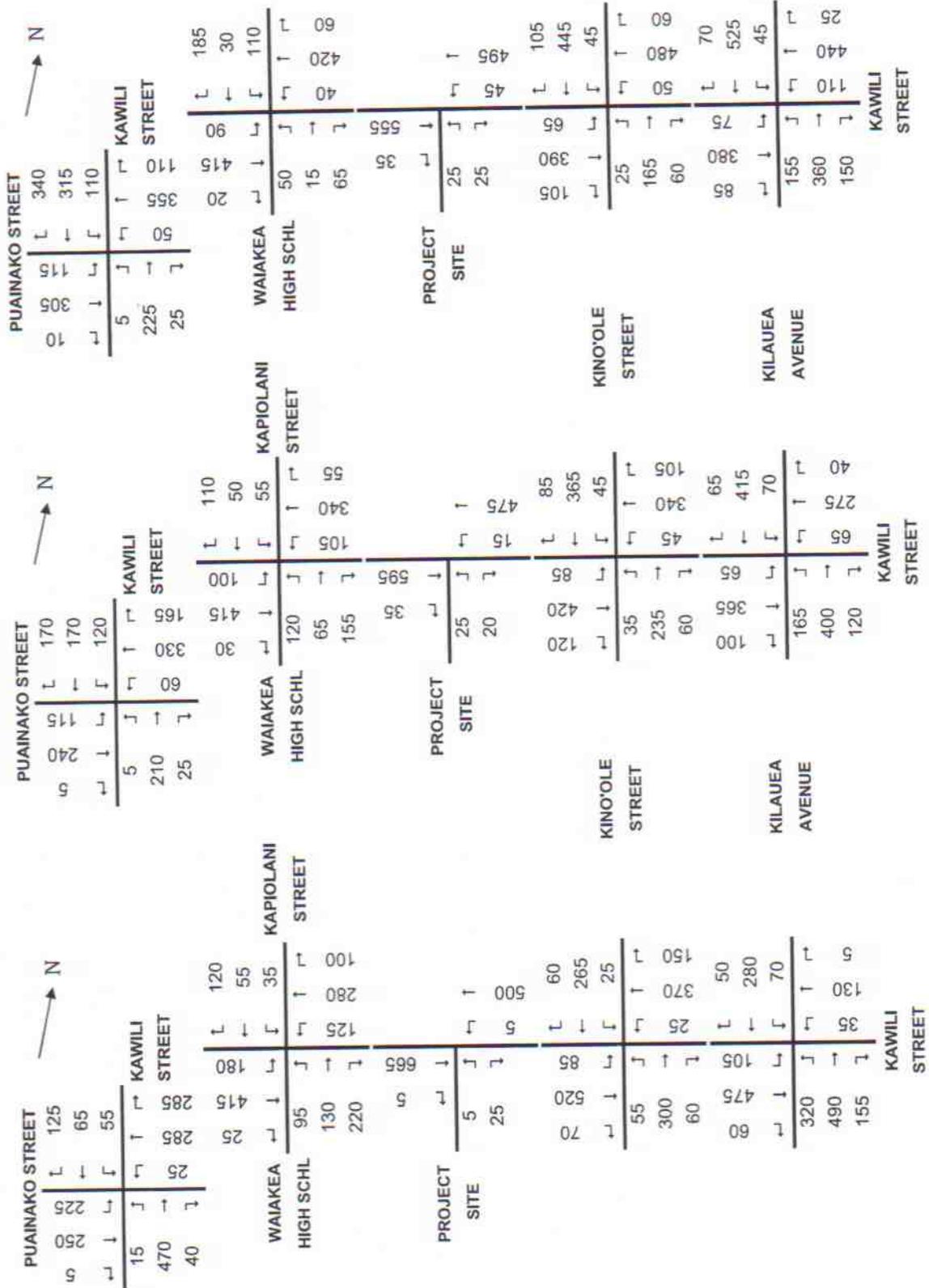
2018 AMBIENT TRAFFIC FORECAST  
 FIGURE 7



