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Governor

DOUGLAS S. CHIN
Lieutenant Governor

LUIS P. SALAVERIA
Director

MARY ALICE EVANS
Deputy Director

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LAND USE COMMISSION
Department of Business, Economic Development & Tourism
State of Hawai`i

DANIEL E. ORODENKER
Executive Officer

BERT SARUWATARI
Planner

SCOTT A.K. DERRICKSON AICP
Planner

RASMI AGRAHARI
Planner

RILEY K. HAKODA
Planner/Chief Clerk

FRED A. TALON
Drafting Technician

October 18, 2018

Scott Glenn, Director
Office of Environmental Quality Control
Department of Health, State of Hawaii
235 S. Beretania Street, Room 702
Honolulu, Hawaii 96813

RECEIVED
'18 OCT 18 P3:41
OFC. OF ENVIRONMENTAL QUALITY CONTROL

RE: LUC Docket No. A11-791
Proposed HoKua Place Project
Second Draft Environmental Impact Statement (2nd DEIS)
Kawaihau District, Wailua, Kaua`i, State of Hawai`i
TMK: (4) 4-3-03:por. 01

Dear Mr. Glenn:

With this letter, the Hawai`i State Land Use Commission, hereby transmits the package for the Second Draft Environmental Impact Statement ("2nd DEIS") for HoKua Place situated at TMK: (4) 4-3-03:por. 01 in the Kawaihau District on the island of Kauai for publication of a notice of availability for public comment for 45-days in the November 8, 2018 edition of the Environmental Notice. The First Draft Environmental Impact Statement ("1st DEIS") included copies of all written comments received during the early consultation period and during the 30-day public consultation period for the EA-EISPN.

Enclosed is a distribution list for the verification by the Office of Environmental Quality Control ("OEQC"), a completed OEQC Publication Form, an electronic copy of the publication in MS Word, two hard copies of the 2nd DEIS, and two electronic copies of the 2nd DEIS. Simultaneous with this letter, we have submitted the summary of the action in a text file by electronic mail to your office.

If there are any questions, please contact Scott Derrickson at (808) 587-3921, or HoKua Place's consultant, Ron Agor of Agor Architects LLC at (808) 947-2467.

Sincerely,

Riley K. Hakoda
Chief Clerk- LUC

19-123

235 SOUTH BERETANIA STREET ❋ SUITE 406 ❋ HONOLULU, HAWAI`I 96813 ❋ TEL (808) 587-3822 ❋ Fax (808) 587-3827 ❋ EMAIL: luc@dbedt.hawaii.gov
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

APPLICANT
PUBLICATION FORM

Project Name:	HoKua Place
Project Short Name:	HoKua Place
HRS §343-5 Trigger(s):	Use of State or County Lands
Island(s):	Kauai
Judicial District(s):	Kawaihau
TMK(s):	(4) 4-3-03:por. 01
Permit(s)/Approval(s):	State Land Use District Boundary Amendment (Agricultural to Urban); County zone change (Agriculture to Residential); Subdivision Approval
Approving Agency:	State of Hawaii Land Use Commission ("LUC")
Contact Name, Email, Telephone, Address	Daniel E. Orodenker, Executive Director State of Hawai`i Land Use Commission 235 S. Beretania Street, Room 406, Honolulu, HI 96813 808-587-3822 daniel.e.orodenker@hawaii.gov
Applicant:	HG Kaua`i Joint Venture LLC
Contact Name, Email, Telephone, Address	Jake Bracken 460 Ena Road, Suite 303, Honolulu, Hi 96815 844-404-3261 jake@hgoffice.com
Consultant:	Agor Jehn Architects LLC
Contact Name, Email, Telephone, Address	Ron Agor, Agor Jehn Architects LLC 460 Ena Road, Suite 303, Honolulu, Hi 96815 808-947-2467 ron@agorjehnarch.com

Status (select one)	**Submittal Requirements**
____ DEA-AFNSI	Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.
____ FEA-FONSI	Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.
____ FEA-EISPN	Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.
____ Act 172-12 EISPN ("Direct to EIS")	Submit 1) the approving agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.
__X__ DEIS	Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.
____ FEIS	Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.
___ FEIS Acceptance Determination	The approving agency simultaneously transmits to both the OEQC and the applicant a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.
____ FEIS Statutory Acceptance	The approving agency simultaneously transmits to both the OEQC and the applicant a notice that it did not make a timely determination on the acceptance or nonacceptance of the applicant's FEIS

under Section 343-5(c), HRS, and therefore the applicant's FEIS is deemed accepted as a matter of law.

____ Supplemental EIS Determination — The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice.

____ Withdrawal — Identify the specific document(s) to withdraw and explain in the project summary section.

____ Other — Contact the OEQC if your action is not one of the above items.

Project Summary

HG Kaua`i Joint Venture, LLC ("HG Kaua`I") proposes a residential subdivision on 97 acres at Kawaihau District, Kaua`i, Hawai'i. HoKua Place (the "Project") will include a mix of single family lots and homes (7,500 to 10,000 square feet in size), as well as multifamily lots of varying size. A total of 683-multi-family units and 86-single family lots and homes are planned (with market and affordable prices) with complementary uses.

This 97-acre development seeks to fill the housing needs of Kapa`a within the Neighborhood General designation, consistent with the Kaua`i Kakou, the Updated Kaua`i General Plan approved in 2018. HoKua Place is proposed to be a sustainable community that preserves the rural-like character of Kapa`a while meeting its growing housing needs.

Affordable housing will be built on-site and will conform to Kaua`i County Ordinance No. 860. In addition, the adjoining HoKua Farm Lots that are to remain an Agricultural District will share some of the Project infrastructure.

HG Kaua`I published a Draft Envionmental Impact Statement for the Project in May 2015. Due to the passage of time and intervening events, including the preparation of updated traffic impact analysis report, an agriultural suitability report and a native invertebrate resources survey, and the approval of the Updated Kaua`i General Plan, it was recommended that a Second Draft Environmental Impact Statement be prepared and published for public comment.

HoKua Place
Section 343-5e HRS Second Draft
Environmental Impact Statement (2nd DEIS)
Volume I

Prepared for:
Accepting Authority
State of Hawai'i Land Use Commission
&
Petitioner
HG Kaua'i Joint Venture LLC
Prepared by:

Agor Jehn Architects, LLC
460 Ena Road, Suite 303
Honolulu, Hawai`i 96815
(808) 947-2467
ron@agorjehnarch.com

October 2018

This Second Draft Environmental Statement (2nd DEIS) and all ancillary documents were prepared under my direction and supervision, and to the best of my Knowledge, fully address the document content requirements set forth in Secton 11-200-17, Hawai'i Administrateive rules.

_____
Ron Agor

HoKua Place - Section 343-5e HRS – Second Draft Environmental Impact Statement (2nd DEIS)

HoKua Place is the name of this project (the "Project"). It was previously identified as Kapaʻa Highlands. The reader will note that several of the studies and references in this document carry the project's former name.

Under the provisions of Section 343-5e HRS, the applicant, HG Kauai Joint Venture LLC, and the accepting authority, State Land Use Commission, have determined at the outset that an environmental impact statement ("EIS") is required for the HoKua Place Project situated at (4) 4-3-003: 001 (portion) in Kapaʻa of the Kawaihau District on the island of Kauai.

Pursuant to the requirements of Section 11-200-3, Hawaii Administrative Rules, and Section 11-200-15, Hawaii Administrative Rules, a Draft Environmental Assessment was published in May 2015. Due to the passage of time and intervening events, as well as the preparation of additional reports, it was recommended that a Second Draft Environmental Impact Statement (2nd DEIS) be prepared and published. This document is the Second Draft Environmental Impact Statement (2ND DEIS).

The following is a summary of the major changes in the Second Draft Environmental Impact Statement (2nd DEIS) from the original Draft EIS: Petitioner has conducted an updated Traffic Impact Assessment Report (TIAR), An Invertebrate Report, and an Agricultural Suitability Report on the property. Petitioner has also incorporated findings and and recommendations contained in the updated Kaua'I Kakua, Kauai General Plan. In addition, this 2nd DEIS incorporates responses to comments on the first Draft EIS.

Following publication of this Second Draft Environmental Impact Statement (2ndDEIS), reviewers will have an opportunity to comment on its contents toward the preparation of the Final EIS. The purpose of the EIS process is to disclose to government agencies, the general public, stakeholders and decision-makers the anticipated impacts of a project and to identify feasible actions that might be taken to mitigate potential impacts.

The following studies included have been conducted to determine the potential impacts which may result from the proposed project and identify appropriate mitigation measures. (Note that there was a project name change after the preparation of the studies - the project did not change - these reports address the proposed HoKua Place project.)

- Kapaʻa Housing Market Study
- Kapaʻa Highlands II Sustainability Plan
- Kapa'a Highlands Agricultural Master Plan
- Kapaʻa Highlands Agricultural Suitability Report (New)
- Preliminary Engineering Report Drainage Improvements
- Preliminary Engineering Report Wastewater Improvements
- Updated Traffic Impact Assessment Report (New)
- Botanical Survey
- Biological Surveys
- Archaeological Assessment with Subsurface Testing
- Cultural Impact Assessment
- Invertebrate Report (New)

Project Name:	HoKua Place (The project was formerly referred to as Kapaʻa Highlands.)
Applicant & Property Owner:	HG Kauaʻi Joint Venture LLC 9911 S. 78th Avenue Hickory Hills, IL 60457
Approving Agency:	State of Hawaiʻi Land Use Commission
Project Location:	Kawaihau District, Wailua, Kauaʻi, Hawaiʻi
TMK:	(4) 4-3-003: 001 (portion)
Land Use Classification:	County Zoning: Agriculture General Plan: Urban Center State Land Use Designation: Agricultural
Land Area:	Approximately 97-acres Portions of the remainder of parcel (4) 4-3-003:001 will be used for well and water system uses
EIS Trigger:	Use of County Lands
Approvals Required:	LUC Boundary Amendment; County Class IV Zoning & Use Permits; County Council Approval for Zoning Change; Subdivision Approval; Building Permits

Summary:
HoKua Place is mix of lots, single-family and multi-family residential (with market and affordable prices) with complementary uses. This 97-acre development seeks to fill the housing needs of Kapaʻa within the Neighborhood General designation, consistent with the Updated Kauaʻi General Plan approved in 2018. HoKua Place is proposed to be a sustainable community that preserves the rural-like character of Kapaʻa while meeting its growing housing needs.

Approximately 97-acres will be subdivided into single family and multifamily lots providing for an approximate total of 683-multi-family units and 86-single family lots and homes; affordable housing will be built on-site and will conform to Kauaʻi County Ordinance. In addition, HoKua Farm Lots shares some of the project infrastructure and is included in this analysis.

The project includes open space encompassing 14.3-acres; a 3.1-acre park adjacent to the existing Kapaʻa Middle School with an area for the county's proposed relocation of the Kapaʻa county swimming pool; and 1.4-acres for commercial use. In accordance with County and State Transportation requirement, improvements will include an intersection on Kapaʻa Bypass Road, bus stops, sidewalks and bike and walking paths to the existing Kapaʻa Middle School.

The direct, indirect, secondary and cumulative impacts associated with the project would be localized or short-term, occurring during the construction phase.

Agencies and Organizations who were sent the Section 343-5e HRS Draft Environmental Impact Statement for comments:

State of Hawaiʻi
Department of Agriculture
Department of Accounting & General Services
Department of Business, Economic Development & Tourism
Department of Business, Economic Development & Tourism – Technology Division
Department of Business, Economic Development & Tourism - Office of Planning
Department of Business, Economic Development & Tourism - Land Use Commission
Department of Education - Planning Branch
Department of Education - Hawaiʻi State Library, Kapaʻa Library
Department of Hawaiian Home Lands
Department of Health
Department of Health - Office of Environmental Quality Control
Department of Land & Natural Resources
Department of Land & Natural Resources - State Historic Preservation Division
Department of Transportation
University of Hawaiʻi - Environmental Center
University of Hawaiʻi - Water Resources Research Center
University of Hawaiʻi - Kauaʻi Community College Library
Office of Hawaiian Affairs

County of Kauaʻi
Office of the Mayor
Department of Parks & Recreation
Department of Planning
Department of Public Works
Department of Transportation
Department of Water
Fire Department
Police Department

Federal
Department of the Interior Fish and Wildlife Service

Other
The Garden Island Newspaper

Likookalani Maltin

Sierra Club- Kaua'i Group

Wailua-Kapa'a Neighborhood Association

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Exhibits-See Volume II

Chapter 1 - Introduction

This Second Draft Environmental Impact Statement (FEIS) represents HoKua Place's analysis in compliance with State environmental review statutes including Chapter 343, Hawai‘i Revised Statues (HRS). (The Project was formerly referred to as Kapa‘a Highlands. Some of the Exhibits and other references carry the former name.)

This Second Draft Environmental Impact Statement (DEIS) discloses and evaluates the activities proposed in the Project of the HoKua Place Project. The purpose of the DEIS is to inform the relevant county, state and federal agencies and the public of the likely environmental consequences of the activities in developing the HoKua Place Project.

1.1 Overview & Background

HoKua Place is a proposed Project of a mix of single-family and multi-family residential, market and affordable priced homes, commercial and other uses (including roads, water and wastewater systems.) This 97-acre ocean view planned community, located mauka of Kapa‘a town, is positioned to be the pride of Kapa‘a. The Project seeks to fill the housing needs of Kapa‘a. Situated in close proximity to schools and commercial areas, HoKua Place is proposed to be developed as a sustainable community that preserves the rural-like character of Kapa‘a while meeting its growing housing needs.

HoKua Place will comprise approximately 97-acres of TMK: (4) 4-3-03:01 (portion) (the "Property"), a larger, approximately 163-acre parcel. HoKua Farm Lots, an adjoining agricultural community, will share some of the infrastructure and is included in this analysis. A Solar farm located on HoKua Farm Lots (formerly known as Kapa‘a Highlands I) produces 1.18 megawatts of energy that feeds into the Kaua‘i Electric distribution grid. A copy of the tentative subdivision approval for the HoKua Farm Lots is attached as Exhibit O.

The Kapa‘a By-Pass Road separates the Property from Kapa‘a Town. The Property is on the north-west corner of the Kapa‘a By-Pass Road and Olohena Road. Olohena Road runs along and adjacent to the east and north boundaries of the Property. The Kapa‘a Middle School is located on the northern end of the Property, fronted by Olohena Road.

HoKua Place, formerly known as Kapa'a Highlands II) , has received letters of support from the County Mayor, County Planning Department, County Housing Department, County Department of Public Works regarding wastewater, State Department of Transportation, County Water Department and others.

1.2 Purpose & Need

HoKua Place (formerly known as Kapaʻa Highlands II) has submitted a petition to the Land Use Commission for a boundary amendment. The petition is to change the State's Land Use District from Agricultural Land Use District to Urban Land Use District. The Project will respond to the General Plan's designation of the property as Neighborhood General and the policies of the General Plan to guide growth on Kaua'i and the need for housing in the area.

In February 2018, the Kaua'i County Council and the Mayor approved the updated County of Kaua'i Kakou, General Plan, hereafter referred to as the "General Plan". The approved General Plan designates HoKua Place as Neighborhood General. This new land use designation applies to areas within a half mile or 10-minute walk from a Neighborhood Center. It is intended for medium intensity, mixed-use environments that support a town core with housing, services, parks, civic/institutional home occupation and commercial use. The Neighborhood General designation is intended to replace the county's Urban Center designation in Kapa'a. The Neighborhood General designation is consistent with the state's Urban District designation.

One of the key policies articulated in the Updated Kaua`i General Plan is to concentrate growth within or adjacent to existing towns in order to preserve Kauaʻi's rural character. Another key policy is to satisfy the projected housing deficit by facilitating the construction of approximately 9,000 new housing units on Kauaʻi by 2035. Another policy is to design health and complete neighborhoods. The updated Kauai General Plan replaces the former Urban designated areas in Kapa'a with the Neighborhood General designation.

The Housing Sector of the Updated Kauai General Plan contains the following goals:

- Provided housing to accommodate growth within and near town centers.
- Prevent housing sprawl into Open and Agriculture lands.
- Provide housing for multigenerational families and aging in place.
- Ensure affordable housing is provided in proximity to job centers.

The General Plan is based on the community's vision for Kaua'i's future by establishing the following "Goals" and "Policies".

The vision sets the desired long-range outcome through a series of statements organized by the following Goals:

Goal #1 - A Sustainable Island
Goal #2 - A Unique and Beautiful Place
Goal #3 - A Healthy and Resilient People
Goal #4 - An Equitable Place, With Opportunity for All

The General Plan has 19 Policies to guide growth on Kauai. Policy #1 is a policy to manage growth to preserve rural character. This policy emphasizes to "Preserve Kaua'i's rural character by limiting the supply of developable land to an amount adequate for future needs. Prohibit development not adjacent to towns. Ensure new development occurs inside growth boundaries and is compact and walkable.

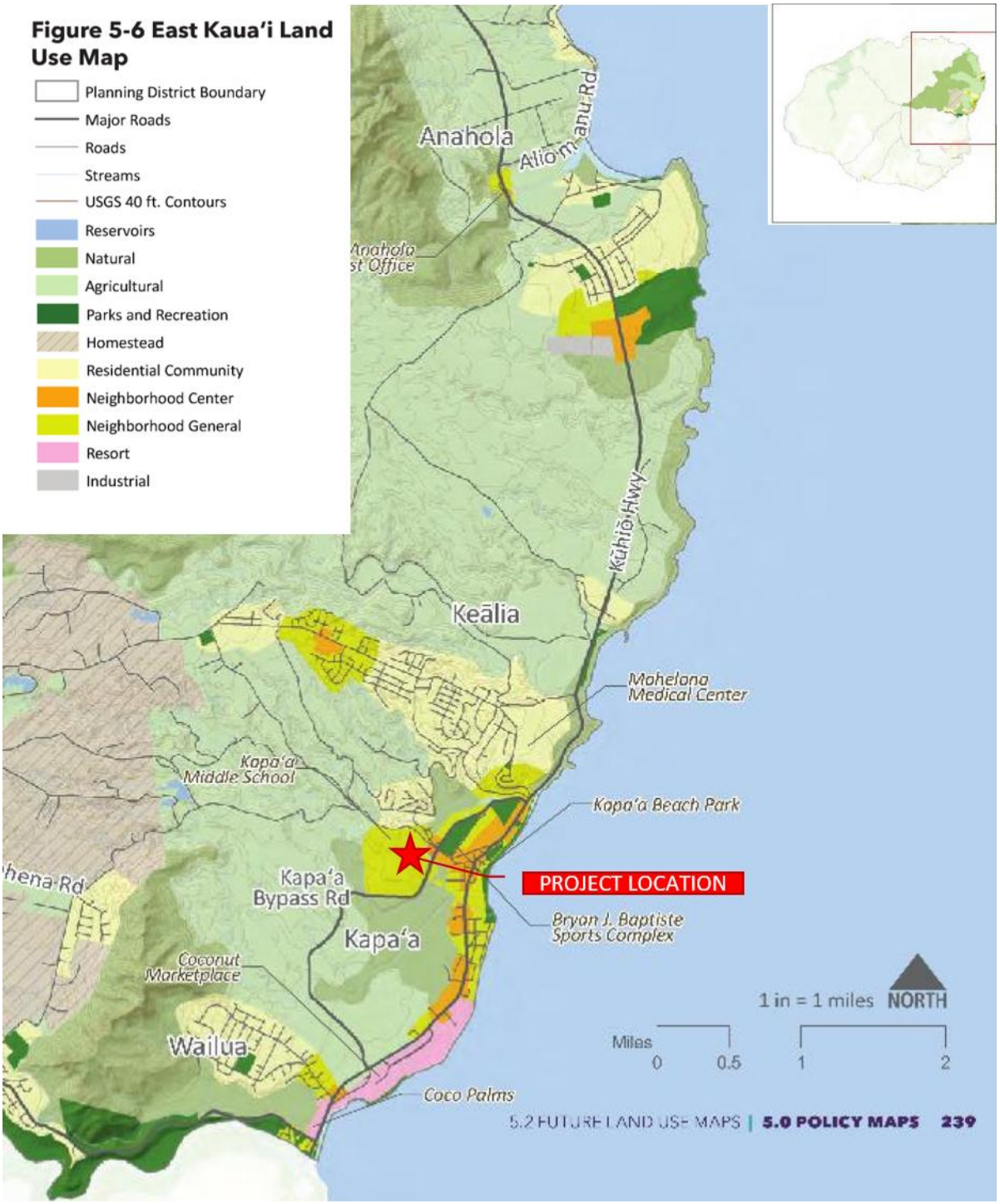
The General Plan's "Guide to Growth also include the following policies:

Policy #1	Manage Growth to Preserve Rural Character
Policy #2	Provide Local Housing
Policy #3	Recognize Kaua'i's Individual Towns and Districts
Policy #4	Design Healthy and Complete Neighborhoods
Policy #5	Make Strategic Infrastructure Investments
Policy #6	Reduce Cost of Living
Policy #7	Build Balanced Multimodal Transportation Systems
Policy #8	Protect Kaua'i's Scenic Beauty
Policy #9	Uphold Kaua'i as a Unique Visitor Destination
Policy #10	Help Business Thrive
Policy # 11	Help Agricultural Lands be Productive
Policy # 12	Protect our Watersheds
Policy #13	Complete Kaua'i's Shift to Clean Energy
Policy #14	Prepare for Climate Change
Policy #15	Respect Native Rights and Wahi Pana
Policy #16	Protect Access to Kaua'i's Treasured Places
Policy #17	Nurture Our Keiki
Policy #18	Honor Our Kupuna
Policy #19	Communicate with Aloha

The HoKua Place Project conforms to and implements the housing policies of the Updated Kaua‘i General Plan by developing land contiguous to Kapa‘a Town and its neighboring residential community, thereby preserving the rural-like character of the surrounding area. As noted in Figure 5-6, the "East Kauai Planning District Land Use Map" included in the Updated Kaua‘i General Plan, the Property has a "Neighborhood General" land use designation.

The lands surrounding the Property to the north and east are designated as "Residential Community" and "Neighborhood General" by the Updated Kauai General Plan. The Property is contiguous to existing urban lands, to the south and across the Kapaa Bypass Road. These existing lands are classified Urban by the State Land Use Commission and zoned Residential by the County of Kaua‘i.

Furthermore, HoKua Place meets the "Goals" and "Policies" of the General Plan as shown Chapter 5, Section 5.1.1, herein.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Planning District Boundary
Major Roads
Roads
Streams
USGS 40 ft. Contours
Reservoirs
Natural
Agricultural
Parks and Recreation
Homestead
Residential Community
Neighborhood Center
Neighborhood General
Resort
Industrial
Anahola
Aliomanu Rd
Anahola Post Office
Kūhiō Hwy
Keālia
Mahelona Medical Center
Kapa'a Middle School
Kapa'a Beach Park
PROJECT LOCATION
Kapa'a Bypass Rd
Kapa'a
Bryan J. Baptiste Sports Complex
Coconut Marketplace
Wailua
Coco Palms
1 in = 1 miles
NORTH
Miles
0
0.5
1
2
5.2 FUTURE LAND USE MAPS | 5.0 POLICY MAPS 239

As discussed in the Housing Market Study prepared for HoKua Place (formerly known as Kapaʻa Highlands II), the cycle for both the economy and real estate is coming off of its 2007-2009 dramatic fall-off in overall activity and in values and Kauai's residential markets are now in the up-cycle.

Looking ahead, these markets are anticipated to right themselves and the county will resume a pattern of multi-year periods of both economic growth and job and personal income expansion. In turn, this will stimulate housing demand.

The Housing Market Study concluded that HoKua Place/Kapaʻa Highlands II will help to satisfy current and future housing demand, demand that has been deep and persistent, from both offshore and on-island households. It concluded that the development will sell well, particularly timed to the up cycle in the housing market.

Finally, the historically low level of permitting activity indicates there will be little or no competitive interference in the short run to this Project's offerings coming from other housing development on the island. The following table describes the potential pricing at retail for each product type in the development.

KAPAA HIGHLANDS PRODUCT SALES PRICE PROJECTION

Housing Produced	Total Units	Retail Price Per Unit	Home Site Only Prices
A House Lot Package, Large Lots (10,000 sf)	36	$800,000-$950,000	$266,000-$316,000
A House Lot Package, Medium Lots (7,500 sf)	50	$650,000-$700,000	$216,000-$233,000
Multi-Family Dwellings (4 Plex, 8 DU/Ac)	500	$250,000-$350,000	
Affordable Housing Dwellings (12 DU/Ac)	183	$125,000-$175,000	

The Market Analysis notes that these expected prices, particularly the affordable ones, are below the historical trend for Kauaʻi housing. Thus, sales are expected to start up strongly. Also, as the development is weighted heavily on multifamily housing production, the projected price of $300,000 (mid-point) is well under the ten-year average for a resale condo sale (which is just under $400,000). The other components of the development plan are also well priced.

Finally, the study estimates absorption. With the up cycle noted to be underway, strong initial sales are expected in year one. This will be maintained over the following 2-4 years. With the cycle's top, sales will begin to drift downwards in somewhat a gradual fall-off. There then will be 2-3 years (two years shown) of slow sales, coinciding with the bottom of the market.

KAPAA HIGHLANDS PRODUCT CLOSING PROJECTION

Product	2019	2020	2021	2022	2023	2024	2025	2026	[illegible]3
Large Lots	11	9	9	7					
Medium Lots	15	15	14	6					
Multi-Family	90	100	90	70	50	30	30	40	
Affordable Housing	40	40	40	35	28				

The Housing Market Analysis for HoKua Place (formerly known as Kapaʻa Highlands II) is included as Exhibit A at the end of the DEIS.

1.3 Proposed Actions

The Project proposes to develop HoKua Place into an approximately 97-acre single-family and multi-family residential subdivision with other complementary uses.

Approximately 97-acres will be subdivided into single family lots ranging from 7,500 to 10,000 square feet as well as multifamily lots of varying size. A total of 683-multi-family units and 86-single family lots and homes are planned. Open space encompassing 14.3-acres will be developed.

The affordable housing element of the Project will conform to Kauaʻi County Ordinance No. 860, Kauaʻi's new housing policy. This ordinance requires developers to sell or rent up to thirty percent (30%) of the total residential units for affordable housing. However, the Kauaʻi housing policy provides incentives to developers who provide the required affordable units on-site. HoKua Place will be providing all of its affordable units on site. The proposed Project will provide much needed affordable housing in the East Kauaʻi region.

The multi-family units will be designed in a range of bedroom configurations that will best meet the demand for housing by providing designs that apply to different family types, including starter families, empty nesters, families with children, and households that qualify for affordably priced housing.

The design of the single family units will appeal to some of those in the aforementioned multi-family demographic groupings, but will go further by addressing the needs of large families, families wanting to be close to the Middle School, trans-generational families needing adequate (larger and more defined) living space, and professional families or those with multiple wage-earners.

Sales prices (with projected prices as noted in 2015 dollars:) for the market single-family lots are anticipated to be sold in the range of $216,000 to $316,000 (home site only), depending upon the size and location of the lots. Market single-family houses would be in the $650,000 to $950,000 range (home and lot). The market multi-family units are proposed to be sold in the range $250,000 to $350,000 (average unit prices), depending on size and location. Prices are subject to market conditions. Affordable multi-family units would be sold in compliance with the Kauai County Housing Code.

A 3.1-acre park is proposed adjacent to the existing Kapaʻa Middle School. The park will have an area for the county's proposed relocation of the Kapaʻa County swimming pool.

A 1.4-acre parcel is proposed for commercial use. A country type store and small personal service types of use are anticipated.

A remnant parcel of 1-acre on the Makai side of the Kapaʻa By-Pass road is also proposed as commercial use or for sub-stations for the police and fire departments. The proposed roadway through the Project will include two bus stops and sidewalks on one side. A bike and walking path are also proposed from the By-Pass road up to the existing Kapaʻa Middle School.

Approximately 14.3-acres are proposed for open greenway areas. Subdivision improvements are anticipated to commence upon securing of all necessary land entitlements and building permits. The estimated cost for the subdivision improvements is $22-million.

Project Components include:

Mix of single-family and multi-family residential (with projected prices noted in 2015 dollars - final pricing is subject to market conditions:)

- 86-single family (lots ranging from 7,500 to 10,000 Sq Ft.)
  - $216,000.00 to $316,000.00 (Home Site Only)
  - $650,000.00 to $950,000.00 (House and Lot)
- 500-multi-family
  - $250,000.00 to $350,000.00 (average Unit Prices)
- Affordable units on site in conformance with Kaua‘i County Ordinance
  - Affordable multi-family units on site (The number & pricing will be in compliance with Kaua‘i Housing Code)

Open space encompassing 14.3-acres including:

- 3.1-acre park adjacent to Kapa‘a Middle School
  - Relocation of County Swimming Pool to park
- Greenways surrounding development

Commercial Areas totaling 1.4-acres:

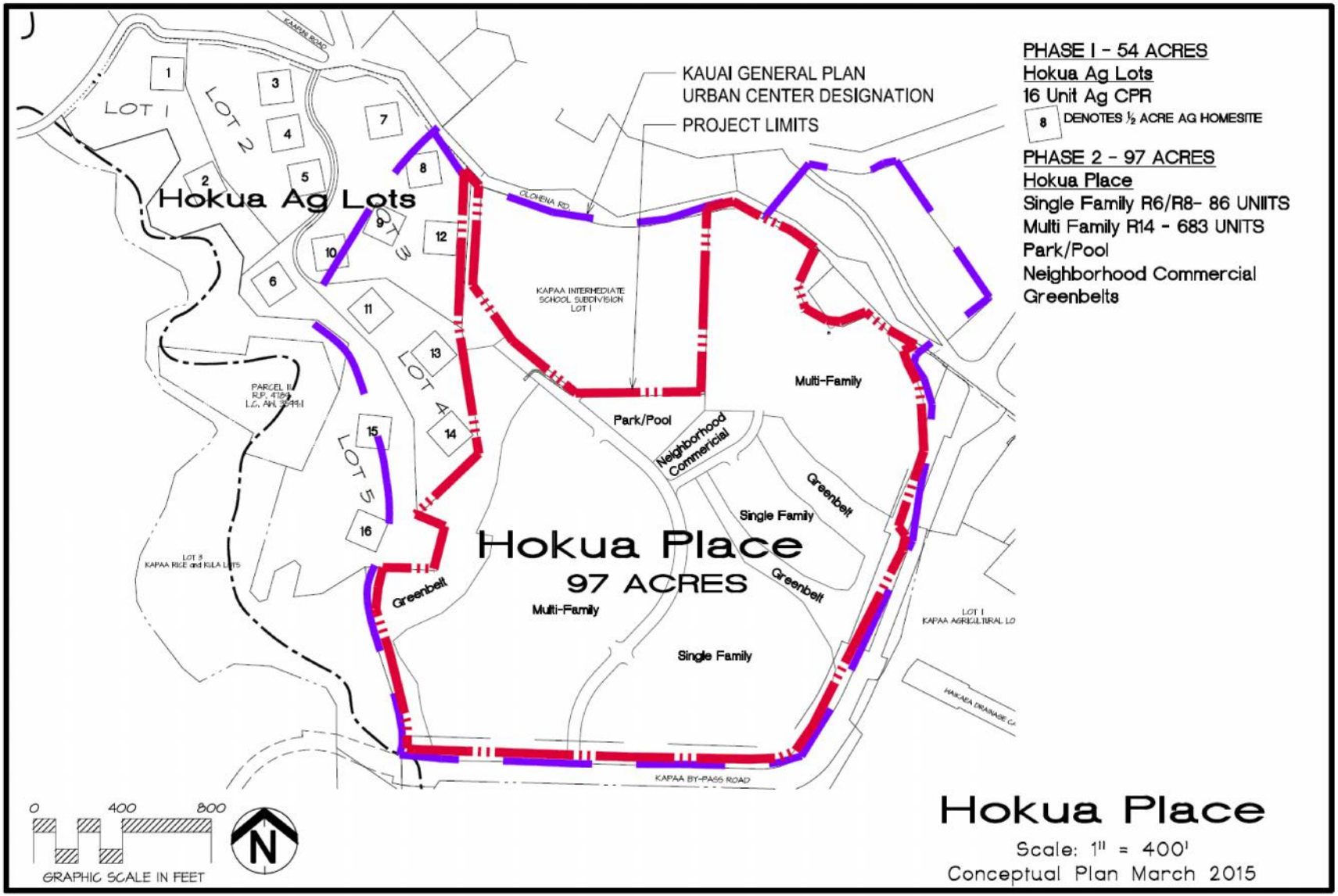
- Stores, personal services
- Land for police/fire sub-stations

Infrastructure Improvements:

- Water/Wastewater
  - Water Master Plan approved by County Water Department
  - Well on site to be dedicated to County Water Department or Private
  - Contributions to repairs of Kapa‘a Sewer Treatment Plant

Transportation:

- Dedication of Kapa‘a By-Pass Road to the State
- Intersection improvements on Kapa‘a Bypass Road
- Complete street multi-modal roadway running through the property
- Bus stops located along roadway
- Bike/Walking path


PHASE I - 54 ACRES
Hokua Ag Lots
16 Unit Ag CPR
8 DENOTES ½ ACRE AG HOMESITE
PHASE 2 - 97 ACRES
Hokua Place
Single Family R6/R8- 86 UNIITS
Multi Family R14 - 683 UNITS
Park/Pool
Neighborhood Commercial
Greenbelts
KAUAI GENERAL PLAN
URBAN CENTER DESIGNATION
PROJECT LIMITS
Hokua Ag Lots
LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
KAMAIN ROAD
OLOHENA RD.
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Greenbelt
LOT 1 KAPAA AGRICULTURAL LO
HAKAEA DRAINAGE C
KAPAA BY-PASS ROAD
0 400 800
GRAPHIC SCALE IN FEET
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Hokua Place
Scale: 1" = 400'
Conceptual Plan March 2015

1.4 Responsible Agencies & Funding

HoKua Place is owned by HG Kaua‘i Joint Venture LLC (the “Petitioner”)

Accepting Agency: State of Hawai‘i Land Use Commission (LUC)

1.5 Project Development Status & Implementation Schedule

The Project has been conceptualized since the summer of 2009, with cooperation and encouragement of the County Planning Department. Once LUC approval is received, County permitting will be sought. The completion time frame for the entire project to be built out is ten years.

1.6 Required Permits & Approvals

A number of permits or other approvals may be necessary prior to development of HoKua Place. The following list (Table 1.6.1) represents those permits or approvals identified to date. Additional permits might be identified subsequently if warranted by modifications, mitigation measures or refinements in final design.

Table 1.6.1 - Permits and Approvals

Permit/Approval	Applicable Activities	Applicable Areas	Regulatory Agency
Boundary Amendment - Land Use District change from Agriculture to Urban	Development/Activities on Project site	Statewide	State of Hawai‘i Land Use Commission (LUC)
Zoning	Development/Activities	Countywide	County of Kaua‘i
National Pollutant Discharge Elimination System (NPDES)	Discharge of any pollutant, altering the quality of any discharge, increasing the quantity of any discharge.	Surface streams and coastal waters of the State	State of Hawai‘i Department of Health (DOH)
Grading Permit	Grading	Countywide	County of Kaua‘i
Subdivision Approval	Dividing or consolidating parcels of land for right-of-way.	Countywide	County of Kaua‘i
Construction/Building Permits	Construction Activities	Countywide	County of Kaua‘i

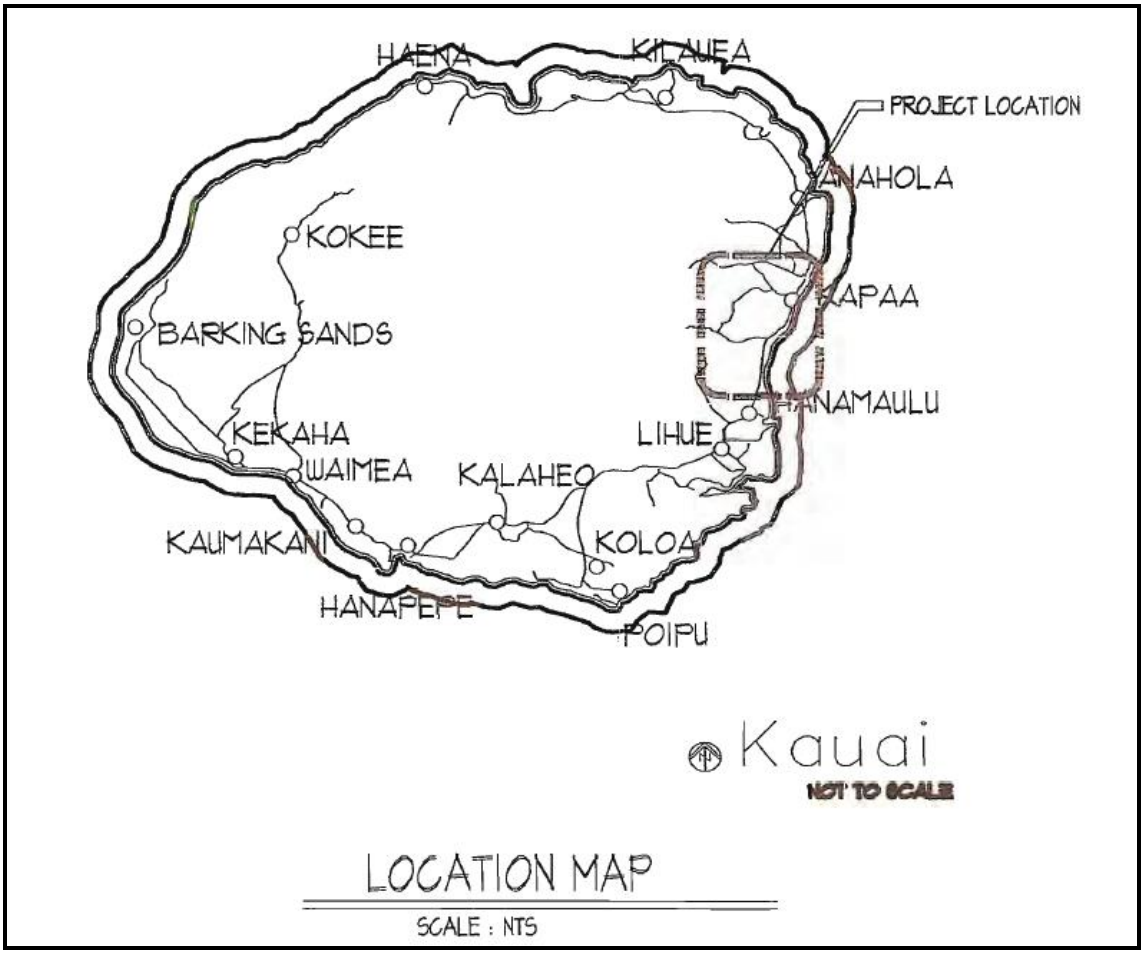
Chapter 2 - Project Description

This chapter gives a general description of the Project, its location and proposed actions.

2.1 Project Location

The Kapaʻa-Wailua area is located on the eastern plain of the island of Kauaʻi, State of Hawaiʻi. Kauaʻi is the northernmost and geologically the oldest of the main Hawaiian Islands. It comprises 549-square miles of land area and 90 miles of coastline, and is the fourth largest in size and population.

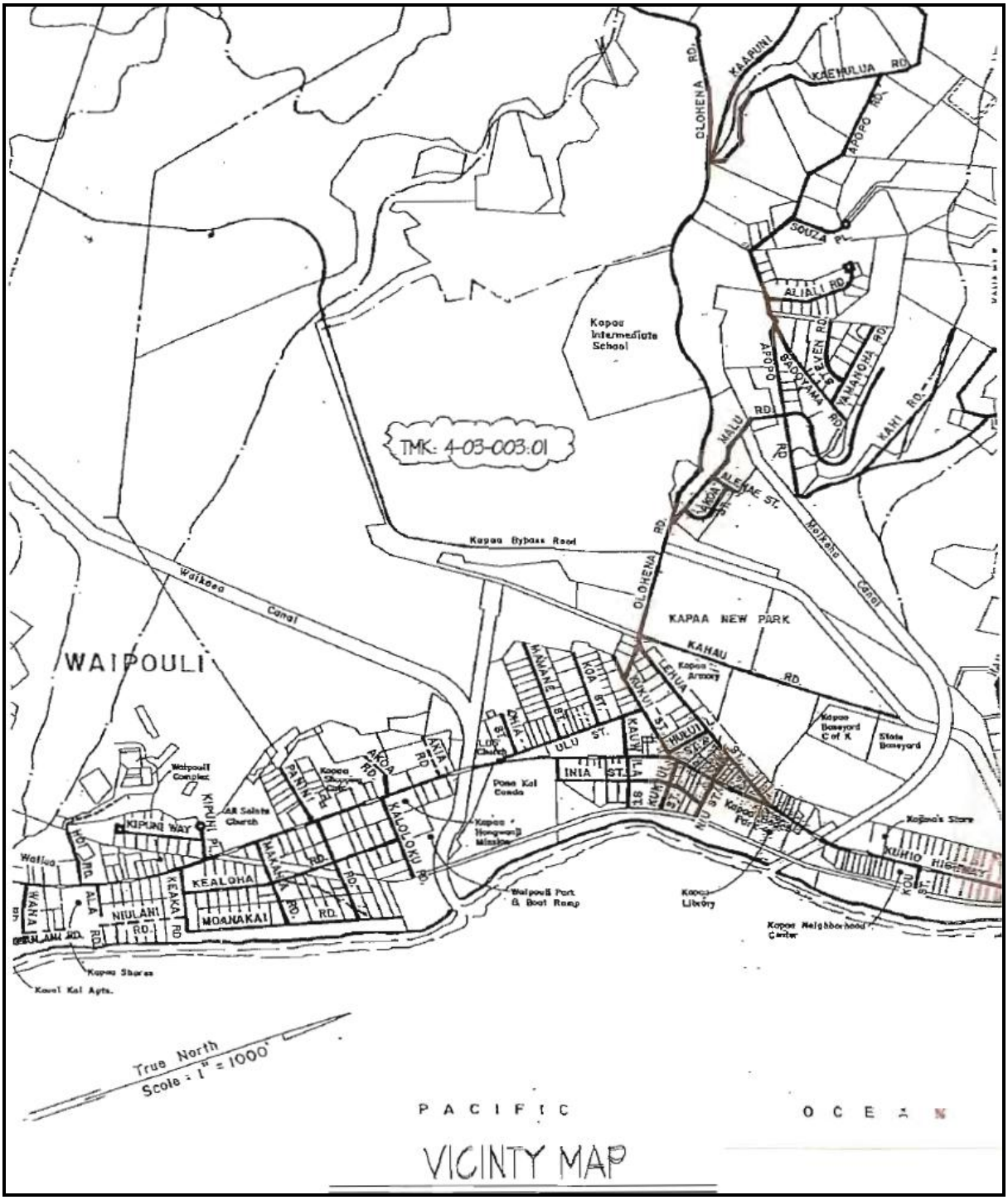
Kauaʻi is generally circular in shape with an average diametric width of 30-miles. The higher central mountainous sector is dominated by Mount Waiʻaleʻale, with a peak elevation slightly more than 5,000 feet. Except for about 10 miles of sea cliffs along the northwesterly Nāpali Coast, the overall terrain rises gently inland from the relatively flat coastal plains to the farmlands and agricultural belt, then toward the grassy uplands, rolling foothills and forest reserves before ascending the hinterlands and the rugged slopes of Mount Waiʻaleʻale.



The subject Property is within the Kawaihau district which extends from the Wailua River north to Moloaʻa, including the Kapaʻa-Wailua basin, Keālia and Anahola.

The Kapaʻa-Wailua region is home to a large portion of Kauaʻi's population. An urban corridor extends along Kūhiō Highway from Haleilio Road in Wailua to Kawaihau Road at the northern edge of Kapaʻa Town. The Kapaʻa-Wailua urban corridor is vibrant and active, a "working town."

Defined and bordered by the Waikaʻea and Moikeha Canals, historic Kapaʻa Town is noted for its "western plantation" style architecture and its walkable, small town character. The canals give strong definition to the edges of the historic town. Served by sidewalks and parking on both sides of the highway, the town's small shops and restaurants appeal to both residents and visitors.



VICINTY MAP

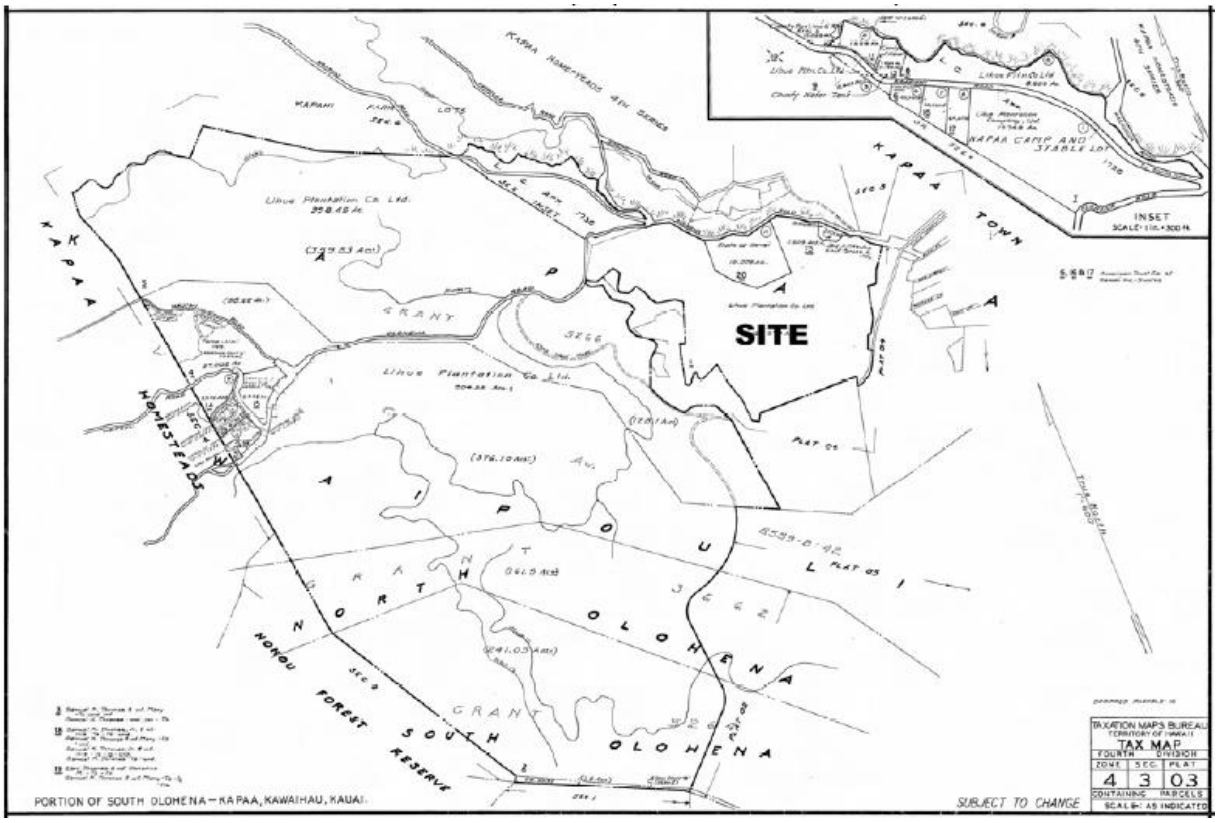
The Kapa‘a By-Pass Road furnishes an alternate route for those traveling between the North Shore and Līhu‘e. Connector roads link the By-Pass to Kūhiō Highway, providing alternatives to reach commercial areas along the coast and improving circulation within the valley. Traffic is minimized and dispersed through the road network. <u>The by-pass road is a paved two-lane roadway with a round-a-bout at Olohena Road to Kapa’a Town. The by-pass road south and along the HoKua Place is owned by the Developer. Negotiations for the improvement of the Kapa’a By-Pass Road has begun between the Developer and DOT.</u>

The subject 97-acres of HoKua Place, is a portion of a larger parcel. The property is located in Kapaʻa, Kauaʻi, Hawaiʻi and is identified by Tax Map Key No. (4) 4-3-003:001 (portion). In addition, a portion of the larger parcel will house a well and waterline improvements as necessary.

The Subject Property is located on the north side of Kapaʻa town on former cane lands situated on a bluff adjacent to the coastal plain of Kapaʻa Town. It is bordered by Olohena Road to the north and the Kapaʻa Bypass Road on the south and east sides of the Project. Kapaʻa Middle School is near the middle of the north portion of the property.

The Kapaʻa By-Pass Road separates the town and the Property. The subject property is surrounded by remnant sugar lands and residential uses. A Solar farm is located on HoKua Farm Lots (formerly known as Kapaʻa Highlands I) and is producing 1.18 megawatts of energy which is feeding into the Kauaʻi electric distribution grid. Across Olohena Road are single family residential neighborhoods as well as commercial areas.

Kapaʻa Beach Park is now an open-space "town park," opening up physical and visual access between the town and the beach. <u>The park features restrooms, showers, picnic tables, grassy park areas and county swimming pool. The Kauai "Bike Path" runs throughout the park.</u> While retaining and enhancing its unique historical and architectural heritage, Kapaʻa is a town with a vibrant community of businesses and neighbors. Visitors enjoy the "sense of place" and are attracted to return.



2.2 Project Description

The proposed HoKua Place Project, will utilize 97-acres of land for single-family and multi-family residential, commercial uses and assorted infrastructure. Development of the Property will address a portion of the significant demand for affordable housing in the County of Kaua‘i, without significantly affecting reserve zoned areas for foreseeable urban growth.

The approximate 97-acres proposed for development will be subdivided into single family lots ranging from 7,500 to 10,000 square feet as well as multi-family lots of varying size.

A total of 683-multi-family units and 86-single family lots and homes are planned. Open space encompassing 14.3 acres will be developed.

A 3.1 acre park is proposed adjacent to the existing Kapa‘a Middle School. The park will have an area for the county’s proposed relocation of the Kapa‘a county swimming pool. A 1.4-acre parcel is proposed for commercial use. A country type store and small personal service types of use are anticipated.

One acre on the Makai side of the Kapa‘a Bypass road (southwest corner of Olohena and the bypass road) is proposed for future commercial use or for sub-stations for the police and fire departments.

The proposed main, multi-modal roadway through the development will include bus stops, sidewalks and a bike and walking path connecting from Kapa‘a Middle School down through the development to the round-a-bout and facilitating green travel to and from Kapa‘a’s town core.

Subdivision improvements, including roads, water system, wastewater, utilities and others improvements, are anticipated to commence upon the securing of all necessary land entitlements and building permits. The estimated cost for the subdivision improvements is $22 million.

It is the intent of the proposed Project to develop a sustainable community. To date, the site has already been developed with an operational 1.18 MW, four-acre solar facility on the Phase I of the proposed overall parcel. Additional sustainable connectivity concepts including bikeways and walkways to and from the pool, neighborhood commercial areas, the middle school and Kapa‘a’s town core are planned.

HoKua Place will be a sustainable community and will incorporate the following elements found within the HoKua Place Sustainability Plan (Exhibit B).

Sustainability Programs and Plans: HoKua Place will incorporate the core principles of the various sustainability programs and plans.

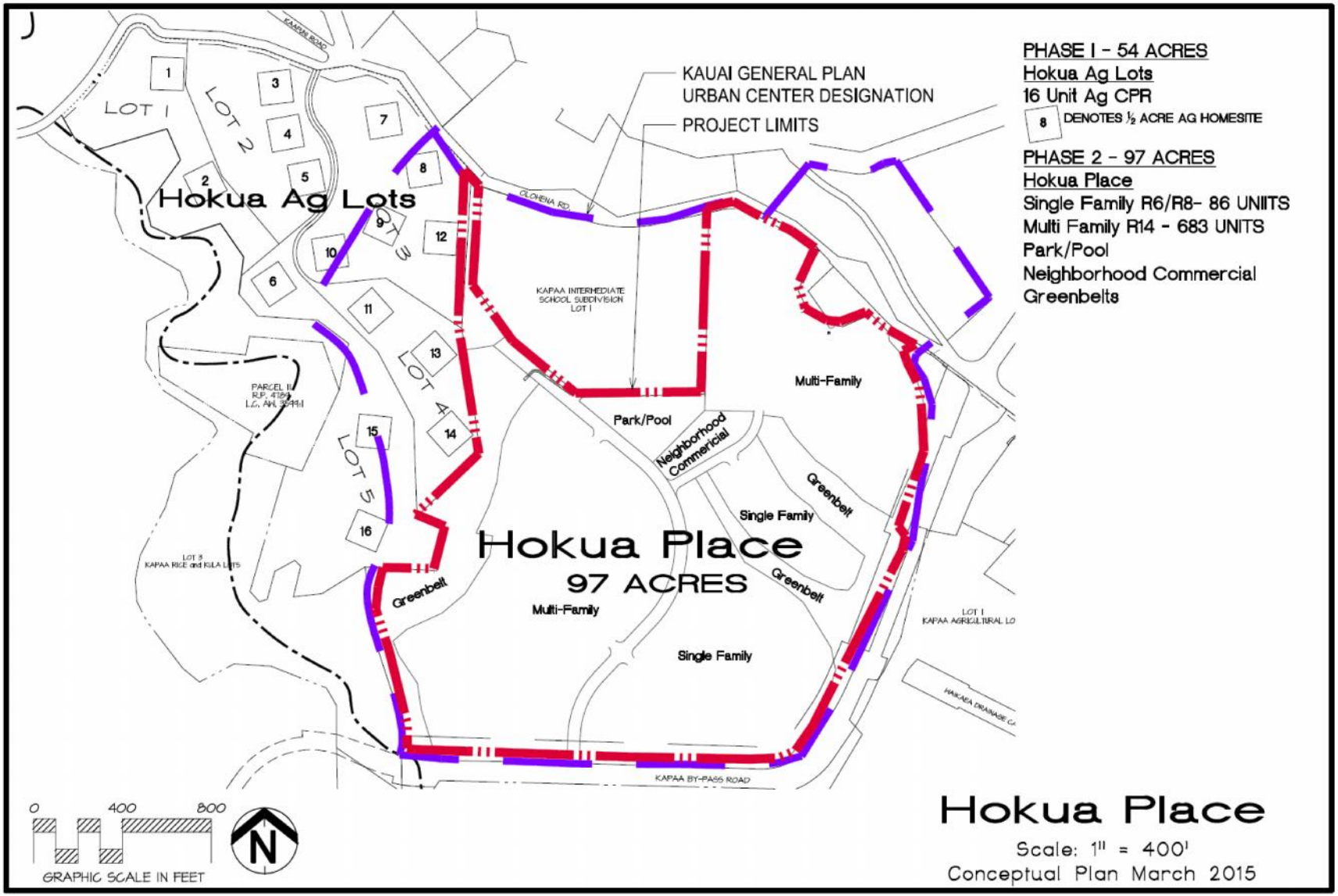
Natural and Cultural Resources: No archaeological sites are known to exist on the property. Should any archaeologically significant artifacts, bones, or other indicators be uncovered during construction, HoKua Place is committed to strict compliance with State laws and rules.

Land Use: HoKua Place is consistent with the Updated General Plan of the County of Kaua‘i. The Developer recognizes that the County Planning Department is in the process of updating the Kapa’a-Wailua Development Plan.

The site plan (Page 23) provided is conceptual in nature so the proposed 769 units can be planned in concert with planning department during the county entitlement process. It is the Developers intent to design the Project to meet the County recommendations of the "Complete Streets" and the "Multi-Model Land Transportation" Ordinances, as well as the proposed Smart Code (Form Based Code). To achieve this goal, it will take a collaborative effort amongst the Developer, their consultants and the Planning Department.

Planning for the subdivision will include consideration of the following design principles:

1. The preservation of natural features and topography.
2. Minimizing land coverage.
3. Provide separation between motor vehicles and pedestrian traffic where feasible.
4. Pedestrian walkways at reasonable intervals within a block.
5. Short residential blocks.
6. Walking and bicycle paths integrated with Kapa'a Town future paths.
7. Good landscaping and drainage.
8. Accommodate multi-model circulation networks of travel by bicyclists, public transportation vehicles and passengers of all ages and abilities.
9. Street patterns to integrate potential development of adjacent lands.
10. Orientation and scenic enhancement.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LOT 3 KAPAA RICE and KILA LOTS
LOT 1 KAPAA AGRICULTURAL LO
HAKAEA DRAINAGE C
KAPAA BY-PASS ROAD
Hokua Place
97 ACRES
Multi-Family
Park/Pool
Neighborhood Commercial
Greenbelt
Single Family
Greenbelt
Greenbelt
Multi-Family
Single Family
0
400
800
GRAPHIC SCALE IN FEET
N
Hokua Place
Scale: 1" = 400'
Conceptual Plan March 2015

Design Features: HoKua Place will include sustainable design features including strategies to reduce solar heat gain through roofs, walls and windows; using site planning and landscaping to improve natural ventilation; daylighting design; and energy efficient light fixtures.

Transportation: HoKua Place will incorporate bus stops into its road system; multi-modal interconnected roads; and complete streets design.

Economic Opportunities: HoKua Place proposes two areas for commercial uses which will provide a variety of job opportunities; construction and construction-related employment will have direct beneficial impact on the local economy during construction.

Open Space and Parks: HoKua Place proposes open space and open greenway areas encompassing 14.3-acres including a 3.1-acre park for the proposed relocation of the Kapaʻa county swimming pool.

Water Management: HoKua Place will install water efficient fixtures, appliances and high efficiency toilets to reduce indoor water use.

Energy Management: HoKua Place will incorporate energy conservation and efficiency measures; solar energy for water heating; encourage photovoltaic systems and other renewable energy sources.

Health: HoKua Place's layout and design will create an opportunity for both residents and the community to have a positive effect on their health through walkable and bikeable transportation options.

Education: HoKua Place will coordinate with the DOE to ensure that the facility assessment policy is addressed. In addition, a 3.1-acre park will be included in the plan and the Kapaʻa county swimming pool will be relocated within the park.

Housing: HoKua Place conforms to the Kauaʻi County Affordable Housing Ordinance No. 860 and offers a variety of housing types that will address a portion of the housing needs of the island.

Social: HoKua Place promotes social sustainability through socially focused-actions <u>like providing mixed building types to meet diverse housing needs, a walkable community where residents can interact with each other more readily, and fostering socially diverse groups</u> that will support quality of life, sense of place and community livability for all residents and the community.

Chapter 3 - Environmental Impact Statement Alternatives

This chapter lists and describes the various alternatives, including the preferred alternative, for the development of the HoKua Place Project.

3.1 Alternative 1 - No Action

Under the "no action" alternative, no action would be taken and the Project area would be left in its current state. HoKua Place would not be built.

There would be no diverse, environmentally-conscious, residential community with single- and multi-family residential, affordable housing, commercial, a walkable street network and a range of housing options.

The land would remain in the State Lands Use Agricultural District.

Without the Project, housing inventory in Kapaʻa would remain low. Affordable housing options in Kapaʻa would be limited.

The County would not have a location for its County pool and residents in Kapaʻa would not have the opportunity for pool use.

Additionally, the "no action" alternative will be contrary to the updated Kauaʻi General Plan in that the General Plan specifically designates the property as Neighborhood General and discusses the need for housing in the area.

Because the No Action alternative does not meet several HoKua Place objectives and does not implement the Kauaʻi General Plan, this alternative has been rejected.

3.2 Alternative 2 - Agricultural Subdivision - Existing Zoning

Under alternative 2, the Existing Zoning Designation alternative, HoKua Place would not be built. There would be no diverse, environmentally-conscious, residential community with single- and multi-family residential, affordable housing, commercial, a walkable street network and a range of housing options.

However, the Property could still be developed as permitted under the existing State Land Use and County zoning designations. An agricultural subdivision would be built to conform to the subject properties' current zoning.

The agriculture subdivision would be similar to HoKua Farm Lots (formerly known as Kapaʻa Highlands I) which adjoins the subject property. The subject property is located in the State Land Use Agricultural District and within the Agriculture District of the Comprehensive Zoning Ordinance of the County of Kauaʻi (CZO).

As such, owners of subdivision lots would be required to comply with the requirements of HRS Chapter 205 and the CZO. Individual lot owners, through an Association would be required either to provide of portion of their lot for grazing of livestock as outlined in the Kapaʻa Highlands Agricultural Master Plan (Exhibit C), or obtain an amendment to conduct alternative agricultural activities.

As outlined in the Kapaʻa Highlands Agricultural Master Plan, crop suitability for the Project site is low. The climate and soils at HoKua Place are not ideal for the growing of most commercially viable crops due to the poor soil, strong trade winds and the salt spray from the ocean. Additionally, due to the generally poor soils and harsh climate, the commercial crops most suited to the area are sugar and pineapple.

Both of these industries have declined in Hawaiʻi. Neither pineapple or sugar is grown commercially on Kauaʻi. With appropriate irrigation and management, both tropical orchard crops (including trees) and some vegetable crops could be grown on the Property, although with some difficulty and risk given the physical conditions at the properly. However, the Kapa'a Highlands Phase II Agricultural Suitabililty Report (Exhibit "C.1), notes that the adjacent Kapa'a Middle School and residential subdivisions on the north and eastern sides of the Property would require extensive buffers around the Property and taking extreme care in implementing farming practices to prevent dust, spray or noise impacts on the school or residentual use.

The applicant's first development plans were to include the 97-acres as part of the agriculture subdivision of HoKua Farm Lots (formerly known as Kapaʻa Highlands I). The Planning Department of the County of Kauaʻi expressed the desire to see a housing Project on the portion of the property that is designated Urban Center in the General Plan.

Thus, HoKua Place was created to adhere to the County of Kauaʻi Planning Department's desire for housing on the subject property, as well as, the poor condition of the property for agricultural production.

Because the Existing Zoning alternative does not meet several HoKua Place objectives and does not implement the Kauaʻi General Plan, this alternative has been rejected. However, if the land use district boundary is not changed from Agriculture to Urban, this option may be considered.

3.3 Alternative 3 - Residential Lot Subdivision Alternative

Under alternative 3, the residential lot subdivision alternative, only single family residential development would occur, as opposed to more dense housing options such as multi-family development.

This alternative would be to develop the Property as a residential subdivision for conventional single family residential uses without any commercial uses. The potential benefit of this alternative is that it addresses the need for housing in Kapaʻa. However, the approximate number of houses amounts to 300 single family units, far short of the proposal. This alternative would require reclassification of the property from the current State Agricultural District to the State Urban District as well as County residential zoning.

Typical small-lot subdivisions consisting of single family residential uses give only one option for housing choice. HoKua Place offers a variety of housing choices rather than a conventional residential single family subdivision.

Several aspects of the design of HoKua Place contribute to a high quality of life. The proposed HoKua Place development will utilize 97-acres of land for single-family and multi-family residential, commercial uses and parks and other community facilities. Development of the Property will address a portion of the significant demand for affordable housing in the County of Kauaʻi, without significantly affecting reserve areas for foreseeable urban growth.

Alternative 3 was rejected because the Residential Lot Subdivision alternative is contrary to the Updated Kaua‘i General Plan that specifically designates the Property as Neighborhood General based on the need for housing in the area.

In addition, implementation of this alternative would not avoid: (1) infrastructure demands (water, wastewater flows, solid waste disposal); (2) traffic impacts; and (3) short-term construction-related disruption, and fugitive dust).

3.4 Alternative 4 - Proceed with Project as Described - Preferred Alternative

The preferred alternative, alternative 4, is to proceed with the Project as described in Chapter 2, Project Description. The Project will respond to the updated Kaua‘i General Plan’s designation of the property as Neighborhood General and its discussion of the need for housing in the area.

HoKua Place is a well thought out residential community consistent with the updated Kaua‘i General Plan and is supported by the Kaua‘i County administration. It will:

1) protect natural resources and culture;
2) provide diverse housing options, transportation choices and recreation opportunities; and
3) encourage a diverse and vibrant economy

3.5 Unresolved Issues

The Petitioner filed and had published a Draft Environmental Impact Statement in May of 2015. In addressing comments from the public and agencies, additional information was added to the document. Due to the new information and the time lag, a Second Draft Environmental Impact Statement (2nd DEIS) is being submitted for publishing. The Petitioner has determined that there are no “Unresolved Issues” in the preparation of the 2nd DEIS.

Chapter 4 - Environmental Setting, Impact & Mitigation

This chapter presents the current description of the environmental setting in the region and within the HoKua Place project area. Mitigation measures identified in this EIS have been developed to avoid, minimize, rectify or reduce the project's potential adverse environmental impacts. Mitigation measures have been considered throughout the project's planning process and incorporated into the project's design and construction plans.

The information about existing conditions, potential project impacts and potential mitigation measures presented in this Chapter has been developed through the review and use of existing information related to the project area.

4.1 Introduction

Each section in this Chapter discusses:

(a) Environmental Setting - current conditions and/or management practices in the project area related to the specific environmental subject,
(b) Potential Environmental Impacts and Mitigation Measures - the project's potential long-term operation phase impacts related to the specific environmental subject, and the potential mitigation measures that could be implemented by the project to avoid, minimize, rectify, or reduce potential substantial adverse environmental impacts, and
(c) Level of Impact after Mitigation - the project's relative potential impact that will remain after the potential mitigation measures are implemented.

4.1.1 Environmental Setting

Environmental Setting describes the existing environmental conditions in the project area and the region as it currently exists, before the commencement of the project. This provides a baseline for comparing "before the project" and "after the project" environmental conditions.

4.1.2 Potential Environmental Impacts & Mitigation Measures

Potential environmental impacts are assessed through thresholds used to determine level of impact. "Thresholds Used to Determine Level of Impact" defines and lists specific criteria used to determine whether an impact is considered to be potentially significant.

Hawai'i Administrative Rules (HAR) Section 11-200-12 provides 13 "significance criteria" against which an action is to evaluate its potential impact. These criteria are:

1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.
2. Curtails the range of beneficial uses of the environment.
3. Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.
4. Substantially affects the economic welfare, social welfare and cultural practices of the community or State.
5. Substantially affects public health.
6. Involves substantial secondary impacts, such as population changes or effects on public facilities.
7. Involves a substantial degradation of environmental quality.

8. Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.
9. Substantially affects a rare, threatened or endangered species, or its habitat.
10. Detrimentally affects air or water quality or ambient noise levels.
11. Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water or coastal waters.
12. Substantially affects scenic vistas and view planes identified in County or State plans or studies.
13. Requires substantial energy consumption.

Effects were assessed for scope, scale and intensity of impacts to resources. Effects may be identified further as beneficial or negative, as well as short-term and long-term. Scope, scale and intensity can be defined on a range from negligible to major.

(Graphic: Pacific Southwest Research Station-Institute of Pacific Islands Forestry, 2009)

- **Negligible:** Resources will not be affected, or the effects will be at or near the lowest level of detection. Resource conditions will not change or will be so slight there will not be any measurable or perceptible consequence to a population, wildlife or plant community, public use and access opportunity, visitor experience, or cultural resource;

- **Minor:** Effects will be detectable but localized, small, and of little consequence to a population, wildlife or plant community, public use and access opportunity, visitor experience, or cultural resource. Mitigation, if needed to offset negative effects, will be easily implemented and likely to be successful;

- **Intermediate:** Effects will be readily detectable and localized with consequences to a population, wildlife or plant community, public use and access opportunity, visitor experience, or cultural resource. Mitigation measures will be needed to offset negative effects and will be extensive, moderately complicated to implement, and probably successful;

- **Major:** Effects will be obvious and will result in substantial consequences to a local area or regional population, wildlife or plant community, public use and access opportunity, visitor experience, or cultural resource. Extensive mitigating measures may be needed to offset negative effects and will be large-scale, very complicated to implement and may not have any guarantee of success. In some instances, major effects will include the irretrievable loss of the resource.

Time scales are defined as either short-term or long-term:

- **Short-term or Temporary:** An effect that generally will last less than a year or season;
- **Long-term:** A change in a resource or its condition that will last longer than a single year or season.

The thresholds established correspond to the above criteria and other environmental laws. Each section of the EIS presents a significance threshold for its specific environmental subject; should the project potentially cause an impact greater than the identified threshold then the potential impact will be considered to be significant.

"Mitigation Measures" identifies project-specific measures that may be needed that go beyond compliance with applicable existing rules, regulations and requirements, to reduce a potentially significant impact, as applicable. The compliance with existing applicable rules, regulations and requirements is considered a part of the existing regulatory environment and is described above.

The mitigation measures identified in this EIS have been developed to avoid, minimize, rectify or reduce the project's potential adverse environmental impacts. Mitigation measures have been considered throughout the project's planning process and will be incorporated into the project design and construction plans. Project mitigation measures are identified and detailed in subsection 4 of sections 4.2 through 4.18.

4.1.3 Level of Impact after Mitigation

"Level of Impact after Mitigation" indicates what effect remains after application of mitigation measures, and whether the remaining effect will be considered to be significant, or not.

4.1.4 Potential Project Impacts in Context with Applicable Requirements & Mitigation Measures

The potential impacts are evaluated within the framework of the project's compliance with all applicable rules, regulations and requirements for its action type and location. The existing rules, regulations, requirements and procedures applicable to the project are considered a part of the existing regulatory environment.

Rules, regulations and requirements which may be applicable include:

- Hawai'i Administrative Rules (HAR), including (but not limited to):
  - Title 11, Chapter 23, Underground Injection Control
  - Title 11, Chapter 45, Community Noise Control
  - Title 11, Chapter 54, Water Quality Standards
  - Title 11, Chapter 55, Water Pollution Control
  - Title 11, Chapter 60, Air Pollution Control
  - Title 11, Chapter 62, Wastewater Systems
  - Title 11, Chapter 68, Litter Control
  - Title 11, Chapter 200, Environmental Impact Statement Rules
  - Title 11, Chapter 260, Hazardous Waste Management General Provisions
  - Title 11, Chapter 262, Standards Applicable to Generators of Hazardous Waste
  - Title 13, Subtitle 5, Chapter 107, Threatened and Endangered Plants
  - Title 13, Subtitle 5, Chapter 124, Indigenous Wildlife, Endangered and Threatened Wildlife and Introduced Wild Birds
  - Title 13, Subtitle 13, Chapter 275-284, Historic Preservation Review Process
  - Title 13, Subtitle 13, Chapter 300, Burial Sites and Human Remains

- Hawai'i Revised Statutes (HRS), including (but not limited to):
  - Chapter 6E, Historic Preservation
  - Chapter 195D, Conservation of Aquatic Life, Wildlife and Land Plants
  - Chapter 205, State Land Use Law

- Chapter 226, Hawai‘i State Planning Act
- Chapter 342D, Water Pollution Law
- Chapter 342J, Hawai‘i Hazardous Waste Law
- Chapter 343, Environmental Impact Statements
- Chapter 344, Hawai‘i State Environmental Policy

- County of Kaua‘i ordinances, rules and requirements, including (but not limited to):
  - County of Kaua‘i General Plan
  - County of Kaua‘i Building and Planning Codes

4.2 Archaeological, Historic and Cultural Resources

This section discusses the cultural, archaeological and historic resources in the region and specific Project area, the potential impact of the project on those resources and mitigation measures the Project will employ to minimize those potential impacts.

4.2.1 Environmental Setting

Archaeological & Historic Resources

Exploration Associates Ltd. (EAL) conducted an archaeological assessment of the property (Exhibit L) "An Archaeological Assessment with Subsurface Testing for the Proposed Kapaʻa Highlands Phase II Project, Kapaʻa Ahupuaʻa, Kawaihau District, Kauaʻi TMK (4) 4-3-3: 1)". The purpose of the archaeological assessment is to address any archaeological and/or historic preservation concerns that might be raised by the proposed Project.

The assessment included a surface survey and a report detailing methods and any finds. The archaeological assessment is not an inventory-level survey per the rules and regulations of the State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR). However, the level of work is sufficient to address site types, locations, and allow for future work recommendations.

On January 3, 2012 and April 25, 2012, a field inspection of the HoKua Place/Kapaʻa Highlands II project area was conducted by Exploration Associates Ltd. archaeologist Nancy McMahon, M.A. Survey transects oriented north-south were spaced apart 10 m. where it was passable as guinea grass was very thick. Field observations were recorded and photographs were taken of the project area. The work was conducted under the overall supervision of principal archaeologist Nancy McMahon, M.A.

Historical research included a review of previous archaeological studies on file at the State Historic Preservation Division of the Department of Land and Natural Resources; studies of documents at Hamilton Library of the University of Hawaiʻi, Kapaʻa and Līhuʻe Public Libraries, Kauaʻi Museum, Kauaʻi Historical Society and study of maps at the Survey Office of the Department of Land and Natural Resources. Nineteenth-century Land Commission Award claim records were accessed via the Internet from the Mahele Database prepared by Waihona ʻĀina Corp.

<u>Kawaihau District</u>

The Pproject

roject area lies in the traditional ahupuaʻa of Kapaʻa, which was part of the ancient district of Puna (now the district is more commonly called "Kawaihau"), one of five ancient districts on Kauaʻi (King 1935: 228). Puna was the second largest district on Kauaʻi, behind Kona, and extended from the tip south of Līhuʻe to Kamalomaloʻo, just north of Keālia.

For taxation, educational and judicial reasons, new districts were created in the 1840s. The Puna District, with the same boundaries became the Līhuʻe District, named for an important town in that district.

<u>Early Historic Accounts of Kapaʻa (1830s-1900s)</u>

Although most of the historic record documents for Kauaʻi in this period revolve around missionary activities and the missions themselves, there was indication that the Kapaʻa area was being considered for new sugar cane experiments, similar to those occurring in Kōloa.

In a historic move, Ladd and Company received a 50 year lease on land in Kōloa from Kamehameha III and Kauaʻi Governor Kaikioʻewa of Kauaʻi. The terms of the lease allowed the new sugar company "the right of

someone other than a chief to control land" and had profound effects on "traditional notions of land tenure dominated by the chiefly hierarchy" (Donohugh, 2001: 88). In 1837, a very similar lease with similar terms was granted to Wilama Ferani, a merchant and U.S. citizen based in Honolulu (Hawaiʻi State Archives, Interior Dept., Letters, Aug. 1837).

The lease was granted by Kauikeaouli for the lands of Kapaʻa, Keālia and Waipouli for twenty years for the following purpose:

> ...for the cultivation of sugar cane and anything else that may grow on said land, with all of the right for some place to graze animals, and the forest land above to the top of the mountains and the people who are living on said lands, it is to them whether they stay or not, and if they stay, it shall be as follows: They may cultivate the land according to the instructions of Wilama Ferani and his heirs and those he may designate under him... (Hawaiʻi State Archives, Interior Dept., Letters, Aug. 1837).

Unlike Ladd & Company which eventually became the Kōloa Sugar Company, there is no further reference to Wilama Ferani and his lease for lands in Kapaʻa, Keālia and Waipouli. In a brief search for information on Honolulu merchant, Wilama Ferani, nothing was found. It is thought that perhaps Wilama Ferani may be another name for William French, a well-known Honolulu merchant who is documented as having experimented with grinding sugar cane in Waimea, Kauaʻi at about the same time the 1837 lease for lands in Kapaʻa, Keālia and Waipouli was signed (Joesting, 1984: 152).

In 1849, son of Waiʻoli missionary, William P. Alexander, recorded a trip he took around Kauaʻi. Although, he focuses on the larger mission settlements like Kōloa and Hanalei, he does mention Kapaʻa:

> A few miles from Wailua, near Kapaʻa we passed the wreck of a schooner on the beach, which once belonged to Capt. Bernard. It was driven in a gale over the reef, and up on the beach, where it now lies.
>
> A few miles further we arrived at Keālia. We had some difficulty crossing the river at this place, owing to the restiveness of our horses. The country here near the shore was rather uninviting, except the valley which always contained streams of water (Alexander, 1991: 123).

In later years, the notorious Kapaʻa reef was to become the location of many shipwrecks once a landing was built there in the 1880s.

The first large scale agricultural enterprise in Kapaʻa began in 1877 by the Makee Sugar Plantation and the Hui Kawaihau (Dole, 1916: 8). The Hui Kawaihau was originally a choral society begun in Honolulu whose membership consisted of many prominent names, both Hawaiian and haole. It was Kalākaua's thought that the Hui members could join forces with Makee, who had previous sugar plantation experience on Maui, to establish a successful sugar corporation on the east side of Kauaʻi.

Captain Makee was given land in Kapaʻa to build a mill and he agreed to grind cane grown by Hui members. Kalākaua declared the land between Wailua and Moloaʻa, the Kawaihau District, a fifth district and for four years the Hui attempted to grow sugar cane at Kapahi, on the plateau lands above Kapaʻa. After a fire destroyed almost one half of the Hui's second crop of cane and the untimely death of one of their principal advocates, Captain James Makee, the Hui began to disperse and property and leasehold rights passed on to Makee's son-in-law and new Makee Plantation owner, Colonel Z. S. Spalding (Dole, 1916: 14).

As part of the infrastructure of the new plantation, a sugar mill was erected and the Makee Landing was built in Kapaʻa during the early years of the Makee Sugar Plantation. Following Captain Makee's death, Colonel Spalding took control of the Plantation and in 1885 moved the mill to Keālia (Cook, 1999: 51). The deteriorating

stone smokestack and landing were still there well into the 1900s (Damon, 1931:359). Conde and Best (1973:180) suggest that railroad construction for the Makee Plantation started just prior to the mid-1890s. There is one reference to a railroad line leading from the Kapaʻa landing to Keālia in 1891. During Queen Liliʻuokalani's visit to Kauaʻi in the summer of 1891, the royal party was treated to music by a band, probably shipped in from Oʻahu. "The band came by ship to Kapaʻa and then by train to Keālia" (Joesting, 1984:252). This line is depicted on a 1910 USGS map which shows the line heading south from Keālia Mill and splitting near the present Coral Reef Hotel, one finger going to the old Kapaʻa Landing (Makee Landing) and another line heading mauka, crossing the present Moʻikeha Canal, traveling southwest up Lehua Street and through what is now goat pasture, along a plateau and into the mauka area behind Kapaʻa swamplands. This railroad line was part of a twenty mile network of plantation railroad with some portable track and included a portion of Keālia Valley and in the mauka regions of the plateau lands north of Keālia (Conde and Best, 1973:180).

By the late 1800s, Makee Plantation was a thriving business with more than one thousand workers employed (Cook, 1999:51). Hundreds of Portuguese and Japanese immigrants found work on Makee Plantation and the new influx of immigrants required more infrastructure. In 1883, a lease for a school lot was signed between Makee Sugar Company and the Board of Education (Kapaʻa School, 1983: 9). Stipulations found in the Portuguese immigrant contracts with Makee Sugar Company stated that "children shall be properly instructed in the public schools" (Garden Island, April 1, 1983). The original Kapaʻa School was constructed in 1883 on a rocky point adjacent to the Makee Sugar Company railroad. Traditionally, this point was known as Kaahiahi (Kapaʻa School, 1983: 10). In 1908, Kapaʻa School was moved to its present site directly mauka and up the hill at Mailehune.

As in much of the rest of Hawaiʻi, the Chinese rice farmers began cultivating the lowlands of Kapaʻa with increasing success in the latter half of the 1800s. Several Hawaiian kuleana owners leased or sold their parcels mauka of the swamp land to Chinese rice cultivators. Other Chinese rice cultivators appeased to the government for swamplands first leasing and later buying. As a result of the growing rice and sugar industries, the economic activity displaced the house lot kuleana on the makai side of the marsh for increasing commercial and residential development (Lai, 1985:148-161).

Narrow wagon roads gave way to macadamized roads in the early part of the 20th century. This new road was called the Kauaʻi Belt Road and parts of it are thought to have followed the "Old Government Road" (Cook, 1999). In Kapaʻa, the present day Kūhiō Highway probably follows the same route as the original Government Road and subsequent Kauaʻi Belt Road. The location of the kuleana awards in Kapaʻa indicates that the majority of the house lots were situated along the Government Road. LCA 3243 names a "road" as one of its boundaries.

<u>20th Century History of Kapaʻa (1900 - Present)</u>

In the early 1900s, government lands were auctioned off as town lots in Kapaʻa to help with the burgeoning plantation population. One kamaʻaina mentioned that in the 1930s and 1940s, the area north of Moʻikeha Canal in Kapaʻa was mostly settled by Portuguese families (Bushnell et al. 2002). The Japanese were also very prominent in the 1920s and 1930s largely replacing the Chinese merchants of the turn of the century in the Kapaʻa business sector (Bushnell et al. 2002). The Board of Health, Territory of Hawaiʻi ran a dispensary in Kapaʻa at the makai edge of Niu Street near the Kapaʻa Beach Park parking lot, adjacent to the bike path starting 1926. The lot is presently vacant. A Fire Station was once located in the area now occupied by the Coral Reef Hotel and a Courthouse and jail cell once stood at the location of the present Kapaʻa Neighborhood Center. It is not known when these structures were removed or abandoned. In 1913, Hawaiian Canneries opened in Kapaʻa at the site now occupied by Pono Kai Resort (Cook, 1999: 56). Through the Hawaiian Organic Act, Hawaiian Canneries Company, Limited purchased the land they were leasing, approximately 8.75-acres, in 1923 (Bureau of Land Conveyances, Grant 8248). A 1923 sketch of the cannery shows only four structures, one very large

structure assumed to be the actual cannery and three small structures makai of the cannery. A 1933 historic photograph of Kapaʻa Town shows an ironwood windbreak on the makai side of the cannery adjacent to the railroad. By 1956, 1.5-million cases of pineapple were being packed. By 1960, 3,400- acres were in pineapple and there were 250 full time employees and 1,000 seasonal employees for the Kapaʻa Cannery (Honolulu Advertiser, March 20, 1960). In 1962, Hawaiian Canneries went out of business due to competition from third world countries.

The Ahukini Terminal & Railway Company was formed in 1920 to establish a railroad to connect Anahola, Keālia, Kapaʻa to Ahukini Landing and "provide relatively cheap freight rates for the carriage of plantation sugar to a terminal outlet" (Conde and Best, 1973: 185). This company was responsible for extending the railroad line from the Makee Landing, which was no longer in use, to Ahukini Landing, and for constructing the original Waikaʻea Railroad Bridge and the Moʻikeha Makai Railroad Bridge.

In 1934, the Līhuʻe Plantation Company absorbed the Ahukini Terminal & Railway Company and Makee Sugar Company (Conde and Best, 1973: 167). The railway and rolling stock formerly owned by Makee Sugar Company became the Makee Division of the Līhuʻe Plantation. At this time, besides hauling sugar cane, the railroad was also used to haul plantation freight including "fertilizer, etc... canned pineapple from Hawaiian Canneries to Ahukini and Nāwiliwili, pineapple refuse from Hawaiian Canneries to a dump near Anahola and fuel oil from Ahukini to Hawaiian Canneries Co., Ltd." (Hawaiian Territorial Planning Board, 1940: 11). Former plantation workers and kamaʻaina growing up in Kapaʻa remember when the cannery would send their waste to the pineapple dump, a concrete pier just north of Kumukumu Stream (State Site No. 50- 30-08-789) by railroad. The structure is built over the water where the rail cars would dump the pineapple waste. The current would carry the waste to Kapaʻa which would attract fish and sharks (Bushnell et al. 2002).

Līhuʻe Plantation was the last plantation in Hawaiʻi to convert from railroad transport to trucking (Conde and Best, 1973: 167). "By 1957 the company was salvaging a part of their plantation railroad, which was being supplanted by roads laid out for the most part on or close to the old rail bed" (Ibid: 167). By 1959, the plantation had completely converted over to trucking. The Cane Haul Road which begins near the intersection of Hauaʻala Road and Kūhiō Highway is thought to date to the late 1950s and follows the alignment of the old railroad.

Severe floods in Kapaʻa in 1940 led to the dredging and construction of the Waikaʻea and Moʻikeha Canals sometime in the 1940s (Hawaii Territorial Planning Board, 1940: 7). Although the Waikaʻea Canal, bordering the Kapaʻa Pineapple Cannery, had been proposed as early as 1923, nothing was constructed until after the floods (Bureau of Land Conveyances, Grant 8248). A Master Plan for Kapaʻa, published in 1940, asks the Territorial Legislature for funds to be set aside for the completion of a drainage canal and for filling makai and mauka of the canal (Hawaii Territorial Planning Board, 1940:7). In 1955, reports came out on the dredging for coral proposed for the reef fronting Kapaʻa Beach Park (Garden Island Newspaper, September 21, 1955). The coral was to be used for building plantation roads. This dredging was later blamed for accelerated erosion along Kapaʻa Beach (Garden Island Newspaper, October 30, 1963).

Today, there are several sea walls along the Kapaʻa Beach Park to check erosion. Old time residents claim the sandy beach in Kapaʻa was once much more extensive than it is now (Bushnell et al. 2002). Keālia Town slowly dispersed after the incorporation of Makee Sugar Company into Līhuʻe Plantation in the 1930s. Many of the plantation workers bought property of their own and moved out of plantation camps. The plantation camps which bordered Kūhiō Highway were disbanded in the 1980s. The Līhuʻe Plantation began to phase out in the last part of the 20th century. Kapaʻa Town suffered after the closing of the Kapaʻa Cannery however the growing tourist industry helped to ease the economic effects of the Cannery's closing.

HoKua Place Site

Heiau of Kapaʻa

During their expeditions around Hawaiʻi in the 1880s, collecting stories from ka poʻe kahiko, Lahainaluna students stopped in Kapaʻa and Keālia and gathered information regarding heiau of the region. Altogether, fourteen heiau were named in Kapaʻa and Keālia, suggesting the two ahupuaʻa were probably more politically significant in ancient times. The following Table lists the names of the ten heiau identified in the ahupuaʻa of Kapaʻa, their location if known, their type, and associated chief and priest.

The exact locations of these heiau are unknown. The locations of two of the heiau correlate with the locations of wahi pana which are known to be in close to Kuahiahi and Kaluluomoʻikeha. Kuahiahi (also spelled Kaahiahi and Keahiahi) is the rocky headland at the north end of Kapaʻa where the first Kapaʻa School was once located. Kaluluomoʻikeha is thought to be the general area near the Moʻikeha Canal and the present day Coral Reef Hotel.

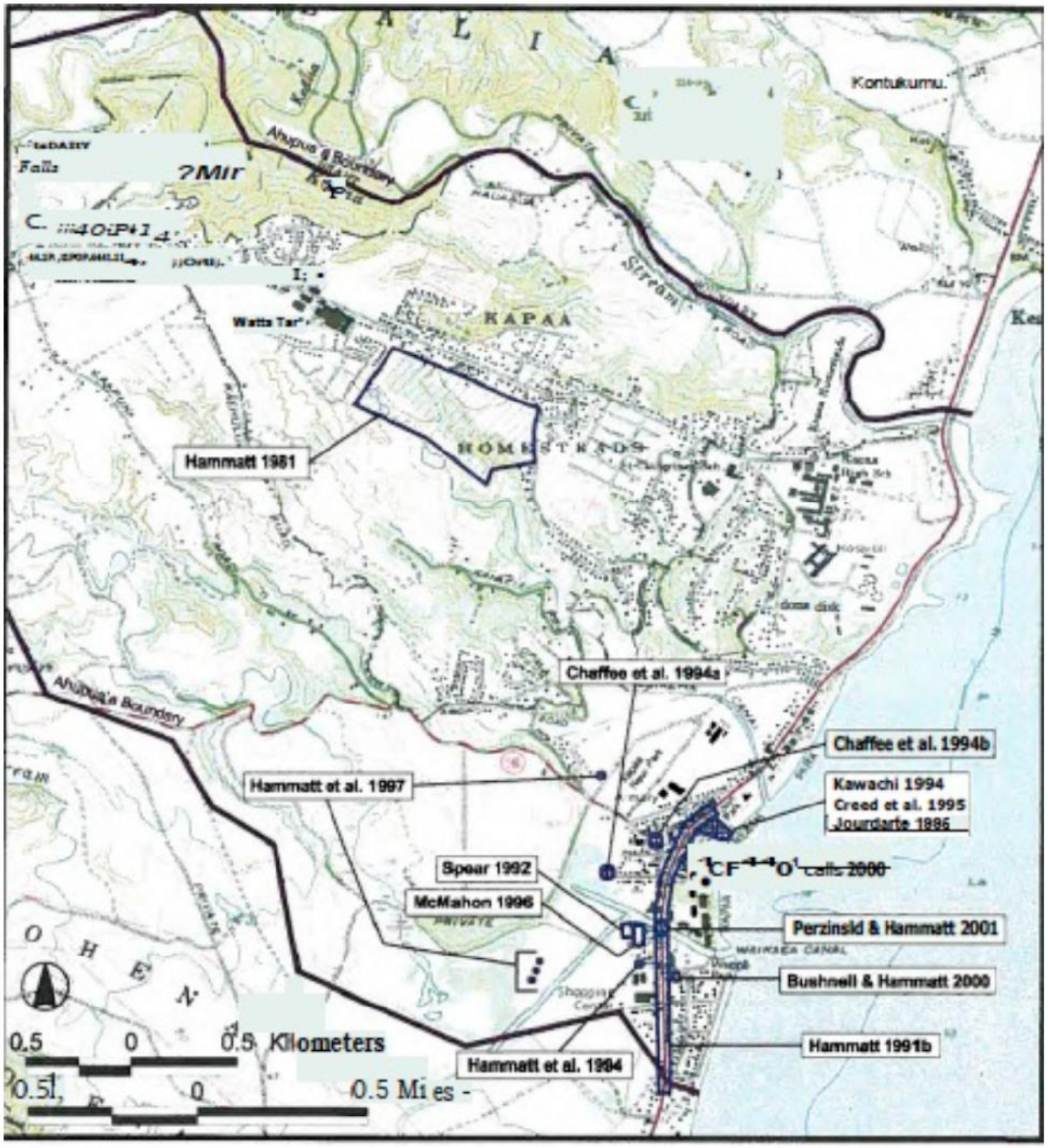
Name	Location	Type	Associated
Mailchuna	Kapa'a (Mailchuna is the area of the present day Kapa'a School)	unknown	Kiha, Kaumuali'i/ Lukahakona
Pueo	Kapa'a	unknown	Kiha, Kaumuali'i/ Lukahakona
Pahua	Kapa'a/Kealia	unknown	Kiha/ Lukahakona
Kumalae	Kapa'a/Kealia	unknown	Kiha/ Lukahakona
Waiehumalama	Kapa'a/Kealia	unknown	Kiha/ Lukahakona
Napu'upa'akai	Kapa'a/Kealia	unknown	Kiha/ Lukahakona
Nocamakalii	Kapa'a/Kealia	"heiau for birth of Kaua'i Chiefs, like Holoholoku"	Unknown
Pu'ukoa	Kapa'a/Kealia	"unu type heiau"	Unknown
Piouka	Kapa'a/Kealia	"unu type heiau"	Unknown
Una	Kapa'a/Kealia	Unknown	Kiha/ Lukahakona
Mano	Kapa'a/Kealia	Unknown	Kiha/ Lukahakona
Kuahiahi	Kapa'a (gov'n't school stands on site now)	Unknown	Kaumuali'i/ Lukahakona
Makanalimu	Upland of Kawaihau	Unknown	Kaumuali'i
Kaluluomoikeha	Kapa'a	Unknown	Mo'ikeha

<u>Archaeological Studies and Sites in Kapa'a Ahupua'a</u>

The following table outlines the archaeological research and historic properties identified in Kapa'a Ahupua'a. The Table provides a list of archaeological research conducted within Kapa'a Ahupua'a, including columns for source, location, nature of study, and findings.

Source	Location	Nature of Study	Findings
Bennett 1931	Island wide Identifies 2 sites: Site 110 Taro terraces and bowl and Site 111 A large simple dirt Hawaiian ditch	Archaeological Reconnaissance	Identifies 2 sites: Site 110 Taro terraces and bowl and Site 111 A large simple dirt Hawaiian ditch
Handy and Handy 1972	Archipelago-wide	Native Planter study	Discusses "highly developed irrigation system"
Ching 1976	Just south of the Waikaea Drainage Canal	Archaeological Reconnaissance	No significant findings
Hammatt 1981	Upland Kapa'a	Archaeological Reconnaissance	No significant findings
Hammatt 1986	Upper reaches of the Makaleha stream valley.	Archaeological Reconnaissance	No significant findings
Hammatt 1991	Along Kuhio Highway	Subsurface Testing	Identifies two sub surface cultural layer sites
Kikuchi and Remoaldo 1992	Around Kapa'a Town	Cemeteries of Kauai	Identifies six cemeteries
Spear 1992	South side Waikaea Canal, mauka of Kuhio Highway. (TMK: 4-5-05:04, 09)	Monitoring Report	Designated subsurface site 50 30 08 547

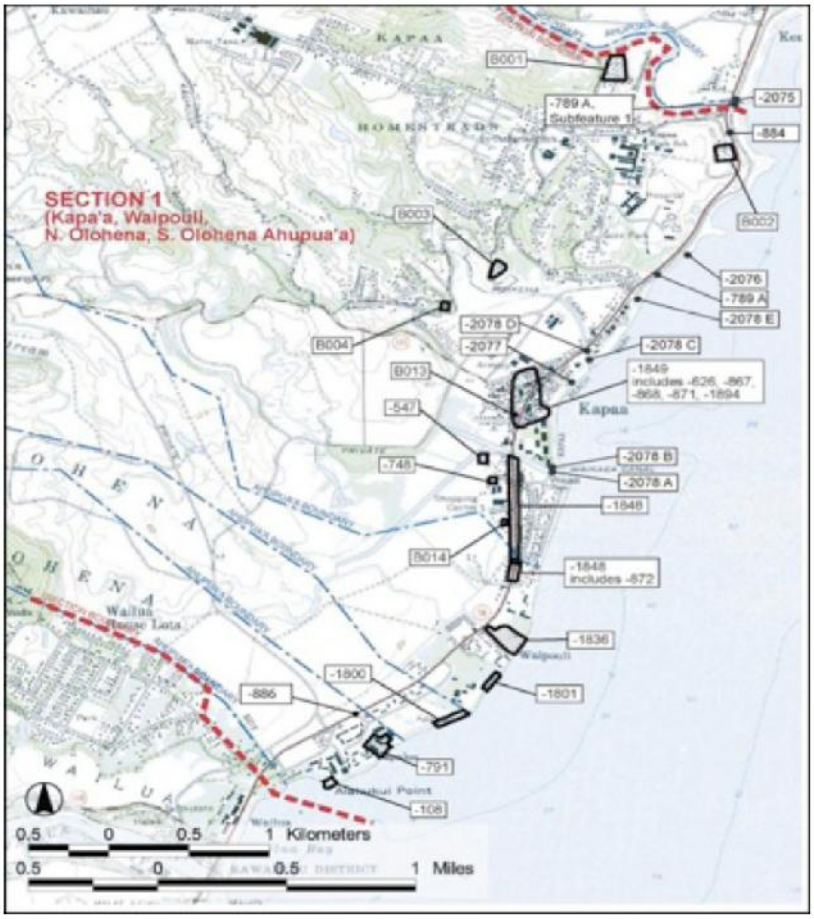
Source	Location	Nature of Study	Findings
Chaffee, Burgett & Spear 1994a	A house lot near the corner of Kukui and Ulu Streets in mauka Kapa'a Town. (TMK: 4-5-09:10)	Archaeological Inventory Survey	No significant findings
Chaffee, Burgett & Spear 1994b	Mamane Street Kapa'a Town. (TMK: 4-5-09:51	Archaeological Inventory Survey	No significant findings
Hammatt, Ida & Chiogioji 1994	Proposed bypass routes mauka of Kapa'a Town	Archaeological Assessment	No new field work, reviews literature
Hammatt, Ida & Folk 1994	South side Waikaea Canal, mauka of Kuhio Highway (TMK: 4-5-05:06)	Archaeological Inventory Survey	Weak cultural layer designated site 50-30-08-748
Kawachi 1994	Inia Street (Jasper) TMK 4-5-08:33	Burial Report .	Designates Site 50-30-08-871
McMahon 1994	"behind the armory in Kapa'a near the god stones" The location is uncertain & "Buzz's near the Coconut Marketplace"	Documents second hand report of burials in two locations	Bones in 3 places reported from behind the armory, 16 bodies reported from the Buzz' s restaurant. No site numbers assigned
Creed, Hammatt, Ida, Masterson & Winieski 1995	Kapa'a Sewer line project, Kuhio Highway, south and central Kapa'a Town	Archaeological Monitoring Report	Documents cultural layer of site -1848 and (an enlarged) site -1849 & recovery of thirty burials at sites —867, -868, -871, & -1894
Jourdane 1995	1382-A `Inia Street, *makai* of Kuhio Highway, central Kapa'a Town	Burial Report	Site 626
McMahon 1996	South side Waikaea Canal, mauka of Kuhio Highway (TMK: 4 5 05:08)	Archaeological Inventory Survey	No significant cultural material
Hammatt, Chiogioji, Ida & Creed 1997	Test excavations focused inland of Kapa'a Town	Archaeological Inventory Survey	Four test trenches were excavated inland of Kapa'a Town
Borthwick and Hammatt 1999	Kapa'a Seventh Day Adventist Church at 1132 Kuhio Highway	Archaeological Monitoring and Burial Treatment Plan	Monitoring was indicated as this parcel lay within the designated Site 50-30-08-1848.



Map showing previous archaeological studies in Kapa‘a

Source	Location	Nature of Study	Findings
Bushnell and Hammatt 2000	Seventh Day Adventist Church, *makai* of Kuhio Highway, south of the Waikaea Canal	Archaeological Monitoring Report	Minimal findings (one piece of worked bone)
Callis 2000	Kapa'a Beach Park	Burial Removal and Archaeological Monitoring Report	Human Burial
Perzinski and Hammatt 2001	Kuhio Highway on the margins of the Waikaea Canal	Archaeological Monitoring Report	No significant cultural material
Elmore and Kennedy 2003	Kuhio Highway	Archaeological Monitoring Report	No significant cultural material
Dega, Michael F. and James Powell 2003	Kuhio Highway	Archaeological Monitoring Report	Human Burials •
Van Ryzin, Karl and Hallett Hammatt, 2004	Water Reservoir	Archaeological Assessment	No significant findings

The following Map and Table is a list of known historic properties within the ahupua'a and includes columns for state site numbers, site type, location and reference.



Site # 50-30-08-	Ahupua'a	Site Type/ Name (if any)	Location	Site Constraints	Reference
B001	Kapa'a	Historic Cemetery	South of bend of Kapa'a Stream, a kilometer mauka from Kuhiō Hwy	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B002	Kapa'a	Historic Cemetery	Just mauka from Kuhiō Highway, south of Kapa'a Stream	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B003	Kapa'a	Kapa'a Public Cemetery	South of Kanaele Road, one kilometer inland of Kuhiō Highway	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B004	Kapa'a	Historic Cemetery	North of Apopo Road, one kilometer inland of Kuhiō Highway	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B013	Kapa'a	Historic Cemetery	Just *mauka* from Kuhiō Highway, north of the Waikaea Canal	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B014	Kapa'a	All Saints Episcopal Church Cemetery	Just *mauka* from Kuhiō Highway, south of the Waikaea Canal	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992:62-65
547	Kapa'a	sub-surface features including a firepit and a possible house foundation	South of bend of Waikaea Canal, mauka of Kuhiō Highway	Archaeological monitoring in the vicinity is recommended	Spear 1992:3
626	Kapa'a	Burial	Inia Street, *makai* of Kuhiō Highway, central Kapa'a	Consultation and monitoring in vicinity indicated	Jourdane 1995
748	Kapa'a	Minimal findings, a weak cultural layer (buried A-horizon)	South of the bend of the Waikaea Canal, *mauka* of Kuhiō Highway	Considered no longer significant within project area	Hammatt et al. 1994
789	Kapa'a/ Kealia	Historic Road	Coastal Cane Haul Road near Kawaihau Road turn off		Perzinski et al. 2000

Site # 50-30-08-	Ahupua'a	Site Type/ Name (if any)	Location	Site Constraints	Reference
867	Kapa'a	1 set of human remains	Kukui Street, just *mauka* of Kuhiō Highway, Kapa'a Town	Consultation and monitoring in vicinity indicated	Creed et al. 1995:50
868	Kapa'a	1 set of human remains	Lehua Street *mauka* of Kuhiō Highway, Kapa'a Town	Consultation and monitoring in vicinity indicated	Creed et al. 1995:50
871	Kapa'a	13 sets of human remains (Creed et al. 1995:50)	Inia Street, *makai* of Kuhiō Highway	Consultation and monitoring in vicinity indicated	Kawachi 1994; Creed et al. 1995:50
1848	Kapa'a	Cultural layer and sub-surface features	Along Kuhiō Highway between Wana Road and the Waikaea Drainage Canal	Archaeological monitoring in the vicinity is recommended	Hammatt 1991; Creed et al. 1995
1849	Kapa'a	Cultural layer and sub-surface features; Creed et al. 1995:53 expands boundaries to incl. burial sites, - 626, -867, -868 -871, and -1894	Along Kuhiō Highway between Inia Street and Kauwila Street extending to the coast	Consultation and monitoring in vicinity indicated	Hammatt 1991; Creed et al. 1995
1894	Kapa'a	11 sets of human remains	Ulu Street, just north of Kuhiō Highway, Kapa'a Town	Consultation and monitoring in vicinity indicated	Creed et al. 1995:50
2075	Kapa'a/Keālia	Highway Bridge Foundation (old Kaua'i Belt Road)	Kuhiō Highway at Kapa'a/ Keālia River		Bushnell et al. 2002:55
2076	Kapa'a	Petroglyph	Rocky coast below former cane haul road (Site -789)	Preservation	Bushnell et al. 2002:55
2077	Kapa'a	Concrete steps (related to historic beach pavilion)	Near present Kapa'a Beach Park Pavilion		Bushnell et al. 2002:55

Site # 50-30-08-	Ahupuaʻa	Site Type/ Name (if any)	Location	Site Constraints	Reference
2078	Kapaʻa	Historic Railway Alignment (2 Railroad Bridges, & RR Culvert Foundation)	Both railroad bridges span the Moikeha Canal; the RR culvert foundation is located north of the Kapaʻa Swimming Pool.		Bushnell et al. 2002:55

Pattern of Archaeological Sites in Kapaʻa

The pattern of archaeological studies in Kapaʻa Ahupuaʻa is somewhat skewed with a dozen Projects in urban Kapaʻa Town and very little work along the coast. Major archaeological sites have been found in the Kapaʻa Town area including extensive cultural layers with burials and other cultural features underlying Kūhiō Highway near All Saints Gym and near the older part of Kapaʻa Town between Waikaʻea Canal and Kapaʻa Beach Park, makai of Kūhiō Highway (Hammatt 1991; Kawachi 1994; Creed et al. 1995; Jourdane 1995; Callis 2000). The mauka-makai extent of these cultural layers has not been clearly defined. These extensive cultural deposits associated with pre-historic and early historic habitation are known to exist in a relatively narrow sand berm that makes up the physio geography of Kapaʻa. The areas mauka of Kapaʻa Town are marshy although much of it has been filled in recent decades. The five kuleana awarded during the Mahele are located adjacent to the present highway. The more mauka studies (Spear 1992, Chaffee et al. 1994a & 1994b, Hammatt et al. 1994, 1997, McMahon 1996) are thought to be located towards the mauka fringe of the sand berm, approaching more marshy conditions and have generally reported no significant or minimal findings. Less than 1.5- km to the south of Waikaʻea Canal is another extensive subsurface, cultural deposit which is associated with a pre-contact fishing encampment located at the southern boundary of Waipouli adjacent to Uhalekawaʻa Stream (Waipouli Stream) and the ocean (Hammatt et al. 2000).

Anticipated sites based on historic and archaeological studies in mauka Kapaʻa would be evidence of cane cultivation like ditches and possible terracing for lo'i cultivation with nearby habitation sites.

Field Inspections

On January 3 and April 25, 2012 Exploration Associates Ltd. archaeologist Nancy McMahon, M.A. made field inspections on proposed HoKua Place/Kapaʻa Highlands II Project area. Access was made via Olohena Road (two gates).

Because of known historic cane cultivation in this area of Kapa`a, predicted sites might be historic plantation related infrastructure such as ditches, flumes, roads, temporary cane-haul railroad berms and reservoirs. None were observed during the survey. The shallow ravine in the Project area was surveyed and tested, however no pre-Contact or historic era terraces or habitation sites were revealed.

The parcel contains no surface archaeological sites. The access road is related to access for construction of the buildings already present on the Phase I parcel.

Entrance off Olohena Road looking makai in the distance the Solar Farm

Remnant Road with Cattle Grazing in the Distance

View across the Project Area, Facing Makai and Northeast

Looking at the Roof of Kapaʻa Middle School

Subsurface Testing

On November 11, 2012, three trenches were excavated with a backhoe with a 24 in. width bucket. (Figure below). Trench 1 was excavated to a depth of 183 cm with a length of 10 meters. Trench 2 was excavated to a depth of 160 cm and a length of 3 m. Trench 3 was excavated to a depth of 260 cm and a length of 2.5 m. Each evinced the same soil composition. A description of the soils representing all three trenches is presented here.

Trench location, facing northeast

A representative profile description evinced the same stratigraphy consisting in all three trenches, consisting of three soil layers with only a single clear boundary delineating the topsoil from the underlying soils. Soil differences could only be determined utilizing the Munsell Color Chart. The topsoil in each trench 5 YR 4/3 reddish brown organic. The other two layers are classified as 5 YR 5/6 yellowish red [20 cmbs] and 5 YR 4/6 yellowish red [20 cmbs to base of excavation]. Characteristics are dry to very dry, crumbly, medium firm, clayey silt. It is pretty much cultivated soils. A local informant, Mr. Vasquez, who worked for the Lihue plantation most of his life ~~Informant~~ stated the plantation chain and ball dragged this land several times over.

Profile Test trench 2 on the left and Trench 3 on the right.

A geologic survey was undertaken on the adjacent Phase I parcel prior to the construction of a solar farm. Soils extracted and examined in test trenches revealed only agricultural soils. No buried cultural layers or plantation infrastructure was present.

Cultural Resources

A Cultural Impact Assessment (CIA) was conducted for the Project; it is attached as Exhibit M. Consistent with the Office of Environmental Quality Control guidelines, the CIA methodology incorporated:

- Historic Research (conducted at the State Historic Preservation Division Library, the Hawaiʻi State Archives and the Bishop Museum where information on historic land use and past cultural traditions was sought.)
- Archaeological Review (using the library at the Department of Land and Natural Resources, State Historic Preservation Division to obtain information regarding previous archaeological and cultural studies in the Kapaʻa area.)
- Identification of Knowledgeable Informants (Hawaiian organizations, community members and cultural and lineal descendants with lineal ties to the greater Kapaʻa area, as well as others with ties to the region were contacted, including the State Historic Preservation Division (SHPD), The Office of Hawaiian Affairs (OHA), the Kauaʻi/Niʻihau Islands Burial Council, the Royal Order of Kamehameha, Kaumualiʻi Chapter, Kauaʻi County Council, Kauaʻi County Mayor, Kauaʻi Health Heritage Coastal Corridor Committee, Kauaʻi Historical Society, Kauaʻi Historic Preservation Commission.
- Interviews (Once the participant was identified, she/he was contacted and interviewed. Excerpts from the interview are used throughout the CIA report, wherever applicable.)
- Report (A CIA report was prepared that documents relevant information on traditions and practices from the historic record as well as from contemporary oral sources. The report includes cultural and historic documentation of Kapaʻa, a summary of archaeological studies, the results of community consultation and an assessment of traditional resources/traditional practices.

The Project area lies in the traditional ahupuaʻa of Kapaʻa which belongs to the ancient district of Puna (now the district is more commonly called "Kawaihau"), one of five ancient districts on Kauaʻi (King 1935: 228). Puna was the second largest district on Kauaʻi, behind Kona, and extended from Kipu south of Līhuʻe to Kamalomaloʻo, just north of Keālia.

For taxation, educational and judicial reasons, new districts were created in the 1840s. The Puna District, with the same boundaries became the Līhuʻe District, named for an important town in that district. In 1878, by the act of King Kalākaua in securing a future name for the new Hui Kawaihau, created the new district of Kawaihau.

This new district encompassed the ahupuaʻa ranging from Olohena on the south to Kilauea on the north. Subsequent alterations to district boundaries in the 1920s left Kawaihau with Olohena as its southernmost boundary and Moloaʻa as its northernmost boundary (King 1935:222).

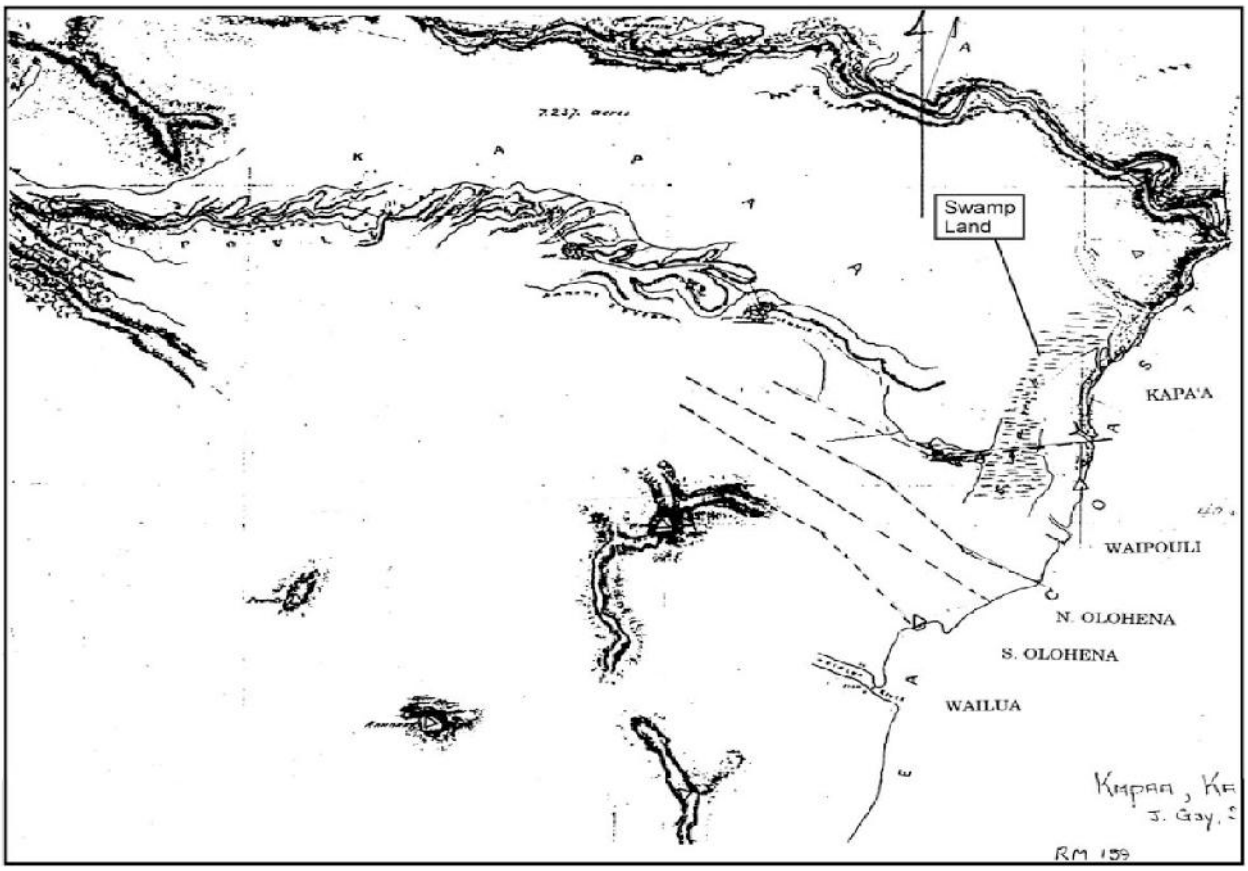
Historically, these ahupuaʻa contained two prominent landscape features, a coastal plain with sand dunes and a large marsh. An 1872 map by James Gay delineating the boundaries of Kapaʻa and adjacent lands shows that much of the makai region was a "swamp" that extended from Waipouli into Kapaʻa.

This "swamp" appears to be the most prominent natural feature of the seaward end of Waipouli and Kapaʻa. The makai areas of the ahupuaʻa can be characterized as fairly flat. Kapaʻa has an irregularly-shaped gulches and small valleys in the uplands, through which small tributary streams run, including the Kapahi, Makaleha, Moalepe and Konohiki Streams. While some of these streams combine with other tributaries in neighboring Keālia to form Kapaʻa Stream, which empties into the ocean at the northern border of the ahupuaʻa, others flow directly into the marsh areas of Kapaʻa and Waipouli (Handy and Handy 1972:394,423; Territorial Planning Board 1940:9).

Kapaʻa Town area is built on a sand berm with ocean on the makai side and marsh on the mauka side. The sand berm was probably slightly wider here than in other localities, but dry land was probably always at a premium.

Hawaiian traditions that centered on Kapaʻa in pre-contact times suggest the significance of, and association with, the *aliʻi.* A survey of traditional mythological literature shows that Kapaʻa was prominently associated with some of the most famous legendary and historical figures including Maui, Kawelo, Mōʻikeha, Māweke, Palila, Pākaʻa and Kanaka Nunui Moe.

What few specific references there are suggest that high status habitation was focused near the coast with less intensive utilization of the uplands which were regarded as wild places. The most notable feature of the traditional accounts are the references to grasses and sedges (Kalukalu grass and Ahuawa rushes) which undoubtedly reflects in part the natural marsh lands near the coast but may also reflect transformation of the landscape through a denudation of trees by the activities of a relatively dense population harvesting slow growing trees for firewood and construction materials over many centuries.



Portion of 1872 Survey Map by James Gay, Showing Swamp Land in Puna.

The Organic Acts of 1845 and 1846 initiated the process of the Mahele, which introduced private property into Hawaiian society. In 1848 the crown and the aliʻi received their lands. The common people received their kuleana in 1850. It is through information garnered from records for Land Commission Awards (LCAs) generated during the Mahele that specific documentation of traditional life in Kapaʻa come to light.

Documents relating to Land Commission Awards (kuleana) during this period show, surprisingly, that only six individuals were awarded kuleana parcels in the relatively large ahupuaʻa of Kapaʻa. Five of the six received multiple parcels and show characteristic similarities. They are Keo (LCA #3554, 3599), Kiau (#8843), Kamapaa (#8837), Ioane Honolii (#3971) and Huluili (#3638). All five had loʻi on the mauka side of the lowland swamp area, sometimes extending a short distance up into small, shallow gulches and valleys. Each also had a separate house lot located on the makai side of the swamp, adjacent to the beach.

Interestingly, the residential "village" of Kapaʻa did not exist as a single entity, but was a series of small settlements or compounds that stretched along the shoreline of the ahupuaʻa and included (south to north) Kupanihi (Makahaikupanihi), Kalolo (Kaulolo), Puhi, and Ulukiu. The sixth individual, Ehu (#8247), was the only person to be awarded a single parcel in the upland area of Kapaʻa at Moalepe valley, approximately five miles from the shore.

A check of the Foreign Testimony (F.T.) for Kuleana Claims to Quiet Land Titles in the Hawaiian Islands (1848-50) reveals the names of three ʻauwai in Kapaʻa. Cross referencing this information with various maps gives a general indication of their location: Makahaikupanihi, along the southern border near the shore and the settlement in Waipouli; Makea, near the current Kapaʻa Public Library on the mauka side of Kūhiō Highway; and Kapaʻa, probably along the current Kanaele Road.

There were no kuleana claims found within the Project area.

Burials

The coastline in Kapaʻa once contained extensive sand dunes that were documented in travels throughout the nineteenth century (Knudsen 1991; Alexander 1991). Most of the sand dunes were modified or destroyed at the onset of the twentieth century. This was due to the extensive use of the coastal areas for ranching, settlement, and new transportation routes like trains and roads.

Archaeological studies in the Kapaʻa area demonstrate the widespread prehistoric use of sand as a medium for burials. Burials have been identified along the coast and extending well mauka of the coastline into present day Kapaʻa Town. Cultural deposits found associated with burials in the Kapaʻa area shed light on the Hawaiian tradition of burying members of the ʻohana in the kulaiwi, or birth land.

For Hawaiians, "man's immortality was manifest in his bones...Even the bones of the living became symbols of the link between man's progenitors and his own eventual immortality" (Pukui et al. 1972:106). Thus, the discovery of iwi (bones) is a very sensitive issue for the Hawaiian community requiring much mediation and protocol.

No burials are believed to be present within the Project area and none are known in the vicinity.

East Kauai's Heritage Resources Map

There are no sites within the property as noted on the East Kauai Heritage Resources map above.

Interviews

A substantial effort was made to locate knowledgeable informants for the area of Kapaʻa. An attempt was made to contact as many individuals as possible. These led to the five knowledgeable parties that were interviewed for this Project. Through the consultation process, five individuals were identified as potential informants. Three had written letters of their knowledge of the area. Two others informants, former Lihue Plantation employees Albert Fukushima and Stanley Vasques, gave verbal interviews.

One of these spoke about the use of the lands for pasture when the Plantation ceased using the land for cane. The other informant was from the East Kauaʻi Soil and Water District and had no knowledge any plantation ditches that were still intact within the Project area. The old maps he had showed the ditch system around Twin Reservoir which is located directly across Olohena Road from this Property but the maps stop before this Project area. This map indicates that there were no permanent plantation ditch lines on this parcel.

No Native Hawaiian informants came forward to discuss any traditional gathering associated with this Project area. The Office of Hawaiian Affairs gave a list of possible individuals with extensive knowledge of traditional cultural practices and resources but none knew of any for this Project area.

Gathering for Plant Resources

Hawaiians utilized upland resources for a multitude of purposes. Forest resources were gathered, for not only the basic needs of food and clothing, but for tools, weapons, canoe building, house construction, dyes, adornments, hula, medicinal and religious purposes

The present Project area is dominated by alien vegetation (albezia, ginger, California grass) although some traditional cultigens (banana, bamboo, kid and historically introduced food plants (papaya)) are present as well. Within the Project area itself no specific documentation was found regarding gathering of plants during traditional Hawaiian times.

During the assessment there were no ongoing practices related to traditional gathering of plant resources identified in the present Project area. None of the individuals contacted for this assessment identified any native plant gathering practices within the Project area.

Historic Properties

No historic properties were identified within the Project area or in the vicinity. The density of identified historic properties is far greater near the coast of Kapaʻa Ahupuaʻa.

Trails

Based on nineteenth and twentieth century maps the primary transportation routes mauka/makai correlated closely to the existing major roadways. During the assessment there were no trail systems identified in the proposed Project area.

Plantation Ditch System or ʻAuwai

Based on the archaeological assessment (McMahon, 2012 & 2013), field checks, documentation from land records, plantations records and maps, and informant's information, no remnants of these historic properties exist. Several pieces presumed to be remnant of the metal flumes (transportable irrigation) were found. It is also thought that the existing roads on the property might be filled.

Past Analysis

In researching archeological/cultural issues related to the HoKua Place/Kapaʻa Highlands II site, past environmental review documents were studied.

The Final Environmental Impact Statement and Site Selection Study for the New Kapaʻa Intermediate School by The Keith Companies in 1993 analyzed an area bordering the HoKua Place property. The study noted,

> "None of the potential school sites fall within an area identified as culturally sensitive on the County Cultural Sensitivity Maps and the sites have been historically disturbed through sugar cane cultivation and grazing activities. No archaeological, historical or cultural resources are known or expected to be present at any of the sites, however an archaeological inventory survey of the selected site will be conducted to insure that no archeological, historical or cultural resources of significance are impacted by the proposed Project. Should such resources be found at the selected site, mitigation and/or preservation plans will be prepared in consultation with the State Department of Land and Natural Resources, State Historic Preservation Division, the County Planning Department, and the Kauaʻi Historic Preservation Review Commission."

It is not known if an archeological inventory study was done for the site. The FEIS also notes a letter from the State Historic Preservation Division which states,

> "A review of our records shows that there are no known historic sites at these four proposed Project locations."

The Final Environmental Assessment for Kūhiō Highway Improvements, Extension of Temporary By-Pass Road, Kūhiō Highway to Olohena Road by the State Department of Transportation in August 2004, analyzed the property surrounding the HoKua Place Project site. It states,

> "The Project has been in agricultural use for over 100 years. During the course of this use, the site has been extensively disturbed and the likelihood of any archaeological or cultural artifacts remaining on site are extremely unlikely."
>
> "The Project site has a long established history in sugar cane agricultural use. This use has removed the site from any cultural practices for over 100 years. The site has been fallowed in recent years and the road has been closed to the public with a gate off of Kūhiō Highway and concrete barrier walls in the vicinity of the ball field. During a site inspection several individuals were observed fishing for Samoan crab along the bridge. This practice can be conducted at any point along the canal however the bridge provided a convenient improved surface for this fishing activity. The proposed By-Pass road improvement will not preclude this fishing activity however the bridge location will not be suitable for fishing as the bridge will not include pedestrian easements."
>
> "Water resources are often identified as potential habitation sites however the Moʻikeha Canal is a man made and improved drainage feature therefore no habitation sites are likely to be found in the vicinity of the bridge."

"The State Historic Preservation Division has not issued a determination regarding the impact of the proposed Project and no statement of 'no effect' has been presented in the Draft EA. The Draft EA does state that the likelihood of finding any archaeological material is minimal as the Project will not require any significant subsurface grading."

The Final Environmental Assessment Wailua Facility Plan prepared for County of Kaua'i, Department of Public Works, Division of Wastewater Management by Fukunaga & Associates Inc. in April 2008 analyzes the Wailua area as a whole. It states,

"Wailua is known for a culturally significant area in Kaua'i, especially in the vicinity of the Wailua River. According to the Malae Heiau: Vegetation Removal and Landscaping Plan, "The lands along the Wailua River comprised a political, religious and social center for Kaua'i's paramount chiefs who resided at Wailua most of the year."

"The Wailua Complex of Heiau is identified and registered on the National and State Register of Historic Places (NRHP). Landscape elements, such as historic plantation town architecture in Kapa'a, are also known and preserved as a significant historic cultural value of Kaua'i. The State Department of Land and Natural Resources (DLNR), Historic Preservation Division recognizes historically significant structures in Kapa'a.

- Puuopae Bridge (Site #: 30089398, TMK: 4-4-02)
- Opaekaa Road Bridge (Site #: 30089377, TMK: 4-2-02:22)
- Seto Building (Site #: 30089379, TMK: 4-5-11:31)
- Kapa'a School (Site #: 30089391, TMK: 4-6-14:31)
- Kawamura Residence and Utility Shed (Site #: 30089393, TMK: 4-5-08:16)
- Wailua Complex of Heiaus (Site #: 3008502, TMK: 3-9-06:01, 4-1-02:03, 4-2-13:17)
- Kukui Heiau (Site #: 3008108, TMK: 4-3-02:01)"

"According to the DLNR, Historic Preservation Division, the Wailua WWTP service areas are within historically sensitive areas requiring careful planning and monitoring to ensure proper preservation. The proposed Project is in a culturally and historically significant area. However, since the Project will be in areas that have been previously disturbed, no adverse effect on significant historic sites or human burials is anticipated. Construction and the required mitigation plans will be coordinated with the State Historic Preservation Division, the Kaua'i Burial Council and the Office of Hawaiian Affairs in accordance with the Hawai'i Revised Statutes (HRS) and the Hawai'i Administrative Rules to minimize any long term negative impacts on historic sites."

4.2.2 Potential Environmental Impacts & Mitigation Measures

Archaeological, Historic and Cultural Resources

Exploration Associates, Ltd. conducted an Archaeological Assessment and a Cultural Impact Assessment for the proposed HoKua Place Project. Historic research of the Project area was carried out to identify any cultural resources or traditional cultural practices associated with the area encompassing the proposed HoKua Place. In addition, community consultation was conducted. An attempt was made to contact parties regarding cultural knowledge, land use history, cultural sites and traditional Hawaiian or other cultural practices in the vicinity of the Project area. Five individuals came forward as knowledgeable informants. In addition to the informants, other community members shared valuable information regarding traditional land use, attitudes and practices associated with the Project area.

The marshlands of Kapaʻa were once a significant resource prior to Western contact. The fringes of the marsh were utilized for loʻi kalo, and other resources including the gathering of kalukalu, a type of grass utilized for kapa. Places in the marshes also served as fishponds. Vestiges of the cultural significance of the marshlands are retained in the moʻolelo and ʻolelo noʻeau particular to this area. With the establishment of the sugar plantations in the late nineteenth century, the marshlands were significantly altered. Marsh areas were drained and filled to create more dryland for commercial agriculture and pasture land.
Several individuals consulted and interviewed grew up fishing for ʻōpae and ʻoʻopu in the irrigation ditches which once drained the swamps. They expressed sadness at the changing of the landscape and the passing of their childhood traditions with the final draining and filling of the swamps. No further concerns regarding the marshlands were expressed other than the presumed low potential of possibly encountering habitation deposits and burials related to former LCA parcels.

The CIA report documents the use of the ʻauwai or plantation ditches for irrigation and water use by the residents up until the 1960s. The ʻauwai were also utilized for a variety of activities beyond their primary irrigation purpose. The bulk of the ʻauwai have been lost through modern pasturage, disuse and adjacent road improvements.

In general the community emphasized the importance of communicating with the ʻohana of Kapaʻa regarding changes to the land. This includes asking permission of the ʻohana, including ʻuhane (immortal spirits) for opening up the land to proposed new uses. It was stressed that this and other protocols are necessary to "open the path" for change, thus avoiding accidents and potential obstacles of a cultural nature.

4.2.3 Level of Impact after Mitigation

As noted in Exploration Associates Limited's field checks, archaeological assessment (Exhibit L) and cultural impact assessment (Exhibit M) of the property, as well as prior archeological and cultural evaluations for neighboring properties, no archaeological sites or historic preservation concerns are evident on or in the vicinity of the property.

There are no known traditional resources or cultural practices associated with the HoKua Place Project Area.

If in the unlikely event that any human remains or other significant subsurface deposits are encountered during the course of development activities, all work in the immediate area will stop and the State Historic Preservation Division will be promptly notified.

4.3 Biological Resources

This section discusses the biological resources (flora and fauna) in the region and in Project area, the potential impacts of the Project on those resources and mitigation measures the Project will take to mitigate those potential impacts.

4.3.1 Environmental Setting

The Project site has been extensively used for sugar cane cultivation for many years. The Project site is currently fallow and was last cultivated over 15-years ago.

Botanical Survey

During April and May of 2012 a botanical survey was conducted on a 97 acre parcel in Kapa`a, Kaua`i, referred to as HoKua Place (TMK (4)3-8-003:001). This research documented 44 vascular plant species within the survey area. Forty taxa were non-native plant species, three taxa were very common indigenous native species, and one taxon was a Polynesian introduction. (The Report is found in Exhibit J.)

That investigation concluded, "No federally listed as threatened or endangered plant species were observed within or near the survey area." (Text case was changed to sentence case - the report had this sentence in All Caps.)

Botanical Survey Methods

On April 19, 2012 and May 7, 2012, K. R. Wood (Endangered Species Specialist) and assistant Megan D. Kirkpatrick (M.S. Environmental Science) conducted a biological inventory on an undeveloped parcel of property in Kapa`a, Kaua`i (TMK [4]3-8-003:001). The survey area is approximately 97-acres of undeveloped land. The primary objectives of this field survey were to:

a. search for threatened and endangered plant species as well as species of concern;
b. provide a complete vascular plant checklist of both native and non-native plant taxa observed on property; and
c. provide a summary concerning the conservation status of all native taxa observed;

A walk-through survey method was used. Transects included walking/driving around boundaries of property (TMK (4)3-8-003:001) and several transects through the interior portions of property. Plant identifications were made in the field and were recorded. Plant names and authors of dicots and monocots follow Wagner et al. (1990) and pteridophytes follow Palmer (2003). Plants of particular interest were collected by the second author (MK) as herbarium specimen vouchers and deposited at the National Tropical Botanical Garden (NTBG) herbarium. Specimens were placed in newspaper sheets and pressed in-between cardboard herbarium presses and dried at the NTBG.

Botanical Survey Results

The study area represents a lowland non-native mesic plant community dominated by secondary vegetation of trees, shrubs, and grasses, many of which are considered invasive. The land is vacant and currently undeveloped and has a past history of grazing and sugarcane cultivation.
The non-native grass Panicum maximum (Poaceae – Guinea grass) and non-native shrub or small tree Leucaena leucocephala (Fabaceae – koa haole) are by far the dominant species found at the site.

Additional common non-native trees and shrubs include: Lantana camara (Verbenaceae – lākana), Indigofera suffruticosa (Fabaceae – indigo), Syzygium cumini (Myrtaceae – Java plum), Psidium guajava (Myrtaceae – guava), Spathodea campanulata (Bignoniaceae – African tulip), and Senna surattensis (Fabaceae – kolomona).

Several less common non-native trees and shrubs include: Clidemia hirta (Melastomataceae – Koster's curse), Cinnamomum camphora (Lauraceae – camphor tree), Falcataria moluccana (Fabaceae – albezia), Ficus microcarpa (Moraceae – Chinese banyan), and Schefflera actinophylla (Araliaceae – octopus tree).

No Hawaiian endemic species (i.e., restricted to only Hawai`i) were observed. One Polynesian introduction was observed, namely Aleurites moluccana (Euphorbiaceae – kukui tree) which is common throughout the Hawaiian Islands. The three indigenous species found at the site are quite common and include: Hibiscus tiliaceus (Malvaceae – hau) which is also often an invasive tree species, the fern species Psilotum nudum (Psilotaceae – moa), and Waltheria indica (Sterculiaceae - `uhaloa). For complete checklist of species see Table 1 which also includes the common names and status (i.e., indigenous/naturalized) category of each taxon.

In addition to the survey, a review of other reports was conducted as part of the assessment. According to the Hawai'i Natural Diversity Database, there have been no recordings of rare species or eco-systems on the subject property. Considering that the 97-acres have no natural water resources, the near proximity of residential and commercial neighborhoods and the adjacent public school, threatened or endangered birds are not expected to frequent the site.

Botanical Resources

The dominate vegetation zone along the eastern coast of Kaua‘i is made up of open guava forest with shrubs. Characteristic vegetation within this zone includes guava, Koa Haole, Lantana, Spanish clover and Bermuda grass.

Surrounding residential and commercial areas are planted with Coconut trees, common landscaping trees, bushes and ornamental plants. The areas along the Moikeha Canal banks are heavily vegetated with invasive mangrove.

Avian and Mammalian Survey

An avian and mammalian survey was conducted on an approximately 97-acre parcel of land identified as Tax Map Key (4) 3-8-003:001 located in Kapa‘a, Island of Kaua‘i.

The associated report is identified as Exhibit K in this assessment. The report describes the methods used and the results of the avian and terrestrial mammalian surveys conducted on the Project site. Both surveys were conducted as part of the environmental disclosure process associated with the proposed Project.

Hau bushes along southwestern bounday

The primary purpose of the surveys was to determine if there are any avian and terrestrial mammalian species currently listed, or proposed for listing under either federal or State of Hawai‘i endangered species statutes

within or adjacent to the study area. The federal and State of Hawaiʻi listed species status follows species identified in the following referenced documents, (Department of Land and Natural Resources (DLNR) 1998; U. S. Fish & Wildlife Service (USFWS) 2005, 2012). The avian and mammalian surveys were conducted May 21, 2012.

Avian Survey Methods

A total of six avian point count stations were sited roughly equidistant from each other within the Project site. Six-minute point counts were made at each of the count stations. Each station was counted once.

Field observations were made with the aid of Leica 8 X 42 binoculars and by listening for vocalizations. Point counts were concentrated during the early morning hours, the peak of daily bird activity. Time not spent counting was used to search the remainder of the Project site for species and habitats that were not detected during count sessions.

Mammalian Survey Methods

With the exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or *ʻōpeʻapeʻa* as it is known locally, all terrestrial mammals currently found on the Island of Kauaʻi are alien species, and most are ubiquitous. The survey for terrestrial mammalian species was limited to visual and auditory detection, coupled with visual observation of scat, tracks, and other animal sign.

No trapping program or heterodyne bat detection survey methods were used during the course of this survey. A running tally was kept of all terrestrial vertebrate mammalian species detected within the Project area during time spent within the Project site.

Avian Survey Results

A total of 193 individual birds of 17 species, representing 13 separate families, were recorded during station counts. All 17 species recorded are alien to the Hawaiian Islands. Avian diversity and densities were in keeping with the location of the Property and the habitat presently on the site.

Four species, House Finch (*Carpodacus mexicanus*), Nutmeg Mannikin (*Lonchura punctulata*), Japanese White-eye (*Zosterops japonicus*) and Zebra Dove (*Geopelia striata*) accounted for slightly more than 45 percent of all birds recorded during station counts.

The most commonly recorded species was House Finch, which accounted for 14 percent of the total number of individual birds recorded. An average of 32 individual birds was recorded per station count; a number that is about average for point counts in this area on the Island of Kauaʻi.

No avian species currently proposed or listed under either the State of Hawaiʻi or federal endangered species statutes was detected during the course of the survey, nor would they be expected given the habitat currently present on the site.

Mammalian Survey Results

Four terrestrial mammalian species were detected while on the site. Numerous dogs (*Canis f. familiaris*) were heard barking from areas adjacent to the site. Tracks and scat of pig (*Sus s. scrofa*) were encountered within the site. Tracks, and scat of both horse (*Equss c. caballus*) and cow (*Bos taurus*), were also encountered within the site.

Avian Resources

The findings of the avian survey are consistent with the location of the Property, and the habitat present on the site. As previously stated all of the avian species detected during the course of this survey are alien to the Hawaiian Islands.

Although not detected during this survey, the endangered Hawaiian Petrel (Pterodroma sandwichensis), and the threatened endemic sub-species of the Newell's Shearwater (Puffinus auricularis newelli) have been recorded over-flying the Project site between April and the end of November each year (David, 1995; Morgan et al., 2003, 2004; David and Planning Solutions 2008).

Typical Guinea grass/koa haole shrub vegetation looking nortwest

The US Fish and Wildlife Service has determined that in addition to the Hawai'ian Petrel and the Newell's Shearwater birds flying over the site, the Band-Rumped Storm Petrel (Oceanodroma castro) may fly over the Project while traveling between the sea and their mountainous breeding sites. The developer is committed to contacting USFWS for further assistance when the design of the utility system heights and numer of shielded streetlights are determined in order to minimize potential affect to these seabirds.

Prior to construction or any subsequent delay in work for 3 or more days, a biologist familiar with the nesting behavior of the Hawaiian Goose shall survey the site. Should any nesting be discovered, work at the area if discovery shall be stopped and the USFWS office shall be contacted for further guidance. All on-site personnel shall be informed that Hawaiian Geese may be in the vicinity of the construction site at any time of the year. If a Hawaiian Geese is within 100 feet of ongoing work, all activities should be temporarily stopped until the goose leaves on its own accord.

Additionally, the Save Our Shearwaters Program has recovered both species from the general Project area on an annual basis over the past three decades (Morgan et al., 2003, 2004; David and Planning Solutions, 2008; Save our Shearwater Program, 2012).

The petrel is listed as endangered, and the shearwater as threatened under both Federal and State of Hawaiʻi endangered species statutes. The primary cause of mortality in both Hawaiian Petrels and Newell's Shearwaters is thought to be predation by alien mammalian species at the nesting colonies (USFWS 1983, Simons and Hodges 1998, Ainley et al., 2001).

Collision with man-made structures is considered to be the second most significant cause of mortality of these seabird species in Hawaiʻi.

Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, seabirds can collide with manmade structures, and if they are not killed outright, the dazed or injured birds are easy targets of opportunity for feral mammals (Hadley 1961; Telfer 1979; Sincock 1981; Reed et al., 1985; Telfer et al., 1987; Cooper and Day, 1998; Podolsky et al. 1998; Ainley et al., 2001; Hue et al., 2001; Day et al 2003).

There are no nesting colonies nor appropriate nesting habitat for either of these listed seabird species within the current study site.

Following build out it is probable that cleared areas, especially those that are landscaped as lawns, and or parking lots will provide loafing habitat for Pacific Golden-Plover (Pluvialis fulva).

The plover is an indigenous migratory shorebird species which nests in the high Arctic during the late spring and summer months, returning to Hawaiʻi and the Tropical Pacific to spend the fall and winter months each year. They usually leave Hawaiʻi for their trip back to the Arctic in late April or the very early part of May each year. This species is a common site around the state during the late fall and winter months.

Mammalian Resources

The findings of the mammalian survey are consistent with the location of the property and the habitat currently present on the site.

No Hawaiian hoary bats were seen overflying the site. Hawaiian hoary bats are widely distributed in the lowland areas on the Island of Kaua‘i, and have been documented in and around almost all areas that still have some dense vegetation (Tomich, 1986; USFWS 1998, David, 2012).

Although no rodents were detected during the course of this survey, it is virtually certain one or more of the four established alien muridae found on Kaua‘i, roof rat (Rattus r. rattus), Norway rat (Rattus norvegicus), European house mouse (Mus musculus domesticus) and possibly Polynesian rats (Rattus exulans hawaiiensis) use various resources found within the general Project area.

All of these introduced rodents are deleterious to native ecosystems and the native faunal species dependant on them.

Past Analysis

In addition the surveys conducted, past environmental review documents were reviewed - statements from reports and analysis on neighboring properties follows.

The Final Environmental Impact Statement and Site Selection Study for the New Kapaa Intermediate School by The Keith Companies in 1993 analyzed an area bordering the HoKua Place property. The study noted,

> “Typical vegetation observed throughout the service area include several types of palms, ironwood, Norfolk pine, papaya, guava, banana, mango, avocado, lantana, koa haole, hau, sugarcane, taro, java plum, and numerous grass species.”
>
> “Domestic pets, feral animals, livestock and rodents make up the majority of the nonhuman mammals inhabiting the service area. The Hawaiian hoary bat, the only native land mammal can be found in the service area, while the endangered marine mammal, the monk seal, occasionally visits the area's shoreline.”

The present Kapa‘a Intermediate School was described as Site #1 in the DEIS. The analysis of that site states,

> “Sites #1, #2, and #4 are or were until recently utilized for sugar cane cultivation and sugar cane is the primary botanical species present at these sites. No endangered plant or animal species are known or expected to be affected by establishment of a school at these locations.”
>
> “The native Hawaiian seabird, Newell's Shearwater, listed as "threatened" under the Federal Endangered Species Act, is known to nest in the interior mountains above the Wailua area. Shearwaters leaving their nests at night can become disoriented and confused by urban lights and may become exhausted or fly into unseen objects such as utility wires, trees, buildings and automobiles. School facilities lighting can be designed and located to minimize the attraction and confusion impacts on Newell's Shearwater. Avoidance of situations where light glare Projects upward or laterally, particularly during the critical fallout period of October and November, will minimize adverse impacts on this unique species.”

The Final Environmental Assessment for Kūhiō Highway Improvements, Extension of Temporary By-Pass Road, Kūhiō Highway to Olohena Road by the State Department of Transportation in August 2004, analyzed the property surrounding the HoKua Place Project site. It states,

> "The majority of the Project alignment is covered with koa haole, giant sensitive plant, and various noxious weedy species. These plants are typical of fallowed agricultural fields. The area along the Moikeha Canal banks is heavily vegetated with mangrove, which is also considered a pest. No rare, threatened or endangered species of flora were observed along the Project alignment."
>
> "The site does not serve as an endangered wildlife habitat although avifauna, feral cats, dogs and rodents may be found on-site. A few egrets were observed onsite in the grassy areas outside of the Project alignment. No rare or endangered species of avifauna were identified. Fauna within the canal include mosquito fish, tilapia, crayfish and Samoan crabs. It is also likely that some ocean fish, such as barracuda, may enter the lower portions of the canal."

The Final Environmental Assessment Wailua Facility Plan prepared for County of Kauai, Department of Public Works, Division of Wastewater Management by Fukunaga & Associates Inc. in April 2008 analyzes the Wailua area as a whole. It states,

> "According to the data compiled by the Hawaii Biodiversity and Mapping Program and the Hawaii Gap Analysis Program, the Project area has multiple classifications of low intensity development, cultivated land, grassland, scrub shrub and wetland habitats. The predominant vegetation zone along the eastern coast of Kauai is made up of open guava forest with shrubs. Characteristic vegetation within this zone includes Guava, Koa Haole, Lantana, Spanish clover and Bermuda grass. Surrounding residential and commercial areas are planted with Coconut trees, vegetable gardens, common landscaping trees, bushes and ornamental plants. The Project areas are highly disturbed, and it is unlikely that any endangered species of flora are in the areas."
>
> "Mammals in the vicinity of the Project include feral cat, roof rat, cattle, dog, pig, and the Hawaiian hoary bat. Birds that are associated with the prevalent vegetation type along the eastern coast of Kauai include cardinal, spotted dove, barred dove, mockingbird, mynah, ricebird, white eye, house sparrow, elepaio, pueo, and golden plover. 'Elepaio and pueo are native Hawaiian birds, and the golden plover is an indigenous Hawaiian bird."
>
> "The U.S. Department of the Interior, Fish and Wildlife Service confirmed that there is no federally designated critical habitat in the proposed Project area. However, the following species are observed in the Project vicinity and listed as federally threatened and endangered species.
>
> Federally threatened species: Newell's shearwater (*Puffinus auricularis newelli*)
> Federally endangered species: Hawaiian petrel (*Pterodroma phaeopygia sandwichensis*); <u>Band-rumped storm petrel (Oceanodroma castro);</u> Hawaiian hoary bat (*Lasirus cinereus semotus*); Hawaiian duck (*Anas wyvilliana*); Hawaiian stilt (*Himantopus mexicanus knudseni*); Hawaiian goose (*Branta sandvicensis*);
> Hawaiian moorhen (*Gallinula chloropus sandvicensis*); Hawaiian coot (*Fulica alai*); Hawaiian monk seal (*Monachus schauinslandi*).
>
> The Project areas are already highly disturbed, and it is unlikely that any of the endangered or critical fauna species listed above inhabit the areas."

"Construction timing should avoid disturbance to possible nesting wetland birds in area adjacent to wetlands. Hawaiian petrel, the Band-Rumped Storm Petrel and the Newell's shearwater are known to transit this area and are prone to collisions with objects in artificially-lighted areas. Artificial lighting and structures higher than the current existing vegetation will attract seabirds circling the light source, and they might collide with structures or fall to the ground. Lights should be designed to prevent the attraction of these nocturnal seabirds (i.e. no emit light upward or no light at night). Prior to Construction, the Developer and Contractors will contact and consult with US Fish and Wildlife Services to establish protocol to least affect these seabirds.

"There are no indications of rare or endangered flora in the Project area. Although the U.S. Department of Interior, Fish and Wildlife Service has confirmed that threatened and endangered species are observed in Wailua-Kapaa area, the project sites are already highly disturbed and developed. Therefore, no negative impacts to existing plants and mammals are anticipated."

4.3.2 Potential Environmental Impacts & Mitigation Measures

Botanical

As all of the plant species recorded are either naturalized species or common indigenous species it is not expected that the development and operation of the proposed subdivision will result in deleterious impacts to any botanical species currently listed or proposed for listing under either federal or State of Hawaiʻi endangered species statutes.

The Conclusion of the Botanical Survey concluded: No threatened or endangered plant species were observed within or anywhere near the survey area during research and therefore there are no concerns about possible impacts to rare plant species at the HoKua Place Project. The current conditions of this study site indicate that the area has been dominated by non-native weedy species for a very long time. The senior author certified his expertise with more than 25 years conducting biological inventories within the Hawaiian Islands and has specialized in the conservation of Hawai`i's Federally Listed as Endangered plant species, including those considered Candidates for listing, Species of Concern, or Federally Listed as Threatened (USFWS 1999a, 1999b, 2004, 2010).

Seabirds

The principal potential impact that construction and operation of the HoKua Place poses to protected seabirds is the increased threat that birds will be downed after becoming disoriented by lights associated with the Project during the nesting season. The two main ways that outdoor lighting could pose a threat to these nocturnally flying seabirds is if, 1) during construction it is deemed expedient, or necessary to conduct nighttime construction activities, and 2) following build-out, the potential operation of streetlights and exterior safety and security lighting.

Hawaiian hoary bat

The principal potential impact that the development of the HoKua Place Project poses to bats is during the clearing and grubbing phases of construction as vegetation is removed. The removal of vegetation within the Project site may temporarily displace individual bats, which may use the vegetation as a roosting location.

As bats use multiple roosts within their home territories, the potential disturbance resulting from the removal of the vegetation is likely to be minimal. During the pupping season, females carrying their pups may be less able to rapidly vacate a roost site as the vegetation is cleared.

Additionally, adult female bats sometimes leave their pups in the roost tree while they forage. Very small pups may be unable to flee a tree that is being felled. Potential adverse effects from such disturbance can be avoided or minimized by not clearing woody vegetation taller than 4.6 meters (15-feet), between June 1 and September 15, the period in which bats are potentially at risk from vegetation clearing.

Critical Habitat

There is no federally delineated Critical Habitat for any species present on or adjacent to the Project area. Thus, the development and operation of the Proposed project will not result in impacts to federally designated Critical Habitat. There is no equivalent statute under State law.

Invertebrates

No voids or lava tube entrances etc were noted on the site. Likewise, there is no evidence of standing water or streams on the site. These are two conditions that could indicate habitat for listed invertebrates.

Steven Lee Montgomery, Ph. D., performed an invertebrate survey of the Project site in January 2018, that is attached as Exhibit P to Volume II of the FEIS. Dr. Montgomery observed no native invertebrate species classified by the US Fish and Wildlife Service or the State of Hawaii as endangered or threatened or as a candidate for listing as an endangered or threatened species.

Recommended Mitigation Measures

- All exterior lights installed in conjunction with the proposed Project should be shielded to reduce the potential for interactions of nocturnally flying seabirds with external lights and man-made structures (Reed *et al.*, 1985; Telfer *et al.*, 1987). Any lighting fixtures that meet the "Dark Skies" guidelines are appropriate.
- It is recommended that woody vegetation taller than 4.6 meters (15-feet), not be cleared between June 1 and September 15, the period in which bats are potentially at risk from vegetation clearing. As an alternative to this, the areas with vegetation exceeding 15-feet that are scheduled for removal will first be reviewed by a qualified land manager, biologist, forester, etc prior to the vegetation removal. The DLNR and the USFWS will be notified if the ʻōpeʻapeʻa is found to be in trees scheduled for removal.

- It is recommended that the Developer apply for an incidental take permit under Section 10(a)(1)(B) of the ESA. If necessary a habitat conservation plan that identifies the potential effects of the action on listed species and their habitat, and define measures to minimize and mitigate any adverse effects.

- It is recommended that, where appropriate and practicable, native plant species be used in landscaping efforts. Not only is this ecologically prudent, but also if the appropriate plants are used, it will also likely save maintenance and water costs over the long term.

- The developer shall contact USFWS after the utility system has been determined (utility poles, light poles, etc) for further assistance with ESA compliance.

4.3.3 Level of Impact after Mitigation

As noted in the botanical survey by Wood & Kirkpatrick (Exhibit J) and the biological surveys (avian and mammalian) (Exhibit K) by Rana Biological Consulting Inc. of the property, as well as prior botanical and biological surveys for neighboring properties, no species currently proposed or listed as threatened or endangered under either the federal or state of Hawaii endangered species statutes were documented on the subject Property.

There is no federally delineated Critical Habitat for any species present on or adjacent to the Project area. Thus, the development and operation of the proposed Project will not result in impacts to federally designated Critical Habitat. There is no equivalent statute under State law.

The Project will follow all applicable rules and regulation and adhere to the mitigation measure described above. The Project will not have a significant impact on any botanical or biological resources.

4.4 Visual & Aesthetic Resources

This section describes the existing visual, vista and view plane conditions on within the Project area, discusses the visual impacts the Project may have, and identifies how the Project mitigates its potential visual impacts.

4.4.1 Environmental Setting

HoKua Place entails approximately 97-acres north of Kapaʻa town. The Kapaʻa By-Pass Road separates the town and the Property.

The Property is on the north-west corner of the Kapaʻa By-Pass Road and Olohena Road. Olohena Road runs along and adjacent to the east and north boundaries of the Property. The Kapaʻa Middle School is located on the northern end of the Property fronted by Olohena Road.

Aerial view of the subject property

The southern border of the Property, along the by-pass road, is elevated approximately 55 feet above msl. The Property rises in elevation to the northern border approximately 130 feet above msl or an average upslope of less than 5%. There are particular areas of the property with 20% slopes.

The Property is located on an elevated plateau and the topography of the Property affords many ocean view lots. Olohena Road bordering the northern property boundary is elevated adequately so ocean views will continue from that road.

The Property is currently fallow and is vegetated with Guinea Grass (Panicum maximum), Koa Haole (Leucaena leucocephala), and Java Plum (Syzygium cumini). Sugar cane cultivation was the last previous use of the property Aerial view of the subject property over fifteen years ago.

The following includes photos from various locations overlooking the property. First the photo guide with image numbers noted at the locations taken (noted on the map,) followed by the images:

3/5/2015 Map for Photo Tour of HoKua Place Google Maps

Photo Tour of HoKua Place
Compare numbers to those on the map.

1. Approaching HoKua Place, driving North on the By-pass Road.

2. Near the south-west corner

3. Across from the church

4. The south-east corner of HoKua Place

5. The south-east corner of HoKua Place

6. On the By-pass road

7. View from the By-pass road

8. Approaching the round-about. HoKua Place on the left.

9. Looking across the round-about at the north-east ridge of HoKua Place

10. Looking across the round-about at the north-east ridge of HoKua Place

11. Starting up the hill on Olohena road

12. On the eastern end of the middle school.

13. Looking across the west side of the middle school parking lot, HoKua Place is beyond.

14. Past the middle school on Olohena Road

15. Looking across the fork at Kaapuni and Olohena road toward HoKua Place

16. Past the fork, on Olohena road.

17. Near the north-western tip of HoKua Place looking at the solar farm.

4.4.2 Potential Environmental Impact & Mitigation Measures

The Project site is not part of a scenic corridor and the Project will not affect scenic vistas and view planes. The proposed Project will not involve significant alteration of the existing topographic character of the site and will not affect public views to and along the shoreline

Olohena Road, along the northern property of HoKua Place is well above the Project site. The Property slopes down approximately 5% from Olohena Road to the by-pass road to the south.