2028 AMBIENT TRAFFIC FORECAST  
 FIGURE 8



PROJECT GENERATED TRAFFIC ASSIGNMENT  
 FIGURE 9

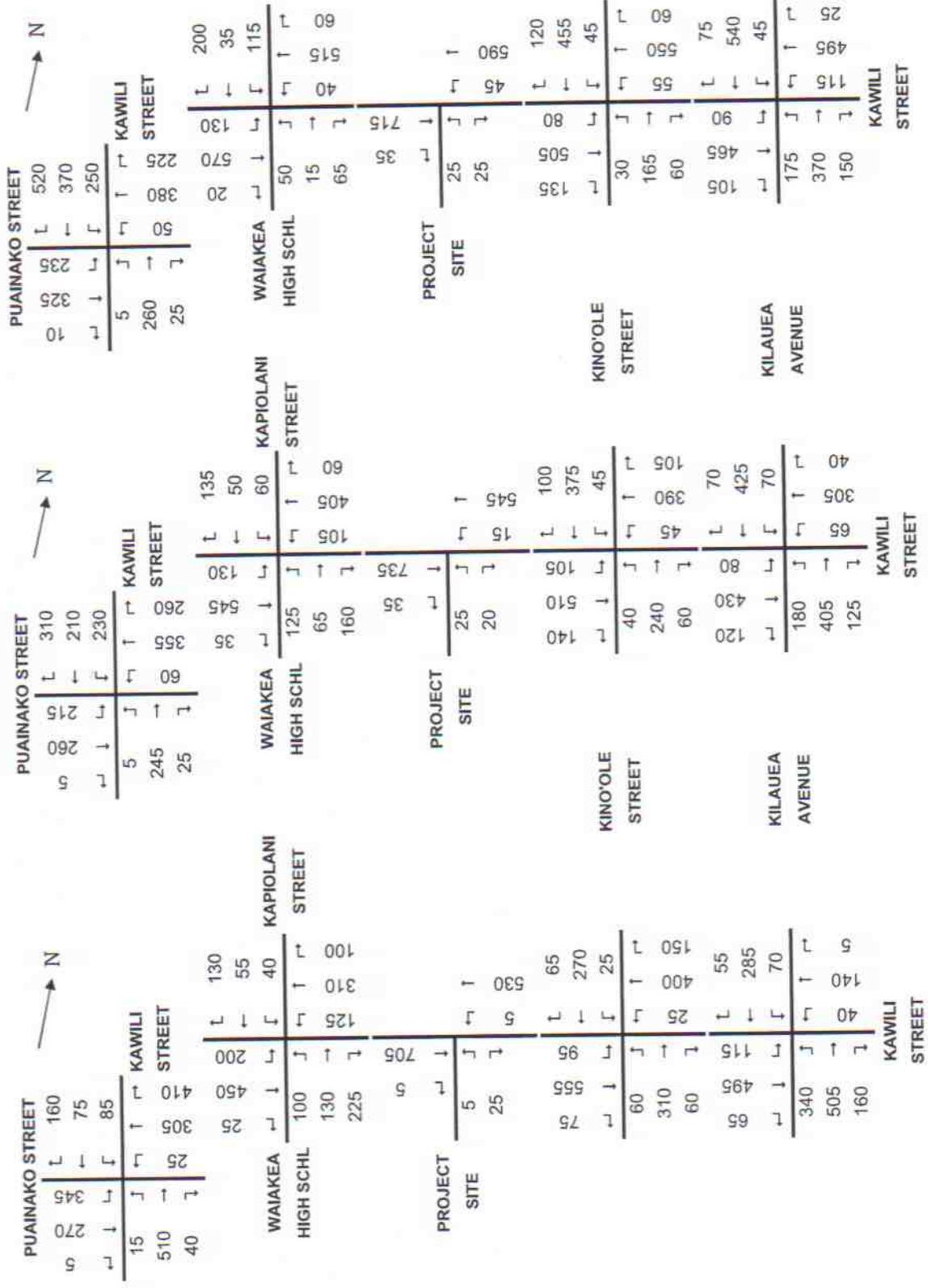


PM PEAK HOUR

MID-AFTERNOON

AM PEAK HOUR

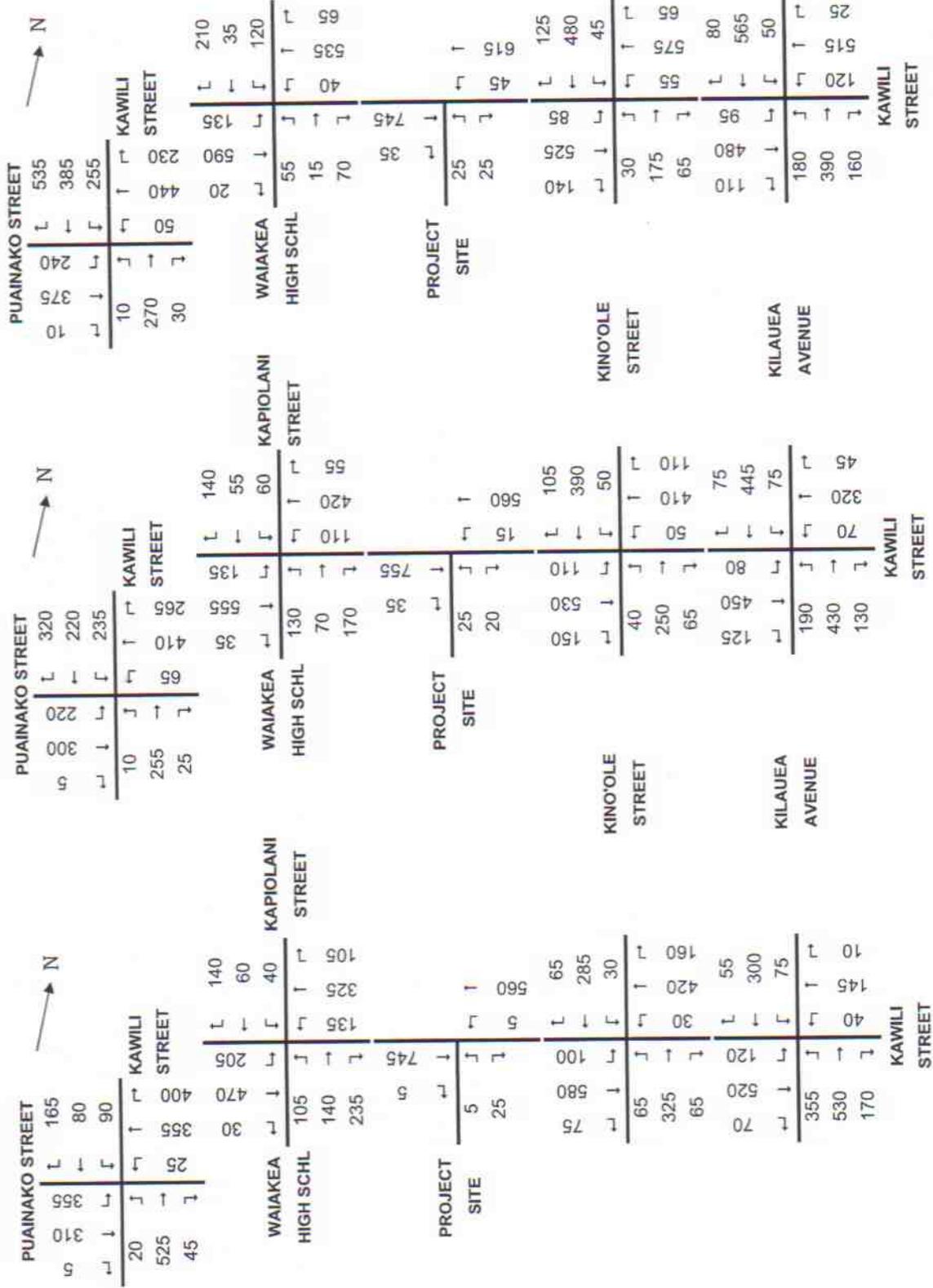
2013 TOTAL WITH PROJECT TRAFFIC FORECAST  
FIGURE 10



AM PEAK HOUR      MID-AFTERNOON      PM PEAK HOUR

2018 TOTAL WITH PROJECT TRAFFIC FORECAST

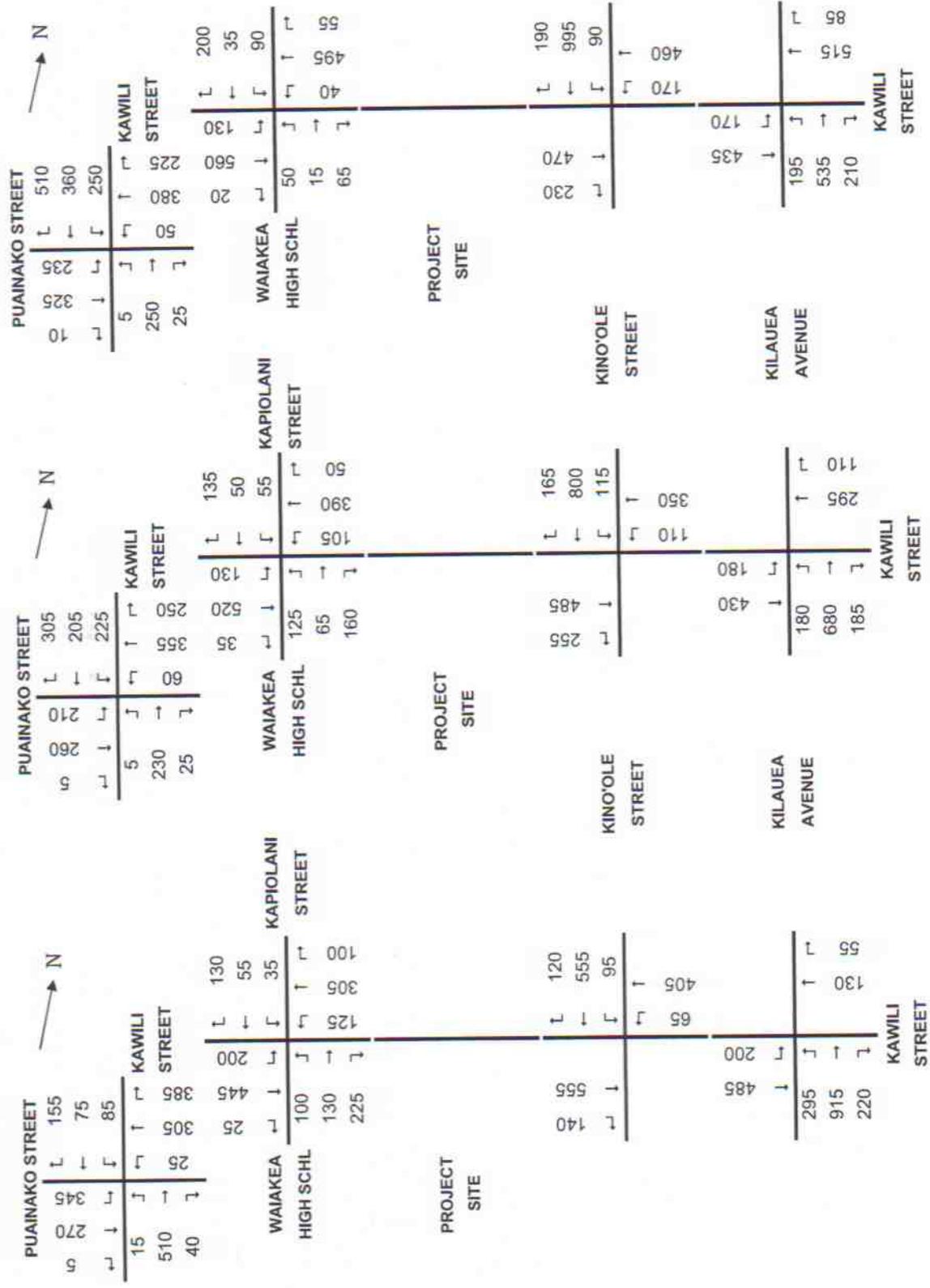
FIGURE 11



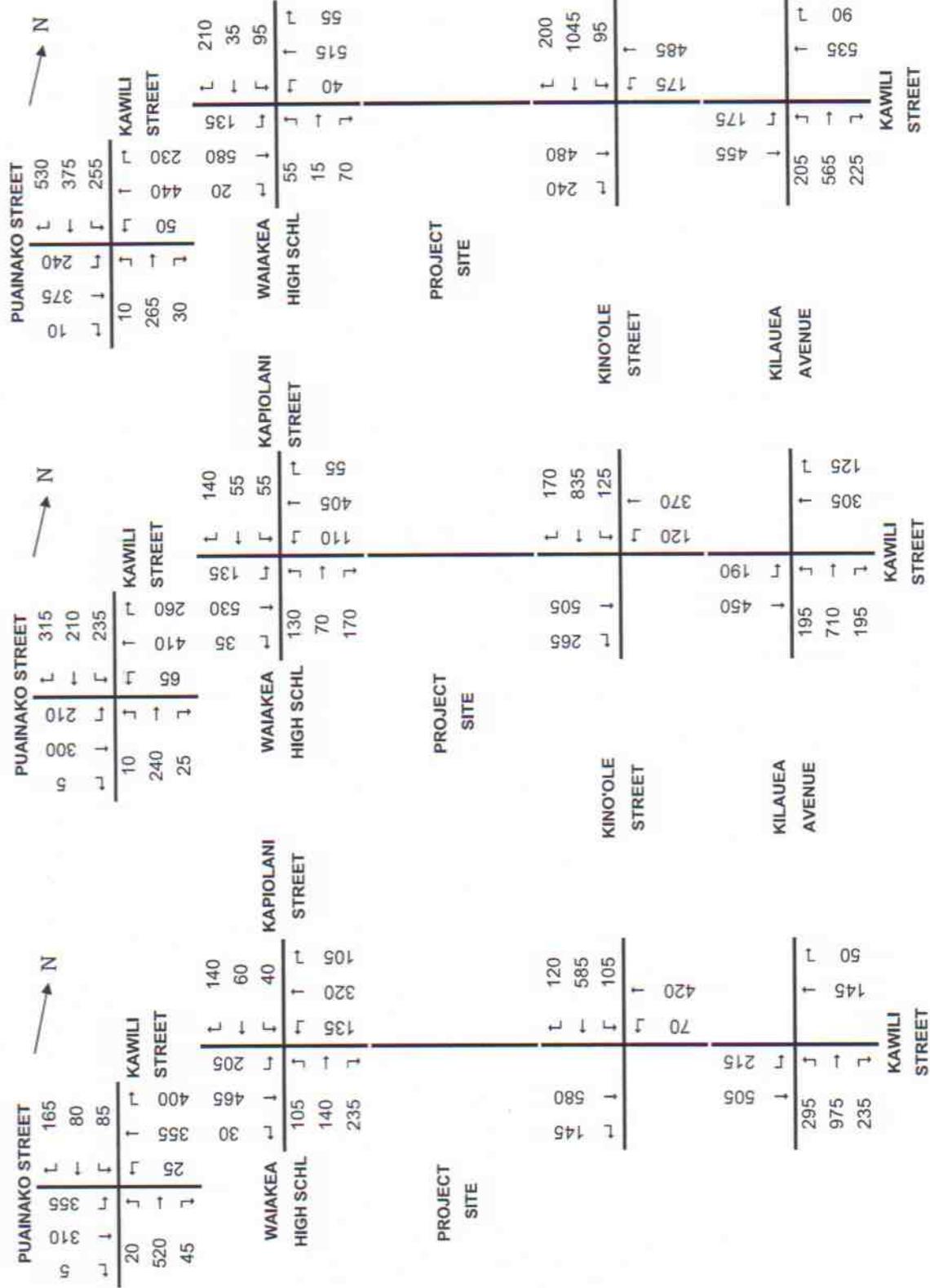
AM PEAK HOUR      MID-AFTERNOON      PM PEAK HOUR

2028 TOTAL WITH PROJECT TRAFFIC FORECAST

FIGURE 12

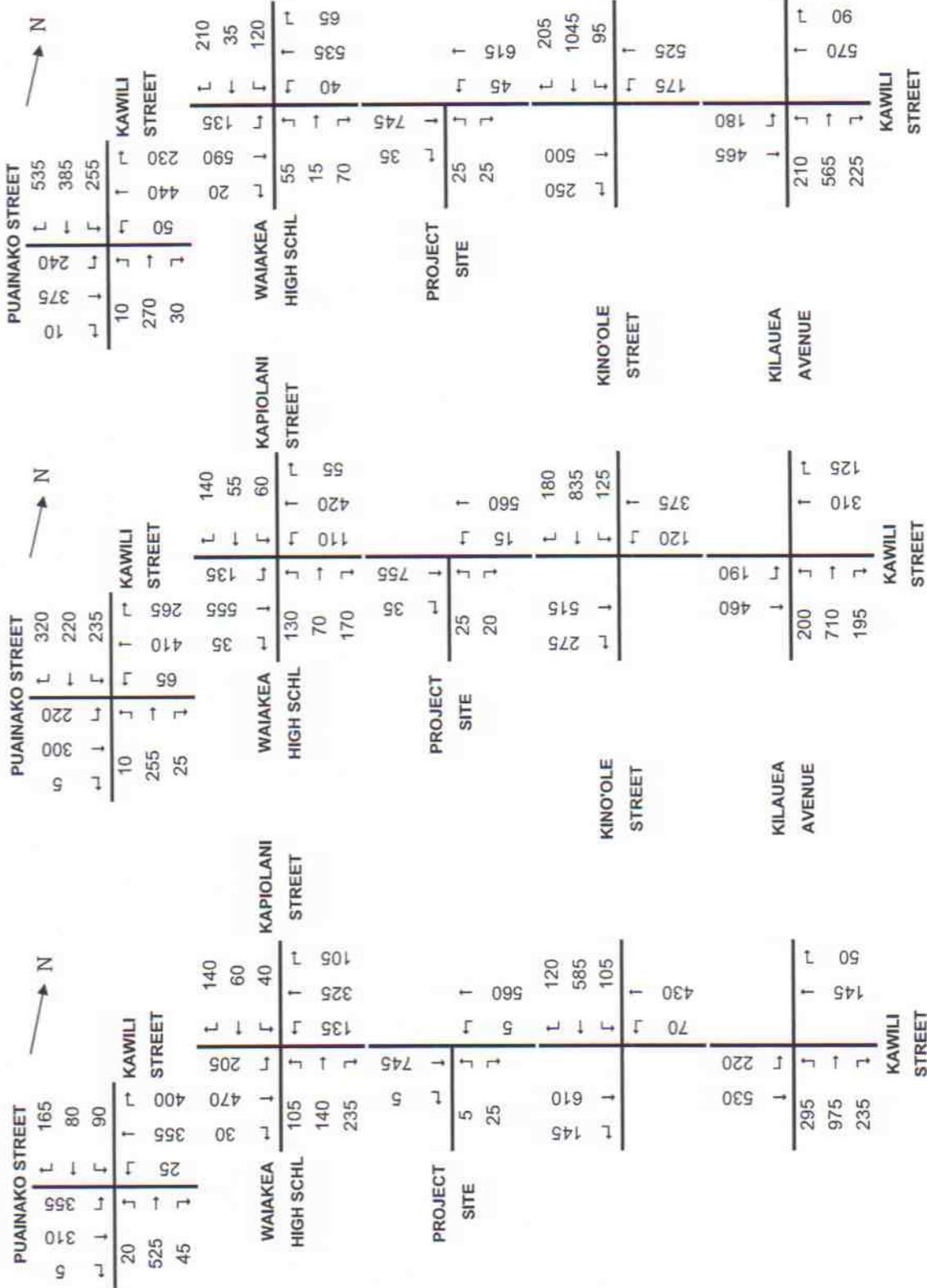


2018 AMBIENT TRAFFIC FORECAST WITH ONE-WAY COUPLET  
 FIGURE 13



AM PEAK HOUR  
 MID-AFTERNOON  
 PM PEAK HOUR  
 2028 AMBIENT TRAFFIC FORECAST WITH ONE-WAY COUPLET  
 FIGURE 14





2028 AMBIENT TRAFFIC FORECAST WITH ONE-WAY COUPLET  
 FIGURE 16



## *Tables*

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**TABLE 1  
LEVEL OF SERVICE ANALYSIS - KAWILI STREET AT KILAUEA AVENUE**