Re-vegetation with native plants will occur in areas disturbed by construction activities and overtime the vegetation near construction areas will grow and mature.

The architecture of the Project will ensure that the Project is compatible with its visual environment. The Project will create structures which are both visually appealing and blend in with the scenery around them.

Additionally, there currently are high voltage electrical lines around part of the Project's perimeter. The electrical utility (KIUC) and HoKua Place would like to run the lines underground thru the Project, dependent upon funding. This would be a preventative measure to protect shearwater birds, and to beautify the historic Kapa'a town core area.

4.4.3 Level of Impact after Mitigation

The mitigation for the impacts to visual and aesthetic resources is incorporated into the Project's design. Therefore, the level of the visual impact after mitigation will be less than significant.

4.5 Geology, Soils & Slope Stability

This section discusses the geology, soils and slope stability in the region and site area, the potential impact of the Project on those characteristics, and mitigation measures Project will employ to mitigate those potential impacts.

4.5.1 Environmental Setting

The southern border of the Property, along the by-pass road, is elevated approximately 55-feet above mean sea level (msl). The Property rises in elevation to the northern border approximately 130-feet above msl or an average upslope of 5%. There are areas of the Property with 20% slopes. The topography of the Property affords many ocean views lots.

Soils

A soil inventory report was included in the Kapaʻa Highlands Agricultural Master Plan by Agricon Hawaii LLC. The soil within the HoKua Place (formerly known as Kapaʻa Highlands II) Project area primarily consists of Līhuʻe-Puhi association, deep, nearly level to steep, well drained soils with fine texture and moderately fine texture subsoil. Permeability is moderately rapid, run-off is slow and erosion hazard is slight.

The following table describes the soil types on the entire 163-acre parcel of TMK (4) 4-003-003:001, which includes the HoKua Farm Lots and HoKua Place (formerly known as Kapaʻa Highlands I and II).

Soil Type	Percent Slope	Map Unit Symbol	Acres	Percent
Hanalei silty clay	0 to 2 %	HnA	01.4	01%
Ioleau silty clay loam	2 to 6 %	IoB	44.5	27%
Ioleau silty clay loam	6 to 12 %	IoC	16.2	10%
Ioleau silty clay loam	12 to 20 %	IoD2	10.7	07%
Ioleau silty clay loam	20 to 35 %	IoE2	24.7	15%
Līhuʻe silty clay	0 to 8 %	LhB	08.4	05%
Līhuʻe silty clay	8 to 15 %	LhC	00.8	00%
Līhuʻe silty clay	15 to 25 %	LhD	04.0	02%
Mokuleia clay loam, poorly drained variant	NA	Mta	03.2	02%
Marsh	NA	MZ	00.3	00%
Pohakupu silty clay loam	0 to 8 %	PkB	00.9	01%
Puhi silty clay loam	3 to 8 %	PnB	31.9	20%
Rough Broken Land	NA	rRR	15.0	09%
		TOTAL	162.0	100%

Hanalei Series

This series consists of somewhat poorly drained to poorly drained soils on bottom lands on the Islands of Kauaʻi and Oʻahu. These soils developed in alluvium derived from basic igneous rock. They are level to gently sloping. Elevations range from nearly sea level to 300-feet. The annual rainfall amounts to 20 to 120-inches. The mean annual soil temperature is 74 F. Hanalei soils are geographically associated with Haleiwa, Hihimanu, Mokuleia and Pearl Harbor soils. These soils are used for taro, pasture, sugarcane and vegetables. The natural vegetation consists of para-grass, sensitive-plant, honohono, Java plum and guava.

USDA

Soils Map

Date: 5/31/2018

Field Office: LIHUE SERVICE CENTER
Agency: USDA-NRCS
Assisted By: GENOA STARRS

State and County: HI, Kauai County, Hawaii
Land Units: (4) 4-3-003:001
Approximate Acres: 163.13

Legend 600 0 600 1,200 Feet 1 inch = 600 feet

Rice Soils Map

MUSYM, MUNAME

- HnA;Hanalei silty clay, 0 to 2 percent slopes, MLRA 167
- IoB;Ioleau silty clay loam, 2 to 6 percent slopes
- IoC;Ioleau silty clay loam, 6 to 12 percent slopes
- IoD2;Ioleau silty clay loam, 12 to 20 percent slopes, eroded
- IoE2;Ioleau silty clay loam, 20 to 30 percent slopes, eroded
- LhB;Lihue silty clay, 0 to 8 percent slopes
- LhC;Lihue silty clay, 8 to 15 percent slopes
- LhD;Lihue silty clay, 15 to 25 percent slopes
- MZ;Marsh
- Mta;Mokuleia clay loam, poorly drained variant
- PkB;Pohakupu silty clay loam, 0 to 8 percent slopes
- PnB;Puhi silty clay loam, 3 to 8 percent slopes
- rRR;Rough broken land
- Rice Poly Layer

N

Ioleau Series
This series consists of well-drained soils on uplands on the island of Kaua‘i. These soils developed in material weathered from basic igneous rock, probably mixed with volcanic ash. They are gently sloping to steep. Elevations range from 100 to 750-feet. The annual rainfall amounts to 40 to 70-inches. The mean annual soil temperature is 72 F. Ioleau soils are geographically associated with Līhu‘e and Puhi soils.

These soils are used for irrigated sugarcane, pasture, pineapple, irrigated orchards, irrigated truck crops, wildlife habitat and woodland. The natural vegetation consists of lantana, koa haole, guava and associated shrubs and grasses.

Līhu‘e Series
This series consists of well-drained soils on uplands on the island of Kaua‘i. These soils developed in material weathered from basic igneous rock. They are gently sloping to steep. Elevations range from nearly sea level to 800 feet. The annual rainfall amounts to 40 to 60 inches. The mean annual soil temperature is 73 F. Līhu‘e soils are geographically associated with Ioleau and Puhi soils.

These soils are used for irrigated sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, woodland and homesites. The natural vegetation consists of lantana, guava, koa haole, joee, kikuyu-grass, molasses-grass, guinea-grass, Bermuda-grass and Java plum.

Mokuleia Series
This series consists of well-drained soils along the coastal plains on the islands of O‘ahu and Kaua‘i. These soils formed in recent alluvium deposited over coral sand. They are shallow and nearly level. Elevations range from nearly sea level to 100 feet. The annual rainfall amounts to 15 to 40 inches on O‘ahu and 50 to 100 inches on Kaua‘i. The mean annual soil temperature is 74 F. Mokuleia soils are geographically associated with Hanalei, Jaucas and Keaau soils.

In this survey area a poorly drained variant of the Mokuleia series was mapped. This soil, Mokuleia clay loam, poorly drained variant, is described in alphabetical order, along with other mapping units of this series.

These soils are used for sugarcane, truck crops and pasture. The natural vegetation consists of kiawe, klu, koa haole and Bermuda-grass in the drier areas and napier-grass, guava and joee in the wetter areas.

Marsh
Marsh consists of wet, periodically flooded areas covered dominantly with grasses and bulrushes or other herbaceous plants. Approximately 0.30-acres of the property (representing a statistically insignificant portion of the overall property) are identified as having "Marsh" soils classification. Characteristics of this soil type include “wet, periodically flooded areas” and “water stands on the surface.” However, upon inspection of the site, there are no wet areas or any standing water.

The area identified with this soil type is situated entirely within the HoKua Farm Lots (formerly known as Kapa‘a Highlands I) and is in the "Open Space" of the HoKua Farm Lots Project. No construction is proposed in the Project “Open Space.”

Since no construction will occur in this area, there will be no harm, changes or loss of this area.

Pohakupu Series
This series consists of well-drained soils on terraces and alluvial fans on the islands of Oʻahu and Kauaʻi. These soils formed in old alluvium derived from basic igneous material. They are nearly level to moderately sloping. Elevations range from 50 to 250-feet. The annual rainfall amounts to 40 to 50- inches. The mean annual soil temperature is 73 F. Pohakupu soils are geographically associated with Alaeloa, Papaa and Līhuʻe soils.

These soils are used for sugarcane, pineapple, truck crops, pasture and homesites. The natural vegetation consists of guava, Christmas berry, Japanese tea, koa haole and kikuyu-grass.

Puhi Series
This series consists of well-drained soils on uplands on the island of Kauaʻi. These soils developed in material derived from basic igneous rock. They are nearly level to steep. Elevations range from 175 to 500-feet. The annual rainfall amounts to 60 to 80-inches. The mean annual soil temperature is 73 F. Puhi soils are geographically associated with Līhuʻe and Kapaʻa soils.

These soils are used for sugarcane, pineapple, truck crops, orchards, pasture, woodland, wildlife habitat water supply and homesites. The natural vegetation consists of guava, Java plum, pangola-grass, kikuyu-grass, elephantopus, joee, yellow fogtail and rhodomyrtus.

Rough Broken Land
Rough broken land consists of very steep land broken by numerous intermittent drainage channels. In most places it is not stony. It occurs in gulches and on mountainsides on all the islands except Oʻahu. The slope is 40 to 70 percent. Elevations range from nearly sea level to about 8,000-feet. The local relief is generally between 25 and 500-feet. Runoff is rapid, and geologic erosion is active. The annual rainfall amounts to 25 to more than 200-inches.

These soils are variable. They are 20 to more than 60-inches deep over soft, weathered rock. In most places some weathered rock fragments are mixed with the soil material. Small areas of rock outcrop, stones and soil slips are common. Included in mapping were areas of colluvium and alluvium along gulch bottoms.

This land type is used primarily for watershed and wildlife habitat. In places it is used also for pasture and woodland. The dominant natural vegetation in the drier areas consists of guava, lantana, Natal redtop, Bermuda-grass, koa haole and molasses-grass. ʻŌhiʻa, kukui, koa and ferns are dominant in the wetter areas. Puakeawe, aʻaliʻi and sweet vernal-grass are common at the higher elevations.

4.5.2 Potential Environmental Impacts & Mitigation Measures

Applicable law will be followed to minimize soil movement, erosion and compaction during all Project actions.

Both short-term construction and long-term maintenance BMPs will be included in any permit conditions. Implementation of Best Management Practices (BMPs) will ensure that the alterations to the terrain minimize erosion, water quality degradation and other environmental impacts.

4.5.3 Level of Impact after Mitigation

As noted in the Kapaʻa Highlands Agricultural Master Plan by Agricon Hawaii LLC., which includes a soil inventory report (Exhibit C), the soils at HoKua Place are generally well drained and the soils can be expected to be low in organic matter. Further, the soil is not ideal for the growing of most commercially viable crops due to poor soil. No impacts on geological resources were noted in the Agricultural Master Plan or accompanying soil inventory report.

The mitigation measures proposed will further reduce the level of impact to geologic resources, which is considered less than significant without any mitigation.

4.6 Water Resources, Drainage & Wastewater

This section discusses the water resources and wastewater management practices in the region and in the subject property area and the potential impacts of the Project on those resources, and mitigation measures the Project will employ to mitigate those potential impacts.

4.6.1 Environmental Setting

A stream exists within the HoKua Farm Lots flowing from north to south along the western border of HoKua Place. The stream flows along the boundary, passes under a bridge on the By-Pass Road at the southwest corner of the property, and empties into the Waiākea drainage canal about 800' downstream from the property.

HoKua Place is committed to keeping the flow of the stream consistent to prevent any potential health and mosquito problems associated with streams when not flowing naturally.

The irrigation facility for this former sugar land is no longer available. There are numerous abandoned irrigation ditches on the property have been reduced or rendered inoperable.

Water Sources

Petitioner has considered two alternative proposals to furnish potable water to the Project. First, under Petitioner's Water Master Plan proposes Petitioner will dedicate its well site to the County Department of Water Supply to furnish water to the Department's storage tanks and existing water system. In return the Department will provide HoKua Place with storage for water. In the event the Department does not approve Petitioner's Water Master Plan, then Petitioner will develop a private water system, using the well to furnish water to the Project.

Implementation of a final alternative is based on the decision of the County Department of Water Supply; each is an acceptable alternative to the applicant.

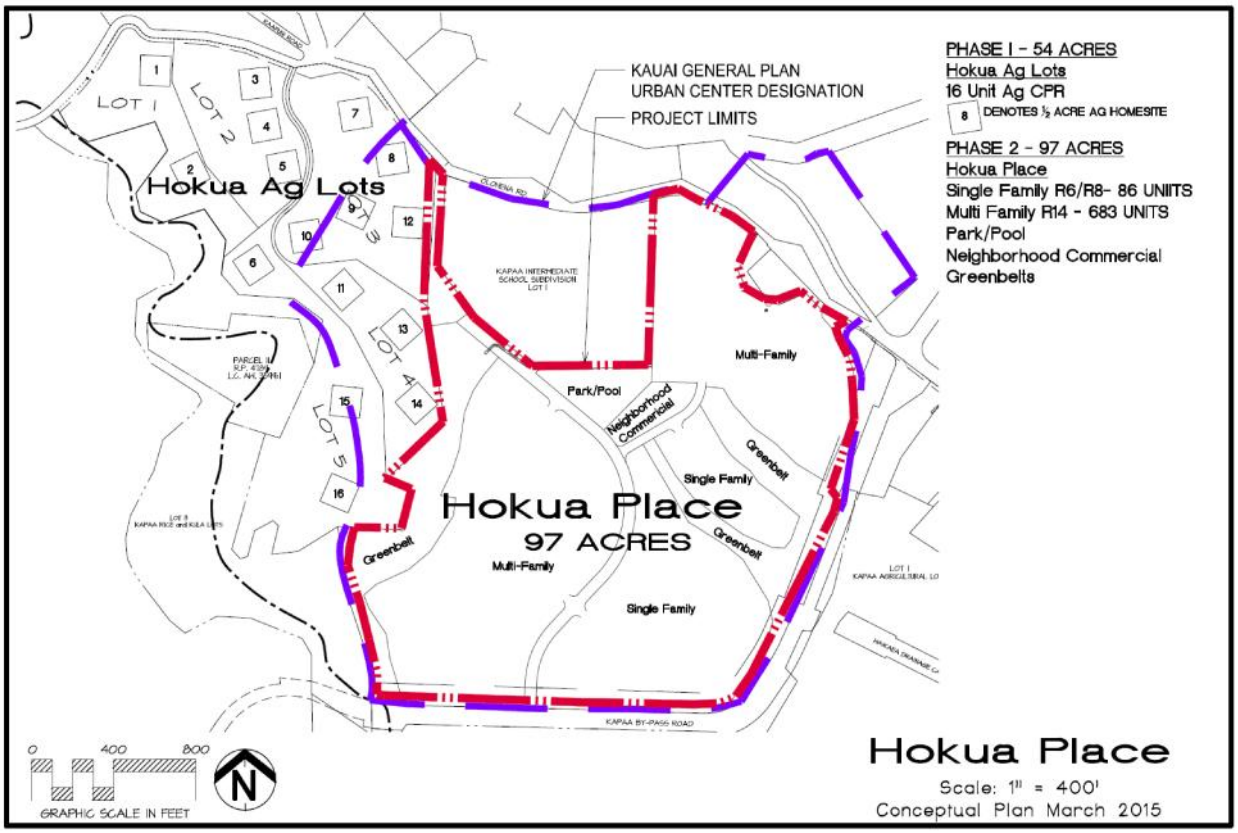
Water Master Plan

The Petitioner has submitted a Water Master Plan for HoKua Place and HoKua Farm Lots to the DOW (Exhibit D) for review and approval.

HoKua Place has a proven well site that will be dedicated to the DOW to feed the Department of Water's storage tanks and existing water system or operated privately. HoKua Place is committed to working with the DOW on pertinent water issues during the design and development phase.

Tom Nance Water Resource Engineering (TNWRE) prepared a water master plan for the development of an agricultural subdivision on site (Exhibit E - Part 1) and estimated the required water system infrastructure and the basis of its sizing.

All infrastructure improvements will be designed, constructed and conveyed in accordance with (DOW) rules, regulations, standards and policies.



As presented in the earlier 2002 Kapa'a Highlands Water Master Plan, the entire Project was to be served from DOW's 313-foot service zone. In the updated Water Master Plan, service to the Project
roject will be from the 313-foot and 214-foot service zones. The red line on the figure above delineates the two service zones in the Project site.

The table below is a compilation of the projected average demand in each service zone based on the unit use rates in DOW's standards. Presented below is a summary of average, maximum day, and peak flow rate requirements by development phase and service zone.

Summary of Average, Maximum Day, and Peak Demands for the Kapaa Highlands Project

Service Zone	Development Phase	Average Demand (GPD)	Maximum Day (GPD)	Peak (GPD)
313-Foot	1	34,725	52,088	104,175
	2	85,830	128,745	257,490
	Totals	120,555	180,832	361,665
214-Foot	1	117,350	176,025	352,050
	2	213,020	319,530	639,060
	Totals	330,370	495,555	991,110
Totals for Both Zones		450,925	676,388	1,352,775

Well Supply

The maximum day demand in a 24-hour pumping day defines the required well pumping capacity. The required capacities for both service zones combined are 158 GPM for Phase 1 and 470 GPM on completion of Phase 2.

As a part of Phase 1 water system improvements, a new well of 500 GPM capacity would be completed at the site in Lot 5 of Phase 1.

A test well that was drilled in this location was pump tested for 12 hours at 550 GPM. The test well produced water of consistently low salinity (specific conductance of 430 US/cm and chlorides of 53 MG/L at the end of the test).

Based on these results, a sustainable capacity of 500 GPM is expectable for a properly developed well. Pump testing of the new well will be conducted for observation to obtain more complete data on aquifer response. Following this, the test well will be sealed in conformance with CWRM requirements.

The new well will have 12-inch casing, be approximately 300-feet deep and draw water exclusively from the lower (second) aquifer at depths between 220 and 300-feet. It will be outfitted with a 500 GPM, 4-pole submersible pump set at a depth of about 50-feet. Chlorination would occur at the well.

The route of the 8-inch or 12-inch, 2,600-foot long dedicated transmission pipeline in a paved roadway from the well to connect to DOW's system is shown on the map below. Based on DOW's stated preference, the connection would be to the 214-foot service zone.

As demonstrated in the calculations following, the transit time in the 2,600-foot long dedicated transmission pipeline would provide adequate chlorine contact time:

- The required CT for water with a pH of 6 to 9 and temperature of 76.2° F. is 2 (MG/L)(MIN) from the table on page 5-33 of the Hawai'i SWTR Manual.
- Volume in the 8-inch or 12-inch, 2,600-foot long pipeline is 907.6 ft3 or 6,788 gallons. The pumping rate will be 500 GPM. Therefore, the residence time in the pipeline will be 13.58 minutes.
- Free chlorine residual at the well head will be 0.5 MG/L.
- Baffle factor for the pipeline is 1.0 based on plug flow.
- Therefore: CT =(0.5 MG/L) (13.58 Min.) (1.0 BF) =6.79 » Required Value of 2

The well will be at a relatively low elevation and it, as well as the entire Project area, is makai of the Underground Injection Control (UIC) line. Both of these aspects suggest that contamination of the groundwater pumped by the well may be an issue.

Fortuitously, the underlying strata provide excellent natural protection against such an occurrence.

The well will be constructed to draw water exclusively from a lower aquifer which is hydrologically separated from a poorly yielding upper aquifer by an impermeable aquiclude that is more than 100 feet thick. This means that if contaminants are released into the subsurface they will accumulate in the upper aquifer and never reach the lower aquifer tapped by the well.

Average Demand for Phase 2 of Kapaa Highlands

Service Zone	Development Parcel	No. of Units	Unit Use Rate (GPD / Unit)	Average Demand (GPD)
313-Foot	SF Residences	4	500	2,000
	MF-1	53	350	18,550
	MF-2	41	350	14,350
	MF-7	17	350	5,950
	MF-13	18	350	6,300
	MF-14	49	350	17,150
	MF-15	14	350	4,900
	MF-16	10	350	3,500
	MF-17	7	350	2,450
	Park	2.37 Acres	4,000	9,480
	General Commercial	0.4 Acres	3,000	1,200
	Total for 312-Foot Zone			85,830
214-Foot	SF Residences	82	500	41,000
	MF-3	35	350	12,250
	MF-4	32	350	11,200
	MF-5	34	350	11,900
	MF-6	84	350	29,400
	MF-8	62	350	21,700
	MF-9	15	350	5,250
	MF-10	43	350	15,050
	MF-11	62	350	21,700
	MF-12	18	350	6,300
	MF-18	20	350	7,000
	MF-19	24	350	8,400
	MF-20	24	350	8,400
	MF-21	11	350	3,850
	MF-22	10	350	3,500
	Church	0.8 Acres	4,000	3,200
	Park	0.73 Acres	4,000	2,920
	Total for 214-Foot Zone			213,020
Total for Phase 2 in Both Service Zones				298,850

With regard to developing a drinking water well makai of the UIC line, DOH has recently (May 2009) instituted a process which includes public notification and the resulting prohibition of installing any new disposal wells within 1/4-mile of the drinking water well.

The 18 homesites in the HoKua Farm Lots (formerly known as Kapa'a Highlands I) will have individual wastewater disposal systems consisting of septic tanks and leach fields. DOH will require the five homesites that will be within 1,000-feet of the well (homesites 14, 15, and 16 and the two homesites on Parcel 11) to have DOH-approved enhanced septic systems.

As an extra precaution, all 18 of the homesites in the HoKua Farm Lots will be required to install enhanced septic systems. All of HoKua Place will be connected to the County's centralized sewer system to eliminate the wastewater treatment and disposal issue for this more densely developed area.

Reservoir Storage

Summarized below are the required reservoir storage volumes by development phase and service zone. Two criteria are applied: (1) provide the maximum day volume; and (2) provide the fire flow-rate and coincident maximum day demand for the duration of the fire with the reservoir 3/4 full at the start.

Computations of Required Reservoir Storage

Service Zone	Required Reservoir Storage	
	Phase 1 (MG)	Phase 2 (MG)
313-Foot Zone		
- Maximum Day Criterion	0.0521*	0.1808
- Fire Flowrate and Maximum Day Use Rate for Duration of the Fire, Reservoir 3/4 Full at Start	0.0229	0.3401*
214-Foot Zone		
- Maximum Day Criterion	0.1760*	0.4956*
- Fire Flowrate and Maximum Day Use Rate for Duration of the Fire, Reservoir 3/4 Full at Start	0.0298	0.3751

* Denotes required storage based on governing criterion.

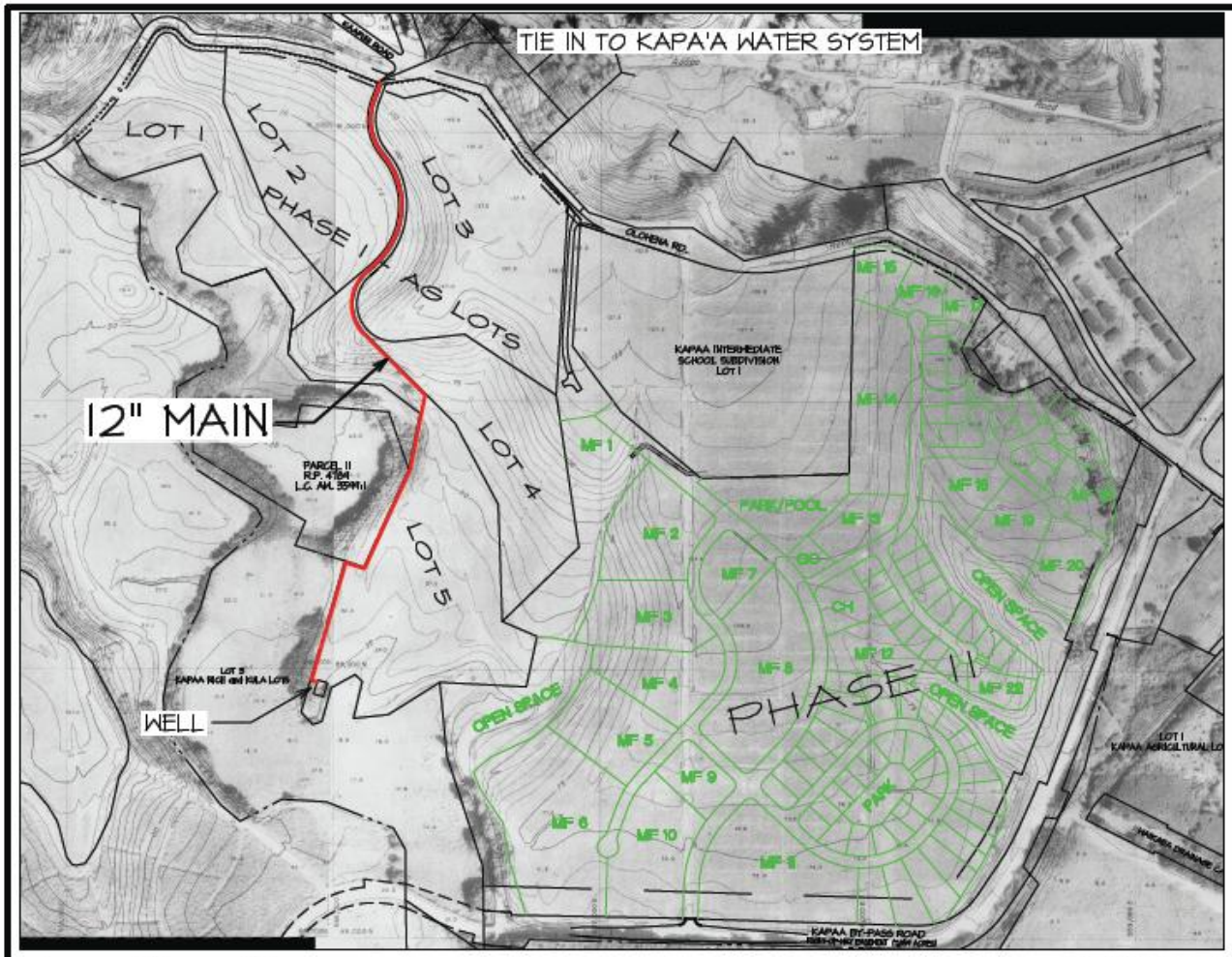
As one well pump is being provided, no credit for well inflow is taken. Fire flow-rate in both service zones of the Phase 1 area is 250-GPM for one hour. In both service zones of Phase 2, it is 2,000-GPM for two hours.

Required storage volumes are denoted by the asterisk (*) in the compilation above. DOW will allow HoKua Farm Lots (formerly known as Kapaʻa Highlands I), consisting of 18 homesites (5 units in the 313-foot zone and 13-units in the 214-foot zone) to utilize storage capacity from existing DOW storage facilities.

Additionally, DOW will provide HoKua Place with storage for water in exchange for HoKua Place dedicating its well site to the DOW to feed the Department of Water's storage tanks and existing water system. David Craddick, former DOW Manager and Chief Engineer wrote in a letter to HoKua Place.

> "At the Department of Water, Water Board July 28th, 2011 meeting, via Managers Report 12-10, in response to your letters of April 22, 2011 and May 11,2011, accepted the proposed exchange of source for storage on a dollar for dollar basis."

Prior to water meter service and/or building permit approval, the developer will complete the required water system facilities and other conditions required by DOW for the Project.



KAPA'A HIGHLANDS PHASE I

WATER MAIN CONNECTION
TO KAPA'A WATER SYSTEM

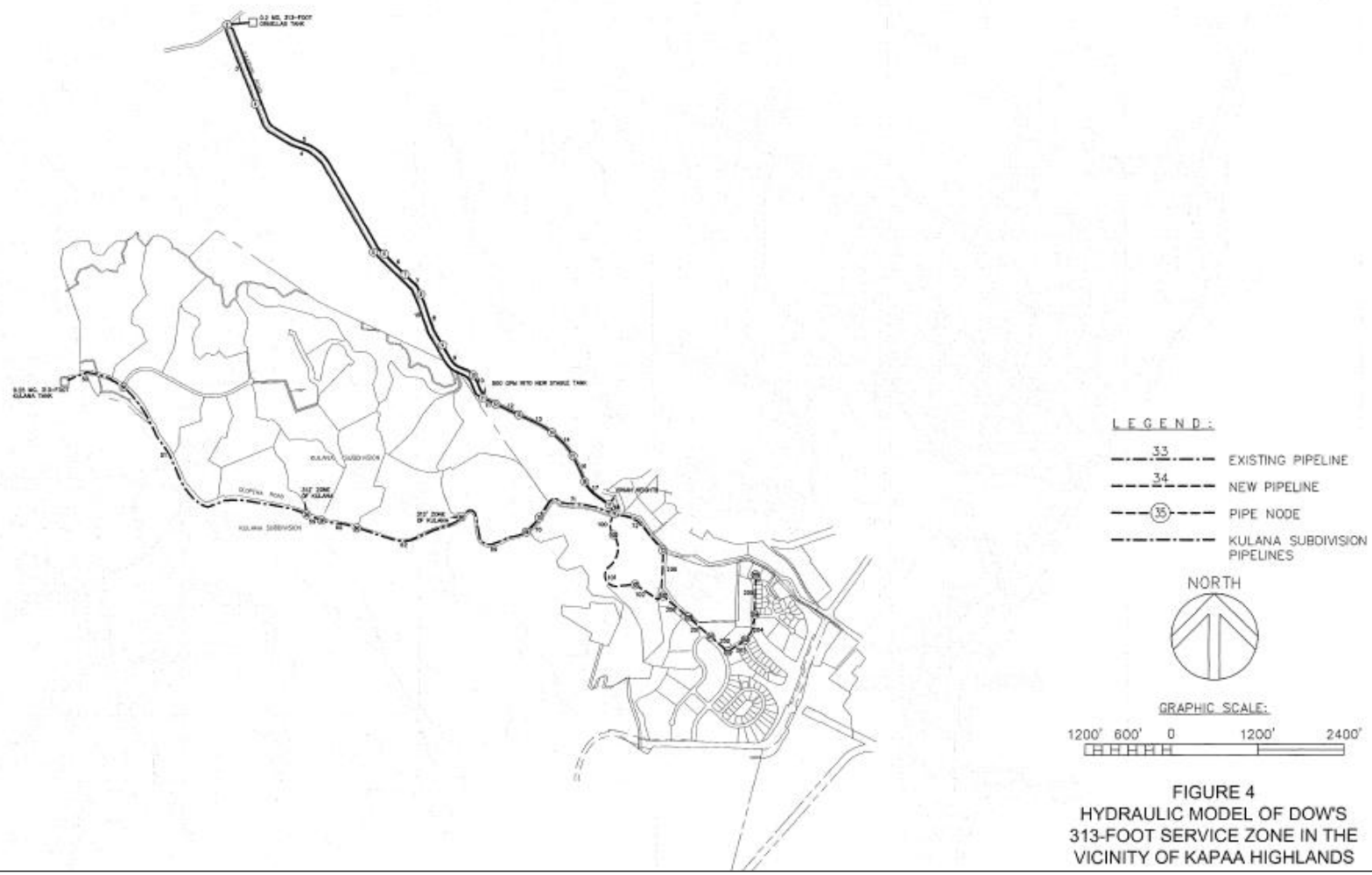


FIGURE 4
HYDRAULIC MODEL OF DOW'S 313-FOOT SERVICE ZONE IN THE VICINITY OF KAPAA HIGHLANDS

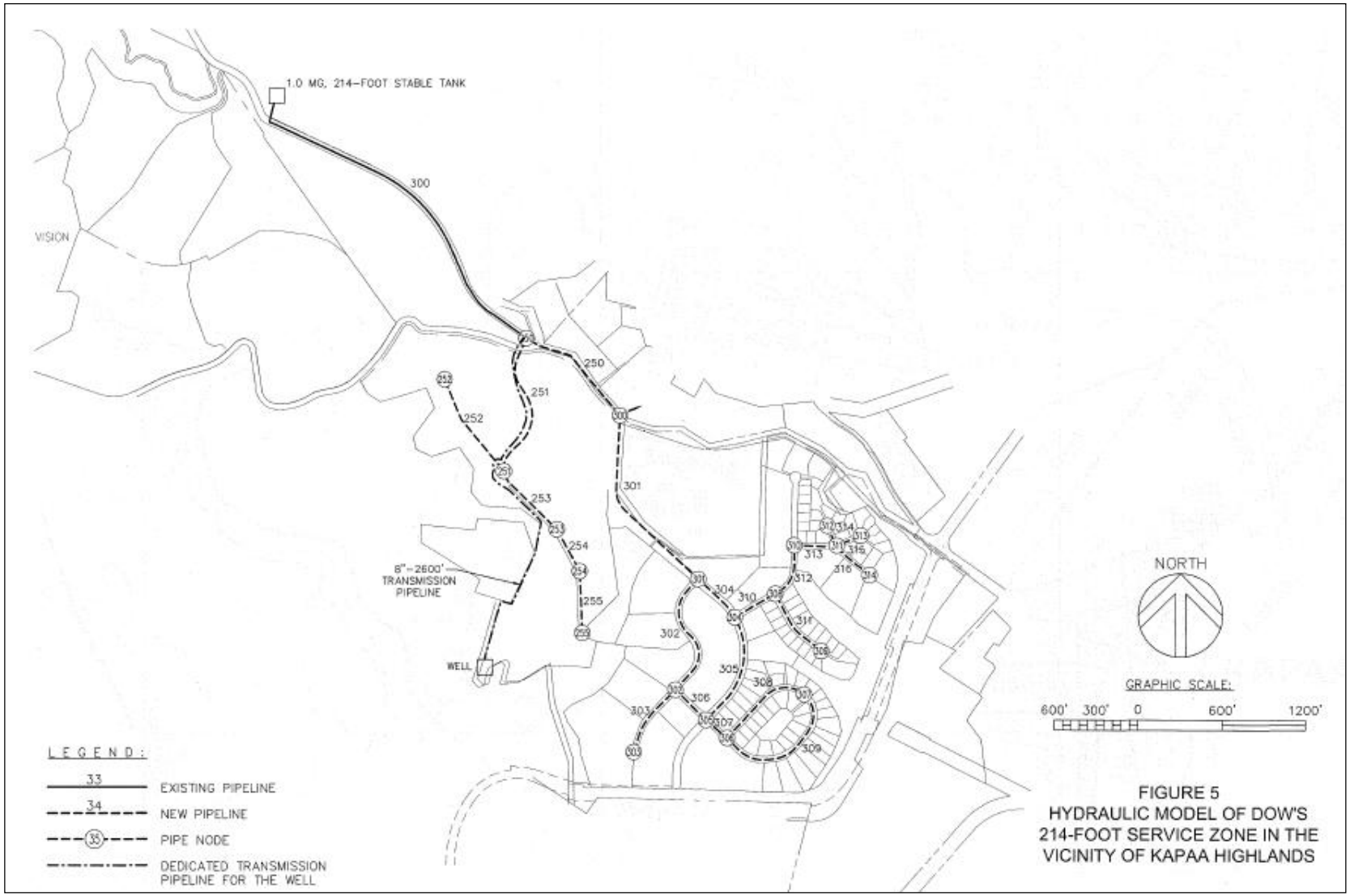


FIGURE 5
HYDRAULIC MODEL OF DOW'S 214-FOOT SERVICE ZONE IN THE VICINITY OF KAPAA HIGHLANDS

Pipeline Sizing for Peak and Fire Flow-rate Requirements

All pipelines will be ductile iron. Pipe sizing is based on two criteria: (1) to provide a minimum 40 psi residual pressure during peak flow-rate conditions, with peak flow-rate defined as the three times the average demand; and (2) to provide the required fire flow-rate with coincident maximum day demand [1.5 times average] and a minimum 20 psi residual pressure at the hydrant. For the agricultural CPR lots of Phase 1, the required fire flow-rate is 250 GPM. For the urban development in Phase 2, required flow-rates have been selected as follows:

Land Use	G P M
Single Family R6 / R8	1250
Multi-Family R 14	1500
General Commercial	2000
Church	2000

Overview of the Hydraulic Impact on DOW's Kapa'a Systems

HoKua Place will draw water from DOW's 313-foot and 214-foot systems, but the source of supply will only deliver water into the lower, 214-foot service zone. Due to the configuration and use of DOW's system, this will not adversely impact DOW's higher service zones in Kapa'a.

- At present, a substantial amount of water is conveyed from wells in the Kapa'a Homesteads 530-foot zone through the 313-foot zone and past the 248-foot PRV zone for consumption in the 214-foot zone. This ongoing transmission from the 530-foot zone to the 214-foot zone substantially exceeds the requirements of HoKua Place in the 313-foot zone.
- When the HoKua Place Project comes on line, every gallon of water used in its 313-foot zone would be replaced by a similar volume of water pumped by its well into the 214-foot zone. This means that there will be no increase in the amount of water conveyed from the 530-foot zone to the 313-foot zone and therefore no impact on customers in the 530-foot zone.
- Due to this gallon-for-gallon replacement of water, it also means that it is not necessary to install a booster pump in the 214-foot zone to pump water back up into the 313-foot zone.

Summary of the Project's Infrastructure Requirements and Tentative Implementation Schedule

Phase 1 - Following approval of the water master plan by DOW, work to construct the well and the roads for Phase 1 would commence within six months of receiving all permits. The cost of installing the necessary improvements will be covered by a Subdivision Bond prior to Phase 1 subdivision approval. Payment of facilities charges for storage and occupancy of the Phase 1 homesites would be made by the developer.

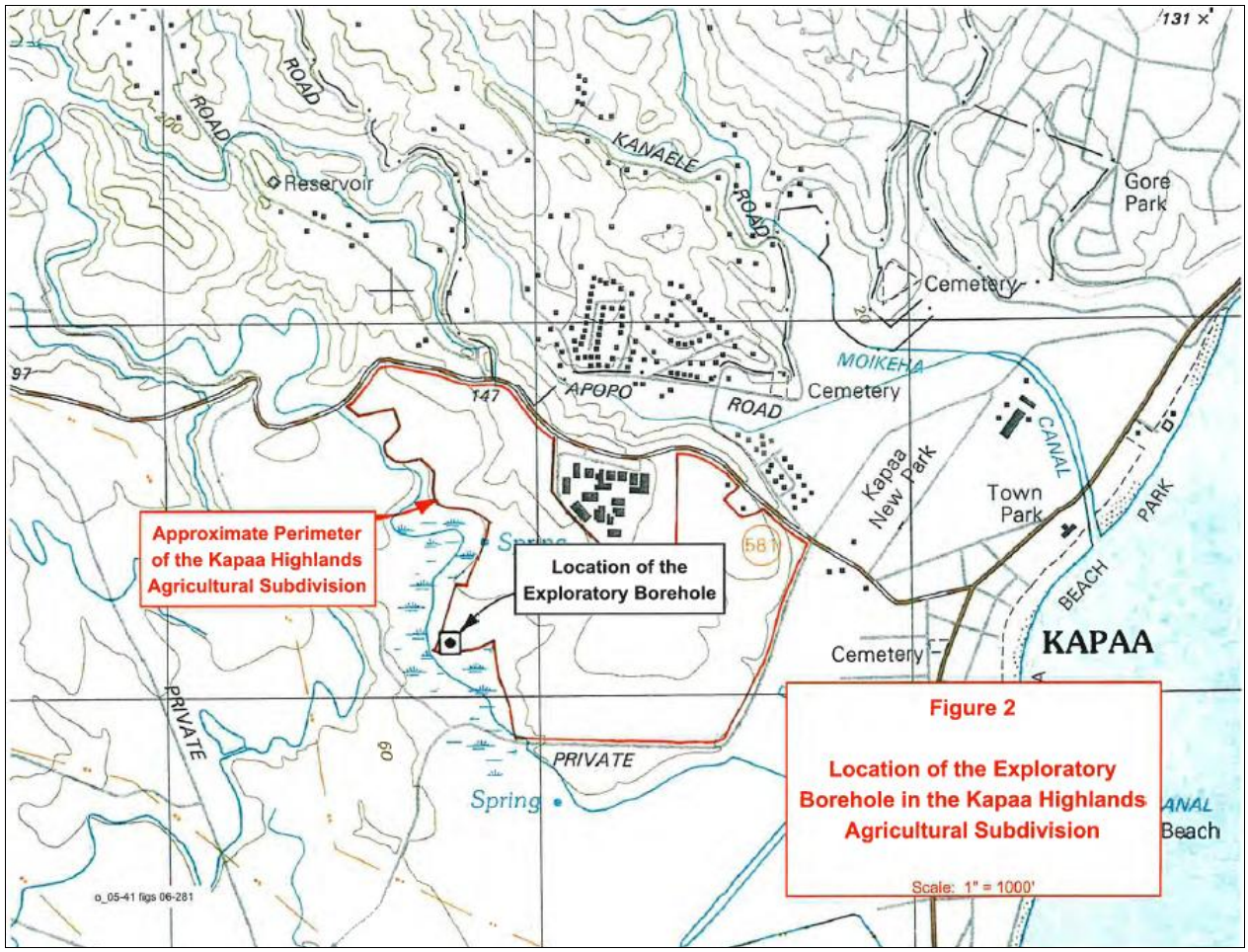
A list of the water system improvements, as they can be defined at this stage of the Project's planning and engineering is provided below. Completion is expected to take two to three years.

- Drill, Case and Pump Test the Supply Well (19-inch borehole to 300-foot depth, 220-feet of solid 12-inch casing, and 80-feet of 12-inch louvered casing).
- Outfit Supply Well (500 GPM, 50 horsepower motor set at 50-foot depth; control building; chlorination; related site work).
- Well Transmission Pipeline (8-inch or 12-inch, 2,600-foot DI pipeline).
- Distribution Pipelines in the 313-Foot Service Zone (6-inch, 1820 feet of ductile iron pipeline and five service meter connections with backflow preventer assemblies. Pipe Nos. 100, 101 and 102.
- Distribution Pipelines in the 214-Foot Service Zone (6-inch, 3020 feet of ductile iron pipeline and 13 service meters with backflow preventer assemblies. Pipe Nos. 251 through 255.

- If not completed by others: 12-inch, 925-foot long pipeline from Olohena/Kaapuni intersection to Kapa'a Middle School (Pipe No. 72)

Phase 2 - Water system infrastructure required for Phase 2 would not be started until all land use permits and approvals are obtained, a process that may take two to three years. A tentative list of the pipelines required to be installed, all within the Project area, is given below.

- Ductile Iron Pipelines in the 313-Foot Service Zone
  - 12"-1835' (Pipe Nos. 200, 201, 202, and 206)
  - 8"-1250' (Pipe Nos. 203, 204, and 205)
- Ductile Iron Pipelines in the 214-Foot Service Zone
  - 12"-2865' (Pipe Nos. 301, 304, 310, 312, and 313)
  - 8"-5780' (Pipe Nos. 302, 303, 305 to 309, 311 and 314 to 316)



Private Water System

In the event the County Department of Water does not give final approval to the Petitioner's Water Master Plan for HoKua Place, then the Petitioner will supply water to the Project through a private water system, in part described above, as well as supplemental summary here and further described in (Exhibit E - Part 2).

Reservoir Storage

With regard to the reservoir storage volume, DOW's two design criteria are appropriate for the private water system: (1) provide the maximum day demand with no credit for well inflow; and (2) provide the fire flowrate with coincident maximum day demand for the duration of the fire with the largest well pump out of service and the reservoir 3/4 full at the start of the fire. For the Phase 1 fire flowrate, DOW's standards require only 250 GPM for one hour. A stricter criterion of 500 GPM for two hours is used herein. Application of the two sizing criteria results in the required storage volumes tabulated below. In all cases, the maximum day sizing criterion governs.

Summary of Computed Required Reservoir Storage Volumes*

Design Criteria	Phase 1 Ag Subd.	Phase 2 Residential	Phased 2 Ag Subd.
(1) Maximum Day Demand (Gallons)	48,000	496,275	150,000
(2) Fire Flowrate			
- Fire Flowrate (GPM)	500	2000	500
- Fire Duration (Hours)	2	2	2
- Coincident Max. Demand (GPM)	33	345	104
- Well Inflow Credit (GPM)	350	350	350
- Required Storage Volume (Gallons)	29,280	319,200	40,640

*Phase 2 storage volumes include the Phase 1 requirement.

Based on the foregoing calculations, the recommended reservoir storage is as follows:

- For Phase 1, a 50,000-gallon storage tank would be installed.
- For the Phase 2 residential Project, a second tank of 500,000-gallon capacity would be installed.
- In the event that Phase 2 consists of the 34 SF residential units in an agricultural subdivision, the second tank would be 100,000 gallons.
- All storage tanks would be lined and bolted steel with a concrete floor and passive cathodic protection.
- The tanks would be located at the Project's highest elevation which is adjacent to residential Lot 7 in Phase 1. The Phase 1 and Phase 2 tanks would have identical floor and spillway elevations of 142 and 160 feet, respectively.
- Except at the Project's lowest elevations, pumped delivery from the storage tanks will be necessary to provide adequate delivery pressures and fire flowrates. These pumping requirements are described in the section following.

Pumped Delivery for the Distribution System

DOW's design criteria for required delivery pressures are appropriate for this private water system. These are: (1) to provide a minimum of 40 psi residual pressure during the peak flowrate condition, with peak flowrate defined as three times the average demand; and (2) to provide a minimum 20 psi residual pressure at the critical hydrant during fire flowrate at that hydrant and coincident maximum day demand throughout the system.

The onsite storage reservoir elevations will not provide adequate gravity pressure to meet either of these criteria. In each development phase, this will require parallel domestic and fire flowrate pumping systems with a generator to provide backup power. For Phase 1, the pump systems would provide up to 70 GPM for peak

domestic use and a 500 GPM fire pump. For the Phase 2 residential development, the domestic pumping capacity would be increased to 700 GPM and the fire pump to 2000 GPM. All pumping systems would be sized to produce a total dynamic head of 110 feet, in effect creating a single, 270-foot service pressure zone across the entire Project site.

Water System Layout

Phase 2 would consist of the 769-unit residential development. By development phase, these would consist of:

Phase 1

- 12-inch, 300-foot deep well, pump sump, and two 350 GPM pumps in the pump sump located at the makai end of the Phase 1 development area.
- A dedicated 8-inch transmission pipeline from the well pumps to the storage reservoir.
- A 50,000-gallon storage tank.
- Parallel domestic and fire flowrate pump systems at the storage tank with backup generator power.
- A distribution pipeline loop consisting of 12-inch for the section that will also serve Phase 2 and 6-inch for the remainder of the loop.

Phase 2

- No change or additions to the well, well pumps, or transmission pipeline.
- Second storage tank of 500,000-gallon capacity.
- Substantial capacity increases for the parallel domestic and fire pumping systems and generator backup power.
- Distribution pipelines of 12-, 8- and 6-inch size.

Average and Maximum Day Demands for the
Phase 1 Agricultural Subdivision and Phase 2 Residential Development

Development Phase	Land Use	Design Criterion (GPD / Unit)	Average Demand (GPD)	Maximum Demand (GPD)
1	16 SF Residential	2,000	32,000	48,000
2	86 SF Residential	500	43,000	64,500
	683 MF Residential	350	239,050	358,575
	3.1 Ac. Parks	4,000	12,400	18,600
	0.8 Ac. Church	4,000	3,200	4,800
	0.4 Ac. Commercial	3,000	1,200	1,800
	Total for Phase 2		298,850	448,275
Total for Both Phases			330,850	496,275

Average and Maximum Day Demands for Development of
Phases 1 and 2 as Agricultural Subdivisions

Development Phase	Land Use	Design Criterion (GPD / Unit)	Average Demand (GPD)	Maximum Demand (GPD)
1	16 SF Residential	2,000	32,000	48,000
2	34 SF Residential	2,000	68,000	102,000
Total for Both Phases			100,000	150,000

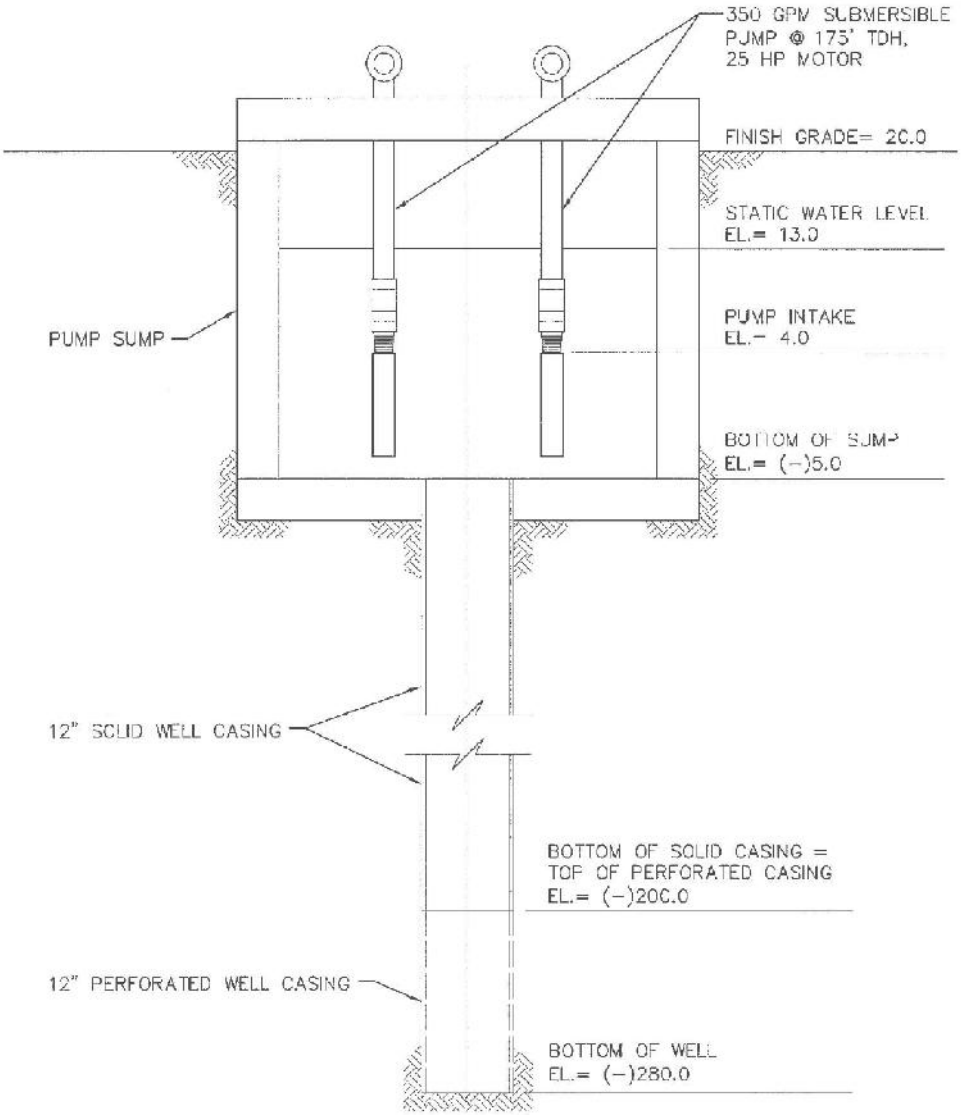
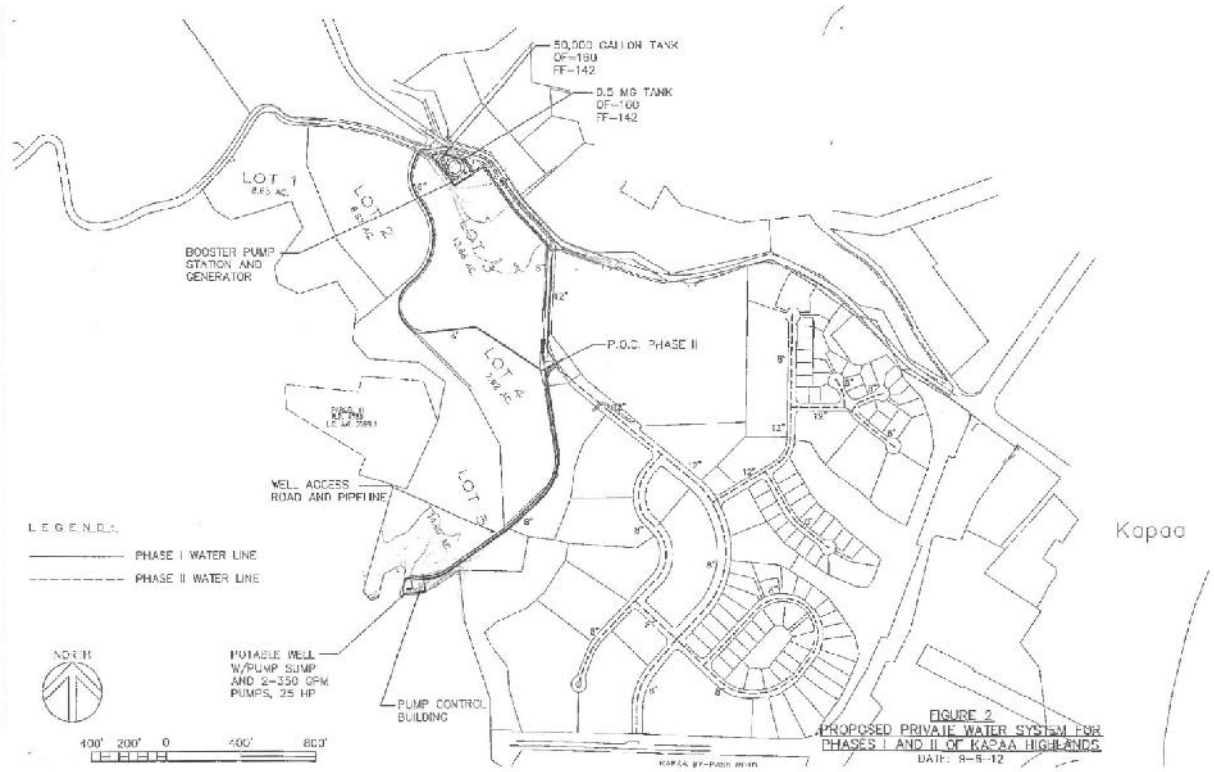


FIGURE 1
RECOMMENDED WELL DEVELOPMENT AND PUMP INSTALLATION
FOR THE KAPAA HIGHLANDS PROJECT
NOT TO SCALE



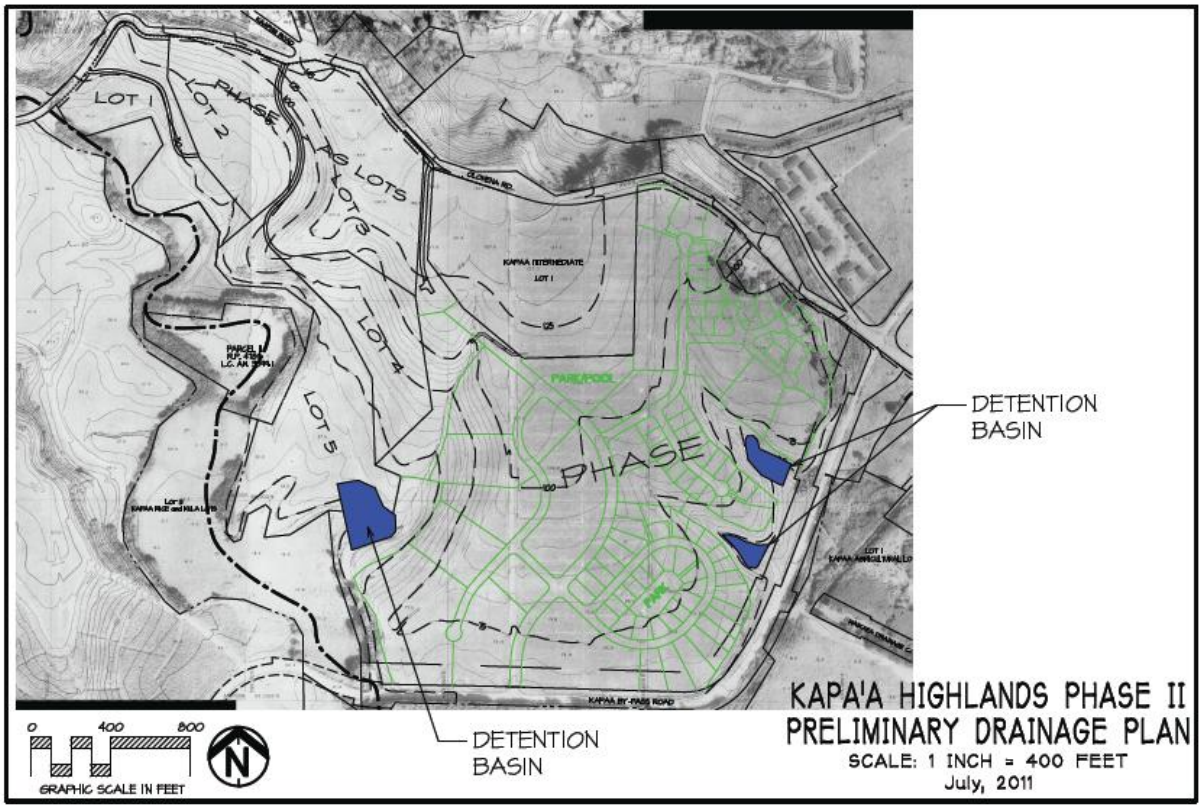
Drainage

Per the County of Kaua'i's "Storm Water Runoff System Manual" 2001, all developments of this scope are required to maintain the existing storm water flows and patterns as feasibly possible so that downstream properties are not subject to any additional storm water flows that are created by the increases in impervious surfaces of the watershed by the proposed Project.

A report examining the existing drainage conditions of the property and the proposed measures to control the storm water from the proposed Phase II development is included as Exhibit F.

According to the Natural Resource Conservation Service (NRCS) soil survey the soils on the property are Ioleau and Puhi silt clay loams. The NRCS hydrologic classification for these soils is Group C for the Ioleau soils and Group B for the Puhi soils. Group B soils have a moderately low runoff potential, while the Group C soils have a moderately high runoff potential. Both soils are in Group I erosion resistance classification, which is the least erodible of the NRCS classifications.

The project engineer has noted that the Kapaa Middle School drainage easement is designated on the current subdivision map as it was proposed by the DOE Kapaa Middle School construction plan. Although the outlet headwall and drain-line have been in use a number of years within the HoKua Place property, the easement (D-1) has not been formally recorded as it is not in the current title report.



The topography of the site varies from gently sloping, bluff top property, to steep areas that drop off into drainage gullies that lead to an unnamed stream and to the Bypass Road.

Storm water generated from each of the Phase II lots will be directed to the nearest downstream street or natural drainage way. A drainage system along the streets will collect the storm water and convey it to the detention basins shown on the map above. The detentions basins moderate the storm flows and allow infiltration back into the soil. They are sized so that the outlet peaks flows match or lower the existing storm water flows prior to the development for both small rainfall events and the 100 year storm event.

Wastewater

The County wastewater treatment plant, Wailua WWTP, is located on approximately 2.1-acres of County owned land next to Lydgate Park.

The treatment plant is designated as an R-2 facility, which means the plant provides secondary treatment and disinfection. This meets the minimum requirements for wastewater treatment per Hawai‘i Administrative Rules (HAR) Title 11, Chapter 62.

It has a capacity of 1.5 million-gallons a day. It is currently operating at 500,000-gallons a day. HoKua Place will be contributing to the deferred maintenance and to the cost of repairs to the sewer treatment plant. A preliminary wastewater report has been completed and is included as Exhibit G.

The Wailua WWTP was originally constructed in 1964 and receives wastewater from the Kapa‘a, Papaloa, Waipouli and Wailua areas. The plant was originally designed to treat an average flow of 0.5- million gallons per day (mgd).

The plant has gone through four phases of construction, the most recent in 1992 to expand to the current design average daily flow of 1.5-mgd and a design peak flow capacity of 5.03-mgd. The existing collection system consists of gravity lines, pump stations and force mains. The collection system is centered in the coastal area along the Kūhiō Highway.

In the Wailua-Kapaʻa area, wastewater treatment is accomplished with Individual Wastewater Systems (IWS), such as cesspools or septic tanks, or at the County owned and operated Wailua WWTP. IWSs are assumed to be used in the parcels that have water service but no sewer service. Based on that assumption, there are approximately 4,300 residential cesspools in the Wailua-Kapaʻa area.

The discharge of raw waste water directly into the ground is not beneficial to the environment; therefore, Department of Health (DOH) now limits the construction of any new cesspools. Approximately 12% of the cesspools in the Wailua-Kapaʻa area have reported failures.

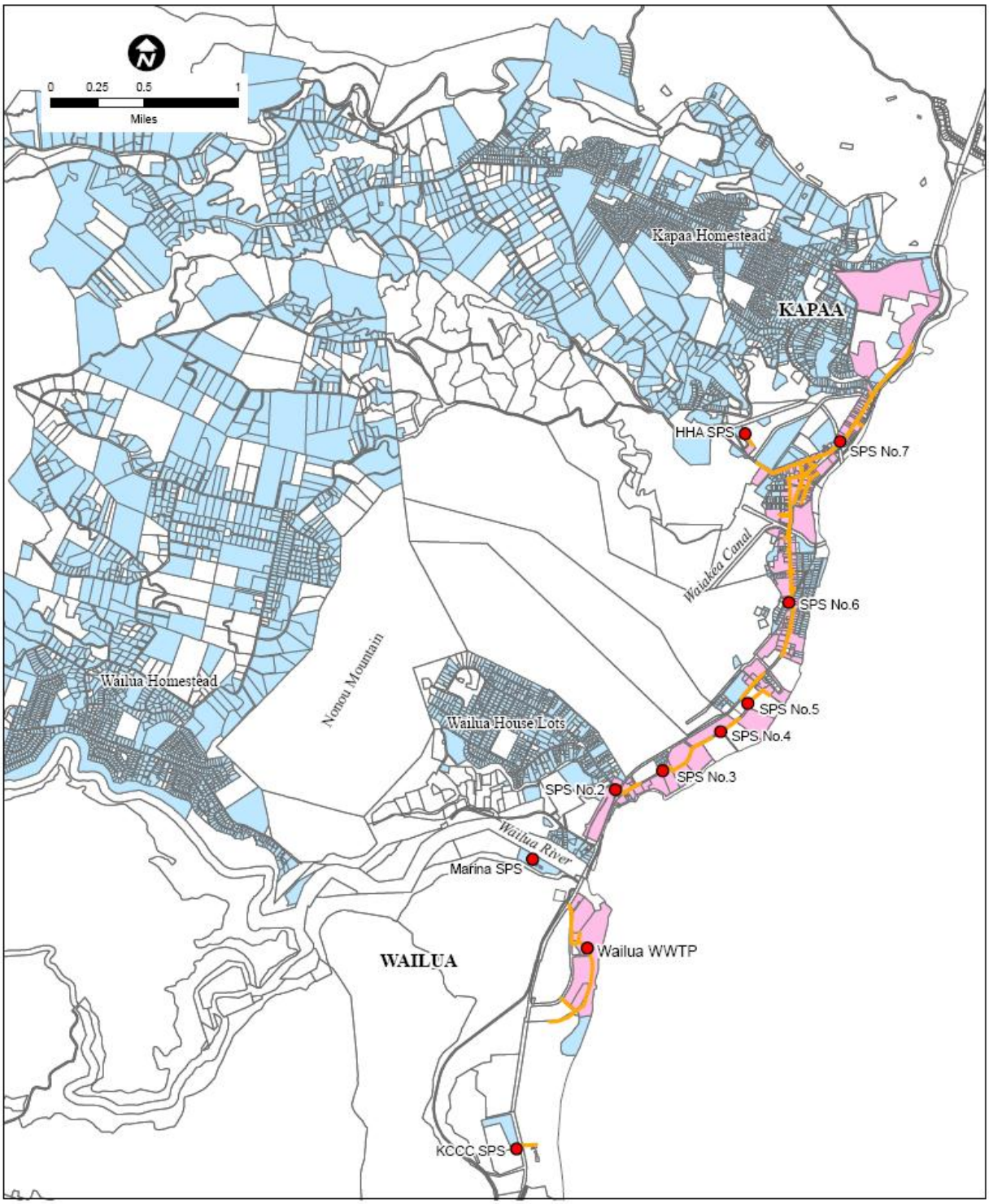
The Wailua WWTP currently uses two methods of effluent disposal, which are an ocean outfall and water reuse for irrigation at the adjacent Wailua Golf Course. Treated effluent is conveyed to the golf course by pumping out of the effluent chamber downstream of the chlorine contact basin.

Effluent sent to the ocean outfall flows by gravity to the ocean through an overflow pipe. When effluent is sent to the golf course, it is stored in a reservoir located at the golf course and is pumped out as required for irrigation.

The Sewer Design Standards, 1973 by the County of Kauaʻi, Department of Public Works, together with the Wailua Facility Plan, September 2008 by Fukunaga and Associates were the primary references for the preliminary wastewater report for HoKua Place (Exhibit G) and will be abbreviated as SDS and WFP, respectively, when quoted in the following summary.

The WFP is a detailed study of the entire Wailua to Kapaʻa wastewater system completed in 2008 to guide the County with the necessary expansion and management of the system through the year 2025. It broke down projected flows to the Wailua Treatment Plant in three phases, the current and near-term flows up to the year 2010, middle term flows for the 2010-2015 period, and far term flows for the years 2015 to 2025.

Wailua-Kapa'a Average Daily Wastewater Flows[1]	
Planning Interval	Average Wastewater Flow (mgd)
Current	0.70
~~Near Term (2010)~~	~~0.98~~
Middle Term (2015)	1.39
Far Term at Wailua WWTP(2025)	1.72
Kapaa Start-Up (2025)	0.40



LEGEND:

Sewerline

Sewer & Water Service Parcels

Water Service Parcels (Assumed IWS)

WAILUA FACILITY PLAN **Water & Sewer Service Area**

The need for the WFP was partially based upon the rapid development that was occurring in the Wailua-Kapa'a area during 2004-2007 period. Development has slowed considerably since this time and several of the developments anticipated in the WFP calculations have been put on hold or are no longer proposed. Of the proposed developments, the Coco Palms Hotel will be removed from the near term anticipate flows and be considered part of the middle term flows. The Coconut Beach Resort and Coconut Plantation Village will be removed from the middle term flows and be considered for the far term flows.

The proposed HoKua Place Project is not expected to be at total capacity by 2015, but for the purposes of this analysis, it will be considered to be completed in the middle term planning period of the WFP. The table below is the adjusted Average Daily Flows (ADF) based upon the current flow to the Wailua Treatment Plant and adjustments due to slower development than anticipated by WFP.

Adjusted Wailua-Kapa'a Average Daily Wastewater Flows	
Planning Interval	Average Wastewater Flow (mgd)
Current	0.70
Near Term (2010)	0.98
Middle Term (2015)	1.39
Far Term at Wailua WWTP(2025)	1.72

Kapa'a Highlands Phase II Wastewater Flow Estimates	
Item	Projected Wastewater Flow (gpd)
Single Family Homes	34,400
Multi-Family Homes	170,750
Neighborhood Commercial	4,800
Total	209,950

Note: Single Family Homes assumed to have 4 occupants/unit and Multi-Family Homes have 2.5 occupants/unit.

[1] Table ES-1, WFP, September 2008

4.6.2 Potential Environmental Impact & Mitigation Measures

Water Sources

With respect to water resources to be used within the Project, two alternatives are considered. First, if the County Department of Water Supply makes a final decision to approve the Petitioner's Water Master Plan where DOW will provide HoKua Place with storage for water in exchange for HoKua Place dedicating its well site to the DOW to supply the Department of Water's storage tanks and existing water system.

The County Department of Water has conceptually approved the Petitioner's Water Master Plan. HoKua Place has a proven well site that will be dedicated to the DOW to feed the Department of Water's storage tanks. HoKua Place is committed to working with the DOW on pertinent water issues during the design and development phase.

In the event the DOW does not approve the applicant's Water Master Plan, then the Petitioner will develop a private water system, using the well for its use within the Project.

Implementation of a final alternative is based on the decision of the County Department of Water Supply; each is an acceptable alternative to the applicant.

The proposed water system will be subject to regulation as a public water system and will meet conditions of the State Department of Health, including HAR Chapter 11-20, 11-21 and 11-25.

Water Management and Conservation

The Project will result in additional consumption of fresh (potable) water; however, the installation of water efficient fixtures and the implementation of a water saving practices will reduce the demand for freshwater resources as noted in the HoKua Place Sustainability Plan (Exhibit B).

As an overarching philosophy in all source alternatives, HoKua Place is committed to water conservation strategies to reduce consumption, conserve resources and minimize water use. The goal is to reduce the total water use through a combination of water saving equipment and strategies.

A number of measures may be implemented to facilitate conservation, including water restrictions during drier periods, public education and more efficient landscaping practices. Consumption could be significantly reduced through end-user conservation. Efficient fixtures and appliances will reduce indoor water use.

The water distribution system will be maintained to prevent water loss and homeowners and businesses will be encouraged to maintain fixtures to prevent leaks. Landscaping will emphasize climate-adapted native and other appropriate plants suitable for coastal locations. Best management practices will be designed and implemented to minimize infiltration and runoff from daily operations.

High efficiency toilets: (HETs) reduce flush volumes by no less than 20% compared to conventional ultra-low flow (ULFT) toilets. Dual-flush HETs allow users to choose one of two flushes: liquids or solids. In actual operation, dual-flush HETs average about 1.2 to 1.4 gpf. Pressure-assist HETs use a pressurized tank that creates for a more forceful flush with less water.

Faucets: Water flow is reduced by ***Flow limiters*** which are built into the faucet or are installed as after-market fittings. Aerators or laminar flow devices are types of flow limiters.

- Aeration injects air into the stream of water, displacing much of the water content.
- Laminar flow uses multiple small diameter parallel streams of water that are not aerated.

Flow control valves can limit water flow down to 1.5 to 0.5 gpm per side (hot and cold).

Showerheads: Federal law since 1994 mandates that all showerheads sold in the United States use 2.5 gpm or less. Despite this, some showerheads actually use much more than 2.5 gpm, and shower towers that include multiple showerheads or jets can total 12.5 gpm or more. A better option is a good quality low-flow showerhead designed to use 2.0 gpm or less while providing a satisfying shower.

Water conserving and Low impact landscaping: Landscaping shall be of native trees, shrubs and flowering plants as encouraged by the Kaua'i Department of Water as part of its recommendations for water conservation. Selection and distribution of plants must be carefully planned when designing a functional landscape. Aesthetics are a primary concern, but it is also important to consider long-term maintenance goals to reduce inputs of labor, water and chemicals. Properly preparing soils and selecting species adapted to the microclimates of a site greatly increases the success of plant establishment and growth, thereby stabilizing soils and allowing for biological uptake of pollutants.

Drainage
Petitioner has prepared a Preliminary Drainage Report. A detailed Drainage and Erosion Mitigation Plan will be prepared and submitted to the County Engineer for approval during the design and development stages. The Applicant will be providing major drainage improvements in connection with development of the property. Multiple detention ponds are proposed for the Property. Additionally, a series of catch basins, drainage, pipes and culverts will be utilized to direct run off to major drainage areas on the Property.

The Project's proposed drainage system will be designed to minimize impacts to near shore coastal waters. Water quality treatment and detention basins will be built to prevent runoff and sedimentation from impacting groundwater resources. Prior to the occupancy of any residential or commercial unit within the Project, HoKua Place shall implement and maintain storm and surface-water runoff BMPs, subject to any applicable review and approval of the State DOH, designed to prevent violations of State water quality standards as a result of storm-water discharges originating from the Project. These BMPs will be documented in a declaration of covenants, conditions and restrictions that will be recorded against the Property and will run with the land.

Per County of Kauai requirements stormwater run-off cannot exceed the pre-development conditions. The land was formally farmed in cane and has been fallow for over a decade. There is only minimal remains of the cane fields drainage and/or irrigation ditches and access roads. Almost the entire Project area is overgrown with tall grass and small trees.

Run-off from the site concentrate in several natural drainageways that lead to the Kapaʻa By-Pass Road and an un-named stream along the south side of the Project. To mitigate the stormwater increases from the new neighborhood and streets, a variety of strategies utilizing practices of Low Impact Development (LID) and stormwater detention ponds will be integrated into the Project. The practices will also include measures to enhance water quality.

Potential water quality impacts during construction of the Project will be mitigated by adherence to State and County water quality regulations governing grading, excavation and stockpiling. Construction BMPs will be utilized pertaining to grading, grubbing, stockpiling, soil erosion and sedimentation during construction. BMPs will also be implemented for long term development and operation of activities occurring on the site as part of pollution prevention measures.

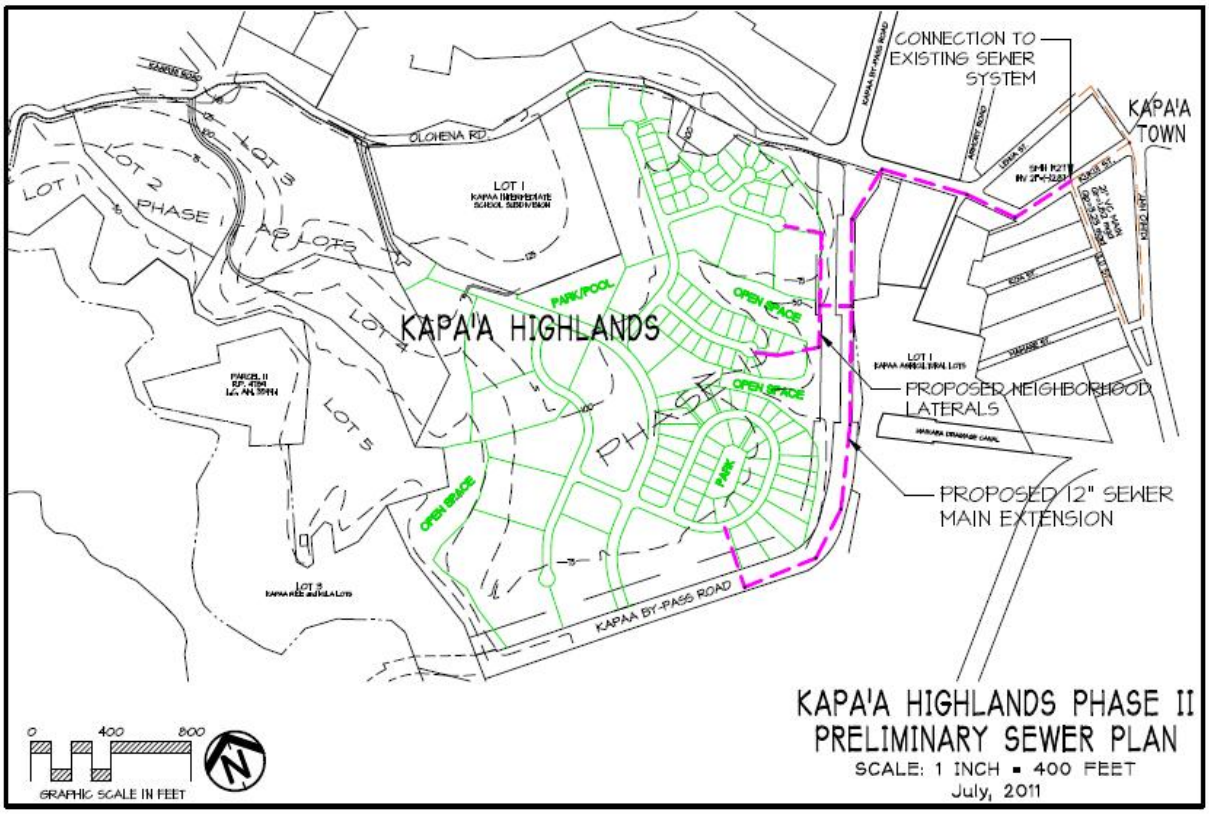
BMPs include storm water runoff and non-storm water sources control measures and practices that will be implemented to minimize the discharge of erosion and other pollutants from entering into the receiving State waters.

Post construction BMPs to prevent erosion and storm water runoff after construction is completed includes the installation of drain inlets and shallow drywells within the Project site, and landscaping and grassing of disturbed areas. Prior to occupancy, HoKua Place will implement and maintain storm and surface-water runoff BMPs, subject to any applicable review and approval of the DOH. Those BMPs will be designed to prevent violations of State water quality standards as a result of storm-water discharges originating from the Project.

Wastewater
Based upon the projected flow of 209,950-gpd (0.21 mgd), with a max load factor of 4.1, a 12" sewer main would be required to serve the Project. It would begin along the Kapaʻa By-Pass Road and terminate at an existing manhole near the intersection of Ulu and Kukui Streets, shown on the map below.

The length of the main within the existing public Right-of-Ways would be about 3,400 linear feet. The wastewater line will comply with all applicable rules and regulations.

The main will connect with the County's existing sewer system. At the existing manhole connection, the existing main downstream of the connection is a 21" main with a capacity of 3.2 mgd. The 21" main currently has a peak flow of about 0.6 mgd, therefore the proposed flow is well within the capacity of the existing sewer system, including allowances for the future increases anticipated in the "Final Wailua Facility Plan", September 2008.



HoKua Place will be contributing funds to help upgrade the deferred maintenance and repair of the Kapa'a Wastewater Treatment plant. The Project will not be a detriment to the capacity of the Plant.

The Project's design features and policies to comply with applicable rules and regulations will include conformance to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems."

4.6.3 Level of Impact after Mitigation

A Water Master Plan for HoKua Place (Exhibit D) and the agreement for the exchange of source for storage has been approved, in concept, by the County Department of Water (DOW). HoKua Place has a proven well site that will be dedicated to the DOW to feed the Department of Water's storage tanks and existing water system. Or, a private water system will be constructed as described.

The well will have no impact on stream flow. At this site, there are two groundwater bodies. The upper aquifer is shallow, of very limited yield, and very likely hydrologically connected to the adjacent stream.

HoKua Place will not use this upper aquifer at all and the well bore will be cemented off to make sure none of the water in this aquifer can be pumped by the well. The well will exclusively draw from the lower aquifer which is several hundred feet below ground.

The 97-acres do not have natural water resources; therefore, there are no impacts on our natural water resources for this particular Project.

Mandatory compliance with requirements of the Department of Water Supply will ensure that the Project has a less than significant impact on water resources or water quality.

Implementation of a water saving practices will reduce the demand for freshwater resources as noted in the HoKua Place Sustainability Plan (Exhibit B).

Presently, the site is in current fallow cane field condition with no drainage system, does experience a fair amount of erosion during rainfall events. The Kapaa By-Pass is the first property directly downstream and frequently needs to be cleared of sediment and debris after significant rainfall by the Department of Transportation. The remainder of the Property drains to an unnamed stream to the south.

It is also experiencing sedimentation from the site. The establishment of greenbelts and detention basins should alleviate this condition. Since the detention basins are sized to large rain events, smaller events would be completely captured within the basin with little or no discharge to downstream properties which would effectively reduce the average annual Total Suspended Solid (TSS) from the site.

Two detention basins are proposed for the Project and a combination of grass swales and drain lines would convey runoff to the detention basins to maintain pre-development flow rates to downstream properties.

The two detention basins proposed would normally not contain any water and are not large enough to provide any recreational opportunities. One of the basins utilizes and enlarges a basin leftover by the former cane operations adjacent to the Kapaʻa Bypass Road.

The greenways follow the natural drainageways and areas outside of the detention areas could be suitable for multi-use pathways to provide pedestrian/bicycle connections between the Project clusters and to adjoining streets.

To mitigate the stormwater increases from the new neighborhood and streets, a variety of strategies utilizing practices of Low Impact Development (LID) and stormwater detention ponds will be integrated into the Project. The practices will also include measures to enhance water quality.

The key component of LID is to minimize impervious surfaces on Property. The Project seeks to do this by clustering development to make maximize use of flat areas on the property and not allowing it in the natural drainageways. Greenbelts would be established surrounding the nature drainageway and within these areas infiltration would be increased through the use of bio-swales, trees, and detention basins.

The LID strategies work best when techniques are utilized throughout the entire watershed. It would start within the Project's clusters with every available option utilized to increase infiltration and reduce run-off before it enters the neighborhood street's drainage system.

In addition, the Project will adhere to recommendations in the Preliminary Engineering Report Wastewater Improvements (Exhibit G) and Preliminary Engineering Report Drainage Improvements (Exhibit F) to ensure water, drainage ways and wastewater improvements will have a less than significant impact.

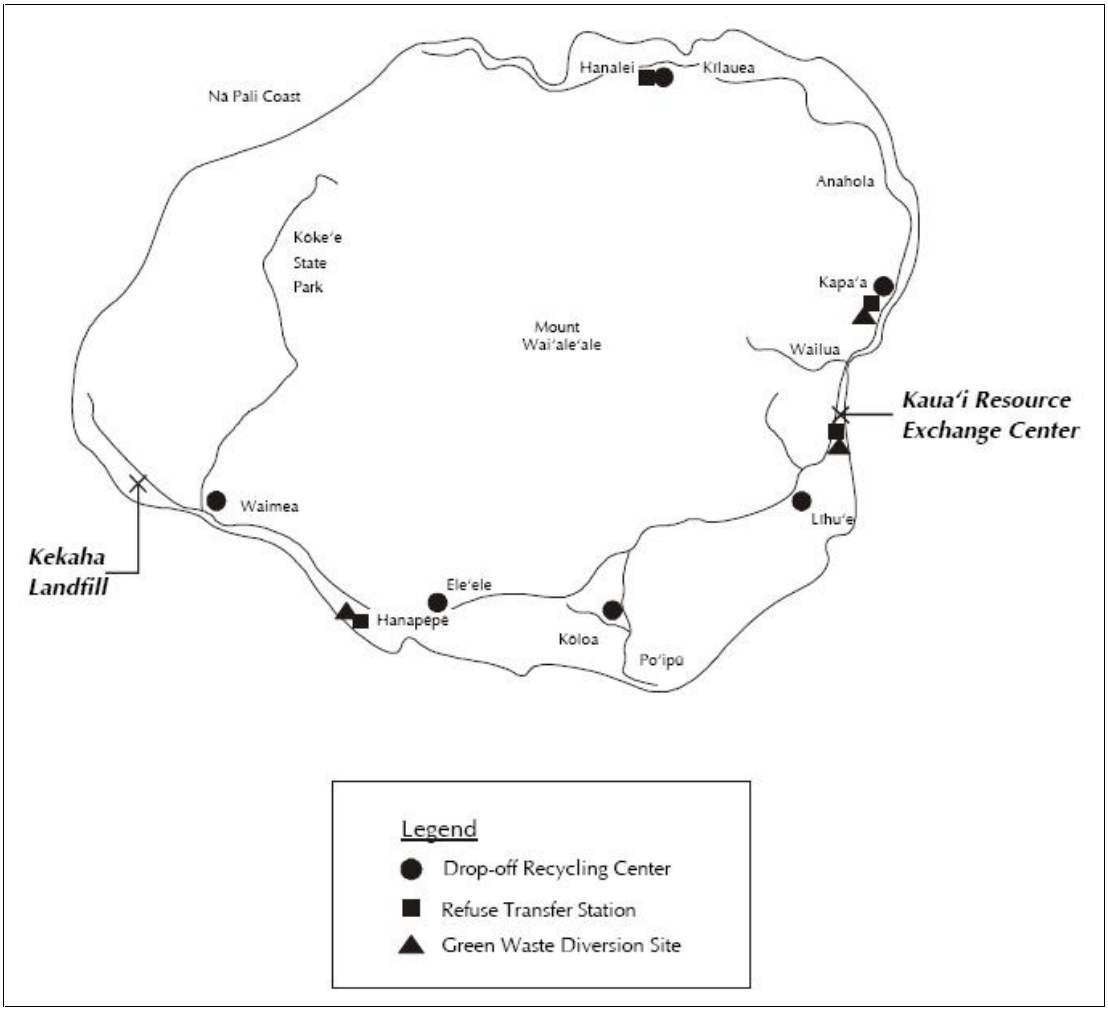
4.7 Solid Waste & Material Management

This section discusses the solid waste and materials management practices within the Project area and potential impacts of the Project on those practices. Measures that will be implemented by HoKua Place to reduce the possible impacts of solid waste on the environment are also presented.

4.7.1 Environmental Setting

Solid waste, as defined under Section 1004(27) of the Resource Conservation and Recovery Act (RCRA), refers to any discarded solid, semisolid, liquid, or contained gaseous materials. Currently because of the very limited use of the area, no significant amount of solid waste is produced.

The County of Kaua‘i currently provides single-family residences with solid waste disposal service on a once-per-week basis. A refuse transfer station is located in Kapa‘a town. The County of Kaua'i has one landfill to service the entire island, the Central Kaua‘i Landfill, which is located in Kekaha. Because there are only six years of capacity left in the current landfill, the County is currently pursuing a new landfill in a more central location (in the vicinity of Līhu‘e.) There is necessary capacity to accommodate the proposed Project.



Kauai has several solid waste diversion programs with several other proposals in progress that will likely be implemented by the time this Project is under construction that the Project will have to adhere too to minimize solid waste generation. The Project is also situated near county recycling and green waste drop-off sites.

4.7.2 Potential Environmental Impact & Mitigation Measures

Waste generated through site development will consist predominantly of vegetation and debris. Soil and debris displaced from grading and clearing will be utilized as fill throughout the site as required, minimizing disposal and transit/relocation of the materials.

Throughout Project construction and development, HoKua Place will seek to reduce, reuse, and recycle materials and waste to the greatest degree possible.

Construction materials that are rendered un-recyclable will be disposed of in the Central Kaua‘i Landfill. Green waste resulting from the project’s development will be chipped into mulch for on-site use or will be disposed of properly.

Measures and provisions to implement recycling, such as collection systems and storage for recyclables, will be incorporated to the HoKua Place project. A community management system will be in place for the residences of this Project.

The management policies will encourage residences to participate in the moral ethics of respecting the surrounding environment, reduce waste and excessive consumption, and fulfill the responsibility as trustees of the environment for the present and the future generations. Residences will be invited to participate in policy and decision making.

Solid waste disposal service for the Single-family residences will be provided by the County of Kaua‘i. Private solid waste disposal will be available for the multi-family projects.

4.7.3 Level of Impact after Mitigation

Mandatory compliance with existing regulations and requirements and the implementation of the mitigation measures proposed above, will ensure that the Project will have a less than significant impact in regards to solid waste management.

4.8 Socioeconomic Conditions & Public Service Facilities

This section discusses the socioeconomic conditions and public services and facilities in the region and in the Project area, and the potential long-term socio-economic impacts of the HoKua Place Project.

4.8.1 Environmental Setting

Population

Kaua‘i County is the fourth largest county in the state, as ranked by population and economic activity, behind the City & County of Honolulu (O‘ahu), Maui County and the Big Island of Hawai‘i.

The Kapa‘a-Wailua basin is home to a large portion of Kaua‘i’s population. An urban corridor extends along Kūhiō Highway from Haleilio Road in Wailua to Kawaihau Road, at the northern edge of Kapa‘a Town. The Kapa‘a-Wailua urban corridor is vibrant and active, a “working town.”

Data from the Technical Study of the General Plan states that the current population for the Kawaihau-Kapa’a (East Kauai) is approximately 21,500. It is projected that the population for this area will increase to 25,110 in 2035.

Kapa‘a town is located 0.3-miles south of the Property. Kapa‘a is the eastside of Kaua‘i’s center of trade and employment, with numerous professional and business services. Although Līhu‘e, approximately 8- miles south of the property, is the center of county, state, and federal government services, its population is slightly less the Kapa‘a’s which has the largest resident population on the island.

Housing

Data from the Technical Study of the General Plan indicates that the current existing housing units is approximately 9,555 for the Kawaihau-Kapa’a (East Kauai). The projected housing units for 2035 is 10,428 units for this area.

Section 2.4.5 East Kaua’I, Kapa’a Town discusses two alternatives for development. The first is HoKua Place, where residential neighborhoods could be absorbed. This alternative includes residential neighborhoods around the Baptise Sports Complex.

The second alternative is to concentrate growth at existing developments along Kuhio Highway. This alternative however, requires much infrastructure to prepare for climate change, particularly sea level rise (SLR)

Market studies have shown that the population growth and correlating need and demand for housing is high on Kaua‘i. The proposed Project will allow residents to purchase from a variety of housing options.
Based on the HoKua Place Housing Market Study, much like the state, Kaua‘i’s residential real estate supply is inflexible and constrained, but to a greater degree, the political climate is viewed as unfriendly towards any and all attempts to expand the supply of residentially zoned land, particularly at the high end and/or in areas that are highly visible (literally and figuratively).

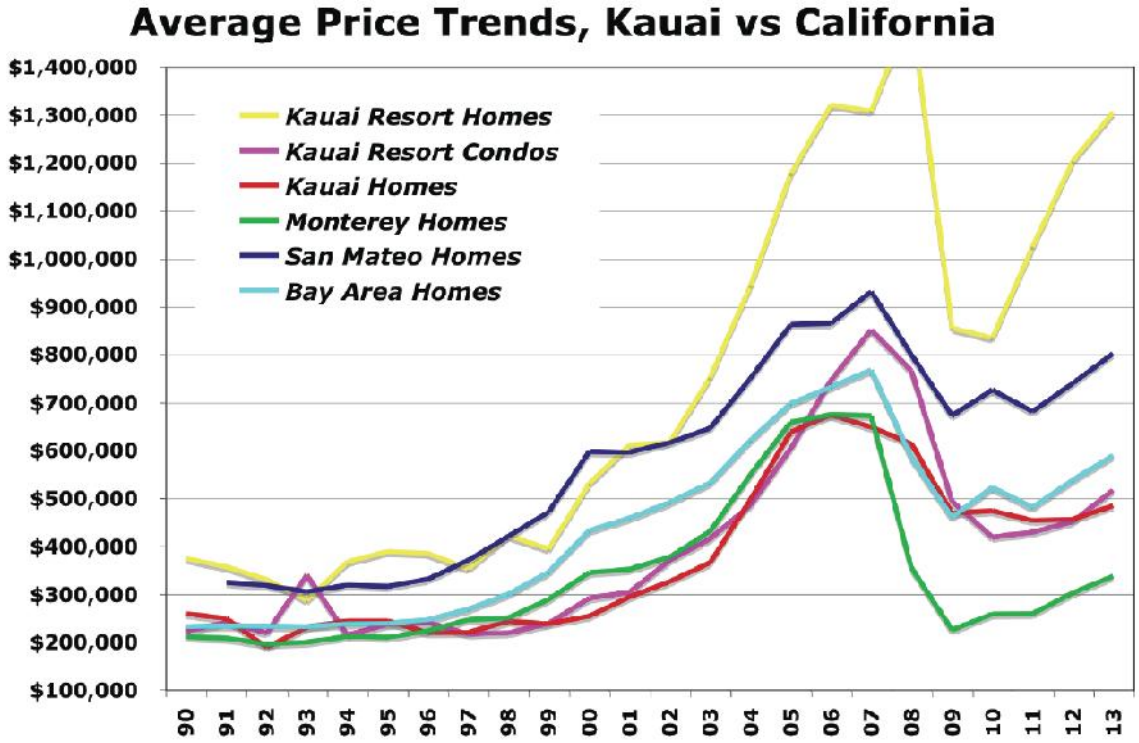
At the same time, demand for residential real estate is both flexible and strong, particularly in good economic times and over the long run. It can be, and is currently, constrained to an uncharacteristic degree, thanks to havoc in the financial markets the last few years and the drastic fall off in economic activity globally and nationally.

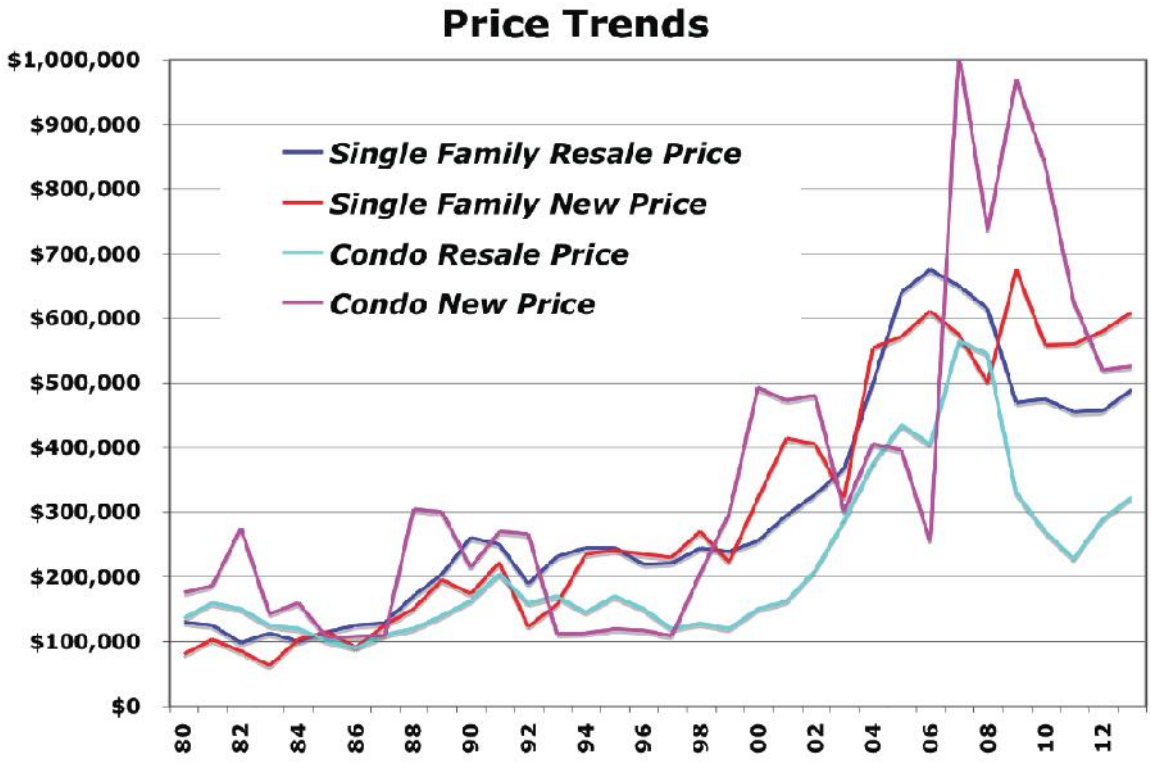
Currently, Kaua'i's residential market shows recovery. The question is, going forward, how will they behave? The rule of thumb for the residential market is that the upswing in the cycle, the up cycle, generally lasts about 6.5 years, and is about twice as long as the down cycles.

In addition, the up cycle, trough to peak, results a tripling of the number of closings. The chart below illustrates this.

The sales and Pricing for condominiums follows:

According to the state economic forecasters, Hawaii's economy continues to grow strongly at an accelerating rate. The state has very low unemployment relative to the rest of the nation, thanks to a resurgent demand in the visitor industry, which is the major engine of economic growth in the county and the state. This, in turn has resulted in recovering and increasing real estate price trends, as noted below:





Employment & Income

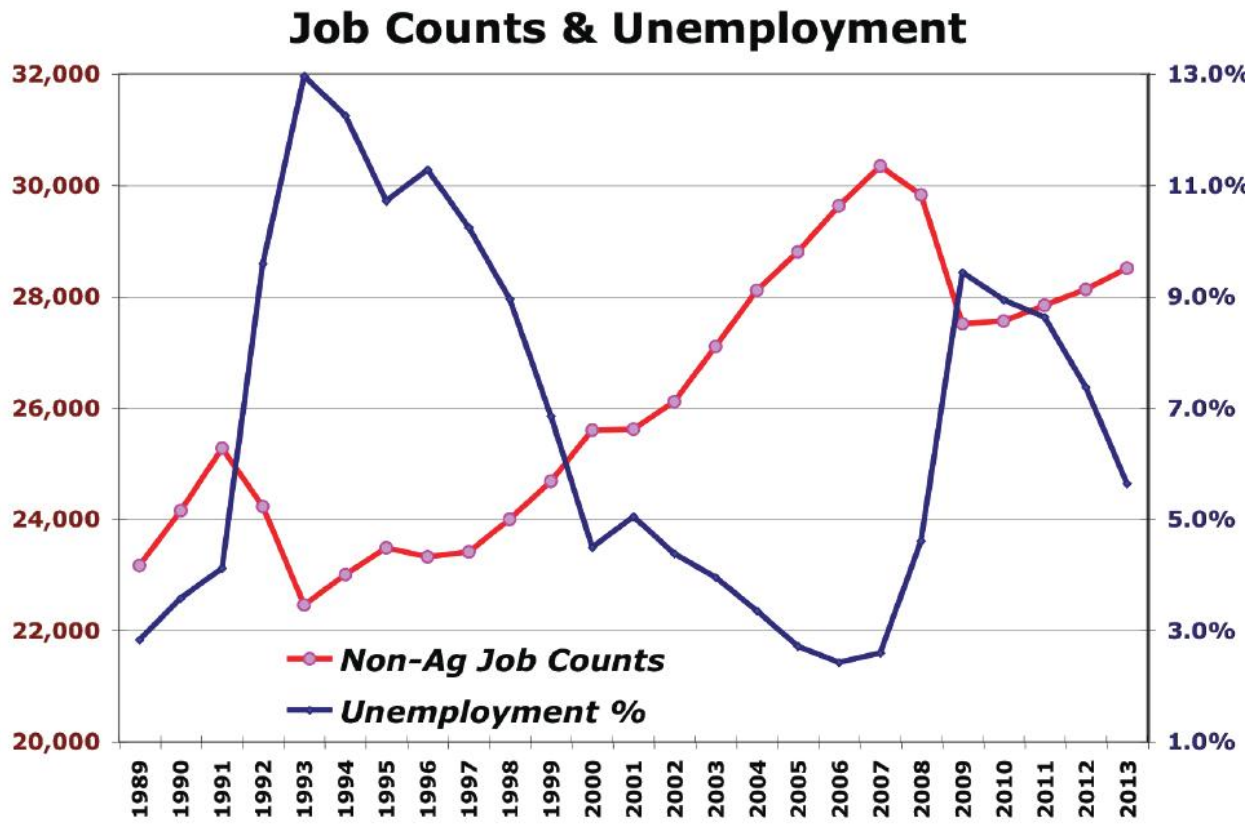
The Technical Study for the Kauai General Plan indicates that the current job count for the Kawaihau-Kapa'a (East Kauai) is approximately 5,073 with an increase in jobs to 5,724 in the year 2035. The study does not consider the three large resort projects in the Wailua area that are slated to be completed within the next 2-5 years. It is estimated that the resort projects will generate at least 500 jobs.

The state of Hawaiʻi has very low unemployment relative to the rest of the nation. The latest statistics show the rate near at 2%, the lowest level in more than two years.

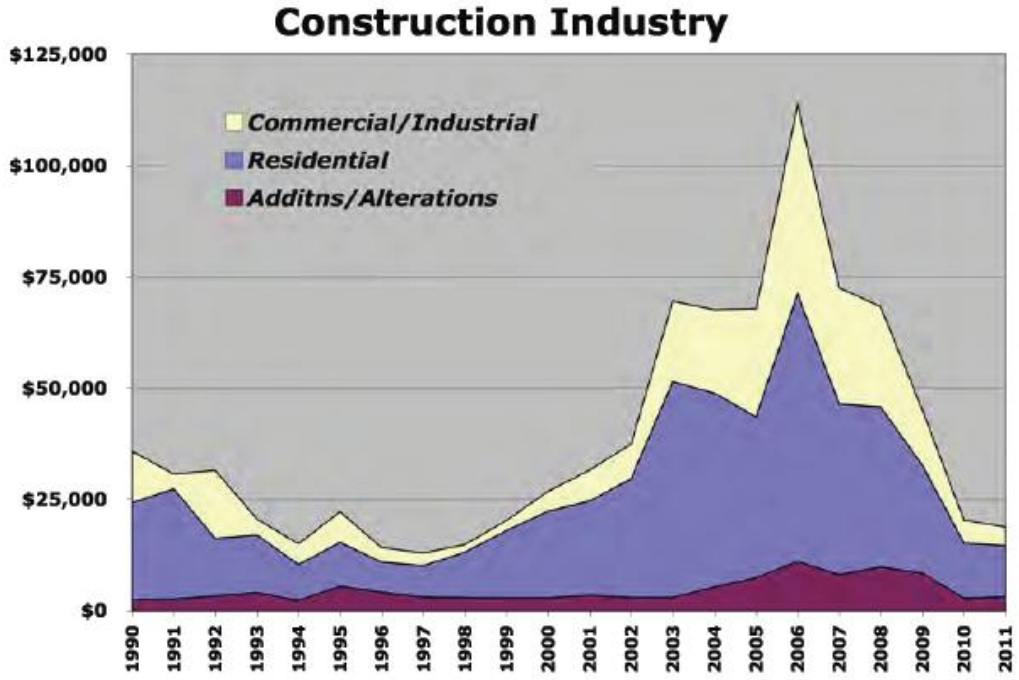
Hawaiʻi fared better than the nation as a whole, which experienced a 4.1 percent unemployment rate In November 2017.

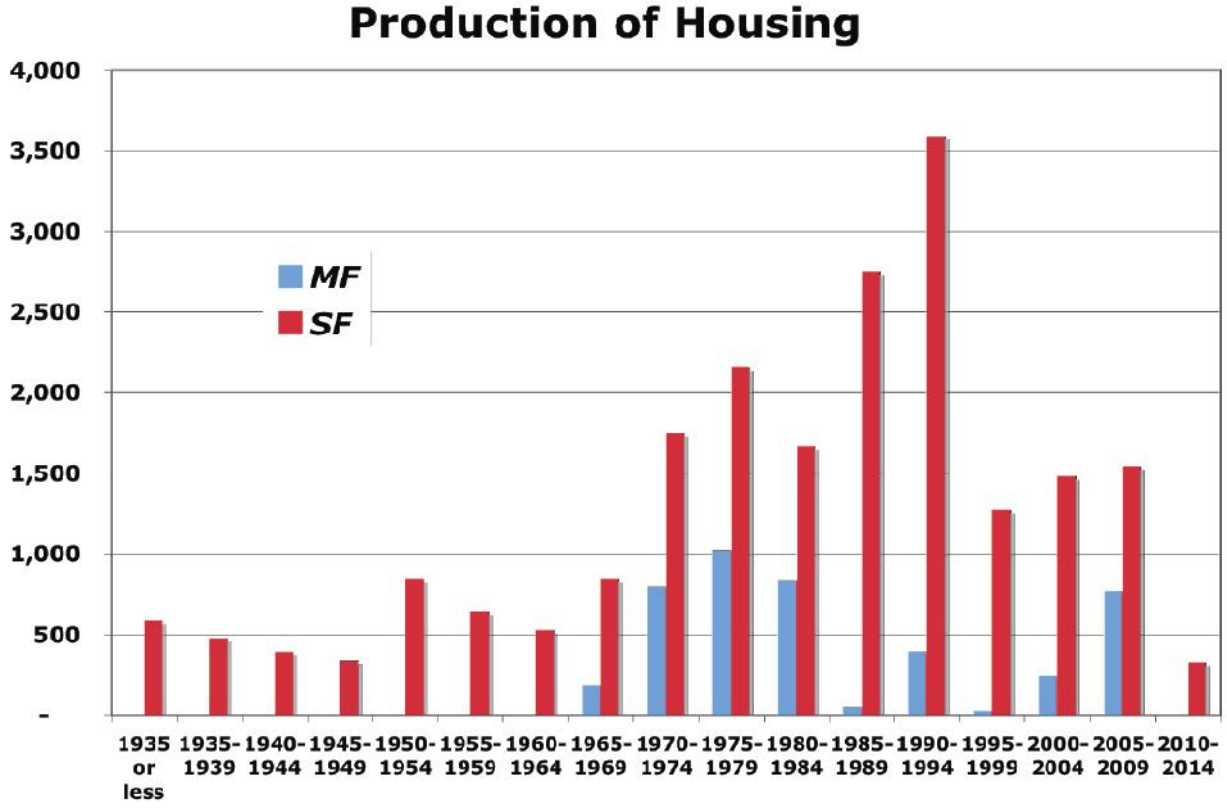
On a county-by-county basis, Honolulu County's 1.6 percent jobless rate in April was the lowest in the state, as opposed to 2.1 percent in Maui County, 2.2 percent in Kauaʻi County and 2.4 percent in Hawaiʻi County.

Mainland economic weakness began to affect the local economy in mid-2007, followed by a critical event that precipitated a broader downturn – the collapse of Aloha and ATA airlines early in 2008. The recession that commenced in 2009 pushed tourism over the cliff, leading to increasing unemployment, business failures, slackening of demand, and undercut spending levels island wide. As a result, the unemployment rate on Kauaʻi, traditionally among the lowest in the nation, more than doubled. However, Kaua'i's has largely recovered since that time. As seen in the next chart, unemployment rates seem to have peaked while the job count loss has leveled out.

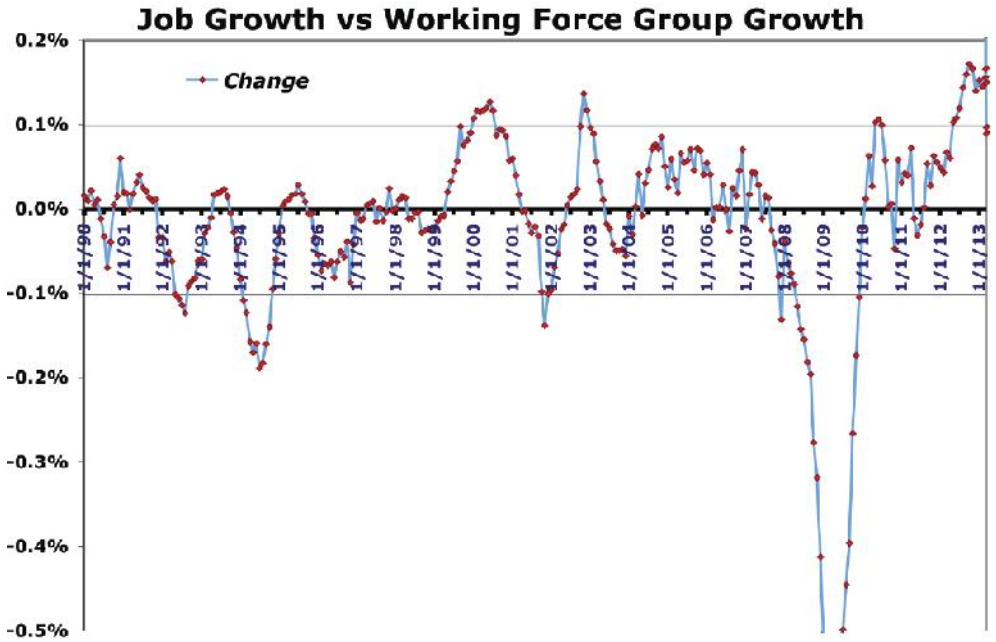


Kaua‘i’s construction industry has been lagging, with private building permits down significantly.

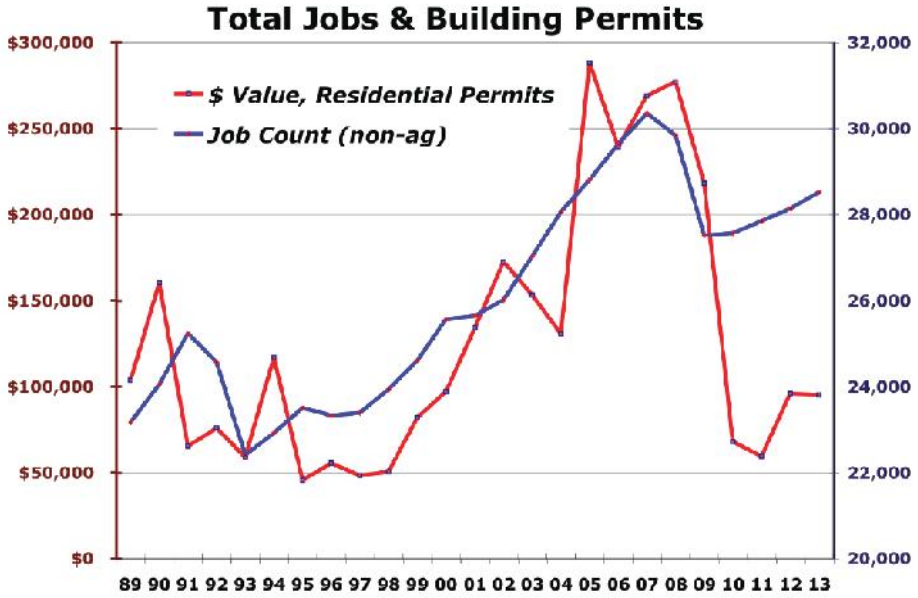




Lastly, the balance between job growth and working force (new entrants into the job market, i.e., those needing jobs) has rebounded strongly, thanks to a slight slowing growth of the population, in combination with a rebound in heath care and business services, plus a strong tourism sector and federal (defense) spending.



Notwithstanding the recent turmoil, mid to long-term indicators and foundational economic attributes have begun to look up for Kaua‘i and especially the Kapa‘a study area.



Economy

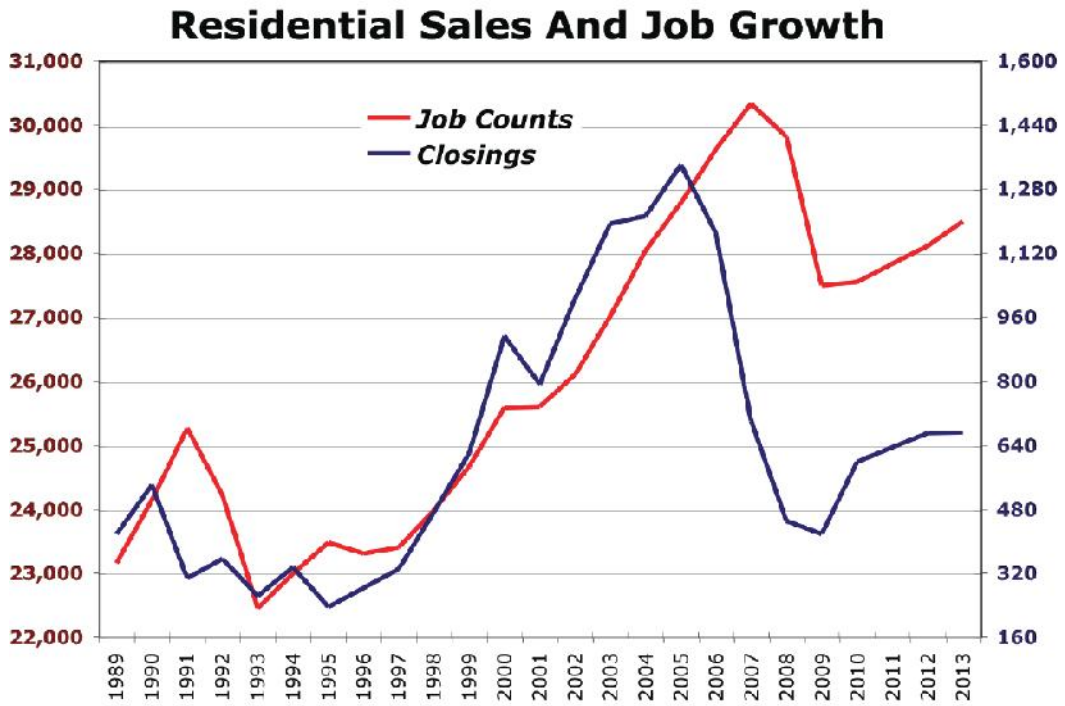
The Housing Market Study developed by The Data@Work describes and analyzes the factors and trends behind the general and specific supply and demand for housing in relation to HoKua Place. The entire study is included as Exhibit A.

The Data@Work is a market research firm that specializes in analyzing residential real estate markets for developers and lenders. They were retained to perform a study analyzing the market for the proposed master planned community on the island of Kaua‘i, called HoKua Place.

The study focused on the historical and projected market conditions and trends in accessing the ability of the Project to be successful in selling its residential properties at a price and at a velocity. The study entailed collecting, comparing and analyzing information that has a bearing on the numerous aspects of market demand for the proposed Project, including but not limited to publicly available real property, economic and commercial data.

The majority of the island's roughly 52,000 residents live and work in the coastal areas leaving the interior of Kaua'i natural and pristine. It has one of the strongest brands in the global visitor industry, as well as arguably the most diversified visitor industry of any of the islands, combining large resort master planned communities, cruise ship visitations, time share developments and small-scale bed and breakfasts.

The breadth and depth of this economic base, like the rest of the state, rests on the county's economy's unique comparative advantage relative to the other visitor destinations world-wide: it has a very high quality of life, a function of a naturally beautiful setting, with a benign environment and near perfect climate.



The majority of the primary housing development is located within the Kapa'a and Līhu'e urban zones, with secondary sources located areas in and around Po'ipū, Kīlauea/Hanalei, and Hanapēpē and Waimea.

Second home development is located within and around the three major resort communities, as well as in locations that are close to the coastline and/or in westward facing locales.

By way of context, housing construction hit a peak on Kaua'i when major resorts were developed in the 1970s; recent high-volume years reach only half that level. Thereafter, many of the condominium Projects that were developed targeted the offshore buyer market. Sales records show that upwards of 30% of the condo sales went to out of state buyers.

Census records have shown that a quarter of the County's housing stock did not house residents. Thus, while the Census categorizes these units as "vacant," they may be actually rented to vacationers, reserved by owners as a second home, or both.

Demand in the housing market hence comes from residents, investors and non-residents.

Fiscal Benefits

The construction and the subsequent operation and maintenance of the master planned community HoKua Place would generate significant, on-going economic and fiscal benefits for residents of Kauai, as well as for the County and State governments.

Development and construction of the Project facilities would generate employment and consequent tax revenues over several years. Thereafter, the Project supplement that with increased State and County tax revenues through increased property assessments from property owners, as well as additional general excise and increased income taxes from property owners that put their units into the long-term rental market (to say nothing of the increased employment from marketing, maintaining and operating those rental units).

In addition to this additional real estate sales activity, the Project is expected to support long-term impacts, such as additional consumer expenditures, employment opportunities, personal income and government revenue enhancement that are a result of the increase in housing stock (to say nothing of the long-term wealth effects on local owners.)

There are other significant secondary impacts as the excise tax and income (and job) generation works their way through the local economy. It is worth noting that some of these impacts will continue after completion of construction and final occupancy.

Like other major residential development, the increase in the tax base of the county in which development occurs more than offsets the cost imposed on the fire and the police department and other public agencies for their services.

The additional number of personnel to be hired by the fire and police departments is significantly lower to the number of those who will be working on the Project construction, services, et. al. before and after completion. And as the master plan is central to existing fire and police services, these costs will be much less than, say, a similar Project outside of the township areas.

Public Services & Facilities

Police protection for the Kapaʻa, area is provided by the Kauaʻi County Police Department, with its main headquarters located in Līhuʻe. A substation is located in Kapaʻa Town approximately 0.5-mile away from the Property.

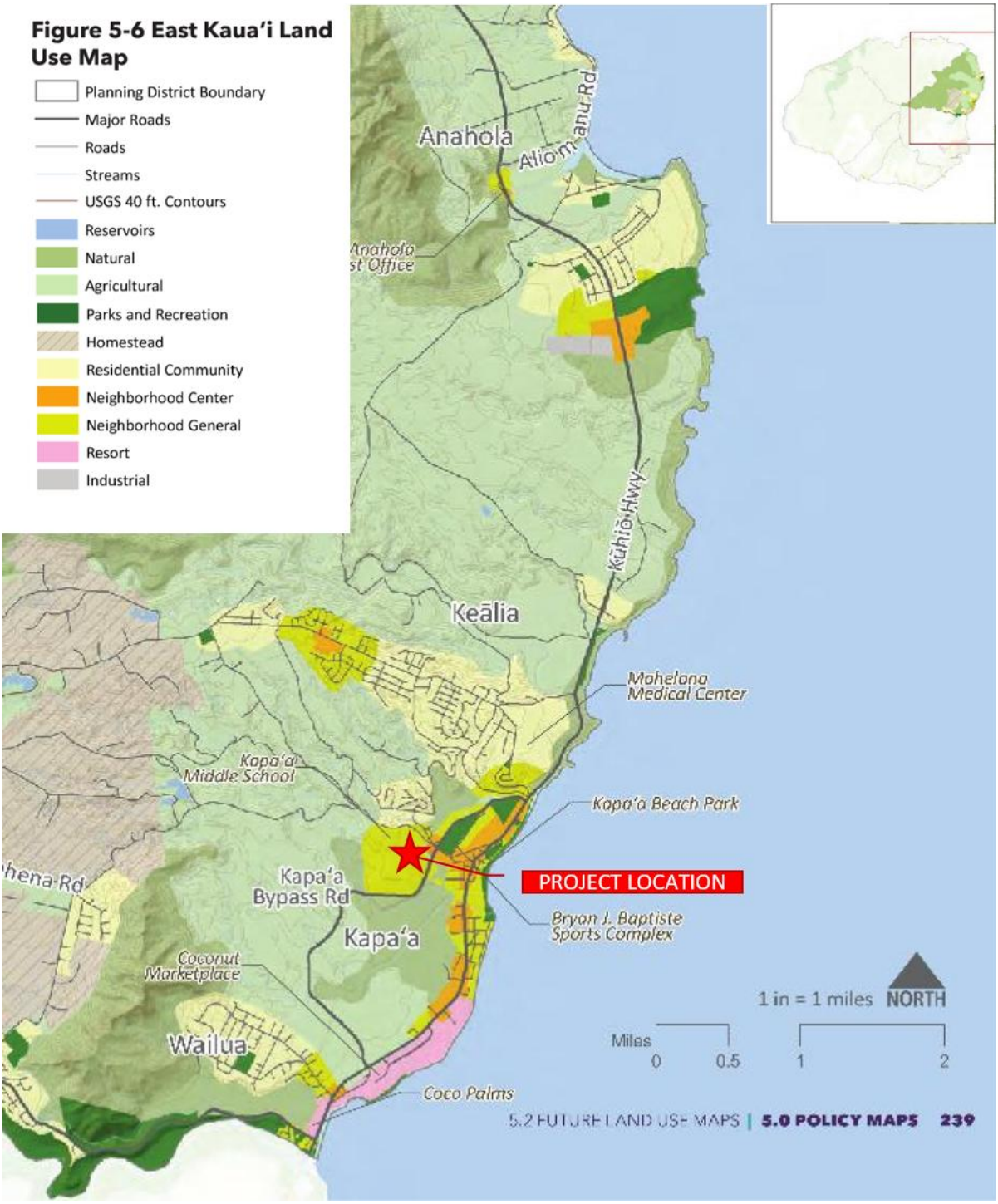
Fire protection is currently available for the Kapaʻa area from a new county fire station located on the north end of Kapaʻa Town, approximately 2.0-miles away from the property on Kūhiō Highway.

The applicant will work with State and Local Civil Defense on incorporating appropriate siren coverage that may include a 121 db(c) omni-directional siren within the 3.1 acres designate for the proposed park area below Kapaa Middle School.

Education

In recent decades the requirement to provide land and money for schools was imposed by state and county agencies as a condition of urbanizing land. The Department of Education (DOE) collected payments of school land and cash from some developers when their Projects were required to make "fair-share contributions" by the State Land Use Commission or the counties to gain Project approval.

The DOE was only granted its own authority to collect impact fees by Act 245, Session Laws of Hawaii 2007.



Prior to Act 245, the State Legislature in 2005 established a School Impact Fee Working Group (hereinafter "Working Group"). The Working Group submitted its findings and recommendations in a report, Hawaii School Impact Fee Working Group Report in March 2007.

The report analyzed salient issues, including "Fair Share" practices; conducted two case studies for specific areas in Central Oahu; and offered impact fee legislative language.

The 2007 report also provided a framework, or procedure, for determining fee schedules for those areas of the state experiencing enough new residential development to create the need for new or expanded school facilities.

Act 245 incorporated many of the findings and recommendations in the 2007 Report. The Act authorizes the Board of Education to designate school impact districts. The DOE may charge impact fees within school impact districts where new public schools must be constructed or expanded to accommodate the children from new homes.

The Legislature determined that new residential developments within identified school impact districts create additional demand for public school facilities. Developers of new housing are required to pay a portion of the cost of providing new or enlarged public schools to serve the additional students who will be living in the new housing. The land or fees charged are based on each new development's proportionate share of the additional demand on public school facilities.

At this time, neither Kapaʻa nor any other district on Kauaʻi is designated as a School Impact Fee District. According to Heidi Meeker, Planning Section, DOE Facilities Development Branch, the DOE will not be asking the HoKua Place Project for any contributions or impact fees at this point in time.

DOE does not have any current plan to propose an impact district in Kapaʻa. However, it is possible that a future impact district may cover Kapaʻa. In that event, HoKua Place may be required to pay impact fees, based on the fee schedule established for the district.

Heidi Meeker of DOE Facilities Development Branch informed representatives of HoKua Place that the DOE will not be requesting any contribution of impact fees from HoKua Place.

The following is a summary of information concerning existing school facilities serving HoKua Place, estimated student generation due to the Project and other information concerning impacts to school facilities. This information is based on information in DOE's Classroom Utilization Report 2007-2008 (CUR 07-08.)

The Kapaʻa Middle School is adjacent and to the north of the HoKua Place Project. Kapaʻa High School and Elementary School, share a campus, which is located within 2-miles of the Property.

Kapaʻa Elementary School serves grades K-5 and has capacity for 1,373 students (DOE). The 2010/2011 school year fall enrollment was 802 students (Kapaʻa Elementary School Status and Improvement Report, School Year 2010-2011).

Kapaʻa Middle School, with facilities' capacity for 1,059 students (DOE), was opened in 1997 and had a fall enrollment for the 2010/2011 school year of 635 students (Kapaʻa Middle School Status and Improvement Report, School Year 2010-2011).

Kapaʻa High School has capacity for 1,445 students (DOE) and had a 2010/2011 fall enrollment of 1,053 students (Kapaʻa High School Status and Improvement Report, School Year 2010-2011.)

Note that all area schools have student enrollment significantly less than the capacity of each school.

Project enrollment is summarized below:

School	**Capacity**	**Enrollment**	**Excess Capacity**
Kapaʻa Elementary	1,373	802	571
Kapaʻa Middle	1,059	635	424
Kapaʻa High	1,445	1,053	392

In discussions between HoKua Place and the DOE (Heidi Meeker), a preliminary spread sheet that calculated student generation estimates, as well as computed impact fee was provided to HoKua Place.

Below is the indicated student generation for the HoKua Place Project, based on 86-single-family units and 683-multi-family units (estimated Kapaʻa-area-only SGR:)

Student Generation (Rate)	S.F.	M.F.	Student Generation (Students)	
Elementary	0.13	0.10	Elementary	82
Middle	0.06	0.05	Middle	42
High	0.10	0.03	High	32

<u>DOE accepts the estimated student count and agrees with HoKua Place.</u>

(Per the DOE representative (Heidi Meeker), DOE does not have a have a problem with the general assessment that there is sufficient capacity in the Kapaʻa schools at this point in time to accommodate the students who will reside in the Project.)

Recreational Facilities

There are several parks within Kapaʻa town, including a beach park, which are within walking distance of the Project area. A County owned 1.9-acre park is located within walking distance from the subject property, just south east of the corner of Olohena Road and the By-Pass road round-a-bout. The park consists of a baseball field, football field, basketball courts, restroom facilities, picnic tables and a barbecue area.

Healthcare Services

Mahelona Medical Center located in Kapaʻa (approximately 2-miles away from the Project) is Kauaʻi's Eastside Critical Access Hospital, providing 24-hour emergency services. The facility is part of the Kauaʻi Region of Hawaiʻi Health Systems Corporation.

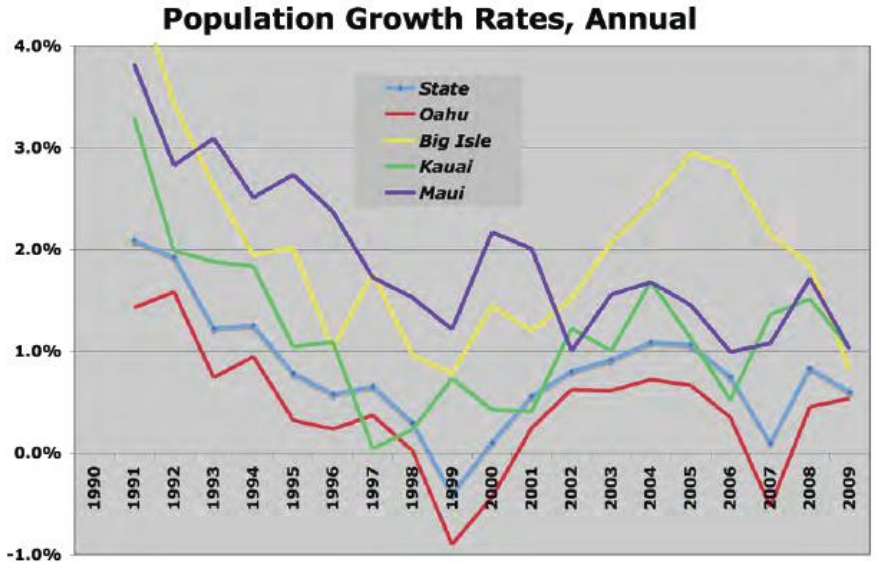
Both Kapa`a and Līhuʻe (8-miles away) provide healthcare facilities and services.

4.8.2 Potential Environmental Impact & Mitigation Measures

Population

An increasing population base via natural growth and inevitable in-migration, coupled with the intrinsic worldwide demand for Hawaiian tourism and its limited land resources, will help in a revival of the economy, along the well-established, highly-cyclical historic trend lines.

The population growth is seen in the following chart.



It is likely that the population growth for the county in the coming years will return to the long-term historical rate of slightly over 1% growth, p.a.

Housing

This Project will have a positive impact on housing and population aspects of the East Kaua'i Region. The Kaua'i General Plan specifically points out the need for more housing in the area and specifically designates the subject property as Neighborhood General for that purpose.

HoKua Place is a well located master planned project on the Island of Kaua'i targeting primary housing demand from local and in-migrant families, as well as offshore second home demand for view estate ownership. Located in the middle of the island, the Project is close to the centers of employment and resort activity, plus the airport, beaches, shopping, recreation, etc.

Development of the Property will address a portion of the significant demand for affordable housing in the County of Kaua'i, without significantly affecting reserve areas for foreseeable urban growth.

HoKua Place will respond to varying spectrums of demand for housing within Kaua'i by providing a wide range of housing opportunities inclusive of affordable housing alternatives. HoKua Place will seek to create and sustain a mixed-income community allowing for unparalleled social diversity.

Affordable housing demands exhibited a significant upward trend over the last several years. Recent market studies have indicated a current shortage of single-family housing in the East Kaua'i area. The forecast is that demand for housing will continue to increase, especially in the area of affordable housing. The proposed

Project will assist in alleviating some of the current supply-and-demand pressures on Kaua'i's current housing market by providing a variety of additional housing products and opportunities for long-term local residents.

In a 2010 letter to the applicant, the Planning Director wrote,

> "We are writing in general support of the land owner's petition to amend 97-acres in Kapa'a to the Urban district." "Affordable housing remains an acute need on Kaua'i, even with a falling real estate market and as such the County is generally supportive of any petition that proposes additional affordable housing, particularly when contiguous to developed urban areas, infrastructure and consistent with our General Plan."

Employment & Income

Development of HoKua Place would generate employment and consequent income and taxes. On a short-term basis, the proposed Project will have a direct beneficial impact on the local economy during construction through construction and construction-related employment.

HoKua Place proposes two areas for commercial uses that, ultimately, will serve to promote and provide a variety of job opportunities. A 1.4-acre parcel is proposed for commercial uses such as a country store and small personal service type uses are anticipated. A 1-acre site on the makai side of the Kapa'a By-Pass Road is also proposed for commercial development or for use as sub-stations for the police and/or fire department.

Economy

By providing the opportunity for new residences on the Island of Kaua'i and generating additional real estate sales activity, the Project is expected to support long-term impacts, including additional consumer expenditures, personal income and government revenue enhancement.

HoKua Place provides significant, on-going economic and fiscal benefits for residents of Kaua'i, as well as for the County and State governments. Over the long term, the residential homeowners will require various services related to home maintenance and improvement that will further support the local economy.

Public Services & Facilities

HoKua Place will have lands available for county police and fire substations on the Property. One acre on the Makai side of the Kapa'a By-Pass road (southwest corner of Olohena and the By-Pass road) is proposed for future commercial use or for sub-stations for the police and fire departments.

Education

The proposed Project will generate increased demand on student enrollment within the region. However, this demand falls well within the existing capacity of all schools serving the district, elementary, middle and high. Per the DOE representative, DOE does not have a problem with the estimated student count. Per the DOE representative, DOE does not have a have a problem with the general assessment that there is sufficient capacity in the Kapa'a schools at this point in time to accommodate the students who will reside in the Project.

HoKua Place will coordinate with the DOE to ensure that the DOE's facility assessment policy and school impact fee provisions are appropriately addressed. Additionally, a 3.1-acre park is proposed adjacent to the existing Kapa'a Middle School. The park will have an area for the county's proposed relocation of the Kapa'a county swimming pool. HoKua Place also plans to develop a bike/walking path from the south of the property to the Kapa'a Middle School to facilitate biking and walking around the Project.

HoKua Place will work with DOE to address any impacts to school facilities due to the Project.

Recreational Facilities
HoKua Place holds respect for the environment by interlinking natural features and open space as core components of the community.

Open space and open greenway areas encompassing 14.3-acres will be developed within the Project. A 3.1-acre park is proposed within the Project for outdoor recreation. Land for the proposed relocation of the Kapaʻa county swimming pool will be available within the 3.1-acre park. The provision of a 3.1-acre park with a county swimming pool within the proposed project will provide residents with an opportunity for leisurely recreational activities.

Healthcare Services
Through the layout and design of HoKua Place, there is an overall opportunity for a positive effect on the health of its residents. Communities that make it easy and safe to walk and ride bikes are opening the door to a wide range of health benefits for their residents by reducing barriers to being physically active and helping individuals integrate physical activity into their daily lives.

Active living is a way of life that integrates physical activity into daily routines. For individuals, the goal is to get a total of at least 30-minutes of activity each day by, for example, walking, bicycling, playing in the park, working in the yard, taking the stairs or using recreation facilities.

For communities, the goal is to provide opportunities for people of all ages and abilities to engage in routine physical activity and to create places and policies that encourage better physical health. Such places within HoKua Place include, open space and open greenway areas encompassing 14.3-acres, a 3.1-acre park for outdoor recreation and land for the proposed relocation of the Kapaʻa county swimming pool which will provide residents with an opportunity for leisurely recreational and physical fitness activities.

4.8.3 Level of Impact after Mitigation

As noted in the Kapaʻa Housing Market Study developed by The Data@Work (Exhibit A) the Project will help satisfy current and future housing demand.

Per the DOE representative Heidi Meeker, DOE does not have a have a problem with the general assessment that there is sufficient capacity in the Kapaʻa schools at this point in time to accommodate the students who will reside in the Project.

The proposed Projectt will not necessitate unreasonable public investment in infrastructure facilities or public services.

The mitigation measures proposed will increase the Project's benefit to the island community and the State. Beyond these important collateral employment and economic impacts, the Project will provide the area with housing opportunities, a park and relocation of the County's swimming pool for area residents. No significant impacts are anticipated.

4.9 Transportation

This section discusses the traffic and transportation systems in the region and the specific Project area, the potential impacts of the Project on traffic, and the mitigation measures HoKua Place will employ to mitigate potential impacts.

4.9.1 Environmental Setting

The proposed Project is located west of Kapaʻa Town and adjacent to Kapaʻa Middle School, generally in the southwest quadrant of the intersection of Olohena Road and Kapaʻa By-Pass. The Project is a residential subdivision with single-family and multi-family residences and neighborhood supporting retail. The Project has two phases. The former Kapaa Highlands development plan is summarized as follows:

Adjoining Ag - 16 Single-Family Units

HoKua Place - 86 Single-Family Lots & Units
683 Multi-Family Units
8,000 SF Neighborhood Retail

Access to and egress from Phase 1 will be via driveways along the south side of Olohena Road west of Kapaʻa Middle School.

Access to and egress from Phase 2 will be provided via a new intersection along the north side of Kapaʻa By-Pass and a new intersection along the south side of Olohena Road. These two intersections will be connected by a new curvilinear roadway running through the Project. For purposes of discussion in the report, this roadway is referred to as Road 'A.'

Kapaʻa Bypass is a two-lane, two-way roadway along the southern and eastern boundaries of the Project. This section of Kapaʻa Bypass is owned by the HoKua Place developer, who has entered a memorandum of understanding with State of Hawaiʻi Department of Transportation to dedicate the roadway to the State upon approval of the HoKua Place subdivision.

According to State of Hawaiʻi Department of Transportation traffic count data from 2010, Kapaʻa By-Pass has a weekday traffic volume of 7,400 vehicles per day.

Olohena Road is a two-lane, two-way roadway along the northern boundary of the Project. Olohena Road also provides service to Kapaʻa Middle School. Kūhiō Highway though Kapaʻa Town is a two-lane, two-way State highway east of the study area.

The intersection of Kūhiō Highway at Kukui Street is a four-legged, signalized intersection located approximately 1,600 feet east of the Project. The northbound and southbound approaches are Kūhiō Highway and the eastbound and westbound approaches are Kukui Street. The northbound and southbound left turns are protected-permissive.

The intersection of Kūhiō Highway at Kapaʻa By-Pass is a three-legged, un-signalized intersection approximately two miles south of Kukui Street. The northbound and southbound approaches are Kūhiō Highway. The eastbound approach is the Kapaʻa By-Pass and is the controlled approach. The northbound approach is coned during the morning peak hours to provide on left turn and one through lane. The coning also allows the

eastbound to southbound left turn to operate as a free right turn. During the afternoon peak hours and off-peak hours, there is one left turn lane and two through lanes. The southbound approach has one through lane and one right turn lane. The eastbound approach has one left turn lane and one right turn lane.

The intersection at Kapaʻa By-Pass and Olohena Road is a four-legged roundabout. All approaches are one lane only. The north leg of the intersection is one-way southbound into the intersection. The remaining three legs are two-way.

The intersection of Olohena Road at Kaapuni Road and Kaehulua Road is actually two intersections. Olohena Road is the eastbound and westbound approaches and Kaapuni Road is the STOP sign controlled approach at Olohena Road. Kaehulua Road intersects Kaapuni Road west of Olohena Road.

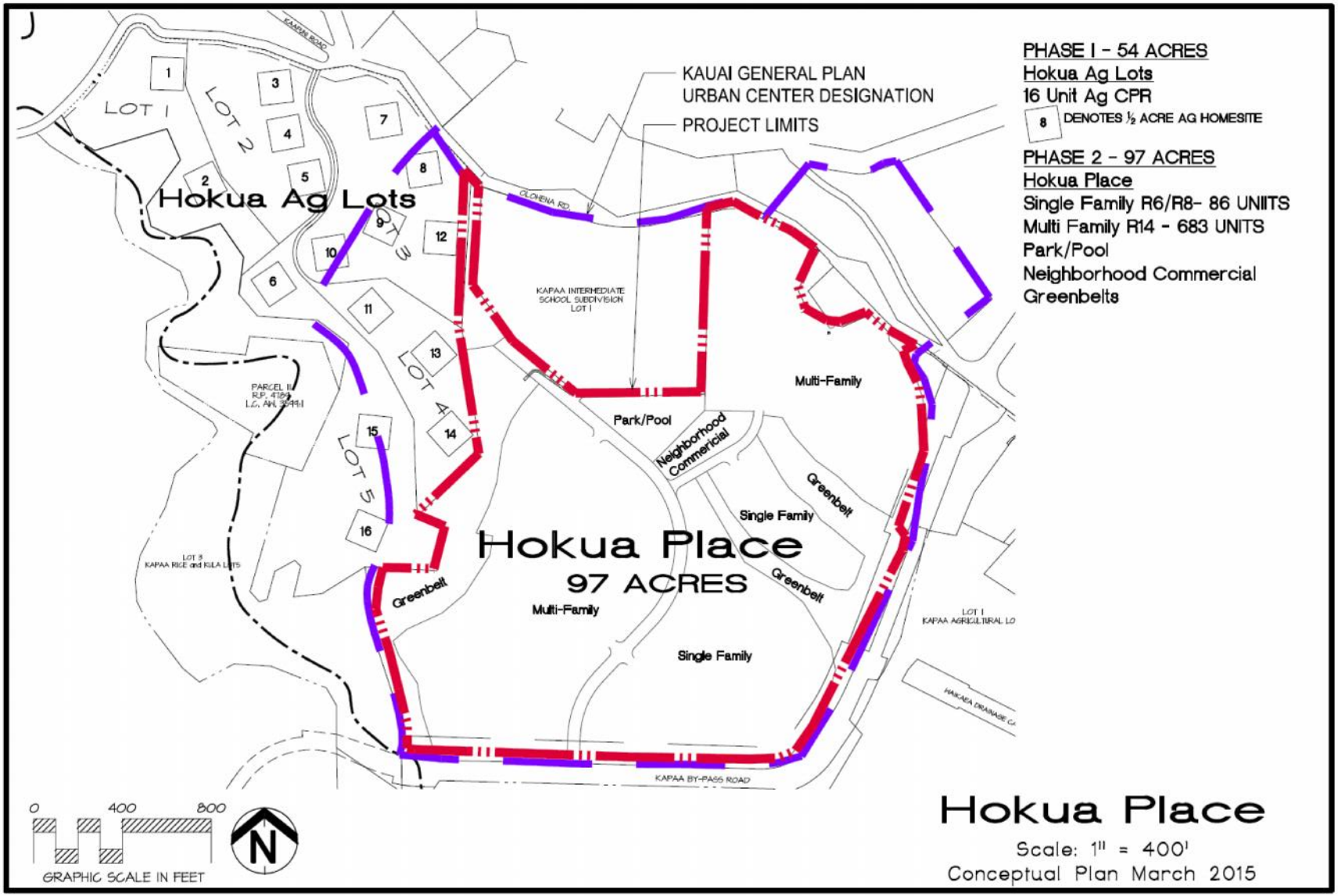
A preliminary trip generation analysis was performed to define the scope of work and study area. This analysis determined that the proposed Project will generate less than 487 trips during the morning peak hour and 560 trips during the afternoon peak hour respectively. Based on "Institute of Transportation Engineers" standards, the traffic study should be a "small development: traffic impact assessment."

Accordingly, the study area was defined to include the intersection of Kapaʻa By-Pass at Olohena Road and the intersections providing access to and egress from Phase 2 of the Project (Kapaʻa By-Pass at Road 'A' and Olohena Road at Road 'A'). Phase 1 lots are serviced by individual driveways which will have negligible traffic volumes.

State of Hawaiʻi Department of Transportation reviewed the first draft of the report and directed that the study area be expanded to include the intersections of Kūhiō Highway at Kukui Street and Kūhiō Highway at Kapaʻa Bypass.

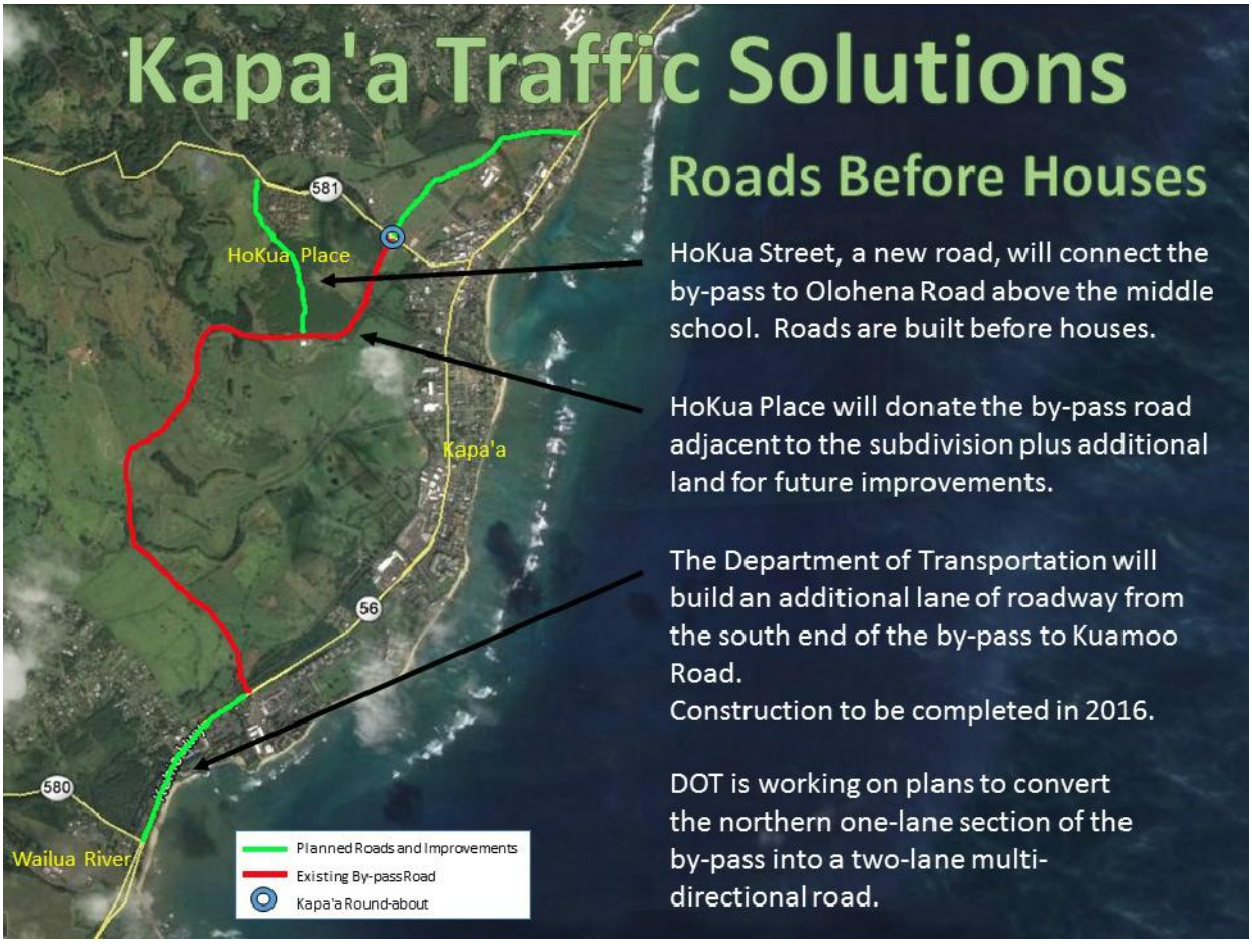
The County of Kauaʻi directed that the intersection of Olohena Road at Kaapuni Road and Kaehulua Road be included in the study area.

Pursuant to the State of Hawai'i Department of Transportaton and the County of Kaua'i's comments, a new TIAR was conducted as depicted in the following next Section 4.9.2


PHASE I - 54 ACRES
Hokua Ag Lots
16 Unit Ag CPR
8 DENOTES ½ ACRE AG HOMESITE
PHASE 2 - 97 ACRES
Hokua Place
Single Family R6/R8- 86 UNIITS
Multi Family R14 - 683 UNITS
Park/Pool
Neighborhood Commercial
Greenbelts
KAUAI GENERAL PLAN
URBAN CENTER DESIGNATION
PROJECT LIMITS
Hokua Ag Lots
LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
KAMAIN ROAD
OLOHENA RD.
KAPAA INTERMEDIATE SCHOOL SUBDIVISION LOT 1
PARCEL II R.P. 4789 L.C. AW. 3244-II
LOT 3 KAPAA RICE and KILA LOTS
Hokua Place
97 ACRES
Multi-Family
Single Family
Park/Pool
Neighborhood Commercial
Greenbelt
LOT 1 KAPAA AGRICULTURAL LO
HAKAEA DRAINAGE C
KAPAA BY-PASS ROAD
0 400 800
GRAPHIC SCALE IN FEET
N
Hokua Place
Scale: 1" = 400'
Conceptual Plan March 2015

4.9.2 Environmental Impacts & Mitigation Measures

Hokua Place completed a new Traffic Impact Assessment Report (TIAR) in May of 2017. Please refer to Exhibit "H", New TIAR. The new TIAR responded to State DOT and the County DPW comments on the DFEIS. This TIAR by Randall S. Okaneiku, P.E., supercedes the previous TIAR provided by Phillip Rowell and Associates in December of 2013.



HDOT prepared *Kapaa Transportation Solutions* in August 2015. HDOT conducted this study to prioritize near- to mid-term transportation solutions to address transportation solutions for the Kapaa area transportation system. The report identified 48 different transportation measures, then classified them as short term (that could be implemented within 5 years), mid-term (that could be implemented within 5 to 10 years) and long-term (that would take more than 10 years to implement) solutions. HDOT then identified 10 priority projects that if completed, would improve both travel time and person thoughput – the number of people that can cross a specific location within an identified time frame.

Implementation of four of these measures would improve traffic circulation for the proposed HoKua Place Project. These measures are:

Project No.	Project Location	Project Description
6	Temporary Kapaa By-Pass Road, north of Olohena Road	Add one lane in the northbound direction
27	Kuhio Highway between Temporary Kapaa By-Pass Road and Kuamoo Road	Add one southbound lane along Kuhio Highway
8	Kapaa New Park	Create direct access from Kapaa New Park to Temporary Kapaa By-Pass Road
24	Eggerking Road Extension	Extend Eggerking Road to connect with Temporary Kapa'a By-Pass Road

Description of Traffic Impact Analysis Report

Randall Okaneku, PE prepared a new Traffic Impact Analysis Report (TIAR) to update the Traffic Impact Assessment Report Kapa`a Highlands Subdivision, dated December 9, 2013, that is attached to the Draft Environmental Impact Statement for the Proposed Hokua Place (DEIS) published in May 2015. The new TIAR was also intended to respond to comments received from the State of Hawaii Department of Transportation and the County of Kauai Department of Public Works, during their review of the DEIS traffic study.

Existing Traffic Conditions

The field investigation was conducted in March 2017, to update the existing traffic conditions from the DEIS traffic study. The study area was expanded to include Lehua Street and Ulu Street. The field investigation indicated that Lehua Street and Ulu Street were used as alternate routes between Kuhio Highway and Olohena Road/Kukui Street to avoid the delays at the intersection of Kuhio Highway and Kukui Street.

Since the preparation of the DEIS traffic study, the peak hour traffic at the round-a-bout intersection of the Kapa`a By-Pass Road and Olohena Road increased by about 12 percent and 22 percent, during the AM and PM peak hours of traffic, respectively.

Trip Generation

Hokua Place is expected to generate 487 vehicle trips per hour (vph) and 560 vph, during the AM and PM peak hours of traffic, respectively. The AM and PM peak hour trip generation characteristics for Hokua Place were increased by about 90± vph over the DEIS traffic study, primarily due to the use of the average peak hour trip rates for the multi-family dwelling units.

Traffic Impact Analysis

The construction of the connector roadway through Hokua Place, between Olohena Road and the Kapa`a By-Pass Road, is expected to mitigate the Project's traffic impacts at the roundabout intersection of the Kapa`a By-Pass Road and Olohena Road. The other intersections in the study area will require the following traffic improvements to mitigate the traffic impacts without and with the proposed Project.

Recommendations Without Project

1. Widen Kuhio Highway between the Kapa`a Bypass Road (South Junction) and Kuamoo Road to provide two through lanes in each direction.
2. Restripe the median on the north leg of Kuhio Highway at the Kapa`a By-Pass Road (South Junction) to provide a median refuge lane.
3. Restripe parking and shoulder lanes on Kuhio Highway through Kapa`a Town to provide additional through and/or left-turn lanes.4. Modify the traffic signal operations at the intersection of Kuhio Highway and Kukui Street to reduce
4. Modify the traffic signal operations at the intersection of Kuhio Highway and Kukui Street to reduce. queuing and delays.
5. Add a right-turn by-pass lane from southbound Kapa`a Bypass Road to mauka bound Olohena Road at their roundabout intersection.
6. Realign Kaehulua Road to intersect Olohena Road and Kaapuni Road to create a four-legged, channelized intersection.
7. Extend the median refuge lane/two-way left-turn lane on the north leg of Kuhio Highway at Lehua Street.

Recommendations With Project

1. Construct Road A from Olohena Road to the Kapa`a By-Pass Road.

2. Construct a roundabout at the intersection of Road A and the Kapa`a By-Pass Road.

Conclusions

The existing traffic congestion on Kuhio Highway through Kapa`a Town can be mitigated by restricting on-street parking and restriping the shoulder lanes to provide for additional through lanes/median left-turn lanes. The existing southbound traffic demand through Kapa`a Town is reduced by the Kapa`a By-Pass Road. Dedication of the Kapa`a By-Pass Road right-of-way along the Hokua Place frontage would assure the continued usage of the existing Kapa`a By-Pass Road.

The construction of the proposed Road A will provide additional mauka-makai roadway capacity between Kapa`a Valley and the Kapa`a By-Pass Road. Road A is expected to mitigate the Hokua Place traffic impacts at the roundabout intersection of the Kapa`a By-Pass Road and Olohena Road. The Hokua Place access intersections on Olohena Road and on the Kapa`a By-Pass Road are expected to operate at satisfactory Levels of Service, during the AM and PM peak hours of traffic.

Purpose and Scope of the Study

The purpose of the new TIAR is to update the traffic impact analysis resulting from the development of the proposed Hokua Place. This report presents the findings and recommendations of the study, the scope of which includes:

1. An evaluation of existing roadways and traffic conditions.
2. The analysis of the future traffic conditions without the proposed Project.
3. The development of trip generation characteristics of the proposed Project.
3. The identification and analysis of the traffic impacts resulting from the development of the proposed Project.
5. The recommendation of roadway improvements, which would mitigate the traffic impacts identified in this study.