PEAK HOUR INTERSECT./APPROACH MOVEMENT	2008			2013			2018			2028												
	EXISTING		V/C	AMBIENT		V/C	TOTAL		AMBIENT		V/C	TOTAL										
	LOS	DEL		LOS	DEL		LOS	DEL	LOS	DEL		LOS	DEL									
<b>AM PEAK HOUR</b>																						
Intersection	C	32.8	0.90	C	34.1	0.92	D	35.7	0.93	D	36.9	0.96	D	38.4	0.97	D	41.9	1.00	D	44.6	1.00	
Kawili St EB Approach	D	47.2	0.26	D	44.9	0.26	D	48.2	0.26	D	44.2	0.26	D	48.4	0.28	D	45.4	0.29	D	47.2	0.28	
Left Turn Lane	C	23.0	0.90	C	22.5	0.89	C	22.3	0.91	C	21.3	0.89	C	21.4	0.93	C	21.1	0.91	C	20.5	0.93	
Through/Right Lane	D	52.2	0.90	D	49.5	0.89	D	53.4	0.91	D	48.9	0.89	D	54.0	0.93	D	50.6	0.91	D	52.7	0.93	
Kawili St WB Approach	C	32.5	0.13	C	31.7	0.12	C	31.4	0.12	C	30.3	0.14	C	30.3	0.14	C	30.0	0.14	C	29.3	0.14	
Left Turn Lane	C	25.8	0.33	C	25.1	0.30	C	24.9	0.30	C	23.9	0.31	C	23.9	0.31	C	23.5	0.31	C	22.8	0.31	
Through/Right Lane	C	34.3	0.33	C	33.4	0.30	C	33.1	0.30	C	32.0	0.31	C	32.0	0.31	C	31.7	0.31	C	30.9	0.31	
Kilauea Ave NB Approach	C	24.3	0.63	C	27.5	0.68	C	28.6	0.70	C	27.0	0.77	C	27.8	0.52	C	27.8	0.86	C	24.7	0.88	
Left Turn Lane	B	18.4	0.77	C	21.4	0.80	C	22.5	0.81	C	20.4	0.86	C	21.4	0.46	C	20.4	0.92	C	20.5	0.94	
Through/Right Lane	C	27.3	0.77	C	30.7	0.80	C	31.7	0.81	D	36.7	0.86	D	36.7	0.46	D	45.9	0.92	D	50.0	0.94	
Kilauea Ave SB Approach	C	31.4	0.21	C	33.7	0.23	C	34.4	0.23	D	37.1	0.24	D	37.1	0.38	D	39.9	0.27	C	42.0	0.28	
Left Turn Lane	C	20.4	0.60	C	21.8	0.64	C	22.2	0.65	C	23.1	0.70	C	23.1	0.29	C	24.1	0.75	C	24.7	0.77	
Through/Right Lane	C	33.7	0.83	D	36.3	0.85	D	37.0	0.86	D	40.1	0.90	D	40.1	0.91	D	43.3	0.90	D	45.7	0.93	
<b>MIDDAY PEAK HOUR</b>																						
Intersection	C	31.1	0.83	C	32.6	0.85	C	33.2	0.86	D	39.9	0.90	D	41.8	0.91	D	45.0	0.90	D	47.0	0.93	
Kawili St EB Approach	D	43.4	0.24	D	46.1	0.25	D	43.9	0.24	D	47.1	0.25	D	48.3	0.26	D	50.8	0.27	E	61.4	0.29	
Left Turn Lane	B	18.0	0.89	B	18.1	0.91	B	17.8	0.89	B	16.7	0.93	B	16.7	0.41	B	18.1	0.94	B	19.1	0.99	
Through/Right Lane	D	47.2	0.89	D	50.2	0.91	D	47.5	0.89	D	51.4	0.93	D	53.0	0.94	E	55.6	0.94	E	67.4	0.99	
Kawili St WB Approach	C	27.8	0.36	C	28.3	0.40	C	27.5	0.40	C	26.6	0.40	C	26.4	0.58	C	28.5	0.48	C	30.3	0.51	
Left Turn Lane	B	19.9	0.60	C	20.6	0.62	C	20.4	0.60	C	20.6	0.58	C	21.0	0.60	C	24.1	0.60	C	26.8	0.62	
Through/Right Lane	C	29.4	0.60	C	29.9	0.62	C	29.0	0.60	C	27.7	0.58	C	27.4	0.58	C	29.4	0.60	C	30.9	0.62	
Kilauea Ave NB Approach	C	22.4	0.54	C	23.1	0.58	C	24.9	0.63	C	33.9	0.85	D	37.3	0.90	D	46.0	0.96	D	42.8	0.91	
Left Turn Lane	B	18.0	0.69	B	19.5	0.70	C	22.1	0.72	C	47.0	0.75	E	57.0	0.76	E	73.9	0.82	E	60.5	0.82	
Through/Right Lane	C	23.8	0.17	C	24.3	0.18	C	25.9	0.18	C	29.3	0.21	C	30.2	0.22	C	36.4	0.21	D	36.6	0.20	
Kilauea Ave SB Approach	C	32.4	0.80	C	34.2	0.83	D	36.8	0.85	D	49.1	0.92	D	51.2	0.93	D	49.6	0.92	D	48.7	0.91	
Left Turn Lane	B	14.5	0.80	B	14.6	0.83	B	15.4	0.85	B	18.8	0.92	B	19.3	0.93	B	18.6	0.92	B	18.3	0.20	
Through/Right Lane	C	34.9	0.80	D	37.1	0.83	D	39.9	0.85	D	53.4	0.92	E	55.7	0.93	D	54.2	0.92	D	53.1	0.91	