1. Existing Conditions

A. Roadways

Kuhio Highway is the primary arterial highway along the east coast of Kauai. Through Kapa`a Town, Kuhio Highway is a two-lane roadway with on-street parking on both sides of the roadway. Kuhio Highway is signalized at its intersection with Kukui Street. Exclusive left-turn lanes are provided on Kuhio Highway at major intersections in Kapa`a Town. The posted speed limit on Kuhio Highway in Kapa`a Town is 25 miles per hour (mph).

The Kapa`a By-Pass Road provides an alternative southbound route around Kapa`a Town. The Kapa`a Bypass Road is a one-lane, one-way, southbound roadway between its north junction at Kuhio Highway and Olohena Road, with a posted speed limit of 25 mph. The Kapa`a By-Pass Road intersects Olohena Road at a single-lane roundabout. South of Olohena Road, the Kapa`a By-Pass Road becomes a two-way, two-lane roadway, with a posted speed limit of 35 mph. A 3,700± foot section of the Kapa`a Bypass Road, south of Olohena Road, was constructed on a roadway easement, which is currently owned by the developer of Hokua Place. Hokua Place, LLC has a Memorandum of Understanding with the State of Hawaii Department of Transportation (DOT) to dedicate the roadway easement to State DOT upon the approval of the Hokua Place subdivision.

South of the proposed intersection with Road A, the posted speed limit on the Kapa`a By-Pass Road is reduced to 25 mph. At its south junction, the Kapa`a By-Pass Road intersects Kuhio Highway at an unsignalized Tee-intersection. The Kapa`a By-Pass Road provides separate left-turn and right-turn lanes at its south junction with Kuhio Highway. Exclusive left-turn and right-turn lanes are provided on Kuhio Highway at the Kapa`a By-Pass Road in the northbound and southbound directions, respectively. A median refuge lane is not delineated on the north leg of Kuhio Highway at the Kapa`a By-Pass Road. However, the striped median provide sufficient refuge space for one vehicle turning left from the Kapa`a By-Pass Road.

South of the Kapa`a By-Pass Road, the center northbound lane of Kuhio Highway is coned to provide a southbound contra-flow lane, during the AM peak period of weekday traffic, resulting in two lanes in the

southbound direction and one lane in the northbound direction. During the field investigation, the contra-flow operation occurred from 5:45 AM to 10:30 AM. The contra-flow lane provides a "free" right-turn movement from the Kapa`a Bypass Road onto southbound Kuhio Highway, during the AM peak period of weekday traffic.

Olohena Road is a two-way, two-lane collector roadway with a posted speed limit of 25 mph. The posted speed limit on Olohena Road is reduced to 15 mph as it approaches Kapa`a Middle School. Olohena Road intersects the Kapa`a Bypass Road at a single-lane roundabout. Makai of Lehua Street, Olohena Road continues as Kukui Street to Kuhio Highway.

Kaapuni Road is a two-way, two-lane, collector road which intersects Olohena Road at a stop-controlled, skewed Tee-intersection. The Kaapuni Road approach has a limited sight distance to the right, due to the vertical alignment of the mauka leg of Olohena Road. Immediately mauka of Olohena Road, the two-way, two-lane Kaehulua Road intersects Kaapuni Road at a stop-controlled, skewed Tee-intersection.

Kukui Street is a two-way, two-lane roadway between Kuhio Highway and Ulu Street with a posted speed limit of 15 mph. Kukui Street is signalized at its intersection with Kuhio Highway with a shared left-turn lane and exclusive right-turn lane.Ulu Street is a two-way, two-lane local street between Kukui Street and Ohia Street. South of Ohia Street, Ulu Street becomes a one-lane, one-way southbound roadway to Kuhio Highway. Ohia Street is a local street, which intersects Ulu Street and Kuhio Highway at stop-controlled intersections. Exclusive left- turn lanes are provided in both directions on Kuhio Highway at Ohia Street/Pono Kai Driveway. Ulu Street provides an alternate route to the south between Kuhio Highway and Kukui Street.

Lehua Street is a two-way, two-lane local street between Olohena Road and Kuhio Highway. Lehua Street intersects Olohena Road at a stop-controlled Tee-intersection. Lehua Street intersects Kuhio Highway at a stop-controlled, channelized Tee-intersection. Lehua Street provides an alternate route to the north between Kuhio Highway and Olohena Road.

Kahau Street is a two-way, two-lane cul-de-sac street. Kahau Street intersects Olohena Road at a stop-controlled Tee-intersection, immediately mauka of Lehua Street.

B. Public Transit

The Kauai County Transportation Agency operates a public bus service in the region with a stop on Olohena Road at the Kapa`a New Town Park, between the Kapa`a By-Pass Road and Kahau Street. The Kauai bus service also stops at Kapa`a Middle School. On Kuhio Highway, the Kauai Bus service stops at Lehua Street, at Ohia Street, and at the Coconut Marketplace near the Kapa`a By-Pass Road (South Junction). The Kauai Bus service is provided at hourly intervals Monday through Friday from 6 AM to 9 PM and on weekends and holidays every two hours from 8 AM to 5 PM.

C. Existing Peak Hour Traffic Volumes and Operating Conditions

1. Field Investigation and Data Collection

Turning movement traffic count surveys were conducted at the following intersections in the study area, during the week of March 13, 2017:

a. Kapa`a By-Pass Road and Olohena Road

b. Olohena Road and Kaapuni Road

c. Kaapuni Road and Kaehulua Road

d. Kuhio Highway and Kukui Street

e. Kuhio Highway and Kapa`a By-Pass Road (South Junction)

f. Kuhio Highway and Lehua Street

g. Olohena Road and Lehua Street

h. Olohena Road and Kahau Street

i. Kukui Street and Ulu Street

j. Ulu Street and Ohia Street

k. Kuhio Highway and Ohia Street/Pono Kai Driveway

l. Kuhio Highway and Ulu Street

Each intersection was surveyed during the peak periods of traffic over a two-day period. On March 14, 2017, a stalled vehicle partially blocked the circulatory roadway of the roundabout intersection of Olohena Road and the Kapa`a Bypass Road from 3:00 PM to 4:00 PM. The blockage limited traffic flows, and this data were excluded from the analysis. Otherwise, the higher peak hour volumes on the survey days at each study intersection were selected for the analysis to establish the existing conditions. The peak hours of traffic varied from intersection to intersection and from day to day.

2. Existing AM Peak Hour Traffic

The existing AM peak hour of traffic in the study area generally occurred from 7:15 AM to 8:1 AM. Table 2 summarizes the changes in the AM peak hour traffic between the DEIS traffic study and the existing AM peak hour traffic data.

Table 2. AM Peak Hour Traffic Comparison

Study Intersection	Intersection Volumes (vph)		Increase (+) Decrease (-)
	2012-2013	2017	
Olohena Road/Kapa`a By-Pass Road	1,447	1,628	+181
Kuhio Highway/Kukui Street	1,441	1,410	-31
Kuhio Hwy/Kapa`a By-Pass Road	1,990	2,111	+121

Excerpt from updated TIAR, Exhibit "H"

In Kapa`a Town, Kuhio Highway carried about 1,400 vehicles per hour (vph), total for both directions, during the AM peak hour of traffic. South of Ulu Street, Kuhio Highway carried over 1,750 vph, total for both directions. The Kapa`a By-Pass Road carried about 800 vph, total for both directions, south of Olohena Road. Mauka of the Kapa`a Bypass Road, Olohena Road carried about 1,000 vph, total for both directions. South of the Kapa`a By-Pass Road (South Junction), Kuhio Highway carried about 2,100 vph.

The traffic signal timing cycle lengths at the intersection of Kuhio Highway and Kukui Street resulted in long delays on Kukui Street. Makai bound traffic on Olohena Road and Kukui Street were diverted to alternate routes to Kuhio Highway. About 54 percent of makai bound traffic on Olohena Road turned left onto Lehua Street to continue in the northbound direction. About 33 percent of makai bound traffic turned right onto Ulu Street to continue in the southbound direction. The remaining 13 percent of the makai bound traffic on Olohena Road continued onto Kukui Street to Kuhio Highway.

During the existing AM peak hour of traffic, the overall intersection of Kuhio Highway and Kukui Street operated at LOS "A". However, the left-turn movement on makai bound Kukui Street operated at LOS "F", with a relatively low traffic demand (32 vph). All the traffic movements in both directions on Kuhio Highway operated at LOS "A" at Kukui Street, during the existing AM peak hour of traffic.

The left-turn movement on makai bound Lehua Street operated at LOS "E" at Kuhio Highway, during the existing AM peak hour of traffic. Makai bound Ohia Street also operated at LOS "E" at Kuhio Highway at a very low volume.

Makai bound Olohena Road operated at LOS "D" at the intersection of Kapa`a By-Pass Road. Kaapuni Road operated at LOS "D" at Olohena Road. The other intersections in the study area operated at satisfactory Levels of Service, i.e., LOS "C" or better, during the existing AM peak hour of traffic. Figures 3 and 4 depict the existing AM peak hour traffic data.

3. Existing PM Peak Hour Traffic

The existing PM peak hour of traffic in the study area varied between the hours of 3:00 PM and 6:00 PM. Table 3 summarizes the changes in the PM peak hour traffic between the DEIS traffic study and the existing (2017) PM peak hour traffic data.

Table 3. PM Peak Hour Traffic Comparison

Study Intersection	Intersection Volumes (vph)		Increase (+) Decrease (-)
	2012-2013	2017	
Olohena Rd/Kapa`a By-Pass Rd	1,459	1,787	+328
Kuhio Hwy/Kukui St	1,370	1,295	-75
Kuhio Hwy/Kapa`a By-Pass Rd	2,176	2,235	+62

Excerpt from updated TIAR, Exhibit "H"

During the existing PM peak hour of traffic, Kuhio Highway carried about 1,200 vph, total for both directions in Kapa`a Town. South of Ulu Street, Kuhio Highway carried over 1,700 vph, total for both directions. The Kapa`a By-Pass Road carried over 1,000 vph, total for both directions, south of Olohena Road. Mauka of the Kapa`a By-Pass Road, Olohena Road carried about 1,000 vph, total for both

directions. Kuhio Highway carried over 2,100 vph, total for both directions, south of the Kapa`a Bypass Road.

The northbound and southbound traffic on Kuhio Highway avoided the traffic signal delays at Kukui Street by diverting to alternate routes to Olohena Road. Less than 10 percent of the mauka bound traffic on Olohena Road at the Kapa`a Bypass Road turned from Kuhio Highway via Kukui Street. About 35 percent of the mauka bound traffic on Olohena Road turned right from Lehua Street to continue in the mauka bound direction, during the existing PM peak hour of traffic. About 55 percent of the mauka bound traffic turned left from Ulu Street onto Kukui Street to continue in the mauka bound direction on Olohena Road.

The overall intersection of Kuhio Highway and Kukui Street operated at LOS "A", during the existing PM peak hour of traffic. The left-turn movement on makai bound Kukui Street operated at LOS "E" with a relatively low traffic demand (36 vph). The other traffic movements at the intersection operated at LOS "A", during the existing PM peak hour of traffic.

The left-turn movement on makai bound Lehua Street operated at LOS "D" at Kuhio Highway, during the existing PM peak hour of traffic. Makai bound Ohia Street operated at LOS "F" at Kuhio Highway with a very low volume. The mauka bound Pono Kai Driveway operated at LOS "D", also with a very low volume.

Southbound Lehua Street operated at LOS "E" at Olohena Road, during the existing PM peak hour of traffic. Southbound Kapa`a By-Pass Road operated at LOS "D" at Olohena Road. The other intersections in the study area operated at satisfactory Levels of Service, during the existing PM peak hour of traffic. The existing PM peak hour traffic data are depicted on Figures 5 and 6.

II. Future Traffic Conditions

A. Background Growth in Traffic

The Kauai Long-Range Land Transportation Plan (KLRLTP) was prepared by the State of Hawaii Department of Transportation (DOT), in cooperation with the Kauai County Department of Public Works and Planning Department. The KLRLTP developed long-range travel forecasts for the island of Kauai. The KLRLTP anticipated that traffic in the Kapa`a area would increase by over 30 percent between the Base Year 2007 and the Horizon Year 2035. For the purpose of this analysis, an average growth factor of 1.14 was uniformly applied to the existing (Year 2017) AM and PM peak hour traffic volumes to estimate the Year 2030 peak hour traffic without the proposed Project.

B. Daily and Seasonal Adjustment Factors

The existing peak hour traffic data were adjusted for the daily and seasonal variation in traffic in the region. The adjustment factors were based upon the 2016 traffic count data, which were collected at DOT's continuous traffic count station at Mile Post 2.4 on Kuhio Highway (Route 56) in Hanamaulu, which is located about 6 miles south of Kapa`a Town. Table 4 summarizes the adjustment factors, which were applied to the existing AM and PM peak hour traffic data, to account for the daily and seasonal variation in traffic from the annual average weekday traffic (AAWDT).

Table 4. Day of the Week and Seasonal Adjustment Factors			
Date	**Day**	**24-Hour Data**	**Adjustment Factors**
3/14/2016	Monday	15,881	1.03
3/15/2016	Tuesday	15,824	1.03
3/16/2016	Wednesday	16,611	0.98
3/17/2016	Thursday	16,467	0.99
3/18/2016	Friday	16,652	0.98
	2016 AAWDT	16,301	1.00

Excerpt from updated TIAR, Exhibit "H"

C. Kuhio Highway Widening

The Final Environmental Assessment Kuhio Highway Short-Term Improvements Kuamoo Road to Temporary Bypass Road (Kuhio Highway EA), was prepared for DOT, by Wilson Okamoto Corporation, dated September 2009. The Kuhio Highway EA recommended the widening of Kuhio Highway from three lanes to four lanes to provide a permanent second southbound lane between the Kapa`a By-Pass Road and Kuamoo Road. The additional lane will provide a "free" right-turn movement from the Kapa`a By-Pass Road onto southbound Kuhio Highway throughout the day.

DOT is presently planning to complete the widening of Kuhio Highway by the Year 2019. The widening of Kuhio Highway from the Kapa`a By-Pass Road to Kuamoo Road is included in this traffic impact analysis.

D. Kapa`a Transportation Solutions

The Kapa`a Transportation Solutions (KTS) was prepared for the State Department of Transportation, dated August 2015.

The KTS cited traffic congestion in the downtown/historic district of Kapa`a Town, which resulted from on-street parking in the curb lanes in both directions on Kuhio Highway. In addition, to the delays caused by vehicles maneuvering into and out of the parallel parking stalls along Kuhio Highway, the on-street parking occupies valuable highway space, which could otherwise provide additional through traffic lanes and/or median left-turn lanes. Table 5 summarizes the roadway improvements relevant to this traffic study, which were prioritized in the Kapa`a Transportation Solutions.

Table 5. Potential Traffic Solutions		
Location	**Description**	**Priority**
Kapa`a By-Pass Road	Widen the Kapa`a By-Pass Road to provide one lane in the northbound direction from Olohena Road to Kuhio Highway.	<5 Years

Kuhio Highway and Kukui Street	Modify traffic signal timings.	<5 Years
Kuhio Hwy and Kapa`a By-Pass Road	Intersection improvements.	<5 Years
Olohena Road at Kapa`a Middle School	Improve crosswalk.	<5 Years
Kapa`a Bypass Road and Olohena Road Round-a-bout	Add a separate (bypass) right-turn lane at the roundabout from makai bound Olohena Road to southbound Kapa`a By-Pass Road.	<5 Years
Kuhio Highway	Provide an additional southbound lane on Kuhio Highway from Kapa`a By-Pass Road to Kuamoo Road (scheduled for construction).	<5 Years
Kuhio Highway and Kukui Street	Close the makai leg of Kukui Street to provide business parking. Implement vehicular and pedestrian improvements on Kukui Street (mauka leg) and Huluili Street at Kuhio Highway.	5-10 Years
Kapa`a New Town Park	Provide direct access from the Kapa`a New Town Park to the Kapa`a By-Pass Road.	5-10 Years
Kuhio Highway and Lehua Street	Improve the left-turn movement from Lehua Street onto Kuhio Highway.	5-10 Years
Kapa`a By-Pass Rd and Kuhio Highway	Re-align the Kapa`a By-Pass Road (South Junction) to intersect Kuhio Highway opposite Aleka Loop or Papaloa Road.	5-10 Years

Excerpt from updated TIAR, Exhibit "H"

Table 5. Potential Traffic Solutions (Cont'd.)		
Location	**Description**	**Priority**
Kapa`a By-Pass Road South of Olohena Road	Improve the horizontal alignment and shoulders of the Kapa`a By-Pass Road, south of Olohena Road, to Kuhio Highway.	5-10 Years
Kuhio Highway Between Kawaihau Road and Lehua Street	Provide a two-way median left-turn lane along Kuhio Highway.	5-10 Years
Olohena Rd at Kahau St and Lehua St	Implement intersection improvements and bicycle/pedestrian improvements to Kuhio Highway.	5-10 Years
Olohena Rd at Kaapuni Rd and Kaehulua Rd	Implement intersection improvements	5-10 Years

Kaapuni Road	Upgrade/improve Kaapuni Road to major collector standards, including bicycle lanes.	5-10 Years
Olohena Road Between Kuhio Highway and Kamalu Road	Improve Olohena Road to accommodate non-motorized modes.	5-10 Years
Kapa`a Bus Hub	Relocate the Kapa`a bus hub from its existing location near the skate park to a new location on or near the Kuhio Highway mainline, with amenities.	5-10 Years

Excerpt from updated TIAR, Exhibit "H"

Improving the horizontal alignment and providing shoulders on the Kapa`a By-Pass Road, south of Olohena Road may impact the proposed Hokua Place frontage. Any widening and realignment should be coordinated with Hokua Place. The Kapa`a Transportation Solutions also identifies Road A as a new connector road between Olohena Road and the Kapa`a By-Pass Road, which was prioritized beyond the 10- year time frame. The construction cost of the connector road was estimated at $25,824,000.

E. Peak Hour Traffic Analysis Without Project

1. AM Peak Hour Traffic Without Project

During the AM peak hour of traffic without the proposed Project, the overall intersection of Kuhio Highway and Kukui Street is expected to continue to operate at LOS "A". The left-turn movement on makai bound Kukui Street is expected to continue to operate at LOS "F". The traffic movements in both directions on Kuhio Highway are expected to continue to operate at LOS "A" at Kukui Street, during the AM peak hour of traffic without the proposed Project.

Makai bound Lehua Street is expected to operate at LOS "F" at Kuhio Highway, during the AM peak hour of traffic without the proposed Project. Makai bound Ohia Street is expected to operate at LOS "E" at Kuhio Highway.

During the AM peak hour of traffic without the proposed Project, makai bound Olohena Road is expected to operate at LOS "F" at the Kapa`a Bypass Road. Southbound Kapa`a By-Pass Road is expected to operate at LOS "D" at Olohena Road. Kaapuni Road is expected to operate at LOS "F" at lohena Road. The other intersections in the study area are expected to operate at satisfactory Levels of Service, during the AM peak hour of traffic without the proposed Project.

2. PM Peak Hour Traffic Without Project

The overall intersection of Kuhio Highway and Kukui Street is expected to operate at LOS "A", during the PM peak hour of traffic without the proposed P roject. The left-turn movement on makai bound Kukui Street is expected to continue to operate at LOS "E". The other traffic movements at the intersection are expected to operate at LOS "A", during the PM peak hour of traffic without the proposed Project.

The left-turn movement on makai bound Lehua Street is expected to operate at LOS "E" at Kuhio Highway, during the PM peak hour of traffic without the proposed Project. Makai bound Ohia Street

also is expected to operate at LOS "F" at Kuhio Highway. Mauka bound Pono Kai Driveway is expected to operate at LOS "E", during the PM peak hour of traffic without the proposed Project.

Southbound Lehua Street is expected to continue to operate at LOS "F" at Olohena Road, during the PM peak hour of traffic without the proposed Project. Southbound Kapa`a By-Pass Road is expected to operate at LOS "F" at Olohena Road. The right-turn movement from the Kapa`a By-Pass Road onto Kuhio Highway is expected to operate LOS "D". The other intersections in the study area are expected to operate at satisfactory Levels of Service, during the PM peak hour of traffic without the proposed Project.

The PM peak hour traffic demands at the intersection of Olohena Road and Kaapuni Road without the proposed Project are expected to meet the AASHTO guideline for an exclusive left-turn lane on makai bound Olohena Road.

III. Traffic Impact Analysis

A. Trip Generation Characteristics

The trip generation characteristics were based upon the ITE trip rates for single-family detached dwelling units (DU) and residential condominium/townhouse units. The weekday ITE trip rates, during the AM peak hour and the PM peak hour of adjacent street traffic, were used for this traffic impact analysis. The ITE regression equations were used to derive the trip rates for the single-family detached dwellings in this analysis.

The ITE trip generation rates for a shopping center were developed from the regression equations to estimate the trip generation from the proposed 8,000 sq. ft. retail center. The pass-by trip rate of 81.2 percent was applied to the PM peak hour trip generation. The ITE pass-by trip rate is reasonable given the size of Hokua Place and the volume of through traffic on Road A. Hokua Place is expected to generate totals of 487 vph and 560 vph, during the AM and PM peak hours of traffic, respectively. The trip generation characteristics for the proposed Project are summarized in Table 6.

Table 6. Hokua Place Trip Generation Characteristics

Land Use (ITE Code)	Units	AM Peak Hour (vph)			PM Peak Hour (vph)		
		Enter	Exit	Total	Enter	Exit	Total
Single-Family	16 DU	5	16	21	13	7	20
Phase 1 (265)							
Single-Family Phase 2 (265)	100 DU	20	60	80	66	38	104

Condominium/ Townhouse (230)	700 DU	52	256	308	244	120	364
Retail Center (820)	8,000 SFGFA	21	13	34	53	57	110
	Pass-By	0	0	0	(-)45	(-)45	(-)90
Total External Trips		**98**	**345**	**443**	**331**	**177**	**509**

Excerpt from updated TIAR, Exhibit "H"

B. Site Access Improvements

A conventional channelized, Tee-intersection was considered at the intersection of Road A and the Kapa`a By-Pass, with left-turn and right-turn deceleration/storage lanes and a median refuge lane on the Kapa`a By-Pass Road. Under unsignalized traffic control, the left-turn lane from Road A onto the Kapa`a Bypass Road is expected to operate at LOS "F", during the PM peak hour of traffic. As an alternative to traffic signalization, a round-a-bout intersection is recommended at Road A and the Kapa`a Bypass Road. The following site access improvements are recommended for the proposed Project:

1. Construct a stop-controlled Tee-intersection between Road A and Olohena Road.
2. Construct a stop-controlled Tee-intersection between the Phase 1 Driveway and Olohena Road.
3. Construct a single-lane round-a-bout at the intersection of Road A and the Kapa`a By-Pass Road.

C. Traffic Assignment

The traffic assignments were based upon the existing traffic patterns along Olohena Road and Kukui Street. The traffic assignments also included through traffic demands, which are expected to be diverted from makai bound Olohena Road and from northbound Kapa`a By-Pass Road to the proposed Road A. Road A is expected to reduce the traffic demands at the roundabout intersection of the Kapa`a By-Pass Road and Olohena Road.

D. AM Peak Hour Traffic Analysis With Project

The roundabout intersection of the Kapa`a By-Pass Road and Road A is expected to operate at satisfactory Levels of Service, during the AM peak hour of traffic with the proposed Project. Road A is expected to operate at LOS "C" at Olohena Road. The Phase 1 driveway on Olohena Road is expected to operate at LOS "B".

The overall intersection of Kuhio Highway and Kukui Street is expected to continue to operate at LOS "A", during the AM peak hour of traffic with the proposed Project. The left-turn movement on makai bound Kukui Street is expected to continue to operate at LOS "F". The traffic movements in both directions on Kuhio Highway are expected to operate at LOS "A" at Kukui Street, during the AM peak hour of traffic with the proposed Project. Makai bound Lehua Street is expected to continue to operate at LOS "F" at Kuhio Highway, during the AM peak hour of traffic with the proposed Project.

Makai bound Ohia Street also is expected to operate at LOS "F" at Kuhio Highway. The Pono Kai Driveway is expected to operate at LOS "D".

During the AM peak hour of traffic with the proposed Project, the overall round-a-bout intersection of the Kapa`a By-Pass Road and Olohena Road is expected to improve from LOS "E" to LOS "D", during the AM peak hour of traffic with the proposed Project. Makai bound Olohena Road is expected to improve from LOS "F" to LOS "E", due to the diversion of makai bound traffic to Road A. Southbound Kapa`a By-Pass Road is expected to worsen from LOS "D" to LOS "E" at Olohena Road.

Kaapuni Road is expected to continue to operate at LOS "F" at Olohena Road. The left-turn movement from the Kapa`a By-Pass Road onto Kuhio Highway is expected to operate at LOS "F", during the AM peak hour of traffic with the proposed Project.

E. PM Peak Hour Traffic Analysis With Project

During the PM peak hour of traffic with the proposed Project, the round-a-bout intersection of the Kapa`a By-Pass Road and Road A is expected to operate at satisfactory Levels of Service. Road A is expected to operate at LOS "D" at Olohena Road. The Phase 1 driveway on Olohena Road is expected to operate at LOS "A".

The overall intersection of Kuhio Highway and Kukui Street is expected to continue to operate at LOS "A", during the PM peak hour of traffic with the proposed Project. The left-turn movement on makai bound Kukui Street is expected to continue to operate at LOS "F". The traffic movements in both directions on Kuhio Highway are expected to operate at LOS "A" at Kukui Street, during the PM peak hour of traffic with the proposed Project.

Makai bound Lehua Street is expected to continue to operate at LOS "F" at Kuhio Highway, during the PM peak hour of traffic with the proposed Project. Makai bound Ohia Street also is expected to operate at LOS "F" at Kuhio Highway. The Pono Kai Driveway is expected to operate at LOS "D" at Kuhio Highway.

During the PM peak hour of traffic with the proposed Project, southbound Kapa`a By-Pass Road is expected to continue to operate at LOS "F" at its roundabout intersection with Olohena Road. The left-turn and right-turn movements on the Kapa`a By-Pass Road (South Junction) at Kuhio Highway are expected to operate at LOS "E" and LOS "D", respectively. The other intersections in the study area are expected to operate at satisfactory Levels of Service, during the PM peak hour of traffic with the proposed Project.

IV. Recommendations and Conclusions

A. Recommended Traffic Improvements Without Project

The following traffic improvements expand upon the potential traffic solutions, which were cited in the Kapa`a Transportation Solutions, and are recommended to mitigate the existing and expected traffic congestion without the proposed Project:

1. Widen Kuhio Highway between the Kapa`a By-Pass Road (South Junction) and Kuamoo

Road to provide two through lanes in each direction (DOT).

2. Restripe the median on the north leg of Kuhio Highway at the Kapa`a By-Pass Road (South Junction) to provide a median refuge lane to facilitate the left-turn movement from the Kapa`a By-Pass Road onto northbound Kuhio Highway.

3. Restrict on-street parking along Kuhio Highway within Kapa`a Town. Provide off-street business parking to replace the restricted parking along Kuhio Highway. Restripe Kuhio Highway to provide additional through and/or left-turn lanes.

4. Modify the traffic signal traffic operations at the intersection of Kuhio Highway and Kukui Street to reduce queuing and delays.

5. Add a right-turn bypass lane at the round-a-bout intersection from southbound Kapa`a By-Pass Road to mauka bound Olohena Road.

6. Realign Kaehulua Road to intersect Olohena Road and Kaapuni Road opposite the mauka leg of Olohena Road to create a four-legged intersection with stop-controls on Kaehulua Road and the mauka leg of Olohena Road. Realign/channelize the mauka leg of Olohena Road to intersect Kaapuni Road and the makai leg of Olohena Road to improve the intersection sight distance. Channelize the right-turn movements on the makai bound approaches of Kaapuni Road and Olohena Road.

7. Extend the median refuge lane/two-way left-turn lane on Kuhio Highway from Lehua Street to Kawaihau Road.

DOT is in the process of widening Kuhio Highway from the Kapa`a By-Pass Road to Kuamoo Road (Item No. 1 above). The above Item Nos. 2, 3, and 7 are expected to improve the capacity of Kuhio Highway through Kapa`a Town.

Consolidating the intersections of Olohena Road, Kaapuni Road, and Kaehulua Road (Item No. 6 above) into a single four-legged intersection is expected to improve the traffic operations and safety at the intersection. A round-a-bout intersection was considered for Olohena Road, Kaapuni Road, and Kaehulua Road. However, the existing roadway slopes would have required extensive grading to provide adequate sight distances at a roundabout intersection.

B. Recommended Traffic Improvements With Project

The following traffic improvements are recommended to mitigate traffic impacts with the proposed Project:

1. Construct Road A from Olohena Road to the Kapa`a By-Pass Road, as recommended in the Kapa`a Transportation Solutions.
2. Construct a single-lane roundabout at the intersection of Road A and the Kapa`a By-Pass Road.

C. Conclusions

An interim solution to the existing traffic congestion in Kapa`a Town is recommended in the Kapa`a Transportation Solutions. Constructing additional off-street parking areas would provide the

opportunity to restripe the existing on-street parking lanes and striped shoulders along Kuhio Highway to provide for additional through traffic lanes and/or median left-turn lanes.

The existing southbound traffic demand in Kapa`a Town is reduced by the Kapa`a By-Pass Road. Dedication of the Kapa`a By-Pass Road right-of-way along the Hokua Place frontage would assure the continued usage of the existing Kapa`a Bypass Road. Any horizontal realignment and/or widening of the Kapa`a By-Pass Road along the Project frontage should be coordinated with the development of Hokua. Widening of the north leg of the Kapa`a By-Pass Road between Olohena Road and Kuhio Highway Place (North Junction) to provide at a two-way, two-lane roadway would provide additional capacity in the northbound direction.

The construction of the proposed Road A is recommended in the Kapa`a Transportation Solutions to provide additional mauka-makai roadway capacity between Kapa`a Valley and the Kapa`a By-Pass Road. By diverting through traffic between Olohena Road and the Kapa`a By-Pass Road, Road A is expected to mitigate the Project's traffic impacts, during the AM and PM peak hour of traffic with the proposed Project at the round-a-bout intersection of the Kapa`a By-Pass Road and Olohena Road.

The round-a-bout at the intersection of the Kapa`a By-Pass Road and Road A will increase the intersection capacity, in anticipation of the increase in demand resulting from the future two-lane widening of the Kapa`a By-Pass Road between Olohena Road and Kuhio Highway (North Junction). The proposed round-a-bout intersection of the Kapa`a By-Pass Road and Olohena Road is expected to operate at satisfactory Levels of Service, during the AM and PM peak hours of traffic with the proposed Project.

4.9.3 Level of Impact after Mitigation

An interim solution to the existing traffic congestion is recommended in the Kapa'a Transportation Solutions. The recommended solutions will provide additional through traffic lanes and/or median left-turn lanes.

The existing southbound traffic demand in Kapa'a Town is reduced by the Kapa'a By-Pass Road. Dedication of the Kapa'a By-Pass Road right-of-way by the Petitioner along the HoKua Place frontage will assure the continued usage of the Kapa'a Bypass Road. Widening of the north leg of the Kapa'a Bypass Road between Olohena Road and Kuhio Highway (North Junction) would provide a two-way, two-lane roadway, thus providing additional capacity in the northbound direction.

The construction of Road A will provide additional mauka-makai roadway capacity between Kapa'a Valley and the By-Pass Road. This would mitigate the Project's traffic impacts during the AM and PM peak hour of traffic at the round-a-bout intersection of Kapa'a By-Pass Road and Olohena Road.

The round-a-bout at the intersection of Kapa'a Bypass Road and Road A will increase the intersection capacity, in anticipation of increase in demand resulting from future two-lane widening of the Kapa'a By-Pass Road.

The intersection of the Kapa'a Bypass Road and Olohena Road is expected to operate at satisfactory Levels of Service during the AM and PM peak hours of traffic as the result of the proposed Project.

4.10 Power & Communication

This section discusses the electrical power and communications facilities in the region, the potential impact of the Project on those facilities, and mitigation measures HoKua Place will employ to mitigate potential impacts.

4.10.1 Environmental Setting

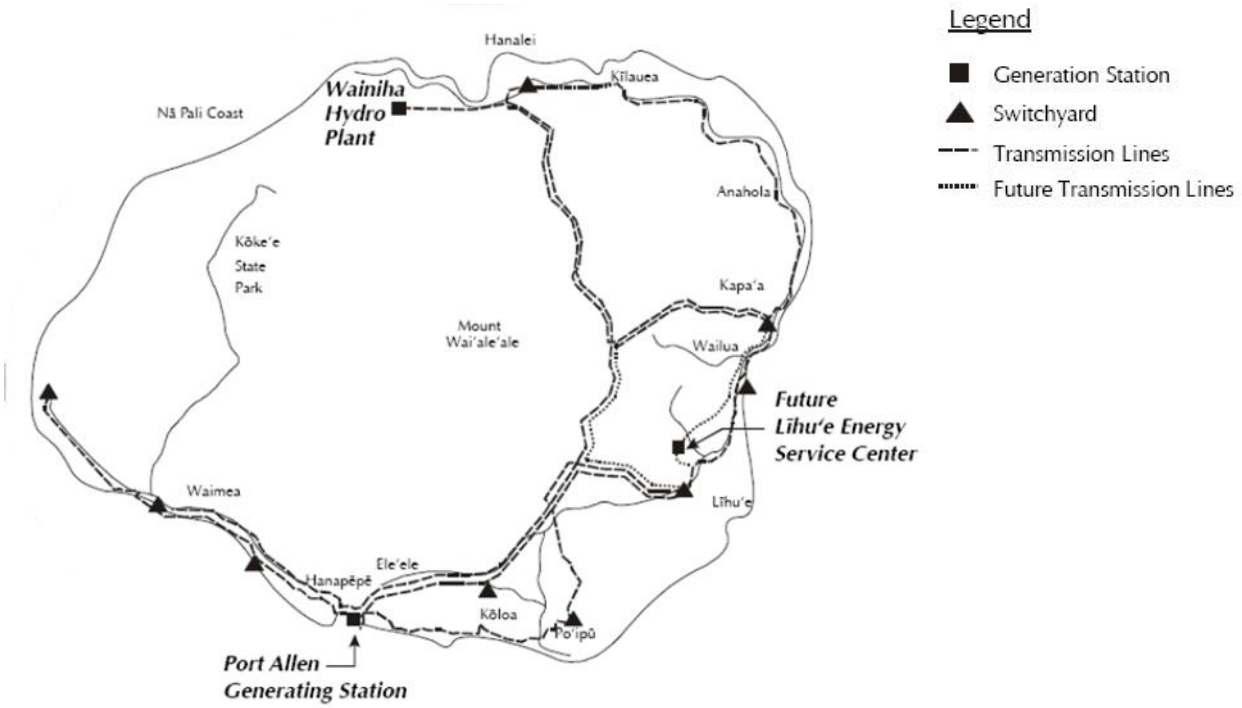
Power

Residents of the State of Hawai'i pay the highest electricity rates in the US. The average American paid 10.5 cents/kWh in 2010. In the state of Hawai'i, O'ahu currently has the lowest residential electricity rates, while Lāna'i has the highest. Residential rates on Kaua'i average between 40-45 cents/kWh.

Hawai'i relies on imported oil for approximately 76% of its total electricity production. The price variation across the state is largely a result of difference in power plant efficiencies, power purchasing agreement and other infrastructure.

	Kaua'i	Oahu	State
Medium Income (2009)	$55,723	$67,019	$63,741
Electricity Price (May 2011)	44.27 cents/kWh	30.1 cents/kWh	-

The Kaua'i Island Utility Cooperative ("KIUC") is the sole electric utility on Kaua'i. KIUC began serving the people of Kaua'i on November 1, 2002, when it purchased Kaua'i Electric from Connecticut-based Citizens Utilities Company. KIUC is America's newest electric cooperative, but it's by no means the only one. It is one of approximately 900 electric cooperatives serving electric consumers in 47 states.



Like all cooperatives, KIUC operates as a not-for-profit organization that is owned and controlled by the people it serves. KIUC serves over 23,300 customers with 92% of KIUC's electricity coming from the burning of imported fossil fuels.

According to the Kauaʻi General Plan, the Kawaihau region is served via a tap off the mauka transmission line that connects the Wainiha Hydroelectric Plant with Port Allen. This tap provides power via the Kapaʻa Switchyard at Kapaʻa Town and other developed coastal areas, as well as to residential communities in Kapaʻa and Wailua Homestead areas. Kapaʻa Switchyard is also linked to the Lydgate Substation and the Līhuʻe Switchyard.

A photovoltaic system that can generate up to 1.18 MW of electricity is situated in HoKua Farm Lots (formerly known as Kapaʻa Highlands I). Its operator entered into an agreement to sell to Kauaʻi Island Utility Cooperative electricity generated from the solar farm for 20 years. "Creating more renewable energy alternatives is one of the most critical challenges we face," Kauaʻi Mayor Bernard Carvalho said at a dedication ceremony for the solar farm.

The photovoltaic system Project spreads over five acres and has 5,376-solar panels mounted on posts and piers. The panels average about 12-feet off the ground.

Communications

The Project site is served by Hawaiian Telcom telephone lines. Numerous cell towers across the island provide cellular phone service to the area.

4.10.2 Environmental Impacts & Mitigation Measures

Power

The Project will not have a significant impact on KIUC's electrical grid. The solar facility located at HoKua Farm Lots (formerly known as Kapaʻa Highlands I) will be transmitting electricity to nearby KIUC transmission lines.

In a September 6, 2007 email to HoKua Place (formerly known as Kapaʻa Highlands II), Curt K. Tadani, Eastside Distribution Planner for KIUC wrote,

> "I got your message and the plans that you brought in were already approved and signed off by us on June 27, 2005 so as far as we're concerned, it should be okay".

Pursuant to Chapter 344 (State Environmental Policy) and Chapter 226 (Hawaiʻi State Planning Act), HRS, all HoKua Place activities, buildings and grounds will be designed with a significant emphasis on energy conservation and efficiency.

Efficient design practices and technologies will be the cornerstone of HoKua Place's design phase. Buildings within HoKua Place will further comply with the County of Kauaʻi Energy Conservation Code (Kauaʻi County Ordinance 890).

Furthermore, solar water heaters will be utilized as made requisite under Section 196-6.5, HRS. HoKua Place will confer with KIUC in regards to suggestions and proposals for customized demand-oriented management programs offering rebates for the installation of alternative energy efficient technologies and measures.

HoKua Place is committed to renewable energy and energy efficiently as ways to reduce environmental harm and self-sufficiency. HoKua Place will continue to improve programs and create new programs as the development is initiated.

In 2009, the State Legislature codified the need for energy efficiency by enacting the statewide energy efficiency portfolio standard with a target of reducing energy consumption by 30% of forecasted energy consumption by 2030 (4,300 GWh) and beginning the process for separating efficiency from the existing renewable portfolio standard.

Hawaiʻi Revised Statutes section 46-19.6 requires all county agencies to place a "priority on processing of permit applications for construction Projects incorporating energy and environmental design building standards."

To reduce net energy consumption and demand, HoKua Place will consider the implementation of elements of the United States Environmental Protection Agency (EPA) Energy Star Program; including efficient insulation, high performance windows, compact construction, efficient ventilation systems, and energy efficient lighting elements and appliances.

HoKua Place will furthermore seek to harness energy conservations and technologies to facilitate the possibility of net energy metering in building design to empower residents and tenants to reduce their electricity costs and provide energy back to the grid.

Energy conservation and efficiency measures will be implemented and emphasized where applicable in the design of HoKua Place. Energy-efficiency technologies to be considered include:

- Solar energy for water heating
- Photovoltaic systems, fuel cells, biofuels and other renewable energy sources
- Optimal utilization of daytime sunlight
- High efficiency light fixtures
- Roof and wall insulation, radiant barriers and energy efficient windows
- Optimized air-flow
- Installation of heat resistant roofing
- Intelligent Landscaping to provide for shading, dust control, and heat-mitigation
- Portable solar lighting (i.e. parking lots)

Additionally, there currently are high voltage electrical lines around part of the Project's perimeter. The electrical utility and HoKua Place would like to run the lines underground thru the Project. Dependent upon funding placing high voltage transmission lines underground may be incorporated into the Project. This action would be a both a preventative measure to protect shearwater birds, and to beautify the historic Kapaʻa town core area.

Communications

The Project will not have a significant impact on communication resources or services.

4.10.3 Level of Impact after Mitigation

The use of alternative/renewable energy, as well as, the implementation of energy conservation and efficiency measures, as noted in the HoKua Place Sustainability Plan (Exhibit B), will serve to reduce the impact of the Project on energy grids and resources. The Projects energy consumption and communication needs will have a less than significant impact.

The Project will not have a significant impact on KIUC's electrical grid. The solar facility located at HoKua Farm Lots (formerly known as Kapaʻa Highlands I), will be transmitting electricity to nearby KIUC transmission lines.

4.11 Noise

This section discusses the noise conditions in the region and in the Project area, the potential impacts of the Project on those conditions, and the mitigation measures HoKua Place will employ to mitigate those potential impacts.

4.11.1 Environmental Setting

Sound levels are fluctuating air pressure waves expressed on a logarithmic scale in decibels (abbreviated as dB). A change of 10 units on a decibel scale reflects a 10-fold increase in sound energy. A 10-fold increase in sound energy roughly translates to a doubling of perceived loudness. In general, humans can barely hear a change of 1 decibel, can usually hear a change of 3 decibels and can easily hear a change of 5 decibels. In evaluating human response to noise, acousticians compensate for people's varying abilities to discern frequency or pitch components of sound.

While a healthy young ear may be able to hear sounds over the frequency range of 20 hertz (Hz) to 20,000 Hz, the human ear is most sensitive to sounds in the middle frequency range used for human speech, and less sensitive to lower- and higher-pitched sounds. The "A" weighting scale is used to account for this varying sensitivity. Thus, most community noise standards are expressed in decibels on the A-weighted scale, abbreviated dBA.

Zero on the decibel scale corresponds to the threshold of human hearing, while sound levels of 120 dBA and higher can be painful and cause hearing damage. For reference, human speech at 10-feet is about 60-70 dBA. Noise-sensitive uses include residences, hospitals, schools, parks and similar uses. Noise could also be a sensitive issue for cultural practices and nature-watching activities.

4.11.2 Environmental Impacts & Mitigation Measures

A temporary increase in noise during construction is anticipated; however, this impact will be a minor, short term inconvenience and will be minimized by the limitations on the hours of construction activity and plans to reduce impacts of construction traffic.

Activities and use of the proposed 3.1-acre park will increase noise especially during the weekends and after school. However, the noise level will be comparable to the noise generated by the adjacent Middle School. Additionally, the noise environment will be affected to a degree by the addition of traffic.

The development of housing on a vacant site will increase noise in the area. Buildings will be designed, oriented and located to minimize conflicts with the surrounding community activities and in a manner that avoids or minimizes the impacts on the development from noise.

Walls, fences and landscaping can be incorporated into project plans to help screen and buffer the Project from the impacts of vehicular traffic as well as avoid or minimize the impacts of noise from the Project on nearby residences.

In addition, best management practices that include performing construction-related activities in strict compliance with all applicable noise regulations will mitigate any temporary impacts.
HoKua Place operations are not expected to cause a significant noise impact, and no mitigation measures beyond compliance with applicable regulations, requirements, and standards, are required.

However, if noise levels exceed the Department of Health's (DOH) "maximum permissible" property-line noise levels, contractors will be required to consult with DOH per Title 11, Chapter 46, HAR (Community Noise Control) prior to construction.

4.11.3 Level of Impact after Mitigation

The implementation of the mitigation measures identified will serve to further reduce the noise associated with the Project. It is expected that HoKua Place will result in a negligible increase in noise and a minor increase in vehicular traffic noise, neither of which will result in a significant impact.

4.12 Climate, Air Quality & Lighting

This section discusses the air quality, climatic, and lighting conditions in the region and specific subject area, the potential impact of the Project on those resources, and mitigation measures HoKua Place will employ to mitigate potential impacts.

4.12.1 Environmental Setting

Climate

While Hawaiʻi is generally characterized as being temperate, the geography of the East Shore District is notable for its breezy temperate climate. Rainfall along the east side of Kauaʻi is slightly higher than other western and inland areas on the island. Prevailing trade winds flow along the coast in the northeasterly direction.

The climate of the Kapaʻa area is mild, with average monthly temperatures ranging from 72 degrees Fahrenheit in the winter to 80 degrees Fahrenheit in the summer. The winds are from the northeast and the mean annual rainfall for the area is 60 to 80-inches.

Air Quality

In the State of Hawaiʻi, both federal and state environmental health standards pertaining to outdoor air quality are generally met due to prevalent trade winds and the absence of major stationary sources of pollutant emissions.

There are no non-attainment areas for air quality in the State of Hawaiʻi, and air quality monitoring data is thus, very limited. The ambient air quality of the Project site is typically clean but heavy with particulate matter from the prevailing on shore winds.

There are no major sources of air pollution in the immediate vicinity such as agricultural burning, manufacturing plants and incinerators. Auto emissions from vehicular traffic on Kūhiō Highway and local streets are not a factor, as the project site is located north of Kūhiō Highway.

In its former use, the site would experience periods of degraded air quality when cane haul trucks were actively hauling sugar cane. Since the cessation of sugar cane cultivation in the Project area, the site has reverted to an overgrown natural state and air quality has remained good.

Lighting

The absence of large, brightly-lit cities on the Island of Kauaʻi, mean that there are very few light sources or lighting impacts within the subject property.

4.12.2 Environmental Impacts & Mitigation Measures

Climate

HoKua Place will have no effect on climatic conditions and no mitigative measures are necessary.

Air Quality
While air quality will be impacted to a certain extent during the course of development, such as exhaust emissions from on-site construction equipment and construction vehicle traffic, the impact will be short-term.
In addition, best management practices that include performing construction-related activities in strict compliance with all applicable air regulations will mitigate any temporary impacts. Contractors will be required to comply with Hawaiʻi Administrative Rules, Chapter 11-60.1, "Air Pollution Control."

Increasingly stringent pollution control measures for new vehicles will also result in a decrease in vehicular emissions over time. Exhaust emission should not have any significant effect on the area because prevailing winds should disperse any exhaust gas concentration.

On-Site grading and infrastructure improvements and residential construction will result in an increase in dust. However, dust resulting from construction is anticipated to be minimal. The prevailing trade wind pattern is from the north-east directions.

Potential airborne matters will generally be carried in the south-west direction, away from the school and existing residential areas. However, on occasions, the easterly winds may carry the potential airborne matters towards the school and existing residential neighborhoods.

Construction activities shall comply with the provisions of Hawaiʻi Administrative Rules 5-11-60.11.33 on Fugitive Dust. Dust preventive measures will include:

- Planning of construction phases to minimize the amount of dust generating materials and activities, centralizing on-site vehicular traffic routes and locating of potential dust-generating equipment in areas of the least impact.
- Providing adequate water source at the site prior to start of construction.
- Landscaping and providing rapid covering of bare areas developed during construction.
- Minimizing dust from shoulders and access roads.
- Providing dust control measures during weekends, after hours, and prior to daily construction.
- Controlling dust from debris being hauled away from the site.

The implementation of dust control measures noted above is warranted during development and construction; however, potential fugitive dust emissions would be temporary and, over the long term, air quality would not be impacted by the proposed well.

Lighting
All construction activities will integrate lighting mitigation measures to reduce lighting impacts. The Newell's Shearwater birds are known to nest in the interior mountain of Wailua and Kapaʻa. The flights of these birds may be over the subject property.

The proposed Project will incorporate exterior lighting that will not have adverse effects on the Newell's Shearwater birds. Additionally, any streetlights that may be installed as part of the Project will be shielded to reduce the potential for interactions of nocturnally flying native birds with external lights and man-made structures.

4.12.3 Level of Impact after Mitigation

The Project will not have a significant adverse impact on air quality or climate, even without mitigation. Compliance with existing requirements and the implementation of mitigation measures described above

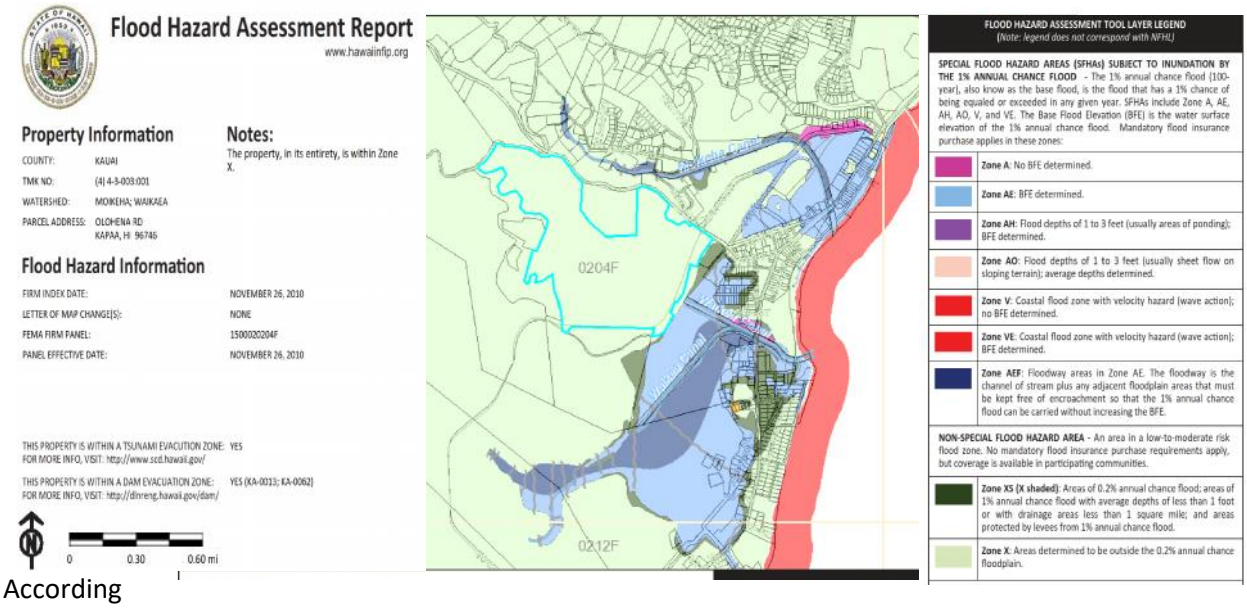
will ensure that the air quality and lighting will remain in compliance with the State laws and regulations and therefore impacts will be less than significant.

4.13 Natural Hazards

This section discusses the natural hazards which may affect the subject property including flooding, hurricanes, volcanic activity, tsunami and earthquakes.

4.13.1 Environmental Setting

Flooding



According to the Federal Emergency Management Agency's Flood Insurance Rate Map (FIRM) Community-Panel No. 1500020135 C, almost all of the Project site is located in Zone X. Zone X is described as areas outside of the 100- and 500-year floodplains with minimal flooding.

Other Hazards

The island of Kaua‘i is uniquely exposed to hurricanes due to its exposure as the western most location in the Hawaiian Islands chain.

The Project site has minimal exposure to other natural hazards, such as volcanic events and earthquakes. Additionally, the Project site is not located in a tsunami zone, so tsunami inundation parameters do not apply to the proposed Project.

4.13.2 Potential Environmental Impact & Mitigation Measures

Flooding

The Project does not involve construction within a 100-year flood plain (Zones A or V), and it does not involve a “critical action” within a 500-year flood plain.

Site Preparation and construction of the proposed Project is not anticipated to result in flooding of the Project site or lower elevation properties and the Project will be consistent with applicable regulations and guidance relating to floodplain management.

The Project will comply with requirements of the Federal Flood Insurance Program.

Other Hazards

The Uniform Building Code (UBC) prepared by the International Conference of Building Officials, details "Prescriptive Details for Hurricane-Resistant Construction" (1991 UBC Appendix Chapter 25).

These prescriptive details help buildings withstand wind acceleration and gusts from hurricanes. Buildings within the HoKua Place will be built with these prescriptive details, where applicable.

In the long-term, the proposed Project will not exacerbate any natural hazard conditions. Planning and design for the proposed Project will be based on County construction-related standards.

Additionally, impacts from natural hazards can be mitigated by adherence to appropriate civil defense evacuation procedures.

4.13.3 Level of Impact after Mitigation

The Project will not have a significant impact on natural hazards. Compliance with existing requirements and the implementation of mitigation measures described above will ensure that no significant impacts are expected.

4.14 Site Preparation & Construction

This section discusses the potential site preparation and construction impacts related to the natural and built environment and the potential mitigation measures that could be employed. Site preparation and construction effects will be temporary.

No unusual site preparation or construction techniques or materials are anticipated. During site preparation and construction related activities, HoKua Place will comply with all applicable rules and regulations.

4.14.1 Potential Environmental Impacts

The Project will require site preparation in order to implement the action. In some cases, this is limited vegetation removal, while others will require grading and leveling of portions of the site.

Heavy equipment including bulldozers, rippers, excavators, loaders, jack hammers, backhoes, dump trucks, pick-up trucks, boom-mounted flatbed trucks, asphaltic concrete hauling trucks, pavers and rollers will be employed.

Activities will occur in phases and involve short-term, temporary impacts from site preparation, cutting, filling, trenching, backfilling and clean-up operations. Activities and facilities may require minimal leveling of ground but will not require significant soil excavation; therefore, site preparation will have a negligible effect on the environment.

Environmental impacts associated with the site preparation and construction phase of a Project are generally localized and temporary in nature. Anticipated impacts include noise from heavy construction equipment, fugitive dust from earthmoving activities, air pollutant emissions from internal combustion engines, and soil erosion and sedimentation.

Construction activities will include site preparation, foundation construction, drainage structure construction or installation, preparation of roads, and clean up. Construction will also generate solid waste in the form of packaging from building materials, detergents, paint, metals and solvents.

Because of the expected levels and timing of construction, with implementation of mitigation measures, construction-related impacts are not expected to be significant. Necessary construction-phase permits will be obtained and complied with including:

- National Pollutant Discharge Elimination System (NPDES) and component Best Management Practice (BMP) plan
- Noise permit
- Noise variance
- Oversize and Overweight Vehicles Permit (OOVP)

4.14.2 Mitigation Measures

Mitigation measures for all phases and types of Project site preparation and construction includes conformance to all laws, codes, rules and regulations.

The potential construction impacts are evaluated within the framework of compliance with all applicable rules, regulations and requirements for the project type and location. Applicable rules, regulations and requirements will include OSHA, and necessary permits.

The following mitigation measures have been identified to minimize potential impacts:

Cultural, Archaeological and Historic Resources

- If in the unlikely event that any human remains or other significant subsurface deposits are encountered during the course of development activities, all work in the immediate area will stop and DLNR's State Historic Preservation Division will be promptly notified.

Biological Resources

- Landscaping within the HoKua Place Project seeks to include native trees, shrubs and flowering plants, as encouraged by the Kaua‘i Department of Water, as part of their recommendations for water conservation.
- The proposed Project will incorporate exterior lighting that will not have adverse effects on the Newell’s Shearwater birds.

Visual and Aesthetic Resources

- Re-vegetation will occur in areas disturbed by construction activities and overtime the vegetation near construction areas will grow and mature.
- The architecture of the Project will ensure that the Project is compatible with its visual environment. The Project will create structures which are both visually appealing and blend in with the scenery around them.
- High voltage electrical lines around part of the Project’s perimeter may be run underground, funding permitting.

Geology, Soils and Slope Stability

- Applicable law will be followed to minimize soil movement, erosion and compaction during all project actions.
- Implementation actions will include Best Management Practices (BMPs) to ensure that the alterations to the terrain minimize erosion, water quality degradation and other environmental impacts.
- Both short-term construction and long-term maintenance BMPs will be included in any permit conditions.

Water Resources and Wastewater

- HoKua Place will work with the DOW on pertinent water issues during the design and development phase.
- The proposed water system will meet conditions of the State Department of Health, including HAR Chapter 11-20, 11-21 and 11-25.
- Installation of water efficient fixtures and the implementation of a water saving practices to reduce the demand for freshwater resources.
- The water distribution system will be maintained to prevent water loss and homeowners and businesses will be encouraged to maintain fixtures to prevent leaks.
- Landscaping will emphasize climate-adapted native and other appropriate plants suitable for coastal locations.
- Best management practices will be designed and implemented to minimize infiltration and runoff from daily operations.

- The Project's proposed drainage system will be designed to minimize impacts to near shore coastal waters. Water quality treatment and detention basins will be built to prevent runoff and sedimentation from impacting groundwater resources.
- Prior to the occupancy of any residential or commercial unit within the Project, HoKua Place shall implement and maintain storm and surface-water runoff BMPs, subject to any applicable review and approval of the State DOH, designed to prevent violations of State water quality standards as a result of storm-water discharges originating from the Project.
- Potential water quality impacts during construction of the Project will be mitigated by adherence to State and County water quality regulations governing grading, excavation and stockpiling.
- BMPs will also be implemented for long term development and operation of activities occurring on the site as part of pollution prevention measures.
- HoKua Place will be contributing funds to help upgrade the deferred maintenance and repair of the Kapaʻa Wastewater Treatment plant. The Project will not be a detriment to the capacity of the Plant.
- Wastewater line in Olohena and other roadways will comply with all applicable rules and regulations.
- The Project's design features and policies to comply with applicable rules and regulations will include conformance to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems."

Solid Waste and Material Management

- Soil and debris displaced from grading and clearing will be utilized as fill throughout the site as required, minimizing disposal and transit/relocation of the materials.
- Throughout Project construction and development, HoKua Place will seek to reduce, reuse, and recycle materials and waste to the greatest degree possible.
- Green waste resulting from the Project's development will be chipped into mulch for on-site use or will be disposed of properly.
- Measures and provisions to implement recycling, such as collection systems and storage for recyclables, will be incorporated to the HoKua Place Project. A community management system will be in place for the residences of this Project.
- The management policies will encourage residences to participate in the moral ethics of respecting the surrounding environment, reduce waste and excessive consumption, and fulfill the responsibility as trustees of the environment for the present and the future generations. Residences will be invited to participate in policy and decision making.

Power and Communications

- Pursuant to Chapter 344 (State Environmental Policy) and Chapter 226 (Hawaiʻi State Planning Act), HRS, all HoKua Place activities, buildings and grounds will be designed with a significant emphasis on energy conservation and efficiency.
- Buildings within HoKua Place will further comply with the County of Kauaʻi Energy Conservation Code (Kauaʻi County Ordinance 890).
- Solar water heaters will be utilized as made requisite under Section 196-6.5, HRS.
- HoKua Place will confer with KIUC in regards to suggestions and proposals for customized demand-oriented management programs offering rebates for the installation of alternative energy efficient technologies and measures.
- HoKua Place is committed to renewable energy and energy efficiently as ways to reduce environmental harm and self-sufficiency. HoKua Place will continue to improve programs and create new programs as the development is initiated.

- To reduce net energy consumption and demand, HoKua Place will consider the implementation of elements of the United States Environmental Protection Agency (EPA) Energy Star Program; including efficient insulation, high performance windows, compact construction, efficient ventilation systems, and energy efficient lighting elements and appliances.
- HoKua Place will furthermore seek to harness energy conservations and technologies to facilitate the possibility of net energy metering in building design to empower residents and tenants to reduce their electricity costs and provide energy back to the grid.
- Energy conservation and efficiency measures will be implemented and emphasized where applicable in the design of HoKua Place.

Noise

- Limitations on the hours of construction activity and plans to reduce impacts of construction traffic.
- Buildings will be designed, oriented and located to minimize conflicts with the surrounding community activities and in a manner that avoids or minimizes the impacts on the Project from noise.
- Walls, fences and landscaping can be incorporated into Project plans to help screen and buffer the Project from the impacts of vehicular traffic as well as avoid or minimize the impacts of noise from the Project on nearby residences.
- Best management practices that include performing construction-related activities in strict compliance with all applicable noise regulations will mitigate any temporary impacts.
- If noise levels exceed the Department of Health's (DOH) "maximum permissible" property-line noise levels, contractors will be required to consult with DOH per Title 11, Chapter 46, HAR (Community Noise Control) prior to construction.

Climate, Air Quality and Lighting

- Best management practices that include performing construction-related activities in strict compliance with all applicable air regulations will mitigate any temporary impacts.
- The Contractor will be required to comply with Hawai'i Administrative Rules, Chapter 11-60.1, "Air Pollution Control."
- Construction activities shall comply with the provisions of Hawai'i Administrative Rules 5-11-60.11.33 on Fugitive Dust.
- Planning of construction phases to minimize the amount of dust generating materials and activities, centralizing on-site vehicular traffic routes and locating of potential dust-generating equipment in areas of the least impact.
- Providing adequate water source at the site prior to start of construction.
- Landscaping and providing rapid covering of bare areas developed during construction.
- Minimizing dust from shoulders and access roads.
- Providing dust control measures during weekends, after hours, and prior to daily construction.
- Controlling dust from debris being hauled away from the site.
- All construction activities will integrate lighting mitigation measures to reduce lighting impacts.
- The proposed Project will incorporate exterior lighting that will not have adverse effects on the Newell's Shearwater birds.
- Any streetlights that may be installed as part of the Project will be shielded to reduce the potential for interactions of nocturnally flying native birds with external lights and man-made structures.

Natural Hazards

- The Project will be consistent with applicable regulations and guidance relating to floodplain management.
- The Project will comply with requirements of the Federal Flood Insurance Program.
- The Uniform Building Code (UBC) prepared by the International Conference of Building Officials, details "Prescriptive Details for Hurricane-Resistant Construction" (1991 UBC Appendix Chapter 25). These prescriptive details help buildings withstand wind acceleration and gusts from hurricanes. Buildings within the HoKua Place will be built with these prescriptive details, where applicable.
- Impacts from natural hazards can be mitigated by adherence to appropriate civil defense evacuation procedures.
-

4.14.3 Level of Impact after Mitigation

Prior to the implementation of the mitigation measures described above, the potential impact was found to be less than significant. The implementation of the mitigation measures, including best management practices and conformance with existing laws, codes and ordinances, will serve to further reduce the potential impacts related to HoKua Place construction. Site preparation and construction effects will be temporary.

4.15 Secondary & Cumulative Impacts

The proposed Project does not appear to have the potential to involve any significant secondary impacts. While there are anticipated changes in several environmental and social categories, as noted above, these are anticipated and the result of implementation of the County's General Plan. These changes are less than significant.

A cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions.

Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time.

Hence, a cumulative impact will occur when the incremental environmental effects of the Project added to other past, present, and reasonably foreseeable future actions result in substantial significant impacts.

There are direct effects from implementing the alternatives for this Project and this section discusses the overall, or cumulative, effects.

HoKua Farm Lots (formerly known as Kapaʻa Highlands I) is an agricultural subdivision that is adjoining and mauka of HoKua Place. Within the HoKua Farm Lots is the previously referenced photovoltaic solar facility. Makai of the property is the Kūhiō Bypass Road and below the road is the urban center of Kapaʻa Town. Adjoining and surrounded by the property is the Kapaʻa Middle School below that is a State affordable Housing project. Mauka and south of the subject parcel are in agricultural uses and are not identified for urbanization in the County's General Plan. It is not anticipated that urbanization requests will be made on these surrounding properties; in the event they are, an amendment to the General Plan must be made.

4.15.1 Summary of Potential Contribution of the Preferred Alternative to Cumulative Effects

The following chart identifies possible resources that could be impacted individually or cumulatively by the proposed Project. The analysis evaluates potential impacts in the context of the existing environment, anticipated uses, compliance with applicable rules, regulations and requirements, and mitigation measures previously identified.

Table 14.15.1 - Summary of Potential Contribution of the Preferred Alternative to Cumulative Effects

Resource Area	Effect	Cumulative Effect
Cultural, Archaeological & Historic	Less than Significant	Former irrigation ditches on the property have been reduced and are unrecognizable or rendered inoperable and do not contribute to the historic integrity of irrigation systems on former sugarcane lands. The cumulative effect of the Project will be less than significant.
Biological	Less than Significant	There is no habitat or endangered plants or animals, so the cumulative effect will be less than significant.

Resource Area	Effect	Cumulative Effect
Visual & Aesthetic	Less than Significant	Developing on undeveloped land will alter the visual nature of the area; re-vegetation with native plants in areas disturbed by construction activities and appropriate architecture will ensure that the Project in the context of the surrounding area is compatible with its visual environment, so the cumulative effect will be less than significant
Geology, Soils & Slope Stability	Less than Significant	There is limited identified surrounding disturbances to land; soil movement, erosion and compaction on the site will occur during construction; by implementing BMPs and following applicable laws, so the cumulative effect will be less than significant.
Water Resources & Wastewater	Less than Significant	HoKua Place will result in additional consumption of fresh (drinking) water and the creation of additional wastewater; through the installation of water efficient fixtures and water saving practices, dedication of proved well site to DOW will produce additional water into the County system, meeting applicable conditions of DOH and contributing funds to help upgrade the deferred maintenance and repair of the Kapaʻa Waste Water Treatment plant, so the cumulative effect will be less than significant.
Solid Waste & Material Management	Less than Significant	Additional solid waste will be generated; by utilizing soil and debris displaced from grading and clearing as fill throughout the site, recycling and reuse of construction wastes and implementing collection systems and storage for recyclables, the cumulative effect will be less than significant
Socioeconomic Conditions & Public Service Facilities	Less than Significant & Beneficial	HoKua Place will result in an increased population of the area; however, the Kauaʻi General Plan specifically points out the need for more housing in the area and specifically designates the subject property as Neighborhood General for that purpose. Development of the Property will address a portion of the demand for affordable housing in the County of Kauaʻi, without significantly affecting reserve areas for foreseeable urban growth. HoKua Place will have lands available for county police and fire substations on the Property. So, the cumulative effect will be less than significant.
Power & Communications	Less than Significant	The Project's energy consumption and communication needs will have a less than significant cumulative impact. The use of alternative/renewable energy, as well as, the implementation of energy conservation and efficiency measures will serve to reduce the impact of the Project on energy grids and resources, so the cumulative effect will be less than significant.
Climate, Air Quality & Lighting	Less than Significant	Impacts on air quality and climate will be short term due to construction. Mitigative lighting techniques will ensure the cumulative effect will be less than significant.

Resource Area	Effect	Cumulative Effect
Traffic	Less than Significant	Recommendations for improving traffic is outlined in the updated TIAR (Exhibit "H"). The Project actually has a positive impact as a result of constructing Road 'A', which will divert traffic away from the intersection of Olohena Road and Kapaʻa Bypass. The eastbound to southbound movement will be over-capacity without Road 'A'. Traffic impacts due to the Project are not considered significant.
Noise	Less than Significant	It is expected that HoKua Place will result in a negligible increase in noise and a minor increase in vehicular traffic noise, however the implementation of the mitigation measures will serve to reduce the noise associated with the Project, so the cumulative effect will be less than significant.
Natural Hazards	None	None
Site Preparation & Construction	Less than Significant	Site preparation and construction impacts will be short term during the construction phase of the Project and mitigation measures will ensure the cumulative effect will be less than significant.

In general, the Project will add a limited increment to the current level of cumulative impact. As noted previously in this chapter, impacts to the resources are estimated to be less than significant; in addition the Project would not tip the balance from a less than significant to a significant level on a cumulative basis.

14.15.2 Irreversible & Irretrievable Commitments of Resources

HoKua Place will require minor commitments of both renewable and nonrenewable energy and material resources. Nonrenewable resources that will be used during for the Project include fuel, water and other resources necessary to develop and operate HoKua Place.

Resources that are irreversibly or irretrievably committed to a project are those that are typically used on a long-term or permanent basis; however, those used on a short-term basis that cannot be recovered (e.g., non-renewable resources) also are irretrievable.

Alteration of substrates by construction activities, visual impacts and road development will be irreversible. Construction could result in irreversible commitment of fuel for construction vehicles and equipment and irretrievable commitment of land. Additionally, construction could result in irreversible commitment and expenditure of human labor that could not then be expected in the service of other projects. These commitments of resources are neither unusual nor unexpected, given the nature of the action.

14.15.3 Conclusion

Implementation of the proposed action will not result in significant impacts that will not be able to be mitigated, to any environmental resource area. Therefore, the proposed action, in conjunction with other actions on and in the vicinity of HoKua Place, will not result in significant cumulative impacts.

Chapter 5 – Laws, Regulations, Land Use Plans & Policies

This chapter discusses laws, regulations, land use plans and policies on the County, State and Federal level in relation to HoKua Place. This chapter will explores the Project's potential land use planning effects and its compatibility with existing land uses.

Compliance with existing regulations and requirements and the implementation of the mitigation measures proposed above, will ensure that HoKua Place will not result in a significant impact on current land programs and policies in the area. The implementation of the mitigation measures identified will serve to further reduce any potential impacts the Project may have on land use.

Land use impacts that will result from implementing HoKua Place include temporary construction-related impacts, direct impacts associated with use of the area, and indirect impacts resulting from changes in the character and use of the area. Construction activities will be expected to result in short-term impacts on land uses. These impacts include construction noise and dust.

The potential impacts of HoKua Place are evaluated within the framework of compliance with all applicable rules, regulations and requirements for the project type and location.

Overall, since HoKua Place will be consistent with all applicable land use regulation and will not conflict with the applicable land use plans, it will not result in a significant land use planning impact in the State of Hawaiʻi or on the Island of Kauaʻi.

The following sections examine the Project's compliance with applicable land use plans and policies.

5.1 County of Kauaʻi

5.1.1 County General Plan

The General Plan establishes priorities for managing growth and community development over a 20-year planning timeframe.

The General Plan is a direction-setting document and not a regulatory in the sense of a zoning code or other land use entitlement. The policies guide County decision-making by mapping land use patterns, describing what type of development is desirable, and by setting high-level priorities for infrastructure and programs.

"The General Plan is based on the community's vision for Kaua'i's future by establishing the following "Goals" and "Policies".

The vision sets the desired long-range outcome through a series of statements organized by the following Goals:

Goal #1 - A Sustainable Island
Goal #2 - A Unique and Beautiful Place
Goal #3 - A Healthy and Resilient People
Goal #4 - An Equitable Place, With Opportunity for All

The follow are policies articulating the County's path forward toward meeting the community's visions and goals:

Policy #1	Manage Growth to Preserve Rural Character
Policy #2	Provide Local Housing
Policy #3	Recognize Kaua'i's Individual Towns and Districts
Policy #4	Design Healthy and Complete Neighborhoods
Policy #5	Make Strategic Infrastructure Investments
Policy #6	Reduce Cost of Living
Policy #7	Build Balanced Multimodal Transportation Systems
Policy #8	Protect Kaua'i's Scenic Beauty
Policy #9	Uphold Kaua'i as a Unique Visitor Destination
Policy #10	Help Business Thrive
Policy # 11	Help Agricultural Lands be Productive
Policy # 12	Protect our Watersheds
Policy #13	Complete Kaua'i's Shift to Clean Energy
Policy #14	Prepare for Climate Change
Policy #15	Respect Native Rights and Wahi Pana
Policy #16	Protect Access to Kaua'i's Treasured Places
Policy #17	Nurture Our Keiki
Policy #18	Honor Our Kupuna
Policy #19	Communicate with Aloha

HoKua Place is in the East Kaua'i district. The East Kaua'i district extends from the Wailua River north to Moloa'a, including the Kapa'a-Wailua basin, Kealea and Anahola. The Kapa'a-Wailua basin is home to a large portion of Kaua'i's population. An urban corridor extends along Kuhio Highway from Haleilio Road in Wailua to Kawaihau Road, at the northern edge of Kapa'a Town.

Visions for East Kaua'i include the following:

Residents enjoy a high quality of life in a rural setting

Natural resources are protected and open spaces and public access are preserved

Agricultural lands are farmed, productive, and protected. Affordable housing opportunities exist for local families.

Archaeological, historic, and cultural places in our community are honored, preserved, and maintained.

New recreational facilities provide safe and healthy opportunities for youth and adults.

Historic Kapa'a Town maintains its western plantation character, is livable and walkable with mixed uses, pedestrian-friendly streets, bike paths, new parking and public transit.

A range of visitor accommodation types are in place and new attractions have opened.

Deferred infrastructure needs have been addressed.

Public transit services have grown and do integrated into new developments.

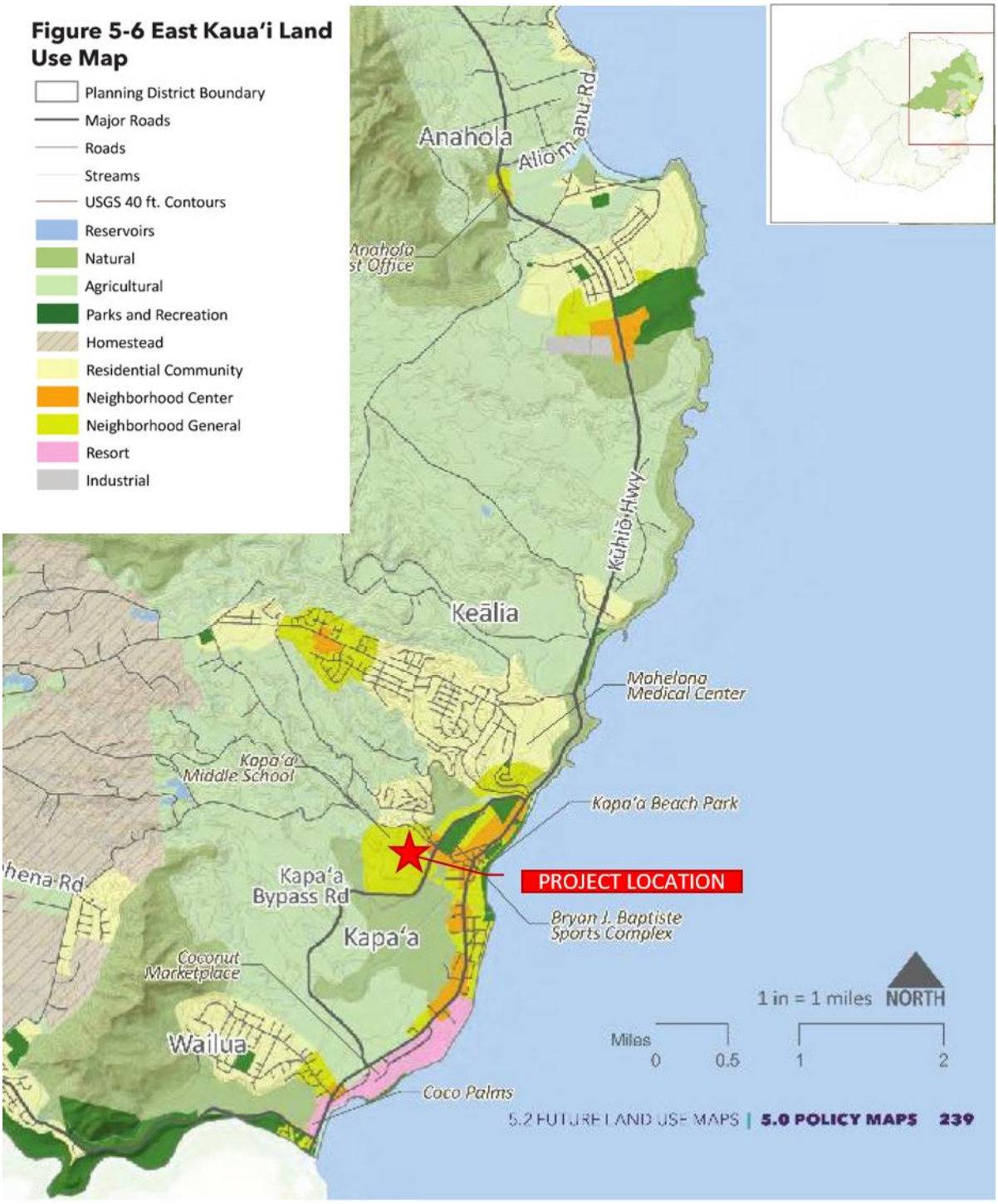


Figure 5-6 East Kaua'i Land Use Map
Planning District Boundary
Major Roads
Roads
Streams
USGS 40 ft. Contours
Reservoirs
Natural
Agricultural
Parks and Recreation
Homestead
Residential Community
Neighborhood Center
Neighborhood General
Resort
Industrial
Anahola
Aliomanu Rd
Anahola Post Office
Kūhiō Hwy
Keālia
Mohelona Medical Center
Kapa'a Middle School
Kapa'a Beach Park
PROJECT LOCATION
Kapa'a Bypass Rd
Kapa'a
Bryan J. Baptiste Sports Complex
Coconut Marketplace
Wailua
Coco Palms
1 in = 1 miles
NORTH
Miles
0
0.5
1
2
5.2 FUTURE LAND USE MAPS | 5.0 POLICY MAPS 239

The HoKua Place meets the Goals of the General Plans as follows:

HoKua Place provides opportunity for housing for all people as they aspire for a better life. The need for housing is very current. The Project will substantially address the current need for housing in the area. The Project will not deplete our important resources. HoKua Place is designated as "Neighborhood General" in the General Plan. It is substantially within a 10 minute walking distance to Kapa'a Town. It's close proximity to Kapa'a Town offers opportunity for town businesses to grow and provide economic opportunities for the businesses as well as the residents of the Project. Phase I of HoKua Place offers agricultural lots that will offer opportunies for local food production. In anticipation of this Project, Phase I has an existing 1.8 MW solar voltaic system that is contributing to clean energy. Thus, HoKua Place contributes to **Goal # 1** of the General Plan, a Sustainable Island.

The HoKua Place offers beautiful and unique views of the lower Kapa'a, the ocean and mountains. The Project will offer views of surrounding beauty to residents from their homes. HoKua Place will not negatively impact public views of the beautiful lands surrounding area. Environmental studies are attached as exhibits and they determined that endangered species, historic structures, archaeological sites, cultural traditions, etc, for the area will not be negatively impacted. Therefore the Project is in line with **Goal # 2**, respecting a Unique and Beautiful Place.

HoKua Place is intended to be designed to offer a healthy lifestyle. The Project is substantially within a 10-minute walk to Kapa'a Town. It entails walking/bicycle paths that will be integrated in future town paths. Diversified housing units will provide homes for all people. The increase in housing units adjacent to Kapa'a Town provides economic opportunities to the businesses and residents. HoKua Place contributes to **Goal #3**, a Healthy and Resilient People.

HoKua Place is in line with **Goal #4** as the Project will offer diversified housing for everyone. It's close walking proximity to Kapa'a town provides economic opportunities for all as Kapa'a town businesses will grow to support the increased population via the Project. The Project will foster a diverse and equitable community with access to housing and economic opportunities.

HoKua Place Project substantially conforms to and implements the General Plan's 19 Policies to Guide Growth.

HoKua Place is strategically placed in a Neighborhood General designation. It is substantially within a 10-minute walk to Kapa'a Town. The Project will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The Project is intended to help preserve the rural character of Kapa'a town, therefore conforms to **Policy #1**.

The purpose of HoKua Place is to provide local housing in line with **Policy #2**. The Project will provide 683 multi-family units and 86 single family units. The Project will comply with the County's affordable housing policy. HoKua Place will preserve Kapa'a town's separate distinctiveness with its elevated lands and walking/bicycle paths connecting the Project with the town as **Policy #3** emphasizes.

HoKua Place is intended to be designed to where it's residents will be safe in walking and bicycling. The Project is substantially within a 10-minute walking distance to town, thus creating a healthy life to its residents. HoKua Place is a place designed for a healthy and complete neighborhood per **Policy #4**.

HoKua Place will include roadways accepted by the State Department of Transportation and the County Public works. These roadways will help the traffic congestion in the immediate area. (See TIAR). The Project will be providing water source to the Project and contribute to the Department of Water system. HoKua Place will also be contributing to the wastewater system for increasing its capacity. Therefore HoKua Place is contributing to infrastructure per **Policy # 5**.

Policy #6 emphasizes to reduce the cost of living. HoKua Place will help to reduce the cost of living by reducing the need for driving into Kapa'a town. With the increase in population created by this Project in the area, more businesses will develop thus creating jobs where residents can live and work without the use of vehicle transportation.

HoKua Place's contribution to **Policy #7** in order to reduce traffic congestion is creating a real opportunity for a walking/bicycle community integrated with Kapa'a town.

HoKua Place will not impact Kaua'i's scenic beauty. The scenic beauty around and beyond the Project will not be harmed. This Project will also not impact Kaua'i's visitor destinations. Therefore, HoKua Place meets the **Policy #8** and **Policy #9**.

The HoKua Place Project will contribute to **Policy #10**, help business thrive, by providing a population that will creating more businesses and support existing businesses.

The petitioner is including HoKua Phase I Ag Lots adjacent and west of HoKua Place. There will be 16 ag lots within 54 acres of land. Therefore, the Project will help agricultural lands be productive per **Policy # 11**.

In accordance to **Policy #12**, HoKua Place will incorporate water conservation and reuse policies to protect our Watersheds. Rain run-offs created by the Project will be taken care of on site with retention basins. Water reuse from the basins will be used to landscape irrigation.

A large 1.18 MW solar farm was constructed on Phase I, HoKua Place adjacent to this Peoject. There will be opportunities to expand the facility to contribute to Kaua'i's shift to clean energy. The Project will include solar water heaters, thus helping on a limited basis to shift to clean energy per **Policy #13**.

HoKua Place land is elevated above the sea rise level maps for the area. The General Plan for the area emphasize developing two housing locations. One at Hokua Place and the other area in Kapa'a Town. Developing HoKua Place will conform to **Policy #14** in preparing for climate change.

Policy #15 entails respecting Native Hawaiian rights and Wahi Pana. HoKua Place will not have a negative impact on Native Hawaiian rights and Wahi Pana. The land for many decades had been in sugar cultivation. There are no customary or traditional practices of Native Hawaiians that would be adversely impacted by the development of HoKua Place.

HoKua Place will not have an impact on access to any of Kaua'i's treasured places, thus is in line with **Policy #16**.

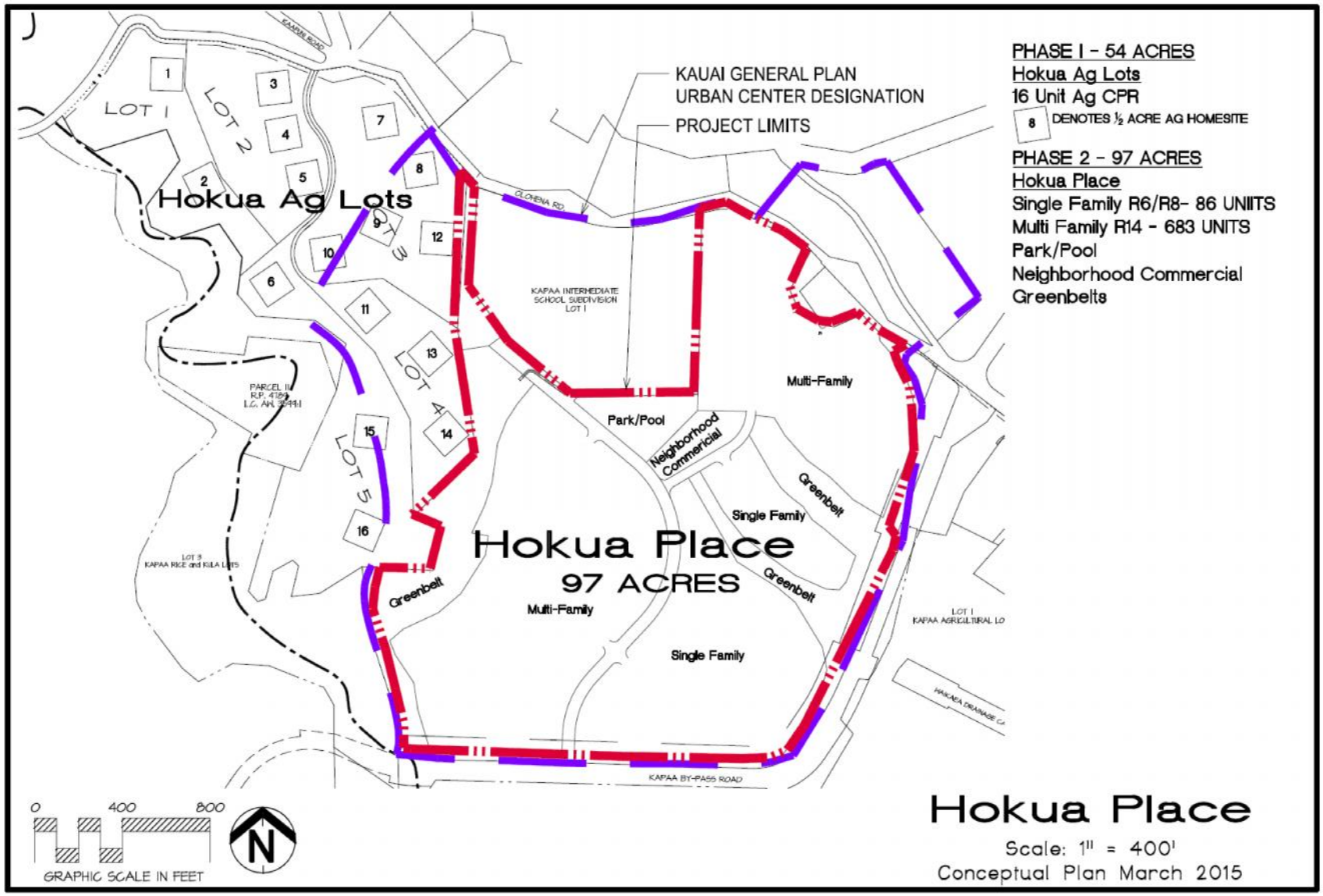
HoKua Place will contribute to the nurturing of our Keiki as emphasized in **Policy #17**. Housing will be available to our young families. They will grow up in a community where walking and bicycling will foster a good and healthy lifestyle. Some parents will be able to work in Kapa'a Town, thus reducing time spent away from their children sitting in traffic.

There will be opportunities to develop senior housing in this Project. HoKua Place will be a Kupuna friendly community. Considerations for our Kupuna to walk or bicycle from home to Kapa'a town is incorporated in HoKua Place. Therefore, the Project is in line with **Policy #18**.

HoKua Place is committed to work and communicate with government and concerned citizens in the actual design and development of this Project. This process will take place during the entitlement process on the County level. The public will have ample opportunity to state their concerns during the process. The Petitioner and their consultants are committed to communicate with Aloha per **Policy #19**. The HoKua Place Project conforms to and implements the policies of the General Plan as stated above by developing within Neighborhood General designation. The rural character of the area will be preserved.

As shown in the East Kauai Land Use Map included in the General Plan, the subject property is surrounded with "Residential" properties.

The site plan provided is conceptual in nature so the proposed 769 units can be planned in concert with planning department during the county entitlement process. It is the Petitioner's intent to design the Project to meet the County recommendations of the "Complete Streets" and the "Multi-Model Land Transportation" Ordinances, as well as the proposed Smart Code (Form Based Code). To achieve this goal, it will take a collaborative effort amongst the Petitioner, their consultants and the planning department.


PHASE I - 54 ACRES
Hokua Ag Lots
16 Unit Ag CPR
8 DENOTES ½ ACRE AG HOMESITE
PHASE 2 - 97 ACRES
Hokua Place
Single Family R6/R8- 86 UNIITS
Multi Family R14 - 683 UNITS
Park/Pool
Neighborhood Commercial
Greenbelts
KAUAI GENERAL PLAN
URBAN CENTER DESIGNATION
PROJECT LIMITS
Hokua Ag Lots
LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
KAPAA INTERMEDIATE SCHOOL SUBDIVISION LOT 1
Hokua Place
97 ACRES
Multi-Family
Park/Pool
Neighborhood Commercial
Greenbelt
Single Family
KAPAA BY-PASS ROAD
0 400 800
GRAPHIC SCALE IN FEET
N
Hokua Place
Scale: 1" = 400'
Conceptual Plan March 2015

5.1.2 Kapaʻa-Wailua Development Plan

The Kapaʻa-Wailua Development Plan is in the process of being updated.

The Main Goal of the Kapaʻa-Wailua Development Plan is:

- Implement the General Plan's provision for the updating of the current community development plans; in this particular case, the Kapaʻa-Wailua Development Plan.

The Kapaʻa-Wailua Development Plan outlines the regional issues and opportunities that will be subjects for future community planning for the Kapa'a Town Core. A "Build-Out Analysis" of the Kapaʻa-Wailua Basin was prepared in the General Plan Update. The updated East Kauai Land Use Map designates the Project as "Neighborhood General". HoKua Place conforms to the new designation as outlined in Chapter 5, Section 5.5.1.

5.1.3 Comprehensive Zoning Ordinance

The purpose of the Comprehensive Zoning Ordinance (CZO) is to provide regulations and standards for land development and the construction of buildings and other structures in the County of Kauaʻi. The regulations and standards prescribed in the CZO are intended to regulate development to ensure its compatibility with the overall character of the island.

The Project site is zoned agriculture by the County of Kauaʻi. However, as described above, the General Plan designation for the subject property is Neighborhood General. The Neighborhood General designation is intended for medium density mixed use environments that support the town core with housing, services, parks, civic/institutional, home occupation, and commercial uses, including a range of multi-family housing types.

An application to the Kauaʻi County Planning Commission and the Kauaʻi County Council for the appropriate zone change will be filed after the EIS has been accepted.

5.1.4 Kauaʻi Economic Development Plan Update

The Kauaʻi Economic Development Plan Update is intended to serve as Kauaʻi's economic development "road map" for the next 5 years. It is intended to guide all stakeholders who have an influence on Kauaʻi's economic future.

Economic Development Goals

In response to the critical issues impacting economic development, five goals have been established within the Kauaʻi Economic Development Plan Update. Two directly pertain to the HoKua Place development.

1. To assist new and existing businesses create new jobs
   1.1 - To provide access to business planning assistance, including market research
   1.2 - To assist with permitting, licensing and regulatory issues
   1.2 - To facilitate access to start-up and expansion capital

4. To promote affordable housing
   4.1 - To develop new affordable single- and multi-family housing

Housing Vision

The Kaua'i Economic Development Plan Update lists its "Housing Vision" as the following:

- There is a continuum of housing (from homeless shelters, transitional, rental housing, and for-sale multi- and single-family homes) to meet the needs of Kaua'i's residents
- County government funding is used to leverage private and other government funding to create affordable housing
- There are lands zoned with adequate infrastructure for residential development

HoKua Place will respond to varying spectrums of demand for housing within Kaua'i by providing a wide range of housing opportunities inclusive of affordable housing alternatives. HoKua Place will seek to create and sustain a mixed-income community allowing for unparalleled social diversity.

HoKua Place will utilize 97-acres of land for single-family and multi-family residential and commercial purposes. Development of the Property will address a portion of the significant demand for affordable housing in the County of Kaua'i, without significantly affecting reserve areas for foreseeable urban growth.

The Kawaihau Planning District has substantial capacity for additional residential development, as described in Section 6.2.3.1 (Build-Out Analysis) of the Kaua'i General Plan.

> "Lands previously designated for urban use but as yet mostly undeveloped include an area located near Kapa'a, south of Olohena Road. This area was previously designated for Urban Mixed Use and is shown as Urban Center on the new GP Land Use Map. Owned partly by the State and partly by Amfac/JMB (or its successor), this "expansion area" for Kapa'a has already accommodated the Kapa'a Middle School."

In a 2010 letter to the applicant, the Planning Director wrote

> "We are writing in general support of Three Stooges LLC's petition to amend 97-acres in Kapa'a to the Urban district." "Affordable housing remains an acute need on Kaua'i, even with a falling real estate market and as such the County is generally supportive of any petition that proposes additional affordable housing, particularly when contiguous to developed urban areas, infrastructure and consistent with our General Plan."

HoKua Place will assist in alleviating some of the current supply-and-demand pressures on Kaua'i's current housing market by providing a variety of additional housing products and opportunities for long-term local residents.

Furthermore, the current upcoming developments of the Coconut Beach Resort, the Coconut Plantation Village and the Coco Palms Hotel and Resort will create hundreds of job opportunities for local residence of HoKua Place. The cumulation of upcoming jobs provided by these resorts and the providing of housing by Hokua Place fulfills the "Economic Development Goals" stated herein.

5.2 State of Hawai‘i

5.2.1 Hawai‘i State Plan, HRS Chapter 226

Adopted in 1978 and last revised in 1991, the plan establishes a set of themes, goals, objectives, and policies meant to guide the long-term growth and development within the state. The three themes are individual and family self-sufficiency, social and economic mobility, and community and social wellbeing.

HoKua Place will contribute to the diversification of the State’s economic base by generating economic benefits associated with construction and economic activity on site; and providing housing opportunities. Therefore, HoKua Place will be consistent with the Hawai‘i State Plan objectives.

Sections of the Hawai‘i State Plan which are applicable to HoKua Place are discussed in the following pages.

HAWAI‘I STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
Section 226-4: State Goals In order to guarantee, for the present and future generations, those elements of choice and mobility that insure that individuals and groups may approach their desired levels of self-reliance and self-determination, it shall be the goal of the State to achieve:			
(1) A strong, viable economy, characterized by stability, diversity and growth, that enables the fulfillment of the needs and expectations of Hawai‘i’s present and future generations.	X		
(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.	X		
(3) Physical, social and economic well-being, for individuals and families in Hawai’i, that nourishes a sense of community responsibility, of caring, and of participation in community life.	X		
Discussion: HoKua Place will support the State economy, provide housing opportunities and enhance the social well-being for the people of Kaua'i.			
Section 226-5: Objective and Policies for Population (A) It shall be the objective in planning for the State’s population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter; (B) To achieve the population objective, it shall be the policy of this State to:			
(1) Manage population growth statewide in a manner that provides increased opportunities for Hawai‘i’s people to pursue their physical, social and economic aspirations while recognizing the unique needs of each county.	X		
(2) Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs-and desires.	X		
(3) Promote increased opportunities for Hawai‘i’s people to pursue their socioeconomic aspirations throughout the islands.	X		
(4) Encourage research activities and public awareness programs to foster an understanding of Hawai‘i’s limited capacity to accommodate population needs and to address concerns resulting from an increase in Hawai‘i’s population.			X
(5) Encourage federal actions and coordination among major governmental agencies to promote a more balanced distribution of immigrants among states, provided that such actions do not prevent the reunion of immediate family members.			X
(6) Pursue an increase in federal assistance for states with a greater proportion of foreign immigrants relative to their state’s population.			X
(7) Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.	X		

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
Discussion: HoKua Place proposes two areas for commercial uses which will provide a variety of job opportunities; construction and construction-related employment will have direct beneficial impact on the local economy during construction. HoKua Place conforms with and implements the Updated Kaua'i General Plan which specifically points out the need for more housing in the Project area and specifically designates the subject property as Neighborhood General for that purpose. HoKua Place will provide a variety of housing opportunities, which will have a positive impact on housing and population aspects of the East Kauaʻi Region.			
Section 226-6: Objectives and Policies for the Economy in General. (A) Planning for the State's economy in general shall be directed toward achievement of the following objectives:			
(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaiʻi's people.	X		
(2) A steadily growing and diversified economic base that is not overly dependent on a few industries, and includes the development and expansion of industries on the neighbor islands.			X
(B) To achieve the general economic objectives, it shall be the policy of this State to:			
(1) Expand Hawaiʻi's national and international marketing, communication and organizational ties, to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State.			X
(2) Promote Hawai'i as an attractive market for environmentally and socially sound investment activities that benefit Hawaiʻi's people.			X
(3) Seek broader outlets for new or expanded Hawai'i business investments.			X
(4) Expand existing markets and penetrate new markets for Hawaiʻi's products and services.			X
(5) Assure that the basic economic needs of Hawaiʻi's people are maintained in the event of disruptions in overseas transportation.			X
(6) Strive to achieve a level of construction activity responsive to, and consistent with, state growth objectives.	X		
(7) Encourage the formation of cooperatives and other favorable marketing arrangements at the local or regional level to assist Hawaiʻi's small scale producers, manufacturers and distributors.			X
(8) Encourage labor-intensive activities that are economically satisfying and which offer opportunities for upward mobility.			X
(9) Foster greater cooperation and coordination between the government and private sectors in developing Hawaiʻi's employment and economic growth opportunities.	X		
(10) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.			X
(11) Maintain acceptable working conditions and standards for Hawaiʻi's workers.	X		
(12) Provide equal employment opportunities for all segments of Hawaiʻi's population through affirmative action and nondiscrimination measures.	X		
(13) Stimulate the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.			X
(14) Encourage businesses that have favorable financial multiplier effects within Hawaiʻi's economy.			X
(15) Promote and protect intangible resources in Hawai'i, such as scenic beauty and the Aloha spirit, which are vital to a healthy economy.	X		
(16) Increase effective communication between the educational community and the private sector to develop relevant curricula and training programs to meet future employment needs in general, and requirements of new, potential growth industries in particular.			X
(17) Foster a business climate in Hawai'i - including attitudes, tax and regulatory policies, and financial and technical assistance programs--that is conducive to the expansion of existing enterprises and the creation and attraction of new business and industry.			X

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
Discussion: The Project will meet the needs of projected growth in Kaua'i. Development of the property will address a portion of the significant demand for affordable housing in the County of Kauaʻi, without significantly affecting reserve areas for foreseeable urban growth. Located on the eastern side of the island, the Project is close to the centers of employment, beaches, shopping, recreation, etc. HoKua Place will respond to varying spectrums of demand for housing within Kauaʻi by providing a wide range of housing opportunities inclusive of affordable housing alternatives. HoKua Place will seek to create and sustain a mixed-income community allowing for unparalleled social diversity. Development of facilities would generate employment and have a direct beneficial impact on the local economy during construction through construction and construction-related employment. Additionally, HoKua Place proposes two areas for commercial uses that, ultimately, will serve to promote and provide a variety of job opportunities.			
Section 226-7 Objectives and policies for the economy--agriculture. (a) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:			
(1) Viability of Hawaiʻi's sugar and pineapple industries.			X
(2) Growth and development of diversified agriculture throughout the State.			X
(3) An agriculture industry that continues to constitute a dynamic and essential component of Hawaiʻi's strategic, economic and social well-being.			X
(b) To achieve the agriculture objectives, it shall be the policy of this State to:			
(1) Establish a clear direction for Hawaiʻi's agriculture through stakeholder commitment and advocacy.			X
(2) Encourage agriculture by making best use of natural resources.			X
(3) Provide the governor and the legislature with information and options needed for prudent decision making for the development of agriculture.			X
(4) Establish strong relationships between the agricultural and visitor industries for mutual marketing benefits.			X
(5) Foster increased public awareness and understanding of the contributions and benefits of agriculture as a major sector of Hawaiʻi's economy.			X
(6) Seek the enactment and retention of federal and state legislation that benefits Hawaiʻi's agricultural industries.			X
(7) Strengthen diversified agriculture by developing an effective promotion, marketing, and distribution system between Hawaiʻi's producers and consumer markets locally, on the continental United States, and internationally.			X
(8) Support research and development activities that strengthen economic productivity in agriculture, stimulate greater efficiency, and enhance the development of new products and agricultural by-products.			X
(9) Enhance agricultural growth by providing public incentives and encouraging private initiatives.			X
(10) Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.			X
(11) Increase the attractiveness and opportunities for an agricultural education and livelihood.			X
(12) Expand Hawaiʻi's agricultural base by promoting growth and development of flowers, tropical fruits and plants, livestock, feed grains, forestry, food crops, aquaculture, and other potential enterprises.			X
(13) Promote economically competitive activities that increase Hawaiʻi's agricultural self-sufficiency.			X
(14) Promote and assist in the establishment of sound financial programs for diversified agriculture.			X
(15) Institute and support programs and activities to assist the entry of displaced agricultural workers into alternative agricultural or other employment.			X
(16) Facilitate the transition of agricultural lands in economically non-feasible agricultural production to economically viable agricultural uses.	X		

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
Discussion: The subject property is in the Agriculture land use district. However, the Kauaʻi General Plan and the Kapaʻa Town Development Plan designate the property as Urban Center. The General Plan states: "One of the key policies in the Framework for preserving Kauaʻi's rural character is to promote growth and development in compact urban areas. Urban lands comprise only four to five percent of Kauaʻi's land area, leaving 55 percent in conservation and 40 percent in agriculture." The Property is currently vacant and has not been used for agriculture for over fifteen years. The Property was previously used for sugar cane by Līhuʻe Plantation and fully cultivated for many years. While the property previously was cultivated in sugar, the climate and soils at HoKua Place are not ideal for the growing of most commercially viable crops due to the poor soil, strong trade winds and the salt spray from the ocean. Thus, the property as stated in the Hawaiʻi State Plan will "facilitate the transition of agricultural lands in economically non-feasible agricultural production to economically viable agricultural uses."			
Section 226-8 Objective and policies for the economy--visitor industry. (a) Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawaiʻi's economy.			
(b) To achieve the visitor industry objective, it shall be the policy of this State to:			
(1) Support and assist in the promotion of Hawaiʻi's visitor attractions and facilities.			X
(2) Ensure that visitor industry activities are in keeping with the social, economic and physical needs and aspirations of Hawaiʻi's people.			X
(3) Improve the quality of existing visitor destination areas by utilizing Hawaiʻi's strengths in science and technology.			X
(4) Encourage cooperation and coordination between the government and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.			X
(5) Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawaiʻi's people.			X
(6) Provide opportunities for Hawaiʻi's people to obtain job training and education that will allow for upward mobility within the visitor industry.			X
(7) Foster a recognition of the contribution of the visitor industry to Hawaiʻi's economy and the need to perpetuate the aloha spirit.			X
(8) Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawaiʻi's cultures and values.			X
Discussion: HoKua Place is a residential Project and will have no effect on the tourism industry.			
Section 226-9 Objective and policies for the economy--federal expenditures. (a) Planning for the State's economy with regard to federal expenditures shall be directed towards achievement of the objective of a stable federal investment base as an integral component of Hawaiʻi's economy.			
(b) To achieve the federal expenditures objective, it shall be the policy of this State to:			
(1) Encourage the sustained flow of federal expenditures in Hawaiʻi that generates long-term government civilian employment;			X
(2) Promote Hawaiʻi's supportive role in national defense, in a manner consistent with Hawaiʻi's social, environmental, and cultural goals by building upon dual-use and defense applications to develop thriving ocean engineering, aerospace research and development, and related dual-use technology sectors in Hawaiʻi's economy;			X

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
(3) Promote the development of federally supported activities in Hawaiʻi that respect statewide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawaiʻi's environment;			X
(4) Increase opportunities for entry and advancement of Hawaiʻi's people into federal government service;			X
(5) Promote federal use of local commodities, services, and facilities available in Hawaiʻi;			X
(6) Strengthen federal-state-county communication and coordination in all federal activities that affect Hawaiʻi; and			X
(7) Pursue the return of federally controlled lands in Hawaiʻi that are not required for either the defense of the nation or for other purposes of national importance, and promote the mutually beneficial exchanges of land between federal agencies, the State and the counties.			X
Discussion: HoKua Place is a private Project and no Federal expenditures will be used.			
Section 226-10 Objective and policies for the economy--potential growth activities. (a) Planning for the State's economy with regard to potential growth activities shall be directed towards achievement of the objective of development and expansion of potential growth activities that serve to increase and diversify Hawaiʻi's economic base.			
(b) To achieve the potential growth activity objective, it shall be the policy of this State to:			
(1) Facilitate investment and employment growth in economic activities that have the potential to expand and diversify Hawaiʻi's economy, including but not limited to diversified agriculture, aquaculture, renewable energy development, creative media, and science and technology-based sectors;			X
(2) Expand Hawaiʻi's capacity to attract and service international programs and activities that generate employment for Hawaiʻi's people;			X
(3) Enhance and promote Hawaiʻi's role as a center for international relations, trade, finance, services, technology, education, culture, and the arts;			X
(4) Accelerate research and development of new energy-related industries based on wind, solar, ocean, and underground resources and solid waste;			X
(5) Promote Hawaiʻi's geographic, environmental, social, and technological advantages to attract new economic activities into the State;			X
(6) Provide public incentives and encourage private initiative to attract new industries that best support Hawaiʻi's social, economic, physical, and environmental objectives;			X
(7) Increase research and the development of ocean-related economic activities such as mining, food production, and scientific research;			X
(8) Develop, promote, and support research and educational and training programs that will enhance Hawaiʻi's ability to attract and develop economic activities of benefit to Hawaiʻi;			X
(9) Foster a broader public recognition and understanding of the potential benefits of new, growth-oriented industry in Hawaiʻi;			X
(10) Encourage the development and implementation of joint federal and state initiatives to attract federal programs and projects that will support Hawaiʻi's social, economic, physical, and environmental objectives;			x
(11) Increase research and development of businesses and services in the telecommunications and information industries; and			X
(12) Foster the research and development of non-fossil fuel and energy efficient modes of transportation.	X		

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
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Discussion: Market studies have shown that the population growth and correlating need and demand for housing is high on Kauaʻi. The proposed Project, which will allow residents to purchase an affordable unit or house and lot, as well as, allow other residents to purchase a lot to design and build their own homes, will present an opportunity to address the critical community need for residential housing. Development of facilities would generate employment and consequent income and taxes. On a short-term basis, the proposed project will have a direct beneficial impact on the local economy during construction through construction and construction-related employment. Additionally, HoKua Place proposes two areas for commercial uses that, ultimately, will serve to promote and provide a variety of job opportunities. A photovoltaic system that can generate up to 1.18 MW of electricity is situated within the HoKua Farm Lots. Its operator entered into an agreement to sell to KIUC electricity generated from the solar farm for 20 years.			
Section 226-10.5 Objectives and policies for the economy--information industry. (a) Planning for the State's economy with regard to telecommunications and information technology shall be directed toward positioning Hawaiʻi as a leader in broadband communications and applications in the Pacific Region.			
(b) To achieve the information industry objective, it shall be the policy of this State to:			
(1) Encourage the continued development and expansion of the telecommunications infrastructure serving Hawaiʻi to accommodate future growth in the information industry;			X
(2) Facilitate the development of new business and service ventures in the information industry which will provide employment opportunities for the people of Hawaiʻi;			X
(3) Encourage greater cooperation between the public and private sectors in developing and maintaining a well- designed information industry;			X
(4) Ensure that the development of new businesses and services in the industry are in keeping with the social, economic, and physical needs and aspirations of Hawaiʻi's people;			X
(5) Provide opportunities for Hawaiʻi's people to obtain job training and education that will allow for upward mobility within the information industry;			X
(6) Foster a recognition of the contribution of the information industry to Hawaiʻi's economy; and			X
(7) Assist in the promotion of Hawaiʻi as a broker, creator and processor of information in the Pacific.			X
Discussion: HoKua Place will be a residential development and will have no effect on the information industry.			
Section 226-11 Objectives and Policies for the Physical Environment - Land-based, Shoreline, and Marine Resources. (A) Planning for the State's physical environment with regard to land-based, shoreline and marine resources shall be directed towards achievement of the following objectives:			
(1) Prudent use of Hawaiʻiʼs land-based, shoreline, and marine resources.	X		
(2) Effective protection of Hawaiʻiʼs unique and fragile environmental resources.	X		
(B) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:			
(1) Exercise an overall conservation ethic in the use of Hawaiʻiʼs natural resources.	X		
(2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.	X		
(3) Take into account the physical attributes of areas when planning and designing activities and facilities.	X		
(4) Manage natural resources and environs to encourage their beneficial and multiple uses without generating costly or irreparable environmental damage.	X		
(5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.			X

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
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(6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawaiʻi.	X		
(7) Provide public incentives that encourage private actions to protect significant natural resources from degradation or unnecessary depletion.			X
(8) Pursue compatible relationships among activities, facilities and natural resources.	X		
(9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational and scientific purposes.	X		
Discussion: Although HoKua Place is not located on the shoreline, it will incorporate core principles of various sustainability programs and plans to address the protection of Hawaiʻi's environmental resources. HoKua Place will be incorporating design features to fit development into natural features, protecting natural resources, while taking advantage of natural elements. HoKua Place will encourage protection of urban open spaces by focusing on the urban landscaping, green spaces and mixed-use development and recreational opportunities. HoKua Place focuses on reducing and conserving water use, as well as minimizing impacts to nearby ecosystems from source to storm water systems. Energy management within HoKua Place will encourage energy conservation, energy efficiency and renewable energy.			
Section 226-12 Objective and Policies for the Physical Environment - Scenic, Natural Beauty, and Historic Resources. (A) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawaiʻi's scenic assets, natural beauty and multi-cultural/historical resources. (B) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:			
(1) Promote the preservation and restoration of significant natural and historic resources.	X		
(2) Provide incentives to maintain and enhance historic, cultural and scenic amenities.	X		
(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes and other natural features.	X		
(4) Protect those special areas, structures and elements that are an integral and functional part of Hawaiʻi's ethnic and cultural heritage.	X		
(5) Encourage the design of developments and activities that complement the natural beauty of the islands.	X		
Discussion: HoKua Place will not affect cultural or historic resources. No archaeological sites are known to exist on the property. Should any archaeologically significant artifacts, bones, or other indicators be uncovered during construction, HoKua Place is committed to strict compliance with State laws and rules. The Project site is not part of a scenic corridor and the project will not affect scenic vistas and view planes. The proposed Project will not involve significant alteration of the existing topographic character of the site and will not affect public views to and along the shoreline. The Project design will complement the Kapa'a environment in terms of site plan, building materials and heights.			
Section 226-13 Objectives and Policies for the Physical Environment - Land, Air, and Water Quality. (A) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:			
(1) Maintenance and pursuit of improved quality in Hawaiʻi's land, air and water resources.	X		
(2) Greater public awareness and appreciation of Hawaiʻi's environmental resources.			X
(B) To achieve the land, air, and water quality objectives, it shall be the policy of this State to:			

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
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(1) Foster educational activities that promote a better understanding of Hawaiʻi's limited environmental resources.			X
(2) Promote the proper management of Hawaiʻi's land and water resources.	X		
(3) Promote effective measures to achieve desired quality in Hawaiʻi's surface, ground and coastal waters.	X		
(4) Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawaiʻi's people.	X		
(5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.	X		
(6) Encourage design and construction practices that enhance the physical qualities of Hawaiʻi's communities.	X		
(7) Encourage urban developments in close proximity to existing services and facilities.	X		
(8) Foster recognition of the importance and value of the land, air and water resources to Hawaiʻi's people, their cultures and visitors.			X
Discussion: HoKua Place will employ design principles and features, were feasible, aimed at water and energy conservation and stewardship for Hawai`i's resources. The Project site is located outside of the flood and tsunami zones and project construction practices will minimize threat from natural hazards. The Project site is located in proximity to existing urban development and infrastructure. Through the layout and design of HoKua Place, there is an overall opportunity for a positive effect on the health of its residents. HoKua Place included open space, parks and open greenway areas encompassing 14.3-acres, a 3.1-acre park for outdoor recreation and land for the proposed relocation of the Kapaʻa county swimming pool which will provide residents with an opportunity for leisurely recreational and physical fitness activities.			
226-14 Objective and policies for facility systems--in general. (a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal and energy and telecommunication systems that support statewide social, economic and physical objectives.			
(b) To achieve the general facility systems objective, it shall be the policy of this State to:			
(1) Accommodate the needs of Hawaiʻi's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.	X		
(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.	X		
(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.	X		
(4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction and maintenance of facility systems.	X		
Discussion: HoKua Place will be contributing to act on the deferred maintenance and to the cost of repairs to the County sewer treatment plant. Additionally, HoKua Place has a proven well site that may be dedicated to the DOW to feed the Department of Water's storage tanks. The Project will have a main roadway from the Kapaʻa By-Pass Road running north through the Property to Olohena Road. The roadway will follow the county's resolution for complete roads and as such will be a multi-modal roadway. The By-Pass road is owned by HoKua Place which is working with the Department of Transportation (DOT) and has been allowing for the continuous public use of the road. The By-Pass road will be dedicated to DOT upon final subdivision approval. Thus, HoKua Place will be contributing to the objectives and policies of the State Plan in regards to facility systems.			

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
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226-15 Objectives and Policies for Facility Systems - Solid and Liquid Wastes. (A) Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:			
(1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.	X		
(2) Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.	X		
(B) To achieve solid and liquid waste objectives, it shall be the policy of this State to:			
(1) Encourage the adequate development of sewerage facilities that complement planned growth.			X
(2) Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic.	X		
(3) Promote research to develop more efficient and economical treatment and disposal of solid and liquid wastes.			X
Discussion: HoKua Place will adhere to State and County sanitation standards for solid and liquid waste management. Throughout Project construction and development, HoKua Place will recycle and reuse generated construction wastes, as well as, incorporate measures and provisions to implement recycling such as storage and collection systems for recyclables. BMPs will be implemented for long term development and operation of activities occurring on the site as part of pollution prevention measures. HoKua Place will be contributing funds to help upgrade the deferred maintenance and repair of the Wailua Waste Water Treatment plant.			
226-16 Objective and Policies for Facility Systems - Water. (A) Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational and other needs within resource capacities. (B) To achieve the facility systems water objective, it shall be the policy of this State to:			
(1) Coordinate development of land use activities with existing and potential water supply.	X		
(2) Support research and development of alternative methods to meet future water requirements well in advance of anticipated needs.			X
(3) Reclaim and encourage the productive use of runoff water and wastewater discharges.	X		
(4) Assist in improving the quality, efficiency, service and storage capabilities of water systems for domestic and agricultural use.	X		
(5) Support water supply services to areas experiencing critical water problems.			X
(6) Promote water conservation programs and practices in government, private industry, and the general public to help ensure adequate water to meet long-term needs.	X		
Discussion: HoKua Place will employ design principles, where feasible, to conserve water and seek to achieve water conservation and efficiency. A Water Master Plan for HoKua Place <u>has been conceptually approved</u> by the Kauaʻi County Department of Water (DOW). HoKua Place has a proven well site that will be dedicated to the DOW to feed the Department of Water's storage tanks and existing water system. HoKua Place is committed to continue working with the DOW on pertinent water issues.			
226-17 Objectives and Policies for Facility Systems - Transportation. (A) Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:			
(1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe and convenient movement of people and goods.	X		

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(2) A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State.			X
(B) To achieve the transportation objectives, it shall be the policy of this State to:			
(1) Design, program, and develop a multi-modal system in conformance with desired growth and physical development as stated in this chapter;	X		
(2) Coordinate state, county, federal, and private transportation activities and programs toward the achievement of statewide objectives;			X
(3) Encourage a reasonable distribution of financial responsibilities for transportation among participating governmental and private parties;			X
(4) Provide for improved accessibility to shipping, docking, and storage facilities;			X
(5) Promote a reasonable level and variety of mass transportation services that adequately meet statewide and community needs;			X
(6) Encourage transportation systems that serve to accommodate present and future development needs of communities;	X		
(7) Encourage a variety of carriers to offer increased opportunities and advantages to inter-island movement of people and goods;			X
(8) Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs;			X
(9) Encourage the development of transportation systems and programs which would assist statewide economic growth and diversification;			X
(10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawaiʻi's natural environment;			X
(11) Encourage safe and convenient use of low-cost, energy-efficient, non-polluting means of transportation;			X
(12) Coordinate intergovernmental land use and transportation planning activities to ensure the timely delivery of supporting transportation infrastructure in order to accommodate planned growth objectives; and	X		
(13) Encourage diversification of transportation modes and infrastructure to promote alternate fuels and energy efficiency.			X
Discussion: HoKua Place actively supports transportation planning and objectives of the County of Kauaʻi Transportation Department and DOT. HoKua Place will incorporate bus stops into its road system and complete streets design. HoKua Place is committed to Multi-modal, Interconnected and Concurrent Transportation for its residents and community. HoKua Place also intends to dedicate the Kapaʻa Bypass Road to the State to achieve both State and County transportation goals and objectives.			
226-18 Objectives and Policies for Facility Systems - Energy. (A) Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all:			
(1) Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people;			X
(2) Increased energy self-sufficiency where the ratio of indigenous to imported energy use is increased;	X		
(3) Greater energy security in the face of threats to Hawaiʻi's energy supplies and systems; and	X		
(4) Reduction, avoidance or sequestration of greenhouse gas emissions from energy supply and use.	X		
(B) To achieve the energy objectives, it shall be the policy of this State to ensure the provision of adequate, reasonably priced and dependable energy services to accommodate demand.			
(C) To further achieve the energy objectives, it shall be the policy of this State to:			
(1) Support research and development as well as promote the use of renewable energy sources;	X		
(2) Ensure that the combination of energy supplies and energy-saving systems is sufficient to support the demands of growth;	X		

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(3) Base decisions of least-cost supply-side and demand-side energy resource options on a comparison of their total costs and benefits when a least-cost is determined by a reasonably comprehensive, quantitative, and qualitative accounting of their long-term, direct and indirect economic, environmental, social, cultural, and public health costs and benefits;			X
(4) Promote all cost-effective conservation of power and fuel supplies through measures including: (a) Development of cost-effective demand-side management programs; (b) Education; and (c) Adoption of energy-efficient practices and technologies;	X		
(5) Ensure to the extent that new supply-side resources are needed, the development or expansion of energy systems utilizes the least-cost energy supply option and maximizes efficient technologies;	X		
(6) Support research, development, and demonstration of energy efficiency, load management, and other demand-side management programs, practices, and technologies;	X		
(7) Promote alternate fuels and energy efficiency by encouraging diversification of transportation modes and infrastructure;	X		
(8) Support actions that reduce, avoid, or sequester greenhouse gases in utility, transportation, and industrial sector applications; and			X
(9) Support actions that reduce, avoid or sequester Hawaiʻi's greenhouse gas emissions through agriculture and forestry initiatives.			X
(10) Provide priority handling and processing for all state and county permits required for renewable energy projects.			X
Discussion: HoKua Place activities, buildings and grounds will be designed with a significant emphasis on energy conservation and efficiency. HoKua Place will employ efficient design practices and technologies, where feasible. Buildings within HoKua Place will further comply with the County of Kauaʻi and State Energy Conservation rules and regulations.			
226-18.5 Objectives and policies for facility systems--telecommunications. (a) Planning for the State's telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.			
(b) To achieve the telecommunications objective, it shall be the policy of this State to ensure the provision of adequate, reasonably priced and dependable telecommunications services to accommodate demand.			X
(c) To further achieve the telecommunications objective, it shall be the policy of this State to:			
(1) Facilitate research and development of telecommunications systems and resources;			X
(2) Encourage public and private sector efforts to develop means for adequate, ongoing telecommunications planning;			X
(3) Promote efficient management and use of existing telecommunications systems and services; and			X
(4) Facilitate the development of education and training of telecommunications personnel			X
Discussion: The Project site is served by Hawaiian Telcom telephone lines. Numerous cell towers across the island provide cellular phone service to the area. Therefore, the Project will not have a significant impact on communication resources or services.			
Section 226-19: Objectives and policies for socio-cultural advancement--housing. (a) Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:			
(1) Greater opportunities for Hawaiʻi's people to secure reasonably priced, safe, sanitary, and livable homes, located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more affordable housing is made available to very low-, low- and moderate-income segments of Hawaiʻi's population.	X		
(2) The orderly development of residential areas sensitive to community needs and other land uses.	X		

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(3) The development and provision of affordable rental housing by the State to meet the housing needs of Hawaiʻi's people.	X		
(b) To achieve the housing objectives, it shall be the policy of this State to:			
(1) Effectively accommodate the housing needs of Hawaiʻi's people.	X		
(2) Stimulate and promote feasible approaches that increase housing choices for low-income, moderate-income and gap-group households.	X		
(3) Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style and size of housing.	X		
(4) Promote appropriate improvement, rehabilitation and maintenance of existing housing units and residential areas.			X
(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 areas.	X		
(6) Facilitate the use of available vacant, developable and underutilized urban lands for housing.			X
(7) Foster a variety of lifestyles traditional to Hawaiʻi through the design and maintenance of neighborhoods that reflect the culture and values of the community.	X		
(8) Promote research and development of methods to reduce the cost of housing construction in Hawaiʻi.			X
Discussion: HoKua Place will have a positive impact on housing and population aspects of the East Kauaʻi Region. The Kauaʻi General Plan specifically points out the need for more housing in the area and specifically designates the subject property as Neighborhood General for that purpose. In a 2010 letter to HoKua Place (formerly known as Kapaʻa Highlands II), the Planning Director wrote, "We are writing in general support of Three stooges LLC's petition to amend 97 acres in Kapaʻa to the Urban district. The proposed amendment is in conformance with the County of Kauaʻi's General Plan and will provide affordable housing. Affordable housing remains an acute need on Kauaʻi, even with a falling real estate market and as such the County is generally supportive of any petition that proposes additional affordable housing, particularly when contiguous to developed urban areas, infrastructure and consistent with our General Plan." Therefore, development of the Property will address a portion of the significant demand for affordable housing in the County of Kauaʻi, without significantly affecting reserve areas for foreseeable urban growth. HoKua Place will respond to varying spectrums of demand for housing within Kauaʻi by providing a wide range of housing opportunities inclusive of affordable housing alternatives. HoKua Place will seek to create and sustain a mixed-income community allowing for unparalleled social diversity.			
226-20 Objectives and policies for socio-cultural advancement--health. (a) Planning for the State's socio-cultural advancement with regard to health shall be directed towards achievement of the following objectives:			
(1) Fulfillment of basic individual health needs of the general public.			X
(2) Maintenance of sanitary and environmentally healthful conditions in Hawaiʻi's communities.	X		
(b) To achieve the health objectives, it shall be the policy of this State to:			
(1) Provide adequate and accessible services and facilities for prevention and treatment of physical and mental health problems, including substance abuse.			X
(2) Encourage improved cooperation among public and private sectors in the provision of health care to accommodate the total health needs of individuals throughout the State.			X
(3) Encourage public and private efforts to develop and promote statewide and local strategies to reduce health care and related insurance costs.			X

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(4) Foster an awareness of the need for personal health maintenance and preventive health care through education and other measures.			X
(5) Provide programs, services and activities that ensure environmentally healthful and sanitary conditions.			X
(6) Improve the State's capabilities in preventing contamination by pesticides and other potentially hazardous substances through increased coordination, education, monitoring and enforcement.			X
Discussion: Through the layout and design of HoKua Place, there is an overall opportunity for a positive effect on the health of its residents. HoKua Place provides opportunities for people of all ages and abilities to engage in routine physical activity by creating places and policies that encourage better physical health, including open space and open greenway areas encompassing 14.3-acres, a 3.1-acre park for outdoor recreation and land for the proposed relocation of the Kapaʻa county swimming pool which will provide residents with an opportunity for leisurely recreational and physical fitness activities.			
226-21 Objective and policies for socio-cultural advancement--education. (a) Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.			
(b) To achieve the education objective, it shall be the policy of this State to:			
(1) Support educational programs and activities that enhance personal development, physical fitness, recreation and cultural pursuits of all groups.	X		
(2) Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.	X		
(3) Provide appropriate educational opportunities for groups with special needs.			X
(4) Promote educational programs which enhance understanding of Hawaiʻi's cultural heritage.			X
(5) Provide higher educational opportunities that enable Hawaiʻi's people to adapt to changing employment demands.			X
(6) Assist individuals, especially those experiencing critical employment problems or barriers, or undergoing employment transitions, by providing appropriate employment training programs and other related educational opportunities.			X
(7) Promote programs and activities that facilitate the acquisition of basic skills, such as reading, writing, computing, listening, speaking, and reasoning.			X
(8) Emphasize quality educational programs in Hawaiʻi's institutions to promote academic excellence.			X
(9) Support research programs and activities that enhance the education programs of the State.			X
Discussion: HoKua Place will coordinate with the DOE to ensure that the DOE's facility assessment policy provisions are appropriately addressed. Kapaʻa Elementary School, Kapaʻa Middle School and Kapaʻa High School all presently have sufficient excess capacity to accommodate all students from HoKua Place. Additionally, a 3.1-acre park is proposed adjacent to the existing Kapaʻa Middle School. The park will have an area for the county's proposed relocation of the Kapaʻa county swimming pool. HoKua Place also plans to develop a bike/walking path from the south of the property to the Kapaʻa Middle School to facilitate biking and walking around the Project.			
226-22 Objective and Policies for Socio-Cultural Advancement -Social Services. (A) Planning for the State's socio-cultural advancement with regard to social services shall be directed towards the achievement of the objective of improved public and private social services and activities that enable individuals, families, and groups to become more self-reliant and confident to improve their well-being. (B) To achieve the social service objective, it shall be the policy of the State to:			

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(1) Assist individuals, especially those in need of attaining a minimally adequate standard of living and those confronted by social and economic hardship conditions, through social services and activities within the State's fiscal capacities.			X
(2) Promote coordination and integrative approaches among public and private agencies and programs to jointly address social problems that will enable individuals, families and groups to deal effectively with social problems and to enhance their participation in society.			X
(3) Facilitate the adjustment of new residents, especially recently arrived immigrants, into Hawaiʻi's communities.			X
(4) Promote alternatives to institutional care in the provision of long-term care for elder and disabled populations.			X
(5) Support public and private efforts to prevent domestic abuse and child molestation, and assist victims of abuse and neglect.			X
(6) Promote programs which assist people in need of family planning services to enable them to meet their needs.			X
Discussion: HoKua Place will assist the State with its socio-cultural advancement by providing a variety of housing opportunities for residents as well as the creation of open space and development of a park which included the relocation of a County swimming pool.			
226-23 Objective and policies for socio-cultural advancement--leisure. (a) Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.			
(b) To achieve the leisure objective, it shall be the policy of this State to:			
(1) Foster and preserve Hawaiʻi's multi-cultural heritage through supportive cultural, artistic, recreational, and humanities-oriented programs and activities.			X
(2) Provide a wide range of activities and facilities to fulfill the cultural, artistic, and recreational needs of all diverse and special groups effectively and efficiently.	X		
(3) Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.	X		
(4) Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.	X		
(5) Ensure opportunities for everyone to use and enjoy Hawaiʻi's recreational resources.	X		
(6) Assure the availability of sufficient resources to provide for future cultural, artistic and recreational needs.	X		
(7) Provide adequate and accessible physical fitness programs to promote the physical and mental well-being of Hawaiʻi's people.	X		
(8) Increase opportunities for appreciation and participation in the creative arts, including the literary, theatrical, visual, musical, folk and traditional art forms.			X
(9) Encourage the development of creative expression in the artistic disciplines to enable all segments of Hawaiʻi's population to participate in the creative arts.			X
(10) Assure adequate access to significant natural and cultural resources in public ownership.			X
Discussion: HoKua Place interlinks natural features and open space as core components of the community. Open space and open greenway areas encompassing 14.3-acres will be developed within the Project. A 3.1-acre park is proposed within the Project for outdoor recreation. Land for the proposed relocation of the Kapaʻa county swimming pool will be available within the 3.1-acre park. The provision of a 3.1-acre park with a county swimming pool within the proposed Project will provide residents with an opportunity for leisurely recreational activities.			

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
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226-24 Objective and Policies for Socio-Cultural Advancement - Individual Rights and Personal Well-Being. (A) Planning for the State's socio-cultural advancement with regard to individual rights and personal well-being shall be directed towards achievement of the objective of increased opportunities and protection of individual rights to enable individuals to fulfill their socio-economic needs and aspirations. (B) To achieve the individual rights and personal well-being objective, it shall be the policy of this State to:			
(1) Provide effective services and activities that protect individuals from criminal acts and unfair practices and that alleviate the consequences of criminal acts in order to foster a safe and secure environment.			X
(2) Uphold and protect the national and state constitutional rights of every individual.			X
(3) Assure access to, and availability of, legal assistance, consumer protection, and other public services which strive to attain social justice.			X
(4) Ensure equal opportunities for individual participation in society.			X
Discussion: HoKua Place will assist the State with its socio-cultural advancement by providing a variety of housing opportunities for residents.			
226-25 Objective and Policies for Socio-Cultural Advancement - Culture. (A) Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawaiʻi's people. (B) To achieve the culture objective, it shall be the policy of this State to:			
(1) Foster increased knowledge and understanding of Hawaiʻi's ethnic and cultural heritages and the history of Hawaiʻi.			X
(2) Support activities and conditions that promote cultural values, customs and arts that enrich the lifestyles of Hawaiʻi's people and which are sensitive and responsive to family and community needs.			X
(3) Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawaiʻi.			X
(4) Encourage the essence of the aloha spirit in people's daily activities to promote harmonious relationships among Hawaiʻi's people and visitors.	X		
Discussion: Affordable housing options will be incorporated within the HoKua Place, allowing for a diversity and mix of housing types and options. Complete streets with walkways and bike lanes, will allow for slow movement through the Project for easy social interaction.			
226-26 Objectives and Policies for Socio-Cultural Advancement - Public Safety. (A) Planning for the State's socio-cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:			
(1) Assurance of public safety and adequate protection of life and property for all people.	X		
(2) Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, and social and economic well-being of the community in the event of civil disruptions, wars, natural disasters, and other major disturbances.			X
(3) Promotion of a sense of community responsibility for the welfare and safety of Hawaiʻi's people.	X		
(B) To achieve the public safety objectives, it shall be the policy of this State to:			
(1) Ensure that public safety programs are effective and responsive to community needs.			X
(2) Encourage increased community awareness and participation in public safety programs.			X
(C) To further achieve public safety objectives related to criminal justice, it shall be the policy of this State to:			
(1) Support criminal justice programs aimed at preventing and curtailing criminal activities.			X
(2) Develop a coordinated, systematic approach to criminal justice administration among all criminal justice agencies.			X

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
(3) Provide a range of correctional resources which may include facilities and alternatives to traditional incarceration in order to address the varied security needs of the community and successfully reintegrate offenders into the community.			X
(D) To further achieve public safety objectives related to emergency management, it shall be the policy of this State to:			
(1) Ensure that responsible organizations are in a proper state of readiness to respond to major war-related, natural, or technological disasters and civil disturbances at all times.			X
(2) Enhance the coordination between emergency management programs throughout the State.			X
Discussion: HoKua Place allocates a one acre parcel for the development of sub-stations for the police and fire departments. Provision of correctional facilities falls under the jurisdiction of the PSD.			
226-27 Objectives and Policies for Socio-Cultural Advancement - Government. (A) Planning the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the following objectives:			
(1) Efficient, effective, and responsive government services at all levels in the State.			X
(2) Fiscal integrity, responsibility and efficiency in the state government and county governments.			X
(B) To achieve the government objectives, it shall be the policy of this State to:			
(1) Provide for necessary public goods and services not assumed by the private sector.			X
(2) Pursue an openness and responsiveness in government that permits the flow of public information, interaction and response.			X
(3) Minimize the size of government to that necessary to be effective.			X
(4) Stimulate the responsibility in citizens to productively participate in government for a better Hawaiʻi.			X
(5) Assure that government attitudes, actions and services are sensitive to community needs and concerns.			X
(6) Provide for a balanced fiscal budget.			X
(7) Improve the fiscal budgeting and management system of the State.			X
(8) Promote the consolidation of state and county governmental functions to increase the effective and efficient delivery of government programs and services and to eliminate duplicative services wherever feasible.	X		
Discussion: HoKua Place allocates a one acre parcel for the development of sub-stations for the police and fire departments.			
Hawai'i State Plan - HRS Ch. 226 - Part III. Priority Guidelines			
226-101 Purpose. The purpose of this part is to establish overall priority guidelines to address areas of statewide concern.			
226-102 Overall Direction. The State shall strive to improve the quality of life for Hawaiʻi's present and future population through the pursuit of desirable courses of action in five major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, and quality education.			
226-103 Economic Priority Guidelines. (A) Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawaiʻi's people and achieve a stable and diversified economy:			
(1) Seek a variety of means to increase the availability of investment capital for new and expanding enterprises. (a) Encourage investments which:			
(i) Reflect long term commitments to the State;	X		
(ii) Rely on economic linkages within the local economy;	X		
(iii) Diversify the economy;	X		
(iv) Reinvest in the local economy;	X		

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
(v) Are sensitive to community needs and priorities; and	X		
(vi) Demonstrate a commitment to provide management opportunities to Hawaiʻi residents.	X		
(2) Encourage the expansion of technological research to assist industry development and support the development and commercialization of technological advancements.			X
(3) Improve the quality, accessibility and range of services provided by government to business, including data and reference services and assistance in complying with governmental regulations.			X
(4) Seek to ensure that state business tax, labor laws and administrative policies are equitable, rational, and predictable.			X
(5) Streamline the building and development permit and review process, and eliminate or consolidate other burdensome or duplicative governmental requirements imposed on business, where public health, safety and welfare would not be adversely affected.			X
(6) Encourage the formation of cooperatives and other favorable marketing or distribution arrangements at the regional or local level to assist Hawaiʻi's small-scale producers, manufacturers and distributors.			X
(7) Continue to seek legislation to protect Hawaiʻi from transportation interruptions between Hawaiʻi and the continental United States.			X
(8) Provide public incentives and encourage private initiative to develop and attract industries which promise long-term growth potentials and which have the following characteristics:			
(a) An industry that can take advantage of Hawaiʻi's unique location and available physical and human resources.			X
(b) A clean industry that would have minimal adverse effects on Hawaiʻi's environment.			X
(c) An industry that is willing to hire and train Hawaiʻi's people to meet the industry's labor needs at all levels of employment.			X
(d) An industry that would provide reasonable income and steady employment.			X
(9) Support and encourage, through educational and technical assistance programs and other means, expanded opportunities for employee ownership and participation in Hawaiʻi business.			X
(10) Enhance the quality of Hawaiʻi's labor force and develop and maintain career opportunities for Hawaiʻi's people through the following actions:			
(a) Expand vocational training in diversified agriculture, aquaculture, information industry and other areas where growth is desired and feasible.			X
(b) Encourage more effective career counseling and guidance in high schools and post-secondary institutions to inform students of present and future career opportunities.			X
(c) Allocate educational resources to career areas where high employment is expected and where growth of new industries is desired.			X
(d) Promote career opportunities in all industries for Hawaiʻi's people by encouraging firms doing business in the State to hire residents.			X
(e) Promote greater public and private sector cooperation in determining industrial training needs and in developing relevant curricula and on- the-job training opportunities.			X
(f) Provide retraining programs and other support services to assist entry of displaced workers into alternative employment.			X
(B) Priority guidelines to promote the economic health and quality of the visitor industry:			
(1) Promote visitor satisfaction by fostering an environment which enhances the Aloha Spirit and minimizes inconveniences to Hawaiʻi's residents and visitors.			X
(2) Encourage the development and maintenance of well- designed, adequately serviced hotels and resort destination areas which are sensitive to neighboring communities and activities and which provide for adequate shoreline setbacks and beach access.			X
(3) Support appropriate capital improvements to enhance the quality of existing resort destination areas and provide incentives to encourage investment in upgrading, repair and maintenance of visitor facilities.			X
(4) Encourage visitor industry practices and activities which respect, preserve and enhance Hawaiʻi's significant natural, scenic, historic and cultural resources.			X

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
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(5) Develop and maintain career opportunities in the visitor industry for Hawaiʻi's people, with emphasis on managerial positions.			X
(6) Support and coordinate tourism promotion abroad to enhance Hawaiʻi's share of existing and potential visitor markets.			X
(7) Maintain and encourage a more favorable resort investment climate consistent with the objectives of this chapter.			X
(8) Support law enforcement activities that provide a safer environment for both visitors and residents alike.	X		
(9) Coordinate visitor industry activities and promotions to business visitors through the state network of advanced data communication techniques.			X
(C) Priority guidelines to promote the continued viability of the sugar and pineapple industries:			
(1) Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries.			X
(2) Continue efforts to maintain federal support to provide stable sugar prices high enough to allow profitable operations in Hawai'i.			X
(3) Support research and development, as appropriate, to improve the quality and production of sugar and pineapple crops.			X
(D) Priority guidelines to promote the growth and development of diversified agriculture and aquaculture:			
(1) Identify, conserve, and protect agricultural and aquaculture lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquaculture uses of such lands.			X
(2) Assist in providing adequate, reasonably priced water for agricultural activities.			X
(3) Encourage public and private investment to increase water supply and to improve transmission, storage, and irrigation facilities in support of diversified agriculture and aquaculture.			X
(4) Assist in the formation and operation of production and marketing associations and cooperatives to reduce production and marketing costs.			X
(5) Encourage and assist with the development of a waterborne and airborne freight and cargo system capable of meeting the needs of Hawaiʻi's agricultural community.			X
(6) Seek favorable freight rates for Hawaiʻi's agricultural products from inter-island and overseas transportation operators.			X
(7) Encourage the development and expansion of agricultural and aquaculture activities which offer long-term economic growth potential and employment opportunities.			X
(8) Continue the development of agricultural parks and other programs to assist small independent farmers in securing agricultural lands and loans.			X
(9) Require agricultural uses in agricultural subdivisions and closely monitor the uses in these subdivisions.			X
(10) Support the continuation of land currently in use for diversified agriculture.			X
(E) Priority guidelines for water use and development:			
(1) Maintain and improve water conservation programs to reduce the overall water consumption rate.	X		
(2) Encourage the improvement of irrigation technology and promote the use of non-potable water for agricultural and landscaping purposes.			X
(3) Increase the support for research and development of economically feasible alternative water sources.			X
(4) Explore alternative funding sources and approaches to support future water development programs and water system improvements.			X
(F) Priority guidelines for energy use and development:			
(1) Encourage the development, demonstration and commercialization of renewable energy sources.	X		
(2) Initiate, maintain and improve energy conservation programs aimed at reducing energy waste and increasing public awareness of the need to conserve energy.	X		
(3) Provide incentives to encourage the use of energy conserving technology in residential, industrial and other buildings.			X

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
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(4) Encourage the development and use of energy conserving and cost-efficient transportation systems.			X
(G) Priority guidelines to promote the development of the information industry:			
(1) Establish an information network that will serve as the catalyst for establishing a viable information industry in Hawai'i.			X
(2) Encourage the development of services such as financial data processing, products and services exchange, foreign language translations, telemarketing, teleconferencing, a twenty-four-hour international stock exchange, international banking, and a Pacific Rim management center.			X
(3) Encourage the development of small businesses in the information field such as software development, the development of new information systems and peripherals, data conversion and data entry services, and home or cottage services such as computer programming, secretarial, and accounting services.			X
(4) Encourage the development or expansion of educational and training opportunities for residents in the information and telecommunications fields.			X
(5) Encourage research activities, including legal research in the information and telecommunications fields.			X
(6) Support promotional activities to market Hawaiʻi's information industry services.			X
Discussion: HoKua Place demonstrates a long-term commitment to housing opportunities on Kauaʻi. The Project will meet the needs of projected growth in Kauaʻi. Development of the Property will address a portion of the significant demand for affordable housing in the County of Kauaʻi, without significantly affecting reserve areas for foreseeable urban growth. Located in the middle of the island, the Project is close to the centers of employment, beaches, shopping, recreation, etc. HoKua Place will respond to varying spectrums of demand for housing within Kauaʻi by providing a wide range of housing opportunities inclusive of affordable housing alternatives. HoKua Place will seek to create and sustain a mixed-income community allowing for unparalleled social diversity. Development of facilities would generate employment and have a direct beneficial impact on the local economy during construction through construction and construction-related employment. Additionally, HoKua Place proposes two areas for commercial uses that, ultimately, will serve to promote and provide a variety of job opportunities.			
226-104 Population Growth and Land Resources Priority Guidelines. (A) Priority guidelines to effect desired statewide growth and distribution:			
(1) Encourage planning and resource management to insure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawaiʻi's people.	X		
(2) Manage a growth rate for Hawaiʻi's economy that will parallel future employment needs for Hawaiʻi's people.			X
(3) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.	X		
(4) Encourage major State and Federal investments and services to promote economic development and private investment to the neighbor islands, as appropriate.			X
(5) Explore the possibility of making available urban land, low-interest loans, and housing subsidies to encourage the provision of housing to support selective economic and population growth on the neighbor islands.			X
(6) Seek Federal funds and other funding sources outside the State for research, program development and training to provide future employment opportunities on the neighbor islands.			X
(7) Support the development of high technology parks on the neighbor islands.			X
(B) Priority guidelines for regional growth distribution and land resource utilization:			

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
(1) Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures, and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.	X		
(2) Make available marginal or nonessential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.	X		
(3) Restrict development when drafting of water would result in exceeding the sustainable yield or in significantly diminishing the recharge capacity of any groundwater area.			X
(4) Encourage restriction of new urban development in areas where water is insufficient from any source for both agricultural and domestic use.			X
(5) In order to preserve green belts, give priority to state capital-improvement funds which encourage location of urban development within existing urban areas except where compelling public interest dictates development of a noncontiguous new urban core.			X
(6) Seek participation from the private sector for the cost of building infrastructure and utilities, and maintaining open spaces.			X
(7) Pursue rehabilitation of appropriate urban areas.			X
(8) Support the redevelopment of Kakaʻako into a viable residential, industrial and commercial community.			X
(9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.	X		
(10) Identify critical environmental areas in Hawai'i to include but not be limited to the following: watershed and recharge areas; wildlife habitats (on land and in the ocean); areas with endangered species of plants and wildlife; natural streams and water bodies; scenic and recreational shoreline resources; open space and natural areas; historic and cultural sites; areas particularly sensitive to reduction in water and air quality; and scenic resources.			X
(11) Identify all areas where priority should be given to preserving rural character and lifestyle.			X
(12) Utilize Hawaiʻi's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.	X		
(13) Protect and enhance Hawaiʻi's shoreline, open spaces and scenic resources.	X		
Discussion: HoKua Place will support the anticipated growth and housing demand in the East Kauaʻi region. The Project site is surrounded by residential uses and is designated "Neighborhood General" by the General Plan. The Project site also avoids critical habitat and important agricultural lands.			
226-105 Crime and Criminal Justice Priority Guidelines. (A) Priority Guidelines in the Area of Crime and Criminal Justice:			
(1) Support law enforcement activities and other criminal justice efforts that are directed to provide a safer environment.			X
(2) Target state and local resources on efforts to reduce the incidence of violent crime and on programs relating to the apprehension and prosecution of repeat offenders.			X
(3) Support community and neighborhood program initiatives that enable residents to assist law enforcement agencies in preventing criminal activities.			X
(4) Reduce overcrowding or substandard conditions in correctional facilities through a comprehensive approach among all criminal justice agencies which may include sentencing law revisions and use of alternative sanctions other than incarceration for persons who pose no danger to their community.			X
(5) Provide a range of appropriate sanctions for juvenile offenders, including community-based programs and other alternative sanctions.			X
(6) Increase public and private efforts to assist witnesses and victims of crimes and to minimize the costs of victimization.			X
Discussion: HoKua Place allocates a one acre parcel for the development of a police sub-station which will help increase police presence in the area.			

HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
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226-106 Affordable housing. Priority guidelines for the provision of affordable housing:			
(1) Seek to use marginal or nonessential agricultural land and public land to meet housing needs of low- and moderate-income and gap-group households.	X		
(2) Encourage the use of alternative construction and development methods as a means of reducing production costs.			X
(3) Improve information and analysis relative to land availability and suitability for housing.			X
(4) Create incentives for development which would increase home ownership and rental opportunities for Hawaiʻi's low- and moderate-income households, gap-group households and residents with special needs.	X		
(5) Encourage continued support for government or private housing programs that provide low interest mortgages to Hawaiʻiʻs people for the purchase of initial owner- occupied housing.			X
(6) Encourage public and private sector cooperation in the development of rental housing alternatives.			X
(7) Encourage improved coordination between various agencies and levels of government to deal with housing policies and regulations.			X
(8) Give higher priority to the provision of quality housing that is affordable for Hawaiʻiʻs residents and less priority to development of housing intended primarily for individuals outside of Hawaiʻi.	X		
Discussion: HoKua Place will have a positive impact on housing and population aspects of the East Kauaʻi Region. The Kauaʻi General Plan specifically points out the need for more housing in the area and specifically designates the subject property as Neighborhood General for that purpose. In a 2010 letter to the HoKua Place (formerly known as Kapaʻa Highlands II), the Planning Director wrote, "We are writing in general support of Three stooges LLC's petition to amend 97 acres in Kapaʻa to the Urban district." "Affordable housing remains an acute need on Kauaʻi, even with a falling real estate market and as such the County is generally supportive of any petition that proposes additional affordable housing, particularly when contiguous to developed urban areas, infrastructure and consistent with our General Plan." Therefore, development of the Property will address a portion of the significant demand for affordable housing in the County of Kauaʻi, without significantly affecting reserve areas for foreseeable urban growth. HoKua Place will respond to varying spectrums of demand for housing within Kauaʻi by providing a wide range of housing opportunities inclusive of affordable housing alternatives. HoKua Place will seek to create and sustain a mixed-income community allowing for unparalleled social diversity.			
226-107 Quality education. Priority guidelines to promote quality education:			
(1) Pursue effective programs which reflect the varied district, school, and student needs to strengthen basic skills achievement;			X
(2) Continue emphasis on general education "core" requirements to provide common background to students and essential support to other university programs;			X
(3) Initiate efforts to improve the quality of education by improving the capabilities of the education work force;			X
(4) Promote increased opportunities for greater autonomy and flexibility of educational institutions in their decision-making responsibilities;			X
(5) Increase and improve the use of information technology in education by the availability of telecommunications equipment for:			X
(A) The electronic exchange of information;			X
(B) Statewide electronic mail; and			X
(C) Access to the Internet.			X

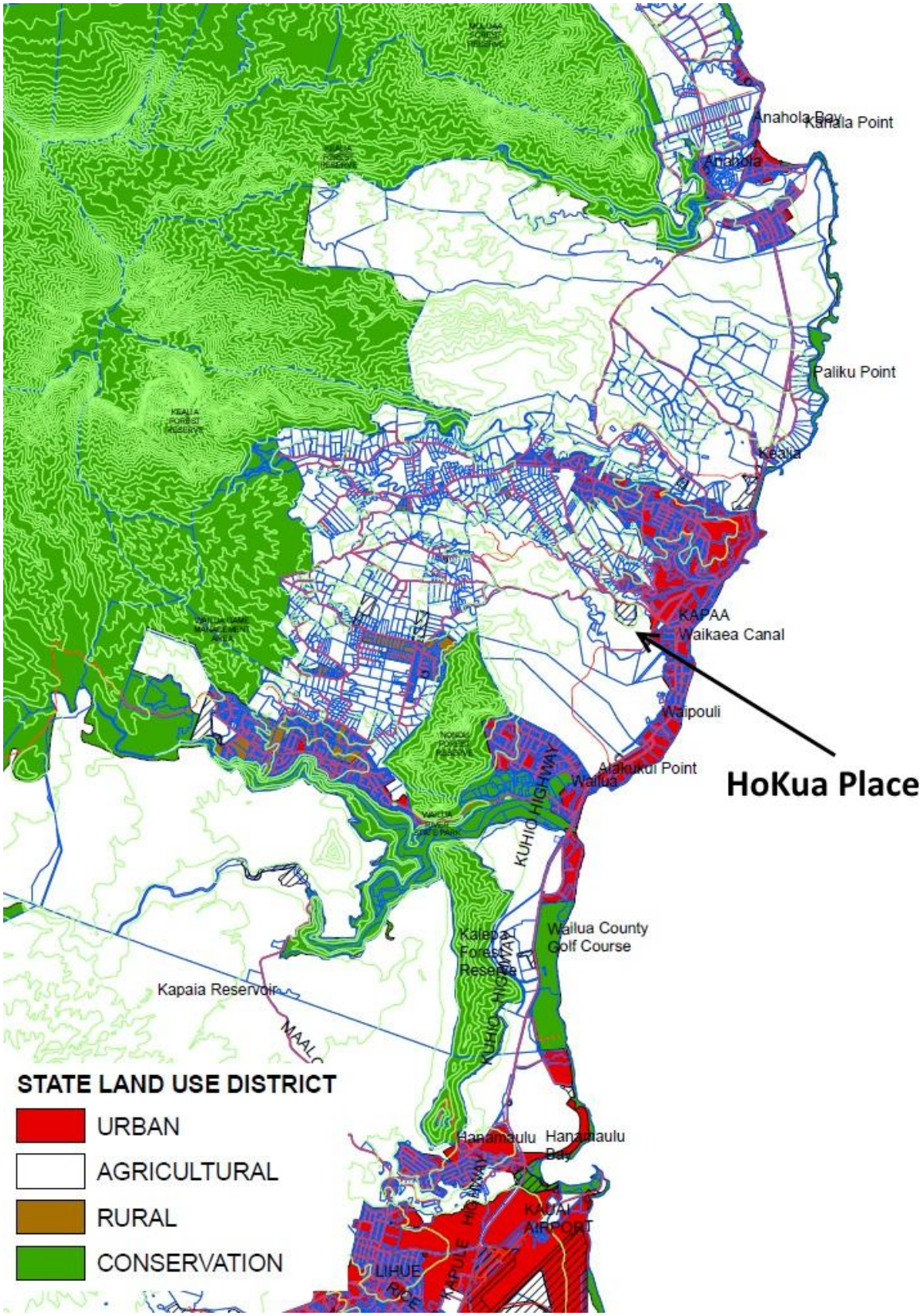
HAWAIʻI STATE PLAN, HRS CHAPTER 226	S	N/S	N/A
S = Supportive, N/S = Not Supportive, N/A = Not Applicable			
Encourage programs that increase the public's awareness and understanding of the impact of information technologies on our lives;			X
(6) Pursue the establishment of Hawaiʻi's public and private universities and colleges as research and training centers of the Pacific;			X
(7) Develop resources and programs for early childhood education;			X
(8) Explore alternatives for funding and delivery of educational services to improve the overall quality of education; and			X
Discussion: HoKua Place will coordinate with the DOE to ensure that the DOE's facility assessment policy provisions are appropriately addressed.			
226-108 Sustainability. Priority guidelines and principles to promote sustainability shall include:			
(1) Encouraging balanced economic, social, community, and environmental priorities;	X		
(2) Encouraging planning that respects and promotes living within the natural resources and limits of the State;	X		
(3) Promoting a diversified and dynamic economy;	X		
(4) Encouraging respect for the host culture;	X		
(5) Promoting decisions based on meeting the needs of the present without compromising the needs of future generations;	X		
(6) Considering the principles of the ahupuaʻa system; and			X
(7) Emphasizing that everyone, including individuals, families, communities, businesses, and government, has the responsibility for achieving a sustainable Hawaiʻi.	X		
Discussion: As noted in the HoKua Place Sustainability Plan, HoKua Place will be a sustainable community and will incorporate, to the extent feasible and practicable, measures to promote energy conservation, sustainable design, environmental stewardship and protection of the natural and cultural resources into the Project. In developing this HoKua Place Sustainability Plan, a variety of recognized sustainability programs and plans were reviewed, summarized and incorporated into this plan. In part, the recommendations from these programs and plans serve as guides to the sustainability actions noted in the HoKua Place Sustainability Plan.			