**TABLE 2  
LEVEL OF SERVICE ANALYSIS - KAWILI STREET AT KINO'OLE STREET**

PEAK HOUR INTERSECT./APPROACH MOVEMENT	2008						2013						2018						2028								
	EXISTING		AMBIENT		TOTAL		AMBIENT		TOTAL		AMBIENT		TOTAL		AMBIENT		TOTAL		AMBIENT		TOTAL						
	LOS	DEL	V/C	LOS	DEL	V/C	LOS	DEL	V/C	LOS	DEL	V/C	LOS	DEL	V/C	LOS	DEL	V/C	LOS	DEL	V/C	LOS	DEL	V/C			
<b>AM PEAK HOUR</b>																											
Intersection	C	32.8	0.73	C	29.7	0.75	C	29.9	0.79	C	33.0	0.79	C	32.8	0.83	C	33.4	0.82	D	35.3	0.84						
Kawili St EB Approach	C	23.9	0.28	C	21.4	0.26	C	22.3	0.26	C	22.1	0.29	C	24.2	0.31	C	26.3	0.38	C	26.7	0.39						
Left Turn Lane	B	13.7	0.77	B	13.0	0.73	B	13.0	0.76	B	13.5	0.76	B	14.2	0.79	B	16.2	0.81	B	16.2	0.82						
Through/Right Lane	C	25.5	0.06	C	22.7	0.06	C	23.7	0.06	C	23.4	0.06	C	25.7	0.06	C	27.8	0.08	C	28.3	0.08						
Kawili St WB Approach	E	56.5	0.97	C	34.7	0.85	C	34.7	0.85	D	35.6	0.92	D	35.2	0.90	D	39.2	0.87	D	36.5	0.87						
Left Turn Lane	B	12.4	0.73	B	11.4	0.65	B	11.4	0.65	B	11.2	0.69	B	11.7	0.68	B	12.5	0.68	B	12.2	0.68						
Through/Right Lane	E	58.8	0.06	D	35.9	0.85	D	35.9	0.85	D	36.8	0.85	D	36.4	0.85	D	40.7	0.89	D	37.8	0.87						
Kino'ole St NB Approach	C	26.1	0.97	D	38.7	0.85	D	38.7	0.85	D	49.9	0.92	D	46.9	0.90	D	41.2	0.87	D	52.3	0.93						
Kino'ole St SB Approach	C	21.5	0.73	C	26.8	0.65	D	26.8	0.65	C	29.3	0.69	C	29.4	0.68	C	28.3	0.68	C	29.9	0.69						
<b>MIDDAY PEAK HOUR</b>																											
Intersection	C	26.5	0.79	C	29.7	0.81	C	30.1	0.82	D	36.3	0.89	D	37.5	0.91	D	38.5	0.92	D	40.3	0.94						
Kawili St EB Approach	C	22.1	0.22	C	20.4	0.23	C	21.4	0.24	C	25.8	0.31	C	27.0	0.31	C	33.6	0.37	C	36.5	0.38						
Left Turn Lane	B	12.2	0.73	B	11.9	0.70	B	12.1	0.73	B	13.7	0.81	B	13.9	0.83	B	16.9	0.88	B	17.1	0.90						
Through/Right Lane	C	23.7	0.11	C	21.8	0.10	C	22.9	0.11	C	27.9	0.11	C	29.2	0.11	C	36.4	0.13	D	39.7	0.13						
Kawili St WB Approach	C	30.3	0.78	C	27.6	0.75	C	28.3	0.76	C	28.3	0.75	C	29.1	0.76	C	34.5	0.81	C	35.5	0.81						
Left Turn Lane	B	12.6	0.56	B	11.8	0.56	B	11.8	0.56	B	12.3	0.56	B	12.3	0.56	B	14.5	0.68	B	14.5	0.68						
Through/Right Lane	C	32.3	0.83	C	29.3	0.83	C	30.1	0.83	C	32.1	0.97	C	30.7	0.97	C	36.5	0.95	C	37.6	0.95						
Kino'ole St NB Approach	C	20.9	0.78	C	25.1	0.78	C	25.1	0.78	C	32.1	0.97	C	32.1	0.97	C	30.4	0.95	C	30.4	0.95						
Kino'ole St SB Approach	C	32.1	0.83	D	46.0	0.92	D	46.0	0.92	E	62.0	1.01	E	64.6	1.02	D	54.9	0.95	E	57.0	0.95						
<b>PM PEAK HOUR</b>																											
Intersection	C	35.0	0.78	D	38.2	0.81	D	43.6	0.85	D	53.0	0.97	E	62.7	0.99	E	57.7	0.99	E	67.8	1.01						
Kawili St EB Approach	B	19.0	0.19	C	22.8	0.21	C	23.8	0.23	D	36.4	0.28	D	42.9	0.28	D	40.0	0.31	D	48.4	0.33						
Left Turn Lane	B	12.9	0.60	B	15.0	0.69	B	15.9	0.72	B	16.7	0.91	C	35.0	0.94	B	18.9	0.92	D	39.3	0.96						
Through/Right Lane	B	19.9	0.11	C	23.8	0.45	C	24.9	0.45	D	39.0	0.15	D	43.9	0.15	D	42.7	0.15	D	49.6	0.15						
Kawili St WB Approach	D	37.8	0.88	D	45.2	0.88	E	60.3	0.94	E	73.9	1.05	F	96.9	1.05	E	77.4	1.05	F	99.8	1.05						
Left Turn Lane	B	12.6	0.37	B	13.8	0.32	B	13.8	0.32	B	13.8	0.44	B	13.8	0.44	B	14.9	0.49	B	14.9	0.49						
Through/Right Lane	D	40.5	0.83	D	48.4	0.83	E	64.7	0.83	E	79.8	1.01	F	<100	1.01	F	83.2	1.01	F	<100	1.01						
Kino'ole St NB Approach	B	18.8	0.37	B	19.9	0.39	B	19.9	0.39	B	19.9	0.44	C	20.2	0.46	C	21.9	0.49	C	21.9	0.49						
Kino'ole St SB Approach	D	52.3	0.37	D	53.2	0.39	E	55.4	0.39	E	64.2	1.01	E	66.8	1.02	E	72.4	1.04	E	75.1	1.04						

**TABLE 3**  
**LEVEL OF SERVICE ANALYSIS**  
**KAWILI STREET AT KILAUEA AVENUE WITH ONE-WAY COUPLET**

PEAK HOUR INTERSECT./APPROACH MOVEMENT	2018						2028					
	AMBIENT			TOTAL			AMBIENT			TOTAL		
	LOS	DEL	V/C	LOS	DEL	V/C	LOS	DEL	V/C	LOS	DEL	V/C
<b>AM PEAK HOUR</b>												
Intersection	C	26.6	0.71	C	26.6	0.72	C	31.4	0.75	C	31.4	0.77
Kawili St EB Approach	B	16.4		B	16.8		B	16.8		B	17.4	
Left Turn Lane	B	13.3	0.30	B	13.4	0.31	B	13.5	0.32	B	13.5	0.33
Through/Right Lane	B	17.7	0.59	B	18.2	0.61	D	18.2	0.61	B	19.0	0.64
Kawili St WB Approach	C	22.7	0.33	C	22.7	0.33	C	22.8	0.34	C	22.8	0.33
Kilauea Ave NB Approach	C	32.1		C	32.1		D	39.6		D	39.6	
<b>MIDDAY PEAK HOUR</b>												
Intersection	C	21.9	0.69	C	22.0	0.69	C	22.7	0.72	C	22.9	0.73
Kawili St EB Approach	B	17.7		B	18.0		B	18.3		B	18.5	
Left Turn Lane	B	16.0	0.28	B	16.3	0.29	B	16.8	0.29	B	16.9	0.29
Through/Right Lane	B	18.4	0.54	B	18.7	0.56	B	18.9	0.57	B	19.2	0.58
Kawili St WB Approach	C	28.3	0.68	C	28.6	0.69	C	30.0	0.73	C	30.4	0.74
Kilauea Ave NB Approach	C	21.9		C	21.9		C	22.5		C	22.5	
<b>PM PEAK HOUR</b>												
Intersection	C	26.7	0.76	C	29.1	0.79	C	28.5	0.80	C	28.8	0.81
Kawili St EB Approach	B	16.8		B	17.1		B	17.2		B	16.9	
Left Turn Lane	B	16.3	0.25	B	16.6	0.25	B	16.5	0.26	B	16.0	0.26
Through/Right Lane	B	17.0	0.51	B	17.3	0.53	B	17	0.53	B	17	0.55
Kawili St WB Approach	D	39.9	0.88	D	47.5	0.93	D	45.2	0.92	D	42.1	0.91
Kilauea Ave NB Approach	C	24.6		C	24.6		C	25.3		C	28.3	