5.2.2 State Land Use Law, HRS Chapter 205

Administered by the Land Use Commission, all lands in the State of Hawaiʻi are classified into one of four major land use districts: urban, rural, agricultural, and conservation. Each category has a range of allowable uses.

Chapter 205, HRS, relating to the Land Use Commission, establishes four major land use districts into which all lands of the State are placed. The districts are designated Urban, Rural, Agricultural and Conservation.

The subject property is in the Agricultural land use district. The General Plan designates the property as Neighborhood General .



State Land Use District Map - 2012 (LUC Website)

The Property is currently vacant and has not been used for agriculture for over fifteen years. The Property was previously used for sugar cane by Līhuʻe Plantation and fully cultivated for many years.

HoKua Place has submitted a petition to the Land Use Commission for a boundary amendment. The petition is to change the state land use designation from Agricultural Land Use District to Urban Land Use District.

LUC Rules § 15-15-18 sets forth the standards used by the Commission for determining urban district boundaries. The proposed reclassification conforms to those standards as shown by the following analysis:

1. Lands Characterized by "city-like" Concentrations of People, Structures, Streets, Urban Level of Services and Other Related Land Uses.

The Property is located adjacent to and north of the town of Kapaʻa. The Kapaʻa By-Pass Road separates the town and the Property. The Property is on the northwest corner of the Kapaʻa By-Pass Road and Olohena Road. Olohena Road runs along and adjacent to the east and north boundaries of the Property.

The town of Kapaʻa consists of a variety of commercial, resort, recreational, and single and multi-family residential uses. The Kapaʻa Middle School is located adjacent and to the north of the Property. Olohena Road fronts Kapaʻa Middle School to the north. Across Olohena Road are single family residential neighborhoods.

The updated General Plan was approved by the County Council and Mayor in February 2018.

The General Plan establishes priorities for managing growth and community development over a 20-year planning timeframe.

The General Plan is a direction-setting document and not a regulatory in the sense of a zoning code or other land use entitlement. The policies guide County decision-making by mapping land use patterns, describing what type of development is desirable, and by setting high-level priorities for infrastructure and programs.

"The General Plan is based on the community's vision for Kaua'i's future by establishing "Goals" and "Policies" as outlined in Chapter 5, Section 5.1.1.

HoKua Place conforms to and implements the Goals and Policies of the General Plan by developing in the new Neighborhood General designation, which is contiguous to Kapa'a Town and its neighboring residential community, thereby, preserving the rural character of the area. Chapter 5, Section 5.1.1 above further depicts the Project's conformance with the General Plan.

2.A. Proximity to Centers of Trading and Employment Except Where the Development Would Generate New Centers Of Trading and Employment.

Kapaʻa town is located adjacent to and south of the property. Kapaʻa is the eastside of Kauaʻi's center of trade and employment, with numerous professional and business services.

Although Līhuʻe, approximately 8 miles south of the property, is the center of county, state, and federal government services, its population is slightly less the Kapaʻa's which has the largest resident population on the island.

Thus, as described previously, the proposed Project conforms to and implements the Kaua'i General Plan's vision of residential development integrating with Kaua'i's towns.

2.B. Availability of Basic Services such as Schools, Parks, Wastewater Systems, Solid Waste Disposal, Drainage, Water, Transportation Systems, Public Utilities, and Police and Fire Protection.

The Kapa'a Middle School (Public School) is adjacent and to the north of the property. The Kapa'a High and Elementary Schools are located within 2-miles of the Property.

There are several parks within Kapa'a town, including a beach park. A County owned 1.9-acre park is located within walking distance from the Property, just south east of the corner of Olohena Road and the by-pass road round-about. The park consists of a baseball field, football field, basketball courts, restroom facilities, picnic tables and a barbecue area.

HoKua Place proposes a 3.1-acre park. Land for the proposed relocation of the Kapa'a County swimming pool will be available within the 3.1-acre park.

The County wastewater treatment plant is located in Kapa'a. It has a capacity of 1.5 million gallons a day. It is currently operating at 500,000 gallons a day. HoKua Place will be contributing to the deferred maintenance and to the cost of repairs to the wastewater treatment plant. An existing sewer transmission line has adequate capacity for HoKua Place's 300,000 gallons daily use and is gravity fed. A wastewater report has been completed and is attached as an Exhibit.

With respect to solid waste, the County of Kaua'i currently provides single-family residences with solid waste disposal service on a once-per-week basis. Private solid waste disposal will be available for the multi-family projects.

A refuse transfer station is located in Kapa'a town. The Central Kaua'i Landfill is currently in the process of being expanded and has the necessary capacity to accommodate the proposed Project.

A Drainage Report is attached as an Exhibit. A complete and final Drainage and an Erosion Mitigation Plan will be prepared and submitted to the County Engineer for approval during the design and development phase of the Project.

HoKua Place will be providing drainage improvements in connection with development of the Property. Multiple detention ponds are proposed for the property. Additionally, a series of catch basins, drainage, pipes and culverts will be utilized to direct run off to major drainage areas on the property.

HoKua Place (formerly known as Kapa'a Highlands II) has an understanding with the County Department of Water (DOW) for water service for the Project. The agreement between the Petitioner and DOW requires the landowner may dedicate a proven well to feed the Department of Water's storage tanks.

The Property is encompassed by the Kapa'a By-Pass Road to the south and Olohena Road to the east and the north side. The By-Pass road is owned by HoKua Place which is working with the Department of Transportation (DOT) and has been allowing for the continuous public use of the road. The by-pass road will be dedicated to DOT upon final subdivision approval. The DOT has stated,

> "We have met with the petitioners, Three Stooge LLC, and we will work with them to ensure that any traffic impacts from the Project are analyzed and effectively mitigated."

There is a round-about located at the south east corner of Olohena Road and the Kapaʻa By-Pass Road. Kūhiō Highway is accessible from the Property by driving south on Olohena and Kūkuī Street approximately 0.5 mile.

The Project will have a main roadway, Roadway A, from the Kapaʻa By-Pass Road running north through the Property to Olohena Road. Roadway A will follow the county's resolution for complete roads and as such will be a multi-modal roadway.

Bus stops will be located along the roadway. A bike/walking path from the roundabout south east of the property will follow the bypass road, connect to the main road and continue to the Kapaʻa Middle School located on the North portion of the Property.

Electrical, cable and telephone services are available for HoKua Place. Additional service infrastructure to the property is anticipated.

Police protection for the Kapaʻa, area is provided by the Kauaʻi County Police Department, with its main headquarters located in Līhuʻe. A substation is located in Kapaʻa Town approximately 0.5 miles away from the Property.

Fire protection is currently available for the Kapaʻa area by a new county fire station located on the north end of Kapaʻa town, approximately 2.0-miles away on Kūhiō Highway. The Project will have lands available for county police and fire substations on the Property.

2.C. Sufficient Reserve Areas for Foreseeable Urban Growth.

HoKua Place will utilize 97-acres of land for single-family and multi-family residential and commercial purposes. Development of the Property will address a portion of the significant demand for affordable housing in the County of Kauaʻi, without significantly affecting reserve areas for foreseeable urban growth.

As noted in the "East Kauai Land Use Map" included in the Kauaʻi General Plan, the subject property has an "Neighborhood General" land use designation. The Kapaʻa Town Development Plan currently designates the property for urban development.

The lands surrounding the property to the north are designated as "Residential" and "Urban" by the County General Plan.

The Property is contiguous to existing urban lands to the south and across the By-Pass road. These existing urban lands are zoned for residential use by the County of Kauaʻi.

3. Lands with Satisfactory Topography, Drainage, and Reasonably Free From the Danger of any Flood, Tsunami, Unstable Soil Condition, and Other Adverse Environmental Effects.

The Property slopes gently down from north to south, with elevations ranging from 130 to 55 feet. As indicated by the Flood Insurance Rate Map for the County of Kauaʻi, the Property is located within Zone X, which is an area of minimal flooding according to the Federal Emergency Management Agency.

A Drainage Report has been completed. The Property is not subject to tsunami, unstable soil conditions or other adverse environmental effects that would render it unsuitable or inappropriate for the proposed Project.

The Property rises in elevation to the northern border approximately 130 feet above msl or an average upslope of 5%. Less than 25 percent of the Property has slopes in the 20 percent range.

4. Lands Contiguous with Existing Urban Areas Shall be Given More Consideration than Non-Contiguous Land, and Particularly when Indicated for Future Urban Use on State or County General Plans.

As noted in the "East Kauai Land Use Map" included in the General Plan, the subject property has a "Neighborhood General" land use designation.

The lands surrounding the property to the north is designated as "Residential Community" and "Neighborhood General" by the Kaua'i General Plan.

The Property is contiguous to existing urban lands to the east and across the bypass road. These existing urban lands are Neighborhood General by the County of Kaua'i.

5. Lands in Appropriate Locations for New Urban Concentration and Consideration to Areas of Urban Growth as Shown on State and County General Plans.

The Kaua'i General Plan designates the Property as "Neighborhood General". Lands to the north and east of the Property are designated as "Residential" and "Neighborhood Center" and "Neighborhood General" by the General Plan. The General Plan substantially replaces its Urban designations with "Neighborhood General.

The Kapa'a urban center is to the south of the Property. Therefore, the Property is an appropriate location for new urban concentration.

The Kaua'i General Plan is the primary policy directing long-range development, conservation, and the use and allocation of land and water resources in the County of Kaua'i.

The General Plan establishes through maps and text geographic areas of the County which are intended to be used for various general purposes such as agriculture, resorts, urban communities, and preservation of natural, cultural and scenic resources.

The following are policies to provide for growth and development while preserving rural character, as described in the General Plan.

(a) Allow incremental growth of Towns, contiguous to existing development. Concentrate primary shopping facilities within Town Center. Support infill development.
(b) Provide for build-out of existing Residential Communities, to include areas zoned R-1 or higher. Allow small, neighborhood-oriented commercial sites in Residential Communities.
(c) Expansion contiguous to an existing town or residential community is prefeered over a new residential community.

The HoKua Place is designated Neighborhood General, and is intended for medium density mixed use environments that support the town core with housing, services, parks, civic/institutional, home occupation, and commercial uses, including a range of multi-family housing types.

6. May Include Lands Which Do Not conform to the Standards in Paragraphs (1) to (5) of LUC Rules § 15-15-18: (A) When Surrounded by or Adjacent to Existing Urban Development; and (B) Only When Those Lands Represent a Minor Portion of this District.

HoKua Place believes the Property conforms to the standards in paragraphs (1) to (5) of LUC Rules § 15-15-18, it should be noted that the Property is in a general area of existing and planned urban development. Furthermore, the Property (97 acres) represents a minor portion of the Agriculture District on the island of Kaua'i.

7. Shall Not Include Lands, the Urbanization of Which Will Contribute Toward Scattered Spot Urban Development, Necessitating Unreasonable Investment in Public Infrastructure or Support Services.

Urbanization of the Property will not contribute to scattered spot urban development.

The Property is located adjacent to Kapa'a town and in close proximity to the existing residential properties and urban uses.

The County wastewater treatment plant is located in Kapa'a. It has a capacity of 1.5 million gallons a day. It is currently operating at 500,000-gallons a day. HoKua Place will be contributing to the deferred maintenance and to the cost of repairs to the wastewater treatment plant. An existing sewer transmission line has adequate capacity for HoKua Place, 300,000 gallons daily use and is gravity feed.

With respect to solid waste, the County of Kaua'i currently provides single-family residences with solid waste disposal service on a once-per-week basis. Private solid waste disposal will be available for the multi-family projects. A refuse transfer station is located in Kapa'a town. The Central Kaua'i Landfill is currently in the process of being expanded and has the necessary capacity to accommodate the proposed Project.

A Water Master Plan has been approved, in concept, by the County Department of Water (DOW). HoKua Place (formerly known as Kapa'a Highlands II) has a proven well site that will be dedicated to the DOW to feed the Department of Water's storage tanks. HoKua Place is committed to working with the DOW on pertinent water issues during the design and development phase.

The Property adjoins the Kapa'a By-Pass Road to the south and Olohena Road to the east and the north side.

The by-pass road is owned by the HoKua Place which is working with the Department of Transportation (DOT) and has been allowing for the continuous public use of the road.

The by-pass road will be dedicated to DOT upon final subdivision approval. The DOT has stated,

> "We have met with the petitioners, Three Stooges LLC, and we will work with them to ensure that any traffic impacts from the Project are analyzed and effectively mitigated."

There is a round-about located at the south east corner of Olohena Road and the Kapa'a By-Pass Road. Kūhiō Highway is accessible from the Property by driving south on Olohena and Kūkuī Street approximately 0.5 mile. The Project will have a complete multi-modal roadway from the Kapa'a By-Pass Road running north through the Property to Olohena Road.

A couple of bus stops will be located along the roadway. A bike/walking path is proposed from the south of the property to the Kapaʻa Middle School located on the North portion of the Property.

Electrical, cable and telephone services are available for all of HoKua Place. Transmission lines to the property by the respective utility companies may be required.

Adjoining the subject property is the HoKua Farm Lots Project (formerly known as Kapaʻa Highlands I). It has a 1.18 mega-watt solar facility which currently is the second largest solar facility serving Kauaʻi.

Police protection for the Kapaʻa area is provided by the Kauaʻi County Police Department, with its main headquarters located in Līhuʻe. A substation is located in Kapaʻa Town approximately 0.5-miles away from the Property.

Fire protection is currently available for the Kapaʻa area by a county fire station located in Kapaʻa town approximately 2.0-miles away on Kūhiō Highway. The Project will also have lands available for county police and fire substations, if needed.

Thus, the proposed Project will not necessitate unreasonable public investment in infrastructure facilities or public services.

8. May Include Lands with General Slope of Twenty Percent or More if the Commission Finds that those Lands are Desirable and Suitable for Urban Purposes and that the Design and Construction Controls, as Adopted by any Federal, State or County Agency, are Adequate to Protect the Public Health, Welfare and Safety, and the Public's Interest in the Aesthetic Quality of the Landscape.

The southern border of the Property, along the By-Pass road, is elevated approximately 55 feet above msl. The Property rises in elevation to the northern border approximately 130 feet above msl or an average upslope of 5%. Less than 25 percent of the Property has slopes in the 20 percent range. With creative designs, landscaping, and strict adherence to governing design and construction controls, the Project will protect public health, welfare and safety, and the public's interest in the aesthetic quality of the landscape.

5.2.3 Coastal Zone Management Act, Chapter 205A (HRS)

Hawaiʻi's Coastal Zone Management (CZM) Program, established pursuant to Chapter 205A, Hawaiʻi Revised Statutes (HRS,) as amended, is administered by the State Office of Planning (OP) and provides for the beneficial use, protection and development of the State's coastal zone.

The objectives and policies of the Hawaiʻi CZM Program encompass broad concerns such as impact on recreational resources, historic and archaeological resources, coastal scenic resources and open space, coastal ecosystems, coastal hazards, and the management of development. The following is a discussion of the conformity of HoKua Place with the applicable CZM objectives and policies.

COASTAL ZONE MANAGEMENT ACT, CHAPTER 205A, HRS (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	**S**	**N/S**	**N/A**
RECREATIONAL RESOURCES			
Objective: Provide coastal recreational opportunities accessible to the public.			
Policies:			
(A) Improve coordination and funding of coastal recreational planning and management; and	X		

COASTAL ZONE MANAGEMENT ACT, CHAPTER 205A, HRS (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	**S**	**N/S**	**N/A**
(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:	X		
(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;	X		
(ii) Requiring replacement of coastal resources having significant recreational value including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;			X
(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;	X		
(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;			X
(v) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;			X
(vi) Adopting water quality standards and regulating point and nonpoint sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;	X		
(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and			X
(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6.			X

Discussion: HoKua Place is not a coastal development project and is located approximately a half-mile inland from the shoreline. This objective is not applicable to the specific Project.

However, related to this objective is the potential water quality impacts during construction of the Project which will be mitigated by adherence to State and County water quality regulations governing grading, excavation and stockpiling.

Construction of Best Management Practices (BMPs) will be utilized in compliance with County ordinances pertaining to grading, grubbing, stockpiling, soil erosion and sedimentation during construction. BMPs will also be implemented for long term development and operation of activities occurring on the site as part of pollution prevention measures.

HoKua Place will implement mitigation measures to address storm and surface water runoff.

HISTORIC RESOURCES			
Objective: *Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.*			
Policies:			
(A) Identify and analyze significant archaeological resources;	X		
(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and	X		
(C) Support state goals for protection, restoration, interpretation, and display of historic resources.	X		

COASTAL ZONE MANAGEMENT ACT, CHAPTER 205A, HRS (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A

Discussion: Exploration Associates Ltd. conducted an archaeological assessment of the property (Exhibit L) "An Archaeological Assessment with Subsurface Testing for the Proposed Kapaʻa Highlands Phase II Project, Kapaʻa Ahupuaʻa, Kawaihau District, Kauaʻi TMK (4) 4-3-3: 1)".

On January 3, 2012 and April 25, 2012 a field inspection of the HoKua Place/Kapaʻa Highlands II Project area was conducted by Exploration Associates Ltd. archaeologist Nancy McMahon, M.A. On November 11, 2012, three trenches were excavated with a backhoe with a 24 in. width bucket. A Cultural Impact Assessment (CIA) was conducted for the Project; it is attached as Exhibit M.

There are no known traditional resources or cultural practices associated with the HoKua Place Project Area. The parcel contains no surface archaeological sites. No burials are believed to be present within the Project area and none are known in the vicinity.

HoKua Place will comply with all State and County laws and rules regarding the preservation of archaeological and historic sites. Should historic remains, such as artifacts, burials, concentrations of shell or charcoal be encountered during construction activities, work will cease in the immediate vicinity of the find and the State Historic Preservation Division will be contacted for appropriate mitigation, if necessary.

SCENIC AND OPEN SPACE RESOURCES			
Objective: *Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.*			
Policies:			
(A) Identify valued scenic resources in the coastal zone management area;	X		
(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;	X		
(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and	X		
(D) Encourage those developments that are not coastal dependent to locate in inland areas.	X		

Discussion: As HoKua Place is located approximately a half-mile inland from the shoreline, this objective is not applicable. The HoKua Place project site is located in an undeveloped area mauka of the Kapaʻa By-Pass Road and immediately mauka of Kapaʻa town. The development of the Project site will result in the replacement of vacant and vegetated land with urban uses such as single- and multi-family homes, some commercial and open space.

Although HoKua Place is not located on the shoreline, it will incorporate core principles of various sustainability programs and plans to address the protection of Hawaiʻi's environmental resources.

HoKua Place included open space, parks and open greenway areas encompassing 14.3-acres, a 3.1-acre park for outdoor recreation and land for the proposed relocation of the Kapaʻa county swimming pool which will provide residents with an opportunity for leisurely recreational and physical fitness activities.

COASTAL ZONE MANAGEMENT ACT, CHAPTER 205A, HRS (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
COASTAL ECOSYSTEMS			
Objective: *Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.*			
Policies:			
(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;	X		
(B) Improve the technical basis for natural resource management;			X
(C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;			X
(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and			X
(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.	X		

Discussion: The Project's proposed drainage system will be designed to minimize impacts to near shore coastal waters. A drainage system along the streets will collect the storm water and convey it to the detention basins. The detentions basins moderate the storm flows and allow infiltration back into the soil. They are sized so that the outlet peaks flows match or lower the existing storm water flows prior to the development for both small rainfall events and the 100 year storm event.

Potential water quality impacts during construction of the Project will be mitigated by adherence to State and County water quality regulations governing grading, excavation and stockpiling. BMPs include storm water runoff and non-storm water sources control measures and practices that will be implemented to minimize the discharge of erosion and other pollutants from entering into the receiving State waters.

ECONOMIC USES			
Objective: *Provide public or private facilities and improvements important to the State's economy in suitable locations.*			
Policies:			
(A) Concentrate coastal dependent development in appropriate areas;	X		
(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and			X
(C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:	X		
(i) Use of presently designated locations is not feasible;			X
(ii) Adverse environmental effects are minimized; and	X		
(iii) The development is important to the State's economy.	X		

Discussion: As HoKua Place is not a coastal project, this objective is not applicable. HoKua Place is an infill development, located between existing Urban uses. HoKua Place is in the County of Kauai General Plan's planned path of urbanization and near existing and growing centers of employment; its

COASTAL ZONE MANAGEMENT ACT, CHAPTER 205A, HRS (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
identified use in the General Plan is as Neighborhood General. The Project will provide on-site and off-site infrastructure systems that will integrate with regional public and private facilities. Internal roadways will connect to existing and future roadways. This Project is consistent with the General Plan and East Kauai Community Development Plan.			
COASTAL HAZARDS			
Objective: *Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.*			
Policies:			
(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;	X		
(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards;	X		
(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and			X
(D) Prevent coastal flooding from inland projects.	X		
Discussion: The HoKua Place site is not subject to tsunami, storm waves, subsidence, or stream flooding, nor will the Project intensify natural hazard conditions. According to the Federal Emergency Management Agency's Flood Insurance Rate Map (FIRM) Community-Panel No. 1500020135 C, the Project site is mostly located in Zone X. Zone X is described as areas outside of the 100- and 500-year floodplains with minimal flooding. The Project will not have a significant impact on natural hazards. Compliance with existing requirements and the implementation of mitigation measures described above will ensure that no significant impacts are expected.			
MANAGING DEVELOPMENT			
Objective: *Improve the development review process, communication, and public participation in the management of coastal resources and hazards.*			
Policies:			
(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;			X
(B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and			X
(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.	X		
Discussion: HoKua Place is not located along the shoreline. This EIS discusses potential impacts and mitigation measures of HoKua Place and is available for public review.			
PUBLIC PARTICIPATION			
Objective: *Stimulate public awareness, education, and participation in coastal management.*			
Policies:			
(A) Promote public involvement in coastal zone management processes;	X		
(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities;	X		

COASTAL ZONE MANAGEMENT ACT, CHAPTER 205A, HRS (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
and			
(C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.	X		

Discussion: HoKua Place is not located along the shoreline. Through this EIS, the State Land Use District Boundary Amendment petition hearings, and the County permitting process, the public has additional opportunities to be involved in the public review process for HoKua Place.

BEACH PROTECTION			
Objective: *Protect beaches for public use and recreation.*			
Policies:			
(A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;	X		
(B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities;			X
(C) Minimize the construction of public erosion-protection structures seaward of the shoreline;	X		
(D) Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor; and			X
(E) Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere or encroach upon a beach transit corridor.	X		

Discussion: As HoKua Place is located approximately a half-mile inland from the shoreline, this objective is not applicable. The HoKua Place Project site is located in an undeveloped area mauka of the Kapaʻa Bypass Road and immediately mauka of Kapaʻa town.

MARINE RESOURCES			
Objective: *Promote the protection, use, and development of marine and coastal resources to assure their sustainability.*			
Policies:			
(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;	X		
(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;	X		
(C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;			X
(D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and			X
(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.			X

Discussion: Potential water quality impacts during construction of the Project will be mitigated by adherence to State and County water quality regulations governing grading, excavation and stockpiling. The County's grading ordinance includes provisions related to reducing and minimizing the discharge of pollutants associated with soil disturbing activities in grading, grubbing and stockpiling.

COASTAL ZONE MANAGEMENT ACT, CHAPTER 205A, HRS (Key: S = Supportive, N/S = Not Supportive, N/A = Not Applicable)	S	N/S	N/A
Construction of BMPs will be utilized in compliance with County ordinances pertaining to grading, grubbing, stockpiling, soil erosion and sedimentation during construction. BMPs will also be implemented for long term development and operation of activities occurring on the site as part of pollution prevention measures.			

5.2.4 Environmental Review, HRS Chapter 343 and HAR Section 11-200

HRS Chapter 343, the State of Hawaiʻi Environmental Review Law, requires that any proposed use within a conservation district, use of State land or use of State funds be subject to review. The statute and rules establish a system of environmental review and provide that environmental concerns are considered for all proposed actions on State and county lands.

As part of this review, this EIS has been prepared to ensure that environmental concerns are given appropriate consideration in decision making, along with economic and technical considerations.

5.2.5 State Environmental Policy, HRS Chapter 344

The broad goals of this policy are to conserve natural resources and enhance the quality of life in the State. It encourages productive and enjoyable harmony between people and their environment to promote efforts which will prevent or eliminate damage to the environment and biosphere, stimulate the health and welfare of humanity, and enrich the understanding of the ecological systems and natural resources important to the people of Hawaiʻi.

HoKua Place will abide by the guidelines promulgated by HRS §344-4(1)–(10), including, but not limited to, encouraging management practices which conserve natural resources and encouraging the efficient use of energy resources.

5.3 Sustainability Principles

As noted in the HoKua Place (formerly known as Kapaʻa Highlands II) Sustainability Plan, HoKua Place will be a sustainable community and will incorporate the following:

Sustainability Programs and Plans:
In developing this HoKua Place Sustainability Plan, a variety of recognized sustainability programs and plans were reviewed, summarized and incorporated into this plan. In part, the recommendations from these programs and plans serve as guides to the sustainability actions noted in this Plan. These include:

- Smart Growth
- SmartCode
- Hawaiʻi 2050 Sustainability Plan (Hawaiʻi 2050)
- OEQC Sustainable Building Design Guidelines
- Hawaiʻi BuiltGreen Program
- US Green Building Council Leadership in Energy and Environmental Design (LEED)
- ENERGY STAR Program
- Whole Building Design Guide (WBDG,) of the National Institute of Building Sciences
- EPA Low Impact Development
- One Planet Living
- Complete Streets

There are several consistent principles and themes that run through the various programs and plans. While some are broad-based and include several of these, others are focused on single issues.

Following are some of the consistent messages found in these programs and plans:

- Soft touch on the land
- Respect and protection of natural and cultural resources
- Use of natural elements (shading, ventilation, lighting, etc)
- Diversity of land uses, housing types, prices
- Live, work, play, shop and learn
- Walking, bicycle and transit transportation focused
- Reuse and minimization of waste
- Renewable and efficient electric
- People and community focused

HoKua Place will implement, to the extent feasible and practicable, measures to promote energy conservation, sustainable design, environmental stewardship and protection of the natural and cultural resources into the Project. These actions are in part, based on the recommendations noted in the following sustainability programs and plans.

Natural and Cultural Resources:
No archaeological or cultural historic sites are known to exist on the property.

Brief discussions separately with historians of the subject area, Randy Wichman and Walter Smith concluded that the subject property has been in sugar cultivation since the 1800s until the early 1990s. They concurred that the subject land was consistently cultivated for sugar for nearly a hundred years.

Albert Fukushima and Stanly Vasques who were employed by Līhuʻe Plantation and worked in the subject area, said that no evidence of artifacts, bones, or other indicators of previous historic on-site activity were uncovered during the cultivation of sugar.

Additionally, Willie Sanchez who started mowing the property in 1999 after Amfac Sugar sold the property, stated that he never saw any historical or cultural items on this property and that the agricultural water system was abandoned and the interior ditches were almost flat from non-use.

In 1995 SHPD stated for the "Site Selection EIS" for the adjacent Kapaʻa Middle School that the site may not be Archaeological or Historically rich because of the consistent cultivation of sugar for nearly a hundred years.

In the late 1999, the State Historic Preservation Division (SHPD) issued a letter of "no significance" to the potential developer at that time.

Should any archaeologically significant artifacts, bones, or other indicators of previous historic on-site activity be uncovered during construction, HoKua Place is committed to their treatment being conducted in strict compliance with the requirements of SHPD.

Land Use:
Two primary planning documents address land use development in Kapaʻa, the General Plan of the County of Kauaʻi and the Kapaʻa-Wailua Development Plan.

The General Plan of the County of Kauaʻi (General Plan)
The General Plan of the County of Kauaʻi ("General Plan") was adopted in 1971 and updated in November 2000 and February 2018. The General Plan is a statement of the County's vision for Kauaʻi and establishes strategies for achieving that vision.

The General Plan contains 4 goals and 19 major policies to guide growth. Chapter 5, Section 5.1.1 outlines these goals and policies and explains the conformance of HoKua Place to the General Plan. Basically, HoKua Place conforms to the Updated Kauai General Plan in that the land designation for the Project is Neighborhood General, a newly created designation intended for medium density mixed-use environments that support the Kapa'a Town Core with housing, services, parks, civic/institutional, home occupation, and commercial uses, including a range of multi-family housing types.

Kapaʻa-Wailua Development Plan
The Kapaʻa-Wailua Development Plan outlines the regional issues and opportunities that will be subjects for future community planning of the Kapa'a Town Core. It is currently being updated.

Sustainable Design Features:
Several sustainability programs and plans identify and address a wide variety of design features that may be incorporated into a development project to enhance its sustainability. These items design features include:

- **Site Planning**
  - Respect for the Land – Work with topography
  - Siting - Proximity to mass transit, shopping, employment centers, recreation, schools
  - Interconnectivity – Connection with neighbors, Multi-modal transportation
  - Intensity of Layout – Village Center; Clustering into compact villages
  - Natural/Cultural Resources – Protection of natural and cultural resources

- **Improvements Planning**
  - Alternatives – Provide a range of housing options at various price levels
  - Orientation – Ventilation; Take advantage of natural air flow
  - Shading – Eve overhang; Vegetation
  - Landscaping – Native plants; Low irrigation
  - Energy Efficiency

The objectives of HoKua Place are to create an attractive master-planned residential community with a variety of housing opportunities and mixed uses, as well as recreational resources.

Transportation:
The Property adjoins the Kapaʻa By-Pass Road to the south and Olohena Road to the east and the north side.

The by-pass road is owned by the HoKua Place which is working with the Department of Transportation (DOT) and has been allowing for the continuous public use of the road. The by-pass road is in the process of being dedicated to DOT. The agreement of transfer will include that all mitigating measures will be the shared responsibility of DOT and HoKua Place.

There is a round-about located at the south east corner of Olohena Road and the Kapaʻa By-Pass Road. Kūhiō Highway is accessible from the Property by driving south on Olohena and Kūkuī Street approximately 0.5-mile.

The Project will have a main roadway from the Kapaʻa By-Pass Road running mauka through the Property to Olohena Road. The roadway will follow the county's resolution for complete roads and as such will be a multi-modal roadway.

A couple of bus stops will be located along the roadway. A bike/walking path from the round-about south east of the property will follow the By-Pass road, connect to the main road and continue to the Kapaʻa Middle School located on the North portion of the Property.

HoKua Place is committed to Multi-modal, Interconnected and Concurrent Transportation for its residents and community.

HoKua Place will include bus stops, sidewalks and a bike and walking path connecting from Kapaʻa Middle School down through the Project to the round-about, facilitating green travel to and from Kapaʻa's town core.

HoKua Place will incorporate a system of interconnected roads that will provide residents alternative transportation routes within the Project. The internal circulation pattern will provide safe and convenient choices for drivers, bicyclists and pedestrians.

Additional sustainable connectivity concepts including bikeways and walkways to and from the planned County pool, neighborhood commercial areas, the middle school and Kapaʻa's town core.

Through recent legislation, the State of Hawaiʻi Department of Transportation (HDOT) and county transportation departments are required to ensure the accommodation of all users of the road, regardless of their age, ability, or preferred mode of transportation. In addition, the concept of "Complete Streets" is prioritized where:

> "Transportation facilities ... are planned, designed, operated and maintained to provide safe access and mobility for all users, including bicyclists, pedestrians, transit riders, freight and motorists".

Economic Opportunities:
HoKua Place provides significant, on-going economic and fiscal benefits for residents of Kaua'i, as well as for the County and State governments.

Development of facilities would generate employment and consequently income and taxes. In addition, by providing the opportunity for new residents to the Island of Kaua'i and generating additional real estate sales activity, the Project is expected to support long-term impacts, including additional consumer expenditures, employment opportunities, personal income and government revenue enhancement.

<u>There are three substantial projects in the area that are projected to be completed in the next two to five years. They are the Coco Palms Hotel and Resort, the Coconut Beach Resort and the Coconut Plantation Village. These projects will generate a long term economic benefit for both the projects and the anticipated residents of the HoKua Place. HoKua Place will provide housing for the potential workforce of the three upcoming projects in close vicinity, therefore living at HoKua Place creates economic benefits for the residents.</u>

On a short-term basis, the proposed Project will have a direct beneficial impact on the local economy during construction through construction and construction-related employment. It should also be noted that the proposed Project will assist in maintaining a viable economy as construction-related employment opportunities for residents would be generated.

Over the long term, the residential homeowners will require various services related to home maintenance and improvement that will further support the local economy.

<u>On-Site Employment Generators</u>
HoKua Place proposes two areas for commercial uses that, ultimately, will serve to promote and provide a variety of job opportunities. A 1.4-acre parcel is proposed for commercial uses such as a country store and small personal service type uses are anticipated. A 1-acre site on the Makai side of the Kapa'a By-Pass Road is also proposed for commercial development or for use as sub-stations for the police and/or fire department

Open Space and Parks:
HoKua Place holds respect for the environment by interlinking natural features and open space as core components of the community.

There are several parks within Kapa'a town, including a beach park. A County owned 1.9-acre park is located within walking distance from the Property, just south east of the corner of Olohena Road and the by-pass road round-about. The park consists of a baseball field, football field, basketball courts, restroom facilities, picnic tables and a barbecue area.

Open space, parks and open greenway areas encompassing 14.3-acres will be developed within the HoKua Place Project. A 3.1-acre park is proposed within the Project for outdoor recreation.

Land for the proposed relocation of the Kapaʻa county swimming pool will be available within the 3.1-acre park. The provision of a 3.1-acre park with a county swimming pool within the proposed Project will provide residents with an opportunity for leisurely recreational activities.

HoKua Place conforms with HRS § 205-a-2(B) (3) (A) which states that CZM's objective is to "protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources."

No scenic, historic, cultural spaces exist or will be created on the subject site and the site is well away from the shoreline. There are no natural wildlife, forest, marine, or unique ecological preserves on or near the subject site.

Thus, open space and recreation will not be adversely affected. Park and beaches of Kapaʻa are within walking distances from the Project.

The proposed Project will not adversely impact scenic or open space resources. The proposed Project will not involve significant alteration of the existing topographic character of the site and will not affect public views to and along the shoreline.

Water Management:
As an overarching philosophy in all source alternatives, HoKua Place is committed to water conservation strategies to reduce consumption, conserve resources and minimize water use. The goal is to reduce the total water use through a combination of water saving equipment and strategies.

A number of measures may be implemented to facilitate user-end conservation, including water restrictions during drier periods, public education and more efficient landscaping practices. Consumption could be significantly reduced through end-user conservation.

Efficient fixtures and appliances will reduce indoor water use. The water distribution system will be maintained to prevent water loss and homeowners and businesses will be encouraged to maintain fixtures to prevent leaks.

Landscaping will emphasize climate-adapted native and other appropriate plants suitable for coastal locations. Best management practices will be designed and implemented to minimize infiltration and runoff from daily operations.

HoKua Place will incorporate the following water conservation strategies.

High efficiency toilets: (HETs) reduce flush volumes by no less than 20% compared to conventional ultra-low flow (ULFT) toilets. Dual-flush HETs allow users to choose one of two flushes: liquids or solids. In actual operation, dual-flush HETs average about 1.2 to 1.4 gpf. Pressure-assist HETs use a pressurized tank that creates for a more forceful flush with less water.

Faucets: Water flow is reduced by ***Flow limiters*** which are built into the faucet or are installed as after-market fittings. Aerators or laminar flow devices are types of flow limiters.

- Aeration injects air into the stream of water, displacing much of the water content.
- Laminar flow uses multiple small diameter parallel streams of water that are not aerated.

Flow control valves can limit water flow down to 1.5 to 0.5 gpm per side (hot and cold).

Showerheads: Federal law since 1994 mandates that all showerheads sold in the United States use 2.5 gpm or less. Despite this, some showerheads actually use much more than 2.5 gpm, and shower towers that include multiple showerheads or jets can total 12.5 gpm or more. A better option is a good quality low-flow showerhead designed to use 2.0 gpm or less while providing a satisfying shower.

Water conserving and Low impact landscaping: Landscaping shall be of native trees, shrubs and flowering plants as encouraged by the Kaua'i Department of Water as part of their recommendations for water conservation. Selection and distribution of plants must be carefully planned when designing a functional landscape. Aesthetics are a primary concern, but it is also important to consider long-term maintenance goals to reduce inputs of labor, water and chemicals. Properly preparing soils and selecting species adapted to the microclimates of a site greatly increases the success of plant establishment and growth, thereby stabilizing soils and allowing for biological uptake of pollutants.

Energy Management:
Pursuant to Chapter 344 (State Environmental Policy) and Chapter 226 (Hawai'i State Planning Act), HRS, all HoKua Place activities, buildings and grounds will be designed with emphasis on energy conservation and efficiency. Efficient design practices and technologies will be the cornerstone of HoKua Place's design phase. Buildings within HoKua Place will further comply with the County of Kaua'i Energy Conservation Code (Kaua'i County Ordinance 890).

Furthermore, solar water heaters will be utilized, as made requisite under Section 196-6.5, HRS.

HoKua Place will confer with KIUC in regards to suggestions and proposals for customized demand-oriented management programs offering rebates for the installation of alternative energy efficient technologies and measures.

HoKua Place is committed to renewable energy and energy efficiently as ways to reduce environmental harm and self- sufficiency. HoKua Place will continue to improve programs and create new programs as the Project is initiated.

Residents of the State of Hawai'i pay the highest electricity rates in the US. The average American paid 10.5 cents/kWh in 2010. In the state of Hawai'i, O'ahu currently has the lowest residential electricity rates, while Lāna'i has the highest. Residential rates on Kaua'i average between 40-45 cents/kWh.

Hawai'i relies on imported oil for approximately 76% of its total electricity production. The price variation across the state is largely a result of difference in power plant efficiencies, power purchasing agreement and other infrastructure.

	Kaua'i	Oahu	State
Medium Income (2009)	$55,723	$67,019	$63,741
Electricity Price (May 2011)	44.27 cents/kWh	30.1 cents/kWh	-

The Kaua'i Island Utility Cooperative ("KIUC") is the sole electric utility on Kaua'i. KIUC began serving the people of Kaua'i on November 1, 2002, when it purchased Kaua'i Electric from Connecticut-based Citizens Utilities Company. KIUC is America's newest electric cooperative, but it's by no means the only one. It is one of approximately 900 electric cooperatives serving electric consumers in 47 states.

Like all cooperatives, KIUC operates as a not-for-profit organization that is owned and controlled by the people it serves. KIUC serves over 23,300 customers with 92% of KIUC's electricity coming from the burning of imported fossil fuels.

In 2009, the State Legislature codified the need for energy efficiency by enacting the statewide energy efficiency portfolio standard with a target of reducing energy consumption by 30% of forecasted energy consumption by 2030 (4,300 GWh) and beginning the process for separating efficiency from the existing renewable portfolio standard.

To reduce net energy consumption and demand, HoKua Place will consider the implementation of elements of the United States Environmental Protection Agency (EPA) Energy Star Program; including efficient insulation, high performance windows, compact construction, efficient ventilation systems, and energy efficient lighting elements and appliances.

HoKua Place will furthermore seek to harness energy conservations and technologies to facilitate the possibility of net energy metering in building design to empower residents and tenants to reduce their electricity costs and provide energy back to the grid.

Energy conservation and efficiency measures will be implemented and emphasized where applicable in the design of HoKua Place. Energy-efficiency technologies to be considered where feasible include:

- Solar energy for water heating
- Photovoltaic systems, fuel cells, biofuels and other renewable energy sources
- Optimal utilization of daytime sunlight
- High efficiency light fixtures
- Roof and wall insulation, radiant barriers and energy efficient windows
- Optimized air-flow
- Installation of heat resistant roofing
- Intelligent Landscaping to provide for shading, dust control, and heat-mitigation
- Portable solar lighting (i.e. parking lots)

Health:
Through the layout and design of HoKua Place, there is an overall opportunity for a positive effect on the health of its residents. Communities that make it easy and safe to walk and ride bikes are opening the door to a wide range of health benefits for their residents by reducing barriers to being physically active and helping individuals integrate physical activity into their daily lives. Active living is a way of life that integrates physical activity into daily routines. For individuals, the goal is to get a total of at least 30-minutes of activity each day by, for example, walking, bicycling, playing in the park, working in the yard, taking the stairs or using recreation facilities.

For communities, the goal is to provide opportunities for people of all ages and abilities to engage in routine physical activity and to create places and policies that encourage better physical health. Such places within HoKua Place include, open space, parks and open greenway areas encompassing 14.3-acres, a 3.1-acre park for outdoor recreation and land for the proposed relocation of the Kapaʻa county swimming pool which will provide residents with an opportunity for leisurely recreational and physical fitness activities.

Education:
Schools servicing the Project include Kapaʻa Elementary, Kapaʻa Middle School and Kapaʻa High School.

Kapaʻa Middle School is adjacent and to the north of the property. Kapaʻa High School and Elementary School, which share a campus, are located within 2-miles of the Property.

Kapaʻa Elementary School serves grade K-5 and is one of the largest elementary schools in the state. It shares a campus with Kapaʻa High School.

The DOE reports that Kapaʻa Elementary School's capacity is 1,373 students, and the 2009/2010 school year enrollment was 827 students.

Kapaʻa Middle School, with facilities for 1,059 students, was opened in 1997 and has an enrollment of 652 students.

Kapaʻa High School currently has a student body numbering 1,033 with a capacity of 1,445.

HoKua Place will generate increased demand on student enrollment within the region. HoKua Place will coordinate with the DOE to ensure that the DOE's facility assessment policy provisions are appropriately addressed.

Additionally, a 3.1-acre park is proposed adjacent to the existing Kapaʻa Middle School. The park will have an area for the county's proposed relocation of the Kapaʻa county swimming pool. HoKua Place also plans to develop a bike/walking path from the south of the property to the Kapaʻa Middle School to facilitate biking and walking around the Project.

Housing:
HoKua Place is a well-located master planned project on the Island of Kauaʻi targeting primary housing demand from local and in-migrant families, as well as offshore second home demand for view estate ownership.

Located in the eastern urban core of the island, the Project is close to the centers of employment and resort activity, plus the airport, beaches, shopping, recreation, etc. It sits above the historic town of Kapaʻa and below the foothills of the mountain chain that forms the island.

The proposed Project, HoKua Place, will utilize 97-acres of land for single-family and multi-family residential and commercial purposes. Development of the Property will address a portion of the significant demand for affordable housing in the County of Kauaʻi, without significantly affecting reserve areas for foreseeable urban growth.

HoKua Place will respond to varying spectrums of demand for housing within Kauaʻi by providing a wide range of housing opportunities inclusive of affordable housing alternatives. HoKua Place will seek to create and sustain a mixed-income community allowing for unparalleled social diversity.

Affordable housing demands exhibited a significant upward trend over the last several years. Recent market studies have indicated a current shortage of single-family housing in the East Kauaʻi area.

The forecast is that demand for housing will continue to increase, especially in the area of affordable housing.

The proposed Project will assist in alleviating some of the current supply-and-demand pressures on Kauaʻi's current housing market by providing a variety of additional housing products and opportunities for long-term local residents.

In a 2010 letter to the applicant, the Planning Director wrote

> "We are writing in general support of Three Stooges LLC's petition to amend 97-acres in Kapaʻa to the Urban district." "Affordable housing remains an acute need on Kauaʻi, even with a falling real estate market and as such the County is generally supportive of any petition that proposes additional affordable housing, particularly when contiguous to developed urban areas, infrastructure and consistent with our General Plan."

Social:

A community is composed of people, as well as places where they live; it is as much a social environment as a physical development. Thus, communities must not only be environmentally sustainable, they must also be socially sustainable.

A socially sustainable development supports more equitable distribution of resources, supports diversity within the community, meets the basic needs of residents and invests in social and human capital, thereby sustaining the quality of life and community livability for all residents into the future.

We saved the concept of Social Sustainability for the end of the analysis, to serve as a summary of the many socially-focused actions suggested about the Project within the Sustainability Plan. Following are just a few of the issues previously mentioned that address and support the resource, the people and the community:

- Affordable housing will be incorporated within the Project, allowing for a diversity and mix of housing types and options
- Complete streets with walkways and bile lanes, allowing for slow movement through the neighborhoods for easy social interaction
- Conformance to the County's Multi-Model Land Transportation Plan (2013)
- Conformance to the County's Form Base Code (Smart Code)
- Space for the relocated County swimming pool
- Allocation for commercial spaces, affording project residents the opportunity to work near where they live
- Proximity to the Middle School affords multi-generation al interaction and learning
- Cooperation with the State by making land available for the Kapaʻa By-Pass Road, helping regional residents
- Project layout and design will create an opportunity for both residents and the community to have a positive effect on their health through walkable and bikeable transportation options.
- Consistency with long range planning documents, implementing the community's vision for the future

5.4 Agricultural Uses and Suitabililty

Section 205-4.5 of HRS Chapter 205 uses the Land Study Bureau's (LSB) soil classification productivity rating system to determine which lands are to be governed by the Chapter. The LSB ratings for HoKua Place are B, C, D and E. Land classification ratings A and B are restricted to the permitted uses as outlined in the section. The cultivation of crops and the raising of livestock are permitted uses. Uses on C, D and E lands also include crop cultivation and the raising of livestock.

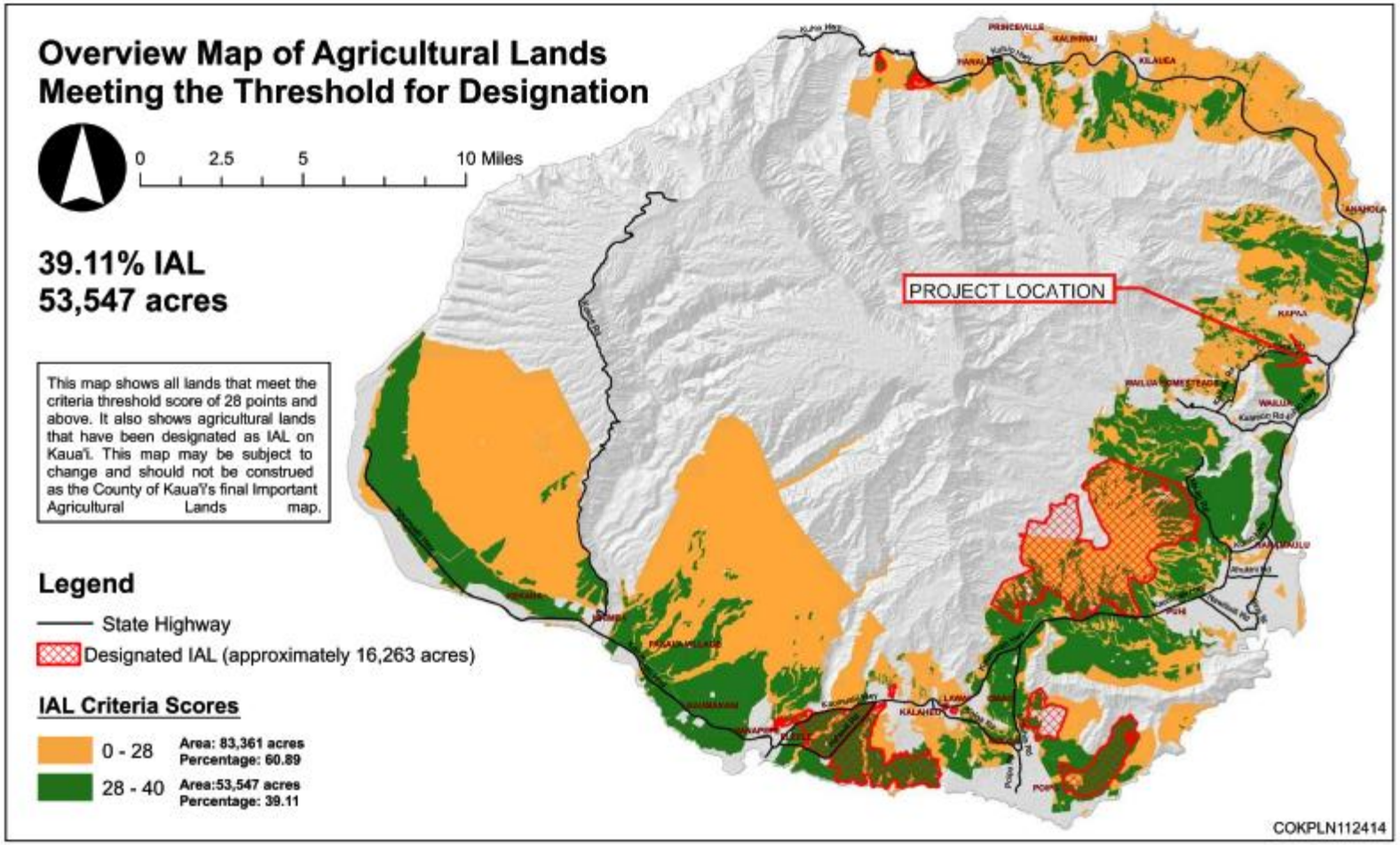
While the Property previously was cultivated in sugar, the climate and soils at HoKua Place are not ideal for the growing of most commercially viable crops due to the poor soil, strong trade winds and the salt spray from the ocean. Thus, a goat livestock operation provides an economically alternative agricultural use for the property.

Either the Association operation of a livestock project, or a contractual relationship between the Association and a livestock Contractor, would allow the agricultural component of the property to be managed as one unit. Individual lot owners would also have the option of compliance with alternate methods of livestock grazing or with the cultivation of agricultural crops, provided they obtained the approval of the Planning Commission of the County of Kaua'i, Subdivision Committee, for an amendment to this Agricultural Master Plan for such alternative agricultural activities.

Livestock grazing is a permissible use within the agricultural districts as outlined under HRS Chapter 205. Section 205-4.5. Livestock (goats) can be raised successfully at HoKua Place. Climate conditions will allow for normal pasture rotation the year around. The ratio of livestock to fenced pasture should be 3-animal units (AU) to 1-acre or better.

An Agricultural Suitability Study was contucted in June of 2018, as attached as Exhibit C.1 in Volume II-A. The conclusion of the study indicates that the reclassification of the 97 acres of agricultural land surrounded by urban development will have a minimal impact on Kauai's ability to feed its population over time. The Island of Kauai has an abundance of good agricultural land that can be put into production of food for the Island's population. The primary problem is the lack of farmers and farm workers. Until farmers can make a good living farming, it will be difficult to provide enough local food to feed the people of Kauai. Other constraints are competition from imports (lower price), infrastructure costs and marketing.

HRS § 205-47 (Act 183, SLH 2005) requires each county to identify and map potential important agricultural lands within the county based on standards and criteria listed in HRS § 205-45. The County of Kauai Planning Department, working with the University of Hawai`i at Manoa Department of Urban and Regional Planning and Economic Research Organization, identified lands meeting statutory criteria to be designated important agricultural lands. The Planning Department then worked for several years with a stakeholder/technical advisory committee to define the criteria, provide input into mapping and discuss issues relative to agriculture on Kauai. Finally the Planning Department conducted numerous community meetings to obtain further input. In July 2015 the Planning Department issued its final report to the Kauai County Council recommending lands to be designated important agricultural lands on Kauai. The HoKua Place Property was not recommended for designation as important agricultural lands. (See the following page for Map)


Overview Map of Agricultural Lands
Meeting the Threshold for Designation
0
2.5
5
10 Miles
39.11% IAL
53,547 acres
This map shows all lands that meet the criteria threshold score of 28 points and above. It also shows agricultural lands that have been designated as IAL on Kaua'i. This map may be subject to change and should not be construed as the County of Kaua'i's final Important Agricultural Lands map.
Legend
State Highway
Designated IAL (approximately 16,263 acres)
IAL Criteria Scores
0 - 28
Area: 83,361 acres
Percentage: 60.89
28 - 40
Area:53,547 acres
Percentage: 39.11
PROJECT LOCATION
COKPLN112414

5.5 Federal "Cross-Cutting" Authorities

The State of Hawaiʻi Drinking Water State Revolving Fund program was established by the 1997 State Legislature as the result of the 1996 Federal amendments to the Safe Drinking Water Act. This program provides low interest loans for the construction of drinking water infrastructure projects. These projects help achieve or maintain compliance with drinking water standards, protect public health and the environment.

Since various water-related actions are proposed, this additional review and analysis is included. The following sub-sections address the proposed Project's relationship to other "cross-cutting" environmental, economic, social and miscellaneous federal authorities as required by the State of Hawaiʻi's Drinking Water State Revolving Fund (DWSRF) program.

5.5.1 Environmental Authorities

Archaeological and Historic Preservation Act (16 U.S.C. § 469a-1)
This Act became law on June 27, 1960 (Public Law 86-523, 16 U.S.C. 469-469c-2). It is the purpose of this Act [16 U.S.C. 469-469c-1] to further the policy set forth in the Act entitled, "An Act to provide for the preservation of historic American sites, buildings, objects, and antiquities of national significance, and for other purposes," approved August 21, 1935 [Historic Sites Act, as amended, 16 U.S.C. 461-467] by specifically providing for the preservation of historical and Archaeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed as the result of (1) flooding, the building of access roads, the erection of workmen's communities, the relocation of railroads and highways, and other alterations of the terrain caused by the construction of a dam by any agency of the United States, or by any private person or corporation holding a license issued by any such agency or (2) any alteration of the terrain caused as a result of any Federal construction project or federally licensed activity or program.

Should historic remains be encountered during construction activities, work will cease in the immediate vicinity of the site and the State Historic Preservation Division will be contacted for appropriate mitigation, if necessary. Consequently, the proposed actions are in compliance with the Act.

Clean Air Act (42 USC 7401)
The Clean Air Act (CAA) is the comprehensive federal law that regulates air emissions from stationary and mobile sources. Among other things, this law authorizes EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and public welfare and to regulate emissions of hazardous air pollutants. One of the goals of the Act was to set and achieve NAAQS in every state by 1975 in order to address the public health and welfare risks posed by certain widespread air pollutants. The setting of these pollutant standards was coupled with directing the states to develop state implementation plans (SIPs), applicable to appropriate industrial sources in the state, in order to achieve these standards.

All applicable emission and ambient air quality standards will be met. Construction and normal operation of the proposed Project will not produce on-site air emissions, will not alter air flow in the vicinity and will have no other measurable effect on the area's micro-climate. Consequently, the proposed Project complies with the provision of the Clean Air Act.

Coastal Zone Management Act, 16 U.S.C. 1456 (c) 2

The Federal CZM Program was created through passage of the CZM Act of 1972. In that act, the Congress stated that it is the national policy to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations; and to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and esthetic values, as well as the needs for compatible economic development.

The Hawaiʻi CZM program was established in 1977 (through Chapter 205A, Hawaiʻi Revised Statutes). §205A-2 Coastal zone management program objectives include:

(1) Recreational resources; Provide coastal recreational opportunities accessible to the public.
(2) Historic resources; Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.
(3) Scenic and open space resources; Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.
(4) Coastal ecosystems; Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.
(5) Economic uses; Provide public or private facilities and improvements important to the State's economy in suitable locations.
(6) Coastal hazards; Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.
(7) Managing development; Improve the development review process, communication and public participation in the management of coastal resources and hazards.
(8) Public participation; Stimulate public awareness, education, and participation in coastal management.
(9) Beach protection; Protect beaches for public use and recreation.
(10) Marine resources; Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

The proposed Project is not located on the coastline. None of the proposed actions involve the placement, erection or removal of materials near the coastline. The type and scale of the activities that it involves typically do not have the potential to affect coastal resources. Finally, it is consistent with the CZM objectives that are relevant to a project of this sort.

Coastal Barrier Improvement Act (Coastal Barrier Resources Act), 16 U.S.C. 3501

The Coastal Barrier Resources Act designated various undeveloped coastal barrier islands, depicted by specific maps, for inclusion in the Coastal Barrier Resources System. No coastal barriers are present in the State of Hawaiʻi.

This Act does not apply to the State of Hawaiʻi at this time; therefore, the proposed Project will not affect any areas protected by this Act.

Endangered Species Act, 16 U.S.C. 1536 (a) (2) and (4)

Each Federal agency shall, insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary (after consultation as appropriate with affected States) to be critical, unless such agency has been granted an exemption for such action. In fulfilling the requirements of this paragraph each agency shall

use the best scientific and commercial data available. Each Federal agency shall confer with the Secretary on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under section 1533 of this title or result in the destruction or adverse modification of critical habitat proposed to be designated for such species.

The area is not known to have rare and/or threatened flora and fauna. The Project will abide by the guidelines promulgated by HRS §344-4(1)–(10) and other laws and regulations, including, but not limited to, encouraging management practices which conserve natural resources and encouraging the efficient use of energy resources; it is therefore in compliance with the Endangered Species Act.

Environmental Justice, Executive Order 12898

The Environmental Justice Executive Order was issued in 1994. To the greatest extent practicable and permitted by law, and consistent with the principles set forth In the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Marian islands.

The proposed Project is located within the community of Kapaʻa. The Project proposes to develop housing for area residents. The Project will have a positive effect by creating employment and housing opportunities for the community and State.

Farmland Protection Policy Act, 7 U.S.C. 4202(8)

On January 1, 1987, and at the beginning of each subsequent year, the Secretary of Agriculture shall report to the Committee on Agriculture, Nutrition and Forestry of the Senate and the Committee on Agriculture of the House of Representatives on the progress made in implementing the provisions of this subtitle. Such report shall include information on (1) the effects, if any, of Federal programs, authorities and administrative activities with respect to the protection of United States farmland; and (2) the results of the reviews of existing policies and procedures required under Section 4(a) of this subtitle.

Federal agencies identify and assess any adverse effects of their programs on the preservation of farmland. The assessment is done to evaluate the Project's relative impact on farmland in a region, county and state. It takes into account the acreage of farmland directly converted, the potential to indirectly convert agricultural land to non-agricultural uses, impacts to individual farms, and the relative size and importance of the farms affected.

The evaluation process derives an impact rating that varies from 0 to 260 points. If an alternative receives a total score equal to or greater than 160 points, alternatives that avoid farmland must be considered.

“Farmland,” as used in the FPPA, includes prime farmland, unique farmland and land of statewide or local importance. “Farmland” subject to FPPA requirements does not have to be currently used for cropland. It can be forestland, pastureland, cropland or other land, but not water or urban built-up land.

While the property previously was cultivated in sugar, the climate and soils at HoKua Place are not ideal for the growing of most commercially viable crops due to the poor soil, strong trade winds and the salt spray from the ocean. Thus, a goat livestock operation provides an economically alternative agricultural use for the property.

As such, the Project is in compliance with FPPA.

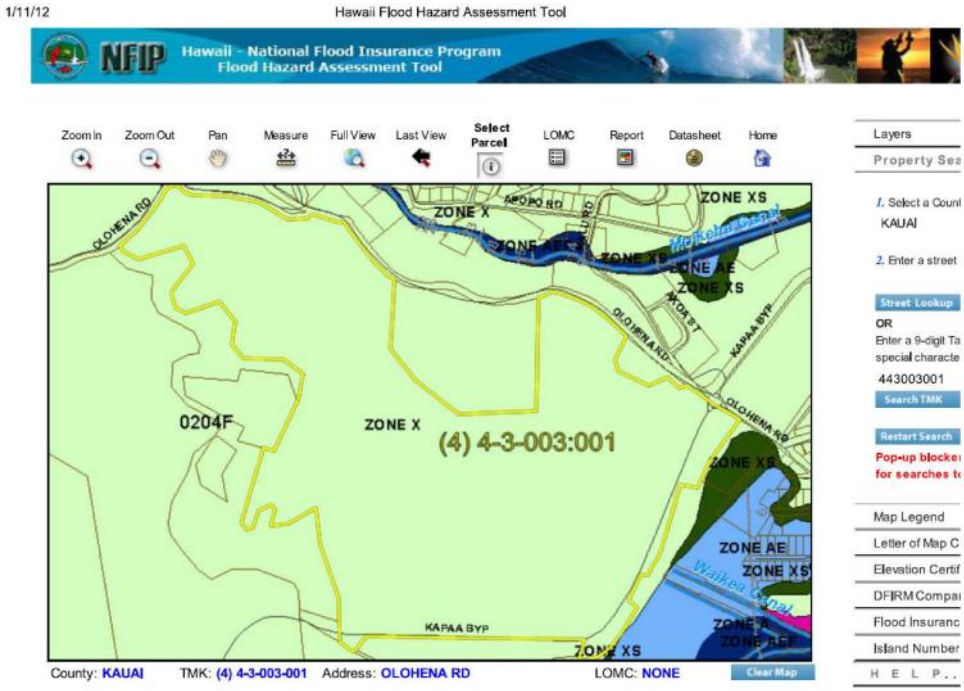
Fish and Wildlife Coordination Act (16 U.S.C. § 661)

The Fish and Wildlife Coordination Act was enacted for the purpose of recognizing the vital contribution of our wildlife resources to the Nation and to provide that wildlife conservation shall receive equal consideration and be coordinated with other features of water-resource development programs. The Fish and Wildlife Coordination Act, as amended, authorizes the Secretaries of Agriculture and Commerce to require consultation with the Fish & Wildlife Service and the fish and wildlife agencies of States where the "waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted ... or otherwise controlled or modified" by any agency under a Federal permit or license. Consultation is to be undertaken for the purpose of "preventing loss of and damage to wildlife resources."

The proposed Project will not result in the diversion of any water body and is in compliance with the Act.

Floodplain Management (Executive Order 11988, as amended by Executive Order 12148)

Signed in 1977, Executive Order 11988 requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities." The amendment (EO 12148 transferred responsibilities to the Federal Emergency Management Agency (FEMA).



Based on the latest available (DLNR's on-line Flood Hazard Assessment Tool, accessed on January 11, 2012) Flood Insurance Rate Map for the area (Map 204F), shown above, the Project site lies within Zone X. Zone X is described as areas outside of the 100- and 500-year floodplains with minimal flooding.

The Project does not involve property acquisition, management, or construction within a 100-year flood plain (Zones A or V), and it does not involve a "critical action" within a 500-year flood plain.

Consequently, it is consistent with applicable regulations and guidance relating to floodplain management.

National Historic Preservation Act (16 U.S.C. § 470)

This Act became law on October 15, 1966 (Public Law 89-665; 16 U.S.C. 470 et seq.). It shall be the policy of the Federal Government, in cooperation with other nations and in partnership with the States, local governments, Indian tribes, and private organizations and individuals to:

(1) use measures, including financial and technical assistance, to foster conditions under which our modern society and our prehistoric and historic resources can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations;
(2) provide leadership in the preservation of the prehistoric and historic resources of the United States and of the international community of nations and in the administration of the national preservation program in partnership with States, Indian tribes, Native Hawaiians, and local governments;
(3) administer federally owned, administered, or controlled prehistoric and historic resources in a spirit of stewardship for the inspiration and benefit of present and future generations;
(4) contribute to the preservation of non-federally owned prehistoric and historic resources and give maximum encouragement to organizations and individuals undertaking preservation by private means;
(5) encourage the public and private preservation and utilization of all usable elements of the Nation's historic built environment; and
(6) assist State and local governments, Indian tribes and Native Hawaiian organizations and the National Trust for Historic Preservation in the United States to expand and accelerate their historic preservation programs and activities.

Although the major burdens of historic preservation have been borne and major efforts initiated by private agencies and individuals, and both should continue to play a vital role, it is nevertheless necessary and appropriate for the Federal Government to accelerate its historic preservation programs and activities, to give maximum encouragement to agencies and individuals undertaking preservation by private means, and to assist State and local governments and the National Trust for Historic Preservation in the United States to expand and accelerate their historic preservation programs and activities.

Should historic remains be encountered during construction activities, work will cease in the immediate vicinity of the site and the State Historic Preservation Division will be contacted for appropriate mitigation, if necessary. Consequently, the proposed actions are in compliance with the Act.

Protection of Wetlands, Executive Order No. 11990 & Executive Order No. 12608

Under this Executive Order (signed in 1977,) each Federal agency must provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.

Each agency must avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds: there is no practical alternative to such construction; the proposed action includes all practical measures to minimize harm to wetlands that may result from such use. In making this finding the head of the agency may take into account economic, environmental and other pertinent factors (Section 2(a)). Each agency must also provide opportunity for early public review of any plans or proposals for new construction in wetlands.

Approximately 0.30-acres of the property (representing a statistically insignificant portion of the overall property) are identified as having "Marsh" soils classification. Characteristics of this soil type include "wet, periodically flooded areas" and "water stands on the surface." However, upon inspection of the site, there are no wet areas or any standing water.

The area identified with this soil type is situated entirely within the HoKua Farm Lots and is in the "Open Space" of the HoKua Farm Lots Project. No construction is proposed in the Project's "Open Space."

Since no construction will occur in this area, there will be no harm, changes or loss of this area.

Safe Drinking Water Act, 42 U.S.C. 300f)

The Safe Drinking Water Act (SDWA) was established to protect the quality of drinking water in the U.S. This law focuses on all waters actually or potentially designed for drinking use, whether from above ground or underground sources. The Act authorizes EPA to establish minimum standards to protect tap water and requires all owners or operators of public water systems to comply with these primary (health-related) standards. The 1996 amendments to SDWA require that EPA consider a detailed risk and cost assessment, and best available peer-reviewed science, when developing these standards. State governments, which can be approved to implement these rules for EPA, also encourage attainment of secondary standards (nuisance-related). Under the Act, EPA also establishes minimum standards for state programs to protect underground sources of drinking water from endangerment by underground injection of fluids.

All appropriate laws and regulations will be followed in the development and operation of the water system.

As identified by the U.S. Environmental Protection Agency, Region IX groundwater Office (http://www.epa.gov/safewater/sourcewater/pubs/qrg_ssamap_reg9.pdf, Accessed February 2011,) there are only two Sole Source Aquifers in Hawaiʻi. They are the Southern Oʻahu Basal Aquifer on the Island of Oʻahu and the Molokaʻi Aquifer on the island of Molokaʻi. There are no sole source aquifers on the Island of Kauaʻi where the proposed Project is located. The Project will not, therefore, affect sole source aquifers and is consistent with the Act.

Wild and Scenic Rivers Act, 15 U.S.C. 1271-1287

The National Wild and Scenic Rivers System was created by Congress in 1968 to preserve certain rivers with outstanding natural, cultural and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection. Rivers may be designated by Congress or, if certain requirements are met, the Secretary of the Interior. Rivers are classified as wild, scenic or recreational.
There are no designated Wild and Scenic Rivers in the State of Hawaiʻi at this time; consequently, the Project is consistent with the provisions of the Wild and Scenic Rivers Act.
(http://www.rivers.gov/wildriverslist.html, Accessed February 2011.)

Essential Fish Habitat Consultation Process Under The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801)

The fish off the coasts of the United States, the highly migratory species of the high seas, the species which dwell on or in the Continental Shelf appertaining to the United States and the anadromous species which spawn in United States rivers or estuaries, constitute valuable and renewable natural resources. These fishery resources contribute to the food supply, economy and health of the Nation and

provide recreational opportunities. A national program for the conservation and management of the fishery resources of the United States is necessary to prevent overfishing, to rebuild overfished stocks, to insure conservation, to facilitate long-term protection of essential fish habitats, and to realize the full potential of the Nation's fishery resources.

According to the Western Pacific Regional Fishery Management Council (WESPAC) in its *Fishery Ecosystem Plan for the Hawai'i Archipelago (2009),* several areas of Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPCs) in the Hawaiian Archipelago have been designated and approved by the Secretary of Commerce.

EFH and HAPC designations for Bottom fish and Seamount Ground fish, Crustaceans, Precious Corals, Coral Reef Ecosystems and Pelagic Management Unit Species (MUS) were approved by the Secretary on February 3, 1999 (64 FR 19068). EFH designations for Coral Reef Ecosystem MUS were approved by the Secretary on June 14, 2002 (69 FR 8336). Maps available at the National Marine Fisheries Service's Essential Fish Habitat Mapper website do not indicate any areas of EFH near the Project area. (http://sharpfin.nmfs.noaa.gov/website/EFH_Mapper/map.aspx, Accessed February 2011.)

No aspect of the Project will affect Essential Fish Habitat, as it does not affect or occur near the sea.

The following is a summary table noting the Environmental Federal Cross Cutting Authorities:

Table 5.5.1.1 – Environmental Federal Cross Cutting Authorities

Environmental Authorities	**Procedure**	**Responsible Agency**
Archaeological and Historical Preservation Act	Obtain review for all projects	State Historic Preservation Office
Clean Air Act	Coordinate to assure Project conforms with state implementation plan	State Department of Health, Clean Air Branch
Coastal Barrier Resources Act	Obtain review if Project is located on a coastal barrier island	State Coastal Zone Management Agency
Coastal Zone Management Act	Obtain review if Project is located in coastal zone	State Coastal Zone Management Agency
Endangered Species Act	Obtain review by U.S. Fish & Wildlife Service for all projects	U.S. Fish & Wildlife Service
Environmental Justice	Are low income and minority groups affected?	U.S. Environmental Protection Agency
Environmental Authorities	**Procedure**	**Responsible Agency**
Floodplain Management	Obtain review if Project is located in or affects 100-year flood plain	Federal Emergency Management Agency
Protection of Wetlands	Obtain review if Project area contains wetlands	U.S. Army Corps of Engineers
Farmland Protection Policy Act	Obtain review if Project area contains prime farmland	Natural Resources Conservation Service-State Conservationist
Fish and Wildlife Coordination Act	Obtain review for all projects	U.S. Fish & Wildlife Service

National Historic Preservation Act	Obtain review for all projects	State Historic Preservation Office
Safe Drinking Water Act	Obtain review if Project could affect sole source aquifer	State Department of Health, Safe Drinking Water Branch
Wild and Scenic Rivers Act	Obtain review if Project is in area with Wild and Scenic Rivers	National Park Service
Essential Fish Habitat consultation under Magnuson-Stevens Fishery Conservation and Mgmt Act	Obtain review if it will affect essential fish habitat	National Marine Fisheries Service (NMFS)

5.5.2 Economic Authorities

Administration of the Clean Air Act and the Water Pollution Control Act with respect to Federal Contracts or Loans (Executive Order 11738)
This Executive Order prohibits the provision of Federal assistance to facilities that are not in compliance with either the Clean Water Act or the Clean Air Act unless the purpose of the assistance is to remedy the cause of the violation.

HoKua Place will comply with the requirements of the Clean Water Act and the Clean Air Act.

Demonstration Cities and Metropolitan Development Act of 1966, Pub.L. 89-754, as Amended (42 USC § 3331)
To demonstrate compliance with this Act, the Hawaiʻi State Department of Health requires DWSRF assistance recipients to describe the proposed Project's effect on local development plans.

HoKua Place will comply with all requirements.

Procurement Prohibitions (Executive Order 11738, Section 306 of the Clean Air Act)
This Executive Order requires recipients of Federal assistance to certify that they will not procure goods, services or materials from suppliers who are on the EPA's list of Clean Air Act violators.

HoKua Place will comply with all requirements.

Procurement Prohibitions (Section 508 of the Clean Water Act)
This Executive Order requires recipients of Federal assistance to certify that they will not procure goods, services or materials from suppliers who are on the EPA's list of Clean Water Act violators.

HoKua Place will comply with all requirements.

Chapter 6 - Agency & Public Participation

The scoping process for the HoKua Place involved a variety of means for input and comments.

6.1 Comment Letter, Scoping Letters & Letters of Support

Comment letters, scoping letters and letters of support for HoKua Place (formerly known as Kapaʻa Highlands II) were received from a variety of governmental agencies, businesses and individuals. The following is a list of letters received by HoKua Place related to the Project. (All letters and responses are attached as Exhibit - Q, Volume II).

- Larry Dill P.E. - County Engineer, Kauaʻi County - Department of Public Works (1/4/12)
- Stanly Vasques (1/4/12)
- Willie Sanchez (12/30/11)
- William N. Arakaki - Kauaʻi Complex Area Superintendent, State of Hawaiʻi - Department of Education (10/28/11)
- Sally Jo Manea - President of Board of Directors, Kauaʻi Path Inc. & Tommy A. Noyes, Member of the Board of Directors, Kauaʻi Path Inc. (10/17/11)
- David Vickers - Island Truss (10/14/11)
- Neil J. Clendeninn, MD, PhD, MS-arch (10/14/11)
- Kurt R. Bosshard - President, Kapaʻa Solar LLC & Trustee, Kurt Bosshard Trust (10/6/11)
- Tim Bynum - Councilmember, Kauaʻi County Council (10/5/11)
- Gary Hooser - Director, State of Hawaiʻi - Office of Environmental Quality Control (10/3/11)
- Michael A. Dahilig - Planning Director, Kauaʻi County - Department of Planning (8/31/11)
- David R. Craddick, P.E. - Manager and Chief Engineer, Kauaʻi County - Department of Water (8/22/11)
- Michael A. Dahilig - Planning Director, Kauaʻi County - Department of Planning (4/4/11)
- Bernard P. Carvalho, Jr. - Mayor, Kauaʻi County (3/1/11)
- Bernard P. Carvalho, Jr. - Mayor, Kauaʻi County (12/9/10)
- Raymond J. McCormick, P.E. - District Engineer, State of Hawaiʻi - Department of Transportation-Highways Division (11/3/10)
- Nancy McMahon - Deputy SHPO/State Archeologist and Historic Preservation Manager, State of Hawaiʻi - Department of Land and Natural Resources-Historic Preservation Division (6/28/10)
- Eugene K. Jimenez - Housing Director, Kauaʻi County - Housing Agency (3/2/10)
- Ian K. Costa - Planning Director, Kauaʻi County - Department of Planning (1/5/10)
- Edward Tschupp - Chief, Kauaʻi County - Department of Public Works-Wastewater Division & Donald M. Fujimoto - Engineer, Kauaʻi County - Department of Public Works-Wastewater Division (12/22/09)
- Chris Tadani - Eastside Distribution Planner, KIUC (9/6/07)
- Ian K. Costa - Planning Director, Kauaʻi County - Department of Planning (5/29/07)
- Don Hibbard - Administrator, State of Hawaiʻi - Department of Land and Natural Resources-Historic Preservation Division (12/14/99)
- Heidi Meeker - Planning Section, State of Hawaiʻi Department of Education - Facilities Development Branch (4/25/12)

6.2 Meetings with Governmental Agencies & Other Entities

Since 2004, HoKua Place has been meeting with various governmental agencies and other entities in the design and development of the HoKua Place Project.

On October 22, 2011, Greg Allen on behalf of HoKua Place (formerly known as Kapaʻa Highlands II), gave a presentation to the Wailua-Kapaʻa Neighborhood Association.

Additionally, the following is a list of people and entities representatives of HoKua Place has met with over the past 14 years.

- State of Hawaiʻi, Office of Environmental Quality Control Staff- notifying them of intent to submit Draft EA and anticipated FONSI (1/24/12)
- Bernard Carvalho - Mayor, Kauaʻi County (6+ times between 2010-2012 – last meeting 1/19/12)
- Department of Planning, County of Kauaʻi, Staff (15+ times between 2004-2012)
- Department of Housing, County of Kauaʻi, Staff (14+ times between 2004-2012)
- David R. Craddick, P.E. Manager and Chief Engineer, Bill Eddy & Staff - Department of Water, Kauaʻi County (4+ times between 2010-2012)
- Dan Davidson, Director & Staff - State of Hawaiʻi, Land Use Commission (2010 & 12/28/11)
- William N. Arakaki - Kauaʻi Complex Area Superintendent, State of Hawaiʻi - Department of Education & Bernard Carvalho - Mayor, Kauaʻi County (10/17/11)
- Kauaʻi Path Inc. (10/13/11)
- Kauaʻi County Council Members Jay Fufaro & Tim Bynum (10/3/11)
- Jessie Souki, Director - State of Hawaiʻi, Office of Planning (9/22/11)
- Andrea Suzuki – Attorney, County of Kauaʻi- Department of Water (September 2011)
- County of Kauaʻi Water Board (7/28/11)
- Larry Dill - Engineering Director, County of Kauaʻi - Department of Public Works (2+ in 2011)
- Mike Dahilig - Planning Director, County of Kauaʻi (2+ times between 2010-2011)
- Eugene Jiminez - Housing Director, County of Kauaʻi (2+ times between 2010-2011)
- Edward Tschupp - Chief, Kauaʻi County - Department of Public Works-Wastewater Division (4+ times in 2011)
- Wally Kudo & Staff Engineers - Department of Public Works, Kauaʻi County (6+ times between 2010-2011)
- County of Kauaʻi Planning Commission (8+ times between 2004-2011)
- Raymond J. McCormick, P.E. - District Engineer, State of Hawaiʻi - Department of Transportation-Highways Division (3+ times between 2010-2011)
- Tommy Contrades, Commissioner - State of Hawaiʻi, Land Use Commission (September 2011)
- Nancy McMahon - Deputy SHPO/State Archeologist and Historic Preservation Manager, State of Hawaiʻi - Department of Land and Natural Resources-Historic Preservation Division (May 2010)
- Ed Tschupp, Wynne Ushigome, Gregg Fujikawa, Ed Doi & Staff - Department of Water, County of Kauaʻi (10+ times between 2004-2010)
- Alfred Castillo, Jr. - County Attorney, County of Kauaʻi (2010)
- Ian Costa - Planning Director, County of Kauaʻi (15+ times between 2004-2009)
- Ken Rainforth - Housing Director, County of Kauaʻi (10+ times between 2004-2009)
- Matthew Pyun – County Attorney, County of Kauaʻi (2007)
- Bryan Baptist - Mayor, Kauaʻi County (6+ times between 2004-2007)

6.3 Section 343-5e HRS DRAFT 2 EIS Recipients

Copies of the Section 343-5e HRS Draft 2 Environmental Impact Statement were sent to the following entities:

Federal
U.S. Department of the Interior, Fish & Wildlife Service

State of Hawai‘i
Department of Agriculture
Department of Business, Economic Development & Tourism - Office of Planning
Department of Education
Department of Education - Hawai‘i State Library, Kapa‘a Branch
Department of Health
Department of Health - OEQC
Department of Land & Natural Resources
Department of Transportation
Office of Hawaiian Affairs

County of Kaua‘i
Office of the Mayor
Department of Parks & Recreation
Department of Planning
Department of Public Works
Department of Transportation
Department of Water
Fire Department
Police Department

Federal
Department of the Interior Fish and Wildlife Service

Other
The Garden Island Newspaper

Likookalani Maltin

Sierra Club- Kaua’i Group

Wailua-Kapa’a Neighborhood Association

Chapter 7 - List of Preparers

Agor Jehn Architects, LLC
Architects-Planners-Land Use Consultants
460 Ena Road, Suite 303
Honolulu, Hi 96815

Name	Role	School/Degree	Years Experience
Ron Agor	Project Manager-FEIS	Cal Poly, San Luis Obispo	34
Sara Jehn	Assist Project Manager FEIS	University of Oklahoma Bachelor of Architecture	5
Peter T. Young Ho'okuleana LLC	Project Manager-DEIS	University of Hawai'i, Mānoa, BBA	41
Jennifer Barra Ho'oKuleana LLC	Deputy Project Manager DEIS	University of Hawai'i, Mānoa, MURP, Colorado State University BS, Natural Resources Recreation & Tourism,	13

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Section 343-5e HRS Second Draft
Environmental Impact Statement (2nd DEIS)
Volume II-A
Exhibits 1 & A to H

Prepared for:
Accepting Authority
State of Hawai'i Land Use Commission
&
Petitioner
HG Kaua'i Joint Venture LLC

Prepared by:

Agor Jehn Architects, LLC
460 Ena Road, Suite 303
Honolulu, Hawai`i 96815
(808) 947-2467
ron@agorjehnarch.com

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EXHIBIT "1"

HG Kauai Joint Venture, LLC

November 2, 2017

To whom it may concern:

We hereby authorize Ron Agor Architect of Agor Jehn Architects LLC to prepare and submit the Final Environment Impact Statement (FEIS) for the HoKua Place. (TMK: (4) 4-3-003:001) We further authorize the use of information and data provided by one of our consultants, Ho'okuleana, LLC, for their submittal of the DEIS.

Please do not hesitate to contact me with any questions at: 435.272.3709.

Jacob Bracken
Manager

5662 W. Clubhouse Dr., Hurricane, UT 84747

HoKua Place FEIS

Exhibits

&

Responses to DEIS Comments

Exhibit A

Kapa‘a Housing Market Study

I. INTRODUCTION

The Data@Work is a market research firm that specializes in analyzing residential real estate markets for developers and lenders. We have been retained to perform a study analyzing the market for proposed master planned community on the island of Kauai, called Kapaa Highlands.

This study focuses on the historical and projected market conditions and trends in accessing the ability of the project to be successful in selling its residential properties at a price and at a velocity. The study entailed collecting, comparing and analyzing information that has a bearing on the numerous aspects of market demand for the proposed project, including but not limited to publicly available real property, economic and commercial data.

The author makes every effort to verify that all of the information in study and in particular the market description and analysis is accurate, but is aware that 100% accuracy is unlikely. Finally, the analysis and statements herein are based on independent research by the author.

II. PROJECT DESCRIPTION & STUDY OUTLINE

Project

Kapaa Highlands is a master planned project on the Island of Kauai targeting primary housing demand from local and in-migrant families, as well as offshore second home demand for view estate ownership. It sits above the historic town of Kapaa and below the foothills of the mountain chain that forms the island. It is equidistant from the two major resorts on the island (and at the center of the third, the Coconut Coast). Thus, it is at or close to the centers of employment and commercial activity.

As Kapaa is arguably at the center of the island, the target market for this development will be spread across a wide range of households, but mainly appealing to local families looking for reasonably priced housing that is well-located with regard to the centers of employment in the county, as well as to a good range of shopping, recreational and social facilities.

The development contains a portion of the Kapaa bypass road, a major arterial road adjacent to the property. As such, the property is accessible from three sides and is adjacent to already improved county roads. Furthermore, the property has no significant restraints relative to adequate water availability and wastewater. Finally, the Kapaa Middle School is located adjacent to the property and adds to the attractiveness of the site to the local population.

KAPAA HIGHLANDS PRODUCT MIX AND SALES PROJECTION

Product	Units
House Lot Packages, On Large Lots (10,000 sf)	36
House Lot Packages, On Medium Lots (7,500 sf)	50
Multi-Family Dwelling Units (4 Plex, 8 DU/Ac)	500
Affordable Housing Dwelling Units (12 DU/Ac)	183

The units described above include condominiums (Multi-Family pads and Affordable Housing) and single-family homes (House Lot package).

EXHIBIT "A"

[Note that some of the House/Lot package units may be sold as home sites, depending on future demand and market conditions].

The condominium units will be designed in a range of bedroom configurations that will best meet the demand for housing by providing designs that apply to different family types, including starter families, empty nesters, families with children, and households that qualify for affordably priced housing.

The design of the single family units will appeal to some of those in the aforementioned condominium demographic groupings, but will go further by addressing the needs of large families, families wanting to be close to the Middle School, trans-generational families needing adequate (read larger and more defined) living space, and professional families or those with multiple wage-earners.

The design of the condominiums could include stacked flats and townhomes, both of which have cost and livability advantages. They will located in multi-unit buildings (four and six-plex, etc.) and laid out in a way that will be taking advantage of the site's benefits: including those of the ocean views, the cooling winds, the warming sunlight, etc. Their density would range from 8 to 12 units per acre.

The single-family units will be designed to take advantage of the area topography, as well as wind and sun direction and views. By having two different lot sizes allows for the land plan to address two demographics: the smaller lot size units would be most appropriate to starter families, and larger lot size units would be appropriate for larger families and multigenerational households.

It is worth being mindful that, generally speaking, the high cost of housing production in Hawaii, and Kauai in particular, often pushes housing prices beyond what local families, particularly workforce families, can afford. To counter that, often Kauai home purchasers include a number of income earners into the purchase, both family members and non-family members. It is this market demand segment that the larger lot size and house size units will address.

In keeping with the county's affordable housing requirement, the requisite number of units will be produced and priced according to the existing income guidelines when marketed. The current affordable requirement is 30%, and the fulfillment of that will be a benefit to the local families seeking better housing or a more convenient location.

Additionally, while the market homes will be priced to the market, and done so at the time of the start of construction, they will also be more affordably priced, relative to much of the new construction on the island. This is because the large size of the overall development (750+ units) is conducive to achieving construction economies of scale, both for infrastructure and vertical construction - which can be passed on to the consumer.

Further, these homes and condos will also be designed with the needs of local families in mind, as opposed to the offshore buyer market. This will thus 'lessen' the overall demand for them, resulting in a more moderate price point. This stands in contrast to many other new home construction projects and developments on the island and in the state, which seek to address the needs of the offshore buyer (and are priced accordingly higher).

Finally, it is important to note that this development will benefit those in the community who will not be purchasing here, but who nonetheless are in the market for affordable housing. This is because this, or any, provision of new housing acts to soften the pressures that push housing prices higher – national and local studies and data has shown that the supply of new housing into an existing market place results in a moderating trend in prices.

Study Outline

In an effort to evaluate the proposed project, the study will begin by describing the area, the housing stock and the economy. It will take account of the economic factors and trends that affect housing relative to the county and to the proposed project. Thereafter, it will describe the housing market in general, and in particular to this project. In doing so, it will describe and analyze the factors and trends behind the general and specific supply and demand for housing. And it will summarize the findings and finish with some concluding remarks and expectations.

III. OVERVIEW of COUNTY and MARKET

Subject Property's Community

Kauai County is the fourth largest county in the state, as ranked by population and economic activity, behind the City & County of Honolulu (Oahu), Maui County and the Big Island of Hawaii.

The majority of the island's roughly 52,000 residents lives and works in the coastal areas leaving the interior of Kauai natural and pristine. Kauai's weather is near perfect year round with daytime temperatures ranging from the mid 70's to the mid 80's, slightly warmer in the summer. The northeast trade winds average about 15 mph for most of the year, and provide refreshing breezes. Rain showers usually fall in the evening and early morning hours, predominantly over the mountain ranges. The temperature of the ocean ranges from 68 to 80 degrees Fahrenheit.

It has one of the strongest brands in the global visitor industry, as well as arguably the most diversified visitor industry of any of the islands, combining large resort master planned communities, cruise ship visitations, time share developments and small-scale bed and breakfasts.

The breadth and depth of this economic base, like the rest of the state, rests on the county's economy's unique comparative advantage relative to the other visitor destinations world-wide: it has a very high quality of life, a function of a naturally beautiful setting, with a benign environment and near perfect climate. Indeed, the proof of its attractiveness can be found in the quality of the number of 'rich and famous' who have bought in Hawaii, starting with Lawrence Rockefeller in 1960 (followed by John Wayne, George Harrison, Peter Gruber, Charles Schwab, Michael Dell, Ben Stiller, Oprah Winfrey, Akio Morita, Michael Creighton, etc.)

Kauai has three major resort destinations:

- **Princeville**, a 45-minute drive from the Airport, is a resort that runs across a large plateau overlooking one of the largest deep-water bays in Hawaii. The view of the sunset, looking west, is extraordinarily beautiful.

- **Poipu**, also a 45-minute drive from the airport, sits above the south shore, with numerous bays and beaches safe for swimming. It has the largest concentration of hotels and golf courses on the island. .

- **Coconut Coast**, a 20 minute drive from the airport, this area was the favored area of Hawaiian royalty and the original site of resort development on the island and, save for Waikiki, the state. It today hosts one of the largest percentage of accommodations, shops, recreation, restaurants and historical sites on the island.

The majority of the primary housing development is located within the Kapaa and Lihue urban zones, with secondary sources located areas in and around Poipu, Kilauea/Hanalei, and Hanapepe and Waimea. Second home development is located within and around the three major

resort communities, as well as in locations that are close to the coastline and/or in westward facing locales).

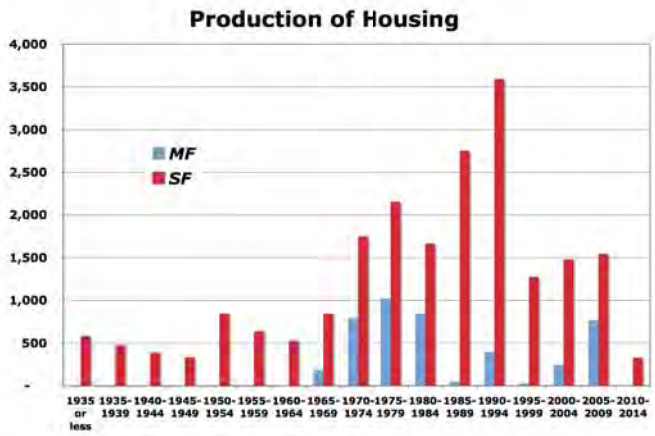
Subject Property's Housing Stock

Most of the primary housing inventory and on-going development is located within the Kapaa and Lihue urban zones. Primary housing is also concentrated, but to a lesser degree, in and around the communities of Poipu, Kilauea/Hanalei, and Hanapepe and Waimea.

Since the 1990s, Kauai's housing stock has grown faster than the population, as measured by the average annual growth rate for dwellings: it grew by 3.5% p.a. between 1990 and 2000, the highest in the State. The growth rate dropped to around 1.7% over the 2000-2010 period. Many of these new units have been targeted for the visitor or second home industry.

For instance, in 1990, the percentage of occupied housing units was about 92.5% of the county's total housing stock. By 2006, according to the Hawaii Housing Study, that dropped to 76.2 percent, the greatest rate of change among the four counties. Since 2006, however, there has been a reversal of that trend, with the percent of housing stock being build for primary homeownership has increased to 89.6%.

By way of context, housing development and construction was most active on Kauai during the time when the major resorts were developed in the 1970 and 1980s. Thereafter, primary housing production reached only half that level, save for periods of housing reconstruction that followed a major hurricane event.



In the years after the establishment of the resorts, there was a boom in condominium production, but many of these projects that were developed targeted the offshore buyer market. TMK records

show that over 70% of the condo units and 12% of the single-family homes are owned by out of state residents.

Census records have shown that a quarter of the County's housing stock did not house residents in 2000. Thus, while the Census categorizes these units as "vacant," they may be actually rented to vacationers, reserved by owners as a second home, or both. Demand in the housing market hence comes from residents, investors, and non-residents.

As a result, the average prices for housing units are skewed upwards and do not necessarily reflect residents' ability to pay for housing. Kauai housing stock is 78% owner occupied and 22% vacant, per their definition (it includes seasonal or recreational use, which itself constitutes 64% of all vacant units, with rental units constituting 20% of that total).

Indeed, housing inventory shows that about 3,000 of the 4,000 condominium units in the county, or 73%, are owned out-of-state. This would account for the high prices of condos in the county, the second highest in the state. Median resale price this May 2013 for a condo on Kauai is $323,000.

HOUSING CHARACTERISTICS OF THE MARKET

Kauai County	Units
Occupied housing units	23,051
Owner-occupied housing units	13,968
Renter-occupied housing units	9,272
Vacant housing units	6,553
For rent	1,312
Rented, not occupied	61
For sale only	251
Sold, not occupied	51
For seasonal, recreational use	4,172
All other vacant units	706
Homeowner vacancy rate (percent)	1.8%
Rental vacancy rate (percent)	12.3%

Note that the homeowner vacancy rate is low but the rental vacancy rate is high. This is indicative of a community that has high priced houses – therefore the homeowner vacancy rates are low. Additionally, as it is a very desirable place to live, there are a lot of rental units for vacation rental – and therefore the rental vacancy rate is high.

HOUSING CHARACTERISTICS OF THE MARKET, BY AREA

	Waimea	Koloa	Lihue	Kawaihau	Hanalei	Total
Detached Home	2,270	4,843	4,706	5,212	2,013	19,044
Townhouse	57	128	142	36	113	484
Condominium	0	195	326	190	366	1,082
Duplex/multiplex	85	201	24	142	22	484
Apartment	328	139	564	202	185	1,428
Co-op	0	67	107	0	0	184
Other/Not	0	179	65	148	52	345
	2,739	5,752	5,935	5,930	2,751	23,051

Note that the area of the proposed development is Kawaihau, highlighted in blue, and that area has very few dwellings that are attached units (condo, townhouse, etc.).

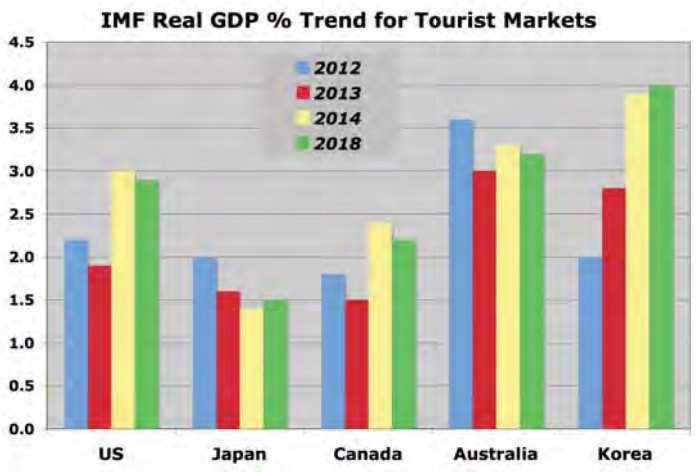
IV. THE ECONOMY

Simply put, residential for-sale and rental values move closely in synch with an area's economic growth, and economic growth is determined in the short run by the balance of trade between the area and it's major trading partners. And the mechanism by which this growth in values occurs is via rising incomes and higher job counts. We start by looking at the economic outlook for the state and the county. As the major industry is tourism, the county's significant visitor sources would be the US, Canada and Asia

As such, we look at the economic trends in all three sources.

GLOBAL ECONOMY:

The overall global economic forecast by the IMF earlier this year noted that the recovery had solidified, but the unemployment remained high. It said global financial risks have shrunk, including the chance of a fallback in economic activity (a double dip).

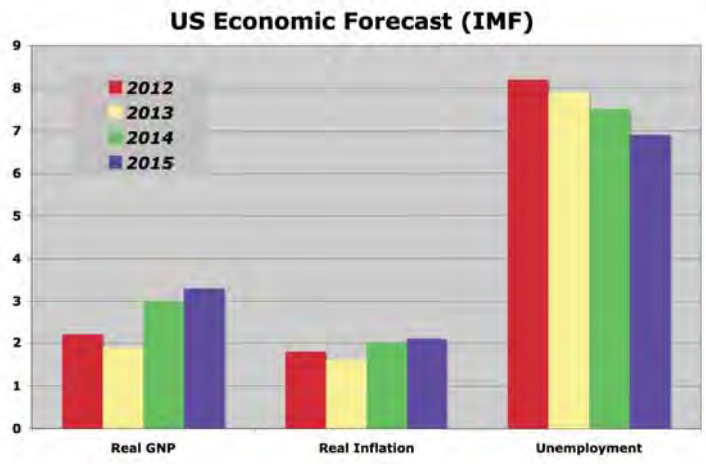


If the advanced economies continue to repair their public and financial balance sheets, and stimulate employment, and if emerging markets do not overheat their economies, global financial markets and property markets will stabilize and grow.

UNITES STATES:

The US economy is projected to grow by 3 percent in 2014, as firmer private final demand takes the burden to stimulate the economy off of federal fiscal policy. More and more, the risks to the economic outlook are abating: the recovery in housing prices and the slight growth in the job

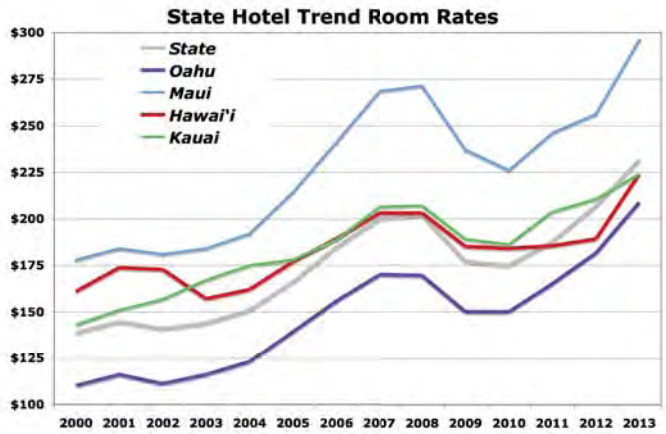
market are big positives looking ahead. Given the slack in the economy, inflation is expected to remain subdued, but with a rise in the interest rates in the cards.



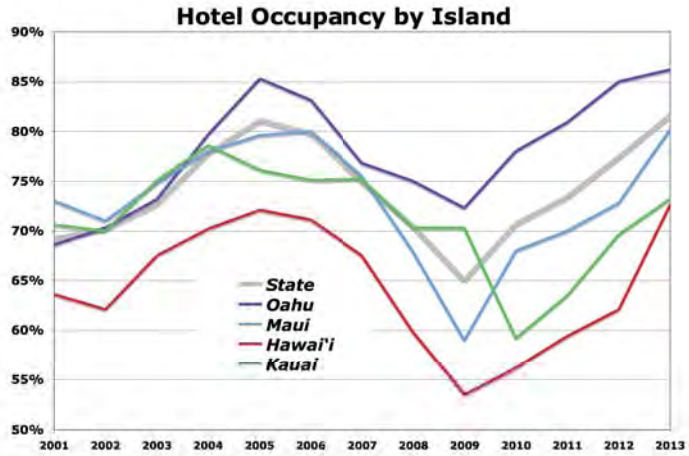
Looking ahead, the US economy will be on the rise. That, plus the perception of a growing economy, should be sufficient to grow the Hawaii state and the Oahu county economies. As an improved US economy is manifested in terms of higher visitor industry revenues, this commensurate growth in state economic activity will then put pressure on housing, via higher job counts (immigration) and incomes.

HAWAII STATE:

According to the state economic forecasters, Hawaii's economy continues to grow strongly in 2013 at an accelerating rate. The state has very low unemployment relative to the rest of the nation, thanks to a resurgent demand in the visitor industry, which is the major engine of economic growth in the county and the state (as seen below).

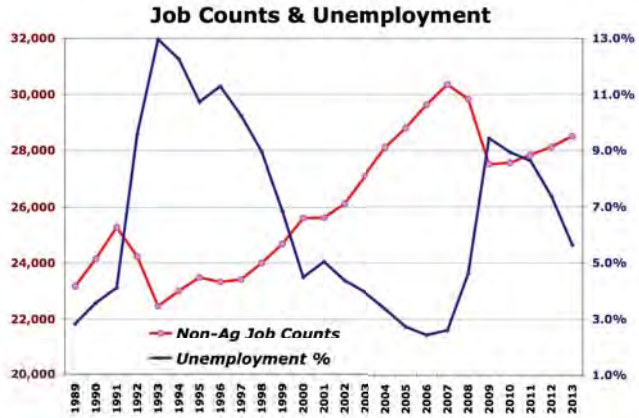


Historically, Hawaii's economy follows those of the Pacific Rim countries, which bodes well for the future.



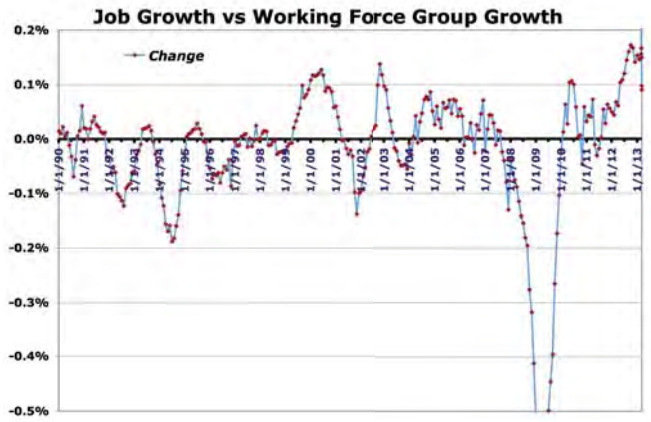
KAUAI:

Kauai is enjoying economy growth again, thanks to a resurgent demand in the visitor industry, which is the major engine of economic growth in the county and the state (as seen in job counts rising and unemployment rates falling).

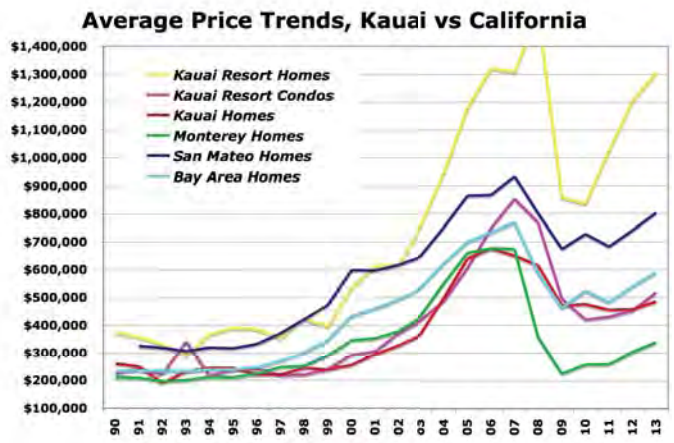


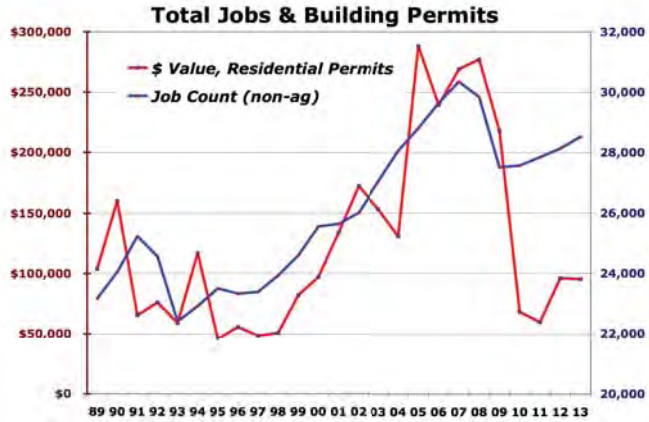
Going forward, Kauai will begin to experience tight labor conditions, with immigration occurring in order to meet rising job growth. Indeed, this is happening already, as seen next.

This chart shows that the recent growth in jobs is outpacing the natural growth in the workforce, i.e., population growth. Thus, in-migration will occur (which leads to increased housing demand).

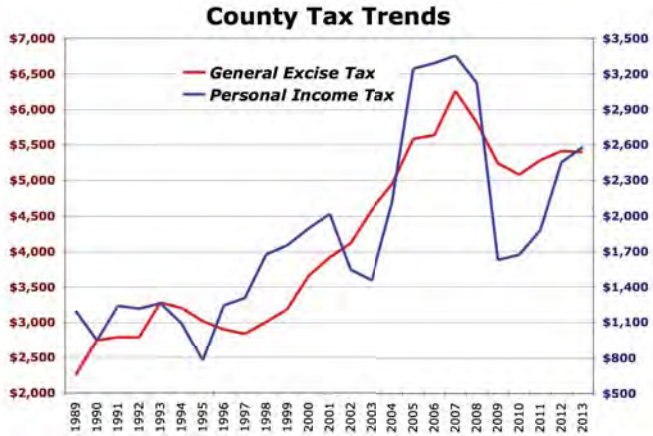


Housing demand will also grow thanks to offshore demand. As seen, when California's residential markets improve, prices (demand) for second homes in Kauai also rises.





Finally, Kauai's economy and real estate market are closely tied, as an increase in one leads to an increase in the activity of the other (per the following chart). In sum, economic indicators look to growth for the island's residential market.



V. HOUSING MARKET

Overview: Much like the state, Kauai's residential real estate supply is inflexible and constrained, but to a greater degree – the cost constraints are even tighter (higher costs of transporting material inputs to a remote locale, plus of sourcing labor in a small community), and the political climate there is generally unfavorable to housing development, particularly at the high end and/or in areas that are highly visible (but decidedly less so, relative to affordable and senior housing, as well as work force housing, which this project is proposing).

At the same time, demand for residential real estate is both flexible and strong, particularly in good economic times and over the long run. It can be, and is currently, constrained to an uncharacteristic degree, thanks to havoc in the financial markets the last few years and the drastic fall off in economic activity globally and nationally.

The first condition, limited supply, arises due to Kauai having a very small landmass, coupled with inadequate infrastructure and challenging geographic conditions (atop the aforementioned political, social and legal impediments).

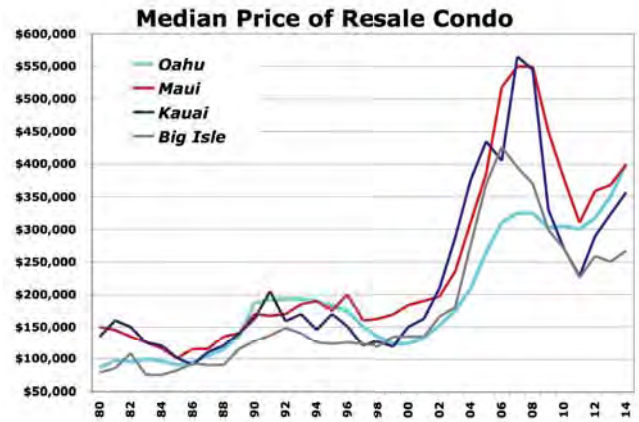
The second starts with the very high quality (defined a high quality of life, in terms of being a place that is environmentally safe, aesthetically pleasing, socially accommodating, politically stable, etc.). This is coupled by a deep and broad appreciation of that lifestyle by very large population accustomed to visiting the island (mainly West Coast and East Asia), which has one of the highest rankings in brand awareness and acceptance.

In combination, this results in a market that can dramatically volatile, up and down, in terms of sales and, to a lesser extent, prices. We note that in the past cycles, prices have been relatively 'sticky' downward, i.e., generally holding on to accumulated values. In this cycle, however, the price appreciation was so extensive and lasted so long, that the ensuing price depreciation during the down cycle has also been extensive.

Currently, Kauai's residential markets are now at the beginning of the up-cycle. The question is, going forward, how long this will last. The rule of thumb for the residential market is that the upswing in the cycle, the up cycle, generally lasts about 6.5 years, and is about twice as long as the down cycles. In addition, the up cycle, through to peak, results a tripling of the number of closings.

For the condo market, the up cycles last about 7 years, almost more than twice as long as the down cycles. In addition, the movement trough to peak of closings can be 300% or 400%, while for prices, it can be 400% or higher (note that this condition is not just particular to Kauai, but to all the neighbor islands).

The following charts illustrate this, starting with price appreciation trends.



For the condo market on Kauai, the one that relates to this project, the up cycles last about 7 years, almost more than twice as long as the down cycles.

Next, we describe the balance between supply and the demand using sales and listings island-wide for condos, as well as the indicator showing the balance between the two, MRI or Months of Remaining Inventory.

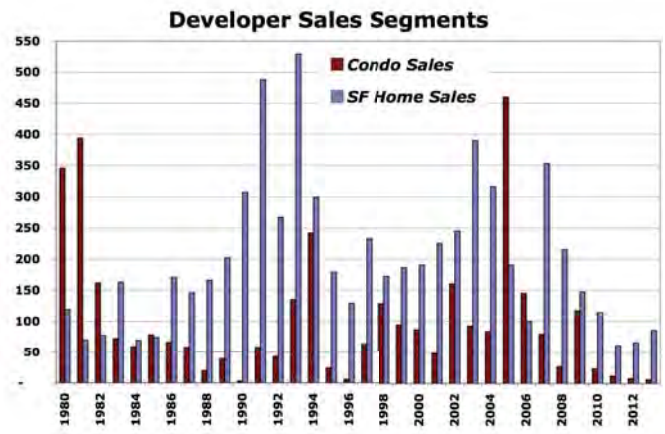
Right now, the MRI trend is declining, per the growth of sales and shrinkage of listings, indicative of a tight market. A normal reading is between 8 and 12 months, with the two balanced.

Looking ahead, we assume that the sales will continue to grow (as a function of low interest rates, plus the spread of the economic recovery in the areas where buyers of Kauai real estate reside (basically on Kauai, plus on the west coast of North America).

In this case, the proper market response to tight supply is for sellers to raise their prices. As seen in other charts, this has already started two years ago, and continues this year as well.

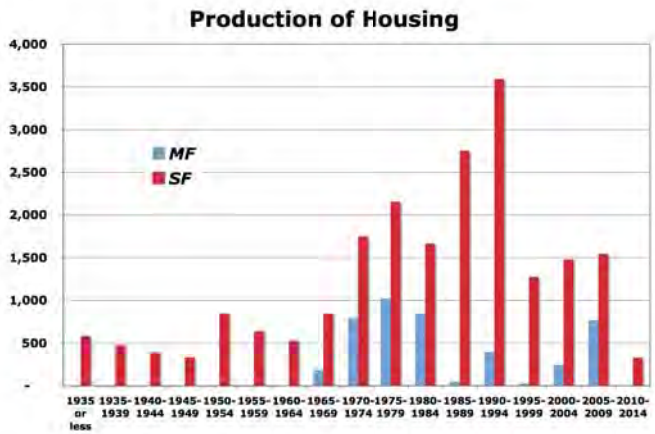
The following chart shows the price trend over the last 32 years for the four basic housing products: single-family resales and developer (newly construct4ed) sales, plus condominium resales and developer sales. As seen, the price trend over the last four years has been down, with the recovery taking hold first with single-family product, followed by condos.

Next, we look at the market for developer sales. As seen in the next chart, the level of new housing production is at a historic low. This is a condition of scarcity and it leads to price movement to the upside.



When that happens, the general public will get a sense that there is a housing shortage, and pressure will be brought politically to increase the supply of affordable housing. In and of itself, that will help to alleviate the demand existing for affordable rental units. That said, it is likely that the demand for reasonably priced housing will vastly outpace the supply.

Another way of seeing this is the long-term production of housing chart. Not only has housing production been low of late, but this also says that the current stock of housing is old, and dated.



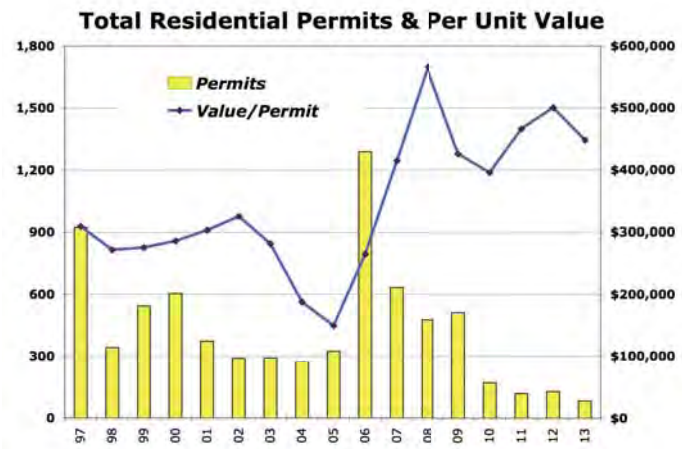
VI. FUTURE KAUAI HOUSING SUPPLY

PERMITS

The easiest way to look ahead to where the housing market is going in the short-term is by examining the activity in permits (where developers apply for permission, and pay their fees, for building residential units). A high level of activity indicates more supply is in the works, which means that more demand will be met, and the potential for prices adjusting downwards. With less supply in the works, prices will feel pressure upwards (and higher prices in the future, when demand recovers).

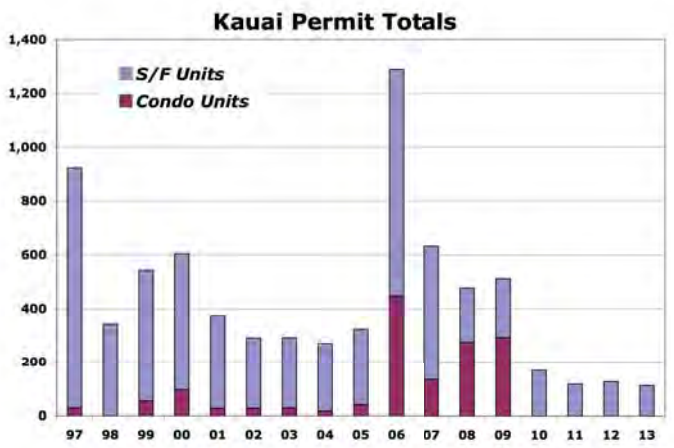
In addition, low levels of per unit value indicate that the units being built are for the lower end of the market (and vice versa). And, this has not been the case overtime on Kauai, indicating that most of the new housing has been targeted on the upper income end of the housing market.

An overview of the TOTAL RESIDENTIAL PERMITS AND VALUES Chart shows that the number of permitted units has sunk so low that it is at an all-time historical low. On the other hand, the value per permitted unit is at a record high.

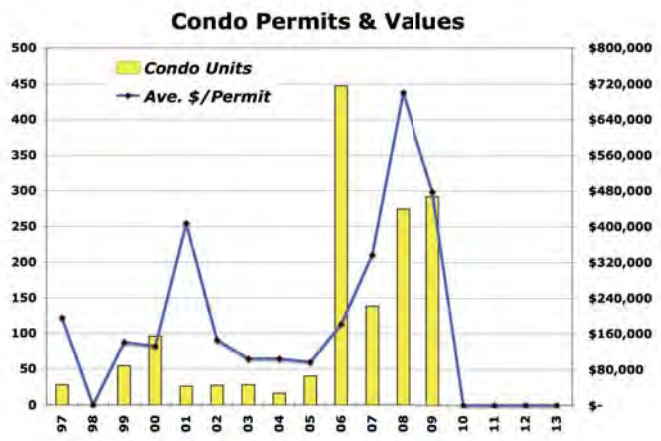


Note that the 2013 data is extrapolated, using actual data through April 2013.

The following chart shows the actual breakdown between condos and single-family homes.

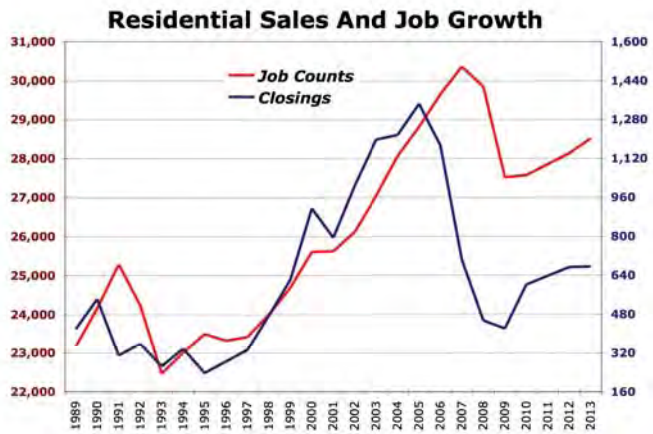


As seen, the number of permits is very low – caused mainly by the condo market.



VII. HOUSING DEMAND

The prime determinant of housing demand is household formation, itself is a function of the economy and demographic and social trends. As noted above, in the short term, residential housing demand is driven by economics – specifically of job creation/income growth, as well as interest rate trends.



Incomes to buy homes, and they drive immigration, which is a prime source of housing demand (sometimes linked to population growth). This linkage is best illustrated in the RESIDENTIAL SALES & JOB GROWTH Chart.

Note how closely the two trends track one another, up until the 2004-2005 period, when high prices prevented many families from buying a house. This then shows how the lack of housing supply on an on-going basis drives prices higher, and thus lowers the sales of homes.

Further note, the gap that has opened up between the two trends starting in 2005. In previous recessions, a similar pattern occurred, with the sales of homes (blue line) picking up during the recovery. This was because a lot of families doubled up (multiple families living in one dwelling) during the recession. Thereafter, they took the economic gains they made in the recovery and invested it in housing. This will be happening in the next few years.

If the subject property were under construction, then this unmet housing demand would turn to this project as a source of housing supply.

VIII. HOUSING DEMAND POTENTIAL & PROJECTION

JOB GROWTH TO HOUSING DEMAND: In the tables below, we describe DBEDT's predictions for wage and salary job creation on Kauai for the next 10-15 years, and derive from that a general expectation for housing demand over the next five to ten years (in other words, we will translate it into housing demand). Note that the model* used here ran from 2007, but was updated in 2009

HOUSING DEMAND, FROM DBEDT'S 2035 JOB FORECAST FOR WAGE & SALARY JOBS

	2007	2015	2020	2025
Total civilian wage and salary jobs	44,077	46,900	49,500	51,900
5 Year Growth		2,823	2,600	2,400
Annual Job Growth		565	520	480
Annual Housing Demand (1.75 Jobs: 1 Home)		332	306	282

*(http://hawaii.gov/dbedt/info/economic/data_reports/2035LongRangeSeries/LRFreport_2035series_revised_Aug09.pdf)

As seen, we use the annual changes in job counts to derive housing demand on the premise that it will take an average of 1.75 new jobs to generate demand for one new house.

However, the job counts used in the charts and tables above are just the number of wage and salary jobholders, and do not encompass the self-employed or home worker. According to DBEDT's projections, self-employed workers consist of about 20% of the total work force, but are growing to 25% in the next ten to twenty years. As such, we want to add this demand for housing into our projections.

The following transforms those projections into annual job growth projections, and then summarizes it in a complete DBEDT projection table.

HOUSING DEMAND, FROM DBEDT'S 2035 JOB FORECAST, SELF-EMPLOYED

	2007	2015	2020	2025
Annual Housing Demand (1.75 Jobs: 1 Home)		332	306	282
Self Employed Housing Demand (15% of total)		33	31	28
Total Annual Housing Demand		365	336	311

Finally, we want to take into consideration offshore demand, relative to housing demand. Studies have shown that this demand varies from a low of 15% on Oahu to a high of 60% on Maui. For Kauai and our purposes here, we use a very conservative factor of 20%. Thus, the total amount of housing demanded in the future should see an increase of another 20%. The following table shows this:

HOUSING DEMAND, FROM DBEDT'S 2035 JOB FORECAST PLUS OFFSHORE DEMAND

	2007	2015	2020	2025
Total Annual Housing Demand		365	336	311
Offshore Buyer Housing Demand (20% of total)		66	61	56
Total Annual Housing Demand		431	397	367

Note that the average number of residential permits taken out in the last five years for the county is 373 units p.a., but the average over the last 2 years (projecting 2011 using YTD numbers through September, is 125 units, p.a.

In sum, housing production in the past has not satisfied housing demand, as driven by job growth, leading to higher priced housing and overcrowding in existing housing.

Looking ahead, this will only continue, as the level of permitting this year has been below what is would house just the recent growth in potential homebuyers.

IX. FORECAST

As seen earlier, the cycle for both the economy and real estate is coming off of a dramatic fall-off in overall activity and in values. Going forward, we believe the markets will right themselves and the county will resume the normal pattern of multi-year periods of both economic growth and job and personal income expansion. In turn, this will lead to housing demand. As seen in the past, the housing market will begin to overheat, manifested by rising housing prices that outrun people's rising incomes. This will lead again to an affordable housing 'crisis' – where demand outstrips supply. A major part of this problem, one of the county's own making, is that there will be limited amounts of land suitable and zoned for housing.

Given this, we believe the development this project will contribute to the satisfaction of housing demand, that has been deep and persistent, from both off-shore and on-island. We also believe that the development will be successful, particularly so in light of the coming up cycle in the housing market. Finally, the historically low level of permitting activity indicates there will little or no competitive interference coming in the short run from other housing development on the island.

The following table describes the potential pricing at the retail level for each product type in the development (note that, in the eventuality that some or all of the house/lot package units are sold as simple home sites, the prices will be lower, as reflected in the final column below).

KAPAA HIGHLANDS PRODUCT SALES PRICE PROJECTION

Housing Produced	Total Units	Retail Price Per Unit	Home Site Only Prices
A House Lot Package, Large Lots (10,000 sf)	36	$800,000-$950,000	$266,000-$316,000
A House Lot Package, Medium Lots (7,500 sf)	50	$650,000-$700,000	$216,000-$233,000
Multi-Family Dwellings (4 Plex, 8 DU/Ac)	500	$250,000-$350,000	
Affordable Housing Dwellings (12 DU/Ac)	183	$125,000-$175,000	

Given that these prices, particularly the affordable ones, are below the historical trend for housing, we expect that sales will start up strongly. We expect them then to hold this momentum over the first three years, coinciding with the market's expansion. Thereafter, they will experience a gradual fall-off, coinciding with the downturn in the cycle. After that, the market will recover, as will sales of the final units.

KAPAA HIGHLANDS PRODUCT CLOSING PROJECTION

Product	2016	2017	2018	2019	2020	2021	2022	2023
Large Lot Homes	11	9	9	7				
Medium Lot Homes	15	15	14	6				
Multi-Family Units	90	100	90	70	50	30	30	40
Affordable Housing Units	40	40	40	35	28			

Exhibit B

Kapa'a Highlands II Sustainability Plan

EXHIBIT "B"

Kapa‘a Highlands II Sustainability Plan

Prepared by:

Ho‘okuleana LLC

… to take responsibility …

25 Kāne‘ohe Bay Drive, Suite 212
Kailua, Hawai‘i 96734
(808) 254-2223 (O‘ahu)
(808) 329-4447 (Big Island)
www.Hookuleana.com
Info@Hookuleana.com

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Kapa'a Highlands II Project Information

Kapa'a Highlands II is a proposed development of a mix of single-family and multi-family residential, market and affordable rate homes. This 163-acre Ocean View "Planned" community is positioned to be the pride of Kapa'a. The development seeks to fill the housing needs of Kapa'a within the Urban Center of the district. Situated in close proximity to schools and commercial areas, Kapa'a Highlands II is proposed to be a sustainable community that preserves the rural character of Kapa'a while meeting its growing housing needs.

Kapa'a Highlands II has received letters of support from the County Mayor, County Planning Department and County Housing Department. Letters of approval have been received from the County Department of Public Works regarding wastewater, State Department of Transportation and the County Water Department.

Project Name:	Kapa'a Highlands Phase II
Location:	Wailua, Kaua'i, Hawai'i
TMK:	(4) 4-3-003:001
Total Area:	163-acres
Existing Use:	Vacant, undeveloped, former sugarcane land
County Zoning:	Agriculture
General Plan Land Use Designation:	Urban Center
State Land Use:	Agricultural
Approvals Required:	LUC Boundary Amendment; County Class IV Zoning & Use Permits; County Council Approval for Zoning Change; Building Permits

Project Components:

Mix of single-family and multi-family residential.
Approximately 69-acres subdivided into:

- 86-single family (lots ranging from 5,000 to 8,000 SqFt.)
  - $180,000.00 to $250,000.00
- 683-multi-family (lots from 1-5 acre parcels)
  - $220,000.00 to $450,000.00
- Totals above include – 167-affordable units on site
  - $189,000.00 to $363,000.00

Open space encompassing 14.3-acres including:

- 3.1-acre park adjacent to Kapa'a Middle School
  - Relocation of County Swimming Pool
- Greenways surrounding development

Commercial Areas totaling 1.4-acres

- Stores, personal services
- Land for police/fire sub-stations

Project Components:

Infrastructure Improvements:

Water:

- Contributions to repairs of Kapa'a Sewer Treatment Plant
- Water Master Plan approved by County Water Department
- Well on site to be dedicated to County Water Department

Transportation:

- Dedication of Kapa'a By-Pass Road to the State
- Complete multi-modal roadway running thru the property
- Bus stops located along roadway
- Bike/Walking path

Aerial Image Overlooking Kapa'a Highlands II Project Area

Kapa'a Highlands II Sustainability Plan

This Kapa'a Highlands II Sustainability Plan is a comprehensive set of goals, strategies and actions focused on improving environmental quality, economic strength and social benefit within the Kapa'a Highlands II project, as well as the broader community.

This Plan serves as a roadmap guiding Kapa'a Highlands II toward a more sustainable future, with implementation of actions through a comprehensive, inclusive stakeholder process.

Before discussing the global context of "sustainability," we explore the Hawaiian view of "' *āina* " – core to the term "sust*aina*bility."

In a traditional Hawaiian context, nature and culture are one and the same; there is no division between the two. The wealth and limitations of the land and ocean resources gave birth to and shaped the Hawaiian worldview. In Hawaiian culture, natural and cultural resources are one and the same.

All forms of the natural environment, from the skies and mountain peaks, to the watered valleys and lava plains, and to the shoreline and ocean depths are believed to be embodiments of Hawaiian gods and deities. (Maly)

'Āina – That Which Sustains the People
(Context, here, primarily provided from writings of Kepa Maly)

The *'āina*, that which feeds, nourishes and sustains life (in English referred to as "land"), *wai* (water), *kai* (ocean), and *lewa* (sky) were the foundation of life and the source of the spiritual relationship between people and their environs. Hawaiian *mo'olelo*, or traditions, express the attachment felt between the Hawaiian people and the earth around them.

In any discussion of Hawaiian land - 'āina, that which sustains the people - and its place in culture, it is also appropriate to briefly discuss traditional Hawaiian land terms, as the terms demonstrate an intimate knowledge of the environment about them. In the Hawaiian mind, all aspects of natural and cultural resources are interrelated. All are culturally significant.

Hawaiian culture revolves around the value of "aloha 'āina" or love of the land. This love is not a passing sentiment, a summer fling or a fair weather affair. It is a deep-seated commitment to the wellbeing of the earth, which sustains us like a parent.

The Hawaiian concept of malama 'āina (literally, caring for or living in harmony with the land,) demands conservation, sustainable use and enhancement of the local, regional and global environment. By simply taking care and respecting the land, it will sustain life. This straightforward relationship has been honored for thousands of years, since the Polynesians followed the stars to the shores of Hawaii.

The traditional land use in the Hawaiian Islands evolved from shifting cultivation into a stable form of agriculture around 1200 AD (Kirch, 2000). Stabilization required a new form of land use. It is widely believed 'Umi a Līloa, the ruler of the Island of Hawai'i, was the first ruler to create the ancient Hawaiian land division, according to a chiefly management system, nearly 600 years ago.

This was the *ahupua'a* land use system, which consisted of vertical landscape segments from the mountains to the near-shore ocean environment, and into the ocean as deep as a person could stand in the water (Isabella Aiona Abbott).

For hundreds of years since, on the death of all *mō'ī* (kings or queens), the new monarch re-divided the land, giving control of it to his or her favorite chiefs. The common people never owned or ruled land.

In the term *ahupua'a*, the words *ahu* (stone altar or stone mound) and *pua'a* (pig) are combined. The *pua'a* was a carved wooden image of a pig head. These stone altars served as border markers and deposition places for offerings to the agricultural god *Lono* and a high chief (*ali'i nui*), who was the god's representative.

Each *ahupua'a* in turn was ruled by a lower chief, or *ali'i 'ai*. He in turn appointed a headman, or *konohiki*. The *konohiki* served as general manager responsible for the use of an *ahupua'a* as a resource system. He in turn was assisted by specialists, or *luna*. For example, the *luna wai* was responsible for the fresh water flow and irrigation system (Kamehameha Schools, 1994).

Manageable parcels of land would typically run *mauka* (upland) to *makai* (toward to ocean) and would be marked with stonewall alignments. Tenants cultivated smaller crops for family consumption, to supply the needs of chiefs and provide tributes.

Kapu (restrictions/prohibitions) were observed as a matter of resource and land management among other things. Access to resources was tied to residency and earned as a result of taking responsibility to steward the environment and supply the needs of *ali'i*. The social structure reinforced land management.

Sustainability – United Nations Context

In 1983, the United Nations Secretary General invited Norwegian Prime Minister Gro Harlem Brundtland to chair a World Commission on Environment and Development. The Report of the Brundtland Commission, Our Common Future, was transmitted to the General Assembly as an Annex to *document A/42/427* - Development and International Co-operation: Environment, in 1987

Chapter 2, "Towards Sustainable Development" of the Brundtland "Our Common Future" defines "sustainable development" as:

> Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:
>
> - the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and
> - the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.
>
> In its broadest sense, the strategy for sustainable development aims to promote harmony among human beings and between humanity and nature.

Sustainability in Hawai'i (Hawai'i 2050)

The following definition, vision and guiding principles are incorporated in the Hawai'i 2050.

Definition:
A Hawai'i that achieves the following:

- Respects the culture, character, beauty and history of our state's island communities
- Strikes a balance between economic, social and community, and environmental priorities
- Meets the needs of the present without compromising the ability of future generations to meet their own needs

Vision:
Living responsibly and within our own means is top-of-mind for all individuals and organizations. We learn about the virtues and values of a sustainable Hawai'i. As a result, our goals of economic prosperity, social and community well-being and environmental stewardship are in balance and achieved.

Hawai'i 2050 Guiding Principles of Sustainability

- Balance economic, social, community and environmental priorities.
- Respect and live within the natural resources and limits of our islands.
- Achieve a diversified and dynamic economy.
- Honor the host culture.
- Make decisions based on meeting the present needs without compromising the needs of future generations.
- Principles of the ahupua'a system guide our resource management decisions.
- Everyone — individuals, families, communities, businesses and government — has a responsibility for achieving a sustainable Hawai'i.

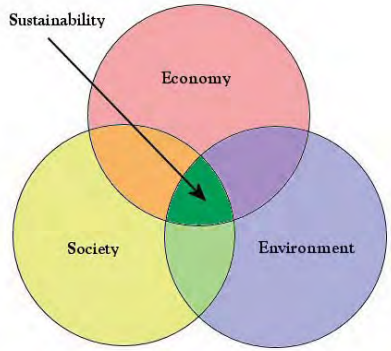
Sustainability in Hawai'i means achieving a quality of life that achieves the following goals:

- It emphasizes respect for the culture, character, beauty and history of our state's island communities.
- It strikes a balance between economic prosperity, social and community well-being, and environmental stewardship.
- It meets the needs of the present community without compromising the ability of future generations to meet their own needs.

Typically, "sustainability" is depicted in a three-themed Venn diagram (noted below,) highlighting the economy, environment and society. The achievement of sustainable development requires integration of these components at all levels.

With respect to Kapa'a Highlands II, sustainable development is achieved when it is:

- economically feasible in order to be successful as a development, while also providing for economic opportunities for future generations who reside, work or visit Kapa'a Highlands II
- protecting and preserving the environment, for today and tomorrow, serving as a model for others to follow
- addressing the needs of a wide variety of people, including their cultural values, as well as providing opportunities for people to interact, grow and learn together



Sustainability is not contradictory to growth, profit and development. Sustainability means that we plan to our limits; sustainable community development draws from and gives back to local strengths, resources and uniqueness. Local development can become more sustainable by having a better environmental, economic and social balance.

Ultimately, a goal is to meld Hawaiian traditional wisdom with modern sustainability concepts and take an integrated approach in the design and operation at Kapa'a Highlands II. This plan was created to highlight the actions of the Kapa'a Highlands II development in terms of sustainability.

In developing this plan, a variety of recognized programs and plans were reviewed, summarized and their recommendations were incorporated into this plan. These include:

- Smart Growth
- SmartCode
- Hawai'i 2050 Sustainability Plan
- OEQC Sustainable Building Design Guidelines
- Hawaii BuiltGreen Program
- US Green Building Council Leadership in Energy and Environmental Design (LEED)
- Energy Star Program
- Whole Building Design Guide (WBDG,) of the National Institute of Building Sciences
- EPA Low Impact Development
- One Planet Living

Further discussion on these programs and plans follow in the next Chapter of this Kapa'a Highlands II Sustainability Plan. Following this are chapters addressing issue-specific sustainability concerns. These include:

- **Natural and Cultural Resources:** Protecting and preserving archaeological sites, trails and dryland forest, for present and future generations
- **Land Use:** Focuses on consistency with local land use planning, fulfilling the community's vision for development in the future
- **Design Features:** Incorporating design features to fit development into natural features, protecting the resources, while taking advantage of natural elements
- **Transportation:** Focuses on sustainable modes of transportation and an improved infrastructure including: multi-modal bicycle, pedestrian and vehicular infrastructure, complete streets, etc
- **Economic Opportunities:** Encourages a vibrant economy through diversity of employment and sustainable business opportunities
- **Open Space and Parks:** Encourages protection of urban open spaces by focusing on the urban landscaping, green spaces and mixed-use development and recreational opportunities
- **Water Management**: Focuses on reducing and conserving water use, as well as minimizing impacts to nearby ecosystems from source to stormwater systems
- **Energy Management:** Encourages energy conservation, energy efficiency and renewable energy
- **Health:** Encourages healthy lifestyles through places to walk and recreate, as well as provide state of the art medical facilities to address community needs
- **Education:** Encourages understanding and practice of sustainable lifestyles, as well as providing opportunities for life-long learning
- **Housing:** Responds to the market and demographic trends and community needs, providing a broad range of housing types and price points

Anticipated beneficial impacts from the Kapa'a Highlands II project include the following:

- Provision of 86 single family homes and 683 multi-family units
- Increased housing choices, including affordable housing
- Increase housing inventory to meet future demands
- Provision of 3.1-acre park with area for relocation of Kapa 'a County swimming pool
- Planned growth in an area designated for urban growth by the General Plan of the County of Kaua'i
- Provision of a pedestrian and transit-friendly community

Kapa'a Highlands II will be a sustainable community and will incorporate the following:

Sustainability Programs and Plans: Kapa'a Highlands will incorporate the core principles of the various sustainability programs and plans.

Natural and Cultural Resources: No archaeological sites are known to exist on the property. Should any archaeologically significant artifacts, bones, or other indicators be uncovered during construction, Kapa'a Highlands II is committed to strict compliance with State laws and rules.

Land Use: Kapa'a Highlands is consistent with local land use plans including the General Plan of the County of Kaua'i, the Kapa'a Town Development Plan and the Kapa'a-Wailua Basin Community Plan.

Design Features: Kapa'a Highlands II will include sustainable design features including strategies to reduce solar heat gain through roofs, walls and windows; using site planning and landscaping to improve natural ventilation; daylighting design; and energy efficient light fixtures.

Transportation: Kapa'a Highlands II will incorporate bus stops into its road system; multi-modal interconnected roads; and complete streets design.

Economic Opportunities: Kapa'a Highlands proposes two areas for commercial uses which will provide a variety of job opportunities; construction and construction-related employment will have direct beneficial impact on the local economy during construction.

Open Space and Parks: Kapa'a Highlands II proposes open space and open greenway areas encompassing 14.3-acres including a 3.1-acre park for the proposed relocation of the Kapa'a county swimming pool.

Water Management: Kapa'a Highlands II will install water efficient fixtures, appliances and high efficiency toilets to reduce indoor water use.

Energy Management: Kapa'a Highlands II will incorporate energy conservation and efficiency measures; solar energy for water heating; encourage photovoltaic systems and other renewable energy sources.

Health: Kapa'a Highlands II's layout and design will create an opportunity for both residents and the community to have a positive effect on their health through walkable and bikable transportation options.

Education: Kapa'a Highlands II will coordinate with the DOE to ensure that the facility assessment policy is addressed. In addition, a 3.1-acre park will be included in the plan and the Kapa'a county swimming pool will be relocated within the park.

Housing: Kapa'a Highlands II conforms to the Kaua'i County Affordable Housing Ordinance No. 860 and offers a variety of housing types that will address a portion of the housing needs of the island.

Social: Kapa'a Highlands II promotes social sustainability through socially-focused actions that will support quality of life, sense of place and community livability for all residents and the community.

Sustainability Programs and Plans

In developing this Kapa'a Highlands II Sustainability Plan, a variety of recognized sustainability programs and plans were reviewed, summarized and incorporated into this plan. In part, the recommendations from these programs and plans serve as guides to the sustainability actions noted in this Plan.
These include:

- Smart Growth
- SmartCode
- Hawai'i 2050 Sustainability Plan (Hawai'i 2050)
- OEQC Sustainable Building Design Guidelines
- Hawaii BuiltGreen Program
- US Green Building Council Leadership in Energy and Environmental Design (LEED)
- ENERGY STAR Program
- Whole Building Design Guide (WBDG,) of the National Institute of Building Sciences
- EPA Low Impact Development
- One Planet Living
- Complete Streets

In this chapter, these various programs and plans are summarized.

As you will see, there are several consistent principles and themes that run through the various programs and plans. While some are broad-based and include several of these, others are focused on single issues.

Following are some of the consistent messages found in these programs and plans:

- Soft touch on the land
- Respect and protection of natural and cultural resources
- Use of natural elements (shading, ventilation, lighting, etc)
- Diversity of land uses, housing types, prices
- Live, work, play, shop and learn
- Walking, bicycle and transit transportation focused
- Reuse and minimization of waste
- Renewable and efficient electric
- People and community focused

Kapa'a Highlands II will implement, to the extent feasible and practicable, measures to promote energy conservation, sustainable design, environmental stewardship and protection of the natural and cultural resources into the project. These actions are in part, based on the recommendations noted in the following sustainability programs and plans.

Smart Growth Network

In 1996, the U.S. Environmental Protection Agency joined with several non-profit and government organizations to form the Smart Growth Network. The Network was formed in response to increasing community concerns about the need for new ways to grow that boost the economy, protect the environment, and enhance community vitality.

Smart growth refers to the management of growth to make it possible "for communities to grow in ways that support economic development and jobs; create strong neighborhood with a range of housing, commercial, and transportation options; and achieve healthy communities that provide families with a clean environment." (Smart Growth Network)

There are 10 accepted principles that define Smart Growth

1. Mix land uses
2. Take advantage of compact building design
3. Create a range of housing opportunities and choices
4. Create walkable neighborhoods
5. Foster distinctive, attractive communities with a strong sense of place
6. Preserve open space, farmland, natural beauty, and critical environmental areas
7. Strengthen and direct development towards existing communities
8. Provide a variety of transportation choices
9. Make development decisions predictable, fair, and cost effective
10. Encourage community and stakeholder collaboration in development decisions

SmartCode

The SmartCode is a form-based code that incorporates Smart Growth and New Urbanism principles. It is a unified development ordinance, addressing development at all scales of design, from regional planning on down to the building signage.

The SmartCode is also a transect-based code. A "transect" is usually seen as a continuous cross-section of natural habitats for plants and animals, ranging from shorelines to wetlands to uplands. It is based on the rural-to-urban transect rather than separated-use zoning, thereby able to integrate a full range of environmental techniques.

The SmartCode is a model transect-based planning and zoning document based on environmental analysis. It addresses all scales of planning, from the region to the community to the block and building. The SmartCode is distributed by the nonprofit Center for Applied Transect Studies (CATS.)

Kapa'a Highlands II has incorporated the SmartCode principles and transects into its layout and design.

Hawai'i 2050 Sustainability Plan (Hawai'i 2050)

The Hawai'i State Plan, embodied in Chapter 226, Hawai'i Revised Statutes (HRS), serves as a guide for goals, objectives, policies, and priorities for the State.

The Hawaii State Planning Act (HRS 226) states that the State shall strive to improve the quality of life for Hawaii's present and future population through the pursuit of desirable courses of action in six major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, quality education and principles of sustainability.

In 2005, the legislature authorized the creations of a task force to review the Hawaii state plan and the State's planning process and to prepare the Hawai'i 2050 Plan. The creation of the Hawaii 2050 sustainability plan raises questions about the long-term limits of growth in the State and highlights the need to begin planning and acting to assure Hawaii's future. Thus, the objectives of the Hawaii 2050 sustainability plan focuses on the revitalization of the State's long-term planning process to better guide the future development of Hawaii.

The Plan offers detailed strategic actions and indicators to serve as a guide towards meeting the Plan's sustainability goals. The Plan incorporates tangible targets and benchmarks. Priority actions for 2020, to be addressed immediately, include:

1. Increase affordable housing opportunities for households up to 140% of median income.
2. Strengthen public education.
3. Reduce reliance on fossil (carbon-based) fuels.
4. Increase recycling, reuse and waste reduction strategies.
5. Develop a more diverse and resilient economy.
6. Create a sustainability ethic.
7. Increase production and consumption of local foods and products, particularly agriculture.
8. Provide access to long-term care and elderly housing.
9. Preserve and perpetuate our Kanaka Maoli and island cultural values.

In 2011, the State established sustainability as a state priority by incorporating the Hawaii 2050 sustainability plan definitions, guiding principles and goals, into chapter 226, Hawaii Revised Statutes (the Hawaii state planning act).

"Sustainability" definition was added to the Planning Act as: "achieving the following:

(1) Respect of the culture, character, beauty, and history of the State's island communities;
(2) Striking a balance between economic, social, community, and environmental priorities; and
(3) Meeting the needs of the present without compromising the ability of future generations to meet their own needs."

The Act also added "principles of sustainability" as one of the six major areas of statewide concern which merit priority attention, economic development, population growth and land resource management, affordable housing, crime and criminal justice, quality education and principles of sustainability."

OEQC's Sustainable Building Design Guidelines

The Environmental Council, as part of a "Planner's Checklist," adopted Guidelines for Sustainable Building Design in Hawai`i (October 13, 1999.) These guidelines do not constitute rules or law. A sustainable building is built to minimize energy use, expense, waste and impact on the environment. It seeks to improve the region's sustainability by meeting the needs of Hawai`i's residents and visitors today without compromising the needs of future generations. Compared to conventional projects, a resource-efficient building project will:

1. Use less energy for operation and maintenance
2. Contain less *embodied* energy (i.e. locally produced building products often contain less *embodied* energy than imported products because they require less energy-consuming transportation.)
3. Protect the environment by preserving/conserving water and other natural resources and by minimizing impact on the site and ecosystems
4. Minimize health risks to those who construct, maintain and occupy the building
5. Minimize construction waste
6. Recycle and reuse generated construction wastes
7. Use resource-efficient building materials (e.g. materials with recycled content and low embodied energy, and materials that are recyclable, renewable, environmentally benign, non-toxic, low VOC (Volatile Organic Compound) emitting, durable, and that give high life cycle value for the cost.)
8. Provide the highest quality product practical at competitive (affordable) first and life cycle costs.

In the design and construction of Kapa'a Highlands II, Three Stooges, LLC will seek to implement feasible measures to conform to these general guidelines.

Hawaii BuiltGreen Program

The Hawaii BuiltGreen Program is a statewide program to "incentivize" the designing and building of energy and resource efficient homes in Hawaii. Originally developed in 2000 by a public/private partnership between the State Dept. of Business, Economic Development & Tourism (DBEDT), USDOE and five other partners. Now promoted by the State, BIA, Hawaii utility companies and other organizations.

Hawai'i BuiltGreen is a self-certification program administered by the Building Industry Association of Hawai'i, which is a professional trade organization affiliated with the National Association of Home Builders. This is a local initiative based on homegrown knowledge of professionals familiar with the unique conditions of Hawaii. The Hawaii BuiltGreen program focuses on design choices through:

- Protecting Site Features and Functions
- Energy Performance and Comfort
- Health and Indoor Air Quality
- Durability and Materials Conservation
- Environmentally-Friendly Home Operations

US Green Building Council
Leadership in Energy and Environmental Design (LEED)

The US Green Building Council's Leadership in Energy and Environmental Design (LEED) program is a voluntary green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO_2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

Specific LEED programs include:

- Homes
- Neighborhood Development
- New Commercial Construction and Major Renovation projects
- Existing Building Operations and Maintenance
- Commercial Interiors projects

LEED for Homes is a voluntary rating system that promotes the design and construction of high performance "green" homes. A green home uses less energy, water and natural resources; creates less waste; and is healthier and more comfortable for the occupants.

LEED for Neighborhood Development is a collaboration between the U.S. Green Building Council, the Congress for the New Urbanism and the Natural Resources Defense Council. The LEED for Neighborhood Development Rating System integrates the principles of smart growth and green building into the first national standard for neighborhood design. LEED for Neighborhood Development recognizes development projects that successfully protect and enhance the overall health, natural environment and quality of life of our communities. The rating system encourages urban smart growth best practices, promoting the design of neighborhoods that reduce vehicle miles traveled and communities where jobs and services are accessible by foot or public transit.

ENERGY STAR Program

ENERGY STAR is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy.

In 1992, the US Environmental Protection Agency (EPA) introduced ENERGY STAR as a voluntary labeling program designed to identify and promote energy-efficient products to reduce greenhouse gas emissions. Computers and monitors were the first labeled products. Through 1995, EPA expanded the label to additional office equipment products and residential heating and cooling equipment. In 1996, EPA partnered with the US Department of Energy for particular product categories.

The ENERGY STAR label is now on major appliances, office equipment, lighting, home electronics, and more. EPA has also extended the label to cover new homes and commercial and industrial buildings.

National Institute of Building Sciences
Whole Building Design Guide (WBDG)

The goal of 'Whole Building' Design is to create a successful high-performance building by applying an integrated design and team approach to the project during the planning and programming phases. The WBDG program is a collaborative effort among federal agencies, private sector companies, non-profit organizations and educational institutions. In buildings, to achieve a truly successful holistic project, these design objectives must be considered in concert with each other:

- Accessible: to address the specific needs of disabled people.
- Aesthetics: the physical appearance and image of building elements and spaces
- Cost-Effective: weighing options during concepts, design development and value engineering
- Functional/Operational: spatial needs and requirements, system performance durability and efficiency
- Historic Preservation: whereby building elements and strategies are classifiable into preservation, rehabilitation, restoration or reconstruction.
- Productive: physical and psychological comfort—including air distribution, lighting, workspaces, systems, and technology.
- Secure/Safe: physical protection of occupants and assets from man-made and natural hazards.
- Sustainable: Pertains to environmental performance of building elements and strategies.

Land Use and Development Practices - Low Impact Development (LID)

Land use practices can improve air quality, reduce stormwater runoff, increase energy efficiency and reduce greenhouse emissions to improve the quality of life for citizens. LID is a land development approach that allows land to be developed but in a manner that helps lessen potential environmental impacts. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat stormwater as a resource rather than a waste product.

By implementing LID principles and practices, water can be managed in a way that reduces the impact of built areas and promotes the natural movement of water within an ecosystem or watershed. LID has been characterized as a sustainable stormwater practice by the Water Environment Research Foundation and others.

In general, implementing integrated LID practices can result in enhanced environmental performance while at the same time reducing development costs when compared to traditional stormwater management approaches. LID techniques promote the use of natural systems, which can effectively remove nutrients, pathogens and metals from stormwater.

Conservation designs can be used to minimize the generation of runoff by preserving open space. Examples of Conservation Design include:

- Cluster development
- Open space preservation
- Reduced pavement widths (streets, sidewalks)
- Shared driveways

One Planet Living

One Planet Living is a vision of a sustainable world, in which people everywhere can enjoy a high quality of life within the productive capacity of the planet, with space left for wildlife and wilderness. Organizations around the world are using the one planet living approach to take measurable steps towards genuine sustainability. From zero carbon buildings to procurement policies that support the green economy, one planet living solutions are cost-effective, creative, inspirational and replicable.

- Zero Carbon - Making buildings more energy efficient and delivering all energy with renewable technologies
- Zero Waste - Reducing waste, reusing where possible, and ultimately sending zero waste to landfill
- Sustainable Transport - Encouraging low carbon modes of transport to reduce emissions, reducing the need to travel
- Sustainable Materials - Using sustainable and healthy products, such as those with low embodied energy, sourced locally, made from renewable or waste resources
- Local and Sustainable Food - Choosing low impact, local, seasonal and organic diets and reducing food waste
- Sustainable Water - Using water more efficiently in buildings and in the products we buy; tackling local flooding and water course pollution
- Land and Wildlife - Protecting and restoring existing biodiversity and natural habitats through appropriate land use and integration into the built environment
- Culture and Heritage - Reviving local identity and wisdom; supporting and participating in the arts
- Equity and Local Economy - Creating bioregional economies that support fair employment, inclusive communities and international fair trade
- Health and Happiness - Encouraging active, sociable, meaningful lives to promote good health and well being

Complete Streets

Complete Streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a complete street. Complete Streets make it easy to cross the street, walk to shops and bicycle to work. They allow buses to run on time and make it safe for people to walk to and from train stations.

By adopting a Complete Streets policy, communities direct their transportation planners and engineers to routinely design and operate the entire right of way to enable safe access for all users, regardless of age, ability or mode of transportation. This means that every transportation project will make the street network better and safer for drivers, transit users, pedestrians and bicyclists – making your town a better place to live.

Natural and Cultural Resources

The preservation of the natural and cultural resources is essential for a prosperous and sustainable future. Kapa'a Highlands II holds respect for the culture and the environment and will interlink natural features and cultural features as core components of the community. Archaeological and cultural sites will be protected and maintained with appropriate treatment and buffers from adjacent uses, as necessary.

No archaeological or cultural historic sites are known to exist on the property.

Brief discussions separately with historians of the subject area, Randy Wichman, Walter Smith and Albert Fukushima, concluded that the subject property has been in sugar cultivation since the 1800s until the early 1990s.

Albert Fukushima, who was employed by Lihue Plantation and worked in the subject area, said that no evidence of artifacts, bones, or other indicators of previous historic on-site activity were uncovered during the cultivation of sugar. Randy Wichman and Walter Smith concurred that the subject land was consistently cultivated for sugar for nearly a hundred years.

In 1995 SHPD stated for the "Site Selection EIS" for the adjacent Kapa'a Middle School that the site may not be Archaeological or Historically rich because of the consistent cultivation of sugar for nearly a hundred years.

In the late 1999, the State Historic Preservation Division (SHPD) issued a letter of "no significance" to the potential developer at that time.

There exists sparingly, evidence of inactive sugar irrigation ditches. Nearly all have lost their banks and flattened out. Currently, SHPD has requested that the applicant record the locations of the remaining remnants of the former irrigation ditches prior to the development stages. The Applicant is committed to conducting and Archaeological Inventory Survey at the time of design and development phase in order to properly record the remains of the plantation irrigation ditches.

Should any archaeologically significant artifacts, bones, or other indicators of previous historic on-site activity be uncovered during construction, the Applicant is committed to their treatment being conducted in strict compliance with the requirements of SHPD.

Additionally, whenever existing rock walls must be removed, the rocks from these walls will be set aside and reused in the construction of new screen, buffer and retaining walls built within Kapa'a Highlands II. Whenever feasible, rocks from Kapa'a Highlands II will be used for such walls (minimize importation of rock from offsite).

Greenbelts

Greenbelts are undeveloped areas that surround the developed areas. Greenbelt is a strategic planning tool to prevent urban sprawl by keeping land permanently open. The purpose of the Greenbelt is to prevent urban sprawl, prevent neighboring towns from merging into one another, and to preserve the setting and the character of the area. Approximately 14.3-acres are proposed for open greenway areas.

Consistency with Regional Land Use Planning

Consistency with local land use planning documents is an essential element of sustainability. The local plans articulate and illustrate the community's vision. Without consistency with that vision, a development project cannot be sustainable.

Two primary planning documents address land use development in Kapa'a, the General Plan of the County of Kaua'i and the Kapa'a-Wailua Basin Community Plan. Following are brief summaries of each.

The General Plan of the County of Kaua'i (General Plan)

The General Plan of the County of Kauai ("General Plan") was adopted in 1971 and updated in November 2000. The General Plan is a statement of the County's vision for Kaua'i and establishes strategies for achieving that vision. Section 7-1.2 of the amended Chapter 7 of the Kauai County Code states:

Pursuant to the provision of the Charter for the County of Kaua'i, the General Plan sets forth in graphics and text, policies to govern the future physical development of the county. The General Plan is intended to improve the physical environment of the County and the health, safety and general welfare of Kaua'i's people.

The General Plan states the County's vision for Kaua'i and establishes strategies for achieving that vision. The strategies are expressed in terms of policies and implementing actions. They may be augmented and changed as new strategies are developed.

The General Plan is a direction-setting policy document. It is not intended to be regulatory. It is intended to be a guide for future amendments to the lands regulations and to be considered in reviewing specific zoning amendment and development applications.

The vision, the maps and text policies, and the implementing actions are intended to guide the county actions and decisions. In addition, the maps and text policies are intended to guide the County in specific types of actions: making revisions to land use and land development Regulations; deciding on zoning changes; preparing and adopting Development Plans and Public Facility Plans; and preparing and adopting capital improvement plans.

The General Plan contains six major themes, each with various policies for implementation. The major themes are as follows:

1. Caring for Land, Water and Culture
2. Developing Jobs and Businesses
3. Preserving Kaua'i's Rural Character
4. Enhancing Towns & Communities and Providing for Growth
5. Building Public Facilities and Services
6. Improving Housing, Parks and Schools

In particular, the proposed reclassification of the Property responds and conforms to Theme No. 6. Market studies have shown that the population growth and correlating need and demand for housing is extremely high on Kaua'i.

The proposed reclassification, which will allow residents to purchase an affordable house and lot as well as allow other residents to purchase a lot to design and build their own homes, will present an opportunity to address the critical community need for residential housing. It should also be noted that the proposed development will assist in maintaining a viable economy as construction-related employment opportunities for residents would be generated.

Kapa'a-Wailua Basin Community Plan

The Kapa'a-Wailua Basin community plan outlines the regional issues and opportunities that will be subjects for future community planning. A "Build-Out Analysis" of the Kapa'a-Wailua Basin was prepared in the General Plan Update. As of 1998, this area had an estimated 4,700 dwelling units, making it the largest residential community on Kauai.

Based on the General Plan Land Use Map designations, the analysis found that an additional 4,000 units could be developed if the General Plan-designated lands were fully zoned, subdivided and built out. About 2,400 more units could be built in Urban Residential areas, about 500 more in Rural Residential areas and approximately 1,100 more units in the Agricultural areas. This would increase the housing units and population of the area by 85%.

The "Build-Out Analysis" specifically included the subject property as an "expansion area". The new General Plan Land Use Map designates the subject property as Urban Center.

The Kapa'a Highlands II project conforms to and implements the policies of the Kaua'i General Plan by developing within the designated Urban District, contiguous to Kapa'a town and its neighboring residential community.

Sustainable Design Features

Thoughtful planning of site, neighborhood and improvements design, incorporating mixed-use land uses, walkable streets, encouraging walking, bicycling and public transportation, and respect for the natural and cultural features creates opportunities for more environmentally-responsible and sustainable development. These sustainable neighborhoods are beneficial to the community, the individual and the environment.

Several sustainability programs and plans (noted previously in Chapter 2) identify and address a wide variety of design features that may be incorporated into a development project to enhance its sustainability. These items design features include:

- **Site Planning**
  - Respect for the Land – Work with topography
  - Siting - Proximity to mass transit, shopping, employment centers, recreation, schools
  - Interconnectivity – Connection with neighbors, Multi-modal transportation (to be discussed in another section of this Plan)
  - Intensity of Layout – Village Center; Clustering into compact villages
  - Natural/Cultural Resources – Protection of natural and cultural resources (to be addressed in another section of this Plan)

- **Improvements Planning**
  - Alternatives – Provide a range of housing options at various price levels (to be discussed in another section of this Plan)
  - Orientation – Ventilation; Take advantage of natural air flow
  - Shading – Eve overhang; Vegetation
  - Landscaping – Native plants; Low irrigation
  - Energy Efficiency – (to be discussed in another section of this Plan)

The objectives of Kapa'a Highlands II are to create an attractive masterplanned residential community with a variety of housing opportunities and mixed uses, as well as recreational resources.

<u>Site Planning</u>

As a mixed-use community, the objectives of Kapa'a Highlands II are to:

- Create a diverse, sustained community of mixed uses, including residential, retail and commercial spaces, recreational spaces, and open space.
- Cultivate intrinsic respect for the land and natural surroundings, develop an inherent Hawaiian sense of place and nourish a sustaining living environment.
- Provide housing for the working families of Hawai'i nearby areas of workforce demand, resultantly improving overall quality of life through the reduction of commuting and facilitation of everyday function.
- Openly embrace a diversity of people and activities through offering mixed uses and housing types.
- Contribute to the social fabric of the community by providing infrastructure and facilities, and by including recreational, and civic sites.
- Engender and incorporate intelligent, planned sustainability by design.
- Emphasize non-vehicular transit for mainstream community-wide travel.

Kapa'a Highlands II is strategically located north of Kapa'a town. The Kapa'a By-Pass Road separates the Kapa'a town and the Kapa'a Highlands II development. Kapa'a Highlands II is on the north-west corner of the Kapa'a By-Pass Road and Olohena Road. Olohena Road runs along and adjacent to the east and north boundaries of the Property. The Kapa'a Middle School is located on the northern end of the Property fronted by Olohena Road. The area also has a long-standing and growing residential base.

This area will continue to be the focus of such development as the Island's population grows. This region is also the near commercial and industrial heart of Kaua'i, serving the needs of the visitor, residents and other industries of the western half of the Island.

Kapa'a Highlands II is a compact, mixed-use, master-planned community offering a wide range of housing types and affordability, and a variety of businesses and employment opportunities with supporting retail, commercial, infrastructure, recreational and open space uses.

The Project proposes to develop Phase II of Kapa'a Highlands into an approximately 97-acre single-family and multi-family residential subdivision. Approximately 69-acres will be subdivided into single family lots ranging from 5,000 to 8,000 square feet and multi-family lots from 1-acre to 5-acre parcels. A total of 683 multi-family units and 86 single family units are planned. Open space encompassing 14.3-acres will be developed and associated infrastructure (e.g., new roadways, utilities, drainage, wastewater). Affordable housing will be provided in accordance with County of Kaua`i requirements.

A 3.1-acre park is proposed adjacent to the existing Kapa'a Middle School. The park will have an area for the county's proposed relocation of the Kapa'a county swimming pool. A 0.4-acre parcel is proposed for commercial use. A country type store and small personal service types of use are anticipated. A remnant parcel of a one acre on the Makai side of the Kapa a Bypass road is also proposed as commercial use or for sub-stations for the police and fire departments. Approximately 14.3-acres are proposed for open greenway areas.

The site is presently fallow, undeveloped, and predominantly vegetated with weeds. The undesirable dumping of old cars, appliances, rubbish associated with undeveloped lands continue to exist on the property. The proposed project will increase the productive use of the property and significantly upgrade the immediate vicinity.

The proposed development will have minimal impact in terms of agriculture. Although the Property was previously used as part of large scale agricultural activities, it is presently fallow, and undeveloped. With the closing of the sugar plantations on Kaua'i, close proximity to existing residential areas, and demand for affordable housing, large-scale agricultural operations were not deemed feasible.

Construction of the proposed development will involve grading, excavation and trenching of presently undeveloped areas within the project site. The project will require alteration of existing landforms to create more efficient land development areas. Appropriate engineering, design and construction measures will be undertaken to minimize potential erosion of soils during construction.

On-Site grading and infrastructure improvements and residential construction will result in an increase in dust, storm run-offs and noise. The prevailing trade wind pattern is from the north-east directions. Potential airborne matters will generally be carried in the south-west direction, away from the school and existing residential areas. However, on occasions, the westerly winds may carry the potential

airborne matters towards the school and existing residential neighborhoods. Construction noise relating to infrastructure installations will be expected.

In the short term, during construction, measures will be taken to minimize impacts such as increased dust, noise and traffic. Construction activities shall comply with the provisions of Hawaii Administrative Rules, S-11-60.11.33 on Fugitive Dust. Dust preventive measures will include;

- Planning of construction phases to minimize the amount of dust generating materials and activities, centralizing on-site vehicular traffic routes and locating of potential dust-generating equipment in areas of the least impact.
- Provide adequate water source at the site prior to start of construction.
- Landscape and provide rapid covering of bare areas developed during construction.
- Minimize dust from shoulders and access roads.
- Provide dust control measures during weekends, after hours, and prior to daily construction.
- Control dust from debris being hauled away from the site.

A national Pollutant Discharge Elimination System (NPDES) general permit will be acquired prior to construction to minimize storm run-offs during construction.

Mitigation measures will be instituted following site-specific assessments, incorporating structural and non-structural BMPs such as minimizing soil exposure and implementing erosion control measures such as silt fences and sediment basins. Following construction, erosion is anticipated to decrease since the soils will have been graded, built over, paved over or landscaped. Landscaping in turn will provide erosion control. Mass grading of the development areas will be in compliance with the County of Kaua'i's grading ordinance requirements and will require NPDES permit from the State DOH for storm water construction activities, including BMPs to minimize off-site impacts.

The Property is encompassed by the Kapa'a By-Pass Road to the south and Olohena Road to the east and the north side. The by-pass road is owned by the Applicant and the Applicant intends to dedicate said road to the Department of Transportation (DOT) for continued public use.

There is a round-about located at the south east corner of Olohena Road and the Kapa'a By-Pass Road. Kuhio Highway is accessible from the Property by driving south on Olohena and Kukui Street approximately 0.5 mile. The project will have a complete multi-modal roadway from the Kapa'a By-Pass Road running north through the Property to Olohena Road. A couple of bus stops will be located along the roadway. A bike/walking path is proposed from the south of the property to the Kapa'a Middle School located on the North portion of the Property.

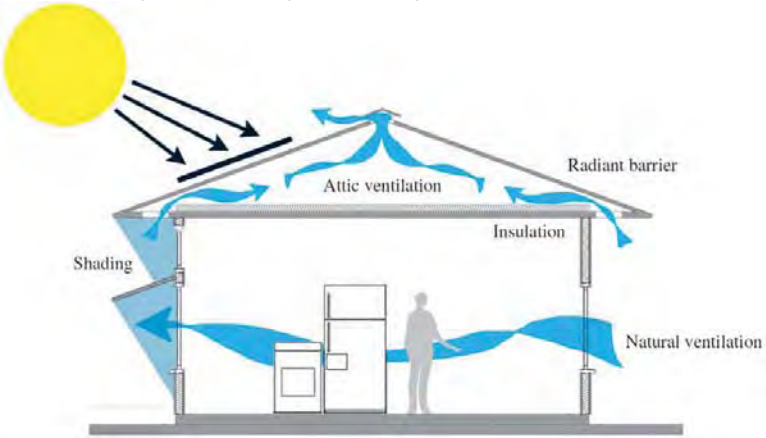
Improvements Planning

There are three major sources of unwanted heat in homes: direct solar impacts on a building and through windows and skylights; heat transfer and infiltration, of exterior high temperatures, through the materials and elements of the structure; and the internal heat produced by appliances, equipment and inhabitants.

The DBEDT Field Guide for Energy Performance, Comfort and Value in Hawaii Homes provides a number of recommended ways to incorporate effective design options to address home temperatures. These items to be considered in the development of Kapa'a Highlands II are summarized and illustrated below:

Design for Comfort and Value

A. Control Heat Gain: Use strategies to reduce solar heat gain through roofs, walls and windows.
   1. Orient and arrange building to control heat gain
   2. Landscape and design outdoor surfaces to reduce air temperatures and glare; minimize paving area and use grassed and planted areas to provide lowered site temperatures, shade and evaporative cooling
   3. Shade roofs, walls and windows with:
      a. Architectural elements such as eaves, awnings and carports, and
      b. Window treatments such as blinds and shutters
   4. Use insulation and/or radiant heat barriers in roofs and walls exposed to the sun
   5. Use high performance windows (Low-e, spectrally selective, or tinted glazing) to keep solar heat out of interior spaces while admitting daylight
   6. Use light colored roofing and wall finishes
   7. Shade or insulate materials with high thermal mass, such as concrete floors, to avoid heat build-up and uncomfortably hot surface temperatures



B. Use Natural Ventilation: Provide ample fresh air ventilation for living spaces and areas where hot air and humidity accumulate, such as attics, high ceiling spaces, kitchens, bathrooms and laundry areas.
   1. Orient buildings to maximize the cooling potential of prevailing winds and minimize morning and afternoon heat gain
   2. Design floor plans and opening placement and type to provide effective cross ventilation with good air circulation throughout room areas and at body level
   3. Provide generous screened openings well protected from the rain

   4. Use architectural design elements such as vents and casement windows to improve interior air circulation
   5. Enhance natural ventilation with fans as needed:
      a. Use ceiling and whole house fans to provide comfort on warm, humid or still days
      b. Use solar powered attic vent fans when appropriate and economically feasible

Shaded areas stay cooler

Consistent with the principles and recommendations noted in the DBEDT publication *Hawai'i Homeowner's Guide to Energy, Comfort & Value*, to the extent feasible and practical, Kapa'a Highlands II will incorporate the following:

Site Planning and Landscaping

Orientation of homes is important. Try to minimize the area of east- and west-facing walls and windows because they are difficult to shade from the sun.

Landscaping and the design of outdoor surfaces can reduce air temperatures and glare. Landscaping minimizes paving area provides lowered site temperatures, shade and evaporative cooling.

Low impact landscaping. Selection and distribution of plants must be carefully planned when designing a functional landscape. Aesthetics are a primary concern, but it is also important to consider long-term maintenance goals to reduce inputs of labor, water, and chemicals. Properly preparing soils and selecting species adapted to the microclimates of a site greatly increases the success of plant establishment and growth, thereby stabilizing soils and allowing for biological uptake of pollutants. Dense, healthy plant growth offers such benefits as pest resistance (reducing the need for pesticides) and improved soil infiltration from root growth. Low impact landscaping can thus reduce impervious surfaces, improve infiltration potential and improve the aesthetic quality of the site.

Protect and retain existing landscaping and natural features. Select plants that have low water and pesticide needs, and generate minimum plant trimmings. Use compost and mulches. This will save water and time.

Examples of Low Impact Landscaping

- Planting native, drought tolerant plants
- Converting turf areas to shrubs and trees
- Reforestation
- Encouraging longer grass length
- Planting wildflower meadows rather than turf along medians and in open space

Control Heat Gain

By using strategies to reduce solar heat gain through roofs, walls and windows, a house can stay cool. Roofs, walls, windows and outdoor flooring can be shaded with architectural elements such as eaves, awnings and carports, and shutters.

Walls

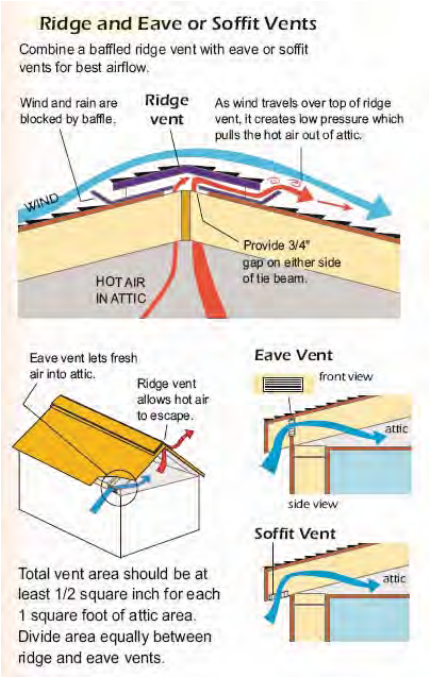
Unshaded walls can get very hot and make your home uncomfortable. The best "cool wall" strategy is shading with overhanging eaves, lanais, or landscaping. If complete shade isn't feasible, use insulation or radiant barriers in the exposed walls. Use a white exterior finish to improve cool wall performance.

Windows

The use of high performance windows (Low-e, spectrally selective, or tinted glazing) helps keep solar heat out of interior spaces while admitting daylight. Overhangs, awning and trees can keep the sun from striking windows directly.

Roofs and Roofing Material

A cool roof is essential for a comfortable home. Insulation keeps roofs and homes cool by blocking heat on the roof thus, the attic, the ceiling and the rest of the house stay cool and comfortable. Installing a white roof will keep a home cooler.



Ventilation is another tool for keeping homes cool. For houses with attics good ventilation is recommended. Ridge and Eave or Soffit Vents work as well. If a ridge vent is not feasible, use a solar powered vent fan in combination with eave or soffit vents, to push warm air out of the house and attic.

Solar Water Heating

Minimizing the energy required for water heating is the most important energy saving step for a Hawaii home. Conventional water heating is a big expense and accounts for about 40% of the utility bill in a Hawaii house.

Hawaii was the first state in the nation to require solar water heaters in new home construction. Act 204 SLH 2008, requires all building permits for single-family homes issued after Jan. 1, 2010, to include solar water heaters. Exceptions are allowed where homes have poor sunlight; if it is cost-prohibitive after 15 years; when the dwelling has a substitute renewable energy source; or if there is an approved tankless water heater and another appliance, both powered by gas.

Additionally insulating hot water supply lines and pipes with at least ½" foam or 1" fiberglass insulation and setting heater thermostats adjustable for 120F or less, can add additional energy savings to a homeowner.

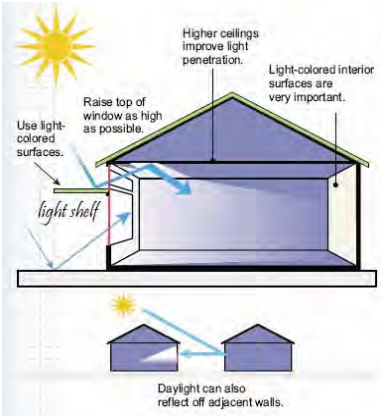
Photovoltaic systems

Alternative energy sources such as photovoltaics and fuel cells that are now available in new products and applications will be available as a house feature option. Renewable energy sources provide a great symbol of emerging technologies for the future.

Lighting

Energy Efficient Light Design

Energy efficient light design features help minimize electric lighting energy demand and heat gain. An efficient lighting system uses fluorescent lamps as the primary light source and may selectively use incandescent (also halogen, a type of incandescent) for accent lighting and for applications where the light is usually off (like exterior lights on motion sensor controls). Modern fluorescent lighting can provide excellent color rendering and be free of flicker and hum. Additionally, start up is nearly instantaneous with electronic instant-start and rapid-start ballasts. Fluorescent lamps last 10 to 20 times longer than incandescents, saving energy all the while, so the lifetime cost is much lower and fluorescent lights do not emit as much heat as incandescents.

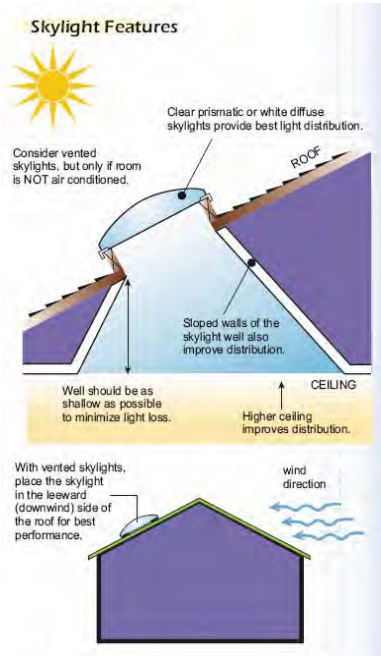


Providing controls such as timers, dimmers, sensors and separate fan/light controls to limit power use to the times and levels needed, also helps reduce lighting power consumption.

The use of solar powered landscape lighting when economically feasible is another energy saving design feature which can be used for both residential homes as well as business and civic buildings and spaces.

Daylighting

Daylighting is the use of natural sunlight to light interior spaces. Using controlled, filtered and indirect daylighting to light interior spaces reduces electric lighting loads. The effectiveness of daylighting can be increased with generous wall openings, open floor plans and light colored interior finishes.



Windows are usually a home's main source of daylight. Blocking direct sunlight and bouncing light on to the ceiling helps facilitate daylighting. Minimizing areas of east- or west-facing windows and using blue or green glass help.

Skylights (traditional, vented, tubular) can provide significant daylighting opportunities.

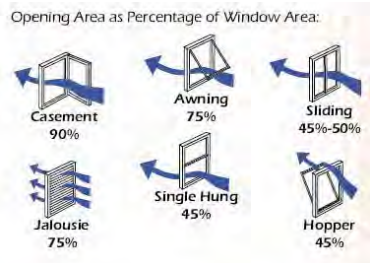
Light-colored interior finishes are critical for good light distribution thus, white ceiling is recommended.

Rooms with higher ceilings and narrow floor plans are easier to daylight. Consider several smaller skylights instead of one larger skylight for better light distribution.

Natural Ventilation

Kapa'a Highlands II will optimize air-flow by designing homes that capture cooling breezes to keep homes comfortable. Utilizing natural ventilation also helps reduce health hazards such as mold and mildew.

Buildings should be oriented to maximize the cooling potential of prevailing winds and minimize morning and afternoon heat gain. Floor plan design will include effective cross ventilation with good air circulation throughout room areas and at body level.



Providing generous screened openings and using architectural design elements such as vents and casement windows will improve interior air circulation.

Ceiling fans are a great way to enhance natural ventilation. Use ceiling and whole house fans to provide comfort on warm, humid or still days.

Transportation

The Property is encompassed by the Kapa'a By-Pass Road to the south and Olohena Road to the east and the north side. The by-pass road is owned by the Kapa'a Highlands II which is working with the Department of Transportation (DOT) and has been allowing for the continuous public use of the road. The by-pass road is in the process of being dedicated to DOT. The agreement of transfer will include that all mitigating measures will be the shared responsibility of DOT and Kapa'a Highlands II.

There is a round-about located at the south east corner of Olohena Road and the Kapa'a By-Pass Road. Kuhio Highway is accessible from the Property by driving south on Olohena and Kūkuī Street approximately 0.5-mile. The project will have a main roadway from the Kapa'a By-Pass Road running north through the Property to Olohena Road. The roadway will follow the county's resolution for complete roads and as such will be a multi-modal roadway. A couple of bus stops will be located along the roadway. A bike/walking path from the round-about south east of the property will follow the bypass road, connect to the main road and continue to the Kapa'a Middle School located on the North portion of the Property. Kapa'a Highlands II is continuing to work with the DOT on potential traffic issues.

Transportation, housing, land use and infrastructure need to be integrated and incorporated into Kaua'i's long-term transportation policies as the population continues to grow in the years ahead. The Kaua'i General Plan, includes the following policies:

Bus Transit.

- Continue to operate The Kauá i Bus; seek to increase ridership and expand service, subject to the availability of funds.
- Improve bus stops to increase safety and convenience of service.
  - Improvements to pullover areas along roadways in order to create safe and accessible bus stops.
  - Designated areas at housing projects (particularly those with elderly and disabled residents) that provide safe and accessible paratransit stops.

Bikeways.

- Support funding to develop Kaua'i's bikeway system to provide for alternative means of transportation, recreation, and visitor activities (economic development).

Regional Highways and Roads.

- Use General Plan policies concerning rural character, preservation of historic and scenic resources, and scenic roadway corridors as part of the criteria for long-range highway planning and design. The goal of efficient movement of through traffic should be weighed against community goals and policies relating to community character, livability, and natural beauty.
- Consider transportation alternatives to increasing the size and capacity of roadways. Alternatives include increased utilization of public transit.
- Planning for the Kapa'a By-Pass should incorporate connector roads between the By-Pass and the coastal highway and between the By-Pass and roads serving the valley.
- The State and the County should jointly undertake a study of the existing roadway network and the future transportation needs within the Kapa'a-Wailua homesteads area.

- Reserve corridors for future roadways as shown on the General Plan Land Use Map. The corridors are conceptual only and are subject to environmental assessment and evaluation of alternative alignments.

Kapa'a Highlands II is committed to Multi-modal, Interconnected and Concurrent Transportation for its residents and community.

Multi-modal Interconnected Roads and Streets

The proposed main complete, multi-modal roadway through the development will include bus stops, sidewalks and a bike and walking path connecting from Kapa'a Middle School down through the development to the round-about, facilitating green travel to and from Kapa'a's town core.

Kapa'a Highlands II incorporates multiple road interconnections with neighbors.

Kapa'a Highlands II will incorporate a system of interconnected roads that will provide residents alternative transportation routes within the project. The internal circulation pattern will provide safe and convenient choices for drivers, bicyclists and pedestrians.

Additional sustainable connectivity concepts including bikeways and walkways to and from the planned County pool, neighborhood commercial areas, the middle school and Kapa 'a's town core are planned.

Complete Streets

Through recent legislation, the State of Hawaii Department of Transportation (HDOT) and county transportation departments are required to ensure the accommodation of all users of the road, regardless of their age, ability, or preferred mode of transportation. In addition, the concept of "Complete Streets" is prioritized where:

> "(T)ransportation facilities ... are planned, designed, operated and maintained to provide safe access and mobility for all users, including bicyclists, pedestrians, transit riders, freight and motorists".

In addition to providing vehicle access, roadway networks are a vital part of the livability of our communities. Complete streets will provide an ease of use and access to destinations by providing an appropriate path of travel for all users, and enhance the ability to move people and goods throughout the state and its counties.

Additionally, complete streets principles will help contribute to a clean and secure energy future for Hawaii by offering flexibility and better accommodation for safe transit, walking, bicycling and alternate fuel vehicles that together, will decrease demand for imported oil.

Complete Streets are streets for everyone. They are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and public transportation users of all ages and abilities are able to safely move along and across a complete street.

Complete Streets make it easy to cross the street, walk to shops, and bicycle to work. They allow buses to run on time and make it safe for people to walk to and from transit stations.

Economic Opportunities

Kapa'a Highlands II provides significant, on-going economic and fiscal benefits for residents of Kaua'i, as well as for the County and State governments.

Development of facilities would generate employment and consequent income and taxes. In addition, by providing the opportunity for new residents to the Island of Kaua'i and generating additional real estate sales activity, the Project is expected to support long-term impacts, including additional consumer expenditures, employment opportunities, personal income and government revenue enhancement.

On a short-term basis, the proposed development will have a direct beneficial impact on the local economy during construction through construction and construction-related employment. It should also be noted that the proposed development will assist in maintaining a viable economy as construction-related employment opportunities for residents would be generated.

Over the long term, the residential homeowners will require various services related to home maintenance and improvement that will further support the local economy.

On-Site Employment Generators

Kapa'a Highlands II proposes two areas for commercial uses that, ultimately, will serve to promote and provide a variety of job opportunities. A 0.4-acre parcel is proposed for commercial uses such as a country store and small personal service type uses are anticipated. A 1-acre site on the Makai side of the Kapa'a Bypass Road is also proposed for commercial development or for use as sub-stations for the police and/or fire department.

Open Space and Parks

Kapa'a Highlands II holds respect for the environment by interlinking natural features and open space as core components of the community.

There are several parks within Kapa'a town, including a beach park. A County-owned 1.9-acre park is located within walking distance from the Property, just south east of the corner of Olohena Road and the by-pass road round-about. The park consists of a baseball field, football field, basketball courts, restroom facilities, picnic tables and a barbecue area.

Open space and open greenway areas encompassing 14.3-acres will be developed within the project. A 3.1-acre park is proposed within the project for outdoor recreation. Land for the proposed relocation of the Kapa'a county swimming pool will be available within the 3.1-acre park. The provision of a 3.1-acre park with a county swimming pool within the proposed development will provide residents with an opportunity for leisurely recreational activities.

Kapa'a Highlands II is conforms with HRS § 205-a-2(B) (3) (A) which states that CZM's objective is to "protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources."

The policies to achieve this objective are as follows:

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

No scenic, historic, cultural spaces exist or will be created on the subject site and the site is well away from the shoreline. There are no natural wildlife, forest, marine, or unique ecological preserves on or near the subject site. Thus, open space and recreation will not be adversely affected. Park and beaches of Kapa'a are within walking distances from the project.

The proposed project will not adversely impact scenic or open space resources. The proposed project will not involve significant alteration of the existing topographic character of the site and will not affect public views to and along the shoreline.

Water Management

As an overarching philosophy in all source alternatives, Kapa'a Highlands II is committed to water conservation strategies to reduce consumption, conserve resources and minimize water use. The goal is to reduce the total water use through a combination of water saving equipment and strategies.

A number of measures may be implemented to facilitate end-use conservation, including water restrictions during drier periods, public education and more efficient landscaping practices. Consumption could be significantly reduced through end-user conservation.

Efficient fixtures and appliances will reduce indoor water use. The water distribution system will be maintained to prevent water loss and homeowners and businesses will be encouraged to maintain fixtures to prevent leaks. Landscaping will emphasize climate-adapted native and other appropriate plants suitable for coastal locations. Best management practices will be designed and implemented to minimize infiltration and runoff from daily operations.

WaterSense

WaterSense, a partnership program by the U.S. Environmental Protection Agency, seeks to protect the future of our nation's water supply by offering people a simple way to use less water with water-efficient products, new homes, and services. WaterSense brings together a variety of stakeholders to:

- Promote the value of water efficiency.
- Provide consumers with easy ways to save water, as both a label for products and an information resource to help people use water more efficiently.
- Encourage innovation in manufacturing.
- Decrease water use and reduce strain on water resources and infrastructure.

The program seeks to help consumers make smart water choices that save money and maintain high environmental standards without compromising performance. Products and services that have earned the WaterSense label have been certified to be at least 20 percent more efficient without sacrificing performance.

If one in every 10 homes in the United States were to install WaterSense labeled faucets or faucet accessories in their bathrooms, it could save 6 billion gallons of water per year, and more than $50 million in the energy costs to supply, heat, and treat that water!

Water Efficient Fixtures

Water is a finite resource—even though about 70 percent of the Earth's surface is covered by water, less than 1 percent is available for human use. Each American uses an average of 100 gallons of water a day at home. We can all use 30 percent less water by installing water-efficient fixtures and appliances. The average household spends as much as $500 per year on their water and sewer bill and can save about $170 per year by installing water-efficient fixtures and appliances.

Water-efficient fixtures reduce water and sewer costs, reduce demand on water supplies and treatment facilities, and reduce heating energy consumption and associated greenhouse gas emissions.

High efficiency toilets: (HETs) reduce flush volumes by no less than 20% compared to conventional ultra-low flow (ULFT) toilets. Dual-flush HETs allow users to choose one of two flushes: liquids or solids. In actual operation, dual-flush HETs average about 1.2 to 1.4 gpf. Pressure-assist HETs use a pressurized tank that creates for a more forceful flush with less water.

Faucets: Water flow is reduced by ***Flow limiters*** which are built into the faucet or are installed as after-market fittings. Aerators or laminar flow devices are types of flow limiters.

- Aeration injects air into the stream of water, displacing much of the water content.
- Laminar flow uses multiple small diameter parallel streams of water that are not aerated.

Flow control valves can limit water flow down to 1.5 to 0.5 gpm per side (hot and cold).

Showerheads: Federal law since 1994 mandates that all showerheads sold in the United States use 2.5 gpm or less. Despite this, some showerheads actually use much more than 2.5 gpm, and shower towers that include multiple showerheads or jets can total 12.5 gpm or more. A better option is a good quality low-flow showerhead designed to use 2.0 gpm or less while providing a satisfying shower.

Groundwater

A Water Master Plan has been approved, in concept, by the County Department of Water (DOW). Kapa'a Highlands II has a proven well site that will be dedicated to the DOW to feed the Department of Water's storage tanks and existing water system. Kapa'a Highlands II is committed to working with the DOW on pertinent water issues during the design and development phase.

The proposed water system will be subject to regulation as a public water system and will meet conditions of the State Department of Health, including HAR Chapter 11-20, 11-21 and 11-25.

Kapa'a Highlands, Phase II consists of approximate 97-acres on the eastern half of the 163.123-acres of Kapa'a Highlands. The proposed development is not anticipated to have significant adverse impacts on ground water because no active water systems are on the 97-acres. The irrigation facility for this former sugar land is no longer available.

A stream exists on Kapa'a Highlands I, flowing from north to south along the western border of the 163.123-acres of Kapa'a Highlands II. Kapa'a Highlands II is committed to keeping the flow of the stream consistent to prevent any potential health and mosquito problems associated with streams when not flowing naturally.

Storm and Surface Water Runoff

A Preliminary Drainage Report has been prepared. A detailed Drainage and Erosion Mitigation Plan will be prepared and submitted to the County Engineer for approval during the design and development stages. The Applicant will be providing major drainage improvements in connection with development of the property. Multiple detention ponds are proposed for the property. Additionally, a series of catch basins, drainage, pipes and culverts will be utilized to direct run off to major drainage areas on the property.

The project's proposed drainage system will be designed to minimize impacts to near shore coastal waters. Water quality treatment and detention basins will be built to prevent runoff and sedimentation from impacting groundwater resources. Prior to the occupancy of any residential or commercial unit within the project, Kapa'a Highlands II shall implement and maintain storm and surface-water runoff BMPs, subject to any applicable review and approval of the State DOH, designed to prevent violations of State water quality standards as a result of storm-water discharges originating from the project. These BMPs will be documented in a declaration of covenants, conditions and restrictions that will be recorded against the property and will run with the land.

Potential water quality impacts during construction of the project will be mitigated by adherence to State and County water quality regulations governing grading, excavation and stockpiling. The County's grading ordinance includes provisions related to reducing and minimizing the discharge of pollutants associated with soil disturbing activities in grading, grubbing and stockpiling.

Construction BMPs will be utilized in compliance with County ordinances pertaining to grading, grubbing, stockpiling, soil erosion and sedimentation during construction. BMPs will also be implemented for long term development and operation of activities occurring on the site as part of pollution prevention measures.

BMPs include storm water runoff and non-storm water sources control measures and practices that will be implemented to minimize the discharge of erosion and other pollutants from entering into the receiving State waters. The erosion control plan for the proposed project include temporary and permanent control measures BMPs that will be implemented in accordance with Chapter 10 of the Hawai'i County Code.

Post construction BMPs to prevent erosion and storm water runoff after construction is completed includes the installation of drain inlets and shallow drywells within the project site, and landscaping and grassing of disturbed areas.

Prior to occupancy, Kapa'a Highlands II will implement and maintain storm and surface-water runoff BMPs, subject to any applicable review and approval of the DOH. Those BMPs will be designed to prevent violations of State water quality standards as a result of storm-water discharges originating from the Project.

Wastewater

Kapa'a Highlands II The project will be contributing to the deferred maintenance and repair of the Kapa'a Waste Water Treatment plant. The project will not be a detriment to the capacity of the Plant.

Energy Management

Pursuant to Chapter 344 (State Environmental Policy) and Chapter 226 (Hawai'i State Planning Act), HRS, all Kapa'a Highlands II activities, buildings and grounds will be designed with a significant emphasis on energy conservation and efficiency. Efficient design practices and technologies will be the cornerstone of Kapa'a Highlands II's design phase. Buildings within Kapa'a Highlands II will further comply with the County of Kaua'i Energy Conservation Code (Kaua'i County Ordinance 890). Furthermore, solar water heaters will be utilized as made requisite under Section 196-6.5, HRS. Kapa'a Highlands II will confer with KIUC in regards to suggestions and proposals for customized demand-oriented management programs offering rebates for the installation of alternative energy efficient technologies and measures

	Kaua'i	Oahu	State
Medium Income (2009)	$55,723	$67,019	$63,741
Electricity Price (May 2011)	44.27 cents/kWh	30.1 cents/kWh	-

Kapa'a Highlands II is committed to renewable energy and energy efficiently as ways to reduce environmental harm and self sufficiency. Kapa'a Highlands II will continue to improve programs and create new programs as the development is initiated.

Residents of the State of Hawaii pay the highest electricity rates in the US. The average American paid 10.5 cents/kWh in 2010. In the state of Hawaii, O'ahu currently has the lowest residential electricity rates, while Lana'i has the highest. Residential rates on Kaua'i average between 40-45 cents/kWh. Hawaii relies on imported oil for approximately 76% of its total electricity production. The price variation across the state is largely a result of difference in power plant efficiencies, power purchasing agreement and other infrastructure.

The Kaua'i Island Utility Cooperative ("KIUC") is the sole electric utility on Kaua'i. KIUC began serving the people of Kauai on November 1, 2002, when it purchased Kauai Electric from Connecticut-based Citizens Communications. KIUC is America's newest electric cooperative, but it's by no means the only one. It is one of approximately 900 electric cooperatives serving electric consumers in 47 states. Like all cooperatives, KIUC operates as a not-for-profit organization that is owned and controlled by the people it serves. KIUC serves over 23,300 customers with 92% of KIUC's electricity coming from the burning of imported fossil fuels.

In 2009 the State Legislature codified the need for energy efficiency by enacting the statewide energy efficiency portfolio standard with a target of reducing energy consumption by 30% of forecasted energy consumption by 2030 (4,300 GWh) and beginning the process for separating efficiency from the existing renewable portfolio standard.

Energy efficiency in homes and buildings

- Hawai'i Revised Statutes section 46-19.6 requires all county agencies to place a "priority on processing of permit applications for construction projects incorporating energy and environmental design building standards."

To reduce net energy consumption and demand, Kapa'a Highlands II will consider the implementation of elements of the United States Environmental Protection Agency (EPA) Energy Star Program; including efficient insulation, high performance windows, compact construction, efficient ventilation systems, and energy efficient lighting elements and appliances.

Kapa'a Highlands II will furthermore seek to harness energy conservations and technologies to facilitate the possibility of net energy metering in building design to empower residents and tenants to reduce their electricity costs and provide energy back to the grid.

Energy conservation and efficiency measures will be implemented and emphasized where applicable in the design of Kapa'a Highlands II. Energy-efficiency technologies to be considered include:

- Solar energy for water heating
- Photovoltaic systems, fuel cells, biofuels and other renewable energy sources
- Optimal utilization of daytime sunlight
- High efficiency light fixtures
- Roof and wall insulation, radiant barriers and energy efficient windows
- Optimized air-flow
- Installation of heat resistant roofing
- Intelligent Landscaping to provide for shading, dust control, and heat-mitigation
- Portable solar lighting (i.e. parking lots)

A photovoltaic system that can generate up to 1.18 MW of electricity is situated in Phase I of the Kapa'a Highlands project. Its operator entered into an agreement to sell to Kaua'i Island Utility Cooperative electricity generated from the solar farm for 20 years. "Creating more renewable energy alternatives is one of the most critical challenges we face," Kauai Mayor Bernard Carvalho said at a dedication ceremony for the solar farm.

The project spreads over five acres of a 165-acre property, and has 5,376 solar panels mounted on posts and piers. The panels average about 12-feet off the ground.

Health and Active Lifestyles

Through the layout and design of Kapa'a Highlands II, there is an overall opportunity for a positive effect on the health of its residents. Communities that make it easy and safe to walk and ride bikes are opening the door to a wide range of health benefits for their residents. They are reducing barriers to being physically active and helping individuals integrate physical activity into their daily lives.

Active living is a way of life that integrates physical activity into daily routines. For individuals, the goal is to get a total of at least 30 minutes of activity each day by, for example, walking, bicycling, playing in the park, working in the yard, taking the stairs, or using recreation facilities. For communities, the goal is to provide opportunities for people of all ages and abilities to engage in routine physical activity and to create places and policies that encourage better physical health.

The burden of physical inactivity:
The Problem:

- 25% of adults are sedentary
- 60% of adults not active enough

The Outcome:

- Obesity, cardiovascular disease, cancer, diabetes, depression
- Physical inactivity is a primary factor in over 250,000 deaths annually.
- Medical costs associated with physical inactivity and its consequences may exceed $76 billion annually. (hawaii.gov/health/healthy-lifestyles)

Walkable and bikable communities increase active living. Active living can improve health by:

- Reducing the risk of dying prematurely.
- Reducing the risk of dying from heart disease.
- Reducing the risk of developing diabetes, colon cancer and high blood pressure.
- Reducing feelings of depression and anxiety.
- Helping control weight.
- Helping build and maintain healthy bones, muscles and joints.
- Promoting psychological well being. (Michigan Department of Community Health)

Growing body of evidence:

- San Diego study: 70 minutes more physical activity/week among residents in walkable neighborhood; 35% vs. 60% overweight (Saelens, Sallis, et. al. 2003)
- 6 lb weight difference in sprawling vs. compact counties
- King County study: 5% increase in neighborhood's "walkability index" correlated with 32% increase in active transportation; 0.23 point reduction in BMI (Frank, Sallis, et. al. 2006) (hawaii.gov/health/healthy-lifestyles)

Community Design Policies Work! The Task Force on Community Preventive Services concluded that:

- Community-scale policies & design are effective
  - Zoning for compact, mixed-use development
  - Transit-oriented development
  - Policies related to street design & connectivity

- Street-scale policies & design are effective:
  - Traffic calming
  - Street lighting
  - Improving street crossings (hawaii.gov/health/healthy-lifestyles)

Education

Schools servicing the project include Kapa'a Elementary, Kapa'a Middle School and Kapa'a High School.

Kapa'a Middle School borders the project site to the north. Kapa'a Elementary School and Kapa'a High School share a campus which is approx imately 2-miles from the project site.

Kapa'a Elementary School serves grads K-5 and is one of the largest elementary schools in the state. It shares a campus with Kapa'a High School. Kapa'a E lementary School's capacity is 1,373 students, and the 2009/2010 school year enrollment was 827 students (Department of Education, 2010a).

Kapa'a Middle School, with facilities for 1,059 students, was opened in 1997 and has an enrollment of 652 students (Department of Education, 2010b).

Kapa'a High School currently has a student body numbering 1,033 with a capacity of 1,445 (Department of Education, 2010c).

The proposed project will generate increased demand on student enrollment within the region. Kapa'a Highlands II will coordinate with the DOE to ensure that the DOE's facility assessment policy provisions are appropriately addressed.

Additionally, a 3.1-acre park is proposed adjacent to the existing Kapa'a Middle School. The park will have an area for the county's proposed relocation of the Kapa'a county swimming pool. Kapa'a Highlands II also plans to develop a bike/walking path from the south of the property to the Kapa'a Middle School to facilitate biking and walking around the development.

Housing

Kapa'a Highlands II is a well located master planned project on the Island of Kaua'i targeting primary housing demand from local and in-migrant families, as well as offshore second home demand for view estate ownership. Located in the middle of the island, the project is close to the centers of employment and resort activity, plus the airport, beaches, shopping, recreation, etc. It sits above the historic town of Kapaa and below the foothills of the mountain chain that forms the island.

The proposed development, Kapa'a Highlands Phase II, will utilize 163-acres of land for single-family and multi-family residential and commercial purposes. Development of the Property will address a portion of the significant demand for affordable housing in the County of Kaua'i, without significantly affecting reserve areas for foreseeable urban growth.

Kapa'a Highlands II will respond to varying spectrums of demand for housing within Kaua'i by providing a wide range of housing opportunities inclusive of affordable housing alternatives. Kapa'a Highlands II will seek to create and sustain a mixed-income community allowing for unparalleled social diversity.

Affordable housing demands exhibited a significant upward trend over the last several years. Recent market studies have indicated a current shortage of single-family housing in the East Kaua'i area. The forecast is that demand for housing will continue to increase, especially in the area of affordable housing. The proposed development will assist in alleviating some of the current supply-and-demand pressures on Kaua'i's current housing market by providing a variety of additional housing products and opportunities for long-term local residents.

The Kawaihau Planning District has substantial capacity for additional residential development, as described in Section 6.2.3.1 (Build-Out Analysis) of the Kaua'i General Plan. "Lands previously designated for urban use but as yet mostly undeveloped include an area located near Kapa'a, south of Olohena Road. This area was previously designated for Urban Mixed Use and is shown as Urban Center on the new GP Land Use Map. Owned partly by the State and partly by Amfac/JMB (or its successor), this "expansion area" for Kapa'a has already accommodated the Kapa'a Middle School."

In a 2010 letter to the applicant, the Planning Director wrote "We are writing in general support of Three Stooges LLC's petition to amend 97-acres in Kapa'a to the Urban district. The proposed amendment is in conformance with the County of Kaua'i's General Plan and will provide 231 units of affordable housing. Affordable housing remains an acute need on Kaua'i, even with a falling real estate market and as such the County is generally supportive of any petition that proposes additional affordable housing, particularly when contiguous to developed urban areas, infrastructure and consistent with our General Plan."

Current Housing Stock

The housing stock on Kaua'i is primarily single family, 69%, with attached housing only at 31%. Around 40% of all single-family homes are built on lots sized less than 10,000 sf. The condominium stock is 64% fee-simple and 34% leasehold. It is also only 10% owner occupied, with the balance of the units investor-owned, either in a rental pool, or part of a hotel operation. About 30% of the condo units were built since 1990, with most of the rest around 25 years or more in age. 38% of the condominium units are one bedrooms, with two bedrooms at 45%.

Housing Mix

The target market for this development is relatively broad, as Kapa'a is arguably at the center of the island, with strong retail and recreational facilities, and easy commute to two out of the three major resort areas on the island. The demand for affordable housing is also significant. The proposed development will not only address a critical community need, it will also provide residents with a unique opportunity to purchase a lot and construct a home that best fits their needs on the proposed development's market-priced lots.

Kapa'a Highlands II – Market Housing Mix (2010 dollars)

Type	Average Sales Price	Lot Size	Total Units
Single-Family Lots	$180,000 to $250,000	5,000 to 8,000 Sq. Ft.	86-lots
Multi-Family Units	$220,000 to $450,000	1 to -acre Parcels	683-units

Kapa'a Highlands II – Affordable Housing Mix (2010 dollars)

Type	Average Sales Price	Lot Size	Total Units
Single-Family	$189,000 to $363,000	1,100 to 1,200 Sq. Ft. living area	13-lots
Multi-Family Units	$189,000 to $363,000	750 to 1,200 Sq. Ft. living area	154-units

Affordable Housing

An affordable housing element of the project is proposed and will conform to Kaua'i County Ordinance No. 860, Kaua'i's new housing policy wherein developers contribute up to thirty percent (30%) of the total residential units for affordable housing.

The Kaua'i housing policy provides incentives to developers who provide the required affordable units on-site and for providing single family affordable units. Kapa'a Highlands will be providing all of its affordable units on site and will include affordable single family units. This will reduce the number of affordable units required from approximately 205 units (30%) to approximately 167 units (21.7%), assuming a mix of 13 single family units and 154 multi-family units. The number of affordable units required will fluctuate depending on how many affordable single family units are provided. The proposed development will provide much needed affordable housing in the East Kaua'i region.

Under the proposed development's preliminary marketing concept, the affordable units are anticipated to be sold in the range of $189,000.00 to $363,000.00, which will be affordable to families earning from 80% up to 140% of the County's annual median income.

Anticipated Buyer Markets

The proposed products respond to the market opportunities identified above as follows:

Entry-level markets – Those units designated as affordable units, as well as many of the multifamily market units are conceived to appeal to entry-level markets, typified by the rapidly increasing 25- to 34-year-old Echo Boom cohort.

Move-up markets – Kapa'a Highlands II's single-family lot products could appeal to move-up markets and growing families.

- The first level move-up market, typified by persons aged 35 to 44, is projected to grow particularly rapidly in the 2020 to 2030 period as the Echo Boomers mature.
- A more affluent move-up market could also be attracted to the views, convenient location and lifestyle offerings at Kapa'a Highlands II.

Based on the Project location, development concept and the comparison projects surveyed, some 75% of Kapa'a Highlands II residents are anticipated to be long-term Island residents. However, some product types could also appeal to second home buyers, relocating retirees or others that may come from off-Island

There has been strong demand historically for these products offerings at these price ranges, and the future should be no different. The location is very desirable, particularly for local buyers, but also for offshore second homeowners who want to feel a part of a 'normal' (but new or upgraded) neighborhood (to say nothing of wanting to take advantage of the views).

Despite current economic conditions, there is capacity amongst prospective buyers, thanks to a strong build up in their own home equity. Coupled with a desire to secure a central location for their home, there should be a goodly number of lots purchased when they come to market (particularly if there is advanced notification).

Social Sustainability

A community is composed of people, as well as places where they live; it is as much a social environment as a physical development. Thus, communities must not only be environmentally sustainable, they must also be socially sustainable.

A socially sustainable development supports more equitable distribution of resources, supports diversity within the community, meets the basic needs of residents and invests in social and human capital, thereby sustaining the quality of life and community livability for all residents into the future.

Socially sustainable development includes the following:

- recognizes, respects and values cultural and social diversity;
- preserve and maintains a high quality of life for all of its residents;
- meets basic needs of food, shelter, education, work, income and safe living and working;
- is equitable, ensuring that the benefits of development are distributed fairly across society;
- promotes education, creativity and the development of human potential;
- preserves our cultural and biological heritage, thus strengthening our sense of connectedness to our history and environment;
- is democratic, promoting citizen participation and involvement;
- promotes the context of "Live Aloha," with people living together harmoniously and in mutual support and respect for each other

We saved the concept of Social Sustainability for the end of the analysis, to serve as a summary of the many socially-focused actions suggested in prior sections of this Sustainability Plan. Following are just a few of the issues previously mentioned:

- Affordable housing will be incorporated within the development, allowing for a diversity and mix of housing types and options
- Complete streets with walkways and bile lanes, allowing for slow movement through the neighborhoods for easy social interaction
- Space for the relocated County swimming pool
- Allocation for commercial spaces, affording project residents the opportunity to work near where they live
- Proximity to the Middle School affords multi-generation al interaction and learning
- Cooperation with the State by making land available for the Kapa'a Bypass Road, helping regional residents
- Project layout and design will create an opportunity for both residents and the community to have a positive effect on their health through walkable and bikable transportation options.
- Consistency with long range planning documents, implementing the community's vision for the future

Exhibit C

Kapa'a Highlands Agricultural Master Plan

Kapaa Highlands
Agricultural Master Plan

June 1, 2007

Agricon Hawaii LLC
P.O. Box 95
Kamuela, HI 96743

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A. SUMMARY

Livestock (goats) can be raised successfully at Kapaa Highlands. Climate conditions will allow for normal pasture rotation the year around. The ratio of livestock to fenced pasture should be 3 animal units (AU) to 1 acre or better.

The climate and soils at Kapaa Highlands are not ideal for the growing of most commercially viable crops due to the poor soil, strong trade winds, and the salt spray from the ocean.

Goats are sold for their meat value and the local markets on all of the islands are excellent. The intended markets for goats raised on the property are the local Kauai market and the Honolulu market.

The Economics for Goats included in this report provides a picture of expected revenue and classifications of operating expenses associated with a livestock (goat) operation ("Project").

The Association of Condominium Owners of the Kapaa Highlands Condominium ("Association") may choose to operate the Project on behalf of participating owners. Alternatively, the Association may choose to enter into a contractual relationship with a livestock contractor pursuant to a license agreement in which the livestock contractor will pay an annual rent per acre to graze the property, plus a percentage of gross profits.

Livestock grazing is a permissible use within the agricultural districts as outlined under Hawaii Revised Statutes (HRS) Chapter 205, Section 205-4.5.

B. DESCRIPTION

The Kapaa Highlands Subdivision is located in Kapaa, above the Kapaa Bypass Road and adjacent to Kapaa Middle School. The property is further identified by Kauai Tax Map Key No. (4) 4-3-03:01. The total land area is 163.125 acres and the combined grazing area is approximately 101.573 acres.

Almost all of the property is located in the State Land Use Commission Agricultural District and within the Agriculture District of the Comprehensive Zoning Ordinance of the County of Kauai (CZO). As such, owners of subdivision lots will be required to comply with the requirements of HRS Chapter 205 and the CZO. Individual lot owners, through the Association, will be required either to provide a portion of their lot for the grazing of livestock as outlined in this Agricultural Master Plan, or to obtain an amendment to this Agricultural Master Plan to conduct alternative agricultural activities. The Kapaa Highlands is shown on the map attached hereto as Exhibit "A".

C. ENVIRONMENTAL SUITABILITY

1. Climate

The property is exposed to the northeast trade winds and, due to the proximity of the property to the ocean the trade winds will carry some salt spray to the property. This is problematic for most commercial crops, but should have no impact on livestock and minimal impact on salt resistant grasses. Annual rainfall is generally between 40 and 50 inches.

2. Soil

The soils are generally well-drained, dark reddish-brown silty clay and silty clay loam. The soil depth is generally between 10 and 15 inches.

The property was previously planted to sugar cane and due to the nature of sugar cane cultivation, these soils can be expected to be low in organic matter and have a low pH (very acid).

A Soils Map for the property is attached hereto as Exhibit "B", and a Soils Inventory (containing technical descriptions of soil types) is attached hereto as Exhibit "C".

The Land Study Bureau Land Classification for this property is B, C, D and E lands, as shown on the Detailed Land Classification Maps attached hereto as Exhibits "D" and "E".

3. Drainage

All the soils on the property are well drained indicating that, if good conservation practices are used, they should not erode.

D. CROP SUITABILITY

Due to the generally poor soils and harsh climate, the commercial crops most suited to the area are sugar and pineapple. Both of these industries are declining in Hawaii. Pineapple is no longer grown on Kauai and there is only one sugar mill that remains in operation. With appropriate irrigation and management, both tropical orchard crops (including trees) and some vegetable crops could be grown on the property, although with some difficulty and risk given the physical conditions at the property.

E. LIVESTOCK

1. Association Project

The Association may choose to operate the Project on behalf of all participating owners. In such case, the Association would be responsible for the rotation, care and marketing of the animals. The participating owners would be responsible for providing fixed assets (fences, gates, and water systems) on the owners' lots. The participating owners would be required to pay their proportionate share of all operational costs to the Association, and would be entitled to their proportionate share of all profits generated by the Project.

2. Contractor Operation

As an alternative, the Association could hire an independent contractor ("Contractor") to operate the Project. In such a case, the Contractor would own the goats and be responsible for the rotation, care, and marketing of the animals. The Association, through the participating owners, would be responsible for the fixed assets. These assets would include the fences, gates, and water systems. The Contractor would pay the Association a fixed rent per acre of pasture plus a percentage of gross profits, and would be responsible for normal maintenance of the fixed assets associated with the livestock operation.

3. Individual Goat Operators

The Owner may elect to engage in individual goat raising operations within the Owner's Agricultural Area of the Owner's Lot ("Owner's Operation"). In such case, the following shall apply:

a. The Owner shall be solely responsible for the costs of the Owner's Operation.

b. The Owner shall raise a minimum of three (3) goats for each acre within the Owner's Agricultural Area.

c. The Owner shall submit reports to, and as required by, the Association providing pertinent information concerning the Owner's Operation and in such detail as to comply with and satisfy the reporting requirement contained in the Agricultural Subdivision Agreement and the County Subdivision Approval.

4. Goat Husbandry

It is recommended that a breeding herd with a ratio of 1 buck to 50 does be maintained. Does will produce an average 1.5 kids per year. Kids can be weaned at approximately 5 to 6 months and should be separated from the breeding herd at this point. The gestation period for a doe is approximately 5 months.

The carrying capacity of the pasture at Kapaa Highlands is approximately 3 to 4 animal units (AU) to the acre. The breeding herd that consists of bucks and does is considered to be one AU per animal. Kids are ½ AU per animal. Therefore, assuming all of the owners became participants in the Project, there would be 101.573 acre of pasture available to carry 355 AU at 3.5 AU per acre. Attached hereto as Exhibit "F" is a spreadsheet entitled "Economics for Goats" which contains detailed assumptions regarding carrying capacity.

The breeding herd should be given good pasture and be kept on a strict health program so that its production of kids is at its optimum. The herd should be wormed every 30 to 60 days and provided with a mineral supplement. The water requirement for goats is between 2 and 3 gallons per day per AU. This will be dependent upon climatic conditions. Supplemental feeding is generally not required unless rainfall diminishes over several months to a point where the grass growth is insufficient to maintain the herd. At this point, the contractor has the option of providing supplemental feed or moving some or all of the goats to another location.

Goats are marketed at between 6 and 9 months of age at a weight of between 60 and 80 pounds. The estimate market price per goat ranges from $140 and $180. The primary market is the Kauai Island market that commands a higher price. The secondary market is Honolulu. The freight to Honolulu is paid by the buyer. Goats are generally sold to individuals who slaughter them for their meat. The market in Hawaii for goats is very stable.

The Economics for Goats spreadsheet contains details on the economics of the livestock (goat) operation.

F. HRS 205 COMPLIANCE

Hawaii Revised Statutes Chapter 205 establishes classifications of lands and requirements for land use. Section 205-4.5 defines permissible uses within the agricultural districts. This section also defines the soil classification rating that applies to the Chapter.

Section 205-4.5 uses the Land Study Bureau's (LSB) soil classification productivity rating system to determine which lands are to be governed by the Chapter. The LSB ratings for Kapaa Highlands are B, C, D and E. Land classification ratings A and B are restricted to the permitted uses as outlined in the section. The cultivation of crops and the raising of livestock are permitted uses. Uses on C, D and E lands also include crop cultivation and the raising of livestock.

G. CONCLUSION

The climate and soils at Kapaa Highlands are not ideal for the growing of most commercially viable crops due to the poor soil, strong trade winds, and the salt spray from the ocean. Thus a livestock operation provides an economically viable agricultural use for the property.

Either the Association operation of a livestock project, or a contractual relationship between the Association and a livestock Contractor, would allow the agricultural component of the property to be managed as one unit. Individual lot owners would also have the option of compliance with alternate methods of livestock grazing or with the cultivation of agricultural crops, provided they obtained the approval of the Planning Commission of the County of Kauai, Subdivision Committee, for an amendment to this Agricultural Master Plan for such alternative agricultural activities.

Livestock grazing is a permissible use within the agricultural districts as outlined under HRS Chapter 205, Section 205-4.5.

Exhibit "A"

Subdivision Map

Exhibit "B"

Soils Map

EXHIBIT "C"
Soils Inventory Report

USDA

Soils Map

Date: 5/31/2018

Field Office: LIHUE SERVICE CENTER
Agency: USDA-NRCS
Assisted By: GENOA STARRS

State and County: HI, Kauai County, Hawaii
Land Units: (4) 4-3-003:001
Approximate Acres: 163.13

Legend

600 0 600 1,200 Feet

1 inch = 600 feet

Rice Soils Map

MUSYM, MUNAME

- HnA;Hanalei silty clay, 0 to 2 percent slopes, MLRA 167
- IoB;Ioleau silty clay loam, 2 to 6 percent slopes
- IoC;Ioleau silty clay loam, 6 to 12 percent slopes
- IoD2;Ioleau silty clay loam, 12 to 20 percent slopes, eroded
- IoE2;Ioleau silty clay loam, 20 to 30 percent slopes, eroded
- LhB;Lihue silty clay, 0 to 8 percent slopes
- LhC;Lihue silty clay, 8 to 15 percent slopes
- LhD;Lihue silty clay, 15 to 25 percent slopes
- MZ;Marsh
- Mta;Mokuleia clay loam, poorly drained variant
- PkB;Pohakupu silty clay loam, 0 to 8 percent slopes
- PnB;Puhi silty clay loam, 3 to 8 percent slopes
- rRR;Rough broken land
- Rice Poly Layer

N

Soils Inventory Report

TMK (4) 4-3-3:1

Map Unit Symbol	Acres	Percent
HnA	1.4	1%
IoB	44.5	27%
IoC	16.2	10%
IoD2	10.7	7%
IoE2	24.7	15%
LhB	8.4	5%
LhC	0.8	0%
LhD	4	2%
Mta	3.2	2%
MZ	0.3	0%
PkB	0.9	1%
PnB	31.9	20%
rRR	15	9%
Total:	162	

Hanalei Series

This series consists of somewhat poorly drained to poorly drained soils on bottom lands on the islands of Kauai and Oahu. These soils developed in alluvium derived from basic igneous rock. They are level to gently sloping. Elevations range from nearly sea level to 300 feet. The annual rainfall amounts to 20 to 120 inches. The mean annual soil temperature is 74° F. Hanalei soils are geographically associated with Haleiwa, Hihimanu, Mokuleia, and Pearl Harbor soils.

These soils are used for taro, pasture, sugarcane, and vegetables. The natural vegetation consists of paragrass, sensitiveplant, honohono, Java plum, and guava.

Hanalei silty clay, 0 to 2 percent slopes (HnA).

This soil is on stream bottoms and flood plains. Included in the areas mapped on Kauai along the Waimea River and in Waipaoiki Valley are small areas where the surface layer is 8 to 10 inches of reddish-brown silty clay. Included in the areas mapped on Oahu were small areas of very deep, well-drained alluvial soils and small areas of very poorly drained to poorly drained clay soils that are strongly mottled and are underlain by peat, muck, or massive marine clay.

In a representative profile the surface layer, about 10 inches thick, is dark-gray and very dark gray silty clay that has dark-brown and reddish mottles. The subsurface layer is very dark gray and dark-gray silty clay about 3 inches thick. The subsoil, about 13 inches thick, is mottled, dark gray and dark grayish-brown silty clay loam that has angular blocky structure. The substratum is stratified alluvium. The soil is strongly acid to very strongly acid in the surface layer and neutral in the subsoil.

Permeability is moderate. Runoff is very slow, and the erosion hazard is no more than slight. The available moisture capacity is about 2.1 inches per foot of soil. Roots penetrate to the water table. Flooding is a hazard.

Representative profile: Island of Kauai, lat. 22°12'37.8" N. and long. 159°28'47" W.

Ap-0 to 6 inches, dark-gray (10YR 4/1) silty clay; common distinct mottles of dark brown (7.5YR 4/4), red (2.5YR 5/8), and dark reddish brown (5YR 3/4) ; weak, coarse and medium, granular structure; very hard, friable, sticky and plastic; abundant fine and medium roots; many fine and medium pores; very strongly acid; abrupt, wavy boundary. 4 to 6 inches thick.

A1g-6 to 10 inches, very dark gray (10YR 3/1) silty clay; many distinct mottles of dark reddish brown (5YR 3/4), yellowish red (5YR 4/8), dark brown (7.5YR 4/4), and dark grayish brown (10YR 4/2); weak, coarse, prismatic structure; very hard, firm, sticky and plastic; abundant fine and medium roots; common fine and medium pores; strongly acid; gradual, smooth boundary. 3 to 5 inches thick.

A3g-10 to 13 inches, mixed, very dark gray (10YR 3/1) and dark gray (10YR 4/1) silty clay; many distinct mottles of yellowish red (5YR 4/8) and dark reddish brown (2.5YR 3/4); weak, coarse, prismatic structure; very hard, firm, sticky and plastic; common medium and fine roots; many fine and medium pores, slightly acid; gradual, smooth boundary. 2 to 4 inches thick.

B21g-13 to 18 inches, mixed, dark-gray (10YR 4/1) and dark grayish-brown (10YR 4/2) silty clay loam; many distinct mottles of strong brown and dark red (2.5YR 3/6); massive, but a few pockets have weak, medium, angular blocky structure; hard, firm, sticky and plastic; few medium and fine roots; many fine and medium pores; neutral; gradual, smooth boundary. 4 to 7 inches thick.

B22g-18 to 26 inches, dark grayish-brown (10YR 4/2) silty clay loam; many distinct mottles of dark red (2.5YR 3/6) and strong brown (7.5YR 5/6); weak, coarse, prismatic structure breaking to weak, fine and medium, angular blocky; slightly hard, firm, sticky and plastic; few medium and fine roots; many fine and medium pores; neutral; gradual, smooth boundary. 7 to 9 inches thick.

C-26 to 36 inches, dark grayish-brown (10YR 4/2) silty clay loam; common distinct mottles of strong brown (7.5YR 5/6), dark red (2.5YR 3/6), and red (2.5YR 4/6); massive; slightly hard, friable, sticky and plastic; few medium roots; many, fine and medium, tubular pores; slightly acid; water stands above this layer.

The A horizon ranges from 10YR to 2.5Y in hue, from 3 to 4 in value, and from 1 to 2 in chroma. Mottles range from a few faint ones to many distinct ones. The B horizon ranges from 10YR to 2.5Y in hue, from 2 to 4 in value, and from 1 to 2 in chroma. Mottles in the B and C horizons range from few to many. The depth to the seasonal high water table ranges from 2 to 5 feet. The C horizon is stratified. It ranges from silty clay to sand in texture.

This soil is used for taro, pasture, and sugarcane. (Capability classification IIw, irrigated or nonirrigated; sugarcane group 3; pasture group 7; woodland group 4)

Hanalei silty clay, 2 to 6 percent slopes (HnB).

On this soil, runoff is slow and the erosion hazard is slight. This soil is used for sugarcane, taro, and pasture. (Capability classification IIw, irrigated or nonirrigated; sugarcane group 3; pasture group 7; woodland group 4)

Hanalei stony silty clay, 2 to 6 percent slopes (HoB).

This soil has a profile like that of Hanalei silty clay, 0 to 2 percent slopes, except that it is stony. Runoff is slow, and the erosion hazard is slight. Stones hinder machine cultivation.

This soil is used for sugarcane and pasture. (Capability classification IIw, irrigated or nonirrigated; sugarcane group 3; pasture group 7; woodland group 4)

Hanalei silty clay, deep water table, 0 to 6 percent slopes (HrB).

This soil has a profile like that of Hanalei silty clay, 0 to 2 percent slopes, except that it has fewer mottles and the water table is at a depth of more than 3 feet. Included in mapping were small areas of stony soils.

This soil is used for sugarcane, taro, pasture, and vegetables. (Capability classification IIw, irrigated or nonirrigated; sugarcane group 3; pasture group 7; woodland group 4)

Hanalei silty clay loam, 0 to 2 percent slopes (HmA).

This soil has a profile like that of Hanalei silty clay, 0 to 2 percent slopes, except for the texture of the surface layer. Also, this soil is underlain by sand at a depth of 30 to 50 inches. Included in mapping was an area on the Hanalei River bottom that is less than 30 inches deep over sand.

This soil is used for taro, pasture, and sugarcane. (Capability classification IIw, irrigated or nonirrigated; sugarcane group 3; pasture group 7; woodland group 4)

Hanalei peaty silty clay loam, 0 to 2 percent slopes (HpA).

This soil has a profile like that of Hanalei silty clay, 0 to 2 percent slopes, except for the texture of the surface layer. Also, the water table is at the surface.

This soil is used for pasture. (Capability classification IVw, irrigated or nonirrigated; sugarcane group 3; pasture group 7; woodland group 4)

Ioleau Series

This series consists of well-drained soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock, probably mixed with volcanic ash. They are gently sloping to steep. Elevations range from 100 to 750 feet. The annual rainfall amounts to 40 to 70 inches. The mean annual soil temperature is 72° F. Ioleau soils are geographically associated with Lihue and Puhi soils.

These soils are used for irrigated sugarcane, pasture, pineapple, irrigated orchards, irrigated truck crops, wildlife habitat, and woodland. The natural vegetation consists of lantana, koa haole, guava, and associated shrubs and grasses.

Ioleau silty clay loam, 6 to 12 percent slopes (IoC).

This soil is on ridgetops in the uplands.

In a representative profile the surface layer is darkbrown and yellowish-red silty clay loam 15 inches thick. The subsoil, 40 to 60 inches thick, is dark-brown and dark reddish-brown silty clay that has subangular blocky structure and is very compact in place. The substratum is soft, weathered rock. The soil is very strongly acid to extremely acid throughout.

Permeability is slow. Runoff is medium, and the erosion hazard is moderate. The available water capacity is about 1.4 inches per foot of soil. Roots penetrate to a depth of 15 to 25 inches or to the plow depth.

Representative profile: Island of Kauai, lat. 22°07'32.9" N. and long. 157°13'03" W.

Ap1-0 to 6 inches, dark-brown (7.5YR 3/4) silty clay loam, brown (7.5YR 4/4) when dry; cloddy, breaking to moderate, fine and very fine, subangular blocky structure; hard, firm, sticky and plastic; abundant medium and fine roots and plentiful very fine roots; very strongly acid; abrupt, wavy boundary. 6 to 8 inches thick.

Ap2-6 to 15 inches, mixture of yellowish-red (5YR 4/6) silty clay loam, strong brown (7.5YR 5/8) when dry; massive; slightly hard, friable, sticky and plastic; and yellowish-red (5YR 4/8) silty clay, reddish brown (5YR 4/4) when dry; strong, very fine, subangular blocky structure; hard, firm, sticky and plastic; few medium roots and plentiful fine and very fine roots; common fine pores; very strongly acid; abrupt, wavy boundary. 7 to 10 inches thick.

B21t-15 to 27 inches, dark reddish-brown (5YR 3/4) silty clay, reddish brown (5YR 4/4) when dry; strong, fine and very fine, subangular blocky structure; very hard, firm, sticky and plastic; very few fine and very fine roots; common very fine pores; very compact in place; many moderately thick clay films on ped faces; very strongly acid; clear, wavy boundary. 5 to 12 inches thick.

B22t-27 to 36 inches, dark-brown (7.5YR 3/2) silty clay, yellowish red (5YR 3/6) in pores, dark brown (7.5YR 4/4) when dry; strong, fine and very fine, subangular blocky structure; very hard, firm, sticky and plastic; very few fine and very fine roots; few medium pores and many very fine pores; compact in place; many moderately thick clay films on ped faces and in pores; few pebbles; very strongly acid; clear, wavy boundary. 9 to 11 inches thick.

B23t-36 to 57 inches, dark-brown (7.5YR 3/3) light silty clay, dark brown (7.5YR 4/4) in pores, dark brown (7.5YR 4/4) when dry; strong, fine and very fine, subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few medium, fine, and very fine roots; many very fine pores; patchy, moderately thick clay films on ped faces; continuous in pores; few pebbles; extremely acid; clear, wavy boundary. 15 to 22 inches thick.

B24t-57 to 61 inches, dark reddish-brown (5YR 3/4) silty clay loam, reddish brown (5YR 4/4) when dry; moderate, fine and very fine, subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; no roots; many very fine pores; patchy, moderately thick clay films on ped faces; continuous in pores; extremely acid.

The A horizon ranges from 5YR to 10YR in hue. In places the texture of the A horizon is clay loam. The B horizon ranges from 2.5YR to 7.5YR in hue, from 3 to 4 in value, and from 2 to 6 in chroma. The depth to the very compact B21t ranges from 15 to 25 inches.

This soil is used for sugarcane, pasture, pineapple, orchards, and truck crops. (Capability classification IIIe, irrigated or nonirrigated; sugarcane group I; pineapple group 6; pasture group 6; woodland group 6)

Ioleau silty clay loam, 2 to 6 percent slopes (IoB).

This soil has a profile like that of Ioleau silty clay loam, 6 to 12 percent slopes, except that it is 10 to 20 inches deeper to the compact layer. Runoff is slow, and the erosion hazard is slight. Roots penetrate to a depth of 25 to 40 inches.

This soil is used for sugarcane, pasture, pineapple, orchards, and truck crops. (Capability classification IIe, irrigated or nonirrigated; sugarcane group 1; pineapple group 5; pasture group 6; woodland group 6)

Ioleau silty clay loam, 12 to 20 percent slopes, eroded (IoD2).

This soil is similar to Ioleau silty clay loam, 6 to 12 percent slopes, except that it is moderately steep and part of the surface layer has been removed by erosion. Runoff is rapid, and the erosion hazard is moderate to severe.

This soil is used for sugarcane, pineapple, and pasture. (Capability classification IVe, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 6; woodland group 6)

Ioleau silty clay loam, 20 to 35 percent slopes, eroded (IoE2).

This soil is similar to Ioleau silty clay loam, 6 to 12 percent slopes, except that it is steep and most of the surface layer has been removed by erosion. Runoff is rapid, and the erosion hazard is severe.

This soil is used for pasture, woodland, sugarcane, pineapple, and water supply. (Capability classification VIe, nonirrigated; pasture group 6; woodland group 6)

Lihue Series

This series consists of well-drained soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock. They are gently sloping to steep. Elevations range from nearly sea level to 800 feet. The annual rainfall amounts to 40 to 60 inches. The mean annual soil temperature is 73° F. Lihue soils are geographically associated with Ioleau and Puhi soils.

These soils are used for irrigated sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, woodland, and homesites. The natural vegetation consists of lantana, guava, koa haole, joee, kikuyugrass, molassesgrass, guineagrass, bermudagrass, and Java plum.

Lihue silty clay, 0 to 8 percent slopes (LhB).

This soil is on the tops of broad interfluves in the uplands. Included in mapping were small areas of a soil that has a very dark grayish-brown surface layer and a mottled subsoil.

In a representative profile the surface layer is duskyred silty clay about 12 inches thick. The subsoil, more than 48 inches thick, is derk-red and dark reddish-brown, compact silty clay that has subangular blocky structure. The substratum is soft, weathered rock. The surface layer is strongly acid. The subsoil is slightly acid to neutral.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is no more than slight. The available water capacity is about 1.5 inches per foot of soil. In places roots penetrate to a depth of 5 feet or more.

Representative profile: Island of Kauai, lat. 21°59'06.7" N. and long. 159°21'50" W.

Ap1-0 to 6 inches, dusky-red (2.5YR 3/2) silty clay, yellowish red (5YR 4/8) when dry; cloddy breaking to weak, fine and medium, subangular blocky structure; very hard, firm, sticky and plastic; abundant roots; common very fine and fine pores; many black concretions; strong effervescence with hydrogen peroxide; strongly acid; abrupt, smooth boundary. 4 to 8 inches thick.

Ap2-6 to 12 inches, dusky-red (2.5YR 3/2) silty clay, yellowish red (5YR 4/6) when dry; massive; very hard, friable, sticky and plastic; many roots; many very fine and fine pores; many, very fine, black concretions; strong effervescence with hydrogen peroxide; strongly acid; abrupt, smooth boundary. 4 to 8 inches thick.

B21-12 to 21 inches, dark reddish-brown (2.5YR 3/4) silty clay, red (2.5YR 4/6) when dry; moderate, medium to very fine, subangular blocky structure; hard, friable, sticky and plastic; abundant roots; many very fine and fine pores; many, fine, black concretions; moderate effervescence with hydrogen peroxide; nearly continuous glaze on ped surfaces, glaze looks like clay films; slightly acid; clear, broken boundary. 7 to 10 inches thick.

B22-21 to 27 inches, dark reddish-brown (2.5YR 3/4) silty clay, red (2.5YR 4/6) when dry; strong, very fine, subangular blocky structure; very hard, friable, sticky and plastic; many roots; many very fine and fine pores; nearly continuous glaze on ped faces; common, black concretions; weak effervescence with hydrogen peroxide; few, fine, black, manganese dioxide stains on ped faces; neutral; clear, smooth boundary. 5 to 8 inches thick.

B23-27 to 48 inches, dark reddish-brown (2.5YR 3/4) silty clay, red (2.5YR 4/6) when dry; strong, very fine, subangular and angular blocky structure; hard, firm, sticky and plastic; few roots; many very fine and fine pores; continuous glaze on ped faces, glaze looks like thick clay films; superimposed on the glaze is dark-red (10R 3/6) material that looks like pseudosand under magnification; large, black coatings on primary structural units; neutral; gradual, smooth boundary. 15 to 30 inches thick

B24-48 to 60 inches, dark-red (2.5YR 3/6) silty clay, red (2.5YR 4/6) when dry; strong, very fine, subangular and angular blocky structure; hard, firm, slightly sticky and plastic; no roots; many very fine and fine pores; thin, patchy coatings that look like clay films; many distinct pressure cutans; ped surfaces have superimposed on them stringy, dark-red (10R 3/6) pseudosand or frostlike coatings; this condition is more prevalent than in the B23 horizon; neutral.

The A horizon ranges from 10R to 5YR in hue, from 2 to 3 in chroma, and from 2 to 3 in value. The B horizon ranges from 10R to 2.5YR in hue and from 4 to 6 in chroma.

This soil is used for sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, and homesites. (Capability classification IIe, irrigated or nonirrigated; sugarcane group 1; pineapple group 5; pasture group 5; woodland group 5)

Lihue silty clay, 8 to 15 percent slopes (LhC).

On this soil, runoff is slow and the erosion hazard is slight. This soil is used for sugarcane, pineapple, pasture, truck crops, orchards, wildlife habitat, and homesites. (Capability classification IIIe, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 5; woodland group 5)

Lihue silty clay, 15 to 25 percent slopes (LhD).

On this soil, runoff is medium and the erosion hazard is moderate. This soil is used for sugarcane, pineapple, pasture, wildlife habitat, and woodland. (Capability classification IVe, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 5; woodland group 5)

Lihue silty clay, 25 to 40 percent slopes, eroded (LhE2).

This soil is similar to Lihue silty clay, 0 to 8 percent slopes, except that the surface layer is thin. Runoff is rapic, and the erosion hazard is severe.

This soil is used for pasture, woodland, and wildlife habitat. Small areas are used for pineapple and sugarcane. (Capability classification VIe, nonirrigated; pasture group 5; woodland group 5)

Lihue gravelly silty clay, 0 to 8 percent slopes (LIB).

This soil is similar to Lihue silty clay, 0 to 8 percent slopes, except that it contains ironstone-gibbsite pebbles and has brighter colors in the B horizon. Included in mapping in the Eleele area and north of the town of Hanamaulu were small areas of soils that have a dark yellowish-brown, friable subsoil.

This soil is used for sugarcane, pasture, and homesites. (Capability classification IIe, irrigated or nonirrigated; sugarcane group 1; pineapple group 5 ; pasture group 5 ; woodland group 5)

Lihue gravelly silty clay, 8 to 15 percent slopes (LIC).

On this soil, runoff is slow and the erosion hazard is slight. Included in mapping were areas where the slope is as much as 25 percent.

This soil is used for sugarcane, pasture, wildlife habitat, and homesites. (Capability classification IIIe, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 5; woodland group 5)

Marsh

Marsh (MZ) consists of wet, periodically flooded areas covered dominantly with grasses and bulrushes or other herbaceous plants. It occurs as small, low-lying areas along the coastal plains. Water stands on the surface, but marsh vegetation thrives. The water is fresh or brackish, depending on proximity to the ocean. Included in mapping were small areas of mangrove swamp and small areas of open water. (Capability classification VIIIw, nonirrigated)

Mokuleia Series

This series consists of well-drained soils along the coastal plains on the islands of Oahu and Kauai. These soils formed in recent alluvium deposited over coral sand. They are shallow and nearly level. Elevations range from nearly sea level to 100 feet. The annual rainfall amounts to 15 to 40 inches on Oahu and 50 to 100 inches on Kauai. The mean annual soil temperature is 74° F. Mokuleia soils are geographically associated with Hanalei, Jaucas, and Keaau soils.

In this survey area a poorly drained variant of the Mokuleia series was mapped. This soil, Mokuleia clay loam, poorly drained variant, is described in alphabetical order, along with other mapping units of this series.

These soils are used for sugarcane, truck crops, and pasture. The natural vegetation consists of kiawe, klu, koa haole, and bermudagrass in the drier areas and napiergrass, guava, and joee in the wetter areas.

Mokuleia clay loam (Mt).

This soil occurs as small areas on the coastal plains. It is nearly level. Included in mapping were small areas of Jaucas soils; small areas of very deep, well-drained soils in drainageways; and small areas of poorly drained clay soils underlain by reef limestone.

In a representative profile the surface layer is very dark grayish-brown clay loam about 16 inches thick. The next layer, 34 to more than 48 inches thick, is dark-brown and light-gray, single-grain sand and loamy sand. The surface layer is neutral in reaction, and the underlying material is moderately alkaline.

Permeability is moderate in the surface layer and rapid in the subsoil. Runoff is very slow, and the erosion hazard is no more than slight. The available water capacity is about 1.8 inches per foot in the surface layer and about 1.0 inches per foot in the subsoil. In places roots penetrate to a depth of 5 feet or more.

Representative profile: Island of Oahu, lat. 21°34'49" N. and long. 158°10'09" W.

Ap-0 to 16 inches, very dark grayish-brown (10YR 3/2) Clay loam, dark grayish brown (10YR 4/2) when dry; moderate, very fine and fine, granular and subangular blocky structure; hard, firm, sticky and plastic; plentiful fine roots; many, very fine and fine, interstitial pores; few, fine and very fine, tubular pores; common wormholes and worm casts; horizon consists of about 25 percent coral sand; slight effervescence with hydrogen peroxide; violent effervescence with hydrochloric acid; neutral; abrupt, wavy boundary. 10 to 16 inches thick.

IIC1-16 to 22 inches, dark-brown (10YR 4/3) loamy sand, brown (10YR 5/3) when dry; massive; soft, slightly hard, nonsticky and nonplastic; plentiful fine roots; porous; few pieces of reef limestone; horizon consists of about 80 percent coral sand; violent effervescence with hydrochloric acid; moderately alkaline; abrupt, smooth boundary. 6 to 20 inches thick.

IIC2-22 to 50 inches, light-gray (10YR 7/2), moist and dry, coral sand; single grain; loose when moist or dry, nonsticky and nonplastic; few fine roots; porous; few pieces of coral; violent effervescence with hydrochloric acid; moderately alkaline.

The depth to coral sand ranges from 12 to 30 inches. The A horizon ranges from 10YR to 5YR in hue and from 1 to 3 in value when moist and 3 to 5 when dry. It ranges from 1 to 3 in chroma when moist and 1 to 3 when dry. The IIC1 horizon ranges from 10YR to 7.5YR in hue, from 3 to 6 in value when moist and 4 to 7 when dry, and from 1 to 3 in chroma.

This soil is used for sugarcane, truck crops, and pasture. Capability classification IIs if irrigated, VIs if nonirrigated; sugarcane group 1; pasture group 3)

Mokuleia clay (Mtb).

This soil has a profile like that of Mokuleia clay loam, except for the texture of the surface layer. It is nearly level. Permeability is slow in the surface layer. Workability is difficult because of the sticky, plastic clay.

This soil is used for sugarcane and pasture. (Capability classification IIIs if irrigated, VIs if nonirrigated; sugarcane group 1; pasture group 3)

Mokuleia fine sandy loam (Mr).

This soil occurs on the eastern and northern coastal plains of Kauai. It is nearly level. This soil has a profile like that of Mokuleia clay loam, except for the texture of the surface layer.

Permeability is moderately rapid in the surface layer and rapid in the subsoil. Runoff is very slow, and the erosion hazard is slight. The available water capacity is about 1 inch per foot in the surface layer and 0.7 inch per foot in the subsoil. Included in mapping were small areas where the slope is as much as 8 percent.

This soil is used for pasture. (Capability classification IIIs if irrigated, IVs if nonirrigated; sugarcane group 1; pasture group 3)

Mokuleia loam (Ms).

This soil has a profile like that of Mokuleia clay loam, except that the surface layer is loam and in most places is about 8 inches thick. It is nearly level.

This soil is used for sugarcane, truck crops, and pasture. (Capability classification IIs if irrigated, VIs if nonirrigated; sugarcane group 1; pasture group 3)

Mokuleia clay loam, poorly drained variant (Mta).

This soil occurs on Kauai. It is nearly level. The soil is poorly drained, and in this way, it differs from other soils of the Mokuleia series. The surface layer is dark brown to black and is mottled.

This soil is used for sugarcane, taro, and pasture. (Capability classification IIIw, irrigated or nonirrigated; sugarcane group 3; pasture group 3)

Pohakupu Series

This series consists of well-drained soils on terraces and alluvial fans on the islands of Oahu and Kauai. These soils formed in old alluvium derived from basic igneous material. They are nearly level to moderately sloping. Elevations range from 50 to 250 feet. The annual rainfall amounts to 40 to 60 inches. The mean annual soil temperature is 73° F. Pohakupu soils are geographically associated with Alaeloa, Papaa, and Lihue soils.

These soils are used for sugarcane, pineapple, truck crops, pasture, and homesites. The natural vegetation consists of guava, Christmas berry, Japanese tea, koa haole, and kikuyugrass.

Pohakupu silty clay loam, 0 to 8 percent slopes (PkB).

This soil has smooth slopes and occurs on terraces and alluvial fans. The slopes are mainly 3 to 8 percent. Included in mapping were small areas of Alaeloa and Waialua soils and small areas where the slope is as much as 15 percent. Also included on Kauai were small areas where the texture is silty clay and small areas that have a hue of 2.5YR in the subsoil.

In a representative profile the surface layer is dark reddish-brown silty clay loam about 13 inches thick. The subsoil, 40 to more than 60 inches thick, is dark reddishbrown and dark-brown silty clay loam that has angular and subangular blocky structure. The substratum is strongly weathered gravel. The soil is slightly acid to medium acid.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.5 inches per foot of soil. In places roots penetrate to a depth of 5 feet or more.

Representative profile: Island of Oahu, lat. 21°22'53" N. and long. 157°45'16" W.

Ap-0 to 13 inches, dark reddish-brown (5YR 3/3) silty clay loam, reddish brown (5YR 4/3) when dry; strong, very fine, subangular blocky structure; hard, friable, sticky and plastic; abundant roots; many very fine and fine pores; common wormholes and worm casts; moderate effervescence with hydrogen peroxide; slightly acid; abrupt, smooth boundary. 8 to 13 inches thick.

B21-13 to 21 inches, dark reddish-brown (5YR 3/3) silty clay loam, reddish brown (5YR 4/4) when dry; moderate, very fine, subangular blocky structure; hard, friable, slightly sticky and plastic; abundant roots; many, very fine and fine, tubular pores; common, patchy pressure cutans; slight effervescence with hydrogen peroxide; slightly acid; abrupt, smooth boundary. 4 to 9 inches thick.

B22-21 to 38 inches, dark-brown (7.5YR 3/4) silty clay loam, brown (7.5YR 4/4) when dry; strong, very fine, blocky and subangular blocky structure; hard, friable, sticky and plastic; plentiful roots; many, very fine and fine, tubular pores; continuous pressure cutans on ped surfaces; few highly weathered pebbles; many black stains in pores and on peds; stains show strong effervescence with hydrogen peroxide; slightly acid; clear, irregular boundary. 4 to 17 inches thick.

B23-38 to 50 inches, dark-brown (7.5YR 3/4) silty clay loam, brown (7.5YR 4/4) when dry; strong, very fine, angular and subangular blocky structure; hard, friable, sticky and plastic; few roots; many, very fine and fine, tubular pores; strong, continuous pressure cutans; few highly weathered pebbles; common black stains that effervesce with hydrogen peroxide; slightly acid; clear, irregular boundary. 12 to 20 inches thick.

B3-50 to 76 inches, dark-brown (7.5YR 3/4) silty clay loam, brown (7.5YR 4/4) when dry; strong, very fine, angular and subangular blocky structure; hard, friable, slightly sticky and plastic; few roots; many, very fine and fine tubular pores; nearly continuous pressure cutans; few highly weathered pebbles; few, fine, black stains that effervesce with hydrogen peroxide; slightly acid.

Effervescence with hydrogen peroxide ranges from slight to moderate in the upper part of the profile and from slight to none below. The structure in the B horizon ranges from moderate to strong. In places a few boulder cores occur within the lower part of the profile. The A horizon ranges from 2 to 3 in chroma and value when moist. The B horizon ranges from 7.5YR to 5YR in hue and from 3 to 4 in chroma and value when moist.

This soil is used for pasture, truck crops, and homesites on Oahu and for sugarcane and pineapple on Kauai. (Capability classification IIe if irrigated, IIIe if nonirrigated; sugarcane group 1; pasture group 6; woodland group 5)

Pohakupu silty clay loam, 8 to 15 percent slopes (PkC).

On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. Workability is slightly difficult because of the slope.

Included in mapping were small areas where the surface layer and part of the subsoil have been removed. Also included, near the drainageways, were areas where the slope ranges from 15 to 25 percent.

This soil is used for pasture. (Capability classification IIIe, nonirrigated; sugarcane group 1; pasture group 6; woodland group 5)

Puhi Series

This series consists of well-drained soils on uplands on the island of Kauai. These soils developed in material derived from basic igneous rock. They are nearly level to steep. Elevations range from 175 to 500 feet. The annual rainfall amounts to 60 to 80 inches. The mean annual soil temperature is 73° F. Puhi soils are geographically associated with Lihue and Kapaa soils.

These soils are used for sugarcane, pineapple, truck crops, orchards, pasture, woodland, wildlife habitat, water supply, and homesites. The natural vegetation consists of guava, Java plum, pangolagrass, kikuyugrass, elephantopus, joee, yellow foxtail, and rhodomyrtus.

Puhi silty clay loam, 0 to 3 percent slopes (PnA).

This soil is on broad interfluves on the uplands.

In a representative profile the surface layer is brown silty clay loam about 12 inches thick. The subsoil, about 48 inches thick, is reddish-brown and dark reddish-brown silty clay loam and silty clay that has subangular blocky structure. The substratum is silty clay. The surface layer is very strongly acid. The subsoil is slightly acid to medium acid.

Permeability is moderately rapid. Runoff is very slow, and there is no erosion hazard. The available water capacity is about 1.3 inches per foot of soil. In places, roots penetrate to a depth of 5 feet or more.

Representative profile: Island of Kauai, lat. 22°01'14" N. and long. 159°23'8.1" W.

Ap-0 to 12 inches, brown (10YR 4/3) silty clay loam, brown (10YR 4/3) when rubbed, yellowish brown (10YR 5/4) when dry; moderate, very fine, subangular blocky structure; hard, friable, slightly sticky and slightly plastic; abundant roots; many, very fine and fine, tubular pores and common interstitial pores; many gritty particles that are hard to break down; delayed effervescence with hydrogen peroxide; very strongly acid; abrupt, wavy boundary. 11 to 14 inches thick.

B21-12 to 21 inches, reddish-brown (5YR 4/4) silty clay loam, yellowish red (5YR 4/6) when dry; weak, very fine and fine, subangular blocky structure; hard, friable, slightly sticky and slightly plastic; plentiful fine and very fine roots; many very fine pores and common fine pores; nearly continuous, shiny glaze on peds; patchy coatings that look like clay films on some peds; medium acid; gradual, smooth boundary. 7 to 11 inches thick.

B22-21 to 33 inches, dark reddish-brown (5YR 3/4) silty clay loam, yellowish red (5YR 4/6) when dry; common black specks; moderate, very fine and fine, sub angular blocky structure; hard, friable, slightly sticky and slightly plastic; plentiful fine and very fine roots; many very fine pores and common fine pores; nearly continuous, shiny glaze on peds, patchy coatings that look like clay films on some peds; stringy coatings of stronger chroma; slightly acid; gradual, smooth boundary. 10 to 14 inches thick.

B23-33 to 41 inches, dark reddish-brown (2.5YR 3/4) silty clay loam, yellowish red (5YR 4/6) when dry; moderate, very fine, subangular blocky structure; hard, friable, slightly sticky and plastic; few very fine roots; many very fine pores and common medium pores; continuous, shiny glaze on peds ; patchy coatings that look like clay films on peds ; many shiny particles; many, very fine, black specks; medium acid; gradual, smooth boundary. 6 to 9 inches thick.

B24-41 to 90 inches, dark reddish-brown (5YR 3/3) silty clay, yellowish red (5YR 4/8) when dry; strong, very fine and fine, subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; many very fine and fine pores and common medium pores; continuous, shiny glaze on peds; many, very fine, black specks and shiny particles; medium acid.

The A horizon ranges from 7.5YR to 10YR in hue, from 2 to 4 in value, and from 2 to 4 in chroma. The B horizon ranges from 2.5YR to 7.5YR in hue, from 3 to 4 in value, and from 3 to 4 in chroma.

This soil is used for sugarcane, pineapple, orchards, truck crops, pasture, and homesites. (Capability classification IIs, irrigated or nonirrigated; sugarcane group 1; pineapple group 4; pasture group 8; woodland group 7)

Puhi silty clay loam, 3 to 8 percent slopes (PnB).

On this soil, runoff is slow and the erosion hazard is slight. This soil is used for sugarcane,

pineapple, orchards, pasture, truck crops, and homesites. (Capability classification IIc, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 8; woodland group 7)

Puhi silty clay loam, 8 to 15 percent slopes (PnC).

On this soil, runoff is slow and the erosion hazard is slight. This soil is used for sugarcane, pineapple, pasture, and orchards. (Capability classification IIIe, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 8; woodland group 7)

Puhi silty clay loam, 15 to 25 percent slopes (PnD).

On this soil, runoff is medium and the erosion hazard is moderate. Included in mapping were small, eroded areas.

This soil is used for sugarcane, pineapple, orchards, pasture, woodland, wildlife habitat, and water supply. (Capability classification IVe, irrigated or nonirrigated; sugarcane group 1; pineapple group 6; pasture group 8; woodland group 7)

Puhi silty clay loam, 25 to 40 percent slopes (PnE).

On this soil, runoff is rapid and the erosion hazard is severe.

This soil is used for pasture, woodland, wildlife habitat, and water supply. (Capability classification VIe, nonirrigated; pasture group 8; woodland group 7)

Rough Broken Land

Rough broken land (rRR) consists of very steep land broken by numerous intermittent drainage channels. In most places it is not stony. It occurs in gulches and on mountainsides on all the islands except Oahu. The slope is 40 to 70 percent. Elevations range from nearly sea level to about 8,000 feet. The local relief is generally between 25 and 500 feet. Runoff is rapid, and geologic erosion is active. The annual rainfall amounts to 25 to more than 200 inches.

These soils are variable. They are 20 to more than 60 inches deep over soft, weathered rock. In most places some weathered rock fragments are mixed with the soil material. Small areas of rock outcrop, stones, and soil slips are common. Included in mapping were areas of colluvium and alluvium along gulch bottoms.

This land type is used primarily for watershed and wildlife habitat. In places it is used also for pasture and woodland. The dominant natural vegetation in the drier areas consists of guava, lantana, Natal redtop, bermudagrass, koa haole, and molassesgrass. Ohia, kukui, koa, and ferns are dominant in the wetter areas. Puakeawe, aalii, and sweet vernalgrass are common at the higher elevations. (Capability classification VIIe, nonirrigated)

Exhibit "D"

LSB Map 100

EXHIBIT "D"

Exhibit "E"

LSB Map 107

EXHIBIT "E"

Exhibit "F"

Economics For Goats

Exhibit "G" of "C"

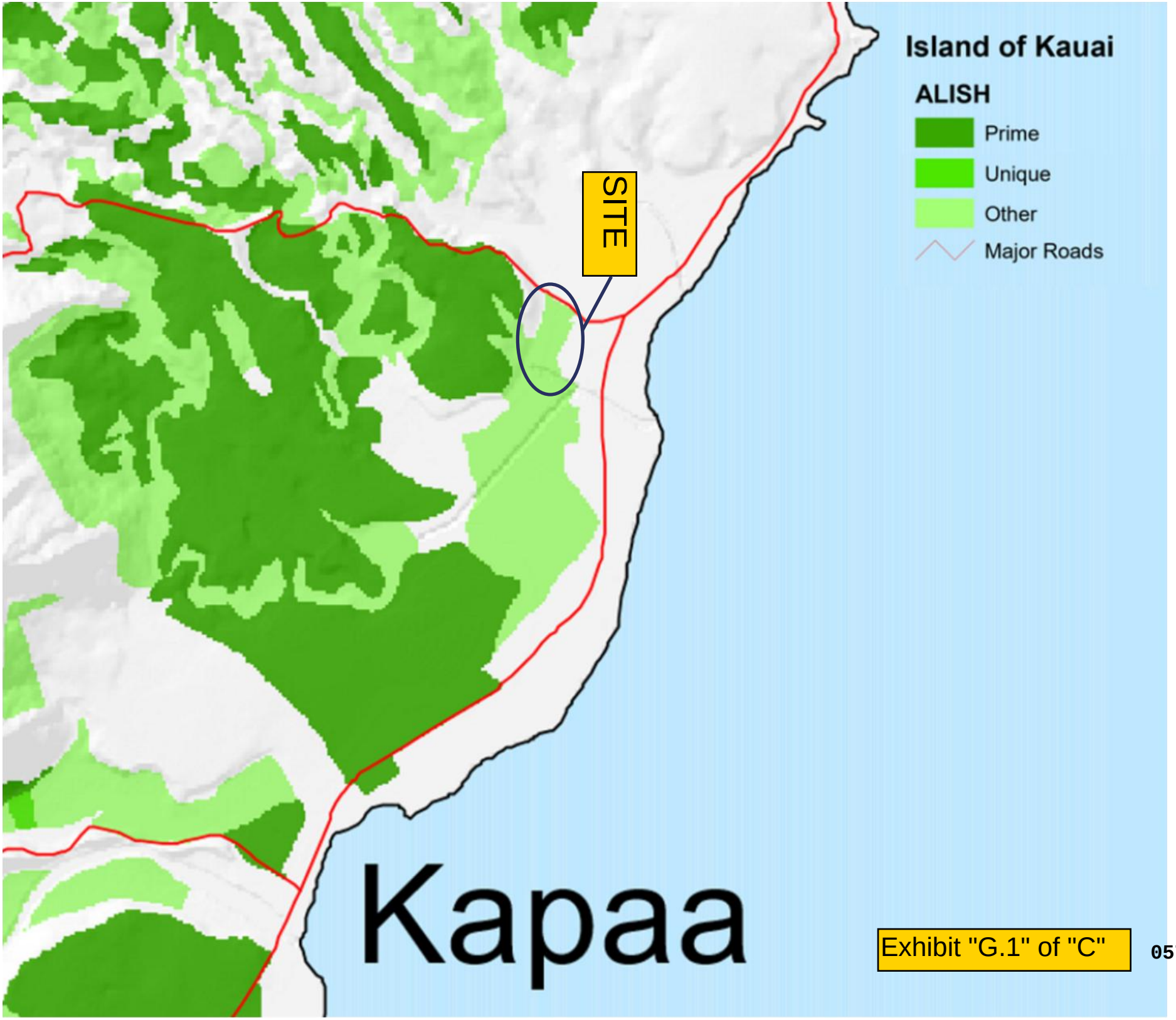
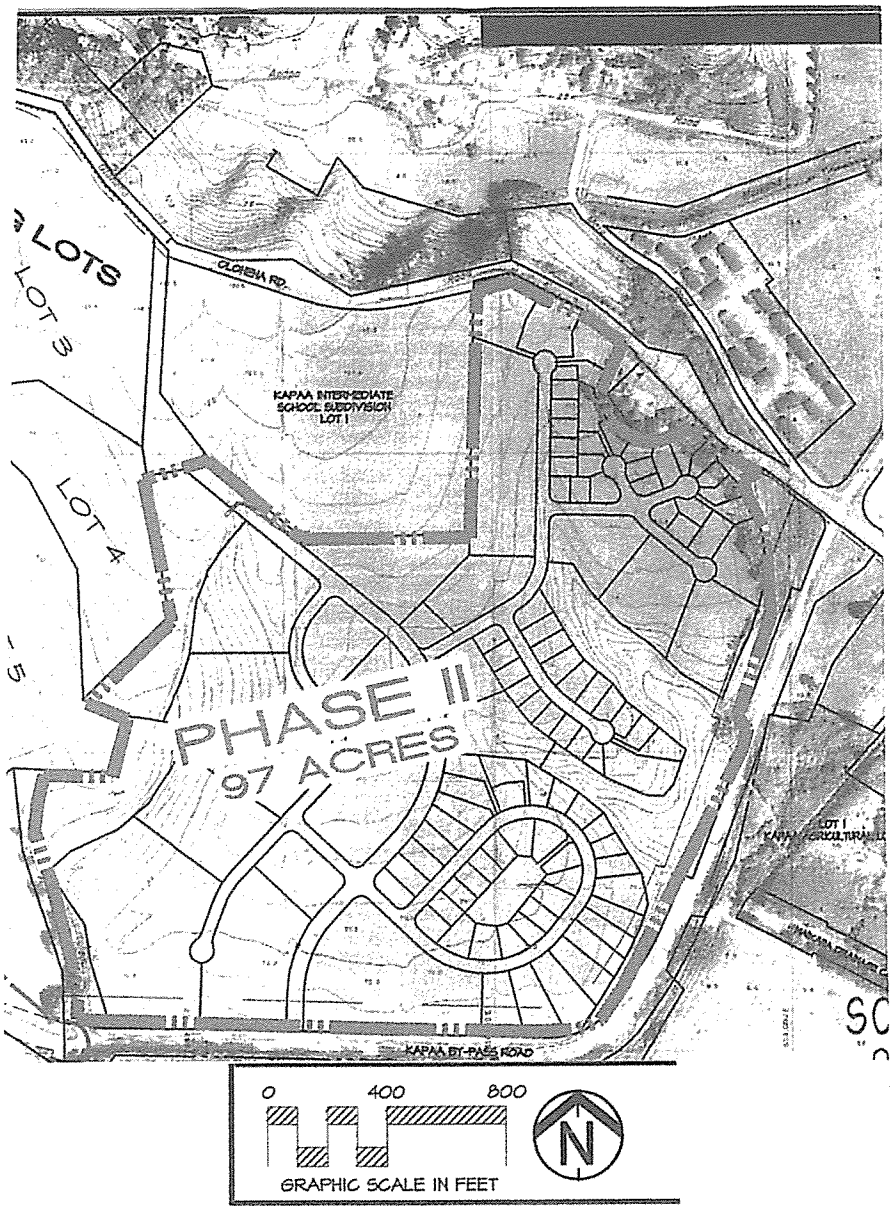


Exhibit "G.1" of "C"

EXHIBIT "C.1"

Kapaa Highlands Phase II
Agricultural Suitability

June, 2018



Agricon Hawaii LLC
P.O. Box 95
Kamuela, HI 96743

Kapaa Highlands Phase II
Agricultural Suitability
June 2018

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Kapaa Highlands Phase II
Agricultural Suitability
June 2018

INTRODUCTION

Kapaa Highlands Phase II is a 97 acre parcel of land in Kapaa, Kauai, Hawaii near Kapaa Middle School. Phase II is part of tax map key number (4) 4-3-003:001, a 163.42 acre parcel. Phase II is presently classified and zoned agriculture under the Hawaii State Land Use and County of Kauai designations. Because of Phase II's location adjacent to urban areas and constraints that lessen its agricultural importance to the County of Kauai and the State, reclassifying Phase II from agriculture to urban would not have a significant negative impact on farming for Kauai or for the state.

SUMMARY

The climate and soils at Phase II are not ideal for the growing of most commercially viable crops due to the strong trade winds and the salt spray from the ocean.

The proximity of Kapaa Middle School and residential subdivisions to the property will require extensive buffers around the agricultural property and will require extreme care in the implementation of farming practices to prevent any dust, spray drift or noise pollution that may impact the school or existing residential property.

The cost of labor, the cost of water, less expensive food imports, food safety requirements, transportation costs and the economies of scale are all hinderances to creating a sustainable farming community on Kauai.

Kauai has an abundance of large parcels of good agricultural land that are not located within urban and rural areas.

The reclassification of 97 acres of agricultural land that is surrounded by urban development and is designated in the Kauai General Plan for urban expansion will have a minor impact on the potential of Kauai's ability to feed its population over time.

DESCRIPTION OF THE PROPERTY

The property is located in Kapaa, Kauai above the Kapaa by-pass road and adjacent to Kapaa Middle School. The property is further identified by TMK (4) 4-3-003-001, Phase II. The land area in Phase II totals 97 acres that is classified and zoned as agricultural land. The property is not currently being used for any type of agriculture.

Kapaa Highlands Phase II
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CLIMATE & SOILS

Climate

The climate is dominated by northeasterly tradewinds caused by high pressure weather systems with winds in the 15 to 35 plus mile per hour (mph) range. Low pressure systems occur during the winter and occasionally during the rest of the year. This latter type of weather system has winds that are variable and usually light to moderate (5 mph to 15 mph) from the south or west or a combination. There are conditions when the low pressure systems generate storms with high winds (50+ mph) and excessive rainfall. From June to November hurricanes can occur although they are infrequent.

The rainfall is approximately 50 inches although, possibly because of global warming, rainfall is difficult to predict and can be considerably higher at times than 50 inches per year.

Temperature during the day ranges from high 80 degrees Fahrenheit ('F) in the summer to low 70's 'F during the winter with slightly cooler temperatures during the night.

The strong tradewinds throughout this property are a negative factor for agricultural production. Costly windbreaks would be required to protect the crops. Another factor that will inhibit plant growth is the salt spray from the ocean carried by the strong winds. The salt spray can limit the crop selection as some agricultural crops are not tolerant of salt spray. Also, the salt spray can damage the production and decrease the quality and sale price.

Topography and Soils

The property elevation slopes gently from approximately 50 feet above sea level at southeast boundary of the property to 100 feet at the northwest section. There are no designated floodplains on the property except for a very small area on the western edge that lies within the 100 year floodplain.

The most extensive soil type on the property is the loleau silty clay loam with 2 to 30 percent slope although most of this soil type on Phase II has 2 to 6 percent slopes (approximately 40 acres). Soil depth to underlying igneous rock is 60 inches. This soil's natural drainage is good and flooding and ponding are not a problem. The surface soil has some organic matter (5%). There are approximately 30 acres of the Puhi silty clay loam soil with 3 to 8 percent slopes. This soil is similar to the loleau soils except that the surface organic matter is 7 percent. There are about 12 acres of soil categorized as rough broken land on the eastern side of Phase II, along with 3.1 acres of poorly drained Mokuleia clay loam. There is a small section of marsh (.3 acres) on the south boundary.

Because the most prevalent soils on the property drain rapidly and rainfall can be erratic, an irrigation system would be required for optimum crop production.

A large portion of this property is presently covered with common trees and bushes all of which would require removal prior to any development.

See Appendix A – Climate and Soils Information.

HAWAII LAND CLASSIFICATIONS

The Hawaii Land Study Bureau (LSB) rates this property as B, C, D and E. This rating indicates that the agricultural potential is mediocre with some areas of good soil and others fair to poor soil. The Agricultural Lands of Importance to the State of Hawaii (ALISH) designation includes Prime and Other. This rating as with the LSB rating indicates areas of the property have the potential for some good crop production as well as medium to poor production.

See Appendix B - Hawaii Land Classification Maps.

AGRICULTURAL LAND ON KAUAI & ITS USE

The total land area of the Island of Kauai is 353,900 acres. The island's four (4) basic land classifications are:

Urban	14,573 acres
Rural	1,253 acres
Conservation	198,769 acres
Agricultural	139,305 acres

Kauai has a farming and ranching community that utilizes approximately one half of the agriculturally classified acreage. There are a total of 63,244 acres in agricultural use. Pasture covers the largest acreage at 41,934 acres. Crops account for the remaining acreage with seed corn production the largest crop segment at 13,299 acres followed by coffee at 3,788 acres.

Recently the seed companies have been decreasing their acreage planted for seed production. Kauai Coffee, one of Kauai's larger agricultural operations, is not expanding its acreage, but improving and replacing coffee trees on its existing acreage under cultivation to increase per acre production. Hawaii Department of Land and Natural Resources has agricultural land that is not being farmed and could be leased to farmers.

Because of the cessation of sugar production on Kauai and the release of these lands, these former sugar lands are available for other agricultural crops. Consequently, there is adequate agricultural land available on the island to produce food to supply the residents of Kauai. Presently, however, the available agricultural land is not being fully utilized because of other constraints to agricultural development.

See Appendix C – Crop Summary by Acreage (2015).

FUTURE FOOD PRODUCTION ON KAUAI

The total acreage on Kauai that is classified for agriculture is 139,305. Of this land, 63,244 acres is currently in active agriculture. The total land area in active agriculture that is not in livestock production is 21,310 acres. Food crops account for 2,314 acres (includes aquaculture) and the predominant food crops are taro and tropical fruit. Food crops (for the purpose of this report) are crops that produce an edible vegetable or fruit. Livestock acreage is considered separately.

Providing food on Kauai for the people living on Kauai or for export is not a land availability issue and should not be in the future. The land that is classified for agriculture but is not in livestock or diversified crops totals 76,061 acres. If 75 % of this land is suitable for growing food crops, the potential for growing food crops increases by approximately 57,000 acres. Suitable is land where the soils have a LSB rating of A, B or C; have adequate rainfall (approximately 60 inches per year) or adequate water for irrigation; are not impacted by salt spray from the ocean; and are tillable.

LOCATION

A major constraint to agricultural development on Phase II of this property is the proximity of the Kapaa Middle School, located on the northern side of the property. Additionally, there are adjacent subdivisions on the north and eastern sides of the property. The existing substantial urban development that is in close proximity to the agriculturally classified parcel will require extensive buffers around the agricultural property and will require extreme care in the implementation of farming practices to prevent any dust, spray drift or noise pollution that may impact the school or existing residential property. The Kauai General Plan designates this property as future urban expansion.

LABOR

The growing of food on Kauai for the people of Kauai is constrained by the lack of people willing to farm this land. A seasoned vegetable farmer expressed the opinion that if a farmer can make money farming, more farmers will farm.

The lack of both skilled and unskilled labor for the agricultural industry on Kauai is a major problem. The present unemployment rate on Kauai is 1.8%, which is essentially full employment. The competition for labor is a serious problem for most of the industries on Kauai. The tourist industry generally pays higher wages and has better benefits for its employees. Many workers prefer the type of jobs offered in the tourist industry versus the agricultural industry. In addition, the technology industry, construction industry, suppliers to these industries and some smaller cottage industries all compete for a finite labor supply and generally offer higher wages.

The County of Kauai Economic Development Department has a very proactive farm internship program in the local high schools to address the lack of farm labor on the island. This program has grown from two high school intern participants in 2014 to 41 interns in 2018. Although it will be many years before

this program can supply sufficient farm labor with the skills, experience, and desire to farm, it will eventually help to ameliorate the farm labor shortage.

INFRASTRUCTURE COSTS

Infrastructure costs to develop a farm are another constraint to farming Phase II. County water is available to the property. Although the County has an agricultural water rate to provide an incentive for farming, the water is still expensive. The current rate is $2.20 per 1,000 gallons. Installing an irrigation system would be required to ensure consistent and quality crop production. Well-designed windbreaks are needed to protect the crops from the prevailing tradewinds and require installation and time to grow large enough to provide adequate wind protection. Extensive brush clearing is required to remove the invasive plant material presently growing on the property. The primary plant species are Haole Koa (Leucaena leacocephala) and Guinea Grass (Megathyrsus maximus). Equipment and materials storage are required and would entail constructing a building. Land preparation and application of soil amendments based on a soil analysis would have to be done prior to planting the crops. A farm road(s) would need to be constructed. Incurring all these costs prior to receiving any income from the sale of the farm production requires capital and that can be difficult for a farmer to obtain.

MARKETING

For a profitable farm operation on this property investing in a good marketing program for the production is a key component. The County of Kauai is developing markets through its Sunshine Markets program for quality produce from small Island farms. However, most of the food presently consumed on Kauai is imported from the mainland because it is cheaper than the food that is produced on Kauai. Price of the product is the most important factor although quality and organic production can be factors in selling a product at a high price if the customer is motivated to pay more for what he or she considers a better product.

An important cost of marketing farm production is the requirement to comply with the United States Department of Agriculture (USDA) food security regulations. These USDA regulations are for consumer protection from diseases carried by food such as salmonella.

Efficient and available transportation to the market is another cost factor for the farm. Kauai has a severe traffic problem, and this increases the cost and makes transporting farm production to the markets a challenge.

FOOD SECURITY

Food security, defined as having sufficient food grown on Kauai to support the resident population in the event of a disruption in transportation between Hawaii and the U.S. Mainland, is a significant issue in Hawaii and is discussed on a regular basis. On Kauai the constraints listed here make achieving the

production of sufficient food to feed the population difficult. There is sufficient unused agricultural land on the island if these other issues are addressed satisfactorily to supply Kauai with adequate food for its population.

CONCLUSION

The reclassification of 97 acres of agricultural land surrounded by urban development will have minimal impact on Kauai's ability to feed its population over time. The Island of Kauai has an abundance of good agricultural land that can be put into the production of food for the Island's population. The bottlenecks are first and foremost the lack of farmers and farm workers. Until the farmer can make a good living farming, it will be difficult to provide enough local food to feed the people of Kauai. Other constraints are competition from imports (lower price), infrastructure costs and marketing.

Appendix A
Climate and Soils Information

Soils Map

Date: 5/31/2018

Field Office: LIHUE SERVICE CENTER
Agency: USDA-NRCS
Assisted By: GENOA STARRS

State and County: HI, Kauai County, Hawaii
Land Units: (4) 4-3-003:001
Approximate Acres: 163.13

Legend 600 0 600 1,200 Feet 1 inch = 600 feet

Rice Soils Map

MUSYM, MUNAME

- HnA;Hanalei silty clay, 0 to 2 percent slopes, MLRA 167
- IoB;Ioleau silty clay loam, 2 to 6 percent slopes
- IoC;Ioleau silty clay loam, 6 to 12 percent slopes
- IoD2;Ioleau silty clay loam, 12 to 20 percent slopes, eroded
- IoE2;Ioleau silty clay loam, 20 to 30 percent slopes, eroded
- LhB;Lihue silty clay, 0 to 8 percent slopes
- LhC;Lihue silty clay, 8 to 15 percent slopes
- LhD;Lihue silty clay, 15 to 25 percent slopes
- MZ;Marsh
- Mta;Mokuleia clay loam, poorly drained variant
- PkB;Pohakupu silty clay loam, 0 to 8 percent slopes
- PnB;Puhi silty clay loam, 3 to 8 percent slopes
- rRR;Rough broken land
- Rice Poly Layer

N

Soils Inventory Report

Thu May 31 2018 11:17:28 GMT-1000 (Hawaiian Standard Time)

Map Unit Symbol	Map Unit Name	Acres	Percent
HnA	Hanalei silty clay, 0 to 2 percent slopes, MLRA 167	1.1	1%
IoB	Ioleau silty clay loam, 2 to 6 percent slopes	45.1	28%
IoC	Ioleau silty clay loam, 6 to 12 percent slopes	16.2	10%
IoD2	Ioleau silty clay loam, 12 to 20 percent slopes, eroded	10.6	7%
IoE2	Ioleau silty clay loam, 20 to 30 percent slopes, eroded	24	15%
LhB	Lihue silty clay, 0 to 8 percent slopes	8.2	5%
LhC	Lihue silty clay, 8 to 15 percent slopes	0.7	0%
LhD	Lihue silty clay, 15 to 25 percent slopes	3.9	2%
Mta	Mokuleia clay loam, poorly drained variant	3.1	2%
MZ	Marsh	0.3	0%
PkB	Pohakupu silty clay loam, 0 to 8 percent slopes	0.8	0%
PnB	Puhi silty clay loam, 3 to 8 percent slopes	31.4	19%
rRR	Rough broken land	16.1	10%
	Total:	161.5	100%

Map Unit Description (Brief, Generated)

Island of Kauai, Hawaii

[Minor map unit components are excluded from this report]

Map unit: HnA - Hanalei silty clay, 0 to 2 percent slopes, MLRA 167

Component: Hanalei (85%)

The Hanalei component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on valley floors on islands. The parent material consists of alluvium derived from basalt. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is frequently flooded. It is occasionally ponded. A seasonal zone of water saturation is at 42 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 8 percent. This component is in the F164XY500HI Volcanic Ash Forest ecological site. Nonirrigated land capability classification is 2w. Irrigated land capability classification is 2w. This soil does not meet hydric criteria. The soil has a maximum sodium adsorption ratio of 3 within 30 inches of the soil surface.

Map unit: IoB - Ioleau silty clay loam, 2 to 6 percent slopes

Component: Ioleau (100%)

The Ioleau component makes up 100 percent of the map unit. Slopes are 2 to 6 percent. This component is on uplands. The parent material consists of basic igneous rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 2e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria.

Map unit: IoC - Ioleau silty clay loam, 6 to 12 percent slopes

Component: Ioleau (100%)

The Ioleau component makes up 100 percent of the map unit. Slopes are 6 to 12 percent. This component is on uplands. The parent material consists of basic igneous rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map Unit Description (Brief, Generated)

Island of Kauai, Hawaii

Map unit: IoD2 - Ioleau silty clay loam, 12 to 20 percent slopes, eroded

Component: Ioleau (100%)

The Ioleau component makes up 100 percent of the map unit. Slopes are 12 to 20 percent. This component is on uplands. The parent material consists of basic igneous rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4e. Irrigated land capability classification is 4e. This soil does not meet hydric criteria.

Map unit: IoE2 - Ioleau silty clay loam, 20 to 30 percent slopes, eroded

Component: Ioleau (100%)

The Ioleau component makes up 100 percent of the map unit. Slopes are 20 to 30 percent. This component is on uplands. The parent material consists of basic igneous rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Map unit: LhB - Lihue silty clay, 0 to 8 percent slopes

Component: Lihue (100%)

The Lihue component makes up 100 percent of the map unit. Slopes are 0 to 8 percent. This component is on uplands. The parent material consists of basic igneous dust. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 2e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The soil has a maximum sodium adsorption ratio of 3 within 30 inches of the soil surface.

Map unit: LhC - Lihue silty clay, 8 to 15 percent slopes

Component: Lihue (100%)

The Lihue component makes up 100 percent of the map unit. Slopes are 8 to 15 percent. This component is on uplands. The parent material consists of basic igneous dust. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria. The soil has a maximum sodium adsorption ratio of 3 within 30 inches of the soil surface.

Map Unit Description (Brief, Generated)

Island of Kauai, Hawaii

Map unit: LhD - Lihue silty clay, 15 to 25 percent slopes

Component: Lihue (100%)

The Lihue component makes up 100 percent of the map unit. Slopes are 15 to 25 percent. This component is on uplands. The parent material consists of basic igneous dust. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 4e. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. The soil has a maximum sodium adsorption ratio of 3 within 30 inches of the soil surface.

Map unit: Mta - Mokuleia clay loam, poorly drained variant

Component: Mokuleia variant (85%)

The Mokuleia variant component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on coastal plains. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is occasionally flooded. It is occasionally ponded. A seasonal zone of water saturation is at 48 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. Irrigated land capability classification is 3w. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 97 percent. There are no saline horizons within 30 inches of the soil surface.

Map unit: MZ - Marsh

Component: Marsh (100%)

The Marsh component makes up 100 percent of the map unit. Slopes are 0 to 2 percent. This component is on along Coastal Plains marshes. The parent material consists of organic. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is frequently flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 80 percent. Nonirrigated land capability classification is 8w. This soil meets hydric criteria. The soil has a slightly saline horizon within 30 inches of the soil surface.

Map Unit Description (Brief, Generated)

Island of Kauai, Hawaii

Map unit: PkB - Pohakupu silty clay loam, 0 to 8 percent slopes

Component: Pohakupu (100%)

The Pohakupu component makes up 100 percent of the map unit. Slopes are 0 to 8 percent. This component is on and terraces alluvial fans. The parent material consists of alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria.

Map unit: PnB - Puhi silty clay loam, 3 to 8 percent slopes

Component: Puhi (100%)

The Puhi component makes up 100 percent of the map unit. Slopes are 3 to 8 percent. This component is on uplands. The parent material consists of basic igneous rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 7 percent. Nonirrigated land capability classification is 2e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The soil has a maximum sodium adsorption ratio of 3 within 30 inches of the soil surface.

Map unit: rRR - Rough broken land

Component: Rough broken land (100%)

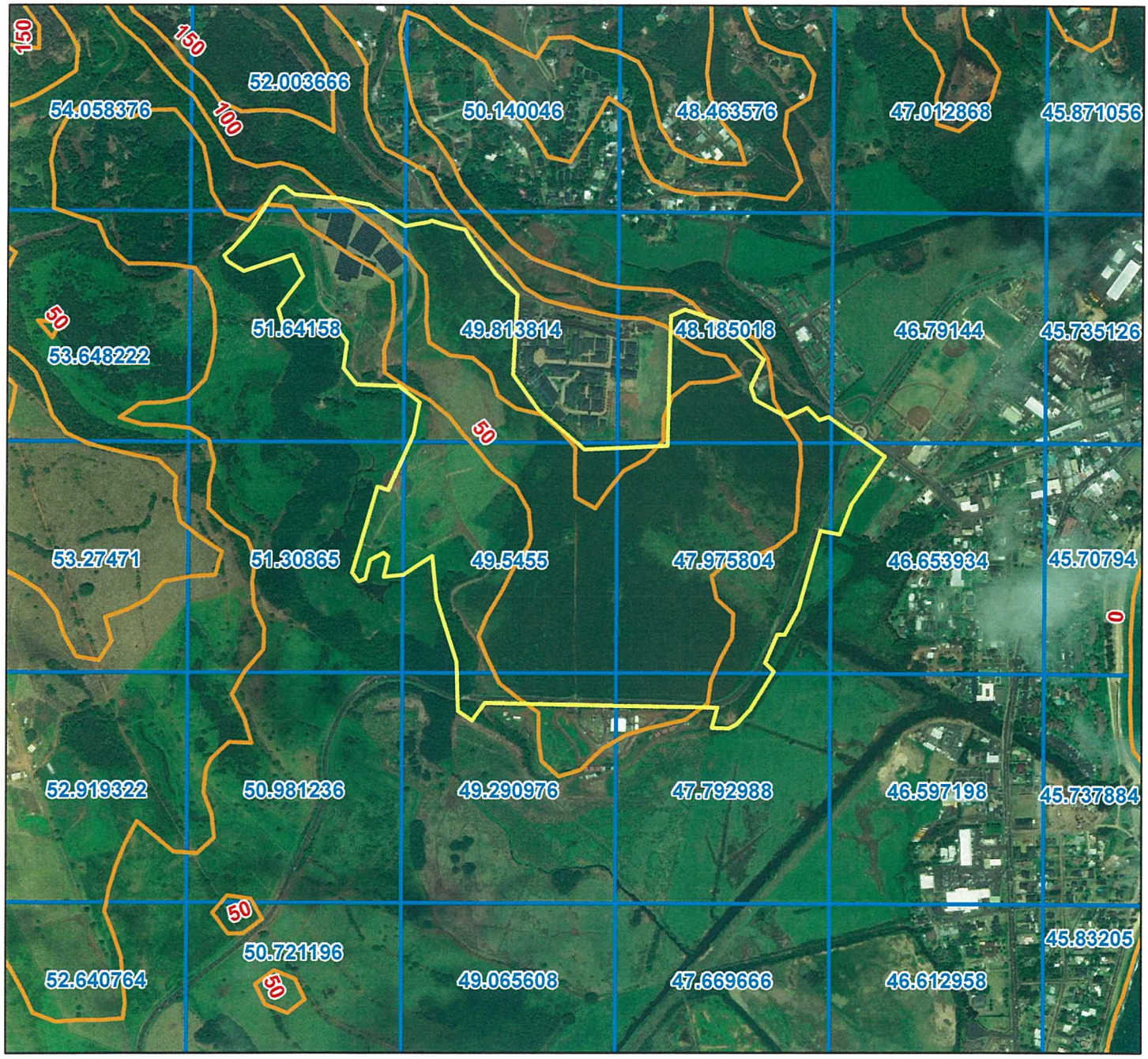
The Rough broken land component makes up 100 percent of the map unit. Slopes are 40 to 70 percent. This component is on mountain sides gulches. The parent material consists of alluvium and colluvium. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 55 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Elevation and Precipitation Map

Date: 5/31/2018

Field Office: LIHUE SERVICE CENTER
Agency: USDA-NRCS
Assisted By: GENOA STARRS

State and County: HI, Kauai County, Hawaii
Land Units: (4) 4-3-003:001
Approximate Acres: 163.13



Legend

- Rice Poly Layer
- precip2000_a_hi007
- contour50f_l_hi007

1,000 0 1,000 2,000 Feet

1 inch = 1,000 feet

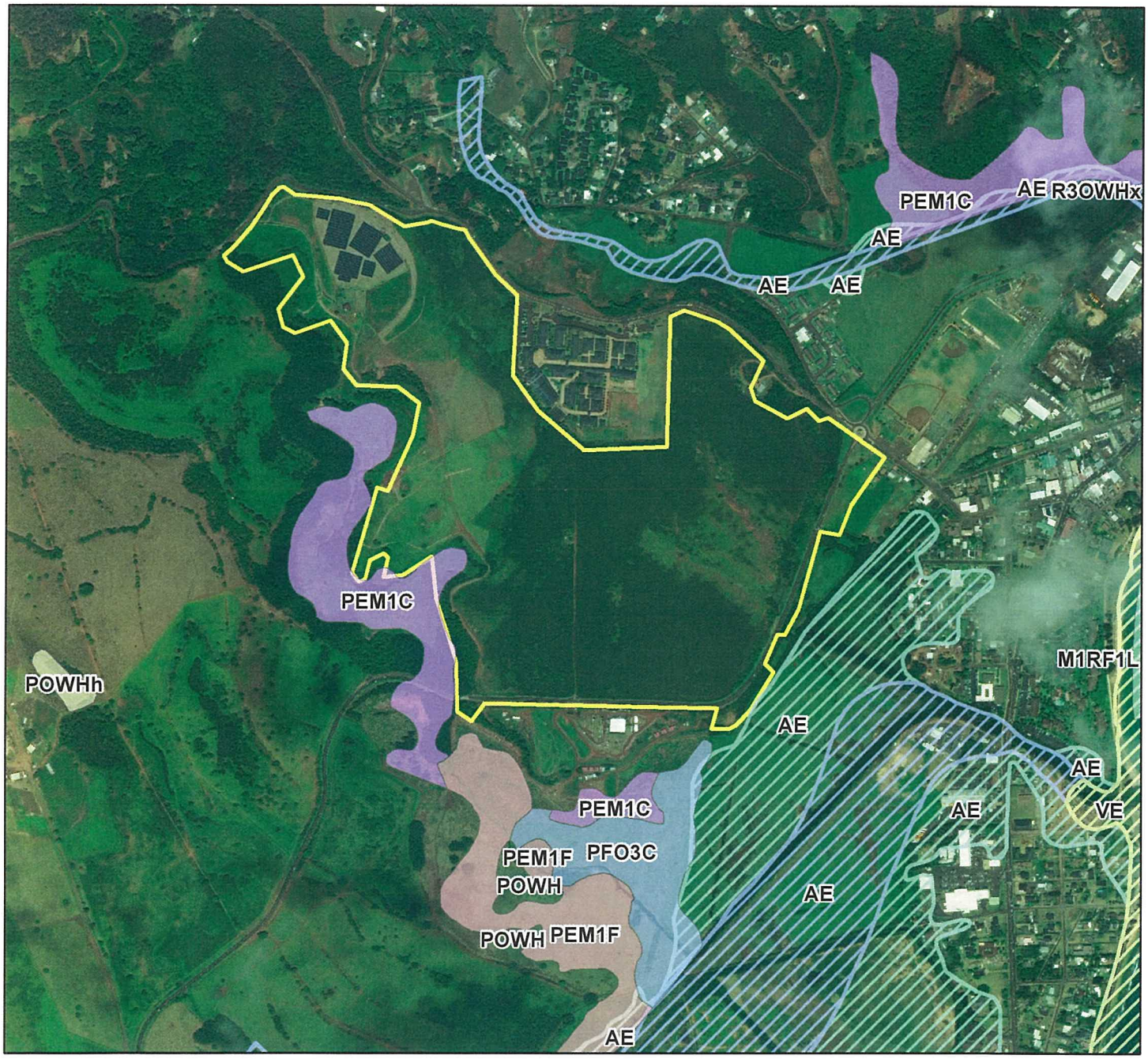
N

Wetland/Floodplain Map

Date: 5/31/2018

Field Office: LIHUE SERVICE CENTER
Agency: USDA-NRCS
Assisted By: GENOA STARRS

State and County: HI, Kauai County, Hawaii
Land Units: (4) 4-3-003:001
Approximate Acres: 163.13



Legend

1,000 0 1,000 2,000 Feet

1 inch = 1,000 feet

N

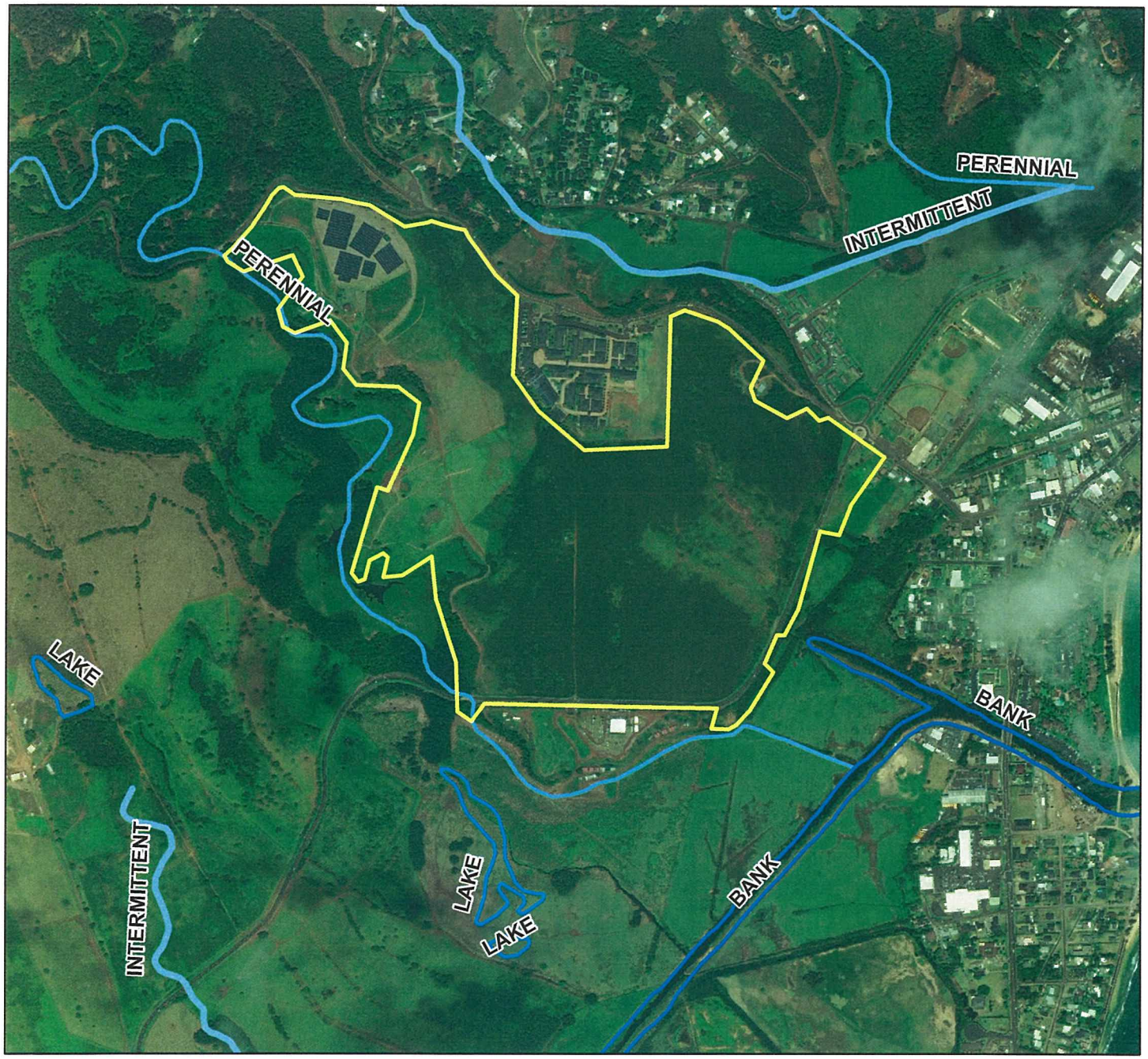
WCODE	ZONE, FLOODWAY, Descrip
M1RF1L	A; ;100yr floodplain determined by approximate methods, no base flood elevations
PEM1C	AE; ;100yr floodplain by analyses, whole-foot elevations within zone
PEM1F	AE;FLOODWAY;100yr floodplain by analyses, whole-foot elevations within zone
PFO3C	VE; ;100yr coastal floodplain with storm waves, approx. analysis, no base flood elev
POWHh	Rice Poly Layer
R3OWH	

Hydrology Map

Date: 5/31/2018

Field Office: LIHUE SERVICE CENTER
Agency: USDA-NRCS
Assisted By: GENOA STARRS

State and County: HI, Kauai County, Hawaii
Land Units: (4) 4-3-003:001
Approximate Acres: 163.13



Legend

Rice Poly Layer

TYPE

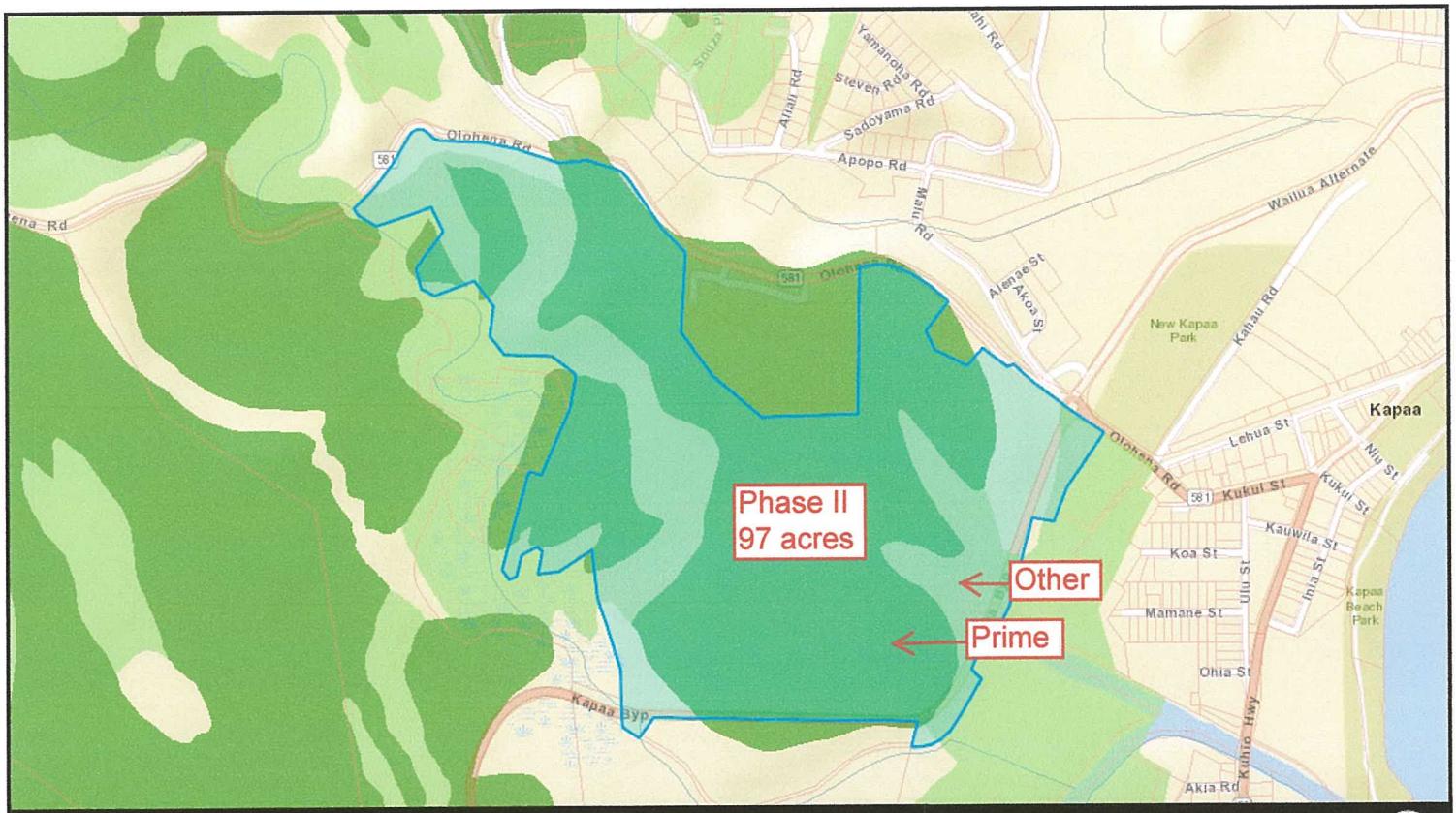
- BANK
- INTERMITTENT
- LAKE
- PERENNIAL

1,000 0 1,000 2,000 Feet

1 inch = 1,000 feet

N

Appendix B
Hawaii Land Classification Maps



Renewable EnerGIS Parcel Report - (4) 4-3-003:001

0 600 ft

SITE DESCRIPTION

Parcel Area (acres): **163.420**
County Zoning: **No data**

County Address: **Olohena Rd**
State Land Use District: **Agriculture; Urban**

LAND ECOLOGY

Critical Habitat: **No**
Special Management Area (SMA): **No**
Thermal Springs Potential: **No data**
High Temperature Resource Areas: **No data**
Reserves: **No**

LAND USE / LAND COVER

Ag Land Use (2011-2015): **Pasture**
Ag Land Use (ALUM 1980): **Grazing; S**
Ag Lands of Importance (ALISH): **Unclassified; Prime; Other**
LSB Soil Rating: **B; C; D; E**
Important Ag Land (IAL): **No data**

INFRASTRUCTURE

Ditches: **DITCH**
Studied Hydro Projects: **No**

HYDROLOGY

Flood Zone: **X**
Streams: **Waikaea**

Point Details – Coordinates of Point: 22.07523, -159.32730

SOLAR RESOURCES

Solar Radiation (calories/cm2/day): **400-450**
DNI Annual (Wh/m2/day): **4,303**
GHI Annual (Wh/m2/day): **5,095**

TERRAIN

NOAA Elevation (m): **31**
USGS Slope (%): **2.81974**
USGS Aspect (degress from N): **219.137**

MARINE RESOURCES

Temp Avg Diff (degrees C): **No data**
Temp Amplitude Diff (degrees C): **No data**
3-Mile Ocean Boundary: **Not applicable**
12-Mile Ocean Boundary: **Not applicable**

Benthic Habitat: **No data**
Whale Sanctuary: **No data**
Marine Managed Area: **No data**
Annual Rainfall: **45.168198**

WIND RESOURCES

Wind Power Density at 50m (W/m2): **239.00**
Wind Speed at 30m (m/s): **No data**
Wind Speed at 50m (m/s): **No data**

Wind Speed at 70m (m/s): **No data**
Wind Speed at 100m (m/s): **No data**

DBEDT STATE OF HAWAII

There are no expressed or implied warranties associated with the release, use, or interpretation of the data or information provided by Renewable EnerGIS. Specifically, no warranty is made that the GIS data or any subsequent updates will be error free and no warranty is made regarding the positional or thematic accuracy of the GIS data or information. The GIS data, information, and any features it depicts do not represent or confer any legal rights, privileges, benefits, boundaries or claims of any kind. Utilization of EnerGIS demonstrates understanding and acceptance of these terms by Renewable EnerGIS users. Information about the data used in Renewable EnerGIS, including dates and sources of the layers, can be found here.

06/24/2018

Layer Name: Agricultural Lands of Importance to the State of Hawaii

Coverage Name: ALISH

Layer Type: Polygon

Status: Complete

Geog. Extent: Main Hawaiian Islands

Projection: Universal Trans Mercator, Zone 4

Datum: NAD 83

Description: Agricultural Lands of Importance to the State of Hawaii for islands of Kauai, Oahu, Maui, Molokai, Lanai & Hawaii.

Source: State Department of Agriculture 1:24,000 hand drafted blueline maps; compiled and drafted in 1977. Prepared with the assistance of the Soil Conservation Service, U.S.Department of Agriculture, and the College of Tropical Agriculture, University of Hawaii. See text below for information about the classification system, including criteria for classification.

History: Digitized in Arc/Info version 6 using ArcEdit by the Office of State Planning (OSP) from State Department of Agriculture's 1:24,000 blueline maps.

Attributes: Polygons:

AREA	area of polygon (sq. meters)
PERIMETER	perimeter of polygon (meters)
ALISH#	Polygon internal number (for Arc/Info use)
ALISH-ID	Polygon ID (for Arc/Info use)
AGTYPE	Agricultural Type

AGTYPE	Definition
<blank>	Unclassified
0	Unclassified
1	Prime Lands
2	Unique Lands
3	Other Lands

Notes: (from "Agricultural Lands of Importance to the State of Hawaii Revised," State Department of Agriculture, November, 1977).

The Classification System:

The classification system for identification of agriculturally important lands in the State of Hawaii provides for the:

1. Establishment of classes of agricultural lands primarily, but not exclusively, on the basis of soil characteristics;

2. Establishment of criteria for classification of lands; and

3. Identification of lands which meet the criteria for the respective classes.

Three classes of agriculturally important lands were established forthe State of Hawaii with the intent of facilitating the SCS effort to inventory prime farmlands nationally and adapting the classification to the types of agricultural activity in Hawaii. These classes and their corresponding SCS (national) equivalents are:

Hawaii Classification System	**SCS Classification System**
Prime Agricultural Land	Prime Farmland
Unique Agricultural Land	Unique Farmland
Other Important Agricultural Land	Additional Farmland of Statewide and Local Importance

The criteria for classification of PRIME AGRICULTURAL LAND are identical to the criteria established by SCS for national application. The criteria for UNIQUE AGRICULTURAL LAND and OTHER IMPORTANT AGRICULTURAL LAND were established cooperatively by the Soil Conservation Service in Hawaii, the College of Tropical Agriculture, and the State Department of Agriculture.

Land considered for classification may or may not currently be in agricultural use, or may be in an agricultural use other than that which its classification may indicate as its agricultural capability. An example of the latter situation is land currently being used for grazing but which meets the criteria for Prime Agricultural Land. Lands not considered for classification as agricultural lands of importance to the State of Hawaii are:

1. Developed urban land over 10 acres;

2. Natural or artificial enclosed bodies of water over 10 acres;

3. Forest reserves;

4. Public use (parks and historic sites) lands;

5. Lands with slopes in excess of 35%; and

6. Military installations, except undeveloped areas over 10 acres.

The classification of agriculturally important lands does not in itself constitute a designation of any area to a specific land use. The classification should, however, provide decision makers with an awareness of the long-term implications of various land use options for production of food, feed, forage, and fiber crops in Hawaii.

Over time new areas may be developed for agricultural uses, other areas may be converted to irreversible non-agricultural uses, and new knowledge may be gained regarding soil interpretations. These and other developments will necessitate the periodic review and revisionof the classification system and lands identified for the various classes.

The Criteria for Classification:

PRIME AGRICULTURAL LAND

PRIME AGRICULTURAL LAND is land best suited for the production of food, feed, forage and fiber crops. The land has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops economically when treated and managed, including water management, according to modern farming methods.

PRIME AGRICULTURAL LAND meets the following criteria:

1. The soils have an adequate moisture supply. Included are:

   a. Soils having aquic or udic moisture regimes. (For definitions of moisture regimes see Soil Taxonomy, Agricultural Handbook 436, December 1975). These soils commonly are in humid or subhumid climates that have well distributed rainfall or have enough rain in the summer that the amount of stored moisture plus rainfall is approximately equal to or exceeds the amount of potential evapotranspiration. Water moves through the soils at some time in most years.

   b. Soils having xeric or ustic moisture regimes and in which the available water capacity is great enough to provide adequate moisture for the commonly grown crops in 7 or more years out of 10.

   c. Soils having aridic or torric moisture regimes and the area has a developed irrigation water supply that is dependable and of adequate quality. Also included are soils having xeric or ustic moisture regimes in which the available water capacity is limited but the area has a developed irrigation water supply that is dependable and of adequate quality.

   d. Soils having sufficient available water capacity within a depth of 40 inches (1 meter), or in the root zone if the root zone is less than 40 inches deep, to produce the commonly grown crops in 7 or more out of 10 years.

      A dependable water supply is one in which enough water is available for irrigation in 8 out of 10 years for the crops commonly grown.

2. The soils have a soil temperature regime that is isomesic, isothermic, or isohyperthermic. These are soils that, at a depth of 20 inches (50 cm), have a mean annual temperature higher than 47 degrees F (8 degrees C), and the difference between the mean summer and mean winter temperature differ by less than 9.0 degrees F (5 degrees C).

3. The soils have a pH between 4.5 and 8.4 in all horizons within a depth of 40 inches (1 meter) or in the root zone if the root zone

is less than 40 inches deep. (Soils which have a pH of less than 4.5 in surface soil because of use of fertilizers are excluded). This range of pH is favorable for growing a wide variety of crops without adding large amounts of amendments.

4. The soils have no water table or a water table that is maintained at a sufficient depth during the cropping season to allow crops common to the area to be grown.

5. The soils can be managed so that in all horizons within a depth of 40 inches (1 meter) or in the root zone if the root zone is less than 40 inches deep, during part of each year the conductivity of saturation extract is less than 4 mmhos/cm and the exchangeable sodium percentage (ESP) is less than 15.

6. The soils are not flooded frequently during the growing season (less often than once in 2 years).

7. The soils have a product of K (erodability factor) x percent slope of less than 2.0. That is, soils having a serious erosion hazard are not included.

8. The soils have a permeability rate of at least 0.06 inches (0.15 cm) per hour in the upper 20 inches (50 cm) and the mean annual soil temperature at a depth of 20 inches is less than 57 degrees F (14 degrees C). Permeability rate is not a limiting factor if the mean annual soil temperature is 57 degrees F (14 degrees C) or higher.

9. Less than 10 percent of the surface layer in these soils consists of rock fragments coarser than 3 inches (7.6 cm). These soils present no particular difficulty in cultivating with large equipment.

10. Must not be thixotropic and have isomesic temperature regime.

UNIQUE AGRICULTURAL LAND

UNIQUE AGRICULTURAL LAND is land other than PRIME AGRICULTURAL LAND and is used for the production of specific high-value food crops. The land has the special combination of soil quality, growing season, temperature, humidity, sunlight, air drainage, elevation, aspect, moisture supply, or other conditions, such as nearness to market, that favor the production of a specific crop of high quality and/or high yield when the land is treated and managed according to modern farming methods. In Hawaii, some examples of such crops are coffee, taro, rice, watercress and non-irrigated pineapple.

Land that qualifies as PRIME AGRICULTURAL LAND and is used for a specific high-value crop is classified as PRIME AGRICULTURAL LAND rather than as UNIQUE AGRICULTURAL LAND.

OTHER IMPORTANT AGRICULTURAL LAND

OTHER IMPORTANT AGRICULTURAL LAND is land other than PRIME or UNIQUE AGRICULTURAL LAND that is of state-wide or local importance for the production of food, feed, fiber and forage crops. The lands in this classification are important to agriculture in Hawaii yet they exhibit properties, such as seasonal wetness, erodibility, limited rooting zone, slope, flooding, or droughtiness, that exclude them from the PRIME or UNIQUE AGRICULTURAL LAND classifications. Two examples are lands which do not have an adequate moisture supply to qualify as PRIME AGRICULTURAL LAND and lands which have similar characterisitics and properties as UNIQUE AGRICULTURAL LAND except that the land is not currently in use for the production of a "unique" crop. These lands can be farmed satisfactorily by applying greater inputs of fertilizer and other soil amendments, drainage improvement, erosion control practices, flood protection and produce fair to good crop yields when managed properly.

Other criteria which may qualify lands as OTHER IMPORTANT AGRICULTURAL LAND are:

1. The land has slopes less than 20%, is presently in crop or has cropping potential, and is not classified as PRIME or UNIQUE AGRICULTURAL LAND. The soils have a moisture supply which is adequate for the commonly grown crop.