**TABLE 4**  
**LEVEL OF SERVICE ANALYSIS**  
**KAWILI STREET AT KINO'OLE STREET WITH ONE WAY COUPLET**

PEAK HOUR INTERSECT./APPROACH MOVEMENT	2018						2028					
	AMBIENT			TOTAL			AMBIENT			TOTAL		
	LOS	DEL	V/C	LOS	DEL	V/C	LOS	DEL	V/C	LOS	DEL	V/C
<b>AM PEAK HOUR</b>												
Intersection	C	34.3	0.80	D	35.5	0.82	C	34.8	0.85	D	38.0	0.85
Kawili St EB Approach	D	50.2	0.95	D	50.7	0.96	D	46.0	0.95	D	54.5	0.97
Kawili St WB Approach	B	13.5		B	13.1		B	11.4		B	13.1	
Left Turn Lane	B	13.8	0.09	B	13.6	0.09	B	12.0	0.09	B	13.6	0.09
Through/Right Lane	B	13.4	0.42	B	13.1	0.41	B	11.4	0.42	B	13.1	0.43
Kino'ole St SB Approach	C	33.0	0.72	D	35.3	0.74	C	39.2	0.84	D	38.8	0.79
<b>MIDDAY PEAK HOUR</b>												
Intersection	D	41.0	0.91	D	42.5	0.92	D	46.4	0.94	D	49.1	0.95
Kawili St EB Approach	D	51.0	0.94	D	49.8	0.93	E	55.1	0.95	E	61.2	0.97
Kawili St WB Approach	B	18.3		B	18.1		B	19.9		B	20.0	
Left Turn Lane	B	18.8	0.17	B	18.5	0.19	C	20.7	0.19	C	20.9	0.19
Through/Right Lane	B	18.1	0.39	B	17.9	0.39	B	19.7	0.40	B	19.7	0.41
Kino'ole St SB Approach	D	44.3	0.88	D	48.4	0.90	D	52.4	0.92	D	53.7	0.93
<b>PM PEAK HOUR</b>												
Intersection	D	47.2	0.94	D	48.6	0.95	D	51.4	0.97	D	54.9	0.99
Kawili St EB Approach	D	52.1	0.92	E	59.7	0.95	E	68.4	0.98	E	80.0	1.02
Kawili St WB Approach	C	25.3		C	28.0		C	29.0		C	30.1	
Left Turn Lane	C	28.9	0.27	C	31.6	0.27	C	33.5	0.28	C	34.0	0.28
Through/Right Lane	C	24.0	0.53	C	26.9	0.59	C	27.4	0.58	C	28.8	0.63
Kino'ole St SB Approach	E	55.5	0.96	D	53.7	0.94	D	53.8	0.96	D	54.6	0.96

**TABLE 5  
LEVEL OF SERVICE ANALYSIS - KAWILI STREET AT KAPIOLANI STREET**

PEAK HOUR INTERSECT./APPROACH MOVEMENT	2008			2013			2018			2028												
	EXISTING		TOTAL	AMBIENT		TOTAL	AMBIENT		TOTAL	AMBIENT		TOTAL										
	LOS	DEL V/C		LOS	DEL V/C		LOS	DEL V/C		LOS	DEL V/C		LOS	DEL V/C								
<b>AM PEAK HOUR</b>																						
Intersection	C	28.6	0.60	C	30.0	0.62	C	30.7	0.63	C	33.4	0.67	C	35.0	0.67	C	33.6	0.70	C	34.2	0.70	
Kawili St EB Approach	C	32.7	0.45	D	35.5	0.47	D	36.5	0.48	D	40.0	0.52	D	42.9	0.53	D	39.4	0.54	D	40.5	0.55	
Left Turn Lane	B	15.6	0.82	B	16.1	0.86	B	16.3	0.87	B	17.0	0.90	B	17.7	0.92	B	17.3	0.90	B	17.5	0.91	
Through/Right Lane	D	39.9	0.42	D	43.6	0.46	D	44.7	0.47	D	49.8	0.45	D	53.5	0.46	D	48.7	0.49	D	50.0	0.50	
Kawili St WB Approach	C	29.9	0.72	C	30.8	0.74	C	31.8	0.76	C	33.8	0.79	C	35.4	0.81	C	33.7	0.79	C	34.3	0.80	
Left Turn Lane	B	17.7	0.21	B	18.7	0.22	B	18.8	0.22	B	18.8	0.24	B	19.5	0.24	B	19.6	0.27	B	19.9	0.27	
Through/Right Lane	C	34.1	0.21	C	35.0	0.22	C	36.2	0.22	C	38.6	0.23	C	40.4	0.24	C	38.2	0.25	C	38.9	0.25	
Kapiolani St NB Approach	C	20.3	0.21	C	20.4	0.22	C	20.4	0.22	C	21.7	0.23	C	22.3	0.24	C	22.7	0.25	C	22.7	0.25	
Left Turn Lane	B	17.3	0.21	B	17.3	0.22	B	17.3	0.22	B	19.2	0.10	B	19.0	0.10	B	20.3	0.11	B	20.3	0.11	
Through/Lane	C	21.8	0.09	C	21.9	0.09	C	21.9	0.09	C	23.8	0.09	C	25.0	0.10	C	24.9	0.11	C	24.9	0.11	
Kapiolani St SB Approach	C	31.2	0.49	C	31.6	0.51	C	31.6	0.51	C	34.9	0.57	C	35.0	0.57	C	37.1	0.61	C	37.1	0.61	
Left Turn Lane	C	22.2	0.38	C	22.2	0.39	C	22.2	0.39	C	24.0	0.39	C	23.1	0.39	C	25.0	0.43	C	25.0	0.43	
Through/Right Lane	C	33.3	0.38	C	33.7	0.39	C	33.7	0.39	C	37.3	0.39	C	37.9	0.43	C	39.8	0.43	C	39.8	0.43	
<b>MIDDAY PEAK HOUR</b>																						
Intersection	C	28.5	0.63	C	28.6	0.61	C	30.5	0.62	C	32.2	0.76	C	33.0	0.77	C	33.8	0.75	C	35.5	0.77	
Kawili St EB Approach	C	32.5	0.28	C	34.2	0.31	D	38.0	0.32	D	39.8	0.38	D	40.2	0.39	D	42.1	0.41	D	45.7	0.42	
Left Turn Lane	B	15.5	0.78	B	15.8	0.81	B	16.1	0.86	B	13.9	0.92	B	14.2	0.92	B	14.5	0.93	B	14.6	0.96	
Through/Right Lane	D	36.5	0.33	D	38.6	0.36	D	43.0	0.39	D	45.9	0.41	D	46.1	0.42	D	48.7	0.43	D	52.8	0.43	
Kawili St WB Approach	C	29.1	0.70	C	30.1	0.73	C	32.2	0.77	C	27.2	0.73	C	27.8	0.75	C	28.3	0.76	C	28.6	0.77	
Left Turn Lane	B	16.3	0.15	B	16.6	0.15	B	17.3	0.15	B	16.5	0.15	B	17.0	0.15	B	17.0	0.15	B	17.5	0.15	
Through/Right Lane	C	32.7	0.10	C	33.9	0.10	C	36.2	0.11	C	29.8	0.11	C	30.2	0.11	C	31.0	0.11	C	31.3	0.11	
Kapiolani St NB Approach	C	24.1	0.32	C	20.8	0.32	C	20.8	0.32	C	24.9	0.32	C	26.0	0.32	C	23.7	0.33	C	24.2	0.34	
Left Turn Lane	B	16.2	0.15	B	16.2	0.15	B	16.2	0.15	B	19.7	0.15	B	20.7	0.15	B	19.1	0.15	B	19.5	0.15	
Through/Right Lane	C	22.2	0.38	C	22.2	0.39	C	22.2	0.39	C	25.7	0.43	C	26.7	0.43	C	25.5	0.43	C	25.9	0.43	
Kapiolani St SB Approach	C	26.4	0.10	C	26.6	0.10	C	26.4	0.11	C	35.3	0.11	C	36.7	0.11	C	37.0	0.11	C	37.6	0.14	
Left Turn Lane	B	17.9	0.38	B	17.9	0.39	B	18.0	0.39	B	21.1	0.65	B	22.1	0.67	B	21.1	0.69	B	21.6	0.70	
Through/Right Lane	C	29.6	0.38	C	29.8	0.39	C	29.8	0.39	C	40.2	0.65	C	42.2	0.67	C	42.2	0.69	C	43.3	0.70	