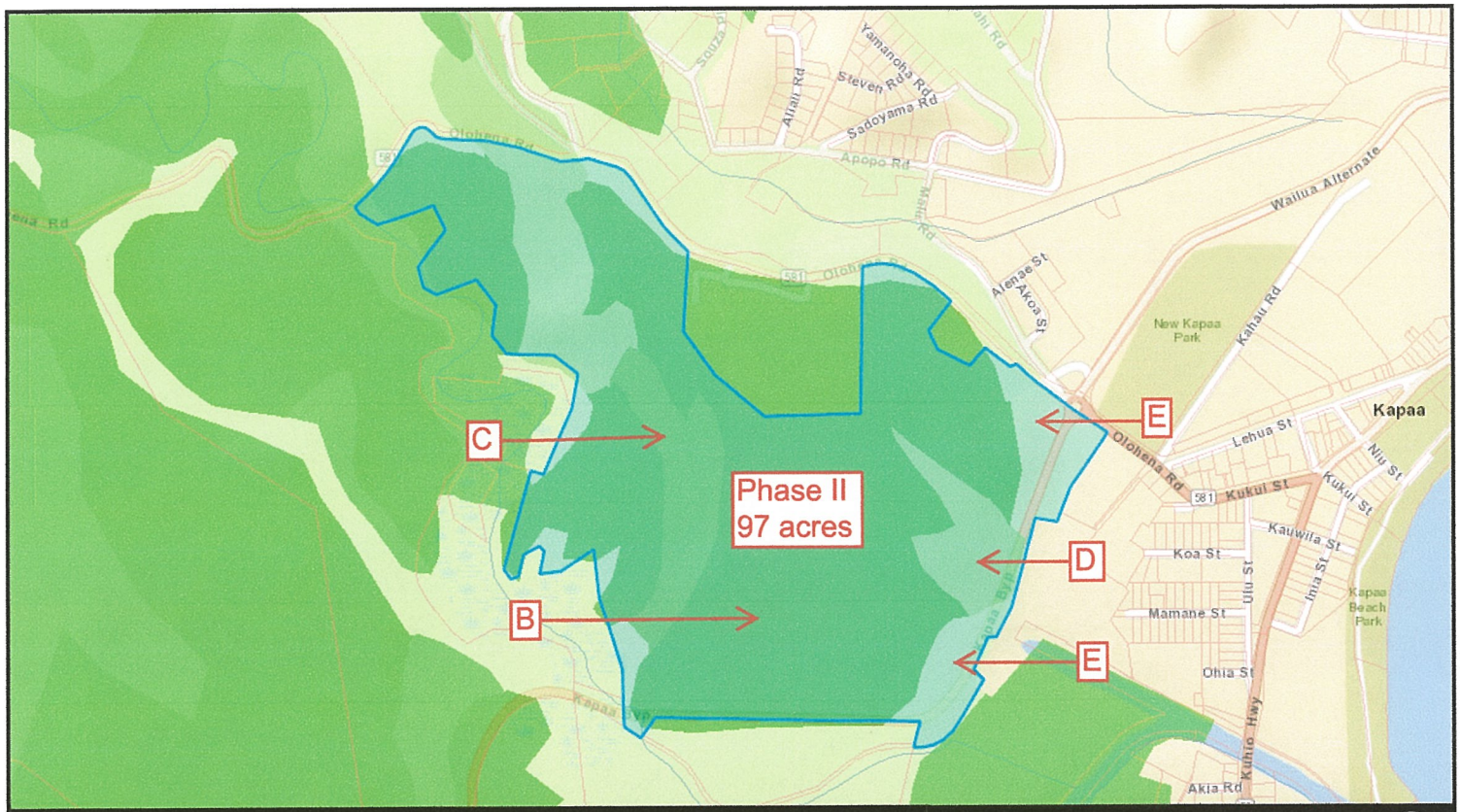
2. The land has slopes less than 35%, is presently used for grazing or has grazing potential, and is not classified as PRIME or UNIQUE AGRICULTURAL LAND. The soils have:

    a. An aquic, udic, xeric, or ustic moisture regime in which the available water capacity is sufficient to produce fair to good yields of adapted forage.

    b. Less than 10% rock outcrops and coarse fragments coarser than 3 inches (7.6 cm) in the surface layer.

3. The soils are thin organic soils underlain by aa lava (typic tropofolists) having aquic, udic, xeric, or ustic moisture regimes and isohyperthemic (greater than 72 degrees F) or isothermic (59 - 72 degrees F) soil temperature regimes.

Contact: Joan Delos Santos, Office of Planning, State of Hawaii,
PO Box 2359, Honolulu, Hi. 96804; (808) 587-2895.
email: JDelos_Santos@dbedt.hawaii.gov



Renewable EnerGIS Parcel Report - (4) 4-3-003:001

0 600 ft

SITE DESCRIPTION

Parcel Area (acres): **163.420**
County Zoning: **No data**
County Address: **Olohena Rd**
State Land Use District: **Agriculture; Urban**

LAND ECOLOGY

Critical Habitat: **No**
Special Management Area (SMA): **No**
Thermal Springs Potential: **No data**
High Temperature Resource Areas: **No data**
Reserves: **No**

LAND USE / LAND COVER

Ag Land Use (2011-2015): **Pasture**
Ag Land Use (ALUM 1980): **Grazing; S**
Ag Lands of Importance (ALISH): **Unclassified; Prime; Other**
LSB Soil Rating: **B; C; D; E**
Important Ag Land (IAL): **No data**

INFRASTRUCTURE

Ditches: **DITCH**
Studied Hydro Projects: **No**

HYDROLOGY

Flood Zone: **X**
Streams: **Waikaea**

Point Details – Coordinates of Point: 22.07523, -159.32730

SOLAR RESOURCES

Solar Radiation (calories/cm2/day): **400-450**
DNI Annual (Wh/m2/day): **4,303**
GHI Annual (Wh/m2/day): **5,095**

TERRAIN

NOAA Elevation (m): **31**
USGS Slope (%): **2.81974**
USGS Aspect (degress from N): **219.137**

MARINE RESOURCES

Temp Avg Diff (degrees C): **No data**
Temp Amplitude Diff (degrees C): **No data**
3-Mile Ocean Boundary: **Not applicable**
12-Mile Ocean Boundary: **Not applicable**
Benthic Habitat: **No data**
Whale Sanctuary: **No data**
Marine Managed Area: **No data**
Annual Rainfall: **45.168198**

WIND RESOURCES

Wind Power Density at 50m (W/m2): **239.00**
Wind Speed at 30m (m/s): **No data**
Wind Speed at 50m (m/s): **No data**
Wind Speed at 70m (m/s): **No data**
Wind Speed at 100m (m/s): **No data**

DBEDT STATE OF HAWAII

There are no expressed or implied warranties associated with the release, use, or interpretation of the data or information provided by Renewable EnerGIS. Specifically, no warranty is made that the GIS data or any subsequent updates will be error free and no warranty is made regarding the positional or thematic accuracy of the GIS data or information. The GIS data, information, and any features it depicts do not represent or confer any legal rights, privileges, benefits, boundaries or claims of any kind. Utilization of EnerGIS demonstrates understanding and acceptance of this data by Renewable EnerGIS users. Information about the data used in Renewable EnerGIS, including dates and sources of the layers, can be found here.

06/24/2018

Layer Name:	Land Study Bureau (LSB) Detailed Land Classification
Layer Type:	Polygon
Status:	Complete; currently being updated
Geog. Extent:	Main Hawaiian Islands
Projection:	Universal Trans Mercator, Zone 4, Meters, NAD 83 HARN
Description:	Land Study Bureau's Detailed Agricultural land productivity ratings for Kauai, Oahu, Maui, Molokai, Lanai and Hawaii.
Source:	Land Study Bureau's Detailed Land Classification Aerial Photos hand drafted onto paper overlays of the U.S.G.S., 1:24,000 topographic and orthophoto quads. Ratings were developed for both over-all productivity, and for specific crops. This layer represents only the over-all productivity ratings. Dates of LSB studies: Hawaii - 1965 Maui - 1967 Oahu - 1972 Kauai - 1967 Molokai - 1968 Lanai - 1967
History:	Digitized in Arc/Info version 7.1.1 using ArcEdit by the Office of Planning (OP), 1998. Note 1: Lands having the LSB rating of "U," which the Land Study Bureau assigned to built-up or urbanized areas (as of the date of the studies), were not digitized. Note 2: All classified lands falling within the State Land Use Urban District were deleted from the layer using the 1995 LUDB coverages. Note 3: Although LSB classification polygons falling within the 1995 LUDB Urban District were deleted from the GIS layer, the classifications themselves still exist – they simply are not represented in this GIS layer. Specifically, there is no provision in State law requiring the rescission of the soil ratings that apply to an area that has been reclassified by the Land Use Commission, e.g., from the Agricultural to Urban districts. Similarly, there is no provision in State law requiring the Detailed Land Classification (Land Study Bureau) bulletins to be reviewed and revised to reflect changes to the land areas for which urban development has occurred.

Attributes: Polygons:

AREA	area of polygon (sq. meters)
PERIMETER	perimeter of polygon (meters)
TYPE	Agricultural Productivity Rating
Island	Island
GISAcres	Acreage, as calculated by GIS software

TYPE	DEFINITION
A-E	Agricultural productivity rating, from A to E, with "A" having the highest rating.

Discussion:

From "A Report on the State of Hawaii Land Evaluation and Site Assessment System" February, 1986, Section IV, pp.23-25):

"Land Study Bureau's Overall Productivity Rating (LSB):

The Land Study Bureau of the University of Hawaii prepared an inventory and evaluation of the State's land resources during the 1960's and 1970's. The Bureau grouped all lands in the State, except those in the urban district**, into homogeneous units of land types; described their condition and environment; rated the land on its over-all quality in terms of agricultural productivity; appraised its performance for selected alternative crops; and delineated the various land types and groupings based on soil properties and productive capabilities.

**Office of Planning note: "urban district," in this context/document, does not refer to the State Land Use District Boundary "Urban District", but instead refers lands that were observed to have been "built areas" in the aerial photographs.

These properties included:

a. Texture-which refers to the proportion of sand, silt and clay in a particular soil. Medium-textured soils which have nearly equal proportions of sand, silt and clay are generally the most desirable for agriculture because of good tillability and water retention.

b. Structure-which refers to the cohesion of soil material into aggregates or clumps. The size, shape and amount of these clumps affect the pore spaces which contain the air and moisture necessary for growth.

c. Depth-which refers to the distance to which roots can penetrate. Generally, the deeper the rooting depth, the more desirable the soil because more moisture can be stored and more soil volume is available from which nutrients can be obtained.

d. Drainage-refers to the frequency and duration of soil saturation with moisture.

e. Parent material-refers to the geologic material from which a soil has developed. Soils formed from coral have neutral to alkaline reactions and are high in calcium. Most of the soils have developed from volcanic material and under tropical conditions of high temperature and rainfall. These soils tend to be acid and fertility levels are relatively low.

f. Stoniness-affects the productivity of land by limiting the use of machinery and the selection of crops.

g. Topography-refers to slope and surface configuration. Lands with flat terrain are better suited for a wider variety of agricultural uses than lands having steeper slopes. Cultivated lands generally have slopes of less than 20 percent. Lands with slopes between 20 to 35 percent usually are not machine-tilled, but are still suitable for certain uses such as orchards and grazing.

h. Climate-with its elements of temperature, sunlight and rainfall constitutes the exterior environment of land, unlike the soil properties which constitute the interior segment.

i. Rain-is the basic source of irrigation. Ideally, it should fall at the place, in the quantity and at the time when it is needed.

The interaction of particular soil properties, topography and climate served to differentiate land types and provided a basis for correlating and establishing productivity ratings. A five-class productivity rating system was developed with "A" representing the class of highest productivity and "E" the lowest."

From "Detailed Land Classification - Island of Kauai," December, 1967, Land Study Bureau, pp. 25-27:

"Over-all (Master) Productivity Rating:

The Over-all Productivity Rating evaluates each Land Type in its over-all or general productive capacity and not for any specific crop. Two independent methods were utilized in ascertaining and checking this over-all rating: averaging the Selected Crop Productivity Ratings and application of the Modified Storie Index (6) (7).

....The Modified Storie Rating Index is a formula whereby the productivity index of the land is developed by multiplying the several factors in the formula. The higher the product, the better suited the Land Type is for agricultural uses.

Modified Storie Rating Index = A x B x C x X x Y

A = percentage rating for the general character of the soil profile
B = percentage rating for the texture of the surface horizon
C = percentage rating for the slope of the land
X = percentage rating for such factors as salinity, soil reaction, damaging winds, erosion, etc.
Y = percentage rating for rainfall

The percentage rating for each factor (A, B, C, X and Y) increases as the favorableness of the factor increases. Therefore, it follows that as the land productivity index approaches 100 percent, the agricultural quality of the land increases. Conversely, less desirable lands have low value indexes. The following are the Modified Storie Index percentages and their associated Over-all Productivity Ratings.

Modified Storie Index Percentages	Over-all Productivity Rating
85-100	A
70-84	B
55-69	C
30-54	D
0-30	E

.....each factor is discussed briefly to indicate its role in determining land quality for agricultural purposes:

The ratings for factor A take drainage and depth of the soil profile into consideration. Deep and shallow soils are recognized and differentiated. The nature of the surface soil and subsoil are considered. Parent material and degree of soil development are recognized as they affect fertility, structure, depth, aeration and moisture-holding capacity of the soil.

Factor B, which expresses the texture of the surface soil, reflects the relative workability of the soil as well as its composition of silt, sand and clay. Stony lands, including lava lands, are placed in special categories. The soils are separated into textural groups. Soils are usually expected to react quite similarly when of similar textural groups. Texture is closely associated with moisture-holding capacity and workability of the soil.

Factor C accounts for the variations in the slope of the land. The slope classes are designed to differentiate ease of irrigation and use of mechanical equipment, susceptibility to erosion, amount of surface runoff, and suitability for commercial forest production. In general, slopes exceeding 35 percent are considered too steep for cultivated crops, and slopes greater than 80 percent are assumed impractical for commercial forest production.

Factor X includes the miscellaneous land characteristics such as soil fertility, soil reaction, soil salinity, and presence of strong winds.

Factor Y accounts for rainfall and associated climatic feature. As a general rule, lands in the higher rainfall zones are cloudy and therefore lower in productivity; irrigated lands are rated 100 because the moisture requirement is adequately met. It is the general assumption that where irrigation is required, climate is usually satisfactory for crop production."

Note: For more detailed explanations of the Land Rating criteria, refer to the Land Study Bureau's publications for each island:

Detailed land classification: island of Hawaii. , Honolulu: Land Study Bureau, University of Hawaii, Nov. 1965.
Detailed land classification - island of Kauai. , Honolulu: University of Hawaii, Land Study Bureau, Dec. 1967.
Detailed land classification - island of Lanai. , Honolulu: University of Hawaii, Land Study Bureau, May 1967.
Detailed land classification: Island of Maui. , Honolulu: Land Study Bureau, University of Hawaii, May 1967.
Detailed land classification: Island of Molokai. , Honolulu: Land Study Bureau, University of Hawaii, June 1968.
Detailed land classification: Island of Oahu. , Honolulu: Land Study Bureau, University of Hawaii, Jan. 1963.

Note: The Detailed Land Classification and the Hawaii Land Evaluation and Site Assessment System publications referenced above can be found at the Hawaii Legislative Reference Bureau (http://lrb.hawaii.org/, 808-587-0690), and at Hawaii State Public Libraries (http://www.librarieshawaii.org/, 808-586-3500).

Contact : Statewide GIS Program, Office of Planning, State of Hawaii,
PO Box 2359, Honolulu, HI. 96804; (808) 587-2846.
email: gis@hawaii.gov

Appendix C
2015 Crop Summary by Acreage

2015 Crop Summary by Acreage							
Crop Types	Hawai'i	Kaua'i	Maui	Moloka'i	Lāna'i	O'ahu	State Total
Aquaculture	165	183	-	28	-	274	651
Banana	536	26	62	-	-	345	969
Coffee	5,525	3,788	545	123	-	168	10,149
Commercial Forestry	21,061	1,743	33	-	-	26	22,864
Dairy	1,855	-	-	-	-	-	1,855
Diversified Crop	3,266	1,199	1,582	937	54	9,865	16,904
Flowers / Foliage / Landscape	1,612	165	134	26	10	484	2,432
Macadamia Nuts	21,359	-	186	-	-	-	21,545
Papaya	2,566	-	-	93	-	166	2,824
Pineapple	-	-	1,094	-	-	3,414	4,508
Seed Production	-	13,299	754	2,342	-	7,333	23,728
Sugar	-	-	38,810	-	-	-	38,810
Taro	61	443	54	2	-	51	612
Tropical Fruit	3,144	463	104	43	-	227	3,980
Crop Total:	***61,149***	***21,310***	***43,360***	***3,593***	***65***	***22,354***	***151,831***
Pasture	554,324	41,934	108,447	38,261	-	18,464	761,429
Total Agriculture	***615,473***	***63,244***	***151,808***	***41,854***	***65***	***40,818***	***913,261***

Appendix D
Resources

RESOURCES

County of Kauai Office of Economic Development, Kauai Economic Development Board. Kauai Economic Development Plan 2005-2015. Lihue, Kauai, Hawaii. Pages 65 – 73.

County of Kauai Planning Department. Kauai General Plan 2018. Lihue, Kauai. Pages 4-20 to 4-26.

Hawaii Land Use Law and Policy. How Much Agricultural Land Does Hawaii Need? @HILandUseLaw. March 11, 2008.

Kauai Coffee Company, LLC. Kalaheo, Hawaii.

Melrose, Jeffrey, Perroy R., Cares S. Statewide Agricultural Land Use Baseline Study 2015. Hawaii Department of Agriculture. University of Hawaii at Hilo Spatial Data Analysis & Visualization Research Lab, Hilo, Hawaii.

State of Hawaii Office of State Planning. Hawaii Statewide GIS Program June 2018. Honolulu, Hawaii.

United States Department of Agriculture Natural Resource and Conservation Service, Pacific Islands Area. Lihue Service Center, Lihue, Kauai.

Exhibit D

Department of Water, Kaua'i County
Manger's Report 12-10

Economics for Goats

01-Jun-07

General Assumptions:	Ratio	Units
Acreage		102
Animal units per acre		3.5
Total animal units (AU)		357
Breeding herd :		206
Bucks (1)	3%	6
Does (30)	97%	200
Kids per doe per year	1.5	300
Total animal units (AU)		356

Note: Bucks & Does = 1 AU each, Kids = 1/2 AU each.

Annual Revenue from Goat Sales:	Ratio	Units	Unit Price	Annual Revenue
Local Kauai Sales	75%	225	$ 160	$ 35,968
Honolulu Sales (FOB Lihue)	25%	75	$ 140	$ 10,491
Totals		300		$ 46,458

Expense:	Units	Unit Cost	Fixed Cost	Annual Cost
Labor:				
Part-time labor (hours)	520	$ 15.00		$ 7,800
Feed:				
Barley-Corn (per head)	206	$ 2.90		$ 597
Minerals:				
Mineral block (per head)	206	$ 12.00		$ 2,472
Veterinary Supplies:				
Worming (per head)	206	$ 1.20		$ 247
Water:				
Annual requirement (3 gallons per head per day)	206	$ 2.03		$ 417
Repair & Maintenance:				
Repair fences, gates, water system			$ 1,200	$ 1,200
Vehicle - Repair , Maintenance and Fuel			$ 2,000	$ 2,000
Hauling Goats (per head):	206	$ 0.70		$ 144
Total Direct Costs				$ 14,878
Overhead:				
Lease Rent (unit cost per acre per year)		$ 35.00		$ 3,570
Administration			$ 500	$ 500
Management			$ 5,000	$ 5,000
Other			$ 250	$ 250
Total Overhead				$ 9,320
Net Operating Profit (Loss)				$ 22,260

EXHIBIT "D"

MANAGER'S REPORT 12-10:

July 21, 2011

Re: Kapaa Highland Request

RECOMMENDATION:

Your concurrence is requested to allow the staff to enter into an agreement in accordance with Part III Section XII of the rules with Kapaa Highland subject to county attorney concurrence. This exchange should be on a dollar for dollar basis not gallon for gallon.

BACKGROUND:

The developer is proposing the following exchange: the developer will give the DOW undeveloped water and in return, the DOW will provide the developer with storage for the developer's project; both will be built to department standards.

The project has a large portion of land that shows in the community plan to be affordable housing though not currently zoned as such. I have checked with the county housing department and the Mayor's office and both want to see the affordable housing go forward. This concurrence is verbal.

The planned storage for planned water exchange will allow this project to move forward when other developments have been stopped due to inadequate storage. There appears to be an overall county benefit and the implementation would be subject to finally getting the storage and source completed.

Our storage project is scheduled to be completed in 3-4 years. The source development could be sooner. The issue with this proposal is wells in different locations have different yields and DOW storage is only subject to available funds.

The developer has drilled a well and tested it. The well is too crooked to be used as a normal source of water and have to be redrilled in another location. The next one may not provide the same yield. It is low enough risk that this is being recommended.

Respectfully submitted,

David R. Craddick, P.E.
Manager and Chief Engineer

Department of Water County of Kaua'i

Water has no substitute.....Conserve it

August 22, 2011

Mr. Gregg Allen
161 Wailua Road
Kapaa, HI 96746

Dear Mr. Allen:

Subject: Water Master Plan for the Kapa'a Highlands Project on TMK: 4-3-03:001

At the Department of Water, Water Board July 28th 2011 meeting, via Managers Report 12-10, in response to your letters of April 22, 2011 and May 11, 2011, accepted the proposed exchange of source for storage on a dollar for dollar basis. This acceptance is based on your commitment to proceed with zoning changes in your development to match the county zoning. That zoning change requires affordable housing in certain portions of your proposed development.

This acceptance is based on building permits and County water meter service not being issued if the source and storage requirements have not been completed as of the date of requested building permit approval. We ask that you submit a proposed draft of an agreement to memorialize this action. We would expect that this agreement runs with the land.

If you have any questions, please contact Mr. Gregg Fujikawa at (808) 245-5416.

Sincerely,

David R. Craddick, P.E.
Manager and Chief Engineer

GF/WE:bdm
Bill/Gregg Allen Response Letter/July Board Mtg.

4398 Pua Loke St., P.O. Box 1706, Lihue, HI 96766 Phone: 808-245-5400
Engineering and Fiscal Fax: 808-245-5813, Operations Fax: 808-245-5402, Administration Fax: 808-246-8628

Exhibit E

Irrigation Supply For the Kapa'a Highlands Agricultural Subdivision
Water Master Plan

EXHIBIT "E"

TNWRE
Tom Nance Water
Resource Engineering

No. of pages: 8
Email: gallen@harbormall.net

Original ☑ will ☐ will not be mailed to you.

October 27, 2006
06-281 (05-41)

MEMORANDUM

TO: Greg Allen

FROM: Tom Nance

SUBJECT: Irrigation Supply for the Kapaa Highlands Agricultural Subdivision

Introduction

This memo report assesses the feasibility of developing an onsite well (or wells) to provide the necessary irrigation supply for the Kapaa Highlands Agricultural Subdivision. The total area of the project is 163 acres. Wagner Engineering Services, Inc. has determined that up to 113 acres of the site is suitable for agricultural use (Figure 1). The Kauai Department of Water (DOW) standards require an average supply for irrigation for 2500 GPD/acre. For 113 acres, this translates to a year-round average of 0.283 MGD. Applying a maximum seasonal use factor of 1.5 results in a required summertime supply capability of 0.424 MGD (equivalent to 295 GPM operating continuously).

Results of an Onsite Exploratory Borehole

To investigate the possibility of providing the irrigation supply with an onsite well or wells, an exploratory borehole was drilled and pump tested. The location of this exploratory borehole is shown on Figures 1 and 2. Ground elevation at the well site is 25 feet. It was drilled to a depth of 260 feet or 235 feet below sea level. During the course of drilling, two separate aquifers were encountered. The upper aquifer has a static water level of about 19 feet above sea level (MSL) and it extends to a depth of about 80 feet (ie. to 55 feet below sea level). It has very limited yield (less than 30 GPM) as it is essentially a collection of water in the soil mantle perched on poorly permeable Koloa lavas beneath it.

The strata between 80- and 210-foot depth are poorly permeable and function as an aquiclude separating the upper and lower aquifers. The lower aquifer, which starts at 210-foot depth and extends below the 260-foot depth of the exploratory borehole, has a static water level about 13 feet (MSL). This lower aquifer is quite productive.

A pump test was run at my direction to define the potential yield and quality of water from the lower aquifer. Using a combination of casing and grout, water from the upper aquifer was sealed off for this test. Results of the 12-hour test conducted on October 19, 2006 are presented on Figures 3, 4, and 5. A series of flowrate steps were run initially to define hydraulic performance (Figure 3). Using a curve

500 Ala Moana Boulevard, Suite [illegible] · Honolulu, Hawaii 96813-4811 · Phone: [illegible] · Fax: [illegible] · Email: [illegible]

fitting technique, these results define expectable drawdown for a range of pumping rates (Figure 4). For example, at 500 GPM, the drawdown would be 7.5 feet.

The remainder of the 12-hour test was run at 550 GPM to see if any salinity change would occur. These results are shown on Figure 5 and Table 1. The salinity (as measured by conductivity) actually decreased for the first two hours and stabilized after that. Chlorides of just 53 MG/L demonstrate that the water is quite fresh and obviously suitable for irrigation use.

Conclusions and Recommendations Regarding the Irrigation Supply

1. Results of the exploratory borehole demonstrate that an adequate irrigation supply for the Agricultural Subdivision can be developed from a single onsite well located in the near proximity of the exploratory borehole.

2. The finished dimensions of the production well should be based on the following:

   a. A 17-inch borehole should be drilled to 300-foot depth.

   b. 220 feet of 8-inch solid casing and 80 feet of 8-inch perforated casing should be installed in the borehole.

   c. The annular space from 220 feet to the ground surface should be sealed with cement grout.

   d. Final pump testing at rates up to 550 GPM should be conducted to confirm the well's yield.

3. A companion report by ITC Water Management describes the delivery components of the irrigation system based on the following:

   a. A 7.5 horsepower, 450 GPM submersible pump and motor should be installed in the well at a depth of 30 to 40 feet.

   b. The well pump should deliver water to an adjacent storage tank of at least 30,000 gallons in size. Well pump cycles would be controlled by a level switch in the tank.

   c. An on-demand pump station of up to 600 GPM capacity should be installed next to the tank to draw water from the tank and deliver it to users in the agricultural subdivision.

Attachments

Specific Conductance and Chlorides of Samples
Collected During the 12-Hour Pump Test on October 19, 2006

Sample Time	Pumping Rate (GPM)	Specific Conductance (µS/cm @ 25° C.)	Chlorides (MG/L)
10:05	317	468	55
10:30	317	449	54
11:00	438	440	54
11:30	529	436	53
12:00	528	432	53
13:00	527	430	53
14:00	527	429	53
15:00	527	429	53
16:00	528	429	53
17:00	529	428	53
18:00	531	429	53
19:00	532	430	53
20:00	533	431	53
21:00	533	431	53
22:00	533	431	53

Notes: 1. Specific conductance measured in the TNWRE office using a HACH Sension5 meter calibrated with a 12.88 mS/cm standard.

2. Chlorides determined by mercuric nitrate titration in the TNWRE office. Samples were diluted 10 fold.

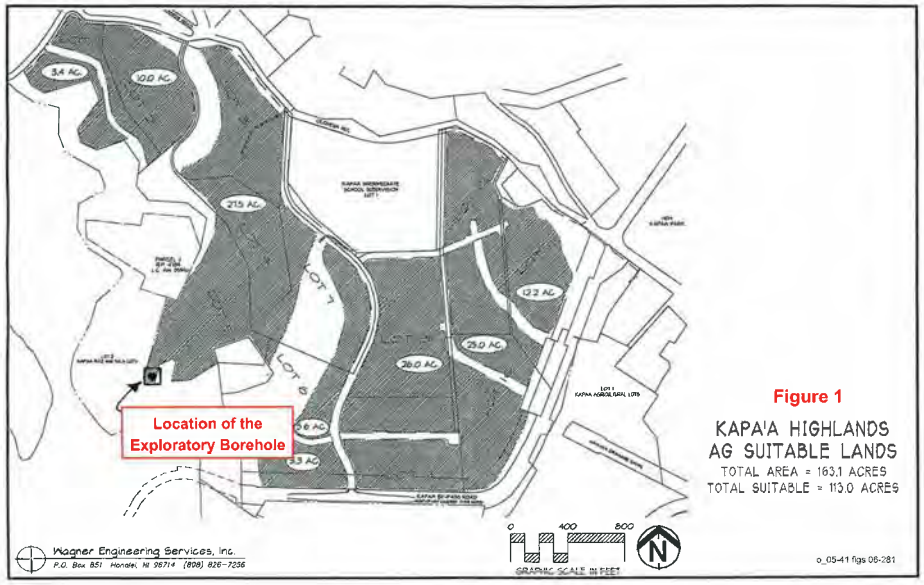


Figure 1

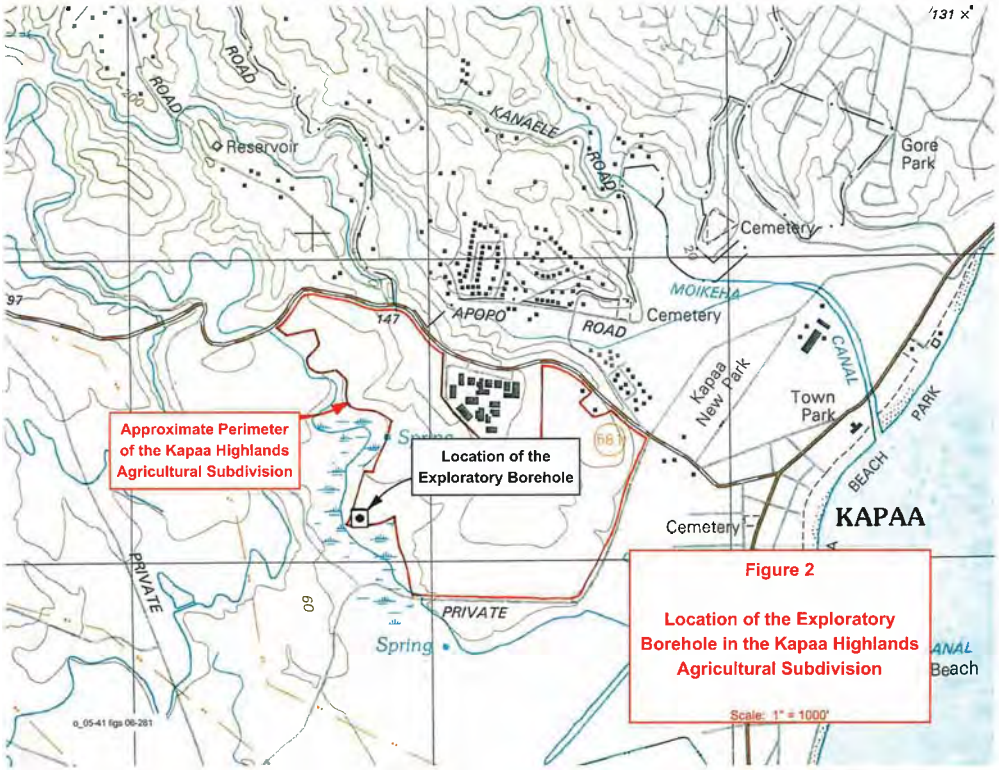


Figure 2

Location of the Exploratory Borehole in the Kapaa Highlands Agricultural Subdivision

Figure 3. Pumping Rate and Water Level During the 12-Hour Test

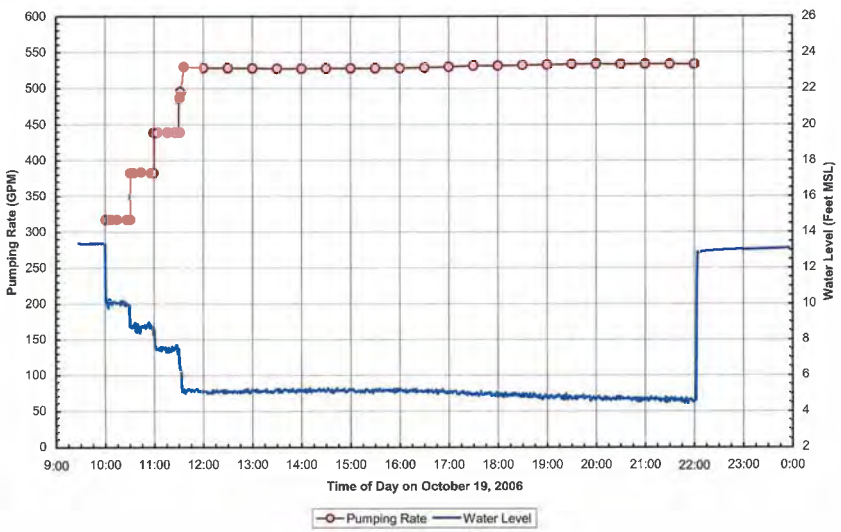


Figure 4. Hydraulic Performance of the Well Based on Step Test Data

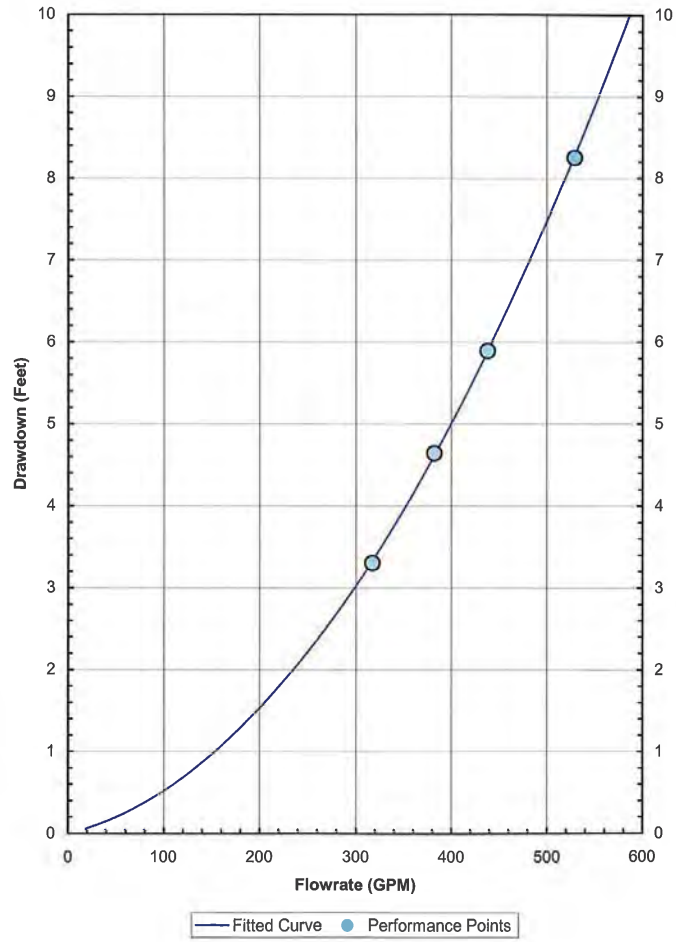


Figure 5. Pumped Water Conductivity through the 12-Hour Test

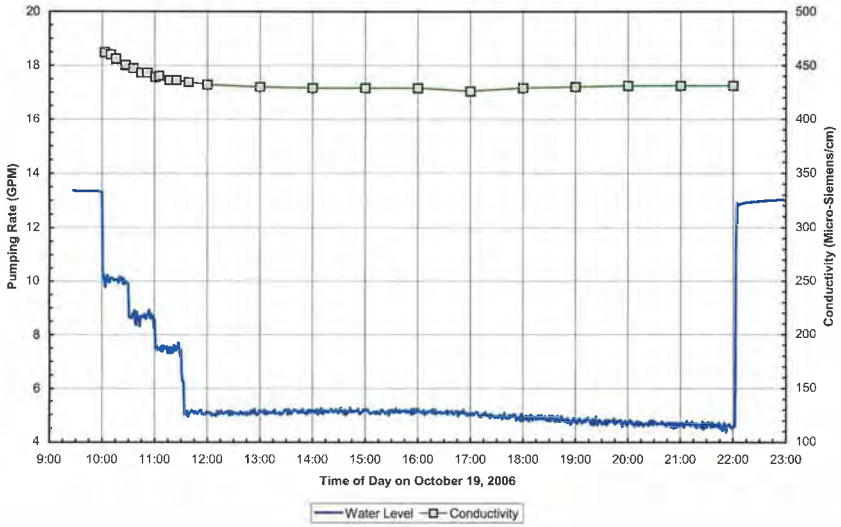


Exhibit E - Part 2

Private Water System

BELLES GRAHAM PROUDFOOT
WILSON & CHUN, LLP
ATTORNEYS AT LAW

MICHAEL J. BELLES
MAX W.J. GRAHAM, III
DONALD H. WILSON
JONATHAN T. CHUN

Federal I.D. No. 99-0313661

OF COUNSEL
DAVID W. PROUDFOOT

COUNSEL
LORNA A. NISHIMITSU

WATUMULL PLAZA
4334 RICE STREET, SUITE 202
LIHUE, KAUAI, HAWAII 96766-1388

TELEPHONE NO: (808) 245-4705
FACSIMILE NO: (808) 245-3277
E-MAIL: mail@kauai-law.com

October 2, 2012

Mr. David R. Craddick
Manager & Chief Engineer
Department of Water
County of Kauai
P. O. Box 1706
Lihue, Kauai, Hawaii 96766

VIA EMAIL & HAND DELIVERY

Re: **Kapaa Highlands Subdivision (S-99-45)**
(fna Kūlana Kai/Kauai Highlands)
Subdivision Of Parcel 1 Being A Portion Of
Grant 5266 To Rufus P. Spalding Into Lots 1 To 18, Inclusive
Kapaa and Waipouli, Kauai, Hawaii
Kauai Tax Map Key No. (4) 4-3-003:001 (por.)
Owner: Allen Family LLC; Moloaa Bay Ventures, LLC; and The Three Stooges LLC

Dear Mr. Craddick:

I am writing to you on behalf of the above-identified applicants ("Applicants") in the Kapaa Highlands Subdivision matter ("Subdivision"). In lieu of obtaining water for the Subdivision from the public water system operated by the Department of Water ("Department"), the Applicants have decided to construct an on-site private water system ("PWS").

The PWS is described in an enclosed Memorandum dated September 12, 2012 prepared by Tom Nance of Tom Nance Water Resource Engineering ("Nance Report"). The essential design specifications are described below.

A. Private Water System.

1. The Applicants will construct a well ("Well") and two storage tanks ("Tanks") on-site.

2. The Well will be located along the south boundary of Lot 5, as shown in Figure 3 of the Nance Report.

3. The Storage Tanks will be located on the north boundary of Lot 3, as shown in Figure 3 of the Nance Report.

4. The Well design is shown on Figure 2 of the Nance Report. The Well will be twelve (12) inches in diameter and operated by two identical 100 gallons per minute ("GPM") pumps, each driven by 7.5 horsepower motors. The first pump will supply the needs of the Subdivision, which is 97,310 gallons per day ("GPD") maximum day use, and the second will serve as a standby pump.

5. Based on the water needs for 50 farm dwelling units, the total maximum day demand is 93,750 GPD. The two 50,000 gallon Tanks will be adequately sized to provide necessary storage plus fire flowrate protection. The Tanks will be lined with bolted steel with reinforced concrete base and passive cathodic protection (zinc anode rods).

6. The pipelines ("Pipelines") for the PWS will be sized to provide: fire flowrate with coincident maximum day demand and a minimum residual pressure of 20 psi (velocities not exceeding 10 fps); and peak flowrate with minimum residual pressure of 40 psi (maximum velocity in Pipelines of 6 fps). NSF-approved, high density polyethylene (HPDE), pipes will be used for the PWS. The Pipeline system is shown on Figure 3 of the Nance Report.

7. Pursuant to the Agricultural Master Plan submitted in this matter, the agricultural activities in the Subdivision will be limited to a goat raising operation ("Goat Project"). The Goat Project will require minimal water (at the most, 3,560 GPD), which will be supplied by the PWS.

8. The on-site Tank elevations will not provide adequate gravity pressure to meet the Department's delivery pressure requirements. Providing the necessary pressure would be done with parallel domestic and fire flowrate pumping systems with a generator to provide back power. These pump systems would provide up to 70 GPM for peak domestic use and 500 GPM for the fire flowrate condition. Both pumping systems would be sized to produce a total dynamic head of 110 feet, in effect creating a single, 270-foot service pressure zone across the entire project site.

B. Modification Of Requirements.

The Applicants are requesting the Department and/or the Board of Water Supply ("Water Board") to grant a modification from the Department's Water System Standards for the PWS as follows:

1. DOW Rule Part 3, Section XII, provides as follows:

"**SECTION XII – MODIFICATION OF REQUIREMENTS**

When conditions pertaining to any subdivision are such that the public may be properly served with water and with fire protection without full and strict compliance with these rules and regulations, or where the subdivision site or layout is such that the public interest will be adequately protected, such modification thereof as is reasonably necessary or expedient, and not contrary to law or the intent and purposes of these rules and regulations, may be made by the Department."

2. As part of the Subdivision in this case, the Applicants propose to have water for potable, fire, and agricultural uses for the Subdivision supplied by the PWS.

3. The PWS does not comply strictly with all of the Department's Water System Standards ("DOW Standards") which typically apply to the DOW's public water systems. These differences are set forth in the enclosed Comparison Of Kapaa Highlands PWS With DOW Water System Standards.

4. The Applicants are requesting the Department and/or the Water Board to find that the PWS: will properly serve the water and fire protection needs of the Subdivision without full and strict compliance with the DOW Standards; that, given the fact that the Subdivision will be served by the PWS, the public interest will be adequately protected by the PWS; that the differences between the PWS and the DOW Standards are, under all of the circumstances of this case, reasonably necessary and expedient; and that such differences are not contrary to the law or the intent or purposes of the DOW Rules.

Based on the above, the Applicants are requesting the Department and/or the Water Board to approve the proposed PWS for the Subdivision, together with the requested modifications. In the event this matter needs to be referred to the Water Board, then I am requesting that it be placed on the next available agenda of the Water Board. For these purposes, I have enclosed a Supporting Information For The Board Of Water Supply, County of Kauai in compliance with the Department's requirements for persons wishing to testify at Water Board Meetings.

Thank you very much for your consideration of this request.

Sincerely yours,

BELLES GRAHAM PROUDFOOT
WILSON & CHUN, LLP

Max W. J. Graham, Jr.

MWJG:jgm
Enclosures
cc: Mr. Greg Allen, Jr., w/encls. (via email only)
Andrea A. Suzuki, Esq., w/encls. (via email only)
Mr. William Eddy, DOW, w/encls. (via email only)
Mr. Gregg Fujikawa, DOW, w/encls. (via email only)
Mr. Dale A. Cua, Staff Planner, w/encls. (via email only)

TNWRE
Tom Nance Water
Resource Engineering

No. of pages: 7
Email: gallen@harbormalt.net
mwg@kauai-law.com
greg@tnwre.com

Original ☑ will ☐ will not be mailed to you.

September 10, 2012
12-177 | 09-12

MEMORANDUM

To: Greg Allen

From: Tom Nance

Subject: Sizing and Layout of a Private Water System to Supply the Kapaa Highlands Project

Introduction

This memo and its attachments present the sizing and layout of major infrastructure elements of a private water system that would be developed to supply the Kapaa Highlands project. The basis of the water system sizing assumes the project would be developed in two phases. Phase 1 would consist of 16 residential units on five lots in an agricultural subdivision. Phase 2 would consist of an urban residential development comprised of 86 SF residential units, 683 MF residential units, and parks (3.1 ac.), church (0.8 ac.), commercial (0.4 ac.), roads (9.4 ac.), and unirrigated open space (14.3 ac.). In the event that land use entitlements are not obtained for the residential development, Phase 2 would consist of 34 residential units on seven lots in an agricultural subdivision.

Required Water Supply

Due to the size of the residential lots in the agricultural subdivision, which vary from 1.47 to 6.67 acres in size for the Phase 1 development, an allocation of 2000 GPD as the average demand per residential lot is recommended, a rate which is four times greater than the Kauai Department of Water (DOW) design standard for single family residential units. For the residential subdivision in Phase 2, use of DOW's design criteria is recommended. Based on these recommendations, Tables 1 and 2 are tabulations of the average and maximum day demands for the private water system. Maximum day demand is defined as 1.5 times the average demand, also in accord with DOW design standards.

Required Water System Capacities

Well Supply. DOW's design criterion for well pumping capacity is to provide the maximum day demand in a 24-hour pumping day with the largest well pump out of service. For Phase 1, this requirement amounts to 48,000 GPD, equivalent to 33 GPM. With the addition of the Phase 2 residential development, this requirement becomes 496,275 MGD, equivalent to 345 GPM. If Phase 2 was limited to the agricultural subdivision, the ultimate well supply requirement would be 150,000 GPD or 104 GPM.

A test well, identified as State No. 0419-05, was drilled and pump tested in October 2006. Over its 260-foot drilled depth, two aquifers were encountered. The upper aquifer can not provide a sufficient source of supply and it is also potentially subject to contamination due to its shallow depth. The lower and confined aquifer was reached at a depth of about 215 feet or 190 feet below sea level. Its piezometric head was about 13 feet above sea level or about 10 feet below ground. Pump testing showed that a properly designed well to exclusively tap this lower aquifer could develop up to 500 GPM of low salinity (chlorides of 55 MG/L), potable quality water. At its depth and overlying confining layers, it is not subject to contamination.

The low ground elevation (about 20 feet), high piezometric head (about 13 feet above sea level), and modest drawdown (3 feet or less at 350 GPM) provide the opportunity to develop one well configured with a pump sump that would enable two pumps to draw from the same well, thereby providing the necessary standby pumping capacity for a stand-alone system with a single well. The recommendation herein is to drill a new 12-inch well to 300-foot depth, complete it with a pump sump as shown on Figure 1, and outfit it with two, 25 horsepower, 350 GPM submersible pumps. Either of the 350 GPM pumps would provide the ultimate maximum demand requirement with the other providing full back-up capacity.

Reservoir Storage. With regard to the reservoir storage volume, DOW's two design criteria are appropriate for the private water system: (1) provide the maximum day demand with no credit for well inflow; and (2) provide the fire flowrate with coincident maximum day demand for the duration of the fire with the largest well pump out of service and the reservoir 3/4 full at the start of the fire. For the Phase 1 fire flowrate, DOW's standards require only 250 GPM for one hour. A stricter criterion of 500 GPM for two hours is used herein. Application of the two sizing criteria results in the required storage volumes tabulated below. In all cases, the maximum day sizing criterion governs.

Summary of Computed Required Reservoir Storage Volumes*

Design Criteria	Phase 1 Ag Subd.	Phase 2 Residential	Phased 2 Ag Subd.
(1) Maximum Day Demand (Gallons)	48,000	496,275	150,000
(2) Fire Flowrate			
- Fire Flowrate (GPM)	500	2000	500
- Fire Duration (Hours)	2	2	2
- Coincident Max. Demand (GPM)	33	345	104
- Well Inflow Credit (GPM)	350	350	350
- Required Storage Volume (Gallons)	29,280	319,200	40,640

*Phase 2 storage volumes include the Phase 1 requirement.

Based on the foregoing calculations, the recommended reservoir storage is as follows:

- For Phase 1, a 50,000-gallon storage tank would be installed.
- For the Phase 2 residential project, a second tank of 500,000-gallon capacity would be installed.
- In the event that Phase 2 consists of the 34 SF residential units in an agricultural subdivision, the second tank would be 100,000 gallons.
- All storage tanks would be lined and bolted steel with a concrete floor and passive cathodic protection.
- The tanks would be located at the project's highest elevation which is adjacent to residential Lot 7 in Phase 1. The Phase 1 and Phase 2 tanks would have identical floor and spillway elevations of 142 and 160 feet, respectively.
- Except at the project's lowest elevations, pumped delivery from the storage tanks will be necessary to provide adequate delivery pressures and fire flowrates. These pumping requirements are described in the section following.

Pumped Delivery for the Distribution System. DOW's design criteria for required delivery pressures are appropriate for this private water system. These are: (1) to provide a minimum of 40 psi residual pressure during the peak flowrate condition, with peak flowrate defined as three times the average demand; and (2) to provide a minimum 20 psi residual pressure at the critical hydrant during fire flowrate at that hydrant and coincident maximum day demand throughout the system.

The onsite storage reservoir elevations will not provide adequate gravity pressure to meet either of these criteria. In each development phase, this will require parallel domestic and fire flowrate pumping systems with a generator to provide back up power. For Phase 1, the pump systems would provide up to 70 GPM for peak domestic use and a 500 GPM fire pump. For the Phase 2 residential development, the domestic pumping capacity would be increased to 700 GPM and the fire pump to 2000 GPM. All pumping systems would be sized to produce a total dynamic head of 110 feet, in effect creating a single, 270-foot service pressure zone across the entire project site.

Water System Layout

Figure 2 illustrates all of the water system components described above with the assumption that Phase 2 would consist of the 769-unit residential development. By development phase, these would consist of:

Phase 1
- 12-inch, 300-foot deep well, pump sump, and two 350 GPM pumps in the pump sump located at the makai end of the Phase 1 development area.
- A dedicated 8-inch transmission pipeline from the well pumps to the storage reservoir.
- A 50,000-gallon storage tank.
- Parallel domestic and fire flowrate pump systems at the storage tank with backup generator power.
- A distribution pipeline loop consisting of 12-inch for the section that will also serve Phase 2 and 6-inch for the remainder of the loop.

Phase 2
- No change or additions to the well, well pumps, or transmission pipeline.
- Second storage tank of 500,000-gallon capacity.
- Substantial capacity increases for the parallel domestic and fire pumping systems and generator backup power.
- Distribution pipelines of 12-, 8-, and 6-inch size.

cc: Max Graham [Email Only]
greg@tnwre.com

Attachments

Table 1

Average and Maximum Day Demands for the
Phase 1 Agricultural Subdivision and Phase 2 Residential Development

Development Phase	Land Use	Design Criterion (GPD / Unit)	Average Demand (GPD)	Maximum Demand (GPD)
1	16 SF Residential	2,000	32,000	48,000
2	86 SF Residential	500	43,000	64,500
	683 MF Residential	350	239,050	358,575
	3.1 Ac. Parks	4,000	12,400	18,600
	0.8 Ac. Church	4,000	3,200	4,800
	0.4 Ac. Commercial	3,000	1,200	1,800
	Total for Phase 2		298,850	448,275
Total for Both Phases			330,850	496,275

Table 2

Average and Maximum Day Demands for Development of
Phases 1 and 2 as Agricultural Subdivisions

Development Phase	Land Use	Design Criterion (GPD / Unit)	Average Demand (GPD)	Maximum Demand (GPD)
1	16 SF Residential	2,000	32,000	48,000
2	34 SF Residential	2,000	68,000	102,000
Total for Both Phases			100,000	150,000

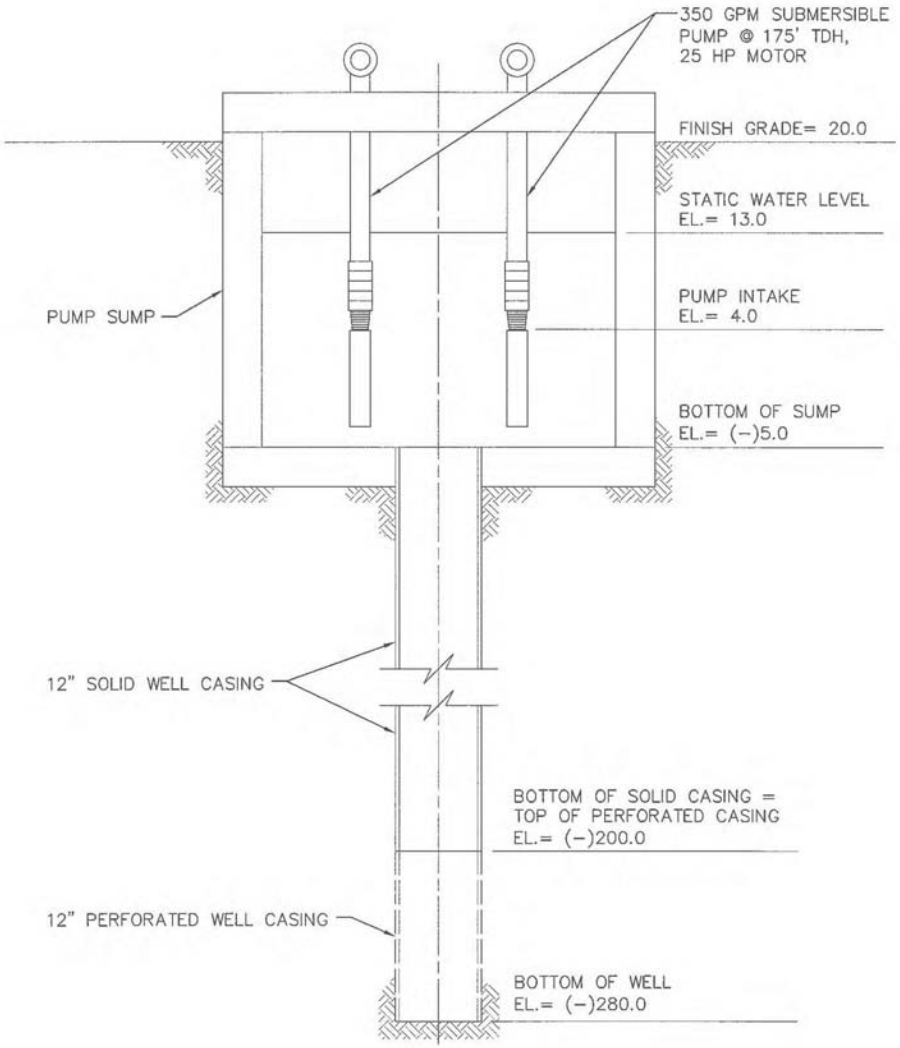


FIGURE 1
RECOMMENDED WELL DEVELOPMENT AND PUMP INSTALLATION
FOR THE KAPAA HIGHLANDS PROJECT
NOT TO SCALE

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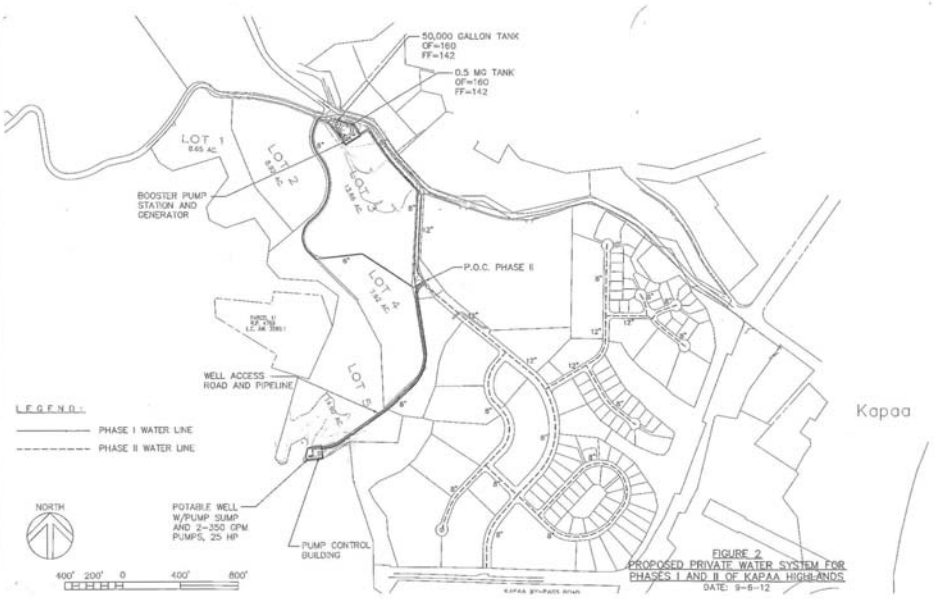

FIGURE 2
PROPOSED PRIVATE WATER SYSTEM FOR PHASES I AND II OF KAPAA HIGHLANDS
DATE: 9-6-12

TNWRE
Tom Nance Water
Resource Engineering

No. of pages: 7
Email: gallen@harbormail.net
mwg@kauai-law.com
greg@tnwre.com

Original ☑ will ☐ will not be mailed to you.

September 12, 2012
12-183 | 09-12

MEMORANDUM

To: Greg Allen

From: Tom Nance

Subject: Basis of Design of the Private Water System for the Kapaa Highlands Agricultural Subdivision

Introduction

This memo and its attachments describe the basis of design for a private water system to serve the 12-lot Kapaa Highlands Agricultural Subdivision. Figure 1 depicts the 12-agricultural lots and the 50-half acre homesites that ultimately would be developed on the 12 lots. The water system would consist of: one 12-inch, 300-foot deep well outfitted with two 100 GPM pumps, one of which would provide back up capacity; two side-by-side and identical 50,000-gallon storage reservoirs located next to Homesite 7, the highest elevation on the property; two parallel pumping systems to provide pressure and flowrates for peak and fire flowrate conditions; and 8- and 6-inch distribution pipelines.

As described herein, there are differences between the standards used for the private system's design and the standards of the Kauai Department of Water (DOW). These differences are noted and discussed as appropriate in the sections following.

Required Water Supply

The agricultural use in the subdivision will be for raising goats for which no specific water allocation is made. An average demand of 1250 GPD for each of the 50-half acre homesites is recommended, a use rate which is 2.5 times DOW's standard for single family residential units. The higher use rate is an appropriate allowance due to the larger than typical size of the homesites.

For the 50 homesites, the total average demand is 62,500 GPD. In conformance with DOW's standards, maximum day use is defined as 1.5 times the average demand. For the 50 homesites, the total maximum day demand is 93,750 GPD.

560 N. Nimitz Hwy. - Suite 213 • Honolulu, Hawaii 96817 • Phone: (808) 537-1141 • Fax: (808) 538-7757 • Email: tom@tnwre.com

Required Well Supply

Well Configuration. A test well, identified as State No. 0419-05, was drilled and pump tested at the makai end of the project site in October 2006. Over its 260-foot drilled depth, two aquifers were encountered. The upper aquifer can not provide a sufficient source of supply and it is also potentially subject to contamination due to its shallow depth. The lower and confined aquifer was reached at a depth of about 215 feet or 190 feet below sea level. Its piezometric head was about 13 feet above sea level or about 10 feet below ground. Pump testing showed that a properly designed well to exclusively tap this lower aquifer could develop up to 500 GPM of low salinity (chlorides of 55 MG/L), potable quality water. At its depth and due to the presence of the overlying and poorly permeable confining layers, this lower aquifer is not subject to contamination.

The low ground elevation (about 20 feet), high piezometric head (about 13 feet above sea level), and modest drawdown provide the opportunity to develop one well configured with a pump sump that would enable two pumps to draw from the same well, thereby providing the necessary standby pumping capacity for a stand-alone system with a single well. The recommendation herein is to drill a new 12-inch well to 300-foot depth and complete it with a pump sump and two pumps as shown on Figure 2. This will enable one pump to provide the required supply and the other pump to provide full back up capacity.

Required Well Pumping Capacity. DOW's design criteria of having the well pumping capacity capable of delivering the maximum day use in a 24-hour pumping day with the largest well pump out of service is adopted for the private water system. The project's 93,750 GPD maximum day use translates to a required well pump capacity of 65 GPM. The proposal herein is to install two identical 100 GPM pumps, each driven by 7.5 horsepower motors. Either pump would provide the required capacity with the other as standby.

Reservoir Storage

DOW's two reservoir storage sizing criteria are appropriate for the private water system. The first, to provide the maximum day use with no credit for well inflow, translates to a required storage volume of 93,750 gallons. The second is to provide the fire flowrate plus the coincident maximum day demand for the duration of the fire with the reservoir 3/4 full at the start of the fire. There is credit for well inflow with the largest well pump considered to be out of service.

For an agricultural subdivision, DOW standards require a fire flowrate of 250 GPM for one hour. A stricter standard of 500 GPM for two hours is adopted for the private water system. With one of the two 100 GPM well pumps on, this higher fire flowrate and longer duration translates to reservoir storage of 74,417 gallons (calculation below). The first criterion governs.

$$\frac{4}{3}(120\,\text{min})\left(500 + \frac{93{,}750}{1{,}440} - 100\right) = 74{,}417 \text{ gallons}$$

Proposed reservoir storage consists of two, side-by-side and identical 50,000-gallon tanks with 142- and 160-foot floor and spillway elevations, respectively. The storage tanks would be lined and bolted steel with reinforced concrete base and passive cathodic protection consisting of zinc anode rods suspended in the water. DOW's standards require storage tanks to be constructed of reinforced concrete. However, lined and bolted steel tanks have a successful operating history in Hawaii. With two side-by-side tanks, one can be taken offline when necessary for maintenance with no interruption of service to customers.

Pumping Systems for Peak and Fire Flowrate Design Conditions

DOW's design criteria for required delivery pressures are appropriate for this private water system. These are: (1) to provide a minimum of 40 psi residual pressure during the peak flowrate condition, with peak flowrate defined as three times the average demand; and (2) to provide a minimum 20 psi residual pressure at the critical hydrant during fire flowrate at that hydrant and coincident maximum day demand throughout the system.

The onsite storage reservoir elevations will not provide adequate gravity pressure to meet either of these delivery pressure requirements. Providing the necessary pressure would be done with parallel domestic and fire flowrate pumping systems with a generator to provide back up power. These pump systems would provide up to 70 GPM for peak domestic use and 500 GPM for the fire flowrate condition. Both pumping systems would be sized to produce a total dynamic head of 110 feet, in effect creating a single, 270-foot service pressure zone across the entire project site.

Distribution Pipelines

The design criteria used for pipeline sizing for the private system are equivalent to DOW's standards. Pipelines shall be sized to provide: (1) fire flowrate with coincident maximum day demand and a minimum residual pressure of 20 psi at the critical hydrant with velocities not exceeding 10 fps; and (2) peak flowrate with a minimum residual pressure of 40 psi and a maximum velocity in pipelines of 6 fps.

DOW's standards require pipelines to be of ductile iron or PVC, the latter conforming to ASTM C-900. However, NSF-approved, high density polyethylene (HPDE) pipes will be used for the private water system. SDR (pressure ratings) of the HDPE pipe will be selected so as not to exceed 60 percent of the recommended working pressure rating. Hazen-Williams "C" values of 130 will be used for all

September 12, 2012
12-183 | 09-12

HDPE pipes. This is less (ie. more conservative) than manufacturer's suggested values of 140 to 150 but greater than DOW's standards for ductile iron and PVC pipes.

Water System Layout

Figure 3 illustrates the water system components as described above. There would be a dedicated 6-inch pipeline from the well to the storage tanks. Distribution pipeline sizing, driven by the fire flowrate sizing criterion, would be 8- and 6-inch to the last hydrants and 4-inch beyond the last hydrants.

cc: Max Graham [Email Only]
greg@tnwre.com

Attachments

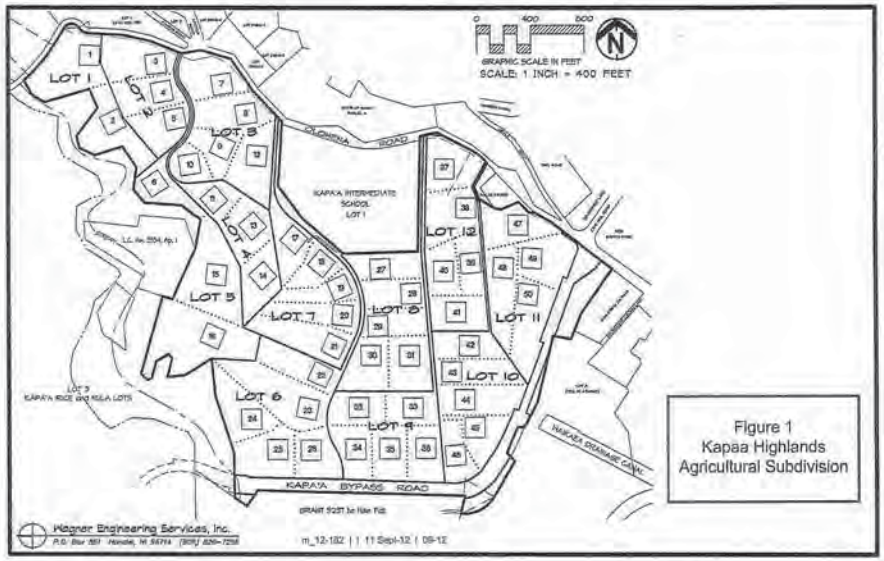

Figure 1
Kapaa Highlands
Agricultural Subdivision

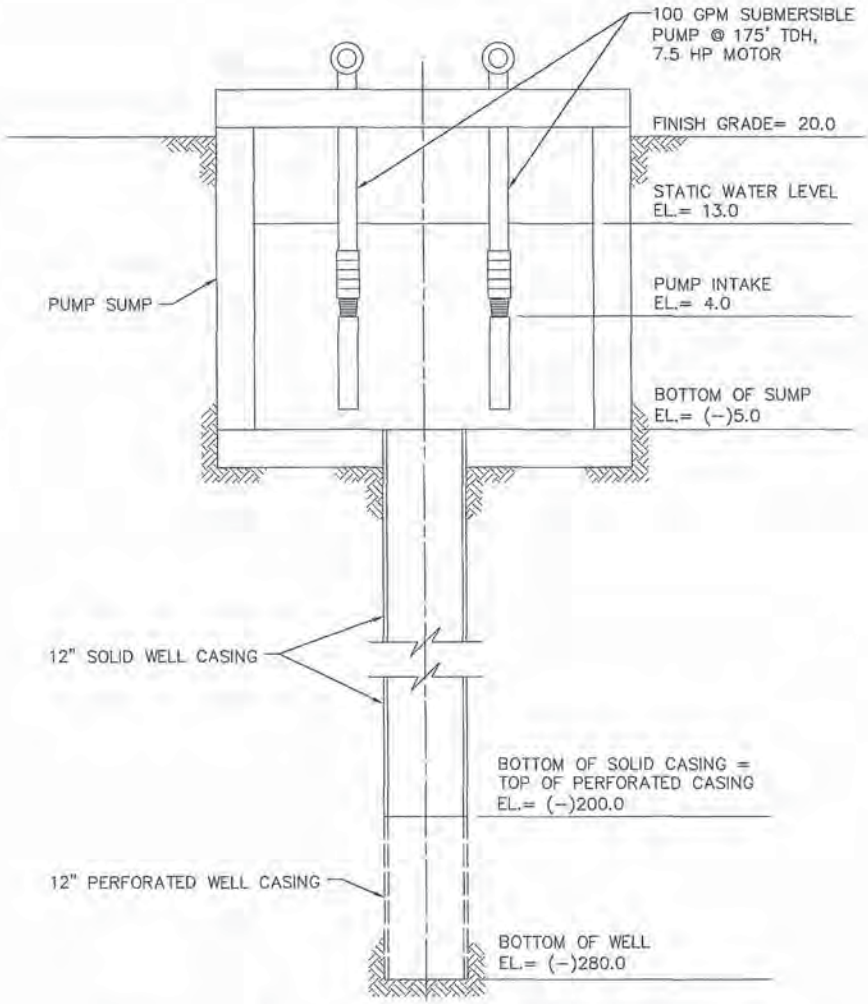

FIGURE 2
RECOMMENDED WELL DEVELOPMENT AND PUMP INSTALLATION
FOR THE KAPAA HIGHLANDS AGRICULTURAL SUBDIVISION
NOT TO SCALE

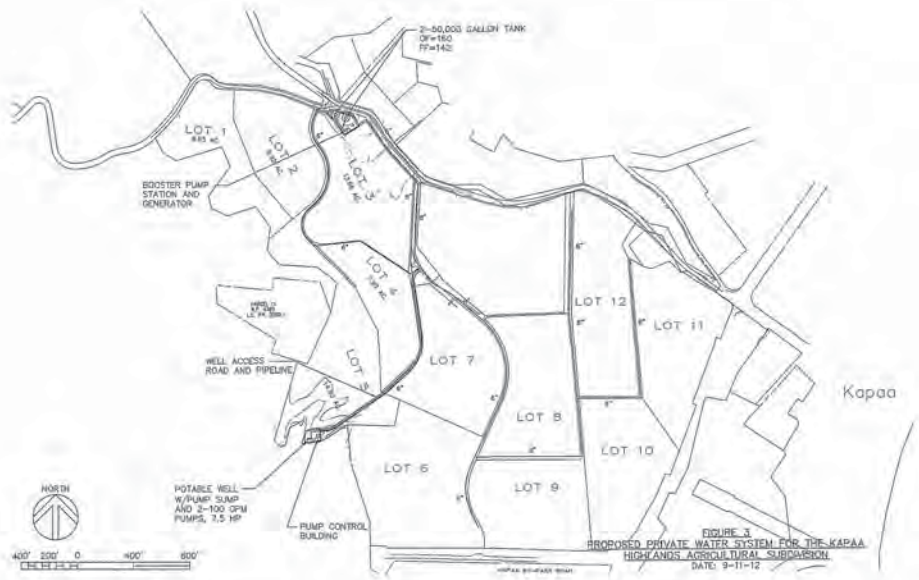

FIGURE 3
PROPOSED PRIVATE WATER SYSTEM FOR THE KAPAA HIGHLANDS AGRICULTURAL SUBDIVISION
DATE: 9-11-12

Table 1

Cost Estimate of the Major Water System Components for Kapaa Highlands Phase I

Item Description	Quantity	Unit	Unit Price	Amount	Total
Drill, Case, and Pump Test Supply Well					
Mobilization		LS		15,000	
Drill 12-Inch Pilot Hole	300	LF	150	45,000	
Video Log Pilot Hole	1	EA	2,500	2,500	
Test Pump Pilot Hole	1	EA	12,500	12,500	
Ream Pilot Hole to 19 Inches	300	LF	125	37,500	
12" Solid Casing	220	LF	175	38,500	
12" Perforated Casing	80	LF	200	16,000	
Furnishing and Installing grout	215	LF	60	12,900	
Plumbness and Alignment Test	1	EA	3,000	3,000	
Furnishing and Installing Test Pump	1	EA	15,000	15,000	
Development and Test Pumping	72	HRS	250	18,000	
Demobilization		LS		5,000	
Total					$220,900
Well Site Work and Pump Outfitting					
Site Earthwork	450	CY	50	22,500	
Site Basecourse	805	SY	20	16,100	
Site Fencing	348	LF	35	12,180	
Site Gate	1	EA	2,500	2,500	
Site Drainage System		LS		15,000	
Wet Well Sump and Cover at Well Casing		LS		60,000	
Submersible Pump (350 GPM, 4-Pole, 25 HP)	2	EA	45,000	90,000	
Discharge Unit, includes Support Pads and Piping		LS		25,000	
Pump Control Building		LS		35,000	
Chlorination System		LS		25,000	
Control Building Mechanical		LS		15,000	
Pump and Building Electrical		LS		50,000	
KIUC Transformer Pad and Ducts		LS		35,000	
Metering, Motor Control Center, SCADA System		LS		150,000	
Back Generator with Fuel Tank (60 KW)		LS		40,000	
Transfer Switch for Generator		LS		3,000	
KIUC Facility Charge for Service (OH Service Available)		LS		50,000	
Total					$646,280
New Well Access Road (from existing culdesac)					
Access Road Excavation and Preparation	1,530	LF	50	76,500	
Basecourse	3,400	SY	25	85,000	
Drainage and Erosion Control		LS		30,000	
Total					$191,500

Table 1

Cost Estimate of the Major Water System Components for Kapaa Highlands Phase I

Item Description	Quantity	Unit	Unit Price	Amount	Total
0.05 MG Tank					
Site Earthwork	1,935	CY	40	77,400	
Basecourse	1,890	SY	20	37,800	
Gravel Fill	452	SY	15	6,780	
Site Fencing	590	LF	35	20,650	
Site Gate	1	EA	2,500	2,500	
Site Drainage System		LS		20,000	
Tank Drainage System		LS		25,000	
Pipe Valves and Fittings		LS		15,000	
0.05 MG Steel Tank With Concrete Floor		LS		150,000	
Tank Level Transmitter System		LS		15,000	
Pipe and Tank Testing		LS		15,000	
Erosion and Dust Control		LS		10,000	
Construction Survey		LS		5,000	
Total					$400,130
Booster System					
Sitework for Booster Pump Station		LS		25,000	
Booster Station Connection Piping & Valves		LS		30,000	
Domestic Booster Pump Station (VFD 25 to 70 gpm, 5 HP)		LS		25,000	
Fire Pump Station (500 GPM at 110-ft TDH, 20 HP)		LS		80,000	
Power and Control Connections		LS		30,000	
MCC for both station with SCADA Controls		LS		125,000	
Back Generator with Fuel Tank (60 KW)		LS		50,000	
Transfer Switch for Generator		LS		3,000	
Total					$368,000
Pipeline in Phase I Subdivision (includes 8-inch well feed line)					
Main Installation Access and Site Preparation		LS		50,000	
12" HDPE Pipe	1,500	LF	85	127,500	
8" HDPE Pipe	3,115	LF	55	171,325	
6" HDPE Pipe	2,256	LF	40	90,240	
12" GV w/VB	2	EA	3,000	6,000	
8" GV w/VB	3	EA	2,500	7,500	
6" GV w/VB	2	EA	2,000	4,000	
12" DI Fittings	5	EA	1,800	9,000	
8" DI Fittings	6	EA	1,200	7,200	
6" DI Fittings	4	EA	800	3,200	
Fire Hydrant w/GV	5	EA	3,500	17,500	
Pipe Testing and Chlorination		LS		25,000	
Erosion and Dust Control		LS		30,000	
Construction Survey		LS		15,000	
Total					$563,465
	Total for Construction				**$2,390,275**
	Engineering Design (8%)				**190,725**
	Construction Management (3%)				**73,000**
	Total Cost				**$2,654,000**

Exhibit F

Preliminary Engineering Report Drainage Improvements
Kapa'a Highlands Phase II

Table 2

Cost Estimate of the Major Water System Components for Kapaa Highlands Phase 2 Residential Project

Item Description	Quantity	Unit	Unit Price	Amount	Total
0.50 MG Tank and Booster Station					
Tank Foundation Earthwork	504	CY	40	20,160	
Basecourse	980	SY	20	19,600	
Tank Drainage System		LS		35,000	
Pipe Valves and Fittings		LS		30,000	
0.50 MG Steel Tank With Concrete Floor		LS		750,000	
Tank Level Transmitter System		LS		15,000	
Pipe and Tank Testing		LS		20,000	
Erosion and Dust Control		LS		15,000	
Construction Survey		LS		5,000	
Total					$909,760
Booster System (Upgrade both Booster Pump Stations)					
Modify Booster Pump Station		LS		40,000	
Booster Station Connection Piping & Valves		LS		45,000	
Domestic Booster Pump Station (VFD 200 to 625 gpm, 25 HP)		LS		120,000	
Fire Pump Station (2000 GPM at 110-ft TDH, 75 HP)		LS		125,000	
Power and Control Connections		LS		30,000	
Modify Existing MCC for New Pump Stations		LS		80,000	
New Back Generator with Fuel Tank for Fire Pump (175kw)		LS		75,000	
Transfer Switch for Generator		LS		6,000	
Total					$521,000
Pipeline in Phase 2 Subdivision					
Main Installation Access and Site Preparation		LS		60,000	
12" HDPE Pipe	2,100	LF	85	178,500	
8" HDPE Pipe	6,830	LF	50	341,500	
12" GV w/VB	3	EA	3,000	9,000	
8" GV w/VB	10	EA	2,500	25,000	
12" DI Fittings	6	EA	1,800	10,800	
8" DI Fittings	15	EA	1,200	18,000	
Fire Hydrant w/GV	14	EA	3,500	49,000	
Pipe Testing and Chlorination		LS		40,000	
Erosion and Dust Control		LS		30,000	
Construction Survey		LS		15,000	
Total					$776,800
	Total for Construction				**$2,207,560**
	Engineering Design (8%)				**176,440**
	Construction Management (3%)				**66,000**
	Total Cost				**$2,450,000**

o_09-12

EXHIBIT "F"

Preliminary Engineering Report
Drainage Improvements

KAPAA HIGHLANDS – PHASE II

Prepared for:
Greg Allen
161 Wailua Rd.
Kapa'a, HI 96746

Prepared by:
Honua Engineering, Inc.
P. O. Box 851
Hanalei, HI 96714

Project Description

The Kapa'a Highlands Subdivision is on former cane lands situated on a bluff adjacent to the coastal plain of Kapa'a Town. It is bordered by Olohena Road to the north and the Kapa'a Bypass Road on the south and east sides of the project. Kapa'a Intermediate School is near the middle of the north portion of the property. Phase I of the development will consist of five agricultural lots on the west side of the property. The remainder of the property to the south and east of the school are proposed to be developed during Phase II of the subdivision. The proposed Phase II development will consist of 86 single and 683 multi-family units, plus a neighborhood commercial site, parks, and a church site as shown on Exhibit 1. Ground elevation of the development ranges from 20 to 180 feet above mean sea level.

Per the County of Kauai's "Storm Water Runoff System Manual" 2001, all developments of this scope are required to maintain the existing stormwater flows and patterns as feasibly possible so that downstream properties are not subject to any additional stormwater flows that are created by the increases in impervious surfaces of the watershed by the proposed development. The report examines the existing drainage conditions of the property and the proposed measures to control the stormwater from the proposed Phase II development.

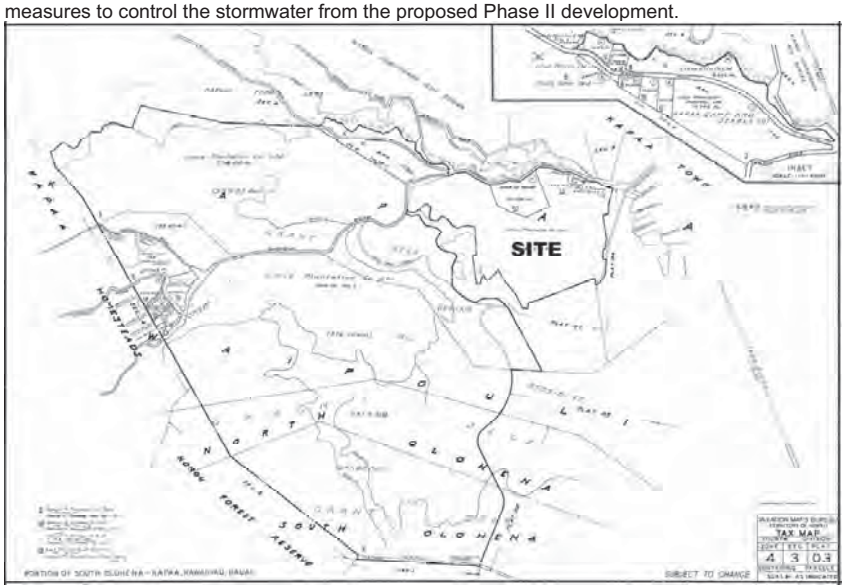

Figure 1: Tax Map Key 4-3-03 (4th Division)

Existing Conditions:

The property is located along Olohena Road about ½ mile mauka of Kapaa Town. The property rises from the coastal flat lands of Kapaa to an elevation of about 140 feet above mean sea level (msl). The Temporary Kapaa Bypass Road passes through a portion of the property along the east and south sides of the property. An unnamed stream flows along the west side of the property. The stream flows along the boundary, passes under a bridge on the By-Pass Road at the southwest corner of the property, and empties into the Waikaea drainage canal about 800' downstream from the property. Near the middle of the property on the north side, along Olohena Road, is the Kapaa Intermediate School site.

The Lihue Plantation had planted a majority of the 163-acre property in sugar cane, which since the property-changed owners has been allowed to go fallow. The Phase II portion of the property is approximately 97-acres. The fallow lands are presently overgrown with grass and remnant cane. A portion of the property on the northwest side near the unnamed stream is being used for cattle pasture. There are numerous abandoned irrigation ditches on the property that will be filled or rendered inoperable as the property is developed. There is also a small amount of the property that is overly steep for farming and is presently covered in brush and trees.

According to the Natural Resource Conservation Service (NRCS) soil survey the soils on the property are Ioleau and Puhi silt clay loams. The NRCS hydrologic classification for these soils is Group C for the Ioleau soils and Group B for the Puhi soils. Group B soils have a moderately low runoff potential, while the Group C soils have a moderately high runoff potential. Both soils are in Group I erosion resistance classification, which is the least erodible of the NRCS classifications.

The topography of the site varies from gently sloping, bluff top property, to steep areas that drop off into drainage gullies that lead to the unnamed stream and to the Bypass Road. The topography is illustrated on Exhibit 1 from aerial mapping done in 1975 for the County of Kauai.

Proposed Phase II:

The proposed Phase II development will consist of 86 single and 683 multi-family units, plus a neighborhood commercial site, parks, and a church site as shown on Exhibit 1. Stormwater generated from each of the Phase II lots will be directed to the nearest downstream street or natural drainageway. A drainage system along the streets will collect the stormwater and convey it to the detention basins shown on Exhibit 1. The detentions basins moderate the storm flows and allow infiltration back into the soil. They are sized so that the outlet peaks flows match or lower the existing stormwater flows prior to the development for both small rainfall events and the 100 year storm event.

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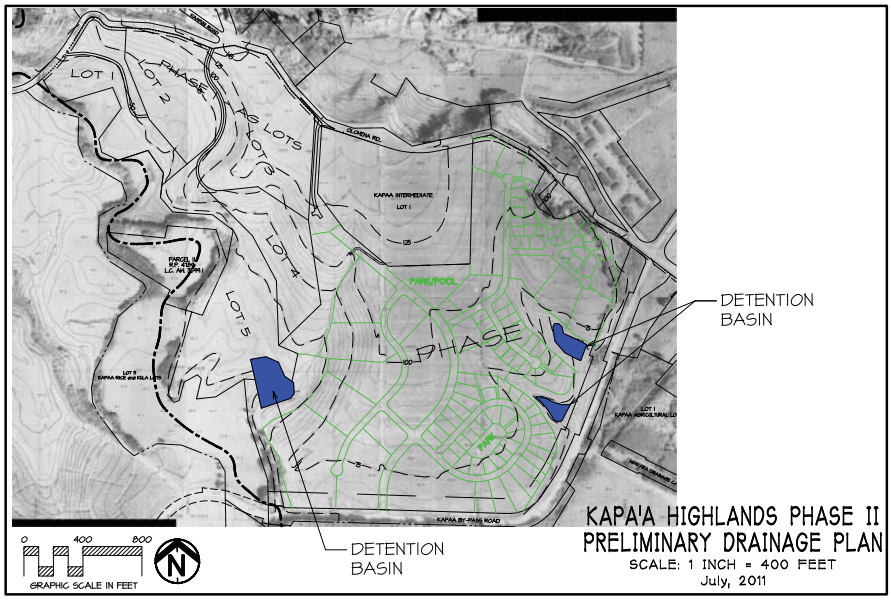


Exhibit G

Preliminary Engineering Report Wastewater Improvements
Kapa‘a Highlands Phase II

Preliminary Engineering Report
Wastewater Improvements

KAPAA HIGHLANDS – PHASE II

Prepared for:
Greg Allen
161 Wailua Rd.
Kapa’a, HI 96746

Prepared by:
Honua Engineering, Inc.
P. O. Box 851
Hanalei, HI 96714

EXHIBIT "G"

July 11, 2011
Project No: 1892

Project Description

The Kapa'a Highlands Subdivision is on former cane lands situated on a bluff adjacent to the coastal plain of Kapa'a Town. It is bordered by Olohena Road to the north and the Kapa'a Bypass Road on the south and east sides of the project. Kapa'a Intermediate School is near the middle of the north portion of the property. Phase I of the development will consist of five agricultural lots on the west side of the property. The remainder of the property to the south and east of the school are proposed to be developed during Phase II of the subdivision. The proposed Phase II development will consist of 86 single and 683 multi-family units, plus a neighborhood commercial site, parks, and a church site as shown on Exhibit 1. Ground elevation of the development ranges from 20 to 180 feet above mean sea level. Due to it's high density the Phase II development will require connection to the Wailua-Kapa'a Sewer System. The following report reviews the anticipated wastewater flows, the adequacy of the existing sewer collection system, and the proposed improvements needed to provide service for the development of Phase II.

Basis of Design

The *Sewer Design Standards, 1973* by the County of Kauai, Department of Public Works, together with the *Wailua Facility Plan, September 2008* by Fukunaga and Associates were the primary references for this report and will be abbreviated as SDS and WFP, respectively, when quoted in the report.

The WFP is a detailed study of the entire Wailua to Kapa'a wastewater system completed in 2008 to guide the County with the necessary expansion and management of the system through the year 2025. It broke down projected flows to the Wailua Treatment Plant in three phases, the current and near term flows up to the year 2010, middle term flows for the 2010-2015 period, and far term flows for the years 2015 to 2025.

Wailua-Kapa'a Average Daily Wastewater Flows[1]	
Planning Interval	Average Wastewater Flow (mgd)
Current	0.70
Near Term (2010)	0.98
Middle Term (2015)	1.39
Far Term at Wailua WWTP(2025)	1.72
Kapaa Start-Up (2025)	0.40

The need for the WFP was partially based upon the rapid development that was occurring in the Wailua-Kapaa area during 2004-2007 period. Development has slowed considerably since this time and several of the developments anticipated in the WFP calculations have been put on hold or are no longer proposed. Of the proposed developments, the Coco Palms Hotel will be removed from the near term anticipate flows and be considered part of the middle term flows. The Coconut Beach Resort and Coconut Plantation Village will be removed from the middle term flows and be considered for the far term flows.

The proposed Kapa'a Highlands development is not expected to be at total capacity by 2015, but for the purposes of this report, it will be considered to be completed in the middle term planning period of the WFP. The table below is the adjusted Average Daily Flows (ADF) based upon the current flow to the Wailua Treatment Plant and adjustments due to slower development than anticipated by WFP.

Adjusted Wailua-Kapa'a Average Daily Wastewater Flows	
Planning Interval	Average Wastewater Flow (mgd)
Current	0.70
Near Term (2010)	0.98
Middle Term (2015)	1.39
Far Term at Wailua WWTP(2025)	1.72

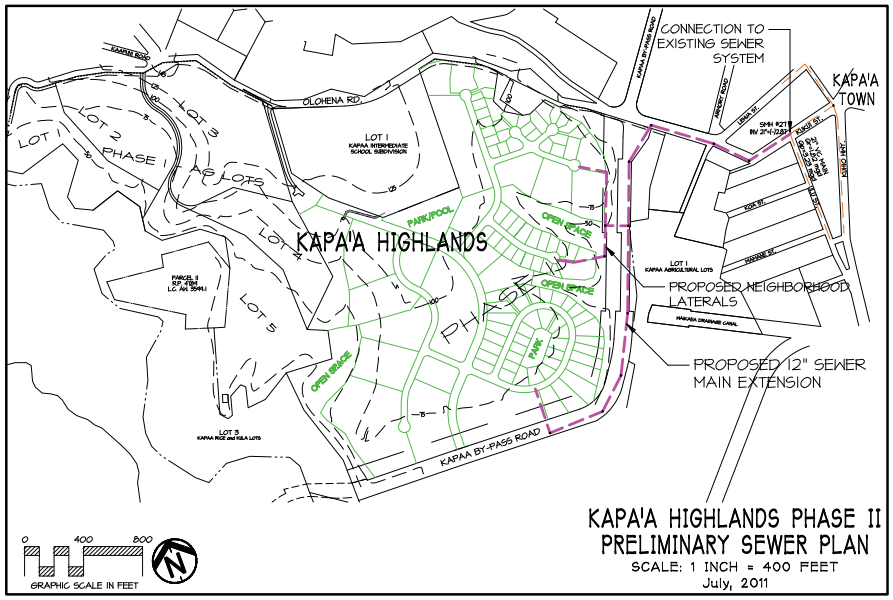
Kapa'a Highlands Phase II Wastewater Flow Estimates	
Item	Projected Wastewater Flow (gpd)
Single Family Homes	34,400
Multi-Family Homes	170,750
Neighborhood Commercial	4,800
Total	209,950

Note: Single Family Homes assumed to have 4 occupants/unit and Multi-Family Homes have 2.5 occupants/unit.

[1] Table ES-1, WFP, September 2008

Preliminary Design

Based upon the projected flow of 209,950 gpd (0.21 mgd), with a max load factor of 4.1, a 12" sewer main would be required to serve the development. The location of the main is shown on Exhibit 1. It would begin along the Kapa'a By-pass Road and terminate at an existing manhole near the intersection of Ulu and Kukui Streets. The length of the main within the existing public Right-of-Ways would be about 3,400 linear feet. At the existing manhole connection the existing main downstream of the connection is a 21" main with a capacity of 3.2 mgd. The 21" main currently has a peak flow of about 0.6 mgd, therefore the proposed flow is well within the capacity of the existing sewer system, including allowances for the future increases anticipated in the "Final Wailua Facility Plan", September 2008.



COMPUTATION OF SANITARY SEWAGE FLOW

SEWER: Kapaa
DISTRICT: Kawaihau
YEAR: 2010
REFERENCE MAPS:
PAGE: 1 of 1
COMPUTED BY: BH
DATE: 3-9-10

SEWER LOCATION			SANITARY SEWAGE (MGD)											SEWER DESIGN				
DISTRICT ZONE OR STREET	FROM	TO	TRIBUTARY AREA (ACRES) INCREMENT	TRIBUTARY AREA (ACRES) TOTAL	TRIBUTARY POPULATION INCREMENT	TRIBUTARY POPULATION TOTAL	AVERAGE FLOW	SUMMATION AVERAGE FLOW	MAX FLOW FACTOR	MAX FLOW	INFILTRATION @ 1,250 or 2,750 GAD	SUMMATION INFILTRATION	PEAK FLOW	SIZE (in.)	SLOPE (ft/100 ft)	CAPACITY (mgd)	AVERAGE VELOCITY (fps)	PEAK VELOCITY (fps)
Kapaa Highlands				67				0.21	4.1	0.86	1,250	0.08	0.94	12	1	2.3	2.6	4.2

Remarks:

EXHIBIT “H”

Updated Traffic Impact Report (TIAR)

By Traffic Management Consultant

Response to State DOT Comments

Comments by State DOT

Response to County DPW Comments

Comments by County DPW

THE TRAFFIC MANAGEMENT CONSULTANT

Randall S. Okaneku, P.E., Principal ∗ 1188 Bishop Street, Suite 1907 ∗ Honolulu, Hawaii 96813
Telephone: (808) 536-0223 ∗ Facsimile: (808) 537-2985 ∗ Email: TMCHawaii@aol.com

TMC Job No. 201708
October 3, 2017

State of Hawaii
Department of Transportation
Highways Division-Kauai District
1720 Haleukana Street
Lihu`e, Kauai, Hawai`i 96766

Attn.: Mr. Larry Dill, P.E., District Engineer

Dear Mr. Dill:

Subject: Traffic Impact Analysis Report Update
For the Proposed Hokua Place
Tax Map Key: (4) 4-3-003: Portion of 001
Kapa`a, Kauai, Hawaii

Thank you for the review comments in your letter, dated September 29, 2017, on the subject traffic study. Our responses follow:

Comment No. 1

Noted.

Comment No. 2

Noted.

Comment No. 3

The AM and PM Peak Hour Traffic Without Project rows of Table 6 summarize the capacity analysis under existing roadway conditions. The AM and PM Peak Hour Traffic With Project rows of Table 6 summarize the capacity analysis with the recommended site access improvements under Section V.B. of the TIAR Update. The AM and PM Peak Hour Traffic With Project – Improved rows in Table 6 summarize the capacity analysis of the recommended traffic improvements under Section V.A. of the TIAR Update.

Comment No. 4

Noted.

Comment No. 5

Noted.

If you require clarification on any of the above material or have any other questions, please do not hesitate to call me.

Very truly yours,

The Traffic Management Consultant

By

Randall S. Okaneku, P. E.
Principal

DAVID Y. IGE
GOVERNOR

FORD N. FUCHIGAMI
DIRECTOR

Deputy Directors
JADE T. BUTAY
ROSS M. HIGASHI
EDWIN H. SNIFFEN
DARRELL T. YOUNG

IN REPLY REFER TO:

HWAY-K 4.170445

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KAUAI DISTRICT
1720 HALEUKANA STREET
LIHUE, HAWAII 96766

September 29, 2017

Randall S. Okaneku, P.E.
The Traffic Management Consultant
1188 Bishop Street, Suite 1907
Honolulu, Hawaii 96813

Dear Mr. Okaneku:

Subject: Traffic Impact Analysis Report Update
Hokua Place
Kapa'a, Kawaihau District, Island of Kaua'i
TMK: (4) 4-3-03: Por. 001

Thank you for submitting the updated Traffic Impact Analysis Report(TIAR) update that was transmitted via email on June 15, 2017. We have circulated the TIAR for comment through the Highways Division Planning Branch as well as the Traffic Branch. We have also reviewed the comments provided by the County of Kauai Department of Public Works Engineering Division on September 1, 2017.

The combined comments for the Hawaii Department of Transportation Highways Division are as follows:

1. The report discussed the projects that are proposed in the Kapaa Transportation Solutions Report dated August 2015. It should be noted that these projects may not be completed on schedule. Therefore, they should not be considered in this report.
2. It is understood that the proposed Road A will be funded and constructed by the developer.
3. Please clarify the scenarios in Table 7, Summary of Capacity Analysis. What assumed improvements are completed for AM/PM peak hour traffic without project, with project, and with project-improved.
4. Section V of the TIAR recommends traffic improvements without the project. Although these recommendations are appreciated, they are not a consideration for this development.
5. We concur with the comments provided by the County of Kauai Department of Engineering Division.

Please contact Raymond McCormick at 808-241-3015 by telephone or by email at Raymond.j.mccormick@hawaii.gov if you have comments or questions regarding this letter.

Sincerely,

Larry Dill, P.E.
District Engineer
for

THE TRAFFIC MANAGEMENT CONSULTANT

Randall S. Okaneku, P.E., Principal ∗ 1188 Bishop Street, Suite 1907 ∗ Honolulu, Hawaii 96813
Telephone: (808) 536-0223 ∗ Facsimile: (808) 537-2985 ∗ Email: TMCHawaii@aol.com

TMC Job No. 201708
October 3, 2017

Department of Public Works
County of Kauai
4444 Rice Street, Suite 275
Lihu`e, Kauai, Hawai`i 96766

Attn.: Mr. Michael Moule, P.E., Chief, Engineering Division

Dear Mr. Moule:

Subject: Traffic Impact Analysis Report Update
For the Proposed Hokua Place
Tax Map Key: (4) 4-3-003: Portion of 001
Kapa`a, Kauai, Hawaii

Thank you for the thorough review comments in your letter, dated September 1, 2017, on the subject traffic study. Our responses follow:

Comment No. 1 – Introduction, Project Description

a. Concur. The design of the intersection between the Phase 1 access road and Olohena Road, mauka of its intersection with Ka`apuni Road, will include the appropriate vertical and horizontal sight distances in accordance with the AASHTO A Policy on Geometric Design of Highways and Streets and the Hawaii Statewide Uniform Design Manual for Streets and Highways.

Comment No. 2 – Existing Roadways

a. Concur. The stated speed limits are intended to provide guidance to the design of the intersection of Road A and the Kapa`a Bypass Road.

b. Concur.

c. Concur.

Comment No. 3 – Existing Peak Hour Traffic Volumes and Operation Conditions

a. Noted. The traffic impact analysis is based upon the methodology presented in the Highway Capacity Manual (HCM). The HCM methodology consists of a series of mathematical calculations to determine roadway capacity, vehicle delay, vehicle queuing, etc. The LOS concept was defined in the HCM to translate the results of the complex calculations into a simplified "A" through "F" grading system.

b. Corrected. The second sentence in the last paragraph on Page 10 should read "South of Ulu Street, Kuhio Highway carried over 1,700 vph…".

c. Corrected. The revised Figure 6 is attached. The PM peak hour of traffic from 3:45 PM to 4:45 PM on March 15, 2015 was selected for the intersection of Kuhio Highway and the Kapa`a Bypass Road because it corresponded with of the commuter PM peak hour traffic at the intersections in Kapa`a Town. The revised traffic data sheets for the intersection of Kuhio Highway and Kapa`a Bypass Road also are attached.

d. LOS, by definition, is the result of a series of mathematical calculations. For the purpose of the traffic impact analysis, the HCM methodology provides a common basis for comparing future traffic conditions without the proposed project and future traffic conditions with the proposed project.

Comment No. 4 – Kapa`a Transportation Solutions

a. Noted. The Kapa`a Transportation Solutions, cited in the TIAR Update, is dated August 2015. Please transmit the latest version of the Kapa`a traffic study.

b. Noted.

Comment No. 5 – Trip Generation Characteristics

a. Noted. The revised Table 6 is shown below:

Table 1. Hokua Place Trip Generation Characteristics

Land Use (ITE Code)	Units	AM Peak Hour (vph)			PM Peak Hour (vph)		
		Enter	Exit	Total	Enter	Exit	Total
Single-Family Phase 1 (265)	16 DU	5	16	21	13	7	20
Single-Family Phase 2 (265)	100 DU	20	60	80	66	38	104
Condominium/ Townhouse (230)	700 DU	52	256	308	244	120	364
Retail Center (820)	8,000 SFGFA	21	13	34	53	57	110
	Pass-By	0	0	0	(-)45	(-)45	(-)90
Total External Trips		**98**	**345**	**443**	**331**	**177**	**509**

b. The ITE Trip Generation Handbook cites a 9,000-square foot retail center, where 20 percent of the trip generation were primary trips. Comparing the retail center to smaller convenience markets, the Trip Generation Handbook listed sites where the primary trip percentages ranged from 8 percent to 28 percent of the PM peak period trip generation. The retail center is described in the DEIS as a neighborhood-oriented commercial center. Therefore, it is reasonable to assume that a significant portion of the retail trips will be generated from within the proposed project, which can be defined as "internal capture" or "diverted trips".

Comment No. 6 – Site Access Improvements

a. Noted. The AM and PM peak hour traffic demands at the Olohena Road intersections at the Phase 1 Driveway and at Road A do not meet the AASHTO left-turn lane guidelines. During the AM peak hour of traffic, the advancing (mauka bound) volumes on Olohena Road do not meet the AASHTO minimum requirements. The left-turn demands at Road A and at the Phase 1 Driveway do not meet the AASHTO minimum left-turn volumes, during the PM peak hour of traffic. The Olohena Road intersections at Road A and the Phase 1 Driveway are expected to operate at satisfactory LOS during the AM peak hour of traffic. The Phase 1 Driveway also is expected to operate at satisfactory LOS at Olohena Road, during the PM peak hour of traffic. Road A is expected to operate at LOS "D", during the PM peak hour of traffic. However, the average delay of 26.7 seconds/vehicle on Road A is in the upper range of LOS "D". Therefore, a median refuge lane at Road A was not recommended at this time. Furthermore, separate left-turn and right-turn lanes on Road A would not improve the LOS.

Comment No. 7 – Traffic Assignment

a. The traffic assignment for the proposed project was primarily based upon the direction of peak hour traffic at the roundabout intersection of the Kapa`a Bypass Road and Olohena Road, where only about one third of Olohena Road traffic turns to/from the south leg of the Kapa`a Bypass Road. The Phase 2 development is concentrated on the makai half of the project site. Only the trips generated from the mauka-most portion of the site and the estimated AM peak hour school trips are expected to use the mauka access of Road A at Olohena Road.

b. The peak hour trip destinations, mauka of the Ka`apuni Road/Olohena Road intersection, are virtually nil, as observed in mauka bound/makai bound directional splits on Olohena Road. The retail trips generated from the mauka neighboring communities are represented in the "pass-by" trips using Road A.

Comment No. 8 – Figures 11 through 14 (Traffic Assignment)

a. The diverted peak hour trips on Road A are depicted on the attached Figures 12.1 and 14.1.

b. The revised Figure 11 is attached.

c. The revised Figure 13 is attached.

d. The revised Figure 14 is attached.

Comment No. 9 – PM Peak Hour Traffic Analysis With Project

a. The recommendation of extending the median refuge lane/two-way left-turn lane in Section V.A.7. of the TIAR Update is expected to mitigate the "bottle-neck" on Kuhio Highway, north of Lehua Street. Ultimately, the improvement of the north leg of the Kapa`a Bypass Road from a one-way roadway to a two-way bypass road is expected to improve traffic operations in Kapa`a Town.

Comment No. 10 – Recommendation of Traffic Improvements Without Project

a. Noted.

Comment No. 11 – Recommendation of Traffic Improvements With Project

a. Noted. While the MUTCD does not provide warrants for roundabout intersections, it does advise that a roundabout intersection can be considered as an alternative to traffic signal control. Based upon the TIAR Update, the intersection of Olohena Road and Road A is not expected to warrant all-way stop controls or traffic signals. Therefore, a roundabout intersection was not considered. However, a reassessment of the traffic operations at the Road A intersection at Olohena Road may be considered after the project is fully built out and occupied. A roundabout intersection was considered at the intersection of Olohena Road, Ka`apuni Road, and Kaehulua Road. However, based upon a preliminary assessment of the horizontal and vertical alignments of the intersecting roadways, it was determined that a roundabout intersection would not be feasible. The realignment of Kaehulua Road to form a four-legged intersection with the Olohena Road and Ka`apuni Road was recommended in Section V.A.6.

If you require clarification on any of the above material or have any other questions, please do not hesitate to call me.

Very truly yours,

The Traffic Management Consultant

By

Randall S. Okaneku, P. E.
Principal

Attachments:
Figure 6-Revised
Kuhio Hwy Kapa`a Bypass Rd Traffic Count Data-Revised
Figure 12.1
Figure 14.1
Figure 11-Revised
Figure 13-Revised
Figure 14-Revised

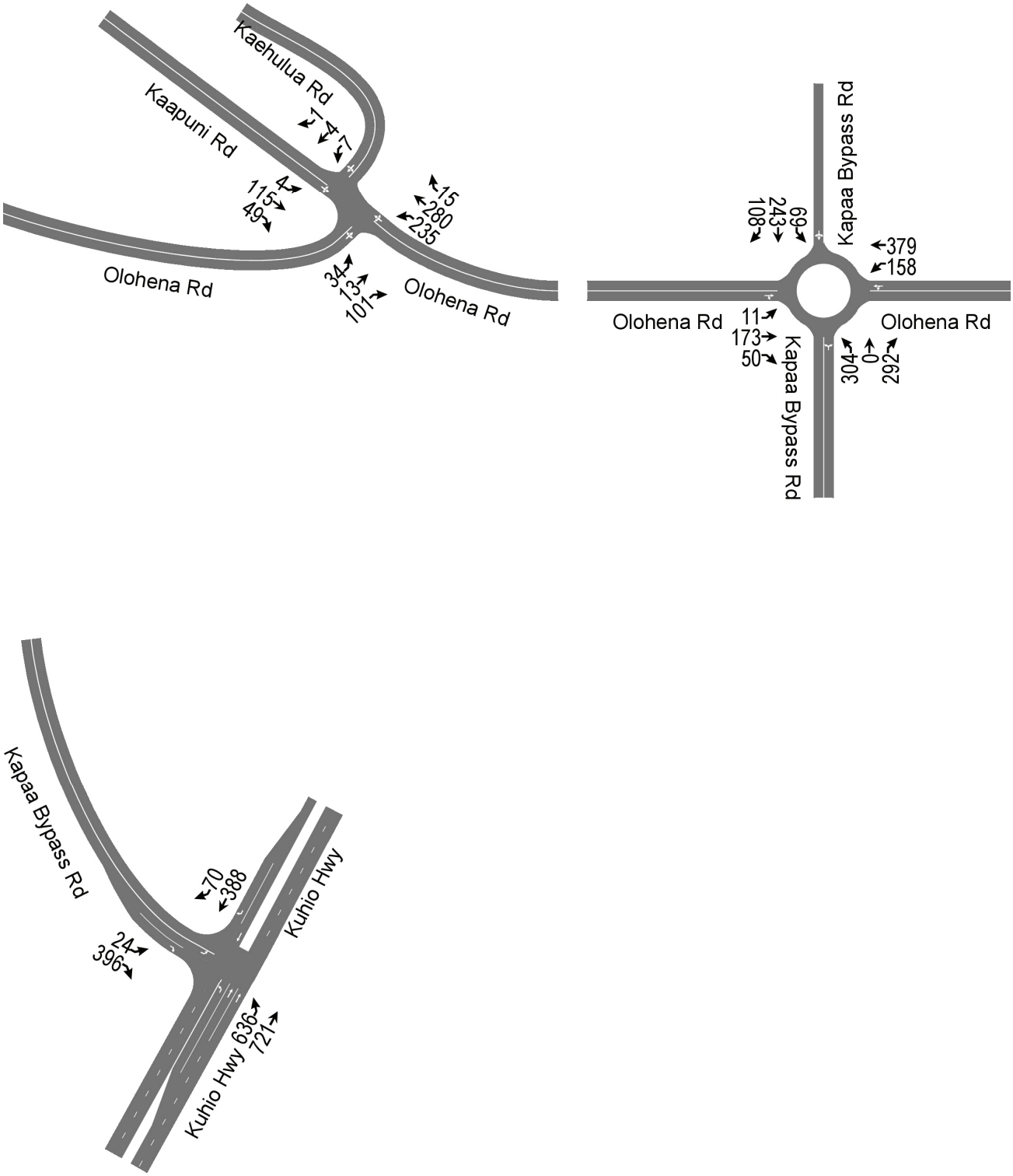


Figure 6. Existing PM Peak Hour Traffic (Cont'd.)

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 1

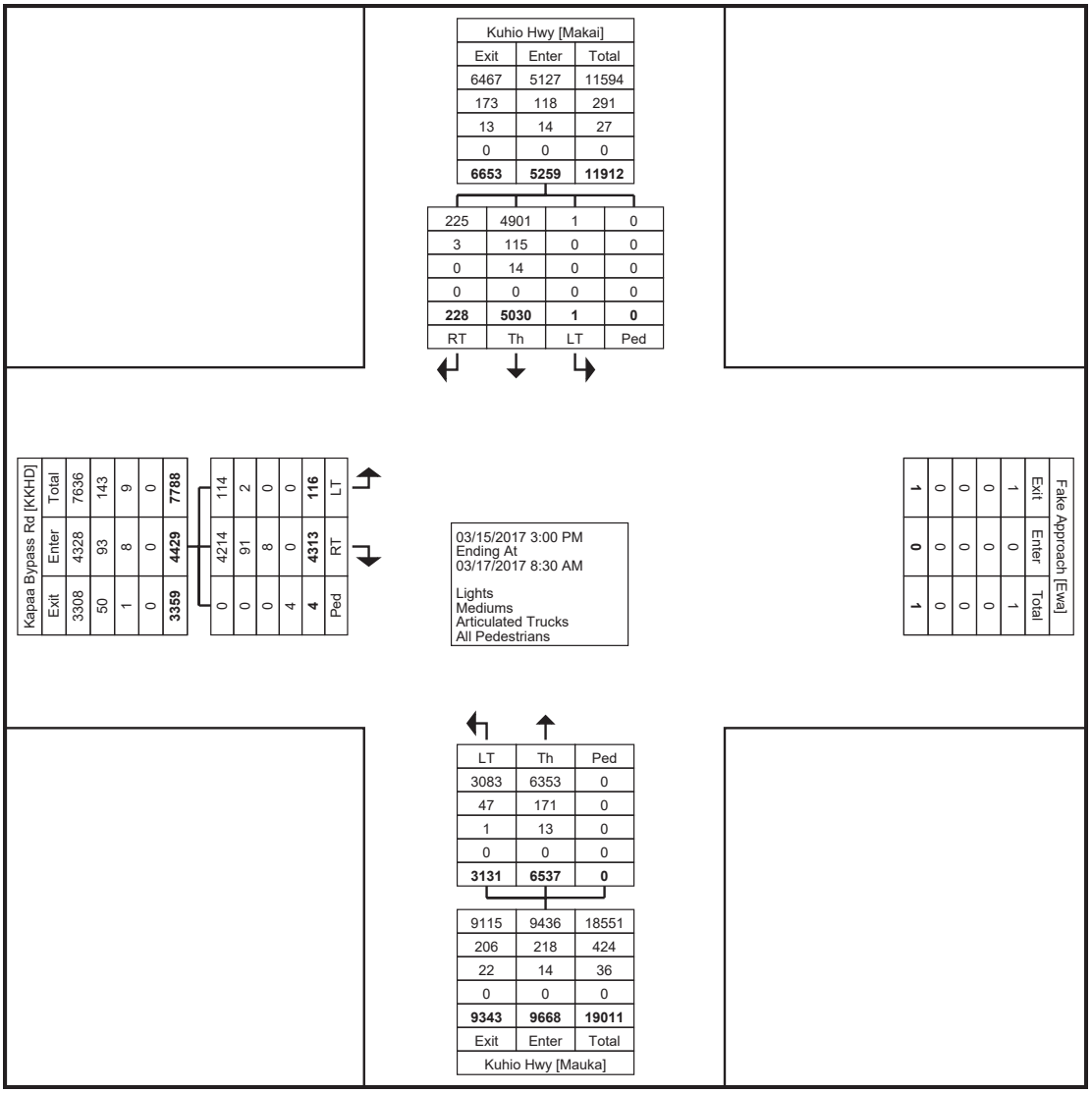
Turning Movement Data

Start Time	Kapaa Bypass Rd Koko Head Bound				Kuhio Hwy Mauka Bound				Kuhio Hwy Makai Bound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
3:00 PM	1	105	0	106	99	191	0	290	0	106	5	0	111	507
3:15 PM	3	100	0	103	122	210	0	332	0	88	7	0	95	530
3:30 PM	8	93	0	101	120	207	0	327	0	73	8	0	81	509
3:45 PM	8	104	0	112	148	201	0	349	0	88	21	0	109	570
Hourly Total	20	402	0	422	489	809	0	1298	0	355	41	0	396	2116
4:00 PM	1	108	0	109	168	161	0	329	0	91	16	0	107	545
4:15 PM	9	94	0	103	154	172	0	326	0	97	14	0	111	540
4:30 PM	6	90	0	96	166	187	0	353	0	112	19	0	131	580
4:45 PM	2	95	0	97	146	176	0	322	0	112	15	0	127	546
Hourly Total	18	387	0	405	634	696	0	1330	0	412	64	0	476	2211
5:00 PM	5	88	0	93	149	232	0	381	0	138	27	0	165	639
5:15 PM	2	91	0	93	149	192	0	341	0	152	25	0	177	611
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	7	179	0	186	298	424	0	722	0	290	52	0	342	1250
6:30 AM	0	78	0	78	14	124	0	138	0	203	0	0	203	419
6:45 AM	2	116	0	118	8	124	0	132	0	190	1	0	191	441
Hourly Total	2	194	0	196	22	248	0	270	0	393	1	0	394	860
7:00 AM	1	161	0	162	20	129	0	149	0	233	0	0	233	544
7:15 AM	1	184	0	185	25	155	0	180	0	200	1	0	201	566
7:30 AM	2	152	0	154	24	152	0	176	0	167	0	0	167	497
7:45 AM	1	155	1	156	33	180	0	213	0	135	0	0	135	504
Hourly Total	5	652	1	657	102	616	0	718	0	735	1	0	736	2111
8:00 AM	0	150	0	150	24	187	0	211	0	132	1	0	133	494
8:15 AM	3	131	0	134	21	177	0	198	0	165	0	0	165	497
8:30 AM	3	130	0	133	33	191	0	224	0	161	1	0	162	519
8:45 AM	1	108	0	109	25	209	0	234	0	189	0	0	189	532
Hourly Total	7	519	0	526	103	764	0	867	0	647	2	0	649	2042
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	5	103	0	108	97	217	0	314	0	96	6	0	102	524
3:15 PM	8	117	0	125	131	156	0	287	0	84	9	0	93	505
3:30 PM	6	83	0	89	138	227	0	365	1	76	8	0	85	539
3:45 PM	2	87	1	89	119	182	0	301	0	76	7	0	83	473
Hourly Total	21	390	1	411	485	782	0	1267	1	332	30	0	363	2041
4:00 PM	2	122	0	124	126	152	0	278	0	96	7	0	103	505
4:15 PM	6	109	1	115	136	158	0	294	0	95	6	0	101	510
4:30 PM	6	96	1	102	143	174	0	317	0	78	2	0	80	499
4:45 PM	5	93	0	98	138	181	0	319	0	83	6	0	89	506
Hourly Total	19	420	2	439	543	665	0	1208	0	352	21	0	373	2020
5:00 PM	2	98	0	100	146	204	0	350	0	85	3	0	88	538
5:15 PM	4	113	0	117	121	159	0	280	0	92	2	0	94	491
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	6	211	0	217	267	363	0	630	0	177	5	0	182	1029
6:30 AM	0	82	0	82	11	115	0	126	0	185	0	0	185	393
6:45 AM	0	89	0	89	10	126	0	136	0	164	3	0	167	392
Hourly Total	0	171	0	171	21	241	0	262	0	349	3	0	352	785
7:00 AM	1	131	0	132	17	133	0	150	0	219	1	0	220	502
7:15 AM	3	168	0	171	32	158	0	190	0	182	3	0	185	546
7:30 AM	1	125	0	126	40	146	0	186	0	166	2	0	168	480
7:45 AM	1	123	0	124	30	165	0	195	0	138	0	0	138	457
Hourly Total	6	547	0	553	119	602	0	721	0	705	6	0	711	1985
8:00 AM	4	116	0	120	20	169	0	189	0	150	0	0	150	459
8:15 AM	1	125	0	126	28	158	0	186	0	133	2	0	135	447
Grand Total	116	4313	4	4429	3131	6537	0	9668	1	5030	228	0	5259	19356
Approach %	2.6	97.4	-	-	32.4	67.6	-	-	0.0	95.6	4.3	-	-	-
Total %	0.6	22.3	-	22.9	16.2	33.8	-	49.9	0.0	26.0	1.2	-	27.2	-
Lights	114	4214	-	4328	3083	6353	-	9436	1	4901	225	-	5127	18891
% Lights	98.3	97.7	-	97.7	98.5	97.2	-	97.6	100.0	97.4	98.7	-	97.5	97.6
Mediums	2	91	-	93	47	171	-	218	0	115	3	-	118	429
% Mediums	1.7	2.1	-	2.1	1.5	2.6	-	2.3	0.0	2.3	1.3	-	2.2	2.2
Articulated Trucks	0	8	-	8	1	13	-	14	0	14	0	-	14	36
% Articulated Trucks	0.0	0.2	-	0.2	0.0	0.2	-	0.1	0.0	0.3	0.0	-	0.3	0.2
All Pedestrians	-	-	4	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 2



Turning Movement Data Plot

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Kapaa Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (3:45 PM)

Start Time	Kapaa Bypass Rd Koko Head Bound				Kuhio Hwy Mauka Bound				Kuhio Hwy Makai Bound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
3:45 PM	8	104	0	112	148	201	0	349	0	88	21	0	109	570
4:00 PM	1	108	0	109	168	161	0	329	0	91	16	0	107	545
4:15 PM	9	94	0	103	154	172	0	326	0	97	14	0	111	540
4:30 PM	6	90	0	96	166	187	0	353	0	112	19	0	131	580
Total	24	396	0	420	636	721	0	1357	0	388	70	0	458	2235
Approach %	5.7	94.3	-	-	46.9	53.1	-	-	0.0	84.7	15.3	-	-	-
Total %	1.1	17.7	-	18.8	28.5	32.3	-	60.7	0.0	17.4	3.1	-	20.5	-
PHF	0.667	0.917	-	0.938	0.946	0.897	-	0.961	0.000	0.866	0.833	-	0.874	0.963
Lights	24	390	-	414	633	712	-	1345	0	377	69	-	446	2205
% Lights	100.0	98.5	-	98.6	99.5	98.8	-	99.1	-	97.2	98.6	-	97.4	98.7
Mediums	0	6	-	6	3	9	-	12	0	11	1	-	12	30
% Mediums	0.0	1.5	-	1.4	0.5	1.2	-	0.9	-	2.8	1.4	-	2.6	1.3
Articulated Trucks	0	0	-	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
All Pedestrians	-	-	0	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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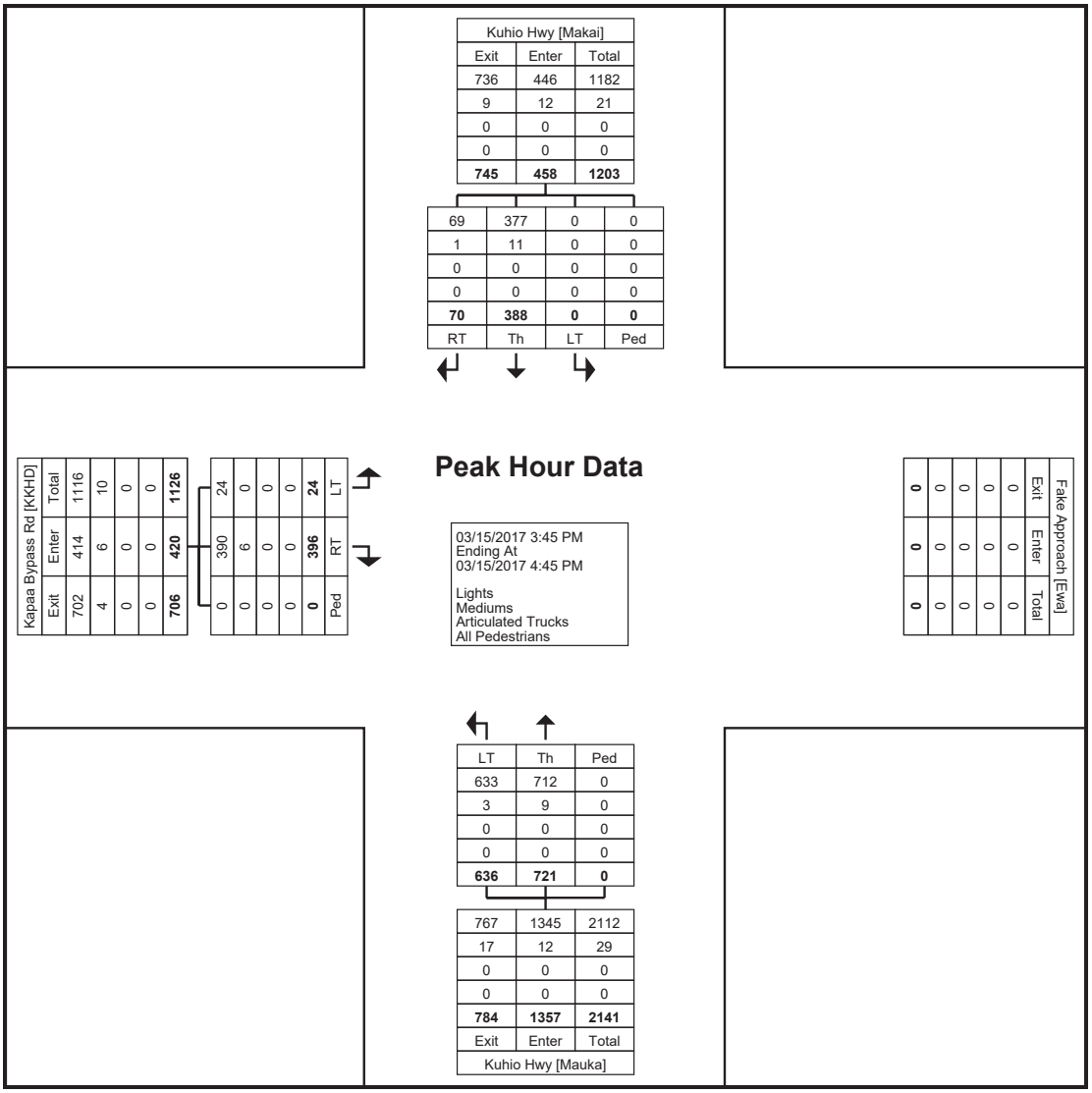
Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 4



Turning Movement Peak Hour Data Plot (3:45 PM)

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Kapaa Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Kapaa Bypass Rd Koko Head Bound				Kuhio Hwy Mauka Bound				Kuhio Hwy Makai Bound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
7:00 AM	1	161	0	162	20	129	0	149	0	233	0	0	233	544
7:15 AM	1	184	0	185	25	155	0	180	0	200	1	0	201	566
7:30 AM	2	152	0	154	24	152	0	176	0	167	0	0	167	497
7:45 AM	1	155	1	156	33	180	0	213	0	135	0	0	135	504
Total	5	652	1	657	102	616	0	718	0	735	1	0	736	2111
Approach %	0.8	99.2	-	-	14.2	85.8	-	-	0.0	99.9	0.1	-	-	-
Total %	0.2	30.9	-	31.1	4.8	29.2	-	34.0	0.0	34.8	0.0	-	34.9	-
PHF	0.625	0.886	-	0.888	0.773	0.856	-	0.843	0.000	0.789	0.250	-	0.790	0.932
Lights	4	635	-	639	100	600	-	700	0	711	1	-	712	2051
% Lights	80.0	97.4	-	97.3	98.0	97.4	-	97.5	-	96.7	100.0	-	96.7	97.2
Mediums	1	14	-	15	2	16	-	18	0	23	0	-	23	56
% Mediums	20.0	2.1	-	2.3	2.0	2.6	-	2.5	-	3.1	0.0	-	3.1	2.7
Articulated Trucks	0	3	-	3	0	0	-	0	0	1	0	-	1	4
% Articulated Trucks	0.0	0.5	-	0.5	0.0	0.0	-	0.0	-	0.1	0.0	-	0.1	0.2
All Pedestrians	-	-	1	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-

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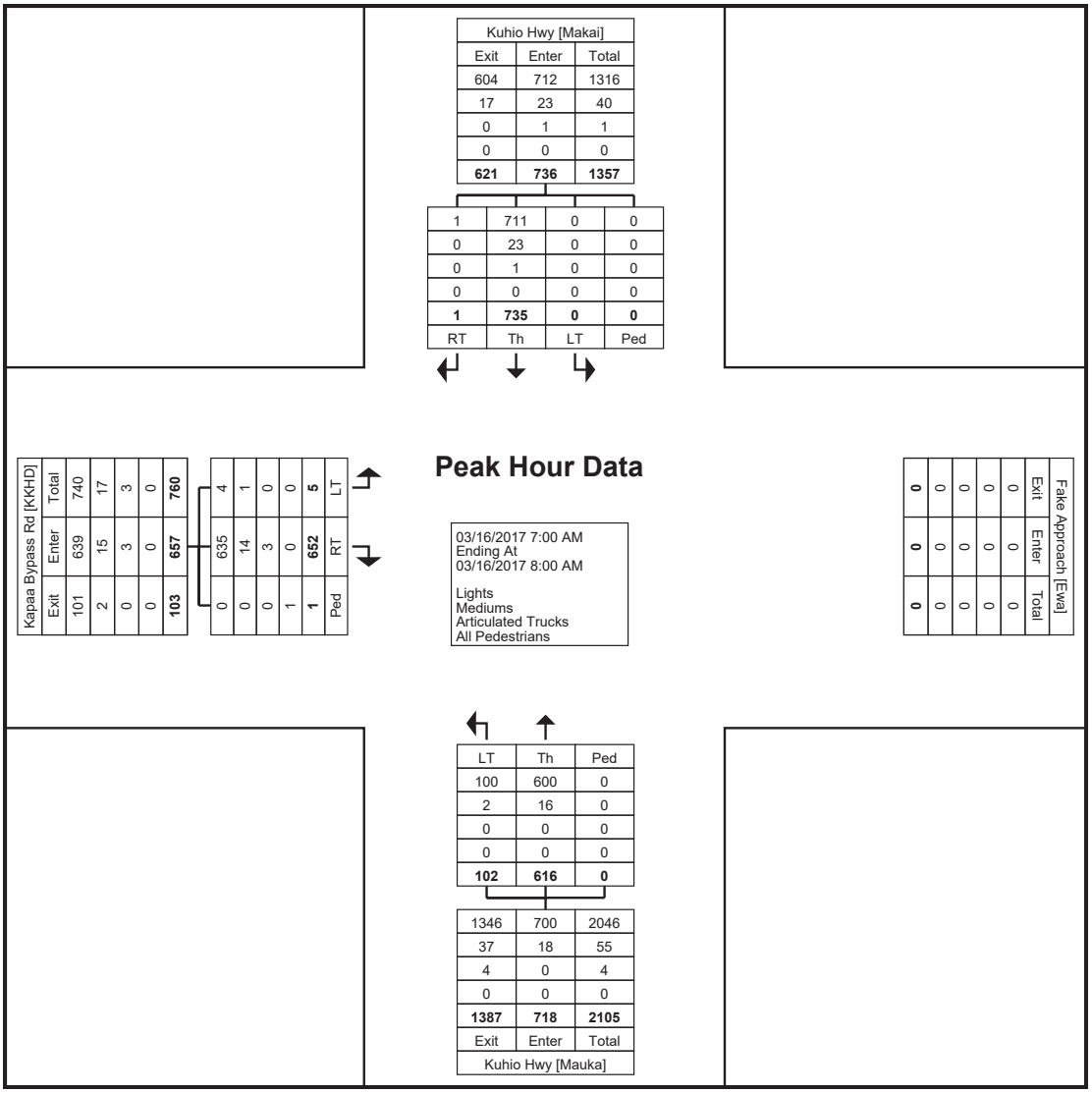
Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 6



Turning Movement Peak Hour Data Plot (7:00 AM)

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Kapaa Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Kapaa Bypass Rd Koko Head Bound				Kuhio Hwy Mauka Bound				Kuhio Hwy Makai Bound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
4:15 PM	6	109	1	115	136	158	0	294	0	95	6	0	101	510
4:30 PM	6	96	1	102	143	174	0	317	0	78	2	0	80	499
4:45 PM	5	93	0	98	138	181	0	319	0	83	6	0	89	506
5:00 PM	2	98	0	100	146	204	0	350	0	85	3	0	88	538
Total	19	396	2	415	563	717	0	1280	0	341	17	0	358	2053
Approach %	4.6	95.4	-	-	44.0	56.0	-	-	0.0	95.3	4.7	-	-	-
Total %	0.9	19.3	-	20.2	27.4	34.9	-	62.3	0.0	16.6	0.8	-	17.4	-
PHF	0.792	0.908	-	0.902	0.964	0.879	-	0.914	0.000	0.897	0.708	-	0.886	0.954
Lights	19	385	-	404	558	710	-	1268	0	337	17	-	354	2026
% Lights	100.0	97.2	-	97.3	99.1	99.0	-	99.1	-	98.8	100.0	-	98.9	98.7
Mediums	0	11	-	11	5	7	-	12	0	4	0	-	4	27
% Mediums	0.0	2.8	-	2.7	0.9	1.0	-	0.9	-	1.2	0.0	-	1.1	1.3
Articulated Trucks	0	0	-	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
All Pedestrians	-	-	2	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-

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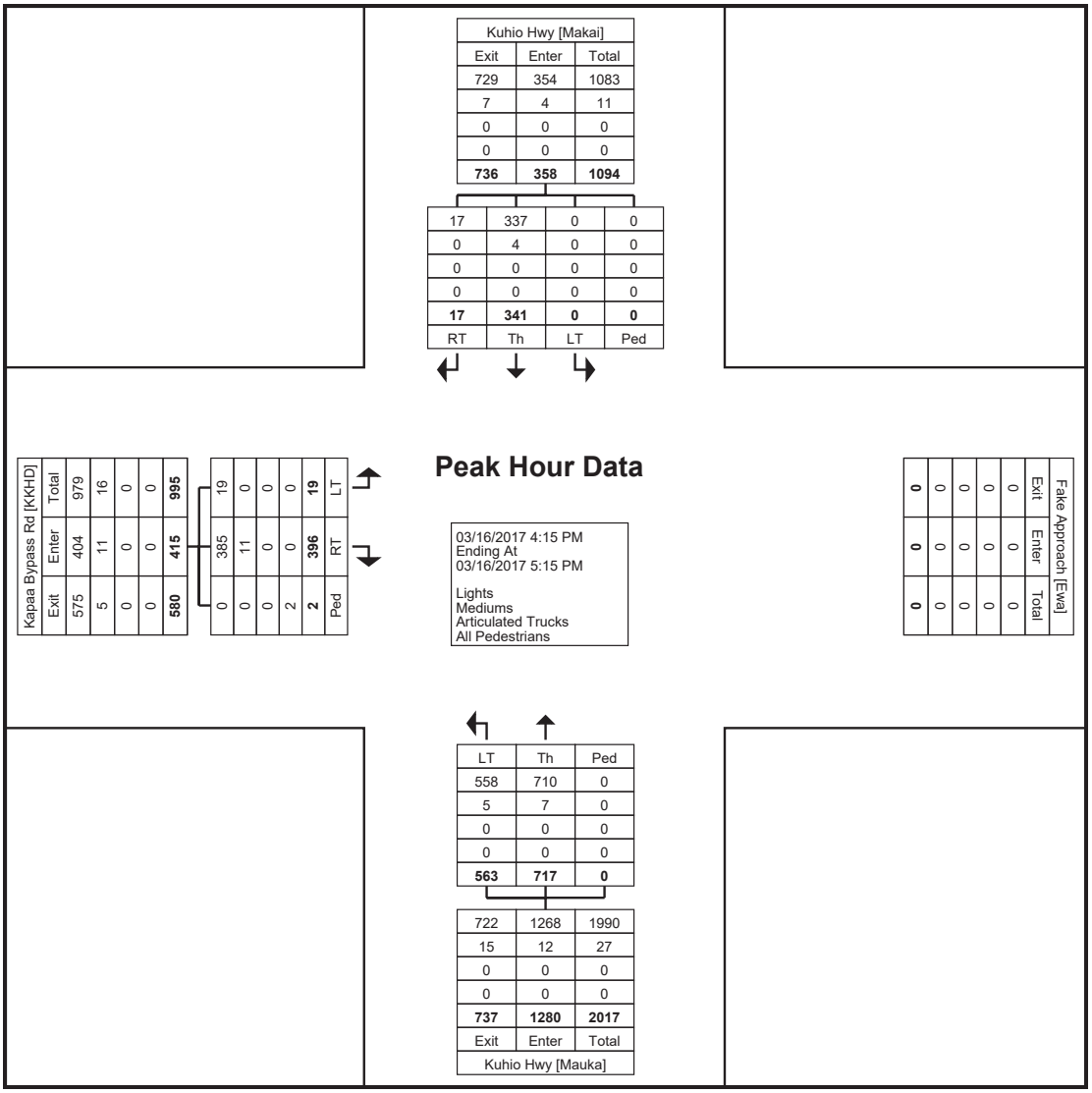
Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 8



Turning Movement Peak Hour Data Plot (4:15 PM)

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Kapaa Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Kapaa Bypass Rd Koko Head Bound				Kuhio Hwy Mauka Bound				Kuhio Hwy Makai Bound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
7:00 AM	1	131	0	132	17	133	0	150	0	219	1	0	220	502
7:15 AM	3	168	0	171	32	158	0	190	0	182	3	0	185	546
7:30 AM	1	125	0	126	40	146	0	186	0	166	2	0	168	480
7:45 AM	1	123	0	124	30	165	0	195	0	138	0	0	138	457
Total	6	547	0	553	119	602	0	721	0	705	6	0	711	1985
Approach %	1.1	98.9	-	-	16.5	83.5	-	-	0.0	99.2	0.8	-	-	-
Total %	0.3	27.6	-	27.9	6.0	30.3	-	36.3	0.0	35.5	0.3	-	35.8	-
PHF	0.500	0.814	-	0.808	0.744	0.912	-	0.924	0.000	0.805	0.500	-	0.808	0.909
Lights	5	535	-	540	113	569	-	682	0	688	6	-	694	1916
% Lights	83.3	97.8	-	97.6	95.0	94.5	-	94.6	-	97.6	100.0	-	97.6	96.5
Mediums	1	10	-	11	5	29	-	34	0	15	0	-	15	60
% Mediums	16.7	1.8	-	2.0	4.2	4.8	-	4.7	-	2.1	0.0	-	2.1	3.0
Articulated Trucks	0	2	-	2	1	4	-	5	0	2	0	-	2	9
% Articulated Trucks	0.0	0.4	-	0.4	0.8	0.7	-	0.7	-	0.3	0.0	-	0.3	0.5
All Pedestrians	-	-	0	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

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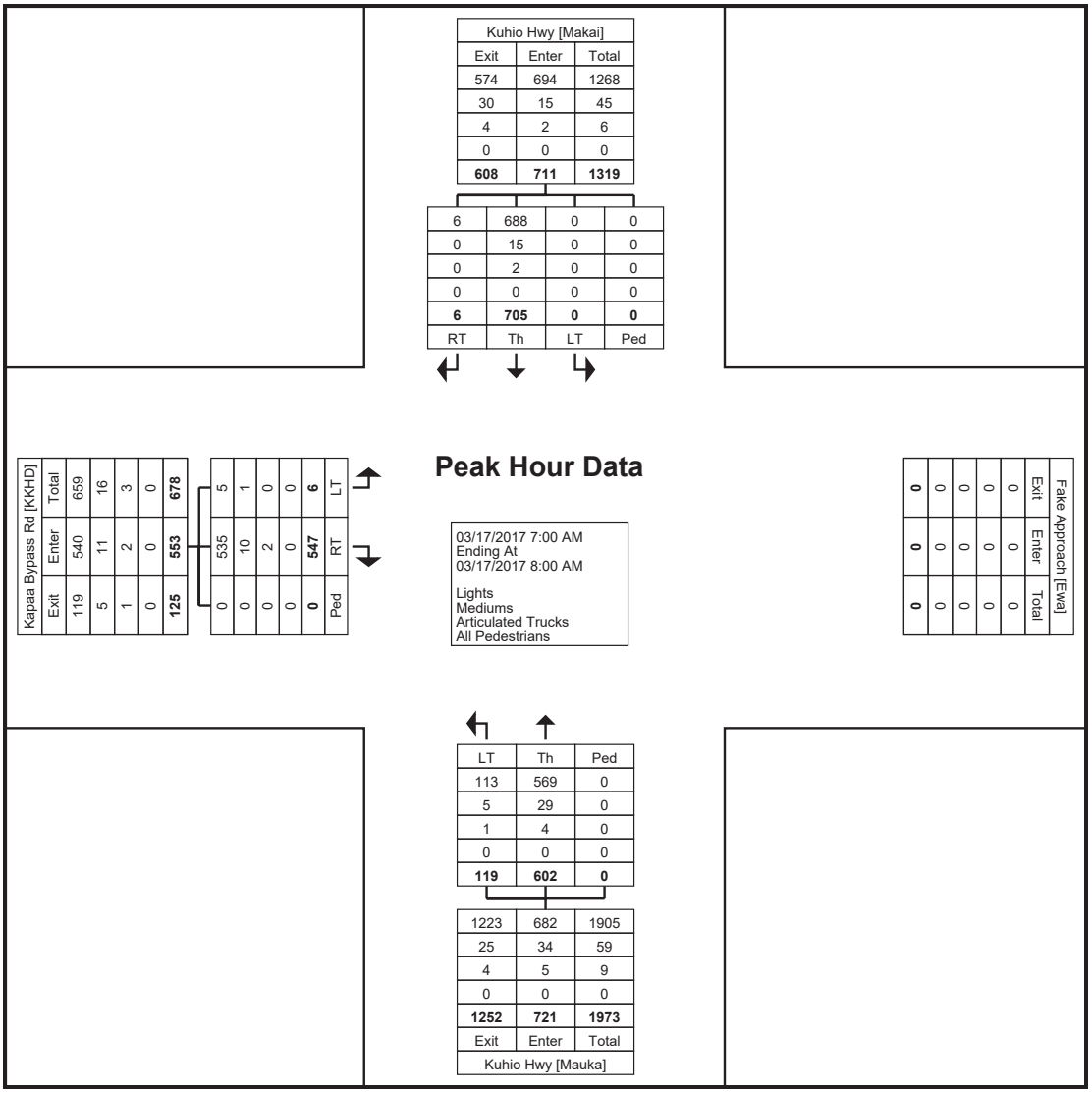
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 10



Turning Movement Peak Hour Data Plot (7:00 AM)

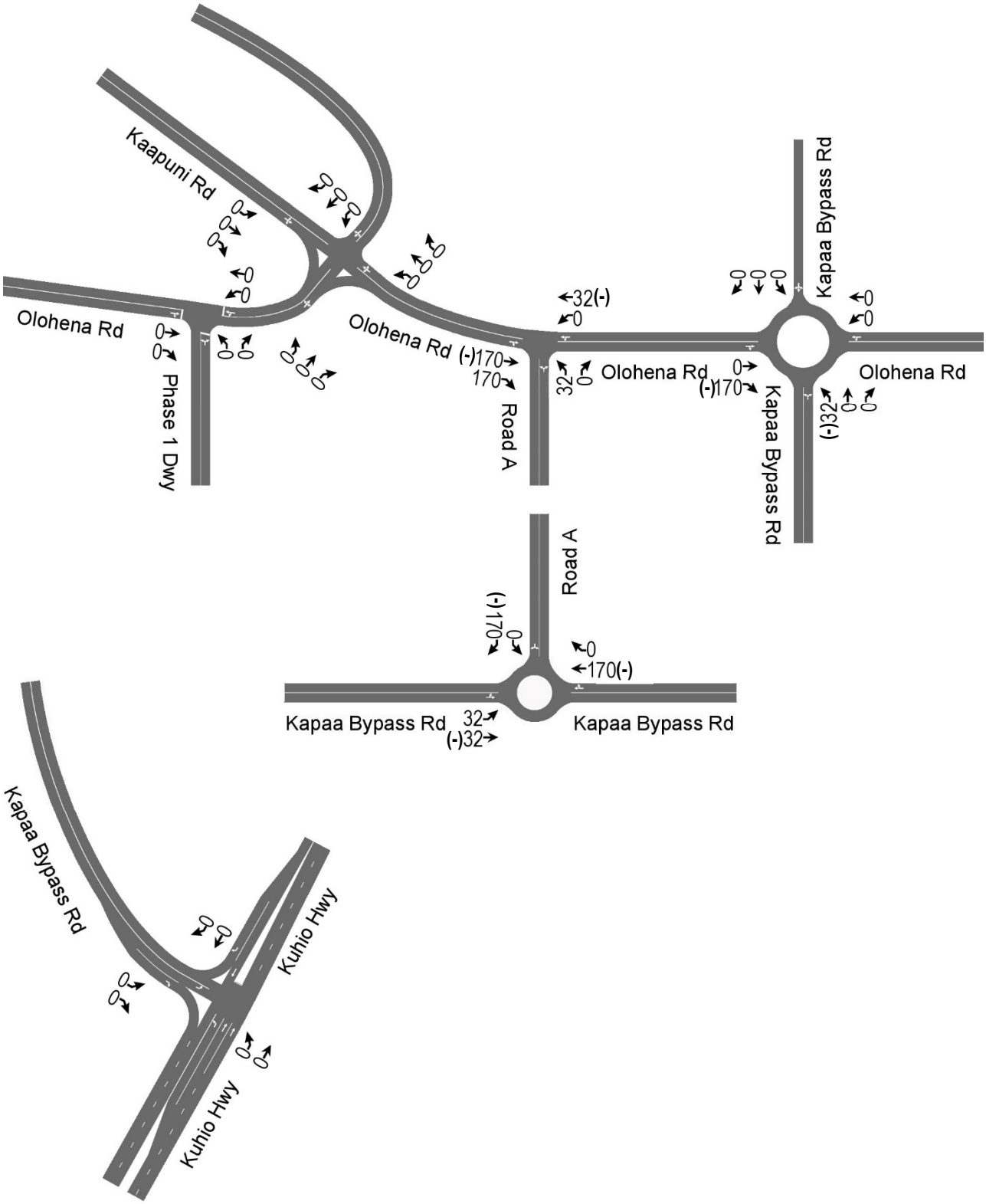


Figure 12.1 AM Peak Hour Diverted Traffic Assignment

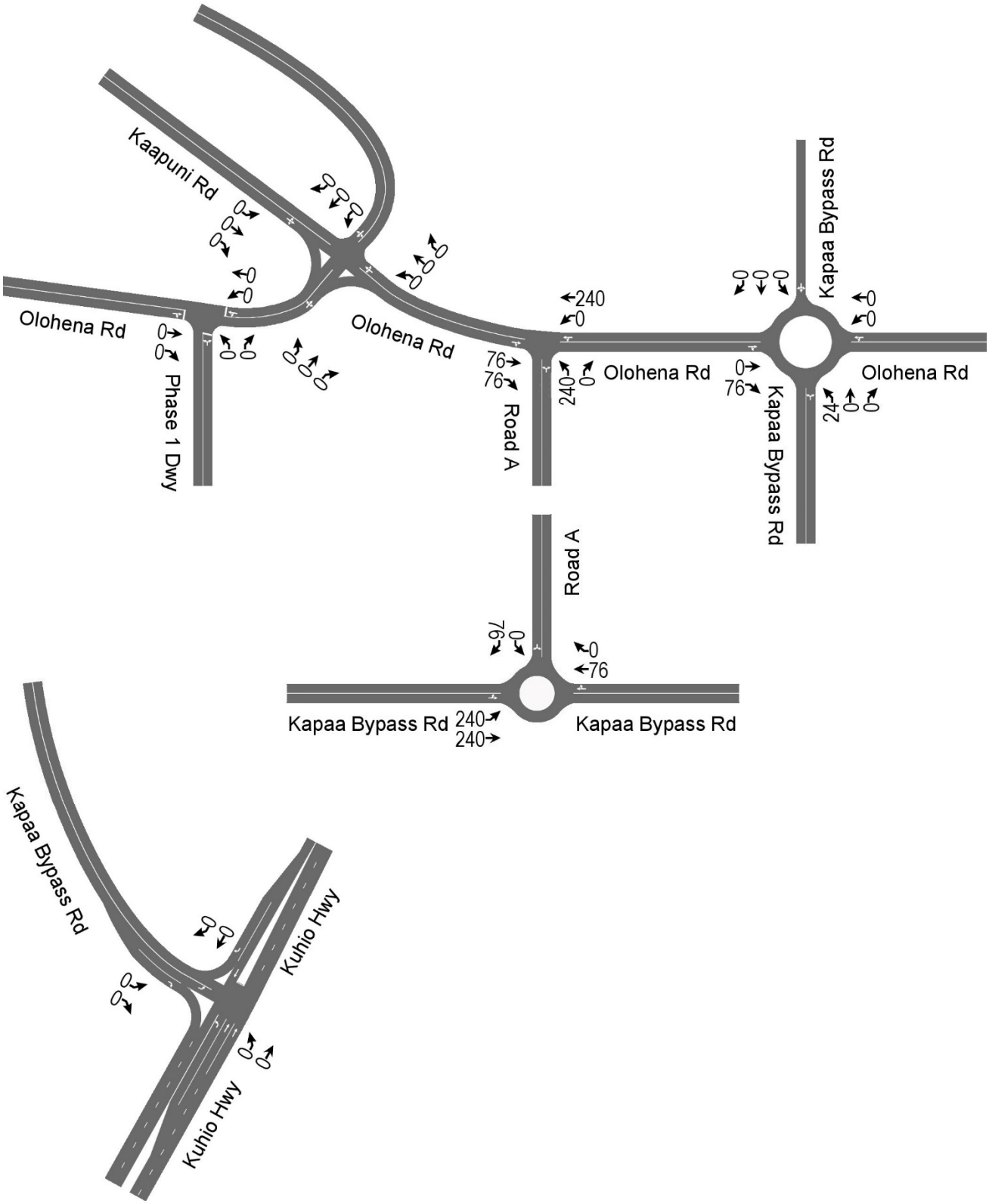


Figure 14.1 PM Peak Hour Diverted Traffic Assignment

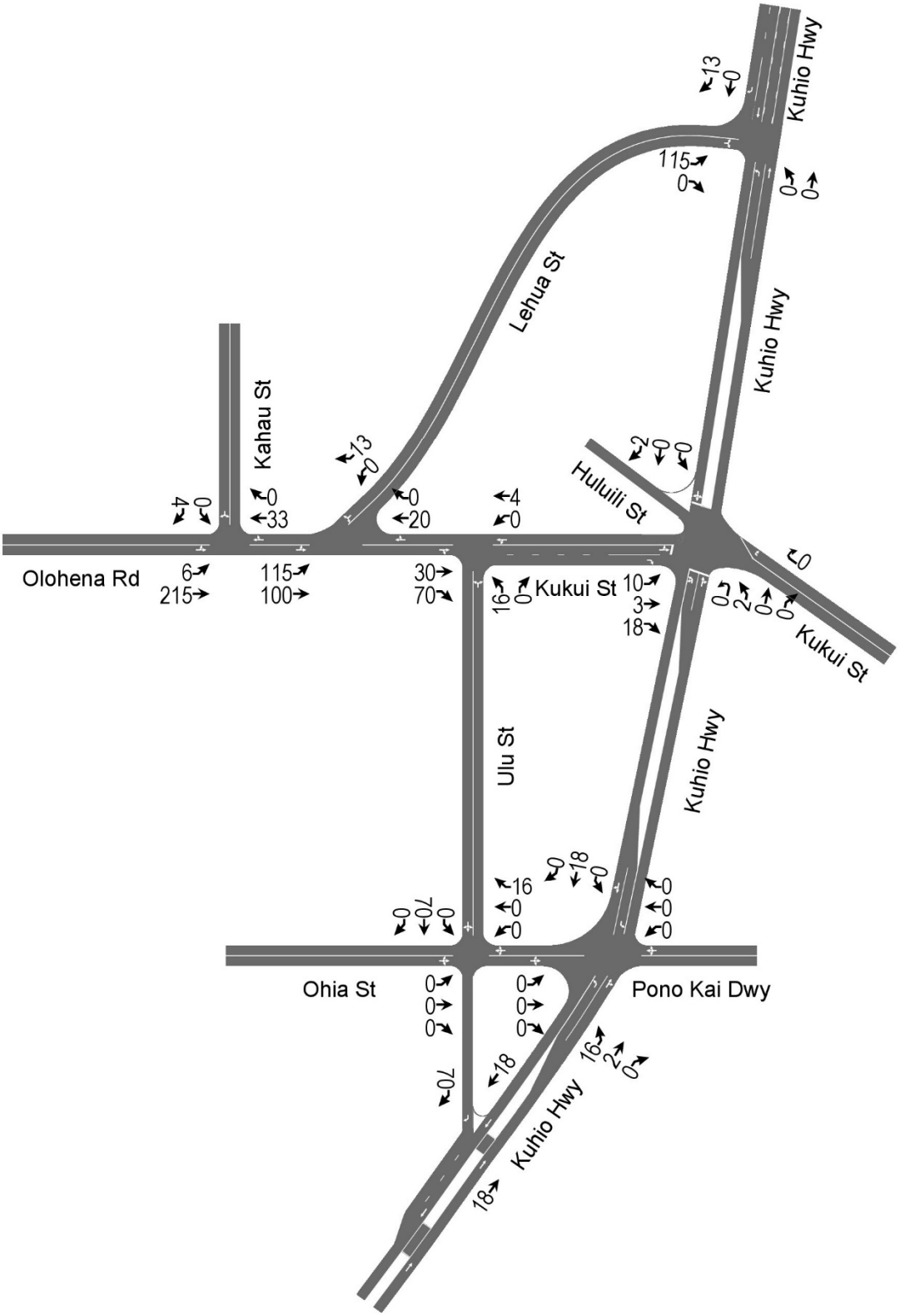


Figure 11. AM Peak Hour Site Traffic Assignment

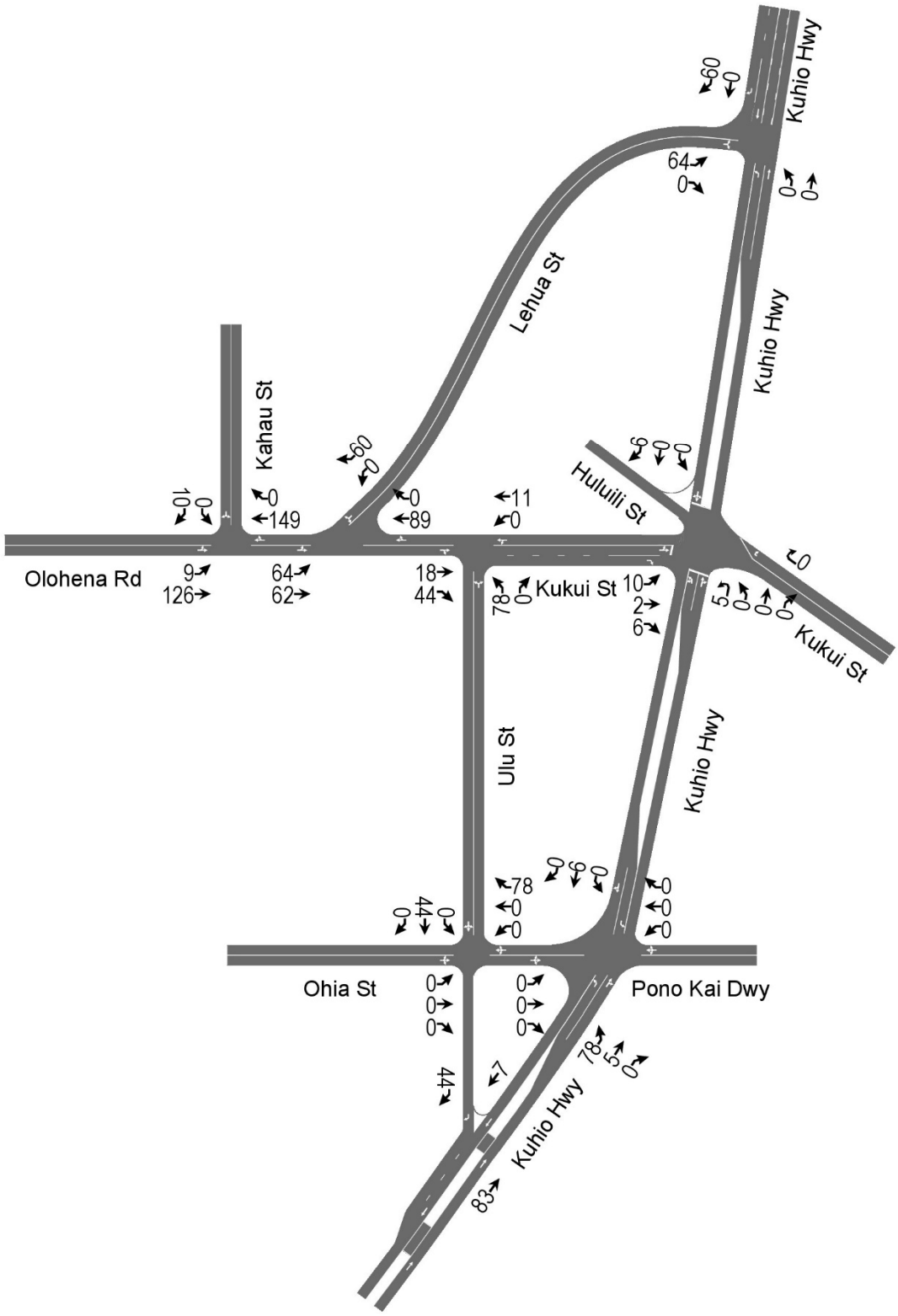


Figure 13. PM Peak Hour Site Traffic Assignment

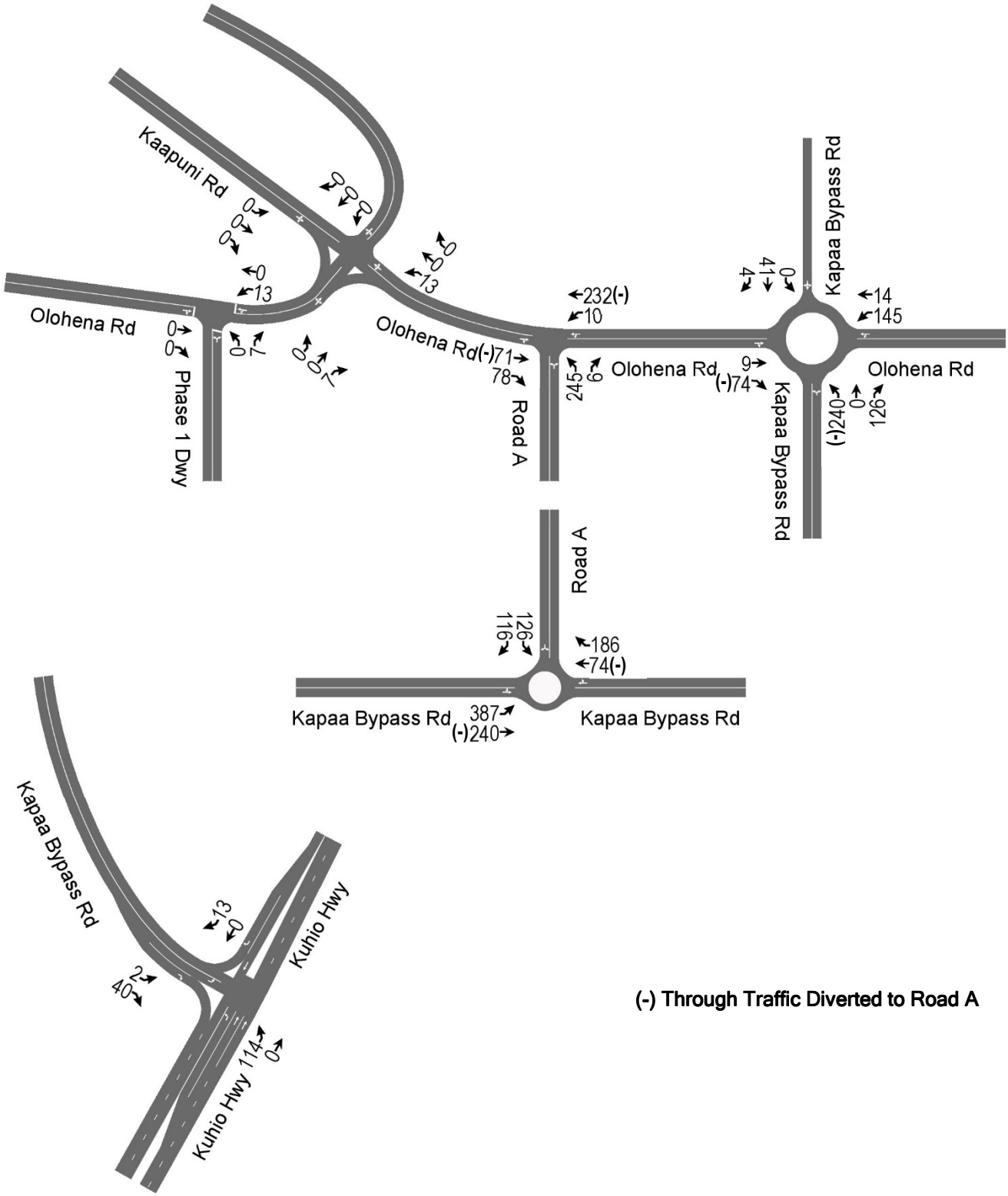


Figure 14. PM Peak Hour Site Traffic Assignment (Cont'd.)

Bernard P. Carvalho, Jr.
Mayor

Wallace G. Rezentes, Jr.
Managing Director

Lyle Tabata
Acting County Engineer

DEPARTMENT OF PUBLIC WORKS
County of Kaua'i, State of Hawai'i
4444 Rice Street, Suite 275, Līhu'e, Hawai'i 96766
TEL (808) 241-4992 FAX (808) 241-6604

September 1, 2017

Randall S. Okaneku, P. E.
The Traffic Management Consultant
1188 Bishop Street, Suite 1907
Honolulu, Hawaii 96813

SUBJECT: Traffic Impact Analysis Report Update
For the Proposed Hokua Place
Kapa`a, Kawaihau District, Island of Kaua'i
TMK: (4) 4-3-03: Por. 001

Dear Mr. Okaneku:

The Engineering Division of the Department of Public Works received the subject Traffic Impact Analysis Report (TIAR) Update that was transmitted via email on June 15, 2017. We appreciate the opportunity to review the TIAR and offer the following comments on the TIAR:

1. **Introduction, Project Description:**
   a. The TIAR indicates that the driveway for phase 1 is proposed to be located on Olohena Road mauka of its intersection with Ka'apuni Road. We have concerns with a proposed intersection at this location, including the proximity to the intersection of Ka'apuni Road as well as concerns about intersection sight distance due to nearby horizontal and vertical curves. Prior to approval of a driveway at this location, additional information will need to be provided about this driveway location, to show that appropriate sight lines can be achieved and that no safety or other problems will be created by the proximity to the intersection of Olohena Road and Ka'apuni Road.
2. **Existing Conditions, Roadways:**
   a. The report states that the Kapa'a Bypass Road speed limit is reduced to 25 mph south of the proposed intersection with Road A. The report should also mention that further south the speed limit is again increased to 35 mph.
   b. The report incorrectly indicates that the posted speed limit for Olohena Road is reduced to 15 mph as it approaches Kapa'a Middle School. The correct statement should be that there is a 15 mph school zone within the vicinity of Kapa'a Middle School during school hours.
   c. Kukui Street and Ulu Street should both be described as collector streets.

3. **Existing Conditions, Existing Peak Hour Traffic Volumes and Operating Conditions:**
    a. The language throughout this segment of the TIAR indicates that intersections "operated at LOS…." However, if we understand correctly, the LOS values given are based on the analysis of the traffic conditions, not actual empirical observations of delay for vehicles at these intersections. The TIAR should instead use language such as "calculated to operate at LOS …." This is an important distinction given that observations of Kūhiō Highway during peak hours of traffic appear to show LOS along the highway worse than the LOS A for movements along Kūhiō Highway as reported in the TIAR, potentially due to other factors than the control delay at the intersections.
    b. Check the traffic volume of 1,500 shown on page 10 for Kūhiō Highway south of Ulu Street in the PM Peak. The volumes shown in Figure 6 do not match.
    c. Figure 6 (Existing PM Peak Hour Traffic) has an error for the southbound through movement on Kūhiō Highway at the Kapa'a Bypass Road. The figure shows an hourly volume of 38, which is way too low for this through movement. The data shown for this intersection in figure 6 does not appear to match either of the two PM peak hour traffic count plots (or their average) in the appendix.
    d. Related to comment "a" above recommending different language for the calculated LOS values, we recommend that the TIAR include some statements comparing the observed traffic conditions with the calculated delays and level of service, ideally offering explanations for the difference in observed level of service and calculated level of service.
4. **Future Traffic Conditions, Kapa'a Transportation Solutions:**
    a. Page 17 of the TIAR refers to removal of on-street parking on Kūhiō Highway. The Kapa'a Transportation Solutions study rejected any potential solutions that removed parking on Kūhiō Highway, since such a change would be detrimental to the economic vitality, multimodal, and safety goals of the study. Removal of parking should not be discussed in the TIAR, as HDOT is not considering removal of parking to add travel lanes or turn lanes.
    b. With respect to a new connector road in the approximate location of Road A, page 18 of the TIAR states, "The construction cost of the connector road was estimated at $25,824,000." The costs in the Kapa'a Transportation Solutions report include right-of-way costs as well as construction cost; therefore it is misleading to state that the full cost shown in the study is the estimated construction cost.
5. **Traffic Impact Analysis, Trip Generation Characteristics:**
    a. The project description in the TIAR's introduction states that there are 700 multi-family dwelling units, but the trip generation calculations are based on 800 multi-family dwelling units. This discrepancy must be corrected, and the accurate trip generation should be reflected in the study.
    b. The pass-by trip percentage of 81.2% is too high, especially given the relatively small amount of traffic traveling through the development on Road A. The diverted volume of 45 vehicles represents approximately 15% of the estimated through vehicles on Road A during the PM Peak Hour. The 8,000 square feet of the Hokua Place shopping center is outside of the sample size in the pass-by trip

chart for shopping centers in the ITE Trip Generation Handbook. A pass-by trip percentage of approximately 30% or 40% would be more reasonable, given the data available in the Trip Generation Handbook. It would also be reasonable for the TIAR to include a calculation of an internal capture rate for trips between the retail portion and the residential portion of the Hokua Place development. However, the combination of the traffic reduction for internal capture and pass-by trips should still be less than 81%.

6. **Traffic Impact Analysis, Site Access Improvements:**
   a. The recommendations for the stop controlled Tee-intersections of Olohena Road with Road A and the phase 1 driveway do not include any statements regarding the recommended lane assignments for these new intersections. The methodologies section of the report describes the use of AASHTO Left-Turn Lane Guidelines, but no such analyses are included in the TIAR for left turn lanes on Olohena Road at these intersections. We believe that at a minimum, a left turn lane would be necessary on Olohena Road at Road A, but analyses must be provided for both intersections. A median refuge lane should also be included on Olohena Road to facilitate the left-turn movement from Road A to Olohena Road. In addition, we believe that Road A should have two approach lanes at Olohena Road, one for right turn movements and one for left turn movements.
7. **Traffic Impact Analysis, Traffic Assignment:**
   a. In the previous TIAR for this project, no traffic was assigned to the left turn movement from southbound Road A to eastbound Kapa'a Bypass (and likewise for the right turn from the Kapa'a Bypass to Road A). In our earlier comments, we recommended that some traffic be assigned to these movements. In almost a complete reversal, the current TIAR assigned nearly all of the traffic to these movements. In the current TIAR, only about 5% to 10% of the project traffic that goes through the existing Kapa'a Bypass roundabout is assigned to go through the intersection of Road A and Olohena Road. A more equitable distribution of traffic should be made, to accurately represent the traffic impact on Olohena Road.
   b. The TIAR assigns no traffic between the project and Olohena Road or Ka'apuni Road north of the project (Wailua Homesteads and Upper Kapahi area). There are relatively few destinations on those roads for the residential traffic from the project, but a small amount of residential traffic is likely to travel to those areas. In addition, much of the traffic generated by the retail portion of the development would have its origin or destination in the residential areas of Wailua Homesteads and Upper Kapahi area. A reasonable (albeit small) amount of traffic must be assigned to those areas.
8. **Figures 11 Through 14 (Traffic Assignment)**
   a. For clarity, the TIAR must show the reassignment of existing traffic on separate figures from the figures for traffic assignment from this project.
   b. On Figure 11, the 989 vehicles shown for northbound Kūhiō Highway at Ulu Street is incorrect. It appears that this volume should be 20.
   c. On Figure 13, the 1,274 vehicles shown for northbound Kūhiō Highway at Ulu Street is incorrect. It appears that this volume should be 92.
   d. On Figure 14, the 30 vehicles shown for the Kapa'a Bypass Road left turn and the

447 vehicles for the Kapa'a Byapss Road right turn appear to be incorrect.

9. **Traffic Impact Analysis, PM Peak Hour Traffic Analysis With Project:**
    a. We recommend that the TIAR further analyze and discuss the impact of the project on the intersection of Kūhi'ō Highway and Lehua Street and recommend measures to mitigate this impact. The TIAR states that "Makai bound Lehua Street is expected to continue at LOS F at Kūhiō Highway during the PM peak hour of traffic with the proposed project." However, Table 7 shows the PM peak hour of traffic without the project to be LOS E. Additionally, while the AM peak hour of traffic with the project continues to be LOS F, the delay increases significantly.
10. **Recommendations and Conclusions, Recommended Traffic Improvements Without Project:**
    a. Item number 3 recommends restricting parking along Kūhiō Highway within Kapa'a Town in order to provide additional through lanes or left turn lanes on Kūhiō Highway. This should not be recommended in the TIAR, because HDOT is not considering removal of parking to add travel lanes. Removal of parking has been determined to be detrimental to businesses and the economic vitality of Kapa'a Town. Discussion of parking removal on Kūhiō Highway in Kapa'a Town should also be removed from other sections of the report, including the conclusions.
11. **Recommendations and Conclusions, Recommended Traffic Improvements With Project:**
    a. Our comments above include several concerns about the intersection of Road A and Olohena Road, including the possibility that additional traffic should be assigned to this intersection. We are concerned that the one-way stop control Tee-intersection proposed will not be sufficient to address traffic operations and safety at intersection. The installation of a roundabout at this intersection shall be evaluated as part of the TIAR, including traffic operations analysis for a roundabout as well as a safety comparison of a roundabout and a one-way stop control intersection. The federal Manual on Uniform Traffic Control Devices (MUTCD) does not include traffic warrants for roundabouts. However, evaluation of the MUTCD's multi-way stop control warrants and/or signal warrants would be instructive with respect to evaluating whether a one-way stop control intersection would be sufficient or if a roundabout is needed instead. Alternatively, we may also accept an evaluation of the need for a roundabout based on roundabout evaluation guidelines from another jurisdiction or research document.
    Consideration should also be given to the construction of a roundabout that combines the intersections of Olohena Road with Ka'apuni Road and Road A (with Kaehulua Road designed as a T intersection with either Ka'apuni Road or Olohena Road). Traffic operations analysis of a roundabout that combines these intersections shall be included in the TIAR.

The comments in this letter should not be construed to be inclusive of all County of Kaua'i recommendations for road improvements required to be constructed as part of the Hokua Place

project. Recommendations and requirements for road improvements will be included as part of future review phases for the project, such as zoning amendments, subdivision applications, and construction plan review. If you have any questions or need additional information, please contact me at (808) 241-4891 or Stanford Iwamoto at (808) 241-4896.

Very truly yours,

MICHAEL MOULE, P.E.
Chief, Engineering Division

MM/SI

Copies to: DPW-Design & Permitting
Lyle Tabata, Acting County Engineer
Larry Dill, HDOT Kaua'i District Engineer

TRAFFIC IMPACT ANALYSIS REPORT UPDATE

FOR THE PROPOSED

HOKUA PLACE

KAPA`A, KAUAI, HAWAII
TAX MAP KEY: (4) 4-3-03: 01

PREPARED FOR

HG KAUAI JOINT VENTURE, LLC

MAY 22, 2017

PREPARED BY

TMC

THE TRAFFIC MANAGEMENT CONSULTANT

TRAFFIC IMPACT ANALYSIS REPORT UPDATE

FOR THE PROPOSED

HOKUA PLACE

KAPA`A, KAUAI, HAWAII
TAX MAP KEY: (4)4-3-03: 01

PREPARED FOR

HG KAUAI JOINT VENTURE, LLC

MAY 22, 2017

RANDALL S. OKANEKU
LICENSED PROFESSIONAL ENGINEER
No. 4922-C
HAWAII, U.S.A.

PREPARED BY

TMC

THE TRAFFIC MANAGEMENT CONSULTANT

RANDALL S. OKANEKU, P.E., PRINCIPAL * 1188 BISHOP STREET, SUITE 1907 * HONOLULU, HI 96813

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EXECUTIVE SUMMARY

TRAFFIC IMPACT ANALYSIS REPORT UPDATE

FOR THE PROPOSED

HOKUA PLACE

Project Description

The proposed Hokua Place will be developed into an 816-unit residential subdivision in Kapa`a, Kauai, Hawaii. The project is situated immediately to the south of Kapa`a Middle School and to the west (mauka) of Kapa`a Town. The primary access will be provided by a new connector roadway between Olohena Road, immediately mauka of Kapa`a Middle School, and the Kapa`a Bypass Road, southwest of its roundabout intersection with Olohena Road.

The Draft Environmental Impact Statement for the Proposed Hokua Place (DEIS) was published in May 2015. The Traffic Impact Assessment Report Kapa`a Highlands Subdivision, dated December 9, 2013, was attached to the DEIS. The purpose of this Traffic Impact Analysis Report Update is to update the DEIS traffic study, and to respond to comments received from the State of Hawaii Department of Transportation and the County of Kauai Department of Public Works, during their review of the DEIS traffic study.

Existing Traffic Conditions

The field investigation was conducted in March 2017, to update the existing traffic conditions from the DEIS traffic study. The study area was expanded to include Lehua Street and Ulu Street. The field investigation indicated that Lehua Street and Ulu Street were used as alternate routes between Kuhio Highway and Olohena Road/Kukui Street to avoid the delays at the intersection of Kuhio Highway and Kukui Street.

Since the preparation of the DEIS traffic study, the peak hour traffic at the roundabout intersection of the Kapa`a Bypass Road and Olohena Road increased by about 12 percent and 22 percent, during the AM and PM peak hours of traffic, respectively.

Trip Generation

Hokua Place is expected to generate 487 vehicle trips per hour (vph) and 560 vph, during the AM and PM peak hours of traffic, respectively. The AM and PM peak hour trip generation characteristics for Hokua Place were increased by about 90± vph over the DEIS traffic study, primarily due to the use of the average peak hour trip rates for the multi-family dwelling units.

Traffic Impact Analysis

The construction of the connector roadway through Hokua Place, between Olohena Road and the Kapa`a Bypass Road, is expected to mitigate the project's traffic impacts at the roundabout intersection of the Kapa`a Bypass Road and Olohena Road. The other intersections in the study area will require the following traffic improvements to mitigate the traffic impacts without and with the proposed project.

Recommendations Without Project

1. Widen Kuhio Highway between the Kapa`a Bypass Road (South Junction) and Kuamoo Road to provide two through lanes in each direction.
2. Restripe the median on the north leg of Kuhio Highway at the Kapa`a Bypass Road (South Junction) to provide a median refuge lane.
3. Restripe parking and shoulder lanes on Kuhio Highway through Kapa`a Town to provide additional through and/or left-turn lanes.
4. Modify the traffic signal operations at the intersection of Kuhio Highway and Kukui Street to reduce queuing and delays.
5. Add a right-turn bypass lane from southbound Kapa`a Bypass Road to mauka bound Olohena Road at their roundabout intersection.
6. Realign Kaehulua Road to intersect Olohena Road and Kaapuni Road to create a four-legged, channelized intersection.
7. Extend the median refuge lane/two-way left-turn lane on the north leg of Kuhio Highway at Lehua Street.

Recommendations With Project

1. Construct Road A from Olohena Road to the Kapa`a Bypass Road.
2. Construct a roundabout at the intersection of Road A and the Kapa`a Bypass Road.

Conclusions

The existing traffic congestion on Kuhio Highway through Kapa`a Town can be mitigated by restricting on-street parking and restriping the shoulder lanes to provide for additional through lanes/median left-turn lanes. The existing southbound traffic demand through Kapa`a Town is reduced by the Kapa`a Bypass Road. Dedication of the Kapa`a Bypass Road right-of-way along the Hokua Place frontage would assure the continued usage of the existing Kapa`a Bypass Road.

The construction of the proposed Road A will provide additional mauka-makai roadway capacity between Kapa`a Valley and the Kapa`a Bypass Road. Road A is expected to mitigate the Hokua Place traffic impacts at the roundabout intersection of the Kapa`a Bypass Road and Olohena Road. The Hokua Place access intersections on Olohena Road and on the Kapa`a Bypass Road are expected to operate at satisfactory Levels of Service, during the AM and PM peak hours of traffic.

TRAFFIC IMPACT ANALYSIS REPORT UPDATE

FOR THE PROPOSED

HOKUA PLACE

KAPA`A, KAUAI, HAWAII
TAX MAP KEY: (4) 4-3-03: 01

I. Introduction

A. Project Description

Hokua Place is planned as an 816-unit residential development in Kapa`a, Kauai, Hawaii. Hokua Place will consist of 116 single-family detached units, 700 multi-family condominiums, a neighborhood retail center consisting of 8,000 square feet of gross floor area (SFGFA), and a community park and recreation center. The project site is located on the southwest quadrant of the roundabout intersection of the Kapa`a Bypass Road and Olohena Road. The project is situated immediately to the south of Kapa`a Middle School and to the west (mauka) of Kapa`a Town. Figure 1 depicts the project location and vicinity map.

Phase 1 of Hokua Place will consist of 16 single-family detached units, which will be located on the mauka portion of the project site. The Phase 1 access driveway is proposed on Olohena Road, mauka of its intersection with Kaapuni Road. Phase 2 will consist of the remaining 800 dwelling units. Phase 2 access is proposed via a collector street between Olohena Road, immediately mauka of Kapa`a Middle School, and the Kapa`a Bypass Road, about 3,000 feet southwest of its intersection with Olohena Road (hereinafter referred to as Road A). The project site is depicted on Figure 2.

The construction of Hokua Place is expected to begin by the Year 2020. For the purpose of this Traffic Impact Analysis Report Update, full occupancy is assumed to occur by the Year 2030.

B. 2015 Draft Environmental Impact Statement

The Draft Environmental Impact Statement for the Proposed Hokua Place (DEIS) was published in May 2015. Hokua Place was formerly known as the Kapa`a Highlands Subdivision. The Traffic Impact Assessment Report Kapa`a Highlands Subdivision was prepared by Phillip Rowell and Associates, dated December 9, 2013, and was attached to the DEIS as Exhibit H.

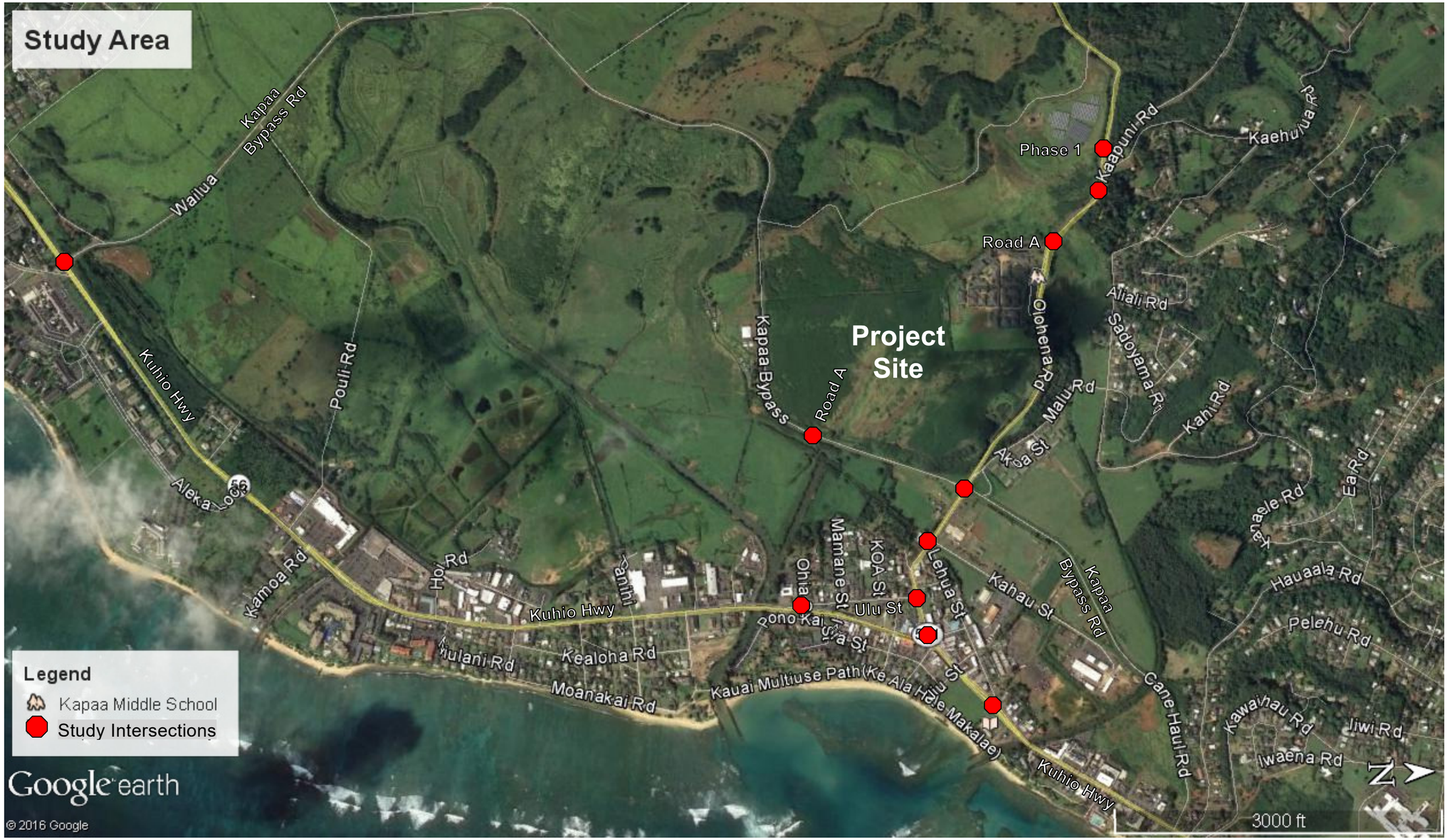


Figure 1. Location Map and Vicinity Map

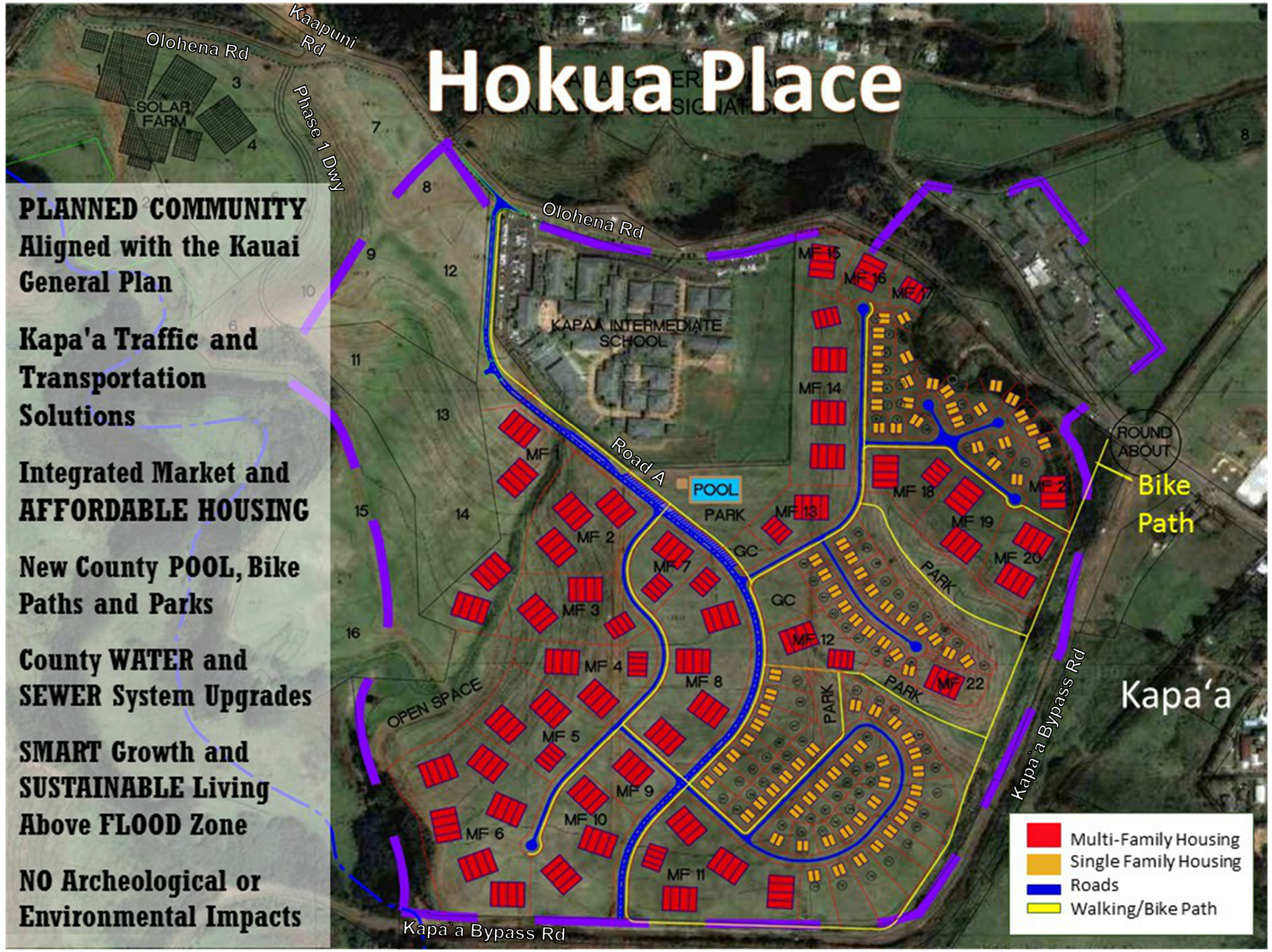


Figure 2. Proposed Site Plan

The State of Hawaii Department of Transportation (DOT) issued comments on the Rowell study in a letter dated March 26, 2014 (HWY-PS 2.6887). Responses to DOT's comments were transmitted via email from Mr. Greg Allen on April 9, 2014. The responses were acceptable to DOT per its letter, dated June 6, 2014 (HWY-PS 2.7311).

The County of Kauai Department of Public Works (DPW) issued its comments on the DEIS in its letter dated June 22, 2015. This TIAR addresses DPW's comments on the DEIS.

C. Purpose and Scope of the Study

The purpose of this study is to update the traffic impact analysis resulting from the development of the proposed Hokua Place. This report presents the findings and recommendations of the study, the scope of which includes:

1. A description of the proposed project.
2. An evaluation of existing roadways and traffic conditions.
3. The analysis of the future traffic conditions without the proposed project.
4. The development of trip generation characteristics of the proposed project.
5. The identification and analysis of the traffic impacts resulting from the development of the proposed project.
6. The recommendation of roadway improvements, which would mitigate the traffic impacts identified in this study.

D. Methodologies

1. Capacity Analysis

The highway capacity analysis, performed in this study, is based upon procedures presented in the Highway Capacity Manual 6th Edition (HCM), published by the Transportation Research Board. HCM defines the Level of Service (LOS) as "a quantitative stratification of a performance measure or measures representing quality of service." HCM defines the six (6) Levels of Service from the traveler's perspective, ranging from the best LOS "A" to the worst LOS "F". LOS translates the complex mathematical results of highway capacity analysis into an A through F system for the purpose of simplifying the roadway performance for non-technical decision makers.

The HCM 6th Edition has updated the highway capacity analysis since the HCM 2010 methodology, utilized in the DEIS traffic study. The most significant change in the HCM 6th Edition occurred in the analysis of roundabouts. The widespread construction of roundabouts throughout the United States, since the development of the HCM 2010, resulted in changes in driver behavior, entering and exiting a roundabout.

The data collected at United States roundabouts improved the HCM 6th Edition methodology for analyzing roundabouts, where the calculated delays were reduced by about one half, when compared with the previous HCM 2010 methodology.

LOS's "A", "B", and "C" are considered satisfactory Levels of Service. LOS "D" is generally considered a "desirable minimum" operating Level of Service. LOS's "E" and "F" are undesirable conditions. Intersection LOS is primarily based upon average delay (d) in seconds per vehicle (sec/veh). The delays at unsignalized intersections, which includes stop-controlled intersections and roundabouts, are generally longer than signalized intersections, due to the drivers' expectation and acceptance of longer delays at higher-volume signalized intersections. Table 1 summarizes the HCM LOS criteria.

Table 1. Intersection Level of Service Criteria (HCM)

LOS	Signalized Control	Unsignalized Control	Description
	Delay d (sec/veh)		
A	d≤10	d≤10	Control delay is minimal.
B	10<d ≤20	10<d≤15	Control delay is not significant.
C	20<d≤35	15<d≤25	Stable operation. Queuing begins to occur.
D	35<d≤55	25<d≤35	Less stable condition. Increase in delays, decrease in travel speeds.
E	55<d≤80	35<d≤50	Unstable operation, significant delays.
F	d>80	d>50	High delays, extensive queuing.

HCM utilizes a peak hour factor (PHF) to convert the peak 15-minute traffic into an hourly volume. For the purpose of this study, the peak hour traffic analysis is based directly upon the peak 15-minute traffic flows entering the study intersection, which is multiplied by four (4) to convert the 15-minute peak volumes into the peak hour volumes.

Synchro is a traffic analysis software that was developed by Trafficware Corporation. Synchro is an intersection analysis program that is based upon the HCM 6th Edition methodology. Synchro was used to calculate the Levels of Service for the intersections in the study area. Worksheets for the capacity analysis, performed throughout this report, are compiled in the Appendix.

2. Trip Generation

The trip generation methodology is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in Trip Generation Manual, 9th Edition, 2012. The ITE trip generation methodology has been updated since the Trip Generation, 7th Edition, utilized in the DEIS traffic study. The ITE trip rates were developed by correlating the total vehicle trip generation data with various land use activities/characteristics, such as the vehicle trips per hour (vph) per dwelling unit (DU).

A portion of the peak hour trips generated by a retail center is considered to be "pass-by" trips, i.e., traffic already on the roadway stopping by at a "secondary" destination enroute to its primary destination. The percentages of pass-by trips were compared with the gross leasable floor areas of the shopping centers, which were collected from traffic studies and compiled by ITE. The results of the analysis were published in the Trip Generation Handbook, 3rd Edition, dated August 2014. The percentage of pass-by trips is generally inversely proportional to the size of the shopping center, e.g., a regional shopping center is a primary destination with a low pass-by trip percentage, while a convenience store is a secondary destination with a high pass-by trip percentage. About 81.2 percent of the total PM peak hour trips generated by the proposed 8,000 square foot retail center are expected to be pass-by trips. The AM peak hour pass-by trip rate for a retail center was not published by ITE.

3. AASHTO Left-Turn Lane Guidelines

The left-turn lane assessment on a two-lane highway is based upon A Policy on Geometric Design of Highways and Streets, 2011, published by the American Association of State Highway and Transportation Officials (AASHTO). The AASHTO guide analyzes the combination of the left-turn volume (minimum 5%), the advancing volume (left-turn, through and right-turn volumes), the opposing volume (left-turn, through and right-turn volumes), and the operating speed. The AASHTO guide is based upon the "Volume Warrants for Left-Turn Storage Lanes at Unsignalized Grade Intersections", Highway Research Record 211, Highway Research Board, 1967, by M. D. Harmelink. The Harmelink left-turn volume warrant analyzes the probability of the arrival of an advancing vehicle slowing and/or stopping behind a vehicle, which is waiting to turn left from the through lane.

II. Existing Conditions

A. Roadways

Kuhio Highway is the primary arterial highway along the east coast of Kauai. Through Kapa`a Town, Kuhio Highway is a two-lane roadway with on-street parking on both sides of the roadway. Kuhio Highway is signalized at its intersection with Kukui Street.

Exclusive left-turn lanes are provided on Kuhio Highway at major intersections in Kapa`a Town. The posted speed limit on Kuhio Highway in Kapa`a Town is 25 miles per hour (mph).

The Kapa`a Bypass Road provides an alternative southbound route around Kapa`a Town. The Kapa`a Bypass Road is a one-lane, one-way, southbound roadway between its north junction at Kuhio Highway and Olohena Road, with a posted speed limit of 25 mph. The Kapa`a Bypass Road intersects Olohena Road at a single-lane roundabout. South of Olohena Road, the Kapa`a Bypass Road becomes a two-way, two-lane roadway, with a posted speed limit of 35 mph. A 3,700± foot section of the Kapa`a Bypass Road, south of Olohena Road, was constructed on a roadway easement, which is currently owned by the developer of Hokua Place. Hokua Place, LLC has a Memorandum of Understanding with the State of Hawaii Department of Transportation (DOT) to dedicate the roadway easement to State DOT upon the approval of the Hokua Place subdivision.

South of the proposed intersection with Road A, the posted speed limit on the Kapa`a Bypass Road is reduced to 25 mph. At its south junction, the Kapa`a Bypass Road intersects Kuhio Highway at an unsignalized Tee-intersection. The Kapa`a Bypass Road provides separate left-turn and right-turn lanes at its south junction with Kuhio Highway. Exclusive left-turn and right-turn lanes are provided on Kuhio Highway at the Kapa`a Bypass Road in the northbound and southbound directions, respectively. A median refuge lane is <u>not</u> delineated on the north leg of Kuhio Highway at the Kapa`a Bypass Road. However, the striped median provide sufficient refuge space for one vehicle turning left from the Kapa`a Bypass Road.

South of the Kapa`a Bypass Road, the center northbound lane of Kuhio Highway is coned to provide a southbound contra-flow lane, during the AM peak period of weekday traffic, resulting in two lanes in the southbound direction and one lane in the northbound direction. During the field investigation, the contra-flow operation occurred from 5:45 AM to 10:30 AM. The contra-flow lane provides a “free” right-turn movement from the Kapa`a Bypass Road onto southbound Kuhio Highway, during the AM peak period of weekday traffic.

Olohena Road is a two-way, two-lane collector roadway with a posted speed limit of 25 mph. The posted speed limit on Olohena Road is reduced to 15 mph as it approaches Kapa`a Middle School. Olohena Road intersects the Kapa`a Bypass Road at a single-lane roundabout. Makai of Lehua Street, Olohena Road continues as Kukui Street to Kuhio Highway.

Kaapuni Road is a two-way, two-lane, collector road which intersects Olohena Road at a stop-controlled, skewed Tee-intersection. The Kaapuni Road approach has a limited sight distance to the right, due to the vertical alignment of the mauka leg of Olohena Road. Immediately mauka of Olohena Road, the two-way, two-lane Kaehulua Road intersects Kaapuni Road at a stop-controlled, skewed Tee-intersection.

Kukui Street is a two-way, two-lane roadway between Kuhio Highway and Ulu Street with a posted speed limit of 15 mph. Kukui Street is signalized at its intersection with Kuhio Highway with a shared left-turn lane and exclusive right-turn lane.

Ulu Street is a two-way, two-lane local street between Kukui Street and Ohia Street. South of Ohia Street, Ulu Street becomes a one-lane, one-way southbound roadway to Kuhio Highway. Ohia Street is a local street, which intersects Ulu Street and Kuhio Highway at stop-controlled intersections. Exclusive left-turn lanes are provided in both directions on Kuhio Highway at Ohia Street/Pono Kai Driveway. Ulu Street provides an alternate route to the south between Kuhio Highway and Kukui Street.

Lehua Street is a two-way, two-lane local street between Olohena Road and Kuhio Highway. Lehua Street intersects Olohena Road at a stop-controlled Tee-intersection. Lehua Street intersects Kuhio Highway at a stop-controlled, channelized Tee-intersection. Lehua Street provides an alternate route to the north between Kuhio Highway and Olohena Road.

Kahau Street is a two-way, two-lane cul-de-sac street. Kahau Street intersects Olohena Road at a stop-controlled Tee-intersection, immediately mauka of Lehua Street.

B. Public Transit

The Kauai County Transportation Agency operates a public bus service in the region with a stop on Olohena Road at the Kapa`a New Town Park, between the Kapa`a Bypass Road and Kahau Street. The Kauai bus service also stops at Kapa`a Middle School. On Kuhio Highway, the Kauai Bus service stops at Lehua Street, at Ohia Street, and at the Coconut Marketplace near the Kapa`a Bypass Road (South Junction). The Kauai Bus service is provided at hourly intervals Monday through Friday from 6 AM to 9 PM and on weekends and holidays every two hours from 8 AM to 5 PM.

C. Existing Peak Hour Traffic Volumes and Operating Conditions

1. Field Investigation and Data Collection

Turning movement traffic count surveys were conducted at the following intersections in the study area, during the week of March 13, 2017:

a. Kapa`a Bypass Road and Olohena Road

b. Olohena Road and Kaapuni Road

c. Kaapuni Road and Kaehulua Road

d. Kuhio Highway and Kukui Street

e. Kuhio Highway and Kapa`a Bypass Road (South Junction)

f. Kuhio Highway and Lehua Street

g. Olohena Road and Lehua Street

h. Olohena Road and Kahau Street

i. Kukui Street and Ulu Street

j. Ulu Street and Ohia Street

k. Kuhio Highway and Ohia Street/Pono Kai Driveway

l. Kuhio Highway and Ulu Street

Each intersection was surveyed during the peak periods of traffic over a two-day period. On March 14, 2017, a stalled vehicle partially blocked the circulatory roadway of the roundabout intersection of Olohena Road and the Kapa`a Bypass Road from 3:00 PM to 4:00 PM. The blockage limited traffic flows, and this data were excluded from the analysis. Otherwise, the higher peak hour volumes on the survey days at each study intersection were selected for the analysis to establish the existing conditions. The peak hours of traffic varied from intersection to intersection and from day to day.

2. Existing AM Peak Hour Traffic

The existing AM peak hour of traffic in the study area generally occurred from 7:15 AM to 8:15 AM. Table 2 summarizes the changes in the AM peak hour traffic between the DEIS traffic study and the existing AM peak hour traffic data.

Table 2. AM Peak Hour Traffic Comparison

Study Intersection	Intersection Volumes (vph)		Increase (+) Decrease (-)
	2012-2013	2017	
Olohena Road/Kapa`a Bypass Road	1,447	1,628	+181
Kuhio Highway/Kukui Street	1,441	1,410	-31
Kuhio Hwy/Kapa`a Bypass Road	1,990	2,111	+121

In Kapa`a Town, Kuhio Highway carried about 1,400 vehicles per hour (vph), total for both directions, during the AM peak hour of traffic. South of Ulu Street, Kuhio Highway carried over 1,750 vph, total for both directions. The Kapa`a Bypass Road carried about 800 vph, total for both directions, south of Olohena Road. Mauka of the Kapa`a Bypass Road, Olohena Road carried about 1,000 vph, total for both directions. South of the Kapa`a Bypass Road (South Junction), Kuhio Highway carried about 2,100 vph.

The traffic signal timing cycle lengths at the intersection of Kuhio Highway and Kukui Street resulted in long delays on Kukui Street. Makai bound traffic on Olohena Road and Kukui Street were diverted to alternate routes to Kuhio Highway. About 54 percent of makai bound traffic on Olohena Road turned left onto Lehua Street to continue in the northbound direction. About 33 percent of makai bound traffic turned right onto Ulu Street to continue in the southbound direction. The remaining 13 percent

of the makai bound traffic on Olohena Road continued onto Kukui Street to Kuhio Highway.

During the existing AM peak hour of traffic, the overall intersection of Kuhio Highway and Kukui Street operated at LOS "A". However, the left-turn movement on makai bound Kukui Street operated at LOS "F", with a relatively low traffic demand (32 vph). All the traffic movements in both directions on Kuhio Highway operated at LOS "A" at Kukui Street, during the existing AM peak hour of traffic.

The left-turn movement on makai bound Lehua Street operated at LOS "E" at Kuhio Highway, during the existing AM peak hour of traffic. Makai bound Ohia Street also operated at LOS "E" at Kuhio Highway at a very low volume.

Makai bound Olohena Road operated at LOS "D" at the Kapa`a Bypass Road. Kaapuni Road operated at LOS "D" at Olohena Road. The other intersections in the study area operated at satisfactory Levels of Service, i.e., LOS "C" or better, during the existing AM peak hour of traffic. Figures 3 and 4 depict the existing AM peak hour traffic data.

3. Existing PM Peak Hour Traffic

The existing PM peak hour of traffic in the study area varied between the hours of 3:00 PM and 6:00 PM. Table 3 summarizes the changes in the PM peak hour traffic between the DEIS traffic study and the existing (2017) PM peak hour traffic data.

Table 3. PM Peak Hour Traffic Comparison

Study Intersection	Intersection Volumes (vph)		Increase (+) Decrease (-)
	2012-2013	2017	
Olohena Rd/Kapa`a Bypass Rd	1,459	1,787	+328
Kuhio Hwy/Kukui St	1,370	1,295	-75
Kuhio Hwy/Kapa`a Bypass Rd	2,176	2,235	+62

During the existing PM peak hour of traffic, Kuhio Highway carried about 1,200 vph, total for both directions in Kapa`a Town. South of Ulu Street, Kuhio Highway carried over 1,500 vph, total for both directions. The Kapa`a Bypass Road carried over 1,000 vph, total for both directions, south of Olohena Road. Mauka of the Kapa`a Bypass Road, Olohena Road carried about 1,000 vph, total for both directions. Kuhio Highway carried over 2,100 vph, total for both directions, south of the Kapa`a Bypass Road.

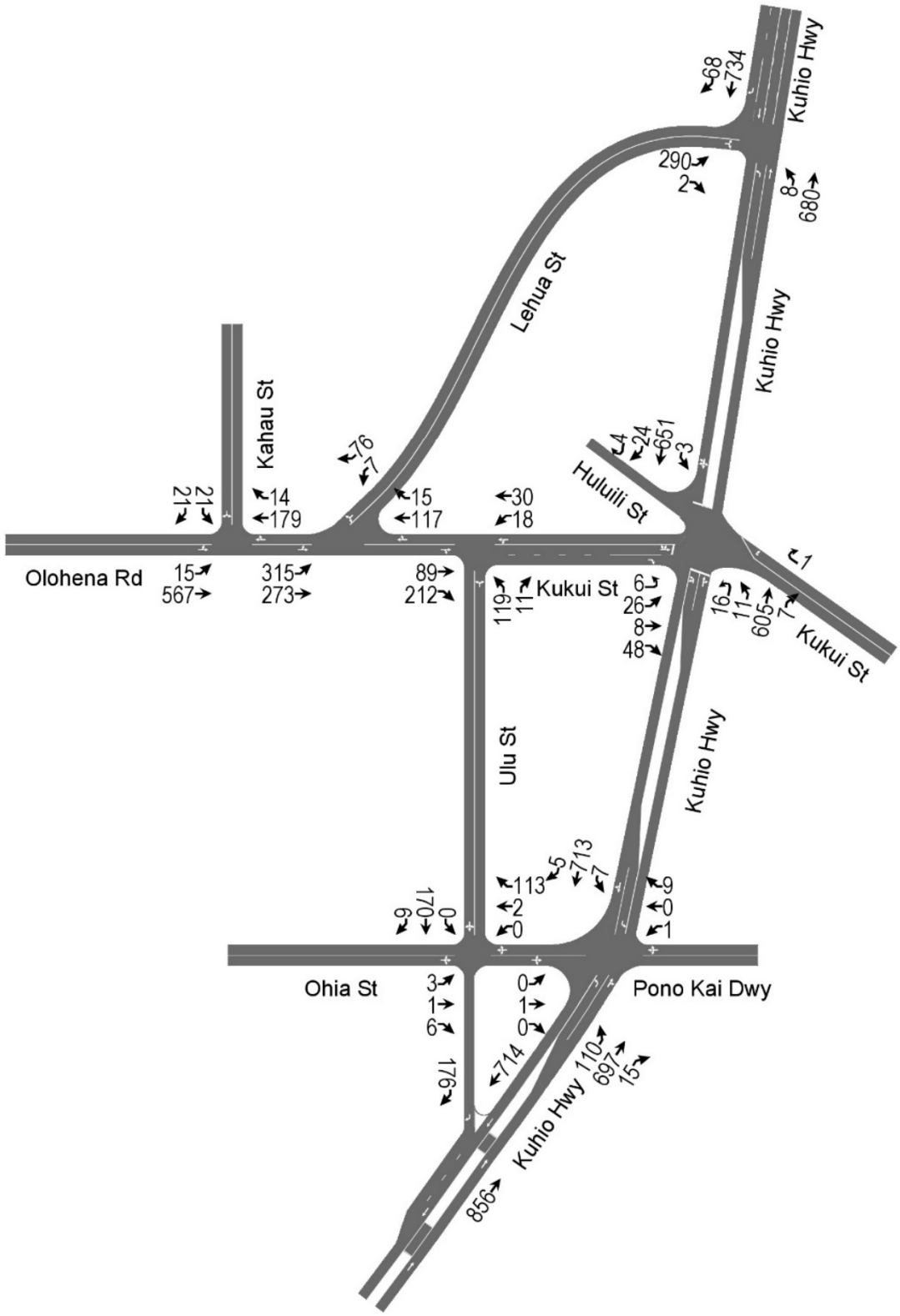


Figure 3. Existing AM Peak Hour Traffic

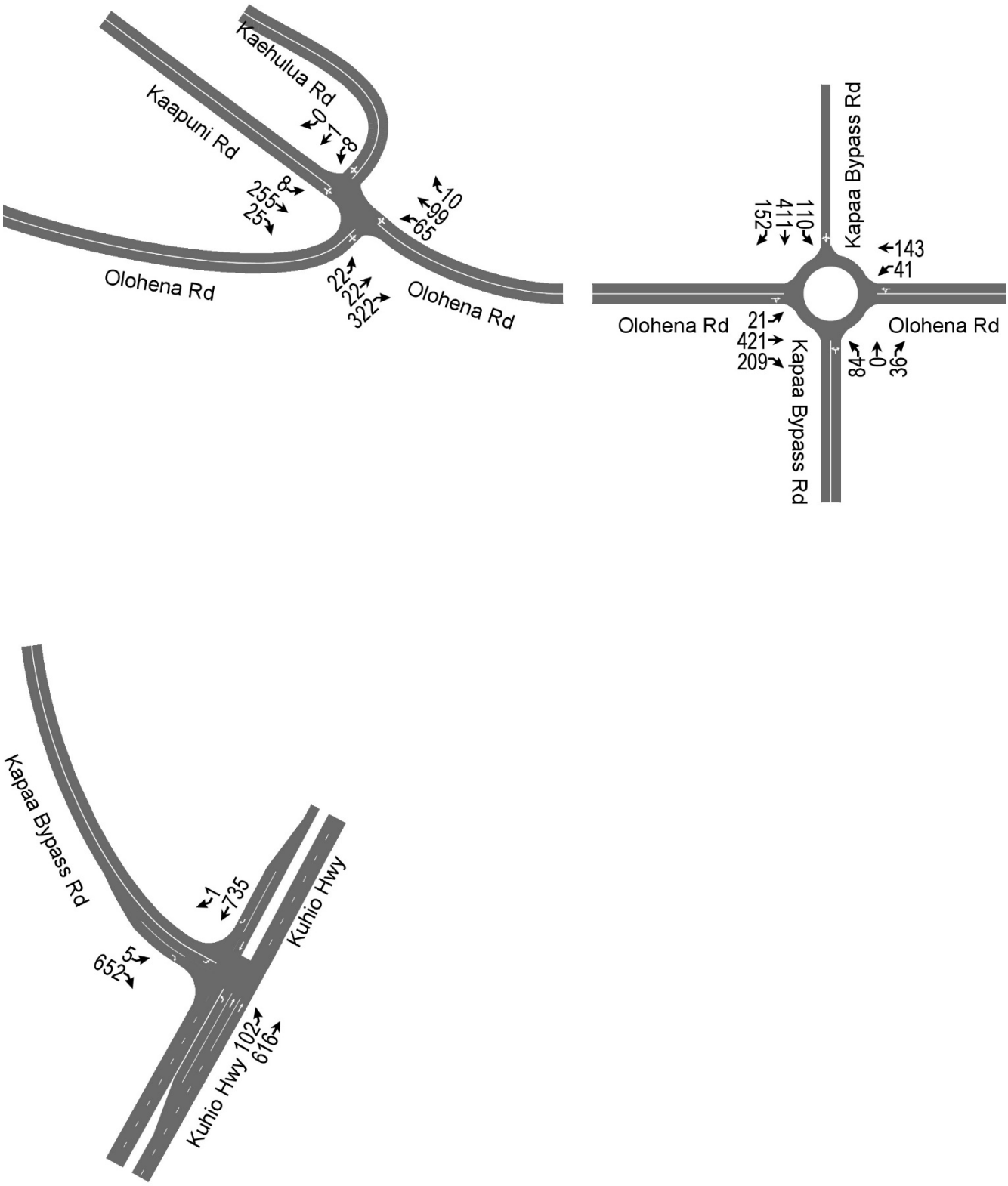


Figure 4. Existing AM Peak Hour Traffic (Cont'd.)

The northbound and southbound traffic on Kuhio Highway avoided the traffic signal delays at Kukui Street by diverting to alternate routes to Olohena Road. Less than 10 percent of the mauka bound traffic on Olohena Road at the Kapa`a Bypass Road turned from Kuhio Highway via Kukui Street. About 35 percent of the mauka bound traffic on Olohena Road turned right from Lehua Street to continue in the mauka bound direction, during the existing PM peak hour of traffic. About 55 percent of the mauka bound traffic turned left from Ulu Street onto Kukui Street to continue in the mauka bound direction on Olohena Road.

The overall intersection of Kuhio Highway and Kukui Street operated at LOS "A", during the existing PM peak hour of traffic. The left-turn movement on makai bound Kukui Street operated at LOS "E" with a relatively low traffic demand (36 vph). The other traffic movements at the intersection operated at LOS "A", during the existing PM peak hour of traffic.

The left-turn movement on makai bound Lehua Street operated at LOS "D" at Kuhio Highway, during the existing PM peak hour of traffic. Makai bound Ohia Street operated at LOS "F" at Kuhio Highway with a very low volume. The mauka bound Pono Kai Driveway operated at LOS "D", also with a very low volume.

Southbound Lehua Street operated at LOS "E" at Olohena Road, during the existing PM peak hour of traffic. Southbound Kapa`a Bypass Road operated at LOS "D" at Olohena Road. The other intersections in the study area operated at satisfactory Levels of Service, during the existing PM peak hour of traffic. The existing PM peak hour traffic data are depicted on Figures 5 and 6.

III. Future Traffic Conditions

A. Background Growth in Traffic

The Kauai Long-Range Land Transportation Plan (KLRLTP) was prepared by the State of Hawaii Department of Transportation (DOT), in cooperation with the Kauai County Department of Public Works and Planning Department. The KLRLTP developed long-range travel forecasts for the island of Kauai. The KLRLTP anticipated that traffic in the Kapa`a area would increase by over 30 percent between the Base Year 2007 and the Horizon Year 2035. For the purpose of this analysis, an average growth factor of 1.14 was uniformly applied to the existing (Year 2017) AM and PM peak hour traffic volumes to estimate the Year 2030 peak hour traffic without the proposed project.

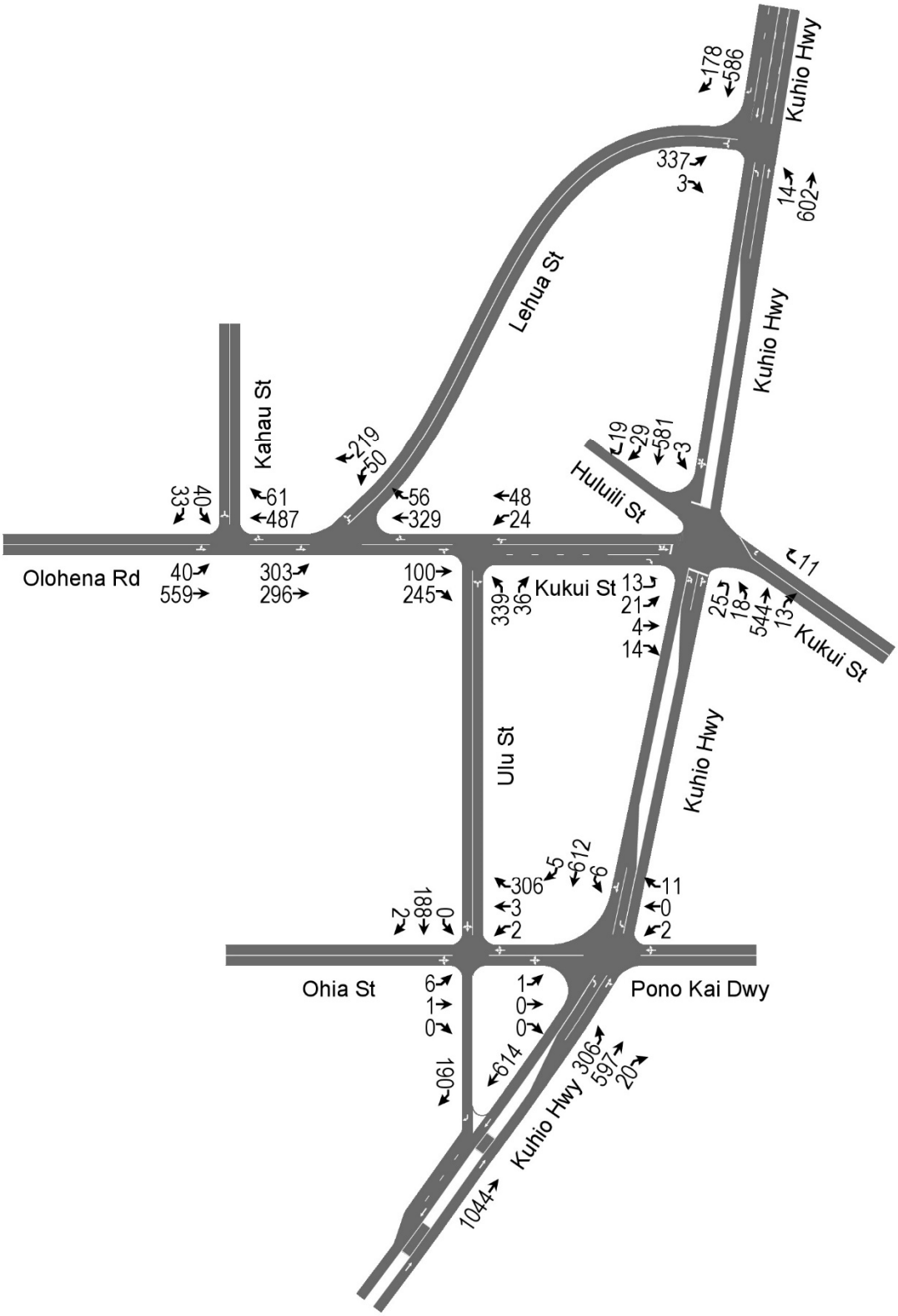


Figure 5. Existing PM Peak Hour Traffic

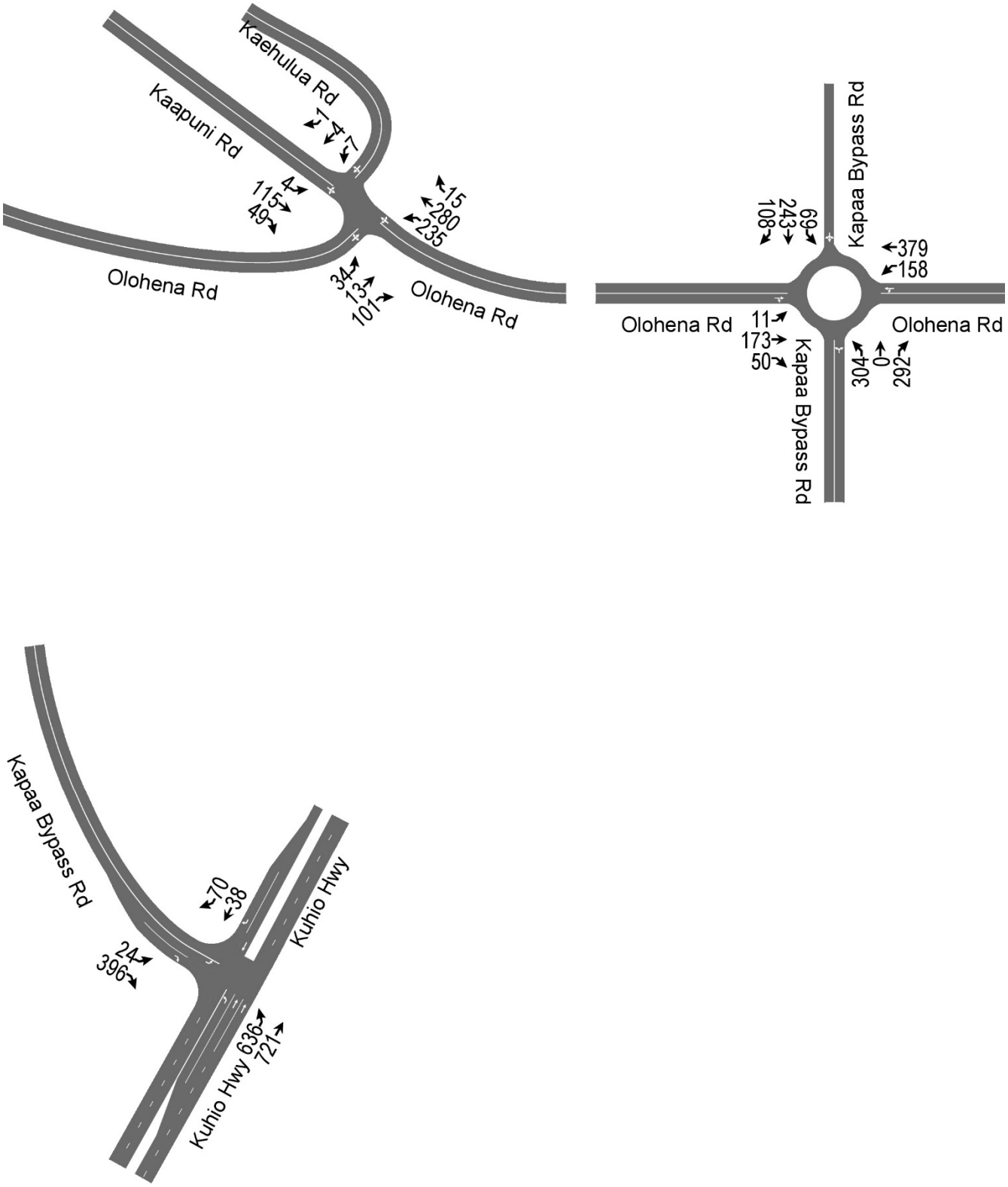


Figure 6. Existing PM Peak Hour Traffic (Cont'd.)

B. Daily and Seasonal Adjustment Factors

The existing peak hour traffic data were adjusted for the daily and seasonal variation in traffic in the region. The adjustment factors were based upon the 2016 traffic count data, which were collected at DOT's continuous traffic count station at Mile Post 2.4 on Kuhio Highway (Route 56) in Hanamaulu, which is located about 6 miles south of Kapa`a Town. Table 4 summarizes the adjustment factors, which were applied to the existing AM and PM peak hour traffic data, to account for the daily and seasonal variation in traffic from the annual average weekday traffic (AAWDT).

Table 4. Day of the Week and Seasonal Adjustment Factors

Date	Day	24-Hour Data	Adjustment Factors
3/14/2016	Monday	15,881	1.03
3/15/2016	Tuesday	15,824	1.03
3/16/2016	Wednesday	16,611	0.98
3/17/2016	Thursday	16,467	0.99
3/18/2016	Friday	16,652	0.98
	2016 AAWDT	16,301	1.00

C. Kuhio Highway Widening

The Final Environmental Assessment Kuhio Highway Short-Term Improvements Kuamoo Road to Temporary Bypass Road (Kuhio Highway EA), was prepared for DOT, by Wilson Okamoto Corporation, dated September 2009. The Kuhio Highway EA recommended the widening of Kuhio Highway from three lanes to four lanes to provide a permanent second southbound lane between the Kapa`a Bypass Road and Kuamoo Road. The additional lane will provide a "free" right-turn movement from the Kapa`a Bypass Road onto southbound Kuhio Highway throughout the day.

DOT is planning to complete the widening of Kuhio Highway by the Year 2019. The widening of Kuhio Highway from the Kapa`a Bypass Road to Kuamoo Road is included in this traffic impact analysis.

D. Kapa`a Transportation Solutions

The Kapa`a Transportation Solutions (KTS) was prepared for the State Department of Transportation, dated August 2015. The KTS was prepared for DOT in cooperation with the Kauai County Department of Public Works, Planning Department, and Transportation Agency, and the Federal Highways Administration. The KTS included input from the Kapa`a Citizens Advisory Committee, which is comprised of the Kapa`a Business Association, Kapa`a High School and Middle School, Wailua-Kapa`a Neighborhood Association, Kauai Visitors and Convention Bureau, and Kauai Path.

The KTS cited traffic congestion in the downtown/historic district of Kapa`a Town, which resulted from on-street parking in the curb lanes in both directions on Kuhio Highway. In addition, to the delays caused by vehicles maneuvering into and out of the parallel parking stalls along Kuhio Highway, the on-street parking occupies valuable highway space, which could otherwise provide additional through traffic lanes and/or median left-turn lanes. Table 5 summarizes the roadway improvements relevant to this traffic study, which were prioritized in the Kapa`a Transportation Solutions.

Table 5. Potential Traffic Solutions

Location	Description	Priority
Kapa`a Bypass Road	Widen the Kapa`a Bypass Road to provide one lane in the northbound direction from Olohena Road to Kuhio Highway.	<5 Years
Kuhio Highway and Kukui Street	Modify traffic signal timings.	<5 Years
Kuhio Hwy and Kapa`a Bypass Road	Intersection improvements.	<5 Years
Olohena Road at Kapa`a Middle School	Improve crosswalk.	<5 Years
Kapa`a Bypass Road and Olohena Road Roundabout	Add a separate (bypass) right-turn lane at the roundabout from makai bound Olohena Road to southbound Kapa`a Bypass Road.	<5 Years
Kuhio Highway	Provide an additional southbound lane on Kuhio Highway from Kapa`a Bypass Road to Kuamoo Road (scheduled for construction).	<5 Years
Kuhio Highway and Kukui Street	Close the makai leg of Kukui Street to provide business parking. Implement vehicular and pedestrian improvements on Kukui Street (mauka leg) and Huluili Street at Kuhio Highway.	5-10 Years
Kapa`a New Town Park	Provide direct access from the Kapa`a New Town Park to the Kapa`a Bypass Road.	5-10 Years
Kuhio Highway and Lehua Street	Improve the left-turn movement from Lehua Street onto Kuhio Highway.	5-10 Years
Kapa`a Bypass Rd and Kuhio Highway	Re-align the Kapa`a Bypass Road (South Junction) to intersect Kuhio Highway opposite Aleka Loop or Papaloa Road.	5-10 Years

Table 5. Potential Traffic Solutions (Cont'd.)		
Location	**Description**	**Priority**
Kapa`a Bypass Road South of Olohena Road	Improve the horizontal alignment and shoulders of the Kapa`a Bypass Road, south of Olohena Road, to Kuhio Highway.	5-10 Years
Kuhio Highway Between Kawaihau Road and Lehua Street	Provide a two-way median left-turn lane along Kuhio Highway.	5-10 Years
Olohena Rd at Kahau St and Lehua St	Implement intersection improvements and bicycle/pedestrian improvements to Kuhio Highway.	5-10 Years
Olohena Rd at Kaapuni Rd and Kaehulua Rd	Implement intersection improvements	5-10 Years
Kaapuni Road	Upgrade/improve Kaapuni Road to major collector standards, including bicycle lanes.	5-10 Years
Olohena Road Between Kuhio Highway and Kamalu Road	Improve Olohena Road to accommodate non-motorized modes.	5-10 Years
Kapa`a Bus Hub	Relocate the Kapa`a bus hub from its existing location near the skate park to a new location on or near the Kuhio Highway mainline, with amenities.	5-10 Years

Improving the horizontal alignment and providing shoulders on the Kapa`a Bypass Road, south of Olohena Road may impact the proposed Hokua Place frontage. Any widening and realignment should be coordinated with Hokua Place. The Kapa`a Transportation Solutions also identifies Road A as a new connector road between Olohena Road and the Kapa`a Bypass Road, which was prioritized beyond the 10-year time frame. The construction cost of the connector road was estimated at $25,824,000.

E. Peak Hour Traffic Analysis Without Project

1. AM Peak Hour Traffic Without Project

During the AM peak hour of traffic without the proposed project, the overall intersection of Kuhio Highway and Kukui Street is expected to continue to operate at LOS "A". The left-turn movement on makai bound Kukui Street is expected to continue to operate at LOS "F". The traffic movements in both directions on Kuhio Highway are expected to continue to operate at LOS "A" at Kukui Street, during the AM peak hour of traffic without the proposed project.

Makai bound Lehua Street is expected to operate at LOS "F" at Kuhio Highway, during the AM peak hour of traffic without the proposed project. Makai bound Ohia Street is expected to operate at LOS "E" at Kuhio Highway.

During the AM peak hour of traffic without the proposed project, makai bound Olohena Road is expected to operate at LOS "F" at the Kapa`a Bypass Road. Southbound Kapa`a Bypass Road is expected to operate at LOS "D" at Olohena Road. Kaapuni Road is expected to operate at LOS "F" at Olohena Road. The other intersections in the study area are expected to operate at satisfactory Levels of Service, during the AM peak hour of traffic without the proposed project. Figures 7 and 8 depict the AM peak hour volumes without the proposed project.

2. PM Peak Hour Traffic Without Project

The overall intersection of Kuhio Highway and Kukui Street is expected to operate at LOS "A", during the PM peak hour of traffic without the proposed project. The left-turn movement on makai bound Kukui Street is expected to continue to operate at LOS "E". The other traffic movements at the intersection are expected to operate at LOS "A", during the PM peak hour of traffic without the proposed project.

The left-turn movement on makai bound Lehua Street is expected to operate at LOS "E" at Kuhio Highway, during the PM peak hour of traffic without the proposed project. Makai bound Ohia Street also is expected to operate at LOS "F" at Kuhio Highway. Mauka bound Pono Kai Driveway is expected to operate at LOS "E", during the PM peak hour of traffic without the proposed project.

Southbound Lehua Street is expected to continue to operate at LOS "F" at Olohena Road, during the PM peak hour of traffic without the proposed project. Southbound Kapa`a Bypass Road is expected to operate at LOS "F" at Olohena Road. The right-turn movement from the Kapa`a Bypass Road onto Kuhio Highway is expected to operate LOS "D". The other intersections in the study area are expected to operate at satisfactory Levels of Service, during the PM peak hour of traffic without the proposed project.

The PM peak hour traffic demands at the intersection of Olohena Road and Kaapuni Road without the proposed project are expected to meet the AASHTO guideline for an exclusive left-turn lane on makai bound Olohena Road. The PM peak hour volumes without the proposed project is depicted on Figures 9 and 10.

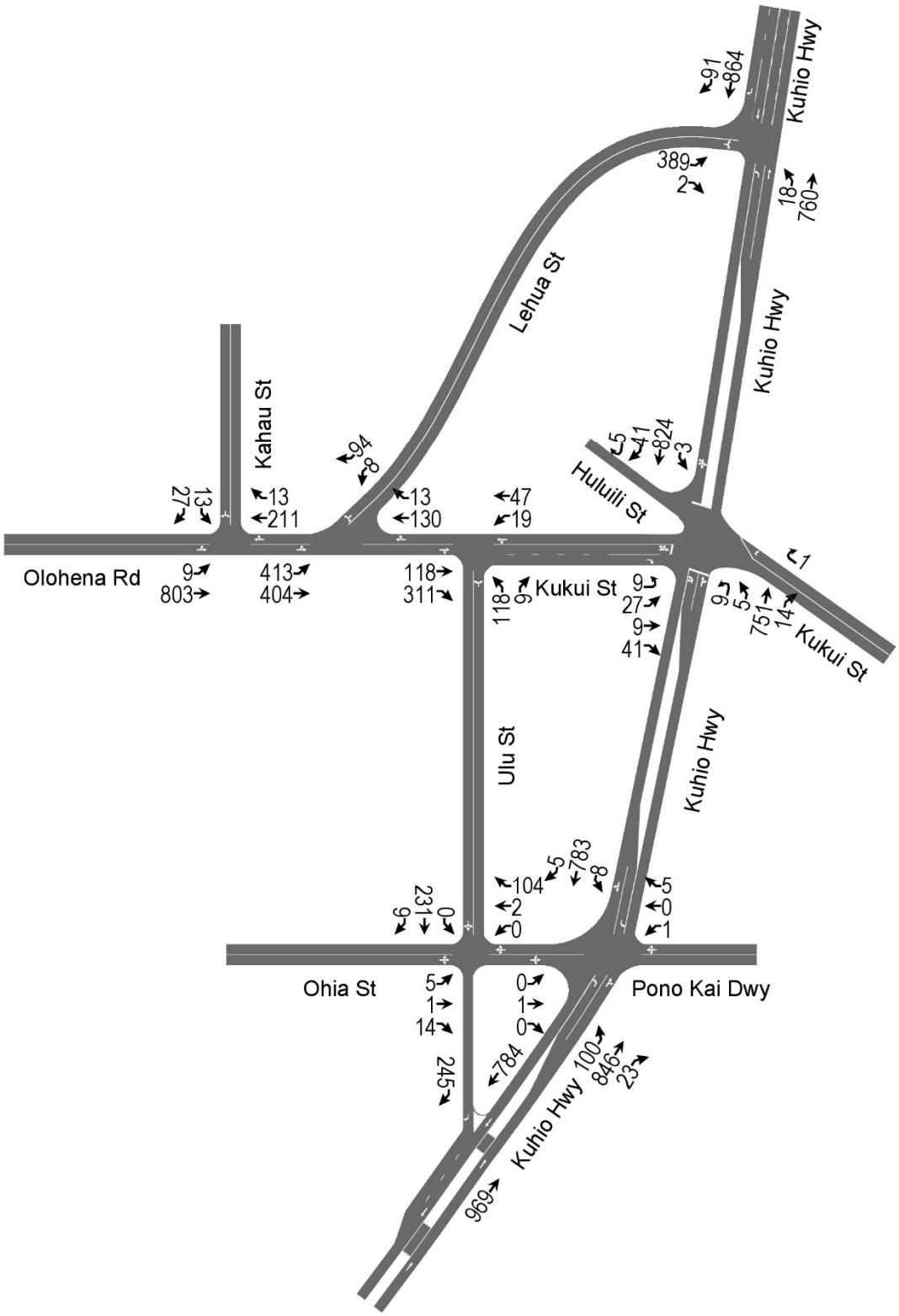


Figure 7. AM Peak Hour Volumes Without Project

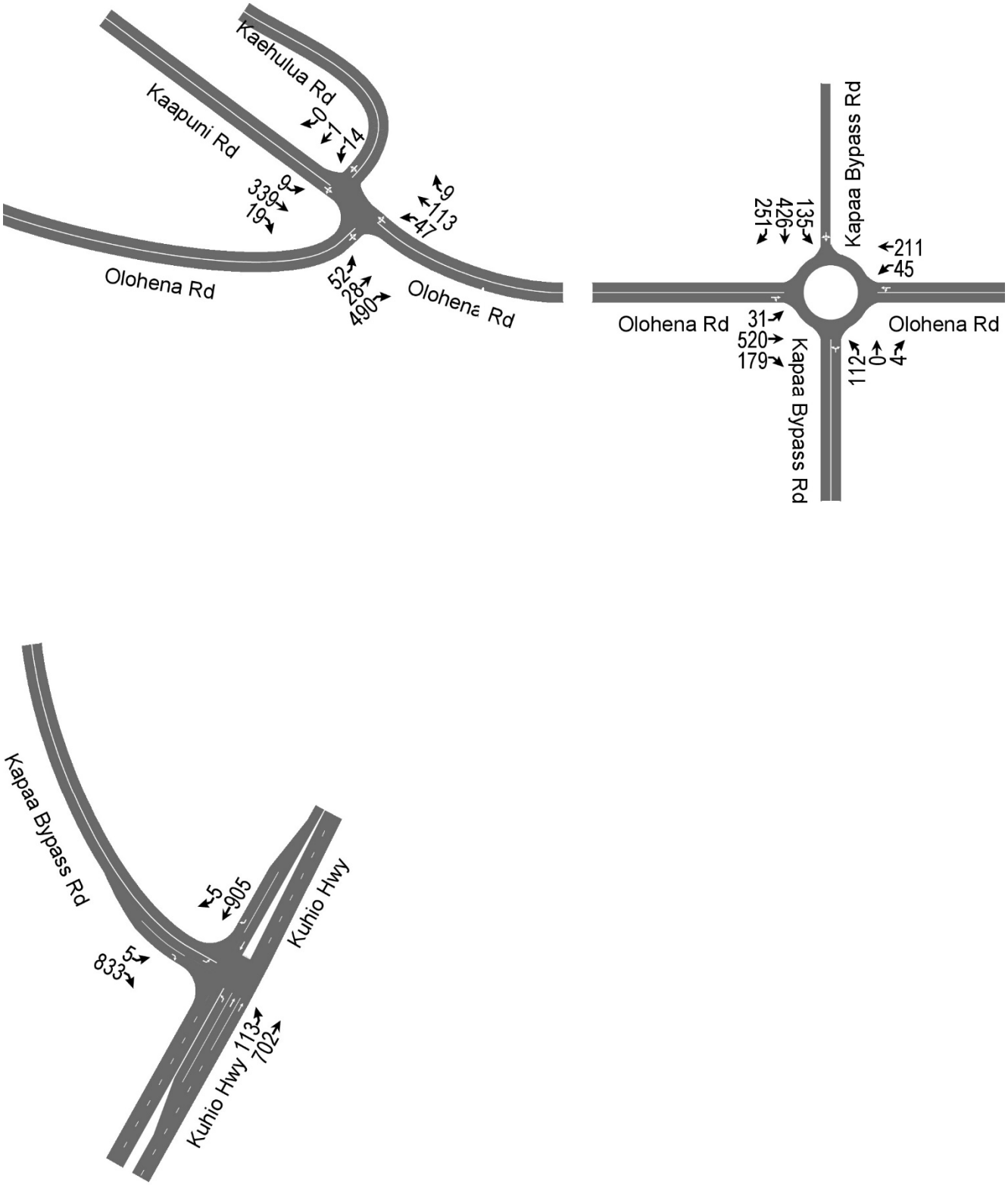


Figure 8. AM Peak Hour Volumes Without Project (Cont'd.)

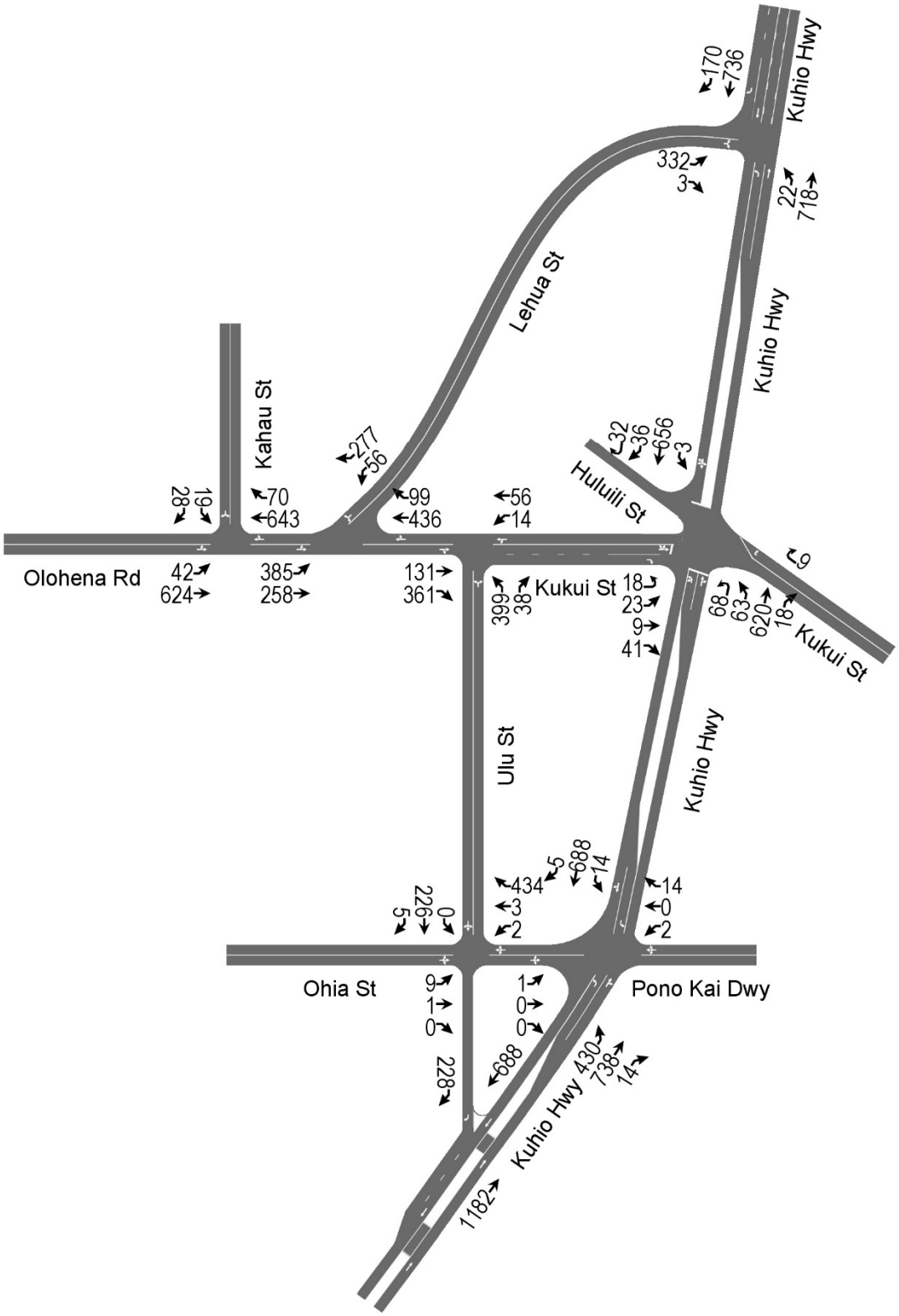


Figure 9. PM Peak Hour Volumes Without Project

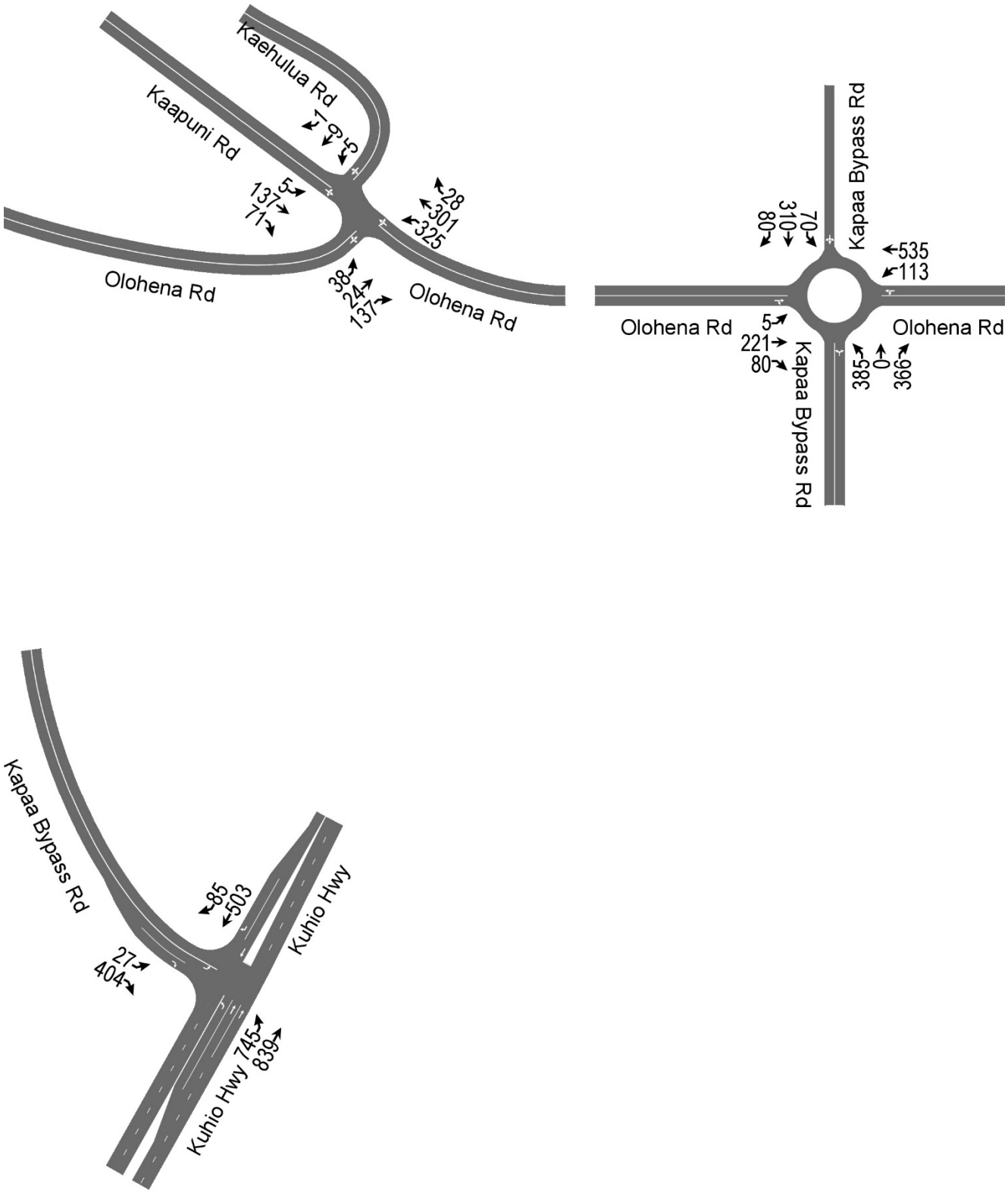


Figure 10. PM Peak Hour Volumes Without Project (Cont'd.)

IV. Traffic Impact Analysis

A. Trip Generation Characteristics

The trip generation characteristics were based upon the ITE trip rates for single-family detached dwelling units (DU) and residential condominium/townhouse units. The weekday ITE trip rates, during the AM peak hour and the PM peak hour of adjacent street traffic, were used for this traffic impact analysis. The ITE regression equations were used to derive the trip rates for the single-family detached dwellings in this analysis. Although ITE recommends the use of the regression equations to derive trip rates, the average peak hour trips rates for the residential condominium/townhouse were used in this analysis. The 800 DU is outside the range of the ITE trip generation data that were utilized to develop the regression equations for condominiums. Furthermore, the average condominium/townhouse rates are higher (more conservative) than the rates that are derived by the regression equations.

The ITE trip generation rates for a shopping center were developed from the regression equations to estimate the trip generation from the proposed 8,000 SFGFA retail center. The pass-by trip rate of 81.2 percent was applied to the PM peak hour trip generation. The ITE pass-by trip rate is reasonable given the size of Hokua Place and the volume of through traffic on Road A. Hokua Place is expected to generate totals of 487 vph and 560 vph, during the AM and PM peak hours of traffic, respectively. The trip generation characteristics for the proposed project are summarized in Table 6.

Table 6. Hokua Place Trip Generation Characteristics

Land Use (ITE Code)	Units	AM Peak Hour (vph)			PM Peak Hour (vph)		
		Enter	Exit	Total	Enter	Exit	Total
Single-Family Phase 1 (265)	16 DU	5	16	21	13	7	20
Single-Family Phase 2 (265)	100 DU	20	60	80	66	38	104
Condominium/ Townhouse (230)	800 DU	60	292	352	279	137	416
Retail Center (820)	8,000 SFGFA	21	13	34	53	57	110
	Pass-By	0	0	0	(-)45	(-)45	(-)90
Total External Trips		**106**	**381**	**487**	**366**	**194**	**560**

B. Site Access Improvements

A conventional channelized, Tee-intersection was considered at the intersection of Road A and the Kapa`a Bypass, with left-turn and right-turn deceleration/storage lanes and a median refuge lane on the Kapa`a Bypass Road. Under unsignalized traffic control, the left-turn lane from Road A onto the Kapa`a Bypass Road is expected to operate at LOS "F", during the PM peak hour of traffic. As an alternative to traffic signalization, a roundabout intersection is recommended Road A and the Kapa`a Bypass Road. The following site access improvements are recommended for the proposed project:

1. Construct a stop-controlled Tee-intersection between Road A and Olohena Road.
2. Construct a stop-controlled Tee-intersection between the Phase 1 Driveway and Olohena Road.
3. Construct a single-lane roundabout at the intersection of Road A and the Kapa`a Bypass Road.

C. Traffic Assignment

The traffic assignments were based upon the existing traffic patterns along Olohena Road and Kukui Street. The traffic assignments also included through traffic demands, which are expected to be diverted from makai bound Olohena Road and from northbound Kapa`a Bypass Road to the proposed Road A. Road A is expected to reduce the traffic demands at the roundabout intersection of the Kapa`a Bypass Road and Olohena Road. Figures 11 and 12 depict the AM peak hour traffic assignments. The PM peak hour traffic assignments are depicted on Figures 13 and 14.

D. AM Peak Hour Traffic Analysis With Project

The roundabout intersection of the Kapa`a Bypass Road and Road A is expected to operate at satisfactory Levels of Service, during the AM peak hour of traffic with the proposed project. Road A is expected to operate at LOS "C" at Olohena Road. The Phase 1 driveway on Olohena Road is expected to operate at LOS "B".

The overall intersection of Kuhio Highway and Kukui Street is expected to continue to operate at LOS "A", during the AM peak hour of traffic with the proposed project. The left-turn movement on makai bound Kukui Street is expected to continue to operate at LOS "F". The traffic movements in both directions on Kuhio Highway are expected to operate at LOS "A" at Kukui Street, during the AM peak hour of traffic with the proposed project.

Makai bound Lehua Street is expected to continue to operate at LOS "F" at Kuhio Highway, during the AM peak hour of traffic with the proposed project. Makai bound Ohia Street also is expected to operate at LOS "F" at Kuhio Highway. The Pono Kai Driveway is expected to operate at LOS "D".

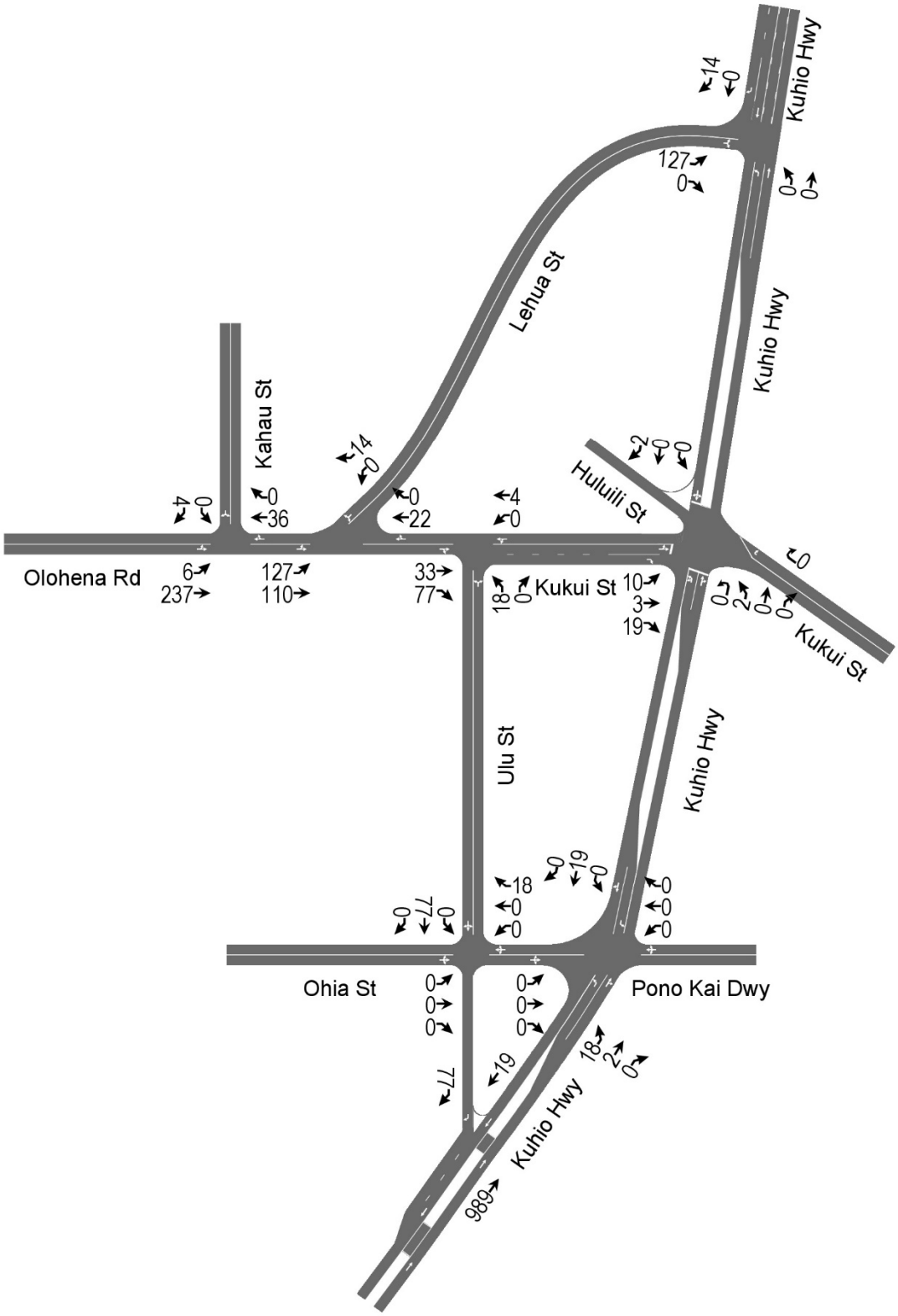


Figure 11. AM Peak Hour Site Traffic Assignment

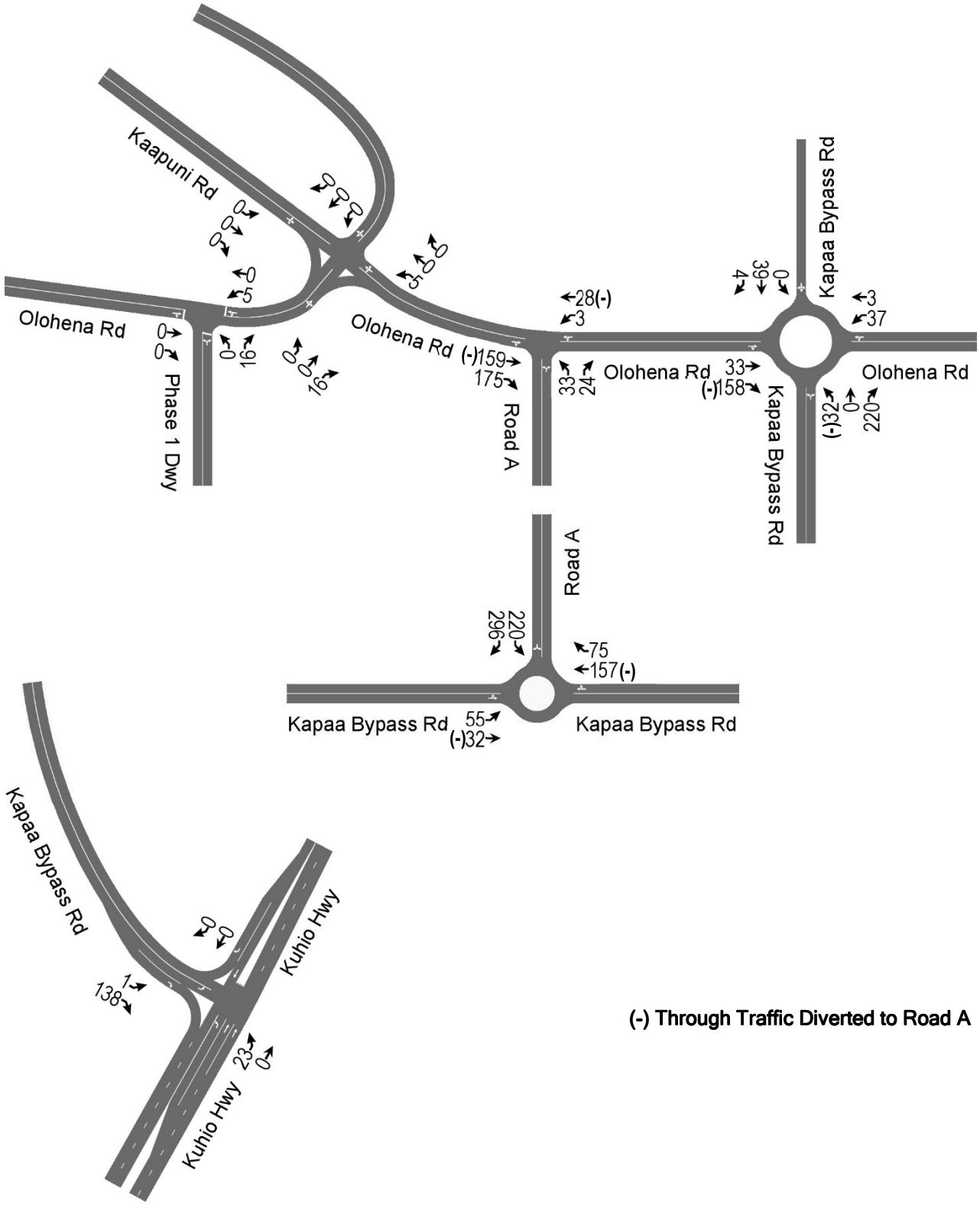


Figure 12. AM Peak Hour Site Traffic Assignment (Cont'd.)

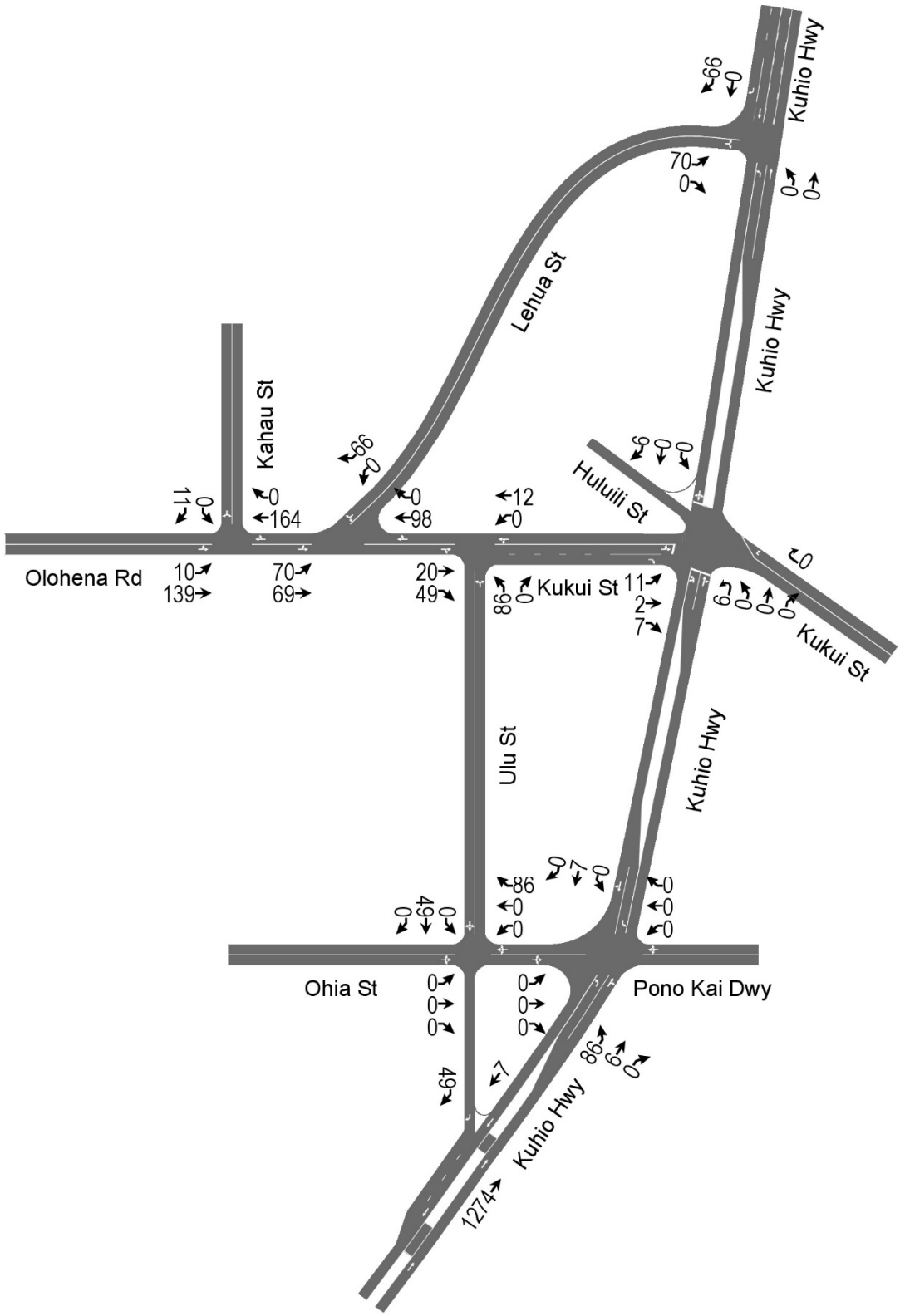


Figure 13. PM Peak Hour Site Traffic Assignment

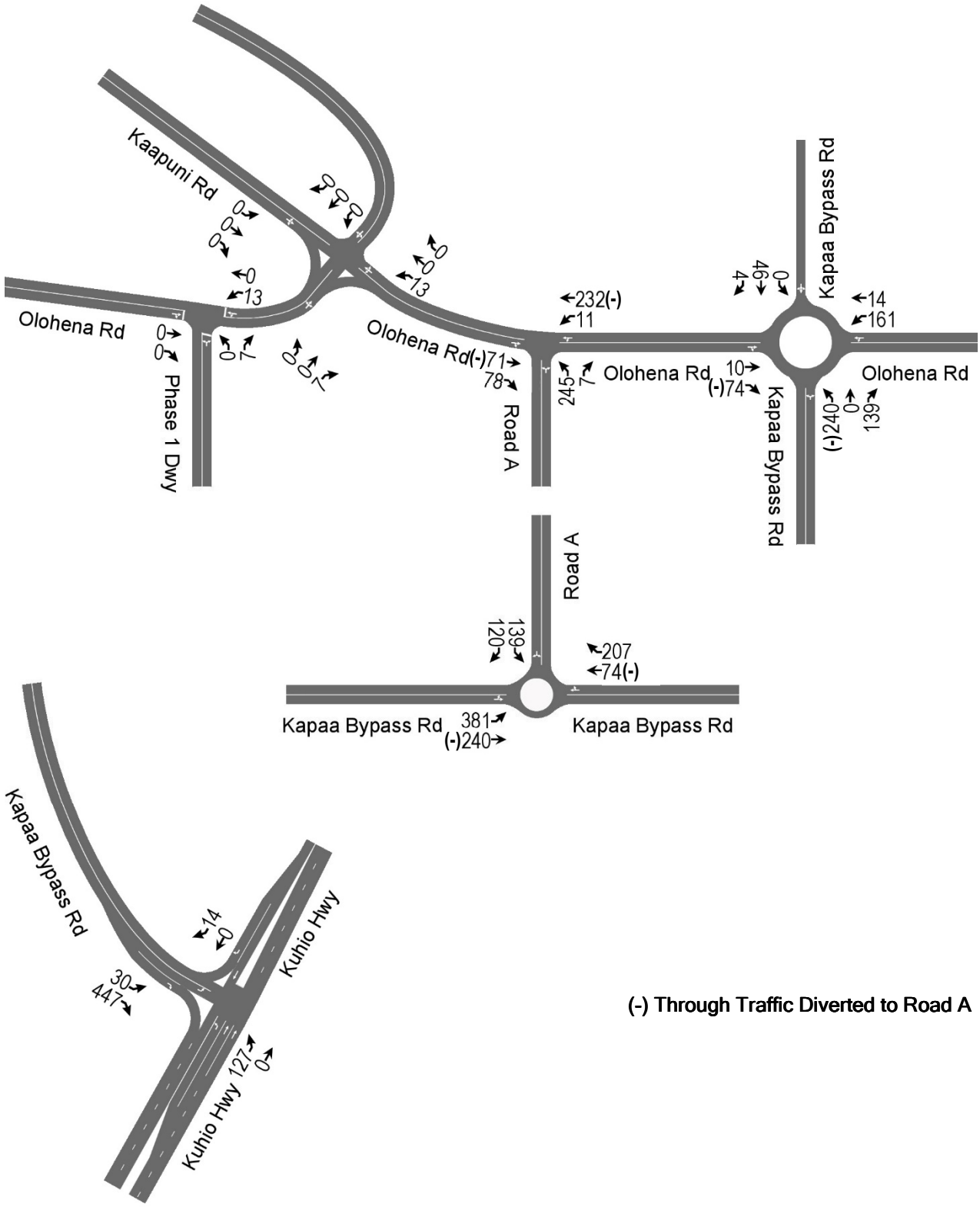


Figure 14. PM Peak Hour Site Traffic Assignment (Cont'd.)

During the AM peak hour of traffic with the proposed project, the overall roundabout intersection of the Kapa`a Bypass Road and Olohena Road is expected to improve from LOS "E" to LOS "D", during the AM peak hour of traffic with the proposed project. Makai bound Olohena Road is expected to improve from LOS "F" to LOS "E", due to the diversion of makai bound traffic to Road A. Southbound Kapa`a Bypass Road is expected to worsen from LOS "D" to LOS "E" at Olohena Road.

Kaapuni Road is expected to continue to operate at LOS "F" at Olohena Road. The left-turn movement from the Kapa`a Bypass Road onto Kuhio Highway is expected to operate at LOS "F", during the AM peak hour of traffic with the proposed project. Figures 15 and 16 depict the AM peak hour volumes with the proposed project.

E. PM Peak Hour Traffic Analysis With Project

During the PM peak hour of traffic with the proposed project, the roundabout intersection of the Kapa`a Bypass Road and Road A is expected to operate at satisfactory Levels of Service. Road A is expected to operate at LOS "D" at Olohena Road. The Phase 1 driveway on Olohena Road is expected to operate at LOS "A".

The overall intersection of Kuhio Highway and Kukui Street is expected to continue to operate at LOS "A", during the PM peak hour of traffic with the proposed project. The left-turn movement on makai bound Kukui Street is expected to continue to operate at LOS "F". The traffic movements in both directions on Kuhio Highway are expected to operate at LOS "A" at Kukui Street, during the PM peak hour of traffic with the proposed project.

Makai bound Lehua Street is expected to continue to operate at LOS "F" at Kuhio Highway, during the PM peak hour of traffic with the proposed project. Makai bound Ohia Street also is expected to operate at LOS "F" at Kuhio Highway. The Pono Kai Driveway is expected to operate at LOS "D" at Kuhio Highway.

During the PM peak hour of traffic with the proposed project, southbound Kapa`a Bypass Road is expected to continue to operate at LOS "F" at its roundabout intersection with Olohena Road. The left-turn and right-turn movements on the Kapa`a Bypass Road (South Junction) at Kuhio Highway are expected to operate at LOS "E" and LOS "D", respectively. The other intersections in the study area are expected to operate at satisfactory Levels of Service, during the PM peak hour of traffic with the proposed project. Figures 17 and 18 depict the PM peak hour volumes with the proposed project.

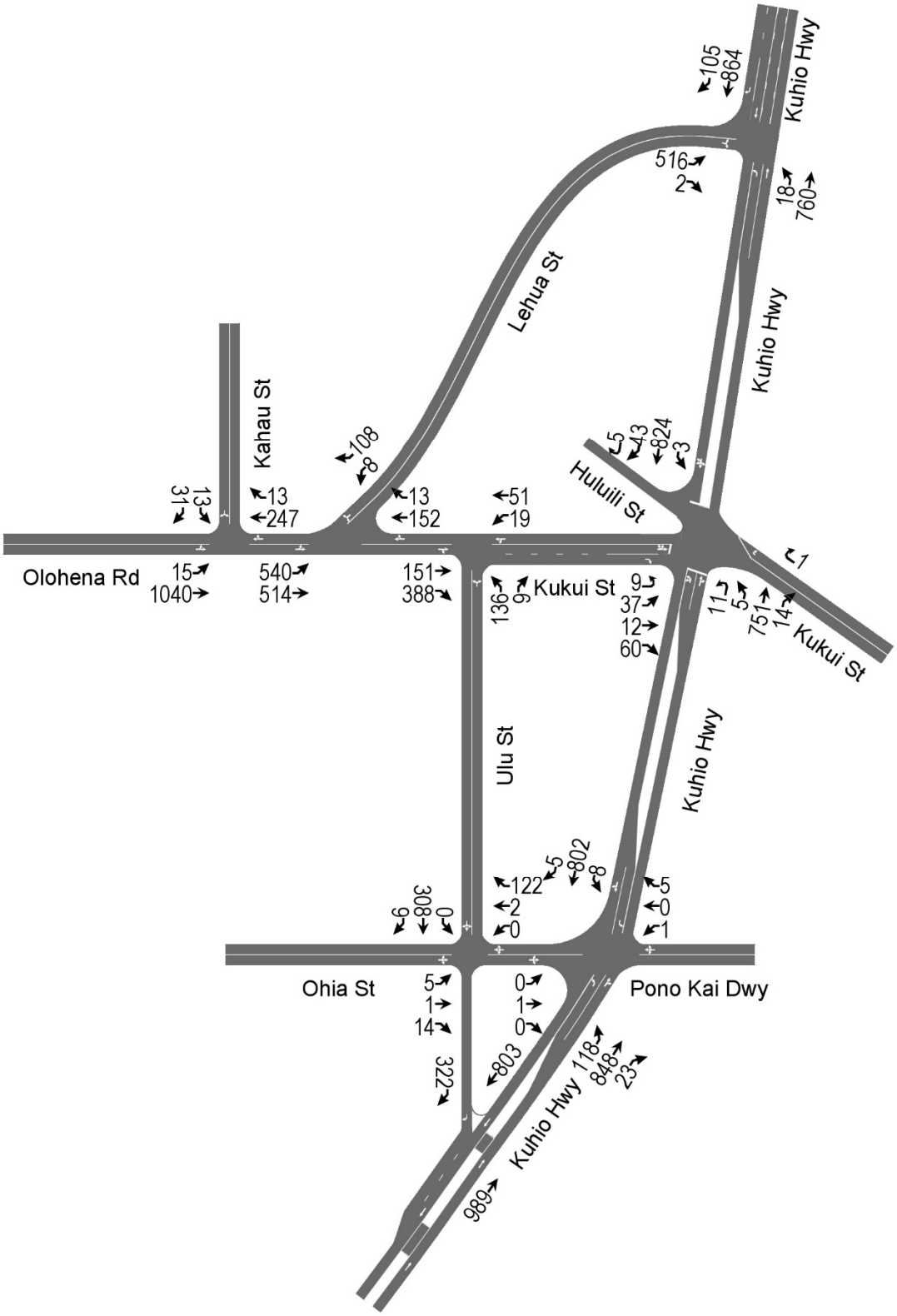


Figure 15. AM Peak Hour Volumes With Project

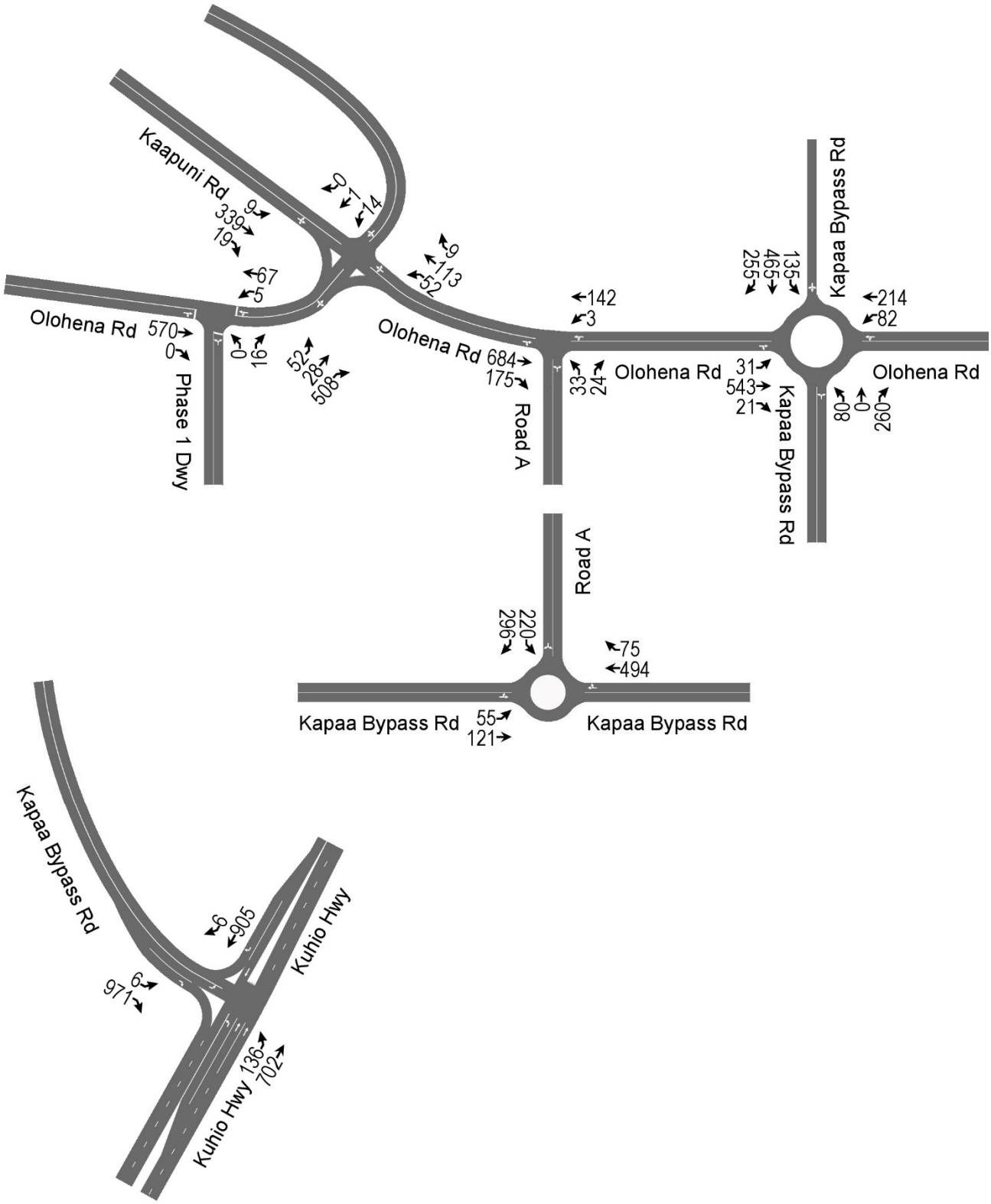


Figure 16. AM Peak Hour Volumes With Project (Cont'd.)

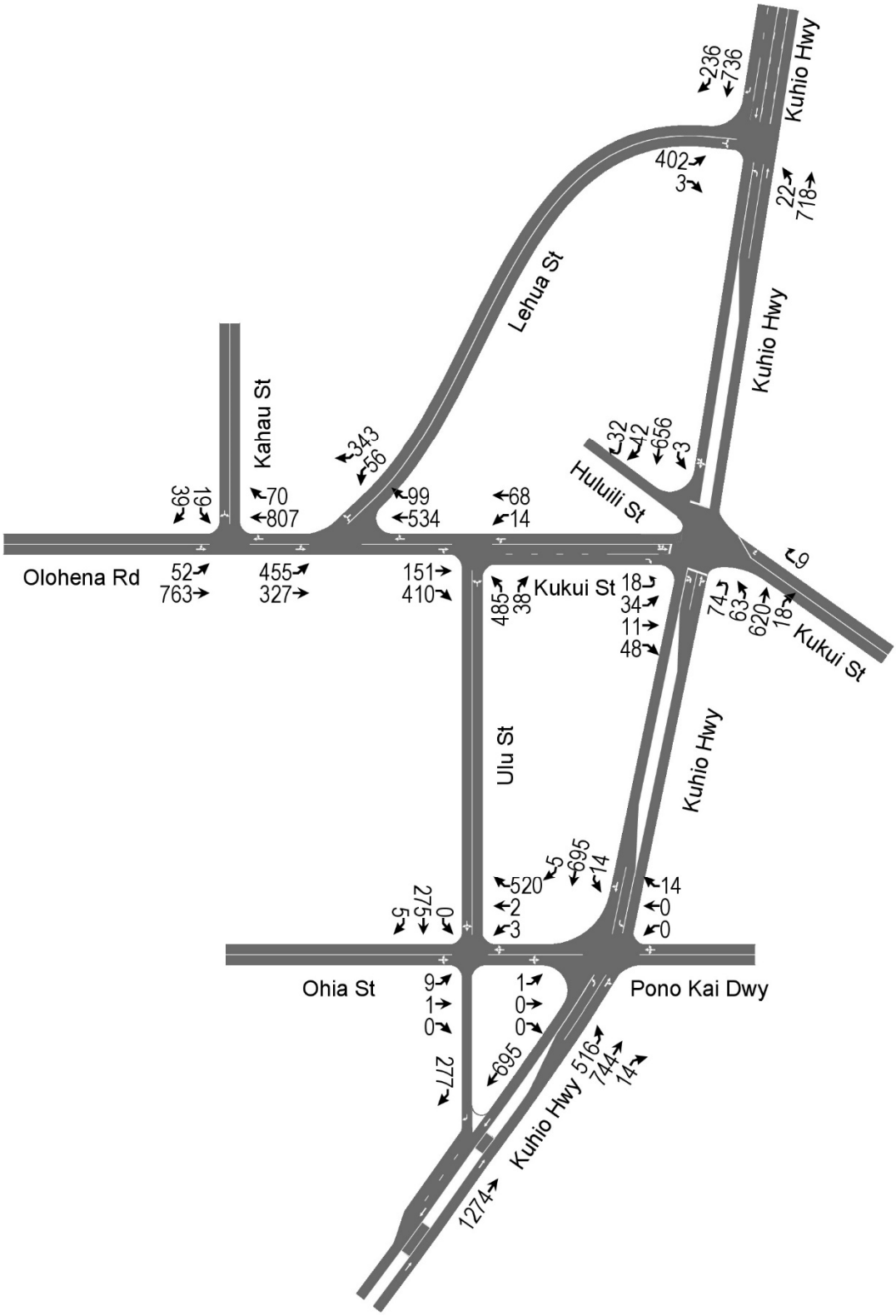


Figure 17. PM Peak Hour Volumes With Project

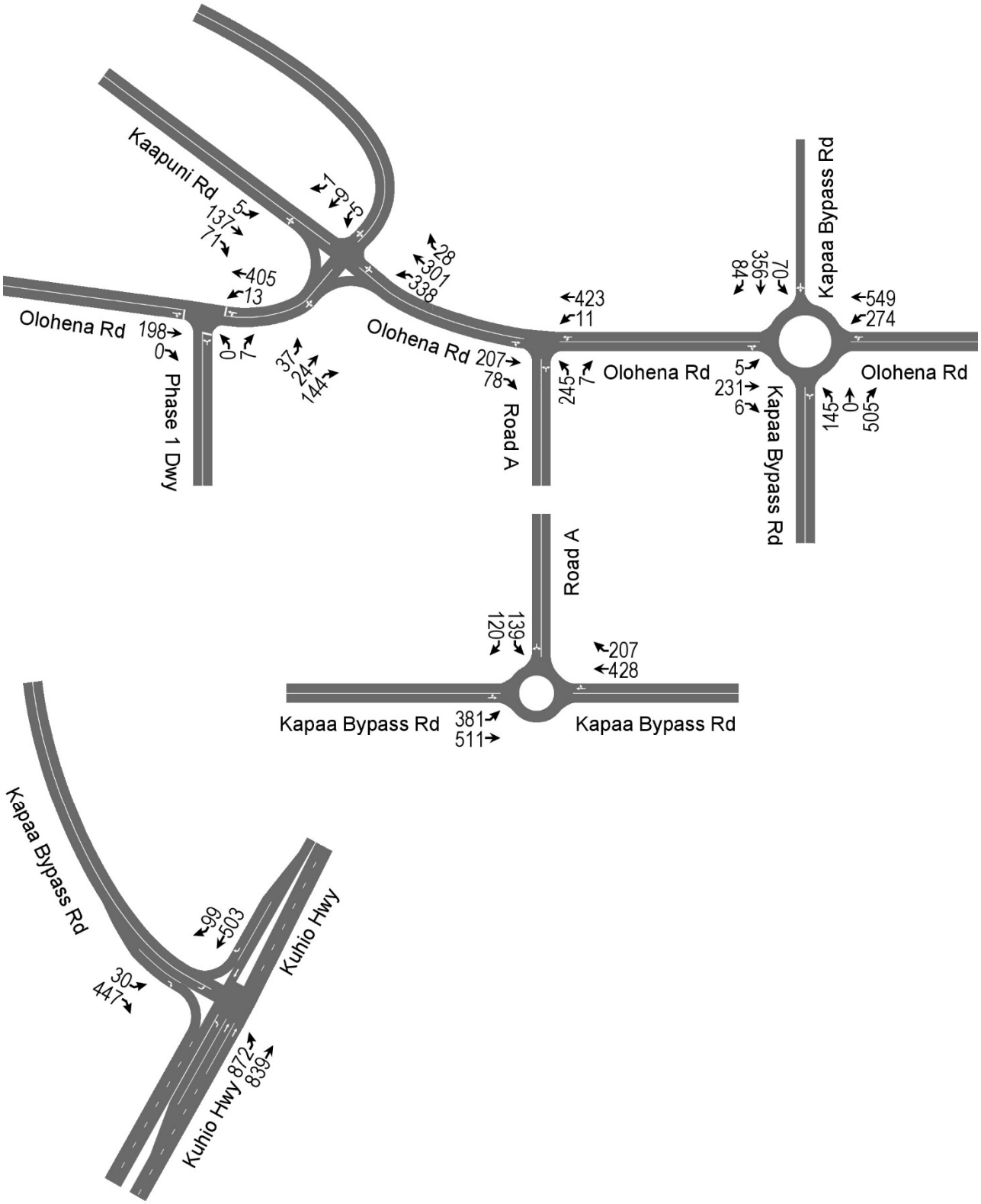


Figure 18. PM Peak Hour Volumes With Project (Cont'd.)

V. Recommendations and Conclusions

A. Recommended Traffic Improvements Without Project

The following traffic improvements expand upon the potential traffic solutions, which were cited in the Kapa`a Transportation Solutions, and are recommended to mitigate the existing and expected traffic congestion without the proposed project:

1. Widen Kuhio Highway between the Kapa`a Bypass Road (South Junction) and Kuamoo Road to provide two through lanes in each direction (DOT).
2. Restripe the median on the north leg of Kuhio Highway at the Kapa`a Bypass Road (South Junction) to provide a median refuge lane to facilitate the left-turn movement from the Kapa`a Bypass Road onto northbound Kuhio Highway.
3. Restrict on-street parking along Kuhio Highway within Kapa`a Town. Provide off-street business parking to replace the restricted parking along Kuhio Highway. Restripe Kuhio Highway to provide additional through and/or left-turn lanes.
4. Modify the traffic signal traffic operations at the intersection of Kuhio Highway and Kukui Street to reduce queuing and delays.
5. Add a right-turn bypass lane at the roundabout intersection from southbound Kapa`a Bypass Road to mauka bound Olohena Road.
6. Realign Kaehulua Road to intersect Olohena Road and Kaapuni Road opposite the mauka leg of Olohena Road to create a four-legged intersection with stop-controls on Kaehulua Road and the mauka leg of Olohena Road. Realign/channelize the mauka leg of Olohena Road to intersect Kaapuni Road and the makai leg of Olohena Road to improve the intersection sight distance. Channelize the right-turn movements on the makai bound approaches of Kaapuni Road and Olohena Road.
7. Extend the median refuge lane/two-way left-turn lane on Kuhio Highway from Lehua Street to Kawaihau Road.

DOT is in the process of widening Kuhio Highway from the Kapa`a Bypass Road to Kuamoo Road (Item No. 1 above). The above Item Nos. 2, 3, and 7 are expected to improve the capacity of Kuhio Highway through Kapa`a Town.

Consolidating the intersections of Olohena Road, Kaapuni Road, and Kaehulua Road (Item No. 6 above) into a single four-legged intersection is expected to improve the traffic operations and safety at the intersection. A roundabout intersection was considered for Olohena Road, Kaapuni Road, and Kaehulua Road. However, the existing roadway slopes would have required extensive grading to provide adequate sight distances at a roundabout intersection.

B. Recommended Traffic Improvements With Project

The following traffic improvements are recommended to mitigate traffic impacts with the proposed project:

1. Construct Road A from Olohena Road to the Kapa`a Bypass Road, as recommended in the Kapa`a Transportation Solutions.
2. Construct a single-lane roundabout at the intersection of Road A and the Kapa`a Bypass Road.

C. Conclusions

An interim solution to the existing traffic congestion in Kapa`a Town is recommended in the Kapa`a Transportation Solutions. Constructing additional off-street parking areas would provide the opportunity to restripe the existing on-street parking lanes and striped shoulders along Kuhio Highway to provide for additional through traffic lanes and/or median left-turn lanes.

The existing southbound traffic demand in Kapa`a Town is reduced by the Kapa`a Bypass Road. Dedication of the Kapa`a Bypass Road right-of-way along the Hokua Place frontage would assure the continued usage of the existing Kapa`a Bypass Road. Any horizontal realignment and/or widening of the Kapa`a Bypass Road along the project frontage should be coordinated with the development of Hokua Place. Widening of the north leg of the Kapa`a Bypass Road between Olohena Road and Kuhio Highway (North Junction) to provide at a two-way, two-lane roadway would provide additional capacity in the northbound direction.

The construction of the proposed Road A is recommended in the Kapa`a Transportation Solutions to provide additional mauka-makai roadway capacity between Kapa`a Valley and the Kapa`a Bypass Road. By diverting through traffic between Olohena Road and the Kapa`a Bypass Road, Road A is expected to mitigate the project's traffic impacts, during the AM and PM peak hour of traffic with the proposed project at the roundabout intersection of the Kapa`a Bypass Road and Olohena Road.

The roundabout at the intersection of the Kapa`a Bypass Road and Road A will increase the intersection capacity, in anticipation of the increase in demand resulting from the future two-lane widening of the Kapa`a Bypass Road between Olohena Road and Kuhio Highway (North Junction). The proposed roundabout intersection of the Kapa`a Bypass Road and Olohena Road is expected to operate at satisfactory Levels of Service, during the AM and PM peak hours of traffic with the proposed project. Table 7 summarizes the measures of effectiveness (MOE) from the traffic analysis of the intersections in the study area.

Table 7. Summary of Capacity Analysis

Scenario	Intersection	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
Existing AM Peak Hour Traffic	Kuhio Hwy & Kukui St & Huluili St	LOS	F		C	N/A	N/A	A	A	A		A			A
		Delay	115.8		31.5	N/A	N/A	1.3	1.3	2.8		4.5			7.3
		v/c	0.49		0.34	N/A	N/A	0.02	0.02	0.42		0.48			0.49 (maximum)
	Ulu St & Kukui St	LOS	N/A	N/A	N/A	A	A	N/A	B			N/A	N/A	N/A	A
		Delay	N/A	N/A	N/A	8.3	0.0	N/A	11.3			N/A	N/A	N/A	2.6
		v/c	N/A	N/A	N/A	0.01	N/A	N/A	0.16			N/A	N/A	N/A	N/A
	Olohena Rd & Lehua St	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B			A
		Delay	8.3	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.7			4.4
		v/c	0.25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.15			N/A
	Olohena Rd & Kahau St	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B			A
		Delay	7.6	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13.2			0.6
		v/c	0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.08			N/A
	Kuhio Hwy & Lehua St	LOS	E			N/A	N/A	N/A	A	A	N/A	N/A	A	A	A
		Delay	46.6			N/A	N/A	N/A	9.3	0.0	N/A	N/A	0.0	0.0	8.7
		v/c	0.85			N/A	N/A	N/A	0.02	0.40	N/A	N/A	0.45	0.04	N/A
	Kuhio Hwy & Ohia St/Pono Kai Dwy	LOS	E			C			A	N/A	N/A	A	N/A	N/A	A
		Delay	48.9			23.7			9.60	N/A	N/A	9.4	N/A	N/A	0.7
		v/c	0.012			0.025			0.10	N/A	N/A	0.01	N/A	N/A	N/A
	Ulu St & Ohia St	LOS	B			A						A			A
		Delay	10			8.8						0.0			3.1
		v/c	0.023			0.089						N/A			N/A
	Kapa`a Bypass Rd & Olohena Rd	LOS	D			A			A			C			C
		Delay	30			5.1			7.1			18.2			20.0
		v/c	0.855			0.204			0.19			0.757			N/A
	Olohena Rd & Kaapuni Rd	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	E			B
		Delay	7.7	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	35.1			12.3
		v/c	0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.751			N/A
	Kaapuni Rd & Kaehulua Rd	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B			A
		Delay	7.6	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.7			0.4
		v/c	0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.024			N/A
	Kuhio Hwy & Kapa`a Bypass Rd	LOS	C	N/A	A	N/A	N/A	N/A	B	N/A	N/A	N/A	N/A	N/A	A
		Delay	20.7	N/A	0.0	N/A	N/A	N/A	10.0	N/A	N/A	N/A	N/A	N/A	0.7
		v/c	0.02	N/A	N/A	N/A	N/A	N/A	0.12	N/A	N/A	N/A	N/A	N/A	N/A

Legend

EBL – Makai (East) Bound Left-Turn Movement
EBT – Makai (East) Bound Through Movement
EBR – Makai (East) Bound Right–Turn Movement
WBL – Mauka (West) Bound Left-Turn Movement
WBT – Mauka (West) Bound Through Movement
WBR – Mauka (West) Bound Right-Turn Movement
NBL – North Bound Left-Turn Movement
NBT – North Bound Through Movement
NBR – North Bound Right-Turn Movement
SBL – South Bound Left-Turn Movement
SBT – South Bound Through Movement
SBR – South Bound Right-Turn Movement

Table 7. Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
Existing PM Peak Hour Traffic	Kuhio Hwy & Kukui St & Huluili St	LOS	E		A	N/A	N/A	A	A	A		A			A
		Delay	61.6		6.9	N/A	N/A	2.4	2.4	3.4		8.2			7.4
		v/c	0.39		0.22	N/A	N/A	0.18	0.18	0.36		0.48			0.48 (maximum)
	Ulu Street & Kukui Street	LOS	N/A	N/A	N/A	A	A	N/A	C			N/A	N/A	N/A	A
		Delay	N/A	N/A	N/A	8.2	0.0	N/A	17.4			N/A	N/A	N/A	7.7
		v/c	N/A	N/A	N/A	0.01	N/A	N/A	0.567			N/A	N/A	N/A	N/A
	Olohena Road & Lehua Street	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	E			B
		Delay	9.8	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	47			12.9
		v/c	0.31	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.81			N/A
	Olohena Road & Kahau Street	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C			A
		Delay	9.1	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	19.0			0.9
		v/c	0.04	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.14			N/A
	Kuhio Hwy & Lehua Street	LOS	D			N/A	N/A	N/A	A	A	N/A	N/A	A	A	A
		Delay	29.2			N/A	N/A	N/A	9.0	0.0	N/A	N/A	0.0	0.0	5.0
		v/c	0.68			N/A	N/A	N/A	0.02	0.38	N/A	N/A	0.39	0.09	N/A
	Kuhio Hwy & Ohia St/Pono Kai Driveway	LOS	F			D			B	N/A	N/A	A	N/A	N/A	A
		Delay	143.4			33.1			11.3	N/A	N/A	9.0	N/A	N/A	3.0
		v/c	0.04			0.10			0.40	N/A	N/A	0.01	N/A	N/A	N/A
	Ulu Street & Ohia Street	LOS	C			B			N/A	N/A	N/A	A	N/A	N/A	A
		Delay	15.5			10.6			N/A	N/A	N/A	0.0	N/A	N/A	7.1
		v/c	0.03			0.38			N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Kapa`a Bypass Rd & Olohena Rd	LOS	A			B			B			D			B
		Delay	7.9			11.5			11.5			26.6			14.2
		v/c	0.32			0.57			0.61			0.73			N/A
	Olohena Rd & Kaapuni Rd	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C			B
		Delay	8.7	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17.3			4.1
		v/c	0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.39			N/A
	Kaapuni Rd & Kaehulua Rd	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B			A
		Delay	7.9	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.7			0.4
		v/c	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.02			N/A
	Kuhio Hwy & Kapa`a Bypass Rd	LOS	B	N/A	C	N/A	N/A	N/A	B	N/A	N/A	N/A	N/A	N/A	A
		Delay	14.0	N/A	19.0	N/A	N/A	N/A	12.7	N/A	N/A	N/A	N/A	N/A	6.7
		v/c	0.06	N/A	N/A	N/A	N/A	N/A	0.59	N/A	N/A	N/A	N/A	N/A	N/A

Table 7. Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
AM Peak Hour Traffic Without Project	Kuhio Hwy & Kukui Street & Huluili Street	LOS	F		C	N/A	N/A	A	A	A		A			A
		Delay	117.0		29.9	N/A	N/A	1.5	1.5	3.7		6.3			8.5
		v/c	0.52		0.36	N/A	N/A	0.03	0.03	0.49		0.57			0.57 (maximum)
	Ulu Street & Kukui Street	LOS	N/A	N/A	N/A	A	A	N/A	B			N/A	N/A	N/A	A
		Delay	N/A	N/A	N/A	8.5	0.0	N/A	12.2			N/A	N/A	N/A	2.7
		v/c	N/A	N/A	N/A	0.02	N/A	N/A	0.203			N/A	N/A	N/A	N/A
	Olohena Road & Lehua Street	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B			A
		Delay	8.5	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13.1			4.6
		v/c	0.29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.19			N/A
	Olohena Road & Kahau Street	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B			A
		Delay	7.7	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14.2			0.6
		v/c	0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.09			N/A
	Kuhio Hwy & Lehua Street	LOS	F			N/A	N/A	N/A	A	A	N/A	N/A	A	A	B
		Delay	104.5			N/A	N/A	N/A	9.7	0.0	N/A	N/A	0.0	0.0	19.3
		v/c	1.33			N/A	N/A	N/A	0.02	0.45	N/A	N/A	0.51	0.06	N/A
	Kuhio Hwy & Ohia St/Pono Kai Driveway	LOS	F			D			B	N/A	N/A	A	N/A	N/A	A
		Delay	65			27.4			10.00	N/A	N/A	9.8	N/A	N/A	0.7
		v/c	0.016			0.036			0.12	N/A	N/A	0.01	N/A	N/A	N/A
	Ulu Street & Ohia Street	LOS	B			A			N/A	N/A	N/A	A	N/A	N/A	A
		Delay	10.3			8.8			N/A	N/A	N/A	0.0	N/A	N/A	3.1
		v/c	0.029			0.101			N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Kapa`a Bypass Rd & Olohena Rd	LOS	F			A			A			D			E
		Delay	64.9			5.4			7.4			30.1			38.7
		v/c	1.027			0.233			0.174			0.888			N/A
	Olohena Rd & Kaapuni Rd	LOS	-	-	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B			A
		Delay	-	-	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.4			7.8
		v/c	-	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.399			N/A
	Kaapuni Rd & Kaehulua Rd	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B			A
		Delay	7.6	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12.6			0.4
		v/c	0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.031			N/A
	Kuhio Hwy & Kapa`a Bypass Rd	LOS	C	N/A	A	N/A	N/A	N/A	B	N/A	N/A	N/A	N/A	N/A	A
		Delay	24.0	N/A	0.0	N/A	N/A	N/A	10.7	N/A	N/A	N/A	N/A	N/A	0.8
		v/c	0.03	N/A	N/A	N/A	N/A	N/A	0.15	N/A	N/A	N/A	N/A	N/A	N/A

Table 7. Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
PM Peak Hour Traffic Without Project	Kuhio Hwy & Kukui St & Huluili St	LOS	E		A	N/A	N/A	A	A	A		A			A
		Delay	62.1		8.6	N/A	N/A	2.7	2.7	3.9		9.6			8.3
		v/c	0.42		0.25	N/A	N/A	0.22	0.22	0.41		0.55			0.55 (maximum)
	Ulu Street & Kukui Street	LOS	N/A	N/A	N/A	A	A	N/A	C			N/A	N/A	N/A	B
		Delay	N/A	N/A	N/A	8.5	0.0	N/A	24.7			N/A	N/A	N/A	10.9
		v/c	N/A	N/A	N/A	0.01	N/A	N/A	0.72			N/A	N/A	N/A	N/A
	Olohena Road & Lehua Street	LOS	B	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	F			E
		Delay	10.8	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	199.9			46.8
		v/c	0.38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.30			N/A
	Olohena Road & Kahau Street	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C			A
		Delay	9.5	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	24.3			1.1
		v/c	0.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.20			N/A
	Kuhio Hwy & Lehua Street	LOS	E			N/A	N/A	N/A	A	A	N/A	N/A	A	A	B
		Delay	48.4			N/A	N/A	N/A	9.3	0.0	N/A	N/A	0.0	0.0	19.3
		v/c	0.85			N/A	N/A	N/A	0.03	0.42	N/A	N/A	0.43	0.10	N/A
	Kuhio Hwy & Ohia St/Pono Kai Driveway	LOS	F			E			B	N/A	N/A	A	N/A	N/A	A
		Delay	261.5			47.7			12.80	N/A	N/A	9.3	N/A	N/A	3.5
		v/c	0.067			0.16			0.48	N/A	N/A	0.02	N/A	N/A	N/A
	Ulu Street & Ohia Street	LOS	C			B			N/A	N/A	N/A	A	N/A	N/A	A
		Delay	17.5			11.1			N/A	N/A	N/A	0.0	N/A	N/A	7.4
		v/c	0.033			0.428			N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Kapa`a Bypass Rd & Olohena Rd	LOS	A			C			C			F			D
		Delay	9.8			16.8			16.9			72.9			27.7
		v/c	0.399			0.714			0.744			1.002			N/A
	Olohena Road & Kaapuni Road	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C			A
		Delay	9.1	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23.5			5.4
		v/c	0.07	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.538			N/A
	Kaapuni Road & Kaehulua Road	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	B			A
		Delay	8.1	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12.6			0.4
		v/c	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.031			N/A
	Kuhio Hwy & Kapa`a Bypass Rd	LOS	C	N/A	D	N/A	N/A	N/A	C	N/A	N/A	N/A	N/A	N/A	A
		Delay	22.6	N/A	25.4	N/A	N/A	N/A	15.6	N/A	N/A	N/A	N/A	N/A	8.6
		v/c	0.12	N/A	N/A	N/A	N/A	N/A	0.70	N/A	N/A	N/A	N/A	N/A	N/A

Table 7. Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
AM Peak Hour Traffic With Project	Kuhio Hwy & Kukui Street & Huluili Street	LOS	F		C	N/A	N/A	A	A	A		A			A
		Delay	118.9		26.1	N/A	N/A	1.8	1.8	4.1		7.0			10.0
		v/c	0.59		0.42	N/A	N/A	0.03	0.03	0.49		0.57			0.59 (maximum)
	Ulu Street & Kukui Street	LOS	N/A	N/A	N/A	A	A	N/A	B			N/A	N/A	N/A	A
		Delay	N/A	N/A	N/A	8.8	0.0	N/A	13.6			N/A	N/A	N/A	2.8
		v/c	N/A	N/A	N/A	0.02	N/A	N/A	0.257			N/A	N/A	N/A	N/A
	Olohena Road & Lehua Street	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C			A
		Delay	9.2	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	19			5.4
		v/c	0.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.31			N/A
	Olohena Road & Kahau Street	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C			A
		Delay	7.8	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17.3			0.6
		v/c	0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.13			N/A
	Kuhio Hwy & Lehua Street	LOS	F			N/A	N/A	N/A	A	A	N/A	N/A	A	A	F
		Delay	237.5			N/A	N/A	N/A	9.7	0.0	N/A	N/A	0.0	0.0	54.4
		v/c	1.43			N/A	N/A	N/A	0.02	0.45	N/A	N/A	0.51	0.05	N/A
	Kuhio Hwy & Ohia Street/Pono Kai Driveway	LOS	F			D			B	N/A	N/A	A	N/A	N/A	A
		Delay	71.7			29.0			10.2	N/A	N/A	9.8	N/A	N/A	0.8
		v/c	0.02			0.04			0.15	N/A	N/A	0.01	N/A	N/A	N/A
	Ulu Street & Ohia Street	LOS	B			A			N/A	N/A	N/A	A	N/A	N/A	A
		Delay	11			8.9			N/A	N/A	N/A	0.0	N/A	N/A	2.9
		v/c	0.03			0.12			N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Kapa`a Bypass Rd & Olohena Rd	LOS	E			A			B			E			D
		Delay	42.1			5.7			14.5			40.7			31.9
		v/c	0.91			0.27			0.53			0.95			N/A
	Road A & Olohena Road	LOS	N/A	N/A	N/A	A	A	N/A	C			N/A	N/A	N/A	A
		Delay	N/A	N/A	N/A	9.6	0.0	N/A	17.9			N/A	N/A	N/A	1.0
		v/c	N/A	N/A	N/A	0.00	N/A	N/A	0.17			N/A	N/A	N/A	N/A
	Olohena Road & Kaapuni Road	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	F			D
		Delay	7.8	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	106.1			35.5
		v/c	0.06	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.078			N/A
	Kaapuni Rd & Kaehulua Rd	LOS	A	A	N/A	N/A	B	N/A	N/A	N/A	N/A	B			A
		Delay	7.6	0.0	N/A	N/A	12.6	N/A	N/A	N/A	N/A	12.6			0.4
		v/c	0.01	-	N/A	N/A	0.03	N/A	N/A	N/A	N/A	0.03			N/A
	Phase 1 Dwy & Olohena Rd	LOS	N/A	N/A	N/A	A	A	N/A	B			N/A	N/A	N/A	A
		Delay	N/A	N/A	N/A	8.6	0.0	N/A	12.1			N/A	N/A	N/A	0.4
		v/c	N/A	N/A	N/A	0.01	N/A	N/A	0.03			N/A	N/A	N/A	N/A

Table 7. Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
AM Peak Hour Traffic With Project (Cont'd.)	Kapa`a Bypass Road & Road A	LOS	A			A			N/A			C			B
		Delay	4.8			7.3			N/A			15.1			10.1
		v/c	0.16			0.45			N/A			0.64			N/A
	Kuhio Hwy & Kapa`a Bypass Road	LOS	F	N/A	A	N/A	N/A	N/A	B	N/A	N/A	N/A	N/A	N/A	A
		Delay	51.1	N/A	0.0	N/A	N/A	N/A	10.9	N/A	N/A	N/A	N/A	N/A	1.0
		v/c	0.07	N/A	N/A	N/A	N/A	N/A	0.18	N/A	N/A	N/A	N/A	N/A	N/A
AM Peak Hour Traffic With Project - Improved	Kuhio Hwy & Kukui Street & Huluili Street	LOS	C		B	N/A	N/A	A	A	A		A			A
		Delay	32.8		11.4	N/A	N/A	0.0	3.8	7.0		8.2			.6
		v/c	0.31		0.27	N/A	N/A	N/A	0.03	0.56		0.63			0.63 (maximum)
	Kuhio Hwy & Lehua Street	LOS	F			N/A	N/A	N/A	A	A	N/A	N/A	A	A	E
		Delay	196.5			N/A	N/A	N/A	9.7	0.0	N/A	N/A	0.0	0.0	45.0
		v/c	1.34			N/A	N/A	N/A	0.02	0.45	N/A	N/A	0.51	0.06	N/A
	Kapa`a Bypass Rd & Olohena Rd	LOS	C			A			B			B		A	B
		Delay	23.9			5.4			11.1			12.1		0.0	12.9
		v/c	0.79			0.25			0.46			0.61		0.13	N/A
	Olohena Rd & Kaapuni Road & Kaehulua Road	LOS	A	A		A	A		D			E			B
		Delay	7.5	0.0		8.1	0.0		34.9			43.2			19.0
		v/c	0.01	N/A		0.04	-		0.87			0.14			N/A
	Kuhio Hwy & Kapa`a Bypass Road	LOS	C	N/A	A	N/A	N/A	N/A	B	A	N/A	N/A	A	A	A
		Delay	21.8	N/A	0.0	N/A	N/A	N/A	10.9	0.0	N/A	N/A	0.0	0.0	0.9
		v/c	0.03	N/A	N/A	N/A	N/A	N/A	0.18	N/A	N/A	N/A	N/A	N/A	N/A
PM Peak Hour Traffic With Project	Kuhio Hwy & Kukui Street & Huluili Street	LOS	E		B	N/A	N/A	A	A	A		B			A
		Delay	63.3		11.1	N/A	N/A	3.0	3.0	4.2		10.5			9.4
		v/c	0.48		0.27	N/A	N/A	0.23	0.23	0.42		0.56			0.56 (maximum)
	Ulu Street & Kukui Street	LOS	N/A	N/A	N/A	A	A	N/A	E			N/A	N/A	N/A	A
		Delay	N/A	N/A	N/A	8.7	0.0	N/A	49.9			N/A	N/A	N/A	22.5
		v/c	N/A	N/A	N/A	0.01	N/A	N/A	0.93			N/A	N/A	N/A	N/A
	Olohena Road & Lehua Street	LOS	B	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	F			A
		Delay	12.7	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	714.0			160.2
		v/c	0.49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.45			N/A
	Olohena Road & Kahau Street	LOS	B	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	E			A
		Delay	10.4	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	36.5			1.5
		v/c	0.07	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.34			N/A

Table 7. Summary of Capacity Analysis (Cont'd.)