**TABLE 6**  
**LEVEL OF SERVICE ANALYSIS**  
**KAWILI STREET AT PUAINAKO STREET**

PEAK HOUR INTERSECT./APPROACH MOVEMENT	2008			2013						2018		
	EXISTING			AMBIENT			TOTAL			AMBIENT		
	LOS	DEL	V/C	LOS	DEL	V/C	LOS	DEL	V/C	LOS	DEL	V/C
<b>AM PEAK HOUR</b>												
Intersection	C	32.2	0.91	D	42.1	0.98	D	44.4	1.00	F	>100	1.42
Puainako St EB Approach	D	36.9	0.90	E	72.1	1.03	E	78.8	1.06	F	>100	1.70
Puainako St WB Approach	B	16.1	0.66	B	19.9	0.72	C	20.2	0.73	C	30.5	0.88
Iwalani St NB Approach	D	49.4	0.92	D	47.8	0.90	D	49.2	0.92	E	63.5	0.98
Kawili St SB Approach	C	22.1		C	24.2		C	24.2		C	32.6	
Through/Left Lane	C	22.5	0.29	C	25.0	0.40	C	25.1	0.40	D	40.0	0.73
Right Turn Lane	C	21.7	0.19	C	23.3	0.23	C	23.3	0.23	C	23.8	0.29
<b>MIDDAY PEAK HOUR</b>												
Intersection	B	19.2	0.64	C	20.8	0.70	C	21.6	0.72	E	70.7	1.15
Puainako St EB Approach	B	12.5	0.46	B	14.2	0.56	B	14.6	0.58	E	71.3	1.04
Puainako St WB Approach	B	15.2	0.62	B	16.5	0.55	B	16.9	0.68	C	23.9	0.83
Iwalani St NB Approach	C	23.5	0.40	C	23.8	0.33	C	24.1	0.44	C	24.6	0.48
Kawili St SB Approach	C	27.7		C	30.3		C	32.1		F	>100	
Through/Left Lane	C	30.2	0.67	C	34.1	0.74	D	36.9	0.78	F	>100	1.33
Right Turn Lane	C	22.4	0.28	C	22.8	0.33	C	22.9	0.34	C	28.8	0.65
<b>PM PEAK HOUR</b>												
Intersection	C	24.3	0.68	C	30.6	0.76	C	31.9	0.78	F	>100	1.43
Puainako St EB Approach	B	13.4	0.52	B	15.3	0.62	B	16.0	0.64	F	>100	1.14
Puainako St WB Approach	B	13.8	0.55	B	15.1	0.62	B	15.2	0.62	B	20.0	0.78
Iwalani St NB Approach	C	24.0	0.43	C	24.3	0.45	C	24.4	0.47	C	32.9	0.68
Kawili St SB Approach	D	38.9		D	54.3		E	57.1		F	>100	
Through/Left Lane	C	46.9	0.89	E	70.9	1.00	E	75.5	1.01	F	>100	1.97
Right Turn Lane	D	25.5	0.52	C	26.6	0.57	C	27.1	0.59	E	70.4	0.98

**TABLE 7**  
**LEVEL OF SERVICE ANALYSIS**  
**KAWILI STREET AT REALIGNED PUAINAKO STREET**

PEAK HOUR INTERSECT./APPROACH MOVEMENT	2018						2028					
	AMBIENT			TOTAL			AMBIENT			TOTAL		
	LOS	DEL	V/C	LOS	DEL	V/C	LOS	DEL	V/C	LOS	DEL	V/C
<b>AM PEAK HOUR</b>												
Intersection	C	25.3	0.74	C	24.7	0.76	C	24.6	0.76	C	24.7	0.76
Puainako St EB Approach	B	16.8		B	14.7		B	15.5		B	15.5	
Left Turn Lane	B	18.1	0.70	B	14.4	0.61	B	15.7	0.66	B	15.7	0.66
Through/Right Lanes	B	15.1	0.19	B	15.1	0.19	B	15.3	0.21	B	15.3	0.21
Through Lanes	C	27.7	0.56	C	24.0	0.29	C	24.4	0.34	C	24.4	0.34
Kawili St NB Approach	C	28.3		C	28.3		C	28.4		C	28.6	
Left Turn Lane	B	17.9	0.04	B	17.9	0.04	B	17.9	0.05	B	17.9	0.05
Through/Right Lanes	C	28.5	0.56	C	28.5	0.56	C	28.8	0.58	C	29.0	0.59
Kawili St SB Approach	C	28.6		C	28.7		C	28.8		C	28.8	
Left Turn Lane	C	22.6	0.30	C	22.6	0.30	C	22.6	0.30	C	22.7	0.32
Through/Right Lanes	C	31.3	0.33	C	31.3	0.33	C	31.4	0.34	C	31.4	0.34
<b>MIDDAY PEAK HOUR</b>												
Intersection	C	21.8	0.58	C	22.1	0.60	C	22.4	0.60	C	22.6	0.62
Puainako St EB Approach	B	18.9		B	19.0		B	19.5		B	19.8	
Left Turn Lane	B	17.1	0.53	B	17.4	0.54	B	17.9	0.56	B	18.6	0.59
Through/Right Lanes	C	20.3	0.24	C	20.3	0.25	C	20.6	0.28	C	20.6	0.28
Puainako St WB Approach	C	28.1		C	28.5		C	28.9		C	29.1	
Left Turn Lane	B	17.7	0.15	B	17.7	0.15	B	17.7	0.17	B	17.7	0.17
Through Lanes	C	27.7	0.46	C	27.7	0.46	C	28.5	0.53	C	28.5	0.53
Kawili St NB Approach	C	26.3		C	26.4		C	26.2		C	26.3	
Left Turn Lane	B	17.1	0.02	B	17.1	0.02	B	17.1	0.03	B	17.1	0.03
Through/Right Lanes	C	26.5	0.33	C	26.6	0.35	C	26.5	0.34	C	26.7	0.36
Kawili St SB Approach	B	16.4		B	16.5		B	16.6		B	16.7	
Left Turn Lane	B	12.9	0.41	B	13.0	0.43	B	13.1	0.44	B	13.2	0.44
Through/Right Lanes	B	18.2	0.38	B	18.3	0.39	B	18.4	0.40	B	18.5	0.41
<b>PM PEAK HOUR</b>												
Intersection	C	22.9	0.66	C	23.1	0.67	C	23.7	0.69	C	23.8	0.70
Puainako St EB Approach	B	20.0		B	20.0		C	21.1		C	21.1	
Left Turn Lane	B	18.9	0.61	B	18.9	0.61	C	21.0	0.67	C	21.0	0.67
Through/Right Lanes	C	20.8	0.31	C	20.8	0.31	C	21.2	0.36	C	21.2	0.36
Puainako St WB Approach	C	27.6		C	27.6		C	28.5		C	28.5	
Left Turn Lane	B	17.6	0.14	B	17.6	0.14	B	17.6	0.14	B	17.6	0.14
Through Lanes	C	28.0	0.49	C	28.0	0.49	C	29.1	0.57	C	29.1	0.57
Kawili St NB Approach	C	26.5		C	26.5		C	26.5		C	26.6	
Left Turn Lane	B	17.1	0.02	B	17.1	0.02	B	17.1	0.04	B	17.1	0.04
Through/Right Lanes	C	26.6	0.35	C	26.7	0.37	C	26.8	0.38	C	27.0	0.39
Kawili St SB Approach	C	20.8		C	21.2		C	21.5		C	21.8	
Left Turn Lane	B	13.5	0.47	B	13.5	0.47	B	13.7	0.49	B	13.7	0.49
Through/Right Lanes	C	23.0	0.70	C	23.5	0.72	C	23.9	0.73	C	24.2	0.74

**TABLE 8**  
**UNSIGNALIZED INTERSECTION LEVEL OF SERVICE ANALYSIS**  
**KAWILI STREET AT PROJECT ACCESS DRIVEWAY**

PEAK HOUR APPROACH	2013		2018		2028	
	LOS	DEL	LOS	DEL	LOS	DEL
<b>AM PEAK HOUR</b>						
Project Access Dwy	C	17.0	C	18.1	C	19.2
Kawili St Left Turn	A	9.2	A	9.4	A	9.6
<b>MIDDAY</b>						
Project Access Dwy	C	22.8	D	31.1	D	32.9
Kawili St Left Turn	A	9.1	A	9.7	A	9.8
<b>PM PEAK HOUR</b>						
Project Access Dwy	C	23.2	E	35.1	E	37.3
Kawili St Left Turn	A	9.1	A	9.8	A	10.0

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## **APPENDIX D**

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### ***PLANNING DIRECTOR LETTER***

Christopher J. Yuen

October 24, 2007

Harry Kim  
Mayor



Christopher J. Yuen  
Director

Brad Kurokawa, ASLA  
LEED® AP  
Deputy Director

County of Hawaii  
PLANNING DEPARTMENT

101 Pauahi Street, Suite 3 • Hilo, Hawaii 96720-4224  
(808) 961-8288 • FAX (808) 961-8742

October 24, 2007

Mr. Dennis I. Hirota, PhD, PE, LPLS  
Managing Partner  
Hawaii Kahi LLC  
864 S. Beretania Street  
Honolulu, HI 93813-2502

Dear Mr. Hirota:

**SUBJECT: MULTI-STORY RENTAL APARTMENT COMPLEX  
FOR HILO COLLEGE STUDENTS  
HONPA HONGWANJI MISSION OF HAWAII, OWNER  
TAX MAP KEY: (3) 2-4-01:116**

This letter responds to your letter of January 15, 2007, requesting project support from the County of Hawaii Planning Dept. for the development of TMK 2-4-01:116 for student housing purposes. I apologize for the length of time it has taken to answer your request.

Your letter describes a proposed 106 unit, 400 bed 3-story rental apartment project on approximately 4.0 acres, with a parking structure, marketed to college students at the University of Hawai'i-Hilo and Hawai'i Community College. The units would consist of 3 or 4 bedrooms, with a bathroom for each bedroom, and one kitchen per unit. Each bed would be rented to students under separate contract, with a projected rental rate of \$975/mo. per bed (computed on a 12 month average) plus tax, with the rental including all utilities except telephone, premium cable service, internet service, and state GET. The project would be located on a site owned by the Honpa Hongwanji Mission of Hawai'i, on the south side of Kawili St., just above the Kinoole St. intersection.

I met with Chancellor Rose Tseng and Gerald DeMello of UH-Hilo to get a preliminary indication of their attitude toward the proposal. It was generally favorable. The University welcomes other near-campus student housing opportunities developed by

Mr. Dennis I. Hirota, PhD, PE, LPLS  
Managing Partner  
Hawaii Kahi LLC  
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October 24, 2007

others because even though the University is working on student housing it does not expect to fully satisfy the demand.

The County administration similarly favors projects that fulfill important needs of the University, and which bring housing to the central part of Hilo.

Turning to the specific requests on p. 4 of the letter:

**Zoning:** The request is to "allow the proposed project improvements to be built and operated on the property, and allow each bed to be rented out on an individual basis."  
**Response:** The site is currently zoned RS-10 and would have to be rezoned to a much greater density, such as RM-1.5, to allow 106 units on 4 acres. There is no alternative to rezoning. The Planning Department can support this rezoning, because of the importance of additional housing in general and student housing in particular. Strict application of the Land Use Pattern Allocation Guide Map of the General Plan indicates that the site is Low Density Urban, but the Planning Director can interpret the map to allow denser development given that the site adjoins property that is "Medium Density" in the General Plan, that the area across the street is "High Density" and that the project is in support of the university, which is identified as "University" use on the LUPAG map a short distance away. There are a number of site-specific issues that have to be considered in zoning, and we do not have a full application with all necessary information at this time. If the necessary RM-1.5 zoning were obtained, the Zoning Code and other county laws would allow the beds to be rented under separate contracts.

**Building Height:** Your request is that ceiling heights be 9' and that the building height be 50'.  
**Response:** RM zoning in the City of Hilo allows building heights of up to 120'. Thus, if you obtained RM zoning without any special conditions of approval, you would be able to build to 50' high. The 9' ceiling height is allowed by all regulations.

**Water Commitment:** You ask for support for obtaining water commitments.  
**Response:** Although you will have to discuss this specifically with the Department of Water Supply, the preliminary indication I received is that they can make adequate water available for the project, including fire flow, from an existing 8" line on Kinoole St. The DWS is a semi-autonomous body, not under the direct control of the Mayor.

**Property taxes, fees and assessments:** You ask for exemption from payment of real property taxes and special assessments, and for waiver of any special "impact" fees or charges.  
**Response:** There are no special assessments that seem applicable to the

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Managing Partner  
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property at this time. Any exemption from payment of property taxes would have to be by county council action. I have discussed this with the Mayor and the county administration cannot commit to support such a waiver for this project. If there were any such waiver it would have to apply generally to projects of this type and not be specific to this one project. Currently, the County does not have a true "impact fee" system. Rather, a "fair share" assessment is imposed at the time of zoning. The County Council is could decide, at the time of zoning, not to impose these fees. At this time, the administration cannot commit to support a waiver of these fees, which are generally imposed on various types of residential development, and generate funds to support regional road, park, police, fire, and solid waste improvements.

Other county requirements: you ask for a waiver of affordable housing requirements, and requirements to submit EIS, traffic, and other studies and reports. Response: The affordable housing requirements are set by county ordinance, Chap. 11 of the Hawai'i County Code. The proposed rental rates would be considerably in excess of the amounts considered "affordable" by Chap. 11. Only the Council, at the time of rezoning, could decide to exempt this project from Chap. 11 requirements, and the administration, at this time, cannot commit to support this waiver. The affordable rental rates were set with a different model in mind—a family renting a unit—rather than students sharing apartments, so there may be grounds to adjust what should be considered affordable. The requirement for an EA or EIS is set by state law. Without more details about the project, we cannot determine whether an EA or EIS is in fact necessary, but if it is required by state law, the County cannot waive it. The County zoning code will require a TIAR for a project of this size, and because this is a requirement of existing county law, the Planning Department cannot waive this requirement. It is not entirely clear what is meant by "other studies and reports", but we do need some basic information to process a rezoning application, and both the Planning Department and Department of Public Works have post-rezoning requirements that sometimes need formal studies that cannot be waived, such as sufficient information to determine that adequate drainage has been provided.

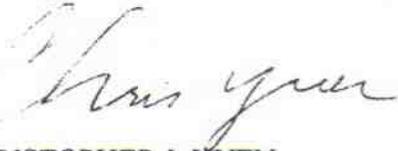
We also suggest that you discuss sewer needs with the Department of Environmental Management. The University is currently studying sewer needs for the proposed US-China Center project, and preliminary indications are that capacity on Kawili St. will not be enough to serve proposed uses, and hence, some improvements may be necessary.

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The proposal also did not make clear what would happen to the ten buildings currently on the site. Presumably, they would have to be demolished because it appears that the project would occupy the entire 4 acre site.

If you have any further questions, please contact me at 961-8288.

Sincerely,



CHRISTOPHER J. YUEN  
Planning Director

CJY:pak

Wpwinb0/Chris07 - Dennis Hirota - Hongwanji - Student Housing

cc: Mayor Harry Kim  
Office of Housing and Community Development  
Planning Section  
Tax Map Key: (3) 2-4-01:116