Scenario	Intersection	MOE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Intersection
PM Peak Hour Traffic With Project (Cont'd.)	Kuhio Hwy & Lehua Street	LOS	F			N/A	N/A	N/A	A	A	N/A	N/A	A	A	B
		Delay	85.7			N/A	N/A	N/A	9.3	0.0	N/A	N/A	0.0	0.0	12.5
		v/c	1.03			N/A	N/A	N/A	0.03	0.42	N/A	N/A	0.43	0.14	N/A
	Kuhio Hwy & Ohia St/Pono Kai Driveway	LOS	F			B			B	N/A	N/A	A	N/A	N/A	A
		Delay	401.7			14.6			14.6	N/A	N/A	9.3	N/A	N/A	4.1
		v/c	0.10			0.04			0.58	N/A	N/A	0.02	N/A	N/A	N/A
	Ulu Street & Ohia Street	LOS	C			B			N/A	N/A	N/A	A	N/A	N/A	A
		Delay	21.7			12.1			N/A	N/A	N/A	0.0	N/A	N/A	8.1
		v/c	0.04			0.51			N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Kapa`a Bypass Rd & Olohena Rd	LOS	B			B			B			F			D
		Delay	11.3			14.2			13.3			84.7			29.8
		v/c	0.39			0.72			0.65			1.05			N/A
	Road A & Olohena Road	LOS	N/A	N/A	N/A	A	A	N/A	D			N/A	N/A	N/A	A
		Delay	N/A	N/A	N/A	7.8	0.0	N/A	26.7			N/A	N/A	N/A	7.0
		v/c	N/A	N/A	N/A	0.01	N/A	N/A	0.61			N/A	N/A	N/A	N/A
	Olohena Road & Kaapuni Road	LOS	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	C			D
		Delay	9.1	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	24.5			5.5
		v/c	0.07	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.55			N/A
	Kaapuni Road & Kaehulua Road	LOS	A	A	N/A	N/A	B	N/A	N/A	N/A	N/A	B			A
		Delay	8.1	0.0	N/A	N/A	12.6	N/A	N/A	N/A	N/A	12.6			0.4
		v/c	0.00	-	N/A	N/A	0.03	N/A	N/A	N/A	N/A	0.03			N/A
	Phase 1 Dwy & Olohena Road	LOS	N/A	N/A	N/A	A	A	N/A	A			N/A	N/A	N/A	A
		Delay	N/A	N/A	N/A	7.6	0.0	N/A	9.3			N/A	N/A	N/A	0.2
		v/c	N/A	N/A	N/A	0.01	N/A	N/A	0.01			N/A	N/A	N/A	N/A
	Kapa`a Bypass Rd & Road A	LOS	C			C			N/A			A			B
		Delay	16.0			16.1			N/A			7.4			14.8
		v/c	0.76			0.70			75			0.30			N/A
	Kuhio Hwy & Kapa`a Bypass Road	LOS	E	N/A	A	N/A	N/A	N/A	C	N/A	N/A	N/A	N/A	N/A	B
		Delay	44.7	N/A	0.0	N/A	N/A	N/A	21.1	N/A	N/A	N/A	N/A	N/A	12.0
		v/c	0.25	N/A	N/A	N/A	N/A	N/A	0.81	N/A	N/A	N/A	N/A	N/A	N/A
PM Peak Hour Traffic With Project - Improved	Kuhio Hwy & Kukui Street & Huluili Street	LOS	C		A	N/A	N/A	A	A	A		B			B
		Delay	32.0		1.8	N/A	N/A	0.1	4.0	5.9		16.7			11.4
		v/c	0.32		0.18	N/A	N/A	N/A	0.24	0.46		0.66			0.66 (maximum)
	Kuhio Hwy & Lehua Street	LOS	F			N/A	N/A	N/A	A	A	N/A	N/A	A	A	B
		Delay	65.9			N/A	N/A	N/A	9.3	0.0	N/A	N/A	0.0	0.0	12.7
		v/c	0.96			N/A	N/A	N/A	0.03	0.42	N/A	N/A	0.43	0.14	N/A

Table 7. Summary of Capacity Analysis (Cont'd.)															
Scenario	**Intersection**	**MOE**	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**	**Intersection**
PM Peak Hour Traffic With Project – Improved (Cont'd.)	**Kapa`a Bypass Rd & Olohena Rd**	**LOS**	A			B			B			D		A	B
		Delay	9.1			12.5			11.2			25.1		0.0	13.7
		v/c	0.33			0.68			0.60			0.72		0.04	N/A
	Olohena Rd & Kaapuni Road & Kaehulua Road	**LOS**	A	A		A	A		C			E			A
		Delay	7.9	0.0		8.2	0.0		21.3			36.0			7.1
		v/c	0.00	N/A		0.23	N/A		0.48			0.12			N/A
	Kuhio Hwy & Kapa`a Bypass Road	**LOS**	E	N/A	A	N/A	N/A	N/A	C	A	N/A	N/A	A	A	A
		Delay	44.9	N/A	0.0	N/A	N/A	N/A	22.4	0.0	N/A	N/A	0.0	0.0	8.9
		v/c	0.25	N/A	N/A	N/A	N/A	N/A	0.81	N/A	N/A	N/A	N/A	N/A	N/A

TRAFFIC IMPACT ANALYSIS REPORT UPDATE

FOR THE PROPOSED

HOKUA PLACE

KAPA`A, KAUAI, HAWAII
TAX MAP KEY: (4) 4-3-03: 01

APPENDIX A

TRAFFIC COUNT DATA

Study Name Kuhio Hwy Kukui ST 3-15-17 to 3-17-17
Start Date 3/15/17
Start Time 3:00 PM
Site Code Hokua Place

Start	Kukui St Makai Bound				Kukui St Mauka Bound				Kuhio Hwy Northbound				Kuhio Hwy Southbound				Intersection	
3/15/17	LT-Huluili	LT-Kuhio	Thru	Right-Turn	Left-Turn	Thru	Thru-Huluili	RT-Kuhio	LT-Kukui	LT-Huluili	Thru	Right-Turn	Left-Turn	Thru	RT-Kukui	RT-Huluili	15-Min Totals	Hourly Totals
3:00 PM	4	11	6	12	0	0	0	4	4	1	121	2	3	126	14	1	309	1160
3:15 PM	1	16	1	9	0	0	0	7	4	1	89	2	1	129	16	0	276	1136
3:30 PM	10	12	0	9	0	0	0	7	5	0	86	0	3	144	12	1	289	1142
3:45 PM	9	15	4	16	1	0	0	1	11	2	99	1	1	113	13	0	286	1125
4:00 PM	7	18	6	11	0	0	0	2	7	0	96	1	3	111	18	5	285	1136
4:15 PM	4	16	4	11	0	0	0	8	7	1	97	0	1	112	20	1	282	1123
4:30 PM	3	9	1	13	0	0	0	2	8	0	110	1	2	107	15	1	272	1153
4:45 PM	2	12	1	11	0	0	0	1	5	0	103	2	3	136	17	4	297	1177
5:00 PM	4	13	4	4	0	0	0	2	7	7	82	1	2	133	10	3	272	1144
5:15 PM	12	9	5	16	0	0	0	1	4	5	109	0	2	134	9	6	312	
5:30 PM	4	3	3	6	0	0	0	2	6	6	123	2	0	133	7	1	296	
5:45 PM	2	7	5	6	0	0	0	3	1	1	108	0	1	124	5	1	264	
3/16/17																		
7:00 AM	0	8	2	8	0	0	0	2	1	1	124	1	0	184	2	2	335	1397
7:15 AM	2	6	0	9	0	0	0	0	2	1	166	3	0	182	9	0	**380**	**1410**
7:30 AM	0	6	1	15	0	0	0	0	7	5	143	1	1	153	6	1	339	1367
7:45 AM	2	3	3	15	0	0	0	0	4	4	153	1	0	151	7	0	343	1399
8:00 AM	2	11	4	9	0	0	0	1	3	1	143	2	2	165	2	3	348	1397
8:15 AM	0	0	1	3	0	0	0	4	4	1	143	4	3	172	2	0	337	
8:30 AM	0	5	3	6	0	0	0	9	7	0	153	9	1	170	7	1	371	
8:45 AM	3	9	0	8	0	0	0	9	2	2	151	5	2	143	6	1	341	
3/16/17																		
3:00 PM	7	7	2	9	1	0	0	1	5	1	93	3	2	134	10	4	279	1182
3:15 PM	2	11	2	3	0	0	0	3	10	2	129	1	2	125	9	3	302	1203
3:30 PM	2	7	4	18	0	0	0	4	7	3	105	3	2	144	14	1	314	1160
3:45 PM	3	8	5	7	0	0	0	10	2	1	96	0	1	148	5	1	287	1160
4:00 PM	3	3	4	9	0	0	0	0	3	4	113	4	2	139	10	6	300	1162
4:15 PM	2	8	1	6	0	0	0	0	3	3	111	1	2	114	8	0	259	1176
4:30 PM	1	9	1	3	0	0	0	0	4	0	136	2	1	148	7	2	314	1269
4:45 PM	6	5	2	3	0	0	0	0	10	1	114	2	3	134	8	1	289	1281
5:00 PM	7	4	1	8	0	0	0	6	4	3	119	3	2	144	10	3	314	**1305**
5:15 PM	4	5	2	9	0	0	0	2	15	14	137	4	0	145	8	7	**352**	
5:30 PM	2	6	0	0	0	0	0	2	3	1	154	3	0	145	5	5	326	
5:45 PM	0	6	1	7	0	0	0	1	3	0	134	3	1	147	6	4	313	
3/17/17																		
6:45 AM	0	4	1	6	0	0	0	2	2	0	104	1	1	167	6	0	294	1326
7:00 AM	1	3	1	8	0	0	0	3	3	0	101	2	0	179	7	0	308	1386
7:15 AM	0	4	0	11	0	0	0	2	5	0	172	2	0	170	5	0	371	1415
7:30 AM	1	10	1	12	0	0	0	3	9	1	141	2	1	167	5	0	353	1395
7:45 AM	1	7	2	12	0	0	0	2	3	0	145	2	2	164	14	0	354	1364
8:00 AM	1	9	0	14	0	0	0	4	11	2	135	3	2	149	7	0	337	
8:15 AM	3	5	1	7	0	0	0	11	5	0	146	4	2	155	12	0	351	
8:30 AM	0	6	0	6	0	0	0	2	4	0	125	3	2	164	10	0	322	

AM Peak Hour Traffic			3/16/17														
7:15 AM	6	26	8	48	0	0	0	1	16	11	605	7	3	651	24	4	1410
PHF	0.75	1.08	N/A	1.33	N/A	N/A	N/A	N/A	2.00	2.75	0.91	0.58	N/A	0.89	0.67	N/A	0.93
PHV	8	24	0	36	0	0	0	0	8	4	664	12	0	728	36	0	1520
T Factor	0%	15%	0%	4%	N/A	N/A	N/A	0%	6%	9%	4%	0%	0%	1%	4%	0%	
PM Peak Hour Traffic			3/16/17														
5:00 PM	13	21	4	24	0	0	0	11	25	18	544	13	3	581	29	19	1305
PHF	0.81	1.05	0.50	0.67	N/A	N/A	N/A	1.38	0.42	0.32	0.99	0.81	N/A	1.00	0.91	0.68	0.93
PHV	16	20	8	36	0	0	0	8	60	56	548	16	0	580	32	28	1408
T Factor	0%	0%	0%	0%	N/A	N/A	N/A	0%	0%	0%	0%	0%	0%	1%	0%	0%	

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Lehua St 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

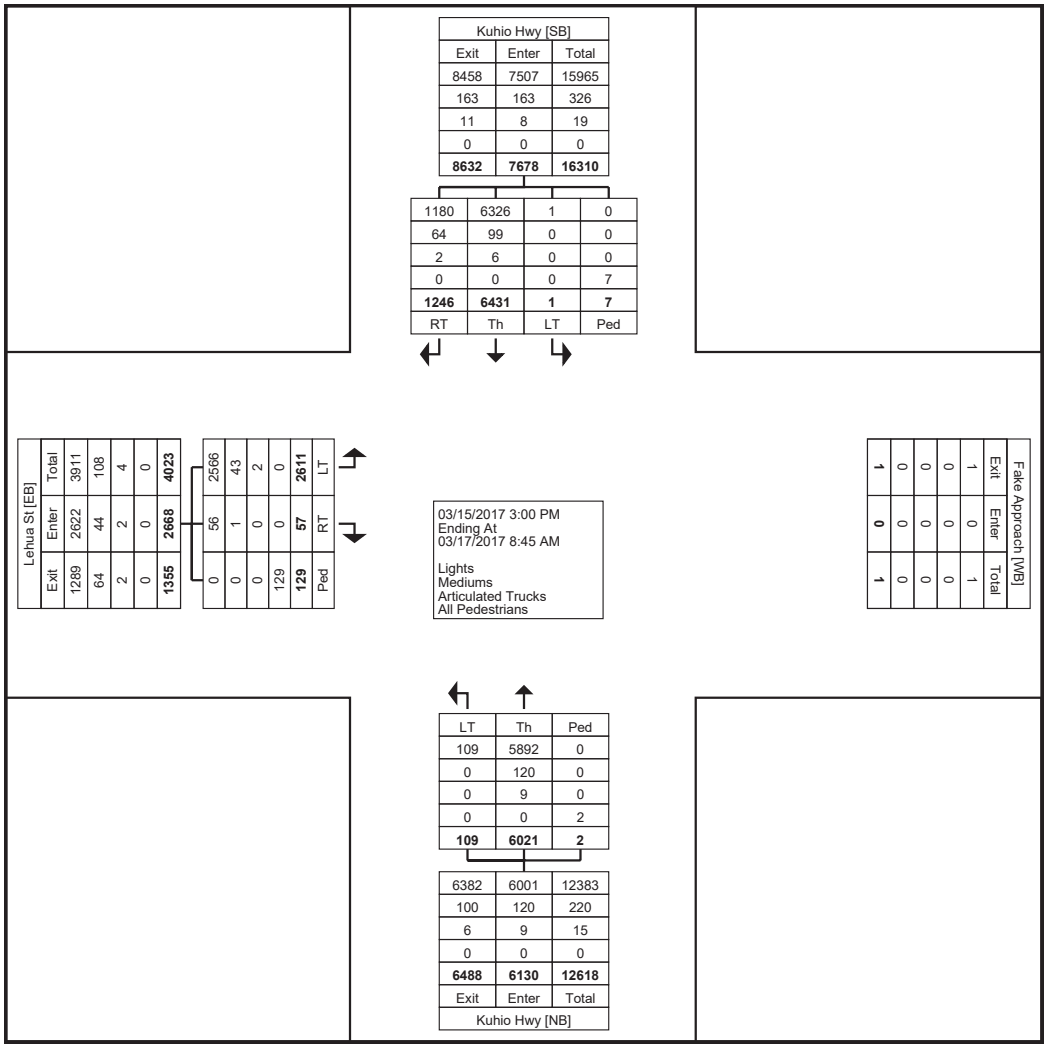
Turning Movement Data

Start Time	Lehua St Eastbound				Kuhio Hwy Northbound				Kuhio Hwy Southbound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
3:00 PM	71	3	1	74	2	142	0	144	0	140	59	0	199	417
3:15 PM	68	4	14	72	4	137	0	141	0	146	51	0	197	410
3:30 PM	75	2	8	77	2	136	0	138	0	154	56	0	210	425
3:45 PM	72	1	2	73	2	148	0	150	0	134	45	0	179	402
Hourly Total	286	10	25	296	10	563	0	573	0	574	211	0	785	1654
4:00 PM	69	4	6	73	1	145	1	146	0	135	54	0	189	408
4:15 PM	72	2	1	74	5	144	1	149	0	139	37	0	176	399
4:30 PM	75	2	5	77	3	143	0	146	0	130	45	0	175	398
4:45 PM	74	0	5	74	5	160	0	165	0	164	38	0	202	441
Hourly Total	290	8	17	298	14	592	2	606	0	568	174	0	742	1646
5:00 PM	82	0	5	82	0	134	0	134	0	140	55	0	195	411
5:15 PM	85	1	6	86	7	145	0	152	0	145	51	0	196	434
5:30 PM	96	2	3	98	2	163	0	165	0	137	34	0	171	434
5:45 PM	69	2	8	71	1	161	0	162	0	131	25	0	156	389
Hourly Total	332	5	22	337	10	603	0	613	0	553	165	0	718	1668
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7:00 AM	51	0	1	51	0	140	0	140	0	213	8	0	221	412
7:15 AM	86	0	2	86	4	168	0	172	0	191	20	0	211	469
7:30 AM	95	1	0	96	1	163	0	164	0	170	15	0	185	445
7:45 AM	64	1	2	65	1	180	0	181	0	184	15	0	199	445
Hourly Total	296	2	5	298	6	651	0	657	0	758	58	0	816	1771
8:00 AM	45	0	4	45	2	169	0	171	1	189	18	0	208	424
8:15 AM	29	1	3	30	10	145	0	155	0	194	12	0	206	391
8:30 AM	34	3	3	37	2	168	0	170	0	185	16	0	201	408
8:45 AM	41	1	10	42	5	161	0	166	0	150	21	0	171	379
Hourly Total	149	5	20	154	19	643	0	662	1	718	67	0	786	1602
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	85	2	3	87	3	131	0	134	0	153	49	0	202	423
3:15 PM	67	1	7	68	5	162	0	167	0	138	42	0	180	415
3:30 PM	71	4	4	75	6	145	0	151	0	155	55	0	210	436
3:45 PM	78	2	1	80	5	141	0	146	0	146	35	0	181	407
Hourly Total	301	9	15	310	19	579	0	598	0	592	181	0	773	1681
4:00 PM	71	0	0	71	4	148	0	152	0	163	51	0	214	437
4:15 PM	66	2	1	68	2	145	0	147	0	119	39	0	158	373
4:30 PM	68	3	0	71	1	175	0	176	0	158	45	0	203	450
4:45 PM	81	1	1	82	1	134	0	135	0	146	25	0	171	388
Hourly Total	286	6	2	292	8	602	0	610	0	586	160	0	746	1648
5:00 PM	80	1	1	81	3	140	0	143	0	163	34	0	197	421
5:15 PM	74	1	6	75	2	161	0	163	0	160	27	0	187	425
5:30 PM	50	2	0	52	4	167	0	171	0	158	28	0	186	409
5:45 PM	55	1	2	56	3	133	0	136	0	151	33	0	184	376
Hourly Total	259	5	9	264	12	601	0	613	0	632	122	0	754	1631
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:45 AM	32	4	1	36	2	107	0	109	0	178	13	7	191	336
Hourly Total	32	4	1	36	2	107	0	109	0	178	13	7	191	336
7:00 AM	62	1	2	63	1	115	0	116	0	183	13	0	196	375
7:15 AM	62	0	1	62	0	170	0	170	0	188	12	0	200	432
7:30 AM	87	0	1	87	2	181	0	183	0	177	9	0	186	456
7:45 AM	69	0	0	69	1	173	0	174	0	195	18	0	213	456
Hourly Total	280	1	4	281	4	639	0	643	0	743	52	0	795	1719
8:00 AM	42	1	3	43	4	144	0	148	0	168	10	0	178	369
8:15 AM	35	1	2	36	1	156	0	157	0	189	21	0	210	403
8:30 AM	23	0	4	23	0	141	0	141	0	172	12	0	184	348
Grand Total	2611	57	129	2668	109	6021	2	6130	1	6431	1246	7	7678	16476
Approach %	97.9	2.1	-	-	1.8	98.2	-	-	0.0	83.8	16.2	-	-	-
Total %	15.8	0.3	-	16.2	0.7	36.5	-	37.2	0.0	39.0	7.6	-	46.6	-
Lights	2566	56	-	2622	109	5892	-	6001	1	6326	1180	-	7507	16130
% Lights	98.3	98.2	-	98.3	100.0	97.9	-	97.9	100.0	98.4	94.7	-	97.8	97.9
Mediums	43	1	-	44	0	120	-	120	0	99	64	-	163	327
% Mediums	1.6	1.8	-	1.6	0.0	2.0	-	2.0	0.0	1.5	5.1	-	2.1	2.0
Articulated Trucks	2	0	-	2	0	9	-	9	0	6	2	-	8	19
% Articulated Trucks	0.1	0.0	-	0.1	0.0	0.1	-	0.1	0.0	0.1	0.2	-	0.1	0.1
All Pedestrians	-	-	129	-	-	-	2	-	-	-	-	7	-	-
% All Pedestrians	-	-	100.0	-	-	-	100.0	-	-	-	-	100.0	-	-

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Lehua St 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017



Turning Movement Data Plot

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Lehua St 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Lehua St Eastbound				Kuhio Hwy Northbound				Kuhio Hwy Southbound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
4:45 PM	74	0	5	74	5	160	0	165	0	164	38	0	202	441
5:00 PM	82	0	5	82	0	134	0	134	0	140	55	0	195	411
5:15 PM	85	1	6	86	7	145	0	152	0	145	51	0	196	434
5:30 PM	96	2	3	98	2	163	0	165	0	137	34	0	171	434
Total	337	3	19	340	14	602	0	616	0	586	178	0	764	1720
Approach %	99.1	0.9	-	-	2.3	97.7	-	-	0.0	76.7	23.3	-	-	-
Total %	19.6	0.2	-	19.8	0.8	35.0	-	35.8	0.0	34.1	10.3	-	44.4	-
PHF	0.878	0.375	-	0.867	0.500	0.923	-	0.933	0.000	0.893	0.809	-	0.946	0.975
Lights	332	3	-	335	14	598	-	612	0	581	173	-	754	1701
% Lights	98.5	100.0	-	98.5	100.0	99.3	-	99.4	-	99.1	97.2	-	98.7	98.9
Mediums	5	0	-	5	0	4	-	4	0	5	5	-	10	19
% Mediums	1.5	0.0	-	1.5	0.0	0.7	-	0.6	-	0.9	2.8	-	1.3	1.1
Articulated Trucks	0	0	-	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
All Pedestrians	-	-	19	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-

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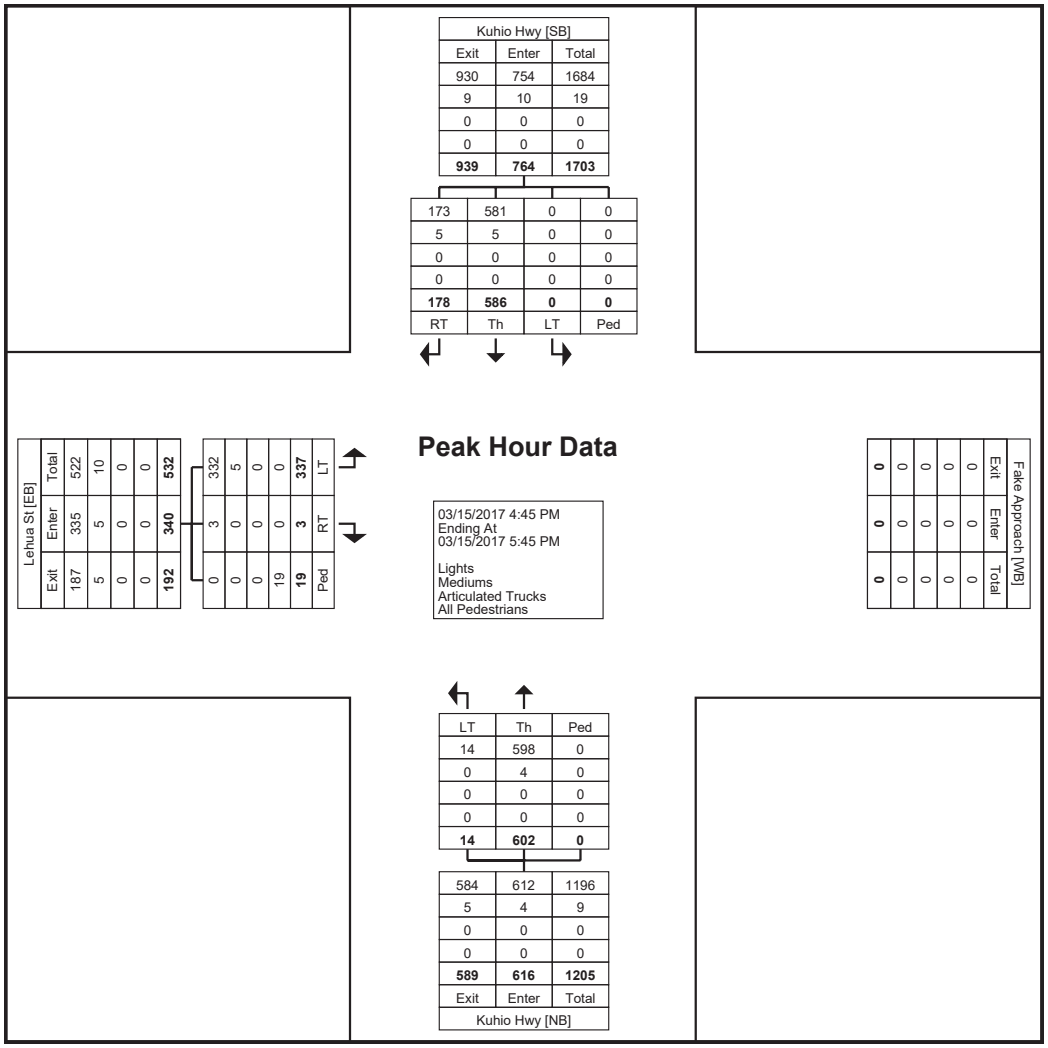
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Lehua St 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 4



Turning Movement Peak Hour Data Plot (4:45 PM)

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1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Lehua St 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Lehua St Eastbound				Kuhio Hwy Northbound				Kuhio Hwy Southbound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
7:15 AM	86	0	2	86	4	168	0	172	0	191	20	0	211	469
7:30 AM	95	1	0	96	1	163	0	164	0	170	15	0	185	445
7:45 AM	64	1	2	65	1	180	0	181	0	184	15	0	199	445
8:00 AM	45	0	4	45	2	169	0	171	1	189	18	0	208	424
Total	290	2	8	292	8	680	0	688	1	734	68	0	803	1783
Approach %	99.3	0.7	-	-	1.2	98.8	-	-	0.1	91.4	8.5	-	-	-
Total %	16.3	0.1	-	16.4	0.4	38.1	-	38.6	0.1	41.2	3.8	-	45.0	-
PHF	0.763	0.500	-	0.760	0.500	0.944	-	0.950	0.250	0.961	0.850	-	0.951	0.950
Lights	287	2	-	289	8	658	-	666	1	720	57	-	778	1733
% Lights	99.0	100.0	-	99.0	100.0	96.8	-	96.8	100.0	98.1	83.8	-	96.9	97.2
Mediums	3	0	-	3	0	20	-	20	0	13	10	-	23	46
% Mediums	1.0	0.0	-	1.0	0.0	2.9	-	2.9	0.0	1.8	14.7	-	2.9	2.6
Articulated Trucks	0	0	-	0	0	2	-	2	0	1	1	-	2	4
% Articulated Trucks	0.0	0.0	-	0.0	0.0	0.3	-	0.3	0.0	0.1	1.5	-	0.2	0.2
All Pedestrians	-	-	8	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-

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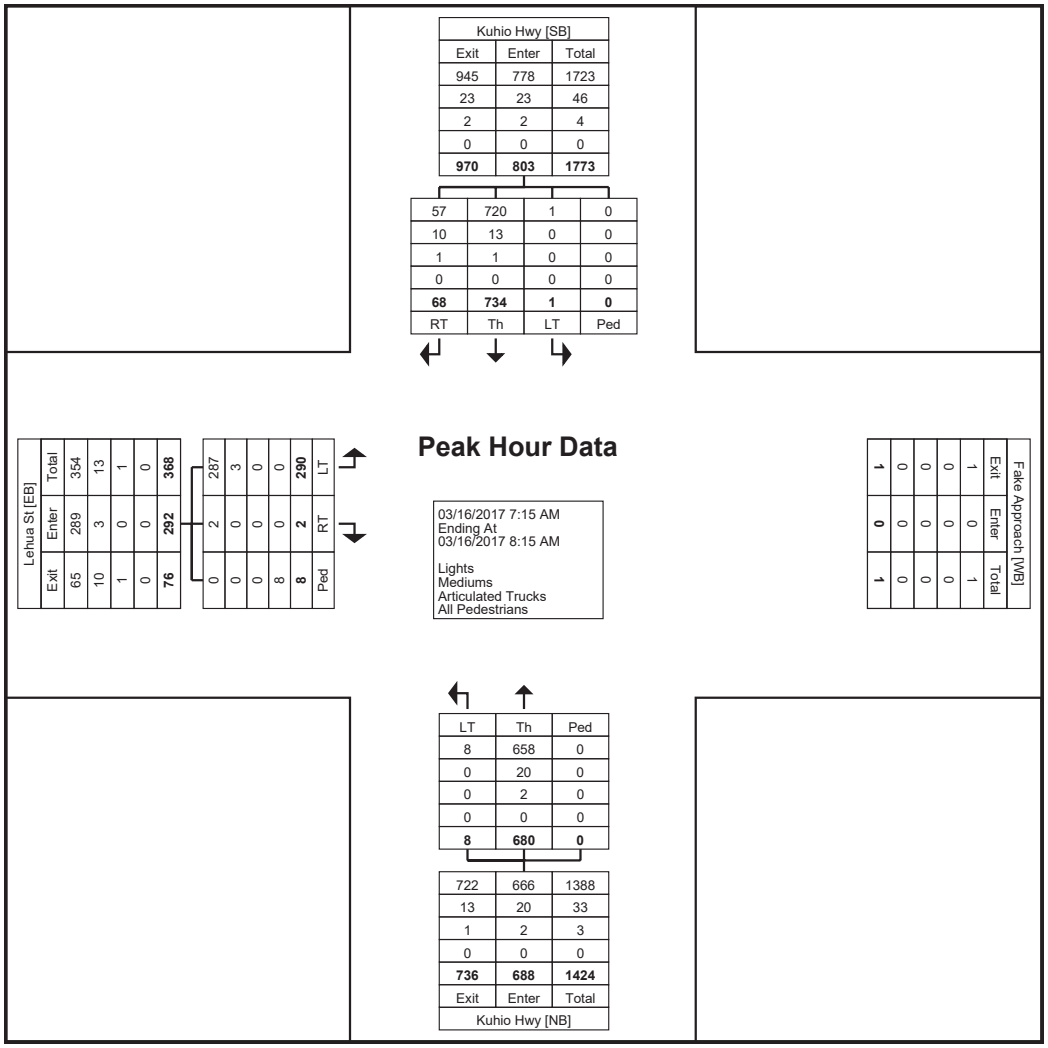
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Lehua St 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 6



Turning Movement Peak Hour Data Plot (7:15 AM)

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1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Lehua St 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (3:15 PM)

Start Time	Lehua St Eastbound				Kuhio Hwy Northbound				Kuhio Hwy Southbound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
3:15 PM	67	1	7	68	5	162	0	167	0	138	42	0	180	415
3:30 PM	71	4	4	75	6	145	0	151	0	155	55	0	210	436
3:45 PM	78	2	1	80	5	141	0	146	0	146	35	0	181	407
4:00 PM	71	0	0	71	4	148	0	152	0	163	51	0	214	437
Total	287	7	12	294	20	596	0	616	0	602	183	0	785	1695
Approach %	97.6	2.4	-	-	3.2	96.8	-	-	0.0	76.7	23.3	-	-	-
Total %	16.9	0.4	-	17.3	1.2	35.2	-	36.3	0.0	35.5	10.8	-	46.3	-
PHF	0.920	0.438	-	0.919	0.833	0.920	-	0.922	0.000	0.923	0.832	-	0.917	0.970
Lights	285	7	-	292	20	592	-	612	0	590	177	-	767	1671
% Lights	99.3	100.0	-	99.3	100.0	99.3	-	99.4	-	98.0	96.7	-	97.7	98.6
Mediums	2	0	-	2	0	4	-	4	0	11	6	-	17	23
% Mediums	0.7	0.0	-	0.7	0.0	0.7	-	0.6	-	1.8	3.3	-	2.2	1.4
Articulated Trucks	0	0	-	0	0	0	-	0	0	1	0	-	1	1
% Articulated Trucks	0.0	0.0	-	0.0	0.0	0.0	-	0.0	-	0.2	0.0	-	0.1	0.1
All Pedestrians	-	-	12	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-

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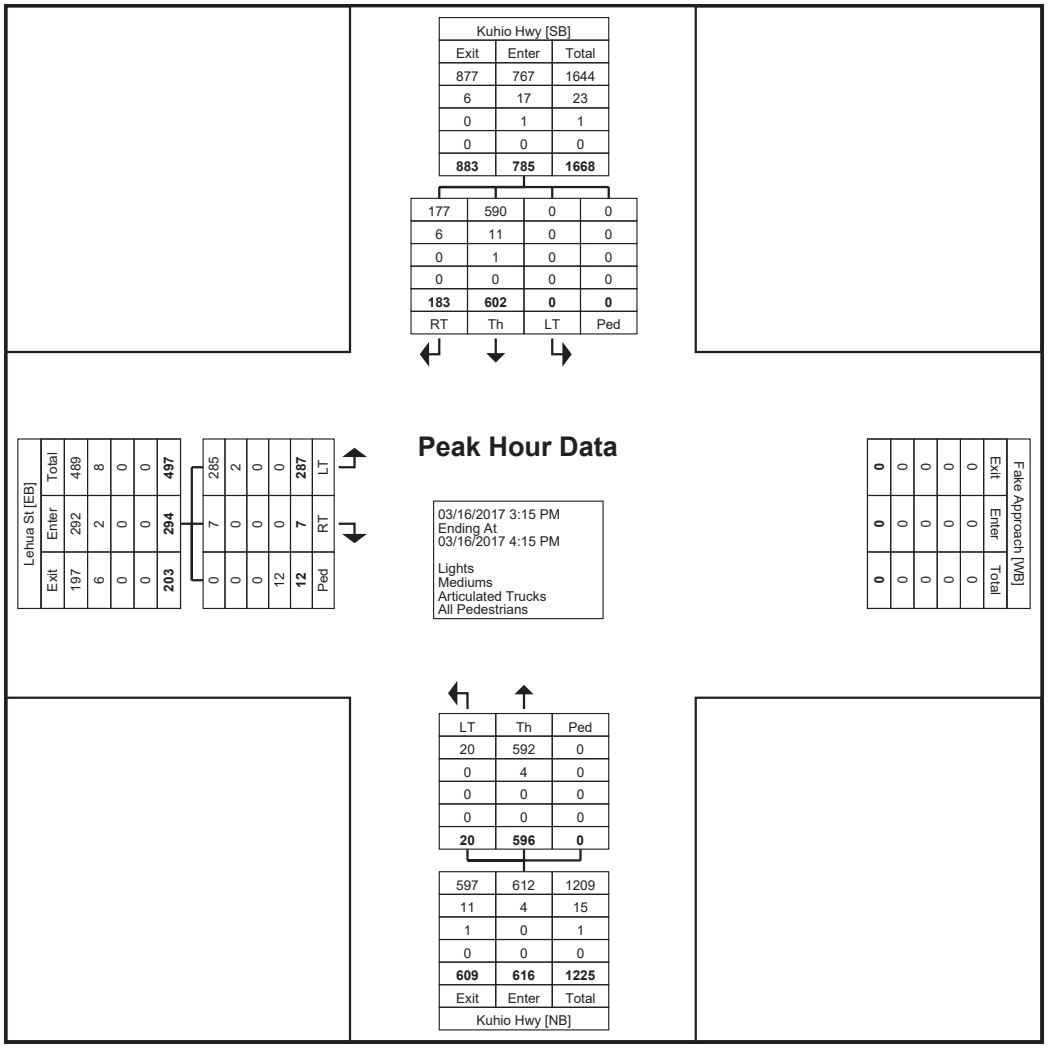

Turning Movement Peak Hour Data Plot (3:15 PM)

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Lehua St 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Lehua St Eastbound				Kuhio Hwy Northbound				Kuhio Hwy Southbound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
7:00 AM	62	1	2	63	1	115	0	116	0	183	13	0	196	375
7:15 AM	62	0	1	62	0	170	0	170	0	188	12	0	200	432
7:30 AM	87	0	1	87	2	181	0	183	0	177	9	0	186	456
7:45 AM	69	0	0	69	1	173	0	174	0	195	18	0	213	456
Total	280	1	4	281	4	639	0	643	0	743	52	0	795	1719
Approach %	99.6	0.4	-	-	0.6	99.4	-	-	0.0	93.5	6.5	-	-	-
Total %	16.3	0.1	-	16.3	0.2	37.2	-	37.4	0.0	43.2	3.0	-	46.2	-
PHF	0.805	0.250	-	0.807	0.500	0.883	-	0.878	0.000	0.953	0.722	-	0.933	0.942
Lights	276	1	-	277	4	614	-	618	0	729	42	-	771	1666
% Lights	98.6	100.0	-	98.6	100.0	96.1	-	96.1	-	98.1	80.8	-	97.0	96.9
Mediums	4	0	-	4	0	22	-	22	0	13	10	-	23	49
% Mediums	1.4	0.0	-	1.4	0.0	3.4	-	3.4	-	1.7	19.2	-	2.9	2.9
Articulated Trucks	0	0	-	0	0	3	-	3	0	1	0	-	1	4
% Articulated Trucks	0.0	0.0	-	0.0	0.0	0.5	-	0.5	-	0.1	0.0	-	0.1	0.2
All Pedestrians	-	-	4	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-

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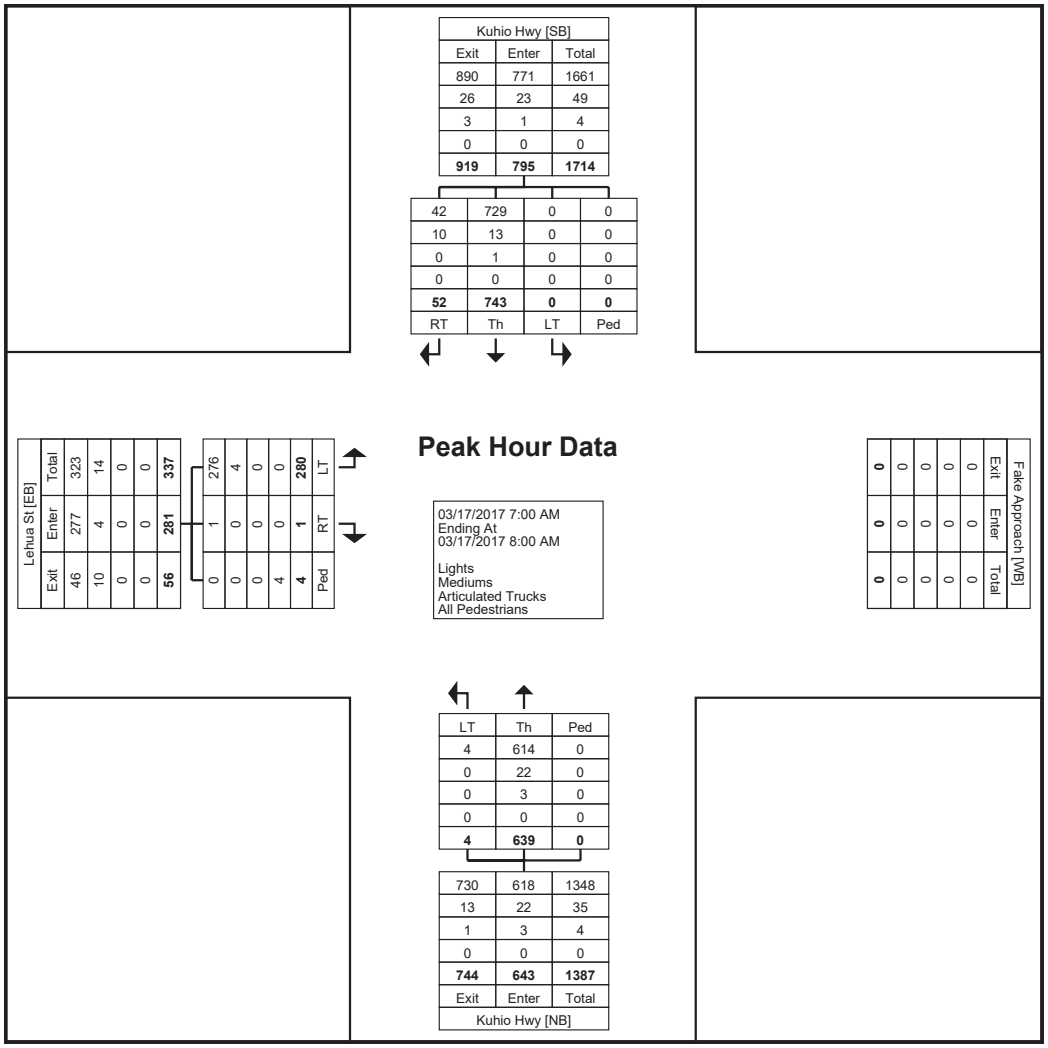


Turning Movement Peak Hour Data Plot (7:00 AM)

Study Name Kuhio Hwy Ulu St Ohia St 3-15-17 to 3-17-17
Start Date 3/15/17
Start Time 3:00 PM
Site Code Hokua Place

Start	Ohia St Eastbound					Pono Kai Dwy Westbound					Kuhio Hwy Northbound					Kuhio Hwy Southbound					Ulu St Southeast Bound					Intersection	
3/15/17	LT-Ulu	LT-Kuhio	Thru	RT-Kuhio	RT-Ulu	LT-Kuhio	LT-Ulu	Thru	RT-Ulu	RT-Kuhio	UT-Ulu	LT-Ohia	LT-Ulu	Thru	Right-Turn	Left-Turn	Thru	RT-Ulu	RT-Ohia	UT-Ulu	UT-Kuhio	LT-Dwy	RT-Kuhio	Thru	RT-Ohia	15-Min Totals	Hourly Totals
3:00 PM	2	0	0	0	0	0	0	0	0	3	0	0	74	154	6	0	154	0	0	2	0	0	0	55	0	450	1699
3:15 PM	4	0	0	0	0	0	0	0	0	3	1	0	61	124	18	3	128	0	0	5	0	0	0	74	3	424	1656
3:30 PM	3	0	0	0	0	0	0	0	0	2	0	1	77	106	4	3	138	0	0	3	0	0	0	67	0	404	1632
3:45 PM	1	0	0	0	2	0	0	0	0	0	0	1	75	123	11	2	136	0	0	4	0	0	0	63	3	421	1640
4:00 PM	3	0	1	0	0	0	0	0	0	2	0	0	66	118	8	1	139	0	2	2	0	0	0	63	2	407	1673
4:15 PM	2	1	0	0	0	0	0	0	0	1	0	0	55	121	12	1	126	0	0	3	0	0	0	76	2	400	1674
4:30 PM	0	0	1	0	0	0	0	0	0	3	0	0	66	137	12	0	125	0	0	1	0	1	0	65	1	412	1715
4:45 PM	1	0	0	0	0	0	0	0	0	2	1	0	70	136	14	1	166	0	0	1	0	0	0	62	0	454	1734
5:00 PM	1	0	0	0	0	1	0	0	0	1	0	0	91	120	10	3	132	0	1	3	0	0	0	44	1	408	1670
5:15 PM	0	1	0	0	1	0	0	0	0	2	1	1	78	131	12	1	156	0	1	1	0	0	0	54	1	441	
5:30 PM	2	0	0	0	2	0	0	0	0	2	0	0	68	157	9	2	152	0	3	0	0	0	0	34	0	431	
5:45 PM	2	0	0	0	1	0	0	0	0	3	0	1	64	131	8	1	138	0	1	1	0	0	0	35	4	390	
3/16/17																											
7:00 AM	2	0	0	0	2	0	0	0	0	3	0	0	16	135	1	0	200	0	3	2	0	0	0	46	3	413	1664
7:15 AM	1	1	0	0	1	0	0	0	0	0	0	3	24	162	1	0	182	0	2	0	2	0	0	39	2	420	1673
7:30 AM	5	4	0	0	2	0	0	0	0	0	0	0	23	165	5	2	162	0	0	0	0	0	0	50	1	419	1683
7:45 AM	1	0	0	0	1	0	0	0	0	2	0	0	27	157	3	1	159	0	1	2	0	0	0	57	1	412	1710
8:00 AM	0	0	0	0	0	0	0	0	0	3	0	0	32	158	4	4	180	0	2	0	0	0	0	38	1	422	**1743**
8:15 AM	0	0	1	0	2	0	0	0	0	2	0	0	27	164	2	1	195	0	0	1	0	0	0	34	1	430	
8:30 AM	1	0	0	0	3	0	0	0	0	1	0	0	22	187	5	0	173	0	0	1	0	0	0	51	2	**446**	
8:45 AM	2	0	0	0	1	1	0	0	0	3	0	0	29	188	4	2	165	0	0	1	0	0	0	47	2	445	
3/16/17																											
3:00 PM	1	0	0	0	1	1	0	0	0	1	1	0	57	124	8	0	152	0	0	0	0	0	0	42	2	390	1643
3:15 PM	2	0	0	0	0	0	0	0	0	2	0	0	76	145	13	0	140	0	0	0	0	0	0	39	1	418	1705
3:30 PM	0	0	0	0	2	0	0	0	0	2	0	0	67	142	10	3	164	0	0	0	0	0	0	38	1	429	1688
3:45 PM	1	0	0	0	0	0	0	0	0	1	0	0	81	118	9	4	155	0	0	0	0	0	0	36	1	406	1732
4:00 PM	3	0	0	0	0	0	0	0	0	1	0	0	71	147	6	3	162	0	0	0	0	0	0	57	2	452	1743
4:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	72	137	10	0	131	0	0	2	0	0	0	48	0	401	1714
4:30 PM	2	0	0	0	0	0	0	0	0	3	0	0	95	163	3	3	152	0	0	1	0	0	0	50	1	**473**	**1756**
4:45 PM	0	0	0	0	0	1	0	0	0	2	0	0	76	153	5	1	139	0	0	1	0	0	0	39	0	417	1704
5:00 PM	2	1	0	0	0	0	0	0	0	4	0	0	60	141	6	1	162	0	0	0	0	0	0	46	0	423	1695
5:15 PM	2	0	0	0	0	1	0	0	0	2	2	2	71	140	6	1	159	0	1	2	0	0	0	53	1	443	
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	58	163	5	1	150	0	0	0	0	0	0	43	0	421	
5:45 PM	1	0	0	0	1	0	0	0	0	2	0	1	53	139	5	1	156	0	0	1	0	0	0	47	1	408	
3/17/17																											
7:00 AM	2	1	0	0	1	0	0	0	0	1	0	1	19	123	0	1	185	0	2	0	0	0	0	48	2	386	1668
7:15 AM	1	1	0	0	0	0	0	0	0	0	0	0	25	182	2	3	172	0	1	0	1	0	0	45	1	434	1680
7:30 AM	5	1	0	0	1	0	0	0	0	0	0	0	21	162	2	2	176	0	1	0	0	0	0	50	0	421	1676
7:45 AM	4	1	0	0	0	1	0	0	0	2	0	0	25	145	3	1	172	0	0	3	0	0	0	67	3	427	1655
8:00 AM	0	1	0	0	0	0	0	0	0	0	1	0	24	148	4	1	170	0	1	1	0	0	0	45	2	398	1660
8:15 AM	0	0	0	0	0	0	0	0	0	4	0	0	27	174	7	0	159	0	1	0	0	0	0	56	2	430	
8:30 AM	0	2	0	0	0	1	0	0	0	2	0	1	30	126	1	3	178	0	0	1	0	0	0	52	3	400	
8:45 AM	0	2	0	0	1	0	0	0	0	4	0	2	21	166	4	1	181	0	0	2	0	0	0	46	2	432	

AM Peak Hour Traffic			3/16/17																								
8:00 AM	3	0	1	0	6	1	0	0	0	9	0	0	110	697	15	7	713	0	2	3	0	0	0	170	6	1743	
PHF	0.75	N/A	N/A	N/A	0.50	N/A	N/A	N/A	N/A	2.25	N/A	N/A	1.25	0.93	0.75	N/A	1.03	N/A	N/A	0.75	N/A	N/A	N/A	0.83	0.75	0.98	
PHV	4	0	0	0	12	0	0	0	0	4	0	0	88	748	20	0	692	0	0	4	0	0	0	204	8	1784	
T Factor	0%	N/A	0%	N/A	17%	0%	N/A	N/A	N/A	11%	N/A	N/A	5%	4%	0%	0%	3%	N/A	0%	0%	N/A	N/A	N/A	4%	17%		
													5	29	0		20										
														4%			3%										

PM Peak Hour Traffic			3/16/17																								
4:30 PM	6	1	0	0	0	2	0	0	0	11	2	2	302	597	20	6	612	0	1	4	0	0	0	188	2	1756	
PHF	0.75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.92	N/A	N/A	0.79	0.92	1.67	0.50	1.01	N/A	N/A	1.00	N/A	N/A	N/A	0.94	0.50	0.93	
PHV	8	0	0	0	0	0	0	0	0	12	0	0	380	652	12	12	608	0	0	4	0	0	0	200	4	1892	
T Factor	0%	0%	N/A	N/A	N/A	0%	N/A	N/A	N/A	0%	0%	0%	1%	1%	0%	0%	0%	N/A	0%	0%	N/A	N/A	N/A	1%	0%		

Study Name **Olohena Rd Lehua St Kahau St 3-13-17 to 3-15-17**
Start Date **03/13/2017**
Start Time **3:00 PM**
Site Code **Hokua Place**

Start	Olohena Rd Eastbound			Olohena Rd Westbound			Kahau St Southbound			Lehua St Southwest Bound			Intersection	
3/13/17	LT-Kahau	LT-Lehua	Thru	Thru	RT-Kahau	RT-Lehua	UT-Lehua	LT-Olohena	Right-Turn	LT-Olohena	RT-Olohena	UT-Kahau	15-Min Totals	Hourly Totals
3:00 PM	12	55	88	79	3	12	9	8	16	8	38	9	337	**1326**
3:15 PM	12	90	70	52	9	10	3	9	6	18	44	11	334	1308
3:30 PM	9	80	53	86	7	21	2	2	6	12	51	8	**337**	1277
3:45 PM	7	60	63	86	7	13	4	3	5	12	51	7	318	1212
4:00 PM	18	68	56	77	8	11	5	8	4	8	42	14	319	1177
4:15 PM	22	59	42	82	9	12	0	4	3	8	43	19	303	
4:30 PM	19	49	65	72	3	7	4	6	3	8	33	3	272	
4:45 PM	9	71	38	81	7	11	2	7	6	11	33	7	283	
3/14/17														
6:30 AM	3	23	36	15	2	0	2	0	0	2	5	4	92	573
6:45 AM	2	40	41	13	7	0	5	4	0	0	10	4	126	698
7:00 AM	4	52	46	25	2	1	1	2	4	1	8	3	149	787
7:15 AM	6	84	57	29	5	3	0	5	1	3	12	1	206	818
7:30 AM	4	81	58	35	0	3	11	3	6	2	13	1	217	762
7:45 AM	4	66	94	28	2	1	0	3	3	0	13	1	215	
8:00 AM	2	38	81	28	1	3	3	2	2	0	18	2	180	
8:15 AM	8	35	49	31	3	4	1	2	5	1	8	3	150	
3/14/17														
3:30 PM	8	61	57	28	4	12	5	5	3	6	25	13	227	1158
3:45 PM	14	66	53	56	8	11	2	7	3	12	40	7	279	1229
4:00 PM	24	78	44	70	10	19	1	9	5	15	46	6	327	1223
4:15 PM	14	55	50	84	10	13	3	12	3	12	54	15	325	1149
4:30 PM	14	81	53	61	3	10	1	3	4	5	56	7	298	1079
4:45 PM	14	66	56	76	3	8	1	7	4	5	26	7	273	
5:00 PM	10	65	45	72	5	8	0	3	4	0	37	4	253	
5:15 PM	9	76	37	71	6	9	0	2	5	8	30	2	255	
3/15/17														
6:30 AM	4	18	27	9	5	0	2	2	1	2	6	6	82	602
6:45 AM	4	48	54	23	8	0	2	7	2	1	7	6	162	748
7:00 AM	1	53	54	23	1	1	1	3	1	0	9	1	148	829
7:15 AM	7	81	59	16	1	4	9	4	8	2	17	2	210	**839**
7:30 AM	2	95	59	35	5	6	0	2	5	1	18	0	228	793
7:45 AM	2	90	89	27	2	3	2	1	6	0	20	1	**243**	
8:00 AM	4	36	58	29	2	2	2	1	2	4	17	1	158	
8:15 AM	1	42	62	21	3	1	0	4	7	4	17	2	164	

AM Peak Hour Traffic			3/15/17										
7:15 AM	15	302	265	107	10	15	13	8	21	7	72	4	839
PHF	1.88	0.84	0.74	0.99	1.25	1.25	1.63	2.00	0.88	N/A	0.90	1.00	0.86
Peak Flow	8	360	356	108	8	12	8	4	24	7	80	4	972
T Factor	0%	1%	4%	3%	10%	0%	8%	50%	19%	0%	7%	25%	
PM Peak Hour Traffic		1.0%	3/13/17					23.8%			7.2%		
3:00 PM	40	285	274	303	26	56	18	22	33	50	184	35	1326
PHF	1.11	0.89	1.29	0.88	0.93	0.67	2.25	2.75	1.38	1.04	0.90	1.09	0.98
Peak Flow	36	320	212	344	28	84	8	8	24	48	204	32	1348
T Factor	13%	3%	4%	1%	0%	2%	0%	0%	6%	2%	2%	0%	

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Olohena Rd
Kapaa Bypass 3-13-17 to 3-15-17
Site Code: Hokua Place
Start Date: 03/13/2017
Page No: 1

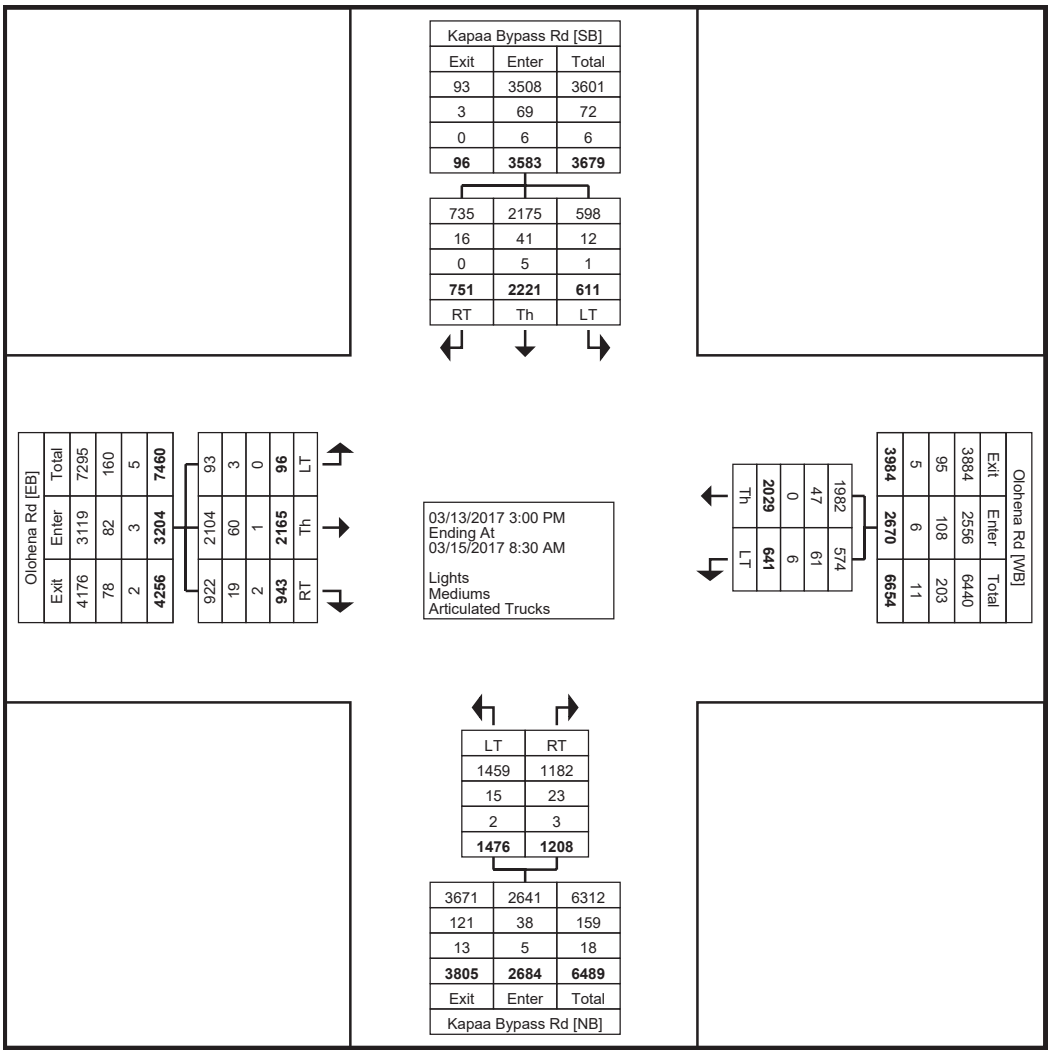
Turning Movement Data

Start Time	Olohena Rd Eastbound				Olohena Rd Westbound			Kapaa Bypass Rd Northbound			Kapaa Bypass Rd Southbound				
	Left-Turn	Thru	Right-Turn	App. Total	Left-Turn	Thru	App. Total	Left-Turn	Right-Turn	App. Total	Left-Turn	Thru	Right-Turn	App. Total	Int. Total
3:00 PM	2	106	33	141	33	102	135	64	38	102	21	32	10	63	441
3:15 PM	4	65	17	86	29	73	102	67	65	132	33	63	28	124	444
3:30 PM	4	50	18	72	42	98	140	57	72	129	14	69	19	102	443
3:45 PM	1	49	11	61	32	118	150	77	57	134	19	46	29	94	439
Hourly Total	11	270	79	360	136	391	527	265	232	497	87	210	86	383	1767
4:00 PM	1	47	17	65	24	114	138	82	78	160	15	66	17	98	461
4:15 PM	2	48	17	67	10	126	136	83	64	147	16	61	10	87	437
4:30 PM	2	35	11	48	16	105	121	89	76	165	13	57	19	89	423
4:45 PM	3	40	12	55	17	109	126	80	64	144	11	41	19	71	396
Hourly Total	8	170	57	235	67	454	521	334	282	616	55	225	65	345	1717
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:30 AM	0	46	37	83	7	16	23	5	4	9	10	40	4	54	169
6:45 AM	3	61	45	109	7	17	24	3	5	8	20	66	9	95	236
Hourly Total	3	107	82	192	14	33	47	8	9	17	30	106	13	149	405
7:00 AM	3	86	76	165	11	28	39	10	2	12	14	96	24	134	350
7:15 AM	3	107	59	169	10	33	43	23	12	35	30	119	31	180	427
7:30 AM	7	116	40	163	10	47	57	25	9	34	30	95	56	181	435
7:45 AM	8	112	34	154	10	35	45	26	13	39	36	101	41	178	416
Hourly Total	21	421	209	651	41	143	184	84	36	120	110	411	152	673	1628
8:00 AM	2	77	27	106	13	32	45	10	11	21	24	91	22	137	309
8:15 AM	1	65	21	87	12	32	44	12	5	17	20	68	14	102	250
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	3	142	48	193	25	64	89	22	16	38	44	159	36	239	559
3:30 PM	2	42	19	63	18	37	55	41	61	102	14	48	19	81	301
3:45 PM	3	46	6	55	37	86	123	93	84	177	14	46	20	80	435
Hourly Total	5	88	25	118	55	123	178	134	145	279	28	94	39	161	736
4:00 PM	2	38	17	57	36	104	140	66	74	140	22	70	44	136	473
4:15 PM	2	51	15	68	42	104	146	68	58	126	11	62	23	96	436
4:30 PM	4	38	12	54	43	85	128	77	76	153	22	65	21	108	443
4:45 PM	4	47	15	66	31	84	115	98	77	175	11	42	20	73	429
Hourly Total	12	174	59	245	152	377	529	309	285	594	66	239	108	413	1781
5:00 PM	5	41	18	64	21	106	127	98	69	167	15	55	28	98	456
5:15 PM	2	36	12	50	29	92	121	96	82	178	10	43	24	77	426
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	7	77	30	114	50	198	248	194	151	345	25	98	52	175	882
6:30 AM	0	38	43	81	8	9	17	3	1	4	9	51	6	66	168
6:45 AM	2	79	56	137	9	26	35	10	7	17	18	58	10	86	275
Hourly Total	2	117	99	218	17	35	52	13	8	21	27	109	16	152	443
7:00 AM	2	90	59	151	10	26	36	10	2	12	13	98	16	127	326
7:15 AM	1	108	62	171	17	24	41	26	6	32	24	107	45	176	420
7:30 AM	4	116	34	154	16	47	63	27	8	35	32	111	50	193	445
7:45 AM	10	126	45	181	13	45	58	25	12	37	39	83	47	169	445
Hourly Total	17	440	200	657	56	142	198	88	28	116	108	399	158	665	1636
8:00 AM	3	73	34	110	13	39	52	16	8	24	16	99	16	131	317
8:15 AM	4	86	21	111	15	30	45	9	8	17	15	72	10	97	270
Grand Total	96	2165	943	3204	641	2029	2670	1476	1208	2684	611	2221	751	3583	12141
Approach %	3.0	67.6	29.4	-	24.0	76.0	-	55.0	45.0	-	17.1	62.0	21.0	-	-
Total %	0.8	17.8	7.8	26.4	5.3	16.7	22.0	12.2	9.9	22.1	5.0	18.3	6.2	29.5	-
Lights	93	2104	922	3119	574	1982	2556	1459	1182	2641	598	2175	735	3508	11824
% Lights	96.9	97.2	97.8	97.3	89.5	97.7	95.7	98.8	97.8	98.4	97.9	97.9	97.9	97.9	97.4
Mediums	3	60	19	82	61	47	108	15	23	38	12	41	16	69	297
% Mediums	3.1	2.8	2.0	2.6	9.5	2.3	4.0	1.0	1.9	1.4	2.0	1.8	2.1	1.9	2.4
Articulated Trucks	0	1	2	3	6	0	6	2	3	5	1	5	0	6	20
% Articulated Trucks	0.0	0.0	0.2	0.1	0.9	0.0	0.2	0.1	0.2	0.2	0.2	0.2	0.0	0.2	0.2

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Olohena Rd
Kapaa Bypass 3-13-17 to 3-15-17
Site Code: Hokua Place
Start Date: 03/13/2017
Page No: 2



Turning Movement Data Plot

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Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Olohena Rd
Kapaa Bypass 3-13-17 to 3-15-17
Site Code: Hokua Place
Start Date: 03/13/2017

Turning Movement Peak Hour Data (3:15 PM)

Start Time	Olohena Rd Eastbound				Olohena Rd Westbound			Kapaa Bypass Rd Northbound			Kapaa Bypass Rd Southbound				
	Left-Turn	Thru	Right-Turn	App. Total	Left-Turn	Thru	App. Total	Left-Turn	Right-Turn	App. Total	Left-Turn	Thru	Right-Turn	App. Total	Int. Total
3:15 PM	4	65	17	86	29	73	102	67	65	132	33	63	28	124	444
3:30 PM	4	50	18	72	42	98	140	57	72	129	14	69	19	102	443
3:45 PM	1	49	11	61	32	118	150	77	57	134	19	46	29	94	439
4:00 PM	1	47	17	65	24	114	138	82	78	160	15	66	17	98	461
Total	10	211	63	284	127	403	530	283	272	555	81	244	93	418	1787
Approach %	3.5	74.3	22.2	-	24.0	76.0	-	51.0	49.0	-	19.4	58.4	22.2	-	-
Total %	0.6	11.8	3.5	15.9	7.1	22.6	29.7	15.8	15.2	31.1	4.5	13.7	5.2	23.4	-
PHF	0.625	0.812	0.875	0.826	0.756	0.854	0.883	0.863	0.872	0.867	0.614	0.884	0.802	0.843	0.969
Lights	10	201	59	270	118	399	517	280	270	550	79	232	92	403	1740
% Lights	100.0	95.3	93.7	95.1	92.9	99.0	97.5	98.9	99.3	99.1	97.5	95.1	98.9	96.4	97.4
Mediums	0	10	2	12	7	4	11	3	2	5	2	10	1	13	41
% Mediums	0.0	4.7	3.2	4.2	5.5	1.0	2.1	1.1	0.7	0.9	2.5	4.1	1.1	3.1	2.3
Articulated Trucks	0	0	2	2	2	0	2	0	0	0	0	2	0	2	6
% Articulated Trucks	0.0	0.0	3.2	0.7	1.6	0.0	0.4	0.0	0.0	0.0	0.0	0.8	0.0	0.5	0.3

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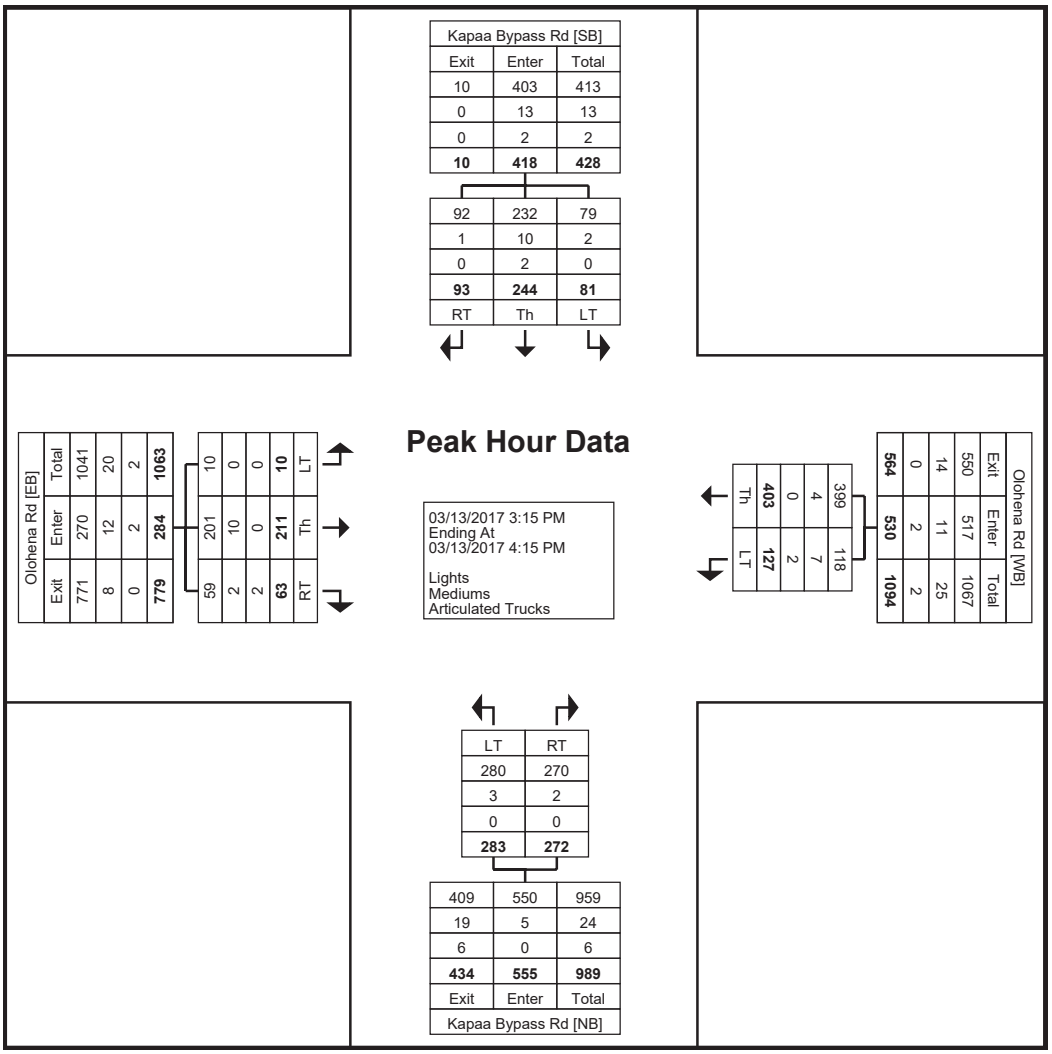
Count Name: Olohena Rd
Kapaa Bypass 3-13-17 to 3-15-17
Site Code: Hokua Place
Start Date: 03/13/2017
Page No: 4



Turning Movement Peak Hour Data Plot (3:15 PM)

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Olohena Rd
Kapaa Bypass 3-13-17 to 3-15-17
Site Code: Hokua Place
Start Date: 03/13/2017

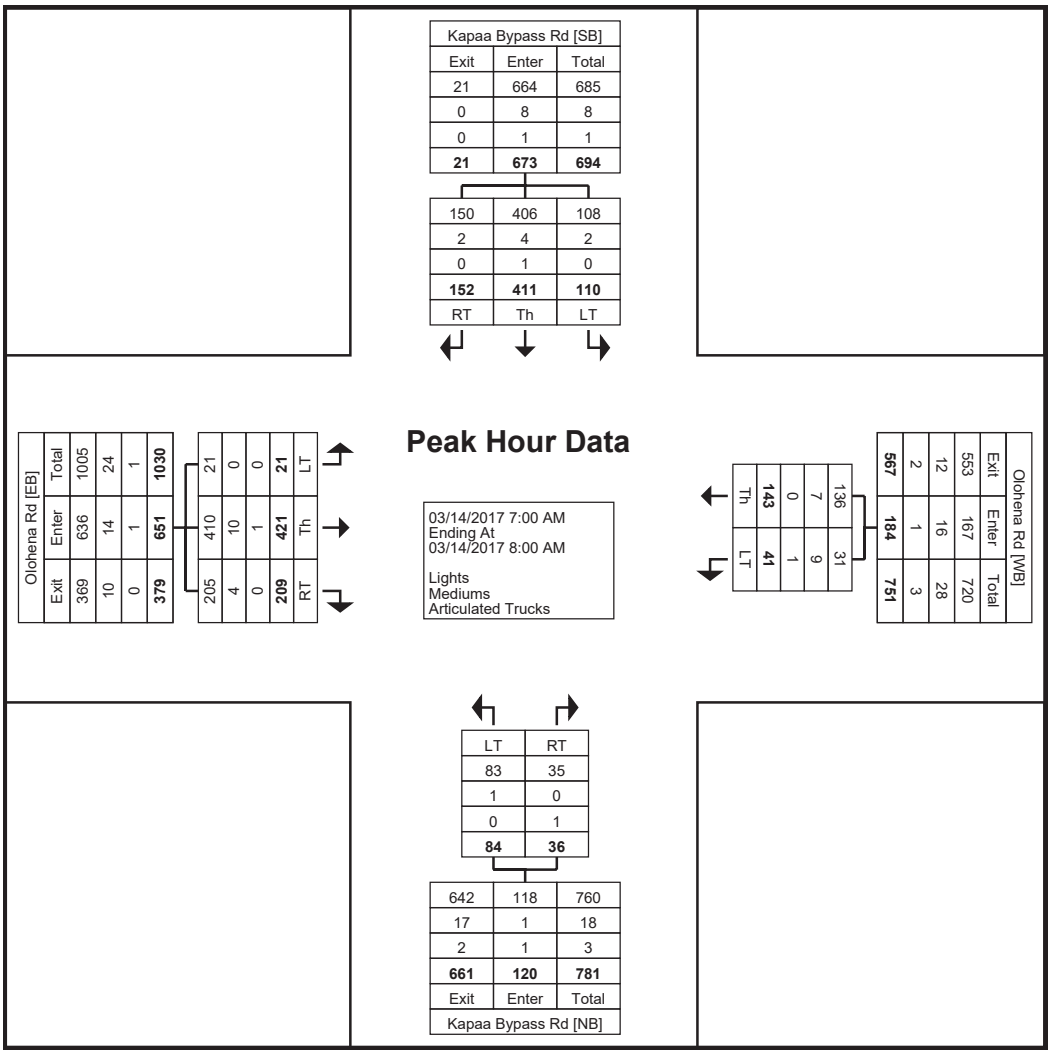
Turning Movement Peak Hour Data (7:00 AM)

Start Time	Olohena Rd Eastbound				Olohena Rd Westbound			Kapaa Bypass Rd Northbound			Kapaa Bypass Rd Southbound				
	Left-Turn	Thru	Right-Turn	App. Total	Left-Turn	Thru	App. Total	Left-Turn	Right-Turn	App. Total	Left-Turn	Thru	Right-Turn	App. Total	Int. Total
7:00 AM	3	86	76	165	11	28	39	10	2	12	14	96	24	134	350
7:15 AM	3	107	59	169	10	33	43	23	12	35	30	119	31	180	427
7:30 AM	7	116	40	163	10	47	57	25	9	34	30	95	56	181	435
7:45 AM	8	112	34	154	10	35	45	26	13	39	36	101	41	178	416
Total	21	421	209	651	41	143	184	84	36	120	110	411	152	673	1628
Approach %	3.2	64.7	32.1	-	22.3	77.7	-	70.0	30.0	-	16.3	61.1	22.6	-	-
Total %	1.3	25.9	12.8	40.0	2.5	8.8	11.3	5.2	2.2	7.4	6.8	25.2	9.3	41.3	-
PHF	0.656	0.907	0.688	0.963	0.932	0.761	0.807	0.808	0.692	0.769	0.764	0.863	0.679	0.930	0.936
Lights	21	410	205	636	31	136	167	83	35	118	108	406	150	664	1585
% Lights	100.0	97.4	98.1	97.7	75.6	95.1	90.8	98.8	97.2	98.3	98.2	98.8	98.7	98.7	97.4
Mediums	0	10	4	14	9	7	16	1	0	1	2	4	2	8	39
% Mediums	0.0	2.4	1.9	2.2	22.0	4.9	8.7	1.2	0.0	0.8	1.8	1.0	1.3	1.2	2.4
Articulated Trucks	0	1	0	1	1	0	1	0	1	1	0	1	0	1	4
% Articulated Trucks	0.0	0.2	0.0	0.2	2.4	0.0	0.5	0.0	2.8	0.8	0.0	0.2	0.0	0.1	0.2

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Olohena Rd
Kapaa Bypass 3-13-17 to 3-15-17
Site Code: Hokua Place
Start Date: 03/13/2017
Page No: 6



Turning Movement Peak Hour Data Plot (7:00 AM)

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Count Name: Olohena Rd
Kapaa Bypass 3-13-17 to 3-15-17
Site Code: Hokua Place
Start Date: 03/13/2017

Turning Movement Peak Hour Data (3:45 PM)

Start Time	Olohena Rd Eastbound				Olohena Rd Westbound			Kapaa Bypass Rd Northbound			Kapaa Bypass Rd Southbound				
	Left-Turn	Thru	Right-Turn	App. Total	Left-Turn	Thru	App. Total	Left-Turn	Right-Turn	App. Total	Left-Turn	Thru	Right-Turn	App. Total	Int. Total
3:45 PM	3	46	6	55	37	86	123	93	84	177	14	46	20	80	435
4:00 PM	2	38	17	57	36	104	140	66	74	140	22	70	44	136	473
4:15 PM	2	51	15	68	42	104	146	68	58	126	11	62	23	96	436
4:30 PM	4	38	12	54	43	85	128	77	76	153	22	65	21	108	443
Total	11	173	50	234	158	379	537	304	292	596	69	243	108	420	1787
Approach %	4.7	73.9	21.4	-	29.4	70.6	-	51.0	49.0	-	16.4	57.9	25.7	-	-
Total %	0.6	9.7	2.8	13.1	8.8	21.2	30.1	17.0	16.3	33.4	3.9	13.6	6.0	23.5	-
PHF	0.688	0.848	0.735	0.860	0.919	0.911	0.920	0.817	0.869	0.842	0.784	0.868	0.614	0.772	0.945
Lights	11	168	47	226	149	374	523	301	285	586	69	234	107	410	1745
% Lights	100.0	97.1	94.0	96.6	94.3	98.7	97.4	99.0	97.6	98.3	100.0	96.3	99.1	97.6	97.6
Mediums	0	5	3	8	9	5	14	2	7	9	0	8	1	9	40
% Mediums	0.0	2.9	6.0	3.4	5.7	1.3	2.6	0.7	2.4	1.5	0.0	3.3	0.9	2.1	2.2
Articulated Trucks	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
% Articulated Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.2	0.0	0.4	0.0	0.2	0.1

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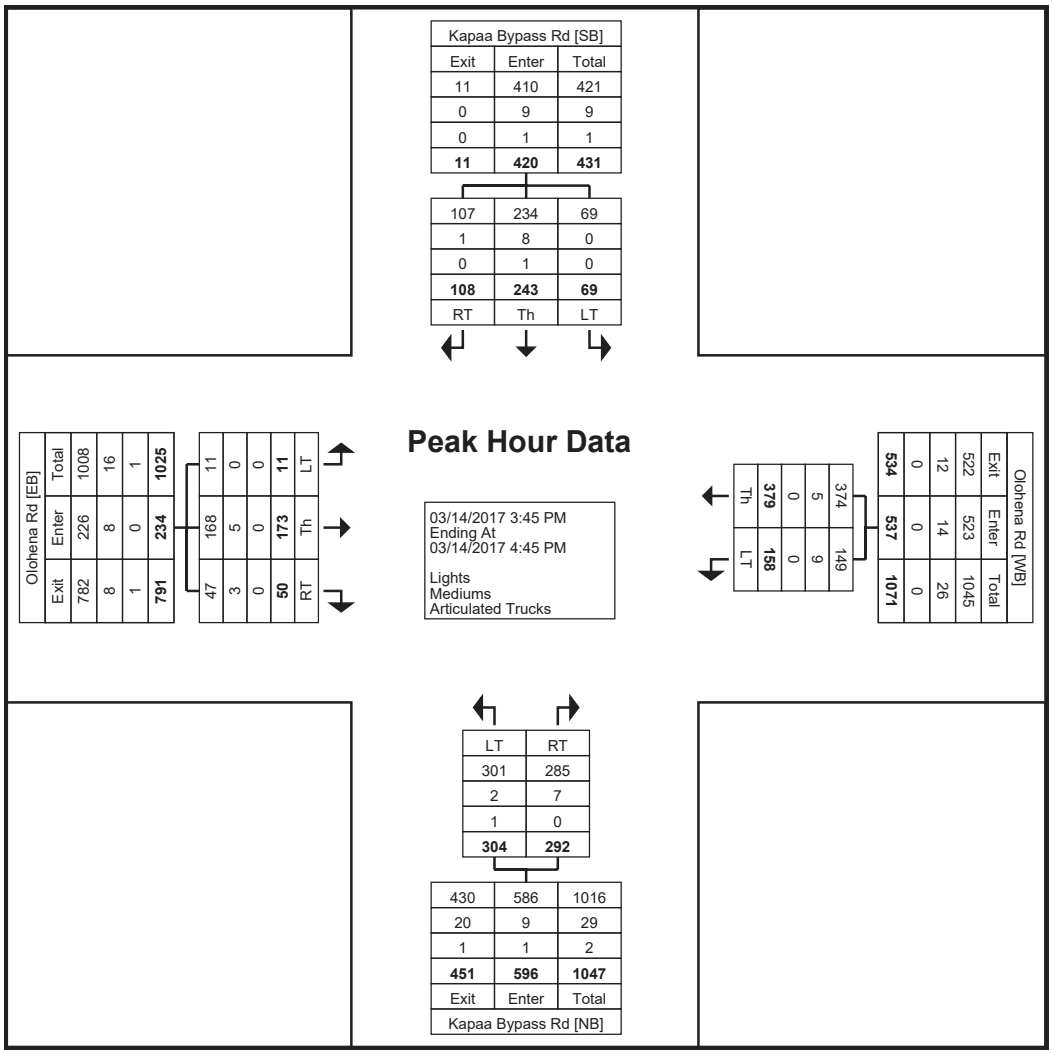

Turning Movement Peak Hour Data Plot (3:45 PM)

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Count Name: Olohena Rd
Kapaa Bypass 3-13-17 to 3-15-17
Site Code: Hokua Place
Start Date: 03/13/2017

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Olohena Rd Eastbound				Olohena Rd Westbound			Kapaa Bypass Rd Northbound			Kapaa Bypass Rd Southbound				
	Left-Turn	Thru	Right-Turn	App. Total	Left-Turn	Thru	App. Total	Left-Turn	Right-Turn	App. Total	Left-Turn	Thru	Right-Turn	App. Total	Int. Total
7:00 AM	2	90	59	151	10	26	36	10	2	12	13	98	16	127	326
7:15 AM	1	108	62	171	17	24	41	26	6	32	24	107	45	176	420
7:30 AM	4	116	34	154	16	47	63	27	8	35	32	111	50	193	445
7:45 AM	10	126	45	181	13	45	58	25	12	37	39	83	47	169	445
Total	17	440	200	657	56	142	198	88	28	116	108	399	158	665	1636
Approach %	2.6	67.0	30.4	-	28.3	71.7	-	75.9	24.1	-	16.2	60.0	23.8	-	-
Total %	1.0	26.9	12.2	40.2	3.4	8.7	12.1	5.4	1.7	7.1	6.6	24.4	9.7	40.6	-
PHF	0.425	0.873	0.806	0.907	0.824	0.755	0.786	0.815	0.583	0.784	0.692	0.899	0.790	0.861	0.919
Lights	16	430	195	641	45	135	180	87	28	115	105	395	153	653	1589
% Lights	94.1	97.7	97.5	97.6	80.4	95.1	90.9	98.9	100.0	99.1	97.2	99.0	96.8	98.2	97.1
Mediums	1	10	5	16	9	7	16	1	0	1	2	4	5	11	44
% Mediums	5.9	2.3	2.5	2.4	16.1	4.9	8.1	1.1	0.0	0.9	1.9	1.0	3.2	1.7	2.7
Articulated Trucks	0	0	0	0	2	0	2	0	0	0	1	0	0	1	3
% Articulated Trucks	0.0	0.0	0.0	0.0	3.6	0.0	1.0	0.0	0.0	0.0	0.9	0.0	0.0	0.2	0.2

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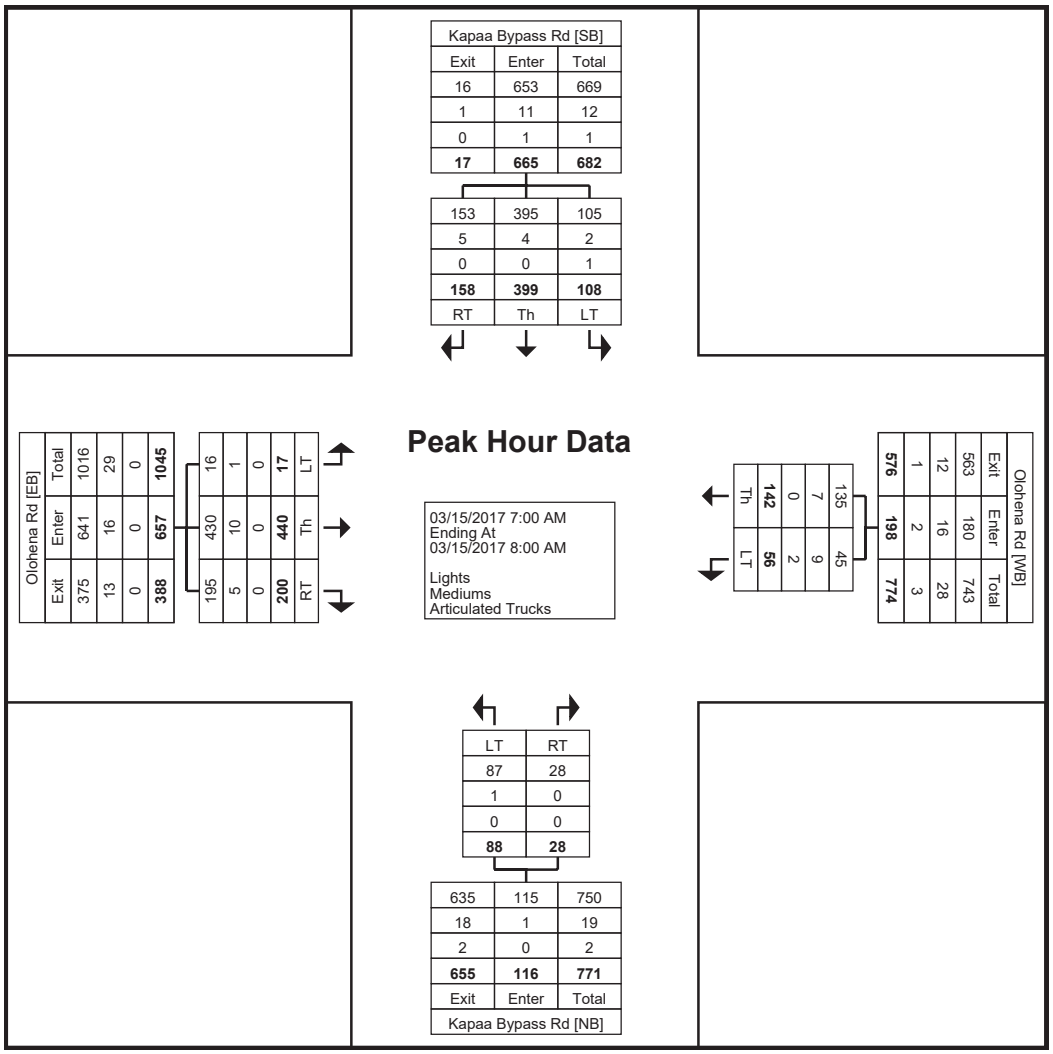

Turning Movement Peak Hour Data Plot (7:00 AM)

Study Name **Olohena Rd Kaapuni Rd Kaehulu Rd 3-13-17 to 3-15-17**
Start Date **03/13/2017**
Start Time **3:30 PM**
Site Code **Hokua Place**

Start	Olohena Rd Eastbound			Olohena Rd Westbound			Kaehulua Rd Southbound			Kaapuni Rd Southeast Bound			Intersection	
3/13/17	LT-Kaapuni	LT-Kaehulu	Thru	Thru	RT-Kaapuni	RT-Kaehulua	LT-Olohena	RT-Olohena	RT-Kaapuni	LT-Kaehulua	LT-Olohena	RT-Olohena	15-Min Totals	Hourly Totals
3:30 PM	4	5	33	38	70	3	0	0	0	0	28	5	186	811
3:45 PM	1	0	28	51	80	6	2	0	0	0	28	8	204	802
4:00 PM	4	0	37	54	84	3	2	0	0	0	21	5	210	797
4:15 PM	7	2	24	50	77	9	1	0	0	0	36	5	211	775
4:30 PM	6	0	18	49	64	5	0	0	1	0	25	9	177	744
4:45 PM	8	4	23	51	72	4	0	4	0	0	26	7	199	
5:00 PM	4	2	36	44	62	1	0	1	0	0	30	8	188	
5:15 PM	5	2	20	53	65	6	2	0	1	0	19	7	180	
3/14/17														
6:30 AM	4	1	36	10	6	0	2	2	0	0	52	5	118	702
6:45 AM	4	1	61	7	7	0	0	0	0	1	65	2	148	789
7:00 AM	3	1	79	14	15	2	2	0	0	1	78	3	198	**835**
7:15 AM	11	6	104	10	24	2	3	0	0	2	72	4	238	782
7:30 AM	3	9	86	17	28	4	1	1	0	5	45	6	205	674
7:45 AM	5	6	53	24	32	2	2	0	0	0	60	10	194	
8:00 AM	5	4	37	30	13	2	4	1	0	1	45	3	145	
8:15 AM	5	2	45	16	17	1	1	0	0	0	40	3	130	
3/14/17														
3:30 PM	6	2	30	33	35	2	0	3	1	2	42	4	160	800
3:45 PM	9	2	22	51	60	3	0	3	2	0	26	11	189	833
4:00 PM	8	5	29	69	64	6	1	2	0	1	29	15	229	**858**
4:15 PM	5	4	26	68	68	2	4	0	0	0	31	14	222	855
4:30 PM	10	0	19	60	63	3	0	2	1	2	24	9	193	834
4:45 PM	11	4	27	38	85	4	2	0	0	1	31	11	214	
5:00 PM	9	0	32	58	81	6	5	1	1	0	30	3	226	
5:15 PM	5	4	17	58	73	4	3	3	3	0	26	5	201	
3/15/17														
6:30 AM	2	1	33	9	2	0	2	3	0	0	49	2	103	658
6:45 AM	2	0	64	8	12	0	1	1	0	0	64	1	153	763
7:00 AM	2	2	83	11	9	2	2	0	0	0	73	9	193	824
7:15 AM	8	7	97	9	20	1	2	0	0	0	61	4	209	761
7:30 AM	10	7	82	21	23	4	1	0	0	0	54	6	208	699
7:45 AM	11	3	65	22	33	5	3	0	0	0	60	12	214	
8:00 AM	3	1	44	20	14	5	0	1	0	0	40	2	130	
8:15 AM	7	0	48	19	13	1	1	1	0	0	51	6	147	

AM Peak Hour Traffic			3/14/17										
7:00 AM	22	22	322	65	99	10	8	1	0	8	255	23	835
PHF	0.50	0.92	0.77	1.63	1.03	1.25	0.67	N/A	N/A	1.00	0.89	1.44	0.88
PHV	44	24	416	40	96	8	12	1	0	8	288	16	952
T Factor	9%	0%	1%	0%	2%	0%	0%	0%	N/A	0%	2%	0%	

PM Peak Hour Traffic			3/14/17										
4:00 PM	34	13	101	235	280	15	7	4	1	4	115	49	858
PHF	1.06	0.65	0.87	0.85	1.09	0.63	1.75	0.50	N/A	1.00	0.99	0.82	0.94
PHV	32	20	116	276	256	24	4	8	1	4	116	60	916
T Factor	0%	0%	2%	0%	1%	0%	0%	0%	0%	0%	2%	0%	

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Count Name: Kuhio Hwy Kapaa Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Data

Start Time	Kapaa Bypass Rd Eastbound				Kuhio Hwy Northbound				Kuhio Hwy Southbound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
3:00 PM	1	105	0	106	99	191	0	290	0	106	5	0	111	507
3:15 PM	3	100	0	103	122	210	0	332	0	88	7	0	95	530
3:30 PM	8	93	0	101	120	207	0	327	0	73	8	0	81	509
3:45 PM	8	104	0	112	148	201	0	349	0	88	21	0	109	570
Hourly Total	20	402	0	422	489	809	0	1298	0	355	41	0	396	2116
4:00 PM	1	108	0	109	168	161	0	329	0	91	16	0	107	545
4:15 PM	9	94	0	103	154	172	0	326	0	97	14	0	111	540
4:30 PM	6	90	0	96	166	187	0	353	0	112	19	0	131	580
4:45 PM	2	95	0	97	146	176	0	322	0	112	15	0	127	546
Hourly Total	18	387	0	405	634	696	0	1330	0	412	64	0	476	2211
5:00 PM	5	88	0	93	149	232	0	381	0	138	27	0	165	639
5:15 PM	2	91	0	93	149	192	0	341	0	152	25	0	177	611
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	7	179	0	186	298	424	0	722	0	290	52	0	342	1250
6:30 AM	0	78	0	78	14	124	0	138	0	203	0	0	203	419
6:45 AM	2	116	0	118	8	124	0	132	0	190	1	0	191	441
Hourly Total	2	194	0	196	22	248	0	270	0	393	1	0	394	860
7:00 AM	1	161	0	162	20	129	0	149	0	233	0	0	233	544
7:15 AM	1	184	0	185	25	155	0	180	0	200	1	0	201	566
7:30 AM	2	152	0	154	24	152	0	176	0	167	0	0	167	497
7:45 AM	1	155	1	156	33	180	0	213	0	135	0	0	135	504
Hourly Total	5	652	1	657	102	616	0	718	0	735	1	0	736	2111
8:00 AM	0	150	0	150	24	187	0	211	0	132	1	0	133	494
8:15 AM	3	131	0	134	21	177	0	198	0	165	0	0	165	497
8:30 AM	3	130	0	133	33	191	0	224	0	161	1	0	162	519
8:45 AM	1	108	0	109	25	209	0	234	0	189	0	0	189	532
Hourly Total	7	519	0	526	103	764	0	867	0	647	2	0	649	2042
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	5	103	0	108	97	217	0	314	0	96	6	0	102	524
3:15 PM	8	117	0	125	131	156	0	287	0	84	9	0	93	505
3:30 PM	6	83	0	89	138	227	0	365	1	76	8	0	85	539
3:45 PM	2	87	1	89	119	182	0	301	0	76	7	0	83	473
Hourly Total	21	390	1	411	485	782	0	1267	1	332	30	0	363	2041
4:00 PM	2	122	0	124	126	152	0	278	0	96	7	0	103	505
4:15 PM	6	109	1	115	136	158	0	294	0	95	6	0	101	510
4:30 PM	6	96	1	102	143	174	0	317	0	78	2	0	80	499
4:45 PM	5	93	0	98	138	181	0	319	0	83	6	0	89	506
Hourly Total	19	420	2	439	543	665	0	1208	0	352	21	0	373	2020
5:00 PM	2	98	0	100	146	204	0	350	0	85	3	0	88	538
5:15 PM	4	113	0	117	121	159	0	280	0	92	2	0	94	491
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	6	211	0	217	267	363	0	630	0	177	5	0	182	1029
6:30 AM	0	82	0	82	11	115	0	126	0	185	0	0	185	393
6:45 AM	0	89	0	89	10	126	0	136	0	164	3	0	167	392
Hourly Total	0	171	0	171	21	241	0	262	0	349	3	0	352	785
7:00 AM	1	131	0	132	17	133	0	150	0	219	1	0	220	502
7:15 AM	3	168	0	171	32	158	0	190	0	182	3	0	185	546
7:30 AM	1	125	0	126	40	146	0	186	0	166	2	0	168	480
7:45 AM	1	123	0	124	30	165	0	195	0	138	0	0	138	457
Hourly Total	6	547	0	553	119	602	0	721	0	705	6	0	711	1985
8:00 AM	4	116	0	120	20	169	0	189	0	150	0	0	150	459
8:15 AM	1	125	0	126	28	158	0	186	0	133	2	0	135	447
Grand Total	116	4313	4	4429	3131	6537	0	9668	1	5030	228	0	5259	19356
Approach %	2.6	97.4	-	-	32.4	67.6	-	-	0.0	95.6	4.3	-	-	-
Total %	0.6	22.3	-	22.9	16.2	33.8	-	49.9	0.0	26.0	1.2	-	27.2	-
Lights	114	4214	-	4328	3083	6353	-	9436	1	4901	225	-	5127	18891
% Lights	98.3	97.7	-	97.7	98.5	97.2	-	97.6	100.0	97.4	98.7	-	97.5	97.6
Mediums	2	91	-	93	47	171	-	218	0	115	3	-	118	429
% Mediums	1.7	2.1	-	2.1	1.5	2.6	-	2.3	0.0	2.3	1.3	-	2.2	2.2
Articulated Trucks	0	8	-	8	1	13	-	14	0	14	0	-	14	36
% Articulated Trucks	0.0	0.2	-	0.2	0.0	0.2	-	0.1	0.0	0.3	0.0	-	0.3	0.2
All Pedestrians	-	-	4	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-

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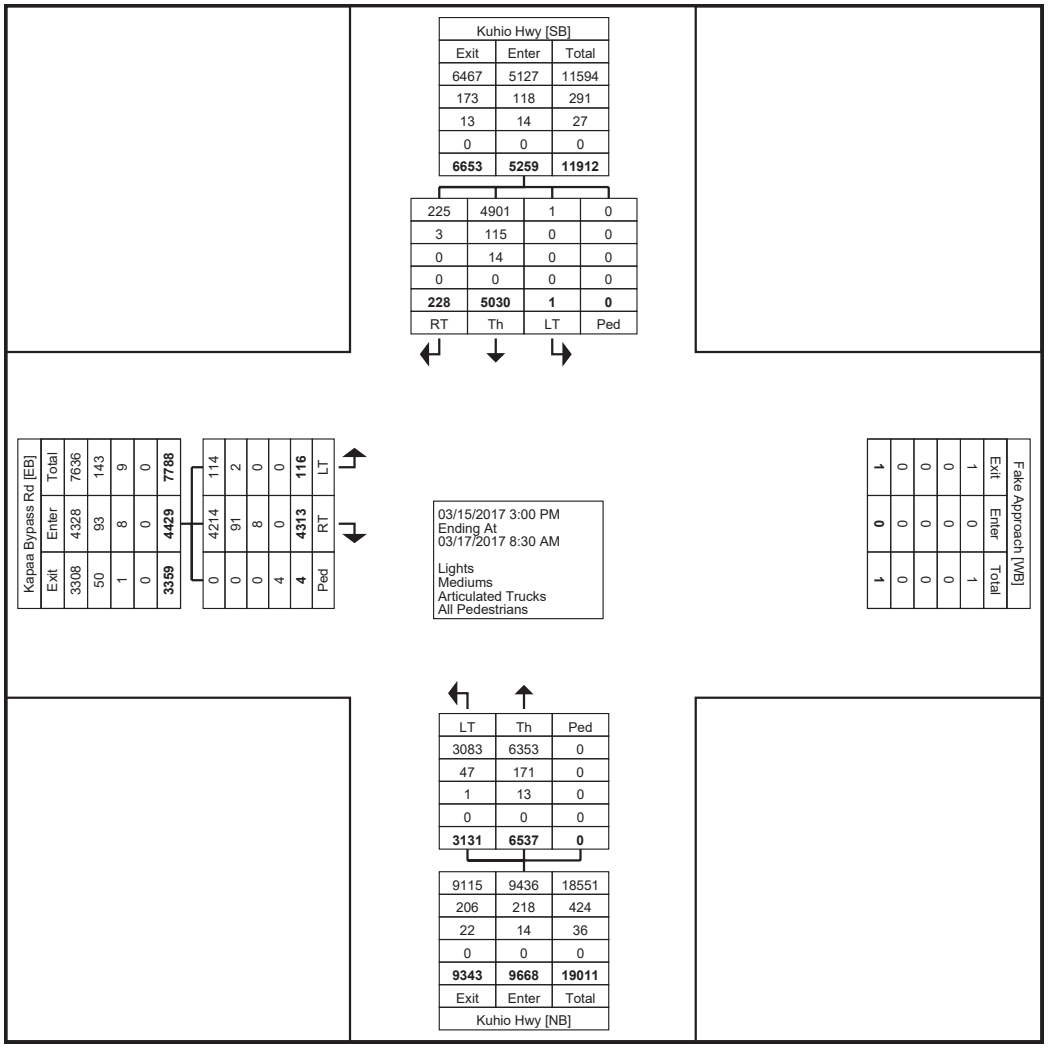
Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 2



Turning Movement Data Plot

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Count Name: Kuhio Hwy Kapaa Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Kapaa Bypass Rd Eastbound				Kuhio Hwy Northbound				Kuhio Hwy Southbound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
4:30 PM	6	90	0	96	166	187	0	353	0	112	19	0	131	580
4:45 PM	2	95	0	97	146	176	0	322	0	112	15	0	127	546
5:00 PM	5	88	0	93	149	232	0	381	0	138	27	0	165	639
5:15 PM	2	91	0	93	149	192	0	341	0	152	25	0	177	611
Total	15	364	0	379	610	787	0	1397	0	514	86	0	600	2376
Approach %	4.0	96.0	-	-	43.7	56.3	-	-	0.0	85.7	14.3	-	-	-
Total %	0.6	15.3	-	16.0	25.7	33.1	-	58.8	0.0	21.6	3.6	-	25.3	-
PHF	0.625	0.958	-	0.977	0.919	0.848	-	0.917	0.000	0.845	0.796	-	0.847	0.930
Lights	15	358	-	373	607	778	-	1385	0	506	85	-	591	2349
% Lights	100.0	98.4	-	98.4	99.5	98.9	-	99.1	-	98.4	98.8	-	98.5	98.9
Mediums	0	5	-	5	3	9	-	12	0	7	1	-	8	25
% Mediums	0.0	1.4	-	1.3	0.5	1.1	-	0.9	-	1.4	1.2	-	1.3	1.1
Articulated Trucks	0	1	-	1	0	0	-	0	0	1	0	-	1	2
% Articulated Trucks	0.0	0.3	-	0.3	0.0	0.0	-	0.0	-	0.2	0.0	-	0.2	0.1
All Pedestrians	-	-	0	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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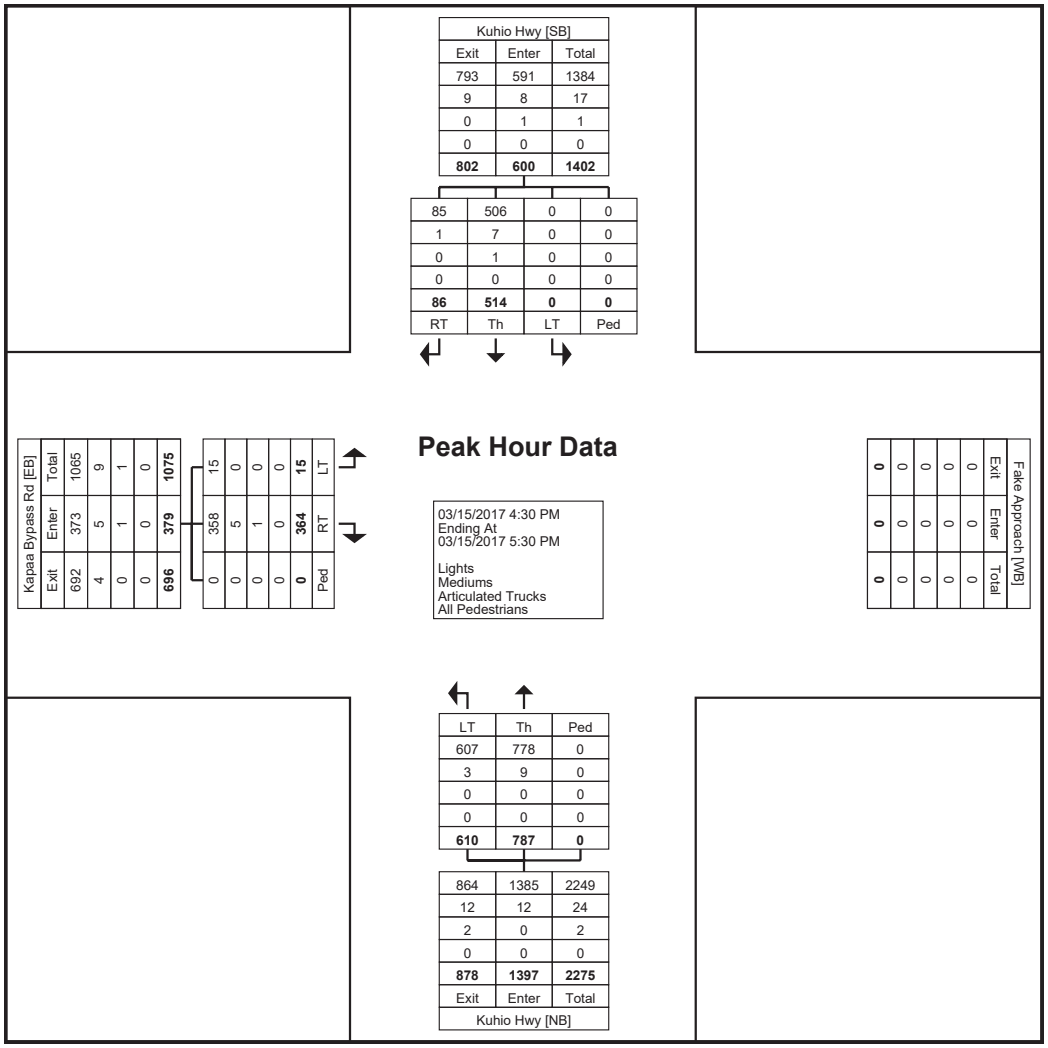
Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 4



Turning Movement Peak Hour Data Plot (4:30 PM)

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808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Kapaa Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

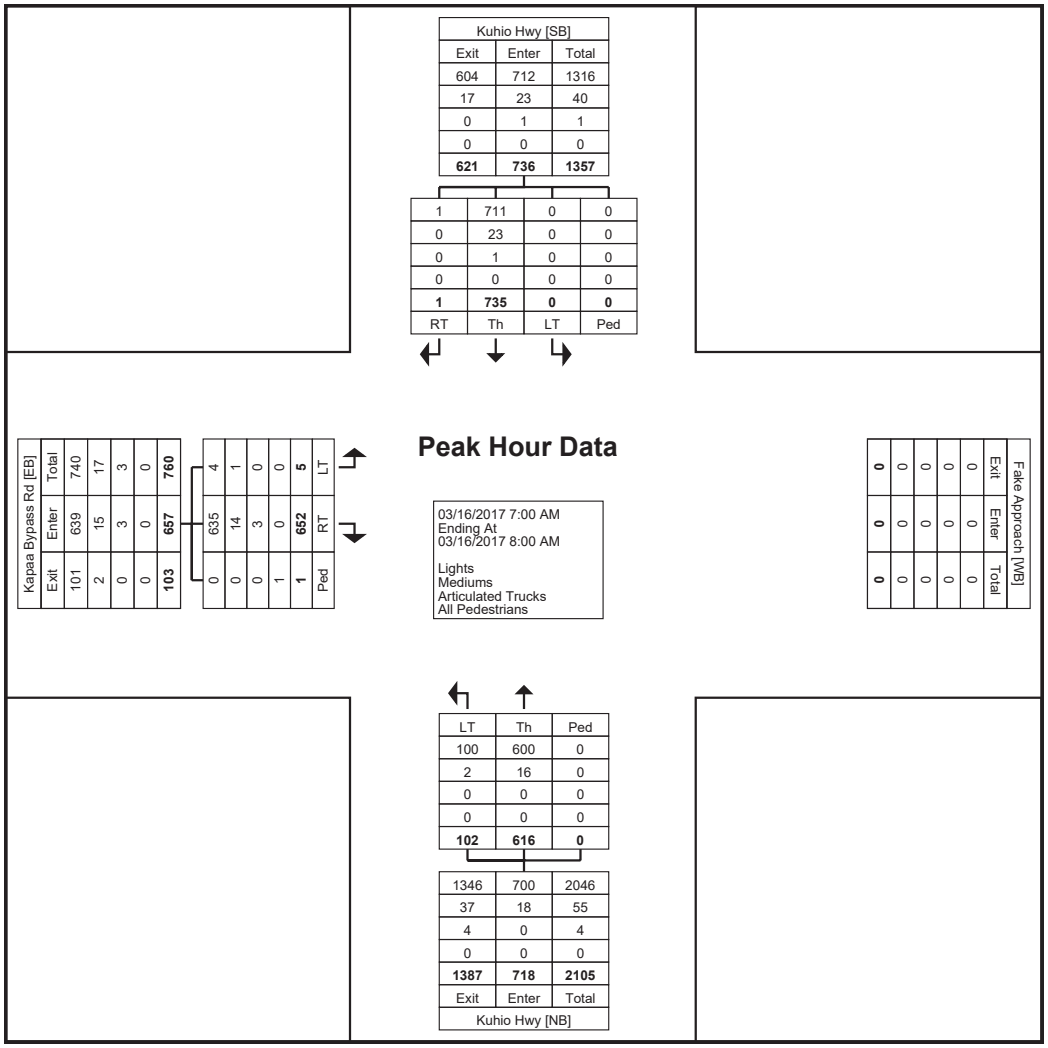
Turning Movement Peak Hour Data (7:00 AM)

Start Time	Kapaa Bypass Rd Eastbound				Kuhio Hwy Northbound				Kuhio Hwy Southbound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
7:00 AM	1	161	0	162	20	129	0	149	0	233	0	0	233	544
7:15 AM	1	184	0	185	25	155	0	180	0	200	1	0	201	566
7:30 AM	2	152	0	154	24	152	0	176	0	167	0	0	167	497
7:45 AM	1	155	1	156	33	180	0	213	0	135	0	0	135	504
Total	5	652	1	657	102	616	0	718	0	735	1	0	736	2111
Approach %	0.8	99.2	-	-	14.2	85.8	-	-	0.0	99.9	0.1	-	-	-
Total %	0.2	30.9	-	31.1	4.8	29.2	-	34.0	0.0	34.8	0.0	-	34.9	-
PHF	0.625	0.886	-	0.888	0.773	0.856	-	0.843	0.000	0.789	0.250	-	0.790	0.932
Lights	4	635	-	639	100	600	-	700	0	711	1	-	712	2051
% Lights	80.0	97.4	-	97.3	98.0	97.4	-	97.5	-	96.7	100.0	-	96.7	97.2
Mediums	1	14	-	15	2	16	-	18	0	23	0	-	23	56
% Mediums	20.0	2.1	-	2.3	2.0	2.6	-	2.5	-	3.1	0.0	-	3.1	2.7
Articulated Trucks	0	3	-	3	0	0	-	0	0	1	0	-	1	4
% Articulated Trucks	0.0	0.5	-	0.5	0.0	0.0	-	0.0	-	0.1	0.0	-	0.1	0.2
All Pedestrians	-	-	1	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 6



Turning Movement Peak Hour Data Plot (7:00 AM)

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808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Kapaa Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Kapaa Bypass Rd Eastbound				Kuhio Hwy Northbound				Kuhio Hwy Southbound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
4:15 PM	6	109	1	115	136	158	0	294	0	95	6	0	101	510
4:30 PM	6	96	1	102	143	174	0	317	0	78	2	0	80	499
4:45 PM	5	93	0	98	138	181	0	319	0	83	6	0	89	506
5:00 PM	2	98	0	100	146	204	0	350	0	85	3	0	88	538
Total	19	396	2	415	563	717	0	1280	0	341	17	0	358	2053
Approach %	4.6	95.4	-	-	44.0	56.0	-	-	0.0	95.3	4.7	-	-	-
Total %	0.9	19.3	-	20.2	27.4	34.9	-	62.3	0.0	16.6	0.8	-	17.4	-
PHF	0.792	0.908	-	0.902	0.964	0.879	-	0.914	0.000	0.897	0.708	-	0.886	0.954
Lights	19	385	-	404	558	710	-	1268	0	337	17	-	354	2026
% Lights	100.0	97.2	-	97.3	99.1	99.0	-	99.1	-	98.8	100.0	-	98.9	98.7
Mediums	0	11	-	11	5	7	-	12	0	4	0	-	4	27
% Mediums	0.0	2.8	-	2.7	0.9	1.0	-	0.9	-	1.2	0.0	-	1.1	1.3
Articulated Trucks	0	0	-	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
All Pedestrians	-	-	2	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-

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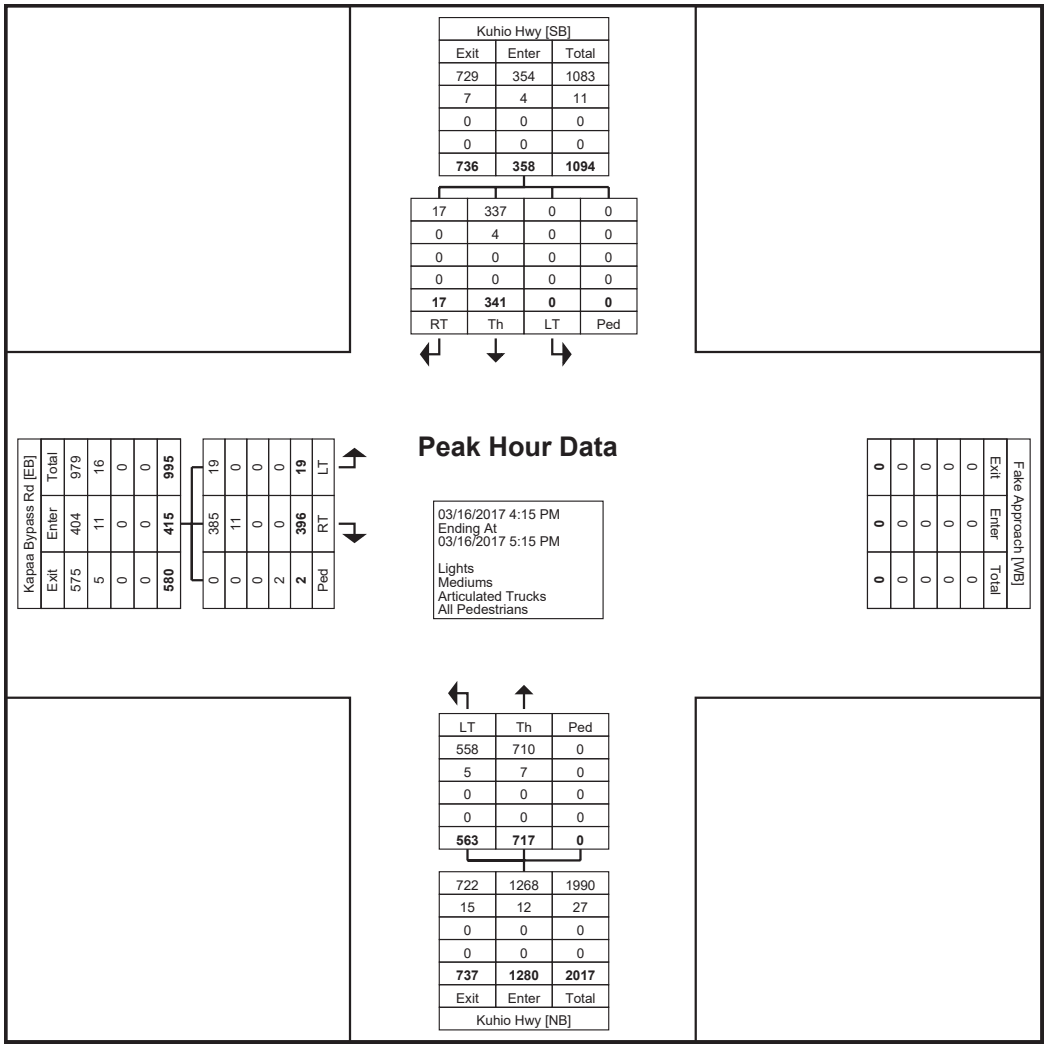
Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017



Turning Movement Peak Hour Data Plot (4:15 PM)

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Count Name: Kuhio Hwy Kapaa Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Kapaa Bypass Rd Eastbound				Kuhio Hwy Northbound				Kuhio Hwy Southbound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
7:00 AM	1	131	0	132	17	133	0	150	0	219	1	0	220	502
7:15 AM	3	168	0	171	32	158	0	190	0	182	3	0	185	546
7:30 AM	1	125	0	126	40	146	0	186	0	166	2	0	168	480
7:45 AM	1	123	0	124	30	165	0	195	0	138	0	0	138	457
Total	6	547	0	553	119	602	0	721	0	705	6	0	711	1985
Approach %	1.1	98.9	-	-	16.5	83.5	-	-	0.0	99.2	0.8	-	-	-
Total %	0.3	27.6	-	27.9	6.0	30.3	-	36.3	0.0	35.5	0.3	-	35.8	-
PHF	0.500	0.814	-	0.808	0.744	0.912	-	0.924	0.000	0.805	0.500	-	0.808	0.909
Lights	5	535	-	540	113	569	-	682	0	688	6	-	694	1916
% Lights	83.3	97.8	-	97.6	95.0	94.5	-	94.6	-	97.6	100.0	-	97.6	96.5
Mediums	1	10	-	11	5	29	-	34	0	15	0	-	15	60
% Mediums	16.7	1.8	-	2.0	4.2	4.8	-	4.7	-	2.1	0.0	-	2.1	3.0
Articulated Trucks	0	2	-	2	1	4	-	5	0	2	0	-	2	9
% Articulated Trucks	0.0	0.4	-	0.4	0.8	0.7	-	0.7	-	0.3	0.0	-	0.3	0.5
All Pedestrians	-	-	0	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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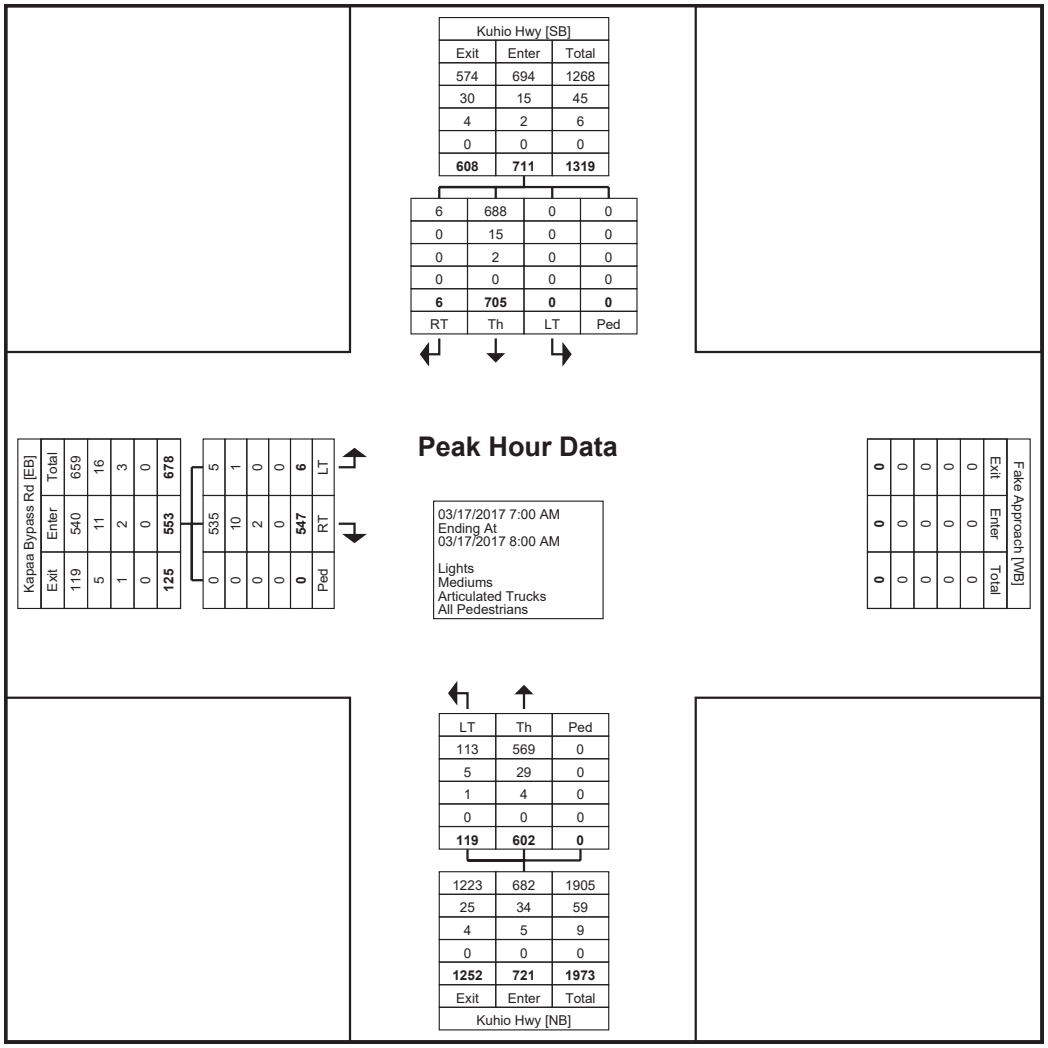
Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 10



Turning Movement Peak Hour Data Plot (7:00 AM)

TRAFFIC IMPACT ANALYSIS REPORT UPDATE

FOR THE PROPOSED

HOKUA PLACE

KAPA`A, KAUAI, HAWAII
TAX MAP KEY: (4) 4-3-03: 01

APPENDIX B

CAPACITY ANALYSIS WORKSHEETS

EXISTING TRAFFIC CONDITIONS

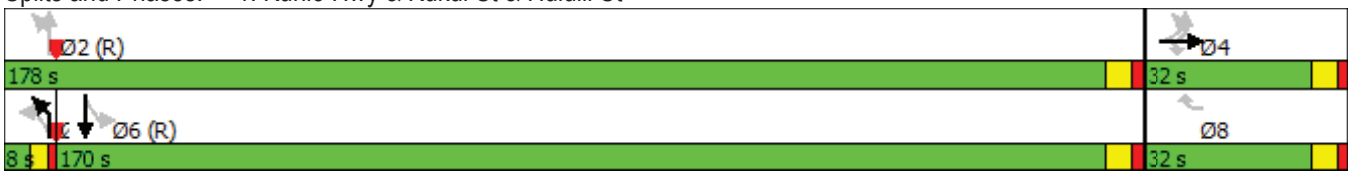
Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	24	8	36	1	8	4	664	12	3	728	36
Future Volume (vph)	8	24	8	36	1	8	4	664	12	3	728	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0			60		0	0		0
Storage Lanes		0		1			1		0	0		0
Taper Length (ft)		100					100			100		
Satd. Flow (prot)	0	0	1621	1501	1589	0	1631	1760	0	0	1799	0
Flt Permitted			0.962				0.367				0.998	
Satd. Flow (perm)	0	0	1582	1420	1526	0	630	1760	0	0	1795	0
Right Turn on Red				Yes	Yes				No			
Satd. Flow (RTOR)				36	374							
Link Speed (mph)			30					30			30	
Link Distance (ft)			417					1113			697	
Travel Time (s)			9.5					25.3			15.8	
Confl. Peds. (#/hr)	2	4		7	4	4	4		7	4		4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	15%	0%	4%	0%	6%	9%	4%	0%	0%	1%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	40	36	1	0	12	676	0	0	771	0
Turn Type	Perm	Perm	NA	Perm	Perm	custom	custom	NA		Perm	NA	
Protected Phases			4				5				6	
Permitted Phases	4	4		4	8	5	2	2		6		
Detector Phase	4	4	4	4	8	5	5	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	3.0	3.0	7.0		7.0	7.0	
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	7.0	7.0	26.0		34.0	34.0	
Total Split (s)	32.0	32.0	32.0	32.0	32.0	8.0	8.0	178.0		170.0	170.0	
Total Split (%)	15.2%	15.2%	15.2%	15.2%	15.2%	3.8%	3.8%	84.8%		81.0%	81.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	1.0	1.0	2.0		2.0	2.0	
Lost Time Adjust (s)			0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)			6.0	6.0	6.0		4.0	6.0			6.0	
Lead/Lag						Lead	Lead			Lag	Lag	
Lead-Lag Optimize?						Yes	Yes					
Recall Mode	None	None	None	None	None	None	None	C-Max		C-Max	C-Max	
Act Effct Green (s)			10.9	10.9	10.9		191.7	190.9			187.0	
Actuated g/C Ratio			0.05	0.05	0.05		0.91	0.91			0.89	
v/c Ratio			0.49	0.34	0.00		0.02	0.42			0.48	
Control Delay			115.8	31.5	0.0		1.3	2.8			4.5	
Queue Delay			0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay			115.8	31.5	0.0		1.3	2.8			4.5	
LOS			F	C	A		A	A			A	
Approach Delay			75.8					2.8			4.5	

Lane Group	SBR2
Lane Configurations	
Traffic Volume (vph)	4
Future Volume (vph)	4
Ideal Flow (vphpl)	1900
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	4
Peak Hour Factor	1.00
Heavy Vehicles (%)	0%
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	

Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS			E					A			A	
Queue Length 50th (ft)			55	0	0		1	127			157	
Queue Length 95th (ft)			103	44	0		4	201			360	
Internal Link Dist (ft)			337					1033			617	
Turn Bay Length (ft)							60					
Base Capacity (vph)			195	207	516		602	1600			1598	
Starvation Cap Reductn			0	0	0		0	0			0	
Spillback Cap Reductn			0	0	0		0	0			0	
Storage Cap Reductn			0	0	0		0	0			0	
Reduced v/c Ratio			0.21	0.17	0.00		0.02	0.42			0.48	

Intersection Summary	
Area Type:	Other
Cycle Length: 210	
Actuated Cycle Length: 210	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.49	
Intersection Signal Delay: 7.3	Intersection LOS: A
Intersection Capacity Utilization 66.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Kuhio Hwy & Kukui St & Huluili St



Lane Group	SBR2
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	100	264	16	40	100	8
Future Vol, veh/h	100	264	16	40	100	8
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	6	17	0	6	9
Mvmt Flow	100	264	16	40	100	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	364	0	305	232
Stage 1	-	-	-	-	232	-
Stage 2	-	-	-	-	73	-
Critical Hdwy	-	-	4.27	-	6.46	6.29
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.353	-	3.554	3.381
Pot Cap-1 Maneuver	-	-	1116	-	679	790
Stage 1	-	-	-	-	797	-
Stage 2	-	-	-	-	940	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1116	-	668	790
Mov Cap-2 Maneuver	-	-	-	-	668	-
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	939	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	676	-	-	1116	-
HCM Lane V/C Ratio	0.16	-	-	0.014	-
HCM Control Delay (s)	11.3	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	368	360	116	12	7	84
Future Vol, veh/h	368	360	116	12	7	84
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	1	5	20	0	0	8
Mvmt Flow	368	360	116	12	7	84

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	135	0	-	0	1225	129
Stage 1	-	-	-	-	129	-
Stage 2	-	-	-	-	1096	-
Critical Hdwy	4.11	-	-	-	6.4	6.28
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.209	-	-	-	3.5	3.372
Pot Cap-1 Maneuver	1456	-	-	-	199	905
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	323	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1447	-	-	-	134	899
Mov Cap-2 Maneuver	-	-	-	-	134	-
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	321	-

Approach	EB	WB	SW
HCM Control Delay, s	4.2	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	1447	-	-	-	625
HCM Lane V/C Ratio	0.254	-	-	-	0.146
HCM Control Delay (s)	8.3	0	-	-	11.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	1	-	-	-	0.5

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	716	188	12	12	24
Future Vol, veh/h	8	716	188	12	12	24
Conflicting Peds, #/hr	6	0	0	6	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	4	14	24	19
Mvmt Flow	8	716	188	12	12	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	206	0	-	0	932	200
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	732	-
Critical Hdwy	4.1	-	-	-	6.64	6.39
Critical Hdwy Stg 1	-	-	-	-	5.64	-
Critical Hdwy Stg 2	-	-	-	-	5.64	-
Follow-up Hdwy	2.2	-	-	-	3.716	3.471
Pot Cap-1 Maneuver	1377	-	-	-	270	800
Stage 1	-	-	-	-	784	-
Stage 2	-	-	-	-	438	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1370	-	-	-	265	796
Mov Cap-2 Maneuver	-	-	-	-	265	-
Stage 1	-	-	-	-	772	-
Stage 2	-	-	-	-	436	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1370	-	-	-	477
HCM Lane V/C Ratio	0.006	-	-	-	0.075
HCM Control Delay (s)	7.6	0	-	-	13.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	344	2	16	672	764	68
Future Volume (Veh/h)	344	2	16	672	764	68
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	344	2	16	672	764	68
Pedestrians	8					
Lane Width (ft)	11.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				697		
pX, platoon unblocked	0.93					
vC, conflicting volume	1476	772	772			
vC1, stage 1 conf vol	772					
vC2, stage 2 conf vol	704					
vCu, unblocked vol	1474	772	772			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	16	99	98			
cM capacity (veh/h)	409	400	846			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	346	16	672	764	68
Volume Left	344	16	0	0	0
Volume Right	2	0	0	0	68
cSH	409	846	1700	1700	1700
Volume to Capacity	0.85	0.02	0.40	0.45	0.04
Queue Length 95th (ft)	203	1	0	0	0
Control Delay (s)	46.6	9.3	0.0	0.0	0.0
Lane LOS	E	A			
Approach Delay (s)	46.6	0.2		0.0	
Approach LOS	E				

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	0	1	0	4	88	748	20	7	713	4
Future Vol, veh/h	0	1	0	1	0	4	88	748	20	7	713	4
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	16	16	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	11	5	4	0	2	2	2
Mvmt Flow	0	1	0	1	0	4	88	748	20	7	713	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1668	1689	715	1680	1681	777	717	0	0	784	0	0
Stage 1	729	729	-	950	950	-	-	-	-	-	-	-
Stage 2	939	960	-	730	731	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.31	4.15	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.399	2.245	-	-	2.218	-	-
Pot Cap-1 Maneuver	77	94	434	76	96	383	870	-	-	834	-	-
Stage 1	417	431	-	315	341	-	-	-	-	-	-	-
Stage 2	320	338	-	417	430	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	70	83	434	68	84	377	870	-	-	822	-	-
Mov Cap-2 Maneuver	70	83	-	68	84	-	-	-	-	-	-	-
Stage 1	375	427	-	279	302	-	-	-	-	-	-	-
Stage 2	284	299	-	412	426	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	48.9	23.7	1	0.1
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	870	-	-	83	198	822	-	-
HCM Lane V/C Ratio	0.101	-	-	0.012	0.025	0.009	-	-
HCM Control Delay (s)	9.6	-	-	48.9	23.7	9.4	-	-
HCM Lane LOS	A	-	-	E	C	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	1	12	0	2	92	0	0	0	0	204	8
Future Vol, veh/h	4	1	12	0	2	92	0	0	0	0	204	8
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	0	0	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	17	0	0	5	0	0	0	0	4	17
Mvmt Flow	4	1	12	0	2	92	0	0	0	0	204	8

Major/Minor	Minor2			Minor1			Major2		
Conflicting Flow All	266	215	215	215	219	4	0	0	0
Stage 1	215	215	-	0	0	-	-	-	-
Stage 2	51	0	-	215	219	-	-	-	-
Critical Hdwy	7.1	6.5	6.37	7.1	6.5	6.25	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.453	3.5	4	3.345	2.2	-	-
Pot Cap-1 Maneuver	691	686	789	746	683	1071	-	-	-
Stage 1	792	729	-	-	-	-	-	-	-
Stage 2	-	-	-	792	726	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	624	682	784	734	679	1067	-	-	-
Mov Cap-2 Maneuver	624	682	-	734	679	-	-	-	-
Stage 1	792	725	-	-	-	-	-	-	-
Stage 2	-	-	-	779	722	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	10	8.8	0
HCM LOS	B	A	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	733	1054	-	-	-
HCM Lane V/C Ratio	0.023	0.089	-	-	-
HCM Control Delay (s)	10	8.8	0	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	0.3	-	-	-

Intersection	
Intersection Delay, s/veh	20.0
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	652	228	136	724
Demand Flow Rate, veh/h	669	247	138	732
Vehicles Circulating, veh/h	556	129	628	348
Vehicles Exiting, veh/h	524	637	597	28
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	30.0	5.1	7.1	18.2
Approach LOS	D	A	A	C

Lane	Left	Left	Left	Left
Designated Moves	LTR	LT	LTR	LTR
Assumed Moves	LTR	LT	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	669	247	138	732
Cap Entry Lane, veh/h	783	1210	727	968
Entry HV Adj Factor	0.975	0.922	0.986	0.989
Flow Entry, veh/h	652	228	136	724
Cap Entry, veh/h	763	1115	717	957
V/C Ratio	0.855	0.204	0.190	0.757
Control Delay, s/veh	30.0	5.1	7.1	18.2
LOS	D	A	A	C
95th %tile Queue, veh	10	1	1	7

Intersection	
Int Delay, s/veh	12.3

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	68	416	40	104	300	17
Future Vol, veh/h	68	416	40	104	300	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	9	1	0	2	2	0
Mvmt Flow	68	416	40	104	300	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	144	0	-	0	644	92
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	552	-
Critical Hdwy	4.19	-	-	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.281	-	-	-	3.518	3.3
Pot Cap-1 Maneuver	1397	-	-	-	437	971
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	577	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1397	-	-	-	409	971
Mov Cap-2 Maneuver	-	-	-	-	409	-
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	577	-

Approach	EB	WB	SE
HCM Control Delay, s	1.1	0	35.1
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1
Capacity (veh/h)	1397	-	-	-	422
HCM Lane V/C Ratio	0.049	-	-	-	0.751
HCM Control Delay (s)	7.7	0	-	-	35.1
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	6.2

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	304	140	32	13	0
Future Vol, veh/h	8	304	140	32	13	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	11	0	0	0
Mvmt Flow	8	304	140	32	13	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	172	0	-	0	476	156
Stage 1	-	-	-	-	156	-
Stage 2	-	-	-	-	320	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1417	-	-	-	551	895
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	741	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1417	-	-	-	547	895
Mov Cap-2 Maneuver	-	-	-	-	547	-
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	741	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1417	-	-	-	547
HCM Lane V/C Ratio	0.006	-	-	-	0.024
HCM Control Delay (s)	7.6	0	-	-	11.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	736	100	620	800	4
Future Vol, veh/h	4	736	100	620	800	4
Conflicting Peds, #/hr	1	0	0	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Yield
Storage Length	140	0	170	-	-	150
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	20	3	2	3	3	0
Mvmt Flow	4	736	100	620	800	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1312	-	801	0	-	0
Stage 1	801	-	-	-	-	-
Stage 2	511	-	-	-	-	-
Critical Hdwy	6.9	-	4.13	-	-	-
Critical Hdwy Stg 1	5.7	-	-	-	-	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-
Follow-up Hdwy	3.69	-	2.219	-	-	-
Pot Cap-1 Maneuver	144	0	820	-	-	-
Stage 1	402	0	-	-	-	-
Stage 2	527	0	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	126	-	819	-	-	-
Mov Cap-2 Maneuver	233	-	-	-	-	-
Stage 1	353	-	-	-	-	-
Stage 2	526	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.7	1.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	819	-	233	-	-	-
HCM Lane V/C Ratio	0.122	-	0.017	-	-	-
HCM Control Delay (s)	10	-	20.7	0	-	-
HCM Lane LOS	B	-	C	A	-	-
HCM 95th %tile Q(veh)	0.4	-	0.1	-	-	-

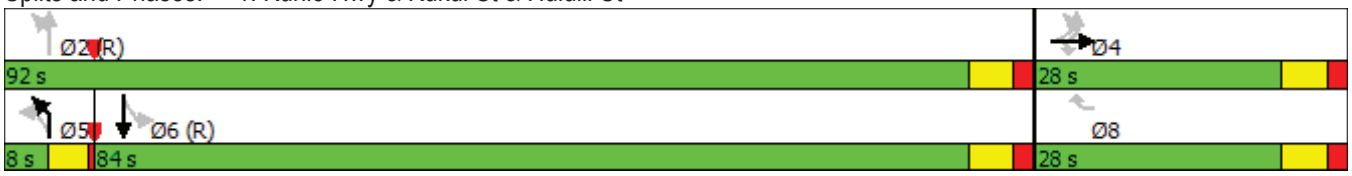
Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	20	8	36	8	60	56	548	16	3	580	32
Future Volume (vph)	16	20	8	36	8	60	56	548	16	3	580	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0			60		0	0		0
Storage Lanes		0		1			1		0	0		0
Taper Length (ft)		100					100			100		
Satd. Flow (prot)	0	0	1765	1561	1589	0	1745	1821	0	0	1770	0
Flt Permitted			0.961				0.397				0.998	
Satd. Flow (perm)	0	0	1489	1324	1423	0	679	1821	0	0	1766	0
Right Turn on Red				Yes	Yes				No			
Satd. Flow (RTOR)				64	340							
Link Speed (mph)			30					30			30	
Link Distance (ft)			417					1123			607	
Travel Time (s)			9.5					25.5			13.8	
Confl. Peds. (#/hr)	37	30		47	30	30	75		49	49		30
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	44	36	8	0	116	564	0	0	643	0
Turn Type	Perm	Perm	NA	Perm	Perm	custom	custom	NA		Perm	NA	
Protected Phases			4				5				6	
Permitted Phases	4	4		4	8	5	2	2		6		
Detector Phase	4	4	4	4	8	5	5	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	4.0	4.0	7.0		7.0	7.0	
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	8.0	8.0	26.0		34.0	34.0	
Total Split (s)	28.0	28.0	28.0	28.0	28.0	8.0	8.0	92.0		84.0	84.0	
Total Split (%)	23.3%	23.3%	23.3%	23.3%	23.3%	6.7%	6.7%	76.7%		70.0%	70.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.5	3.5	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	0.5	0.5	2.0		2.0	2.0	
Lost Time Adjust (s)			0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)			6.0	6.0	6.0		4.0	6.0			6.0	
Lead/Lag						Lead	Lead			Lag	Lag	
Lead-Lag Optimize?						Yes	Yes					
Recall Mode	None	None	None	None	None	None	None	C-Max		C-Max	C-Max	
Act Effct Green (s)			9.3	9.3	9.3		103.3	102.5			90.5	
Actuated g/C Ratio			0.08	0.08	0.08		0.86	0.85			0.75	
v/c Ratio			0.39	0.22	0.02		0.18	0.36			0.48	
Control Delay			61.6	6.9	0.1		2.4	3.4			8.2	
Queue Delay			0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay			61.6	6.9	0.1		2.4	3.4			8.2	
LOS			E	A	A		A	A			A	
Approach Delay			37.0					3.2			8.2	

Lane Group	SBR2
Lane Configurations	
Traffic Volume (vph)	28
Future Volume (vph)	28
Ideal Flow (vphpl)	1900
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	35
Peak Hour Factor	1.00
Heavy Vehicles (%)	0%
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	

Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS			D					A			A	
Queue Length 50th (ft)			33	0	0		11	85			181	
Queue Length 95th (ft)			71	12	0		25	147			302	
Internal Link Dist (ft)			337					1043			527	
Turn Bay Length (ft)							60					
Base Capacity (vph)			272	295	538		645	1556			1332	
Starvation Cap Reductn			0	0	0		0	0			0	
Spillback Cap Reductn			0	0	0		0	0			0	
Storage Cap Reductn			0	0	0		0	0			0	
Reduced v/c Ratio			0.16	0.12	0.01		0.18	0.36			0.48	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 7.4	Intersection LOS: A
Intersection Capacity Utilization 95.3%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Kuhio Hwy & Kukui St & Huluili St



Lane Group	SBR2
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	7.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	112	308	12	48	340	32
Future Vol, veh/h	112	308	12	48	340	32
Conflicting Peds, #/hr	0	4	4	0	0	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	4	4	6	1	0
Mvmt Flow	112	308	12	48	340	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	424	0	342	273
Stage 1	-	-	-	-	270	-
Stage 2	-	-	-	-	72	-
Critical Hdwy	-	-	4.14	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.236	-	3.509	3.3
Pot Cap-1 Maneuver	-	-	1125	-	656	771
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	953	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1121	-	647	766
Mov Cap-2 Maneuver	-	-	-	-	647	-
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	953	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	17.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	656	-	-	1121	-
HCM Lane V/C Ratio	0.567	-	-	0.011	-
HCM Control Delay (s)	17.4	-	-	8.2	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	3.6	-	-	0	-

Intersection	
Int Delay, s/veh	12.9

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	328	220	372	84	48	236
Future Vol, veh/h	328	220	372	84	48	236
Conflicting Peds, #/hr	15	0	0	15	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	1	2	2	1
Mvmt Flow	328	220	372	84	48	236

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	471	0	-	0	1305	429
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	876	-
Critical Hdwy	4.13	-	-	-	6.42	6.21
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.227	-	-	-	3.518	3.309
Pot Cap-1 Maneuver	1086	-	-	-	177	628
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	407	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1072	-	-	-	112	620
Mov Cap-2 Maneuver	-	-	-	-	112	-
Stage 1	-	-	-	-	422	-
Stage 2	-	-	-	-	402	-

Approach	EB	WB	SW
HCM Control Delay, s	5.9	0	47
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	1072	-	-	-	351
HCM Lane V/C Ratio	0.306	-	-	-	0.809
HCM Control Delay (s)	9.8	0	-	-	47
HCM Lane LOS	A	A	-	-	E
HCM 95th %tile Q(veh)	1.3	-	-	-	7

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	36	532	548	60	16	24
Future Vol, veh/h	36	532	548	60	16	24
Conflicting Peds, #/hr	2	0	0	2	0	58
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	3	1	0	0	6
Mvmt Flow	36	532	548	60	16	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	610	0	-	0	1184	638
Stage 1	-	-	-	-	580	-
Stage 2	-	-	-	-	604	-
Critical Hdwy	4.23	-	-	-	6.4	6.26
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.317	-	-	-	3.5	3.354
Pot Cap-1 Maneuver	917	-	-	-	211	469
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	550	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	915	-	-	-	198	444
Mov Cap-2 Maneuver	-	-	-	-	198	-
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	549	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	19
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	915	-	-	-	297
HCM Lane V/C Ratio	0.039	-	-	-	0.135
HCM Control Delay (s)	9.1	0	-	-	19
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	296	3	20	640	656	152
Future Volume (Veh/h)	296	3	20	640	656	152
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	296	3	20	640	656	152
Pedestrians	19					
Lane Width (ft)	11.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				607		
pX, platoon unblocked	0.93					
vC, conflicting volume	1355	675	675			
vC1, stage 1 conf vol	675					
vC2, stage 2 conf vol	680					
vCu, unblocked vol	1344	675	675			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	32	99	98			
cM capacity (veh/h)	437	450	910			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	299	20	640	656	152
Volume Left	296	20	0	0	0
Volume Right	3	0	0	0	152
cSH	437	910	1700	1700	1700
Volume to Capacity	0.68	0.02	0.38	0.39	0.09
Queue Length 95th (ft)	126	2	0	0	0
Control Delay (s)	29.2	9.0	0.0	0.0	0.0
Lane LOS	D	A			
Approach Delay (s)	29.2	0.3		0.0	
Approach LOS	D				

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	0	2	0	12	380	652	12	12	608	5
Future Vol, veh/h	1	0	0	2	0	12	380	652	12	12	608	5
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	7	7	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	11	5	4	0	2	2	2
Mvmt Flow	1	0	0	2	0	12	380	652	12	12	608	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2060	2066	611	2060	2062	666	613	0	0	671	0	0
Stage 1	635	635	-	1425	1425	-	-	-	-	-	-	-
Stage 2	1425	1431	-	635	637	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.31	4.15	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.399	2.245	-	-	2.218	-	-
Pot Cap-1 Maneuver	41	55	497	41	55	444	952	-	-	919	-	-
Stage 1	470	476	-	170	203	-	-	-	-	-	-	-
Stage 2	170	202	-	470	475	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	27	32	497	28	32	441	952	-	-	913	-	-
Mov Cap-2 Maneuver	27	32	-	28	32	-	-	-	-	-	-	-
Stage 1	282	470	-	101	121	-	-	-	-	-	-	-
Stage 2	99	121	-	464	469	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	143.4	33.1	4.1	0.2
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	952	-	-	27	142	913	-	-
HCM Lane V/C Ratio	0.399	-	-	0.037	0.099	0.013	-	-
HCM Control Delay (s)	11.3	-	-	143.4	33.1	9	-	-
HCM Lane LOS	B	-	-	F	D	A	-	-
HCM 95th %tile Q(veh)	1.9	-	-	0.1	0.3	0	-	-

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	1	0	3	2	384	0	0	0	0	200	4
Future Vol, veh/h	8	1	0	3	2	384	0	0	0	0	200	4
Conflicting Peds, #/hr	13	0	0	0	0	13	0	0	0	7	0	16
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	17	0	0	5	0	0	0	0	4	17
Mvmt Flow	8	1	0	3	2	384	0	0	0	0	200	4

Major/Minor	Minor2			Minor1						Major2		
Conflicting Flow All	424	225	218	210	227	20				7	0	0
Stage 1	218	218	-	7	7	-				-	-	-
Stage 2	206	7	-	203	220	-				-	-	-
Critical Hdwy	7.1	6.5	6.37	7.1	6.5	6.25				4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.5	-				-	-	-
Follow-up Hdwy	3.5	4	3.453	3.5	4	3.345				2.2	-	-
Pot Cap-1 Maneuver	544	678	786	752	676	1049				1627	-	-
Stage 1	789	726	-	-	-	-				-	-	-
Stage 2	-	-	-	804	725	-				-	-	-
Platoon blocked, %											-	-
Mov Cap-1 Maneuver	332	664	775	747	662	1031				1617	-	-
Mov Cap-2 Maneuver	332	664	-	747	662	-				-	-	-
Stage 1	789	716	-	-	-	-				-	-	-
Stage 2	-	-	-	803	715	-				-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	15.5	10.6	0
HCM LOS	C	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	352	1025	1617	-	-
HCM Lane V/C Ratio	0.026	0.38	-	-	-
HCM Control Delay (s)	15.5	10.6	0	-	-
HCM Lane LOS	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	1.8	0	-	-

Intersection	
Intersection Delay, s/veh	14.2
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	260	552	640	392
Demand Flow Rate, veh/h	278	564	640	407
Vehicles Circulating, veh/h	439	333	262	892
Vehicles Exiting, veh/h	860	569	455	5
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.9	11.5	11.5	26.6
Approach LOS	A	B	B	D

Lane	Left	Left	Left	Left
Designated Moves	LTR	LT	LTR	LTR
Assumed Moves	LTR	LT	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	278	564	640	407
Cap Entry Lane, veh/h	882	983	1056	556
Entry HV Adj Factor	0.937	0.979	1.000	0.964
Flow Entry, veh/h	260	552	640	392
Cap Entry, veh/h	826	962	1056	536
V/C Ratio	0.315	0.574	0.606	0.733
Control Delay, s/veh	7.9	11.5	11.5	26.6
LOS	A	B	B	D
95th %tile Queue, veh	1	4	4	6

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	52	116	276	280	120	68
Future Vol, veh/h	52	116	276	280	120	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	0	1	2	0
Mvmt Flow	52	116	276	280	120	68

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	556	0	-	0	636	416
Stage 1	-	-	-	-	416	-
Stage 2	-	-	-	-	220	-
Critical Hdwy	4.1	-	-	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.3
Pot Cap-1 Maneuver	1025	-	-	-	442	641
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	817	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1025	-	-	-	418	641
Mov Cap-2 Maneuver	-	-	-	-	418	-
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	817	-

Approach	EB	WB	SE
HCM Control Delay, s	2.7	0	17.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1
Capacity (veh/h)	1025	-	-	-	478
HCM Lane V/C Ratio	0.051	-	-	-	0.393
HCM Control Delay (s)	8.7	0	-	-	17.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.9

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	176	288	44	12	1
Future Vol, veh/h	4	176	288	44	12	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	4	176	288	44	12	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	332	0	-	0	494	310
Stage 1	-	-	-	-	310	-
Stage 2	-	-	-	-	184	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1239	-	-	-	538	735
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	852	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1239	-	-	-	536	735
Mov Cap-2 Maneuver	-	-	-	-	536	-
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	852	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1239	-	-	-	547
HCM Lane V/C Ratio	0.003	-	-	-	0.024
HCM Control Delay (s)	7.9	0	-	-	11.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	24	360	664	748	446	78
Future Vol, veh/h	24	360	664	748	446	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	140	0	170	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	0	1	3	1
Mvmt Flow	24	360	664	748	446	78

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2148	446	446	0	-	0
Stage 1	446	-	-	-	-	-
Stage 2	1702	-	-	-	-	-
Critical Hdwy	6.6	6.23	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.319	2.2	-	-	-
Pot Cap-1 Maneuver	48	611	1125	-	-	-
Stage 1	649	-	-	-	-	-
Stage 2	136	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 20	611	1125	-	-	-
Mov Cap-2 Maneuver	426	-	-	-	-	-
Stage 1	266	-	-	-	-	-
Stage 2	136	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.7	6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1125	-	426	611	-	-
HCM Lane V/C Ratio	0.59	-	0.056	0.589	-	-
HCM Control Delay (s)	12.7	-	14	19	-	-
HCM Lane LOS	B	-	B	C	-	-
HCM 95th %tile Q(veh)	4	-	0.2	3.8	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

TRAFFIC IMPACT ANALYSIS REPORT UPDATE

FOR THE PROPOSED

HOKUA PLACE

KAPA`A, KAUAI, HAWAII
TAX MAP KEY: (4) 4-3-03: 01

APPENDIX C

CAPACITY ANALYSIS WORKSHEETS

PEAK HOUR TRAFFIC WITHOUT PROJECT

Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	27	9	41	1	9	5	751	14	3	824	41
Future Volume (vph)	9	27	9	41	1	9	5	751	14	3	824	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0			60		0	0		0
Storage Lanes		0		1			1		0	0		0
Taper Length (ft)		100					100			100		
Satd. Flow (prot)	0	0	1621	1501	1589	0	1630	1761	0	0	1800	0
Flt Permitted			0.962				0.320				0.998	
Satd. Flow (perm)	0	0	1602	1447	1542	0	547	1761	0	0	1797	0
Right Turn on Red				Yes	Yes				No			
Satd. Flow (RTOR)				76	246							
Link Speed (mph)			30					30			30	
Link Distance (ft)			417					1113			697	
Travel Time (s)			9.5					25.3			15.8	
Confl. Peds. (#/hr)	2	4		7	4	4	4		7	4		4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	15%	0%	4%	0%	6%	9%	4%	0%	0%	1%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	45	41	1	0	14	765	0	0	873	0
Turn Type	Perm	Perm	NA	Perm	Perm	custom	custom	NA		Perm	NA	
Protected Phases			4				5				6	
Permitted Phases	4	4		4	8	5	2	2		6		
Detector Phase	4	4	4	4	8	5	5	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	1.0	1.0	7.0		7.0	7.0	
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	5.0	5.0	26.0		34.0	34.0	
Total Split (s)	27.0	27.0	27.0	27.0	27.0	5.0	5.0	73.0		68.0	68.0	
Total Split (%)	27.0%	27.0%	27.0%	27.0%	27.0%	5.0%	5.0%	73.0%		68.0%	68.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	1.0	1.0	2.0		2.0	2.0	
Lost Time Adjust (s)			0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)			6.0	6.0	6.0		4.0	6.0			6.0	
Lead/Lag						Lead	Lead			Lag	Lag	
Lead-Lag Optimize?						Yes	Yes					
Recall Mode	None	None	None	None	None	None	None	C-Max		C-Max	C-Max	
Act Effct Green (s)			8.6	8.6	8.6		84.0	83.2			81.2	
Actuated g/C Ratio			0.09	0.09	0.09		0.84	0.83			0.81	
v/c Ratio			0.33	0.21	0.00		0.03	0.52			0.60	
Control Delay			48.8	5.1	0.0		2.1	5.1			7.9	
Queue Delay			0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay			48.8	5.1	0.0		2.1	5.1			7.9	
LOS			D	A	A		A	A			A	
Approach Delay			27.9					5.1			7.9	
Approach LOS			C					A			A	
Queue Length 50th (ft)			28	0	0		1	134			168	
Queue Length 95th (ft)			61	10	0		5	241			480	
Internal Link Dist (ft)			337					1033			617	
Turn Bay Length (ft)							60					

Lane Group	SBR2
Lane Configurations	
Traffic Volume (vph)	5
Future Volume (vph)	5
Ideal Flow (vphpl)	1900
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	4
Peak Hour Factor	1.00
Heavy Vehicles (%)	0%
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	

Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)			336	363	518		520	1464			1458	
Starvation Cap Reductn			0	0	0		0	0			0	
Spillback Cap Reductn			0	0	0		0	0			0	
Storage Cap Reductn			0	0	0		0	0			0	
Reduced v/c Ratio			0.13	0.11	0.00		0.03	0.52			0.60	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 7.6 Intersection LOS: A
Intersection Capacity Utilization 70.9% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Kuhio Hwy & Kukui St & Huluili St

Lane Group	SBR2
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	118	311	19	47	118	9
Future Vol, veh/h	118	311	19	47	118	9
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	6	17	0	6	9
Mvmt Flow	118	311	19	47	118	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	429	0	360	274
Stage 1	-	-	-	-	274	-
Stage 2	-	-	-	-	86	-
Critical Hdwy	-	-	4.27	-	6.46	6.29
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.353	-	3.554	3.381
Pot Cap-1 Maneuver	-	-	1055	-	631	748
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	927	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1055	-	619	748
Mov Cap-2 Maneuver	-	-	-	-	619	-
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	926	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	627	-	-	1055	-
HCM Lane V/C Ratio	0.203	-	-	0.018	-
HCM Control Delay (s)	12.2	-	-	8.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	413	404	130	13	8	94
Future Vol, veh/h	413	404	130	13	8	94
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	1	5	20	0	0	8
Mvmt Flow	413	404	130	13	8	94

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	150	0	-	0	1374	144
Stage 1	-	-	-	-	144	-
Stage 2	-	-	-	-	1230	-
Critical Hdwy	4.11	-	-	-	6.4	6.28
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.209	-	-	-	3.5	3.372
Pot Cap-1 Maneuver	1437	-	-	-	162	888
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	279	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1428	-	-	-	100	883
Mov Cap-2 Maneuver	-	-	-	-	100	-
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	277	-

Approach	EB	WB	SW
HCM Control Delay, s	4.3	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	1428	-	-	-	547
HCM Lane V/C Ratio	0.289	-	-	-	0.186
HCM Control Delay (s)	8.5	0	-	-	13.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	1.2	-	-	-	0.7

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	803	211	13	13	27
Future Vol, veh/h	9	803	211	13	13	27
Conflicting Peds, #/hr	6	0	0	6	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	4	14	24	19
Mvmt Flow	9	803	211	13	13	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	230	0	-	0	1045	224
Stage 1	-	-	-	-	224	-
Stage 2	-	-	-	-	821	-
Critical Hdwy	4.1	-	-	-	6.64	6.39
Critical Hdwy Stg 1	-	-	-	-	5.64	-
Critical Hdwy Stg 2	-	-	-	-	5.64	-
Follow-up Hdwy	2.2	-	-	-	3.716	3.471
Pot Cap-1 Maneuver	1350	-	-	-	230	775
Stage 1	-	-	-	-	764	-
Stage 2	-	-	-	-	397	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1343	-	-	-	225	771
Mov Cap-2 Maneuver	-	-	-	-	225	-
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1343	-	-	-	431
HCM Lane V/C Ratio	0.007	-	-	-	0.093
HCM Control Delay (s)	7.7	0	-	-	14.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	389	2	18	760	864	91
Future Volume (Veh/h)	389	2	18	760	864	91
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	389	2	18	760	864	91
Pedestrians	8					
Lane Width (ft)	11.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				697		
pX, platoon unblocked	0.84					
vC, conflicting volume	1668	872	872			
vC1, stage 1 conf vol	872					
vC2, stage 2 conf vol	796					
vCu, unblocked vol	1700	872	872			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	99	98			
cM capacity (veh/h)	359	350	776			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	391	18	760	864	91
Volume Left	389	18	0	0	0
Volume Right	2	0	0	0	91
cSH	359	776	1700	1700	1700
Volume to Capacity	1.09	0.02	0.45	0.51	0.05
Queue Length 95th (ft)	356	2	0	0	0
Control Delay (s)	107.8	9.7	0.0	0.0	0.0
Lane LOS	F	A			
Approach Delay (s)	107.8	0.2		0.0	
Approach LOS	F				

Intersection Summary			
Average Delay	19.9		
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	0	1	0	5	100	846	23	8	783	5
Future Vol, veh/h	0	1	0	1	0	5	100	846	23	8	783	5
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	16	16	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	11	5	4	0	2	2	2
Mvmt Flow	0	1	0	1	0	5	100	846	23	8	783	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1865	1887	786	1876	1878	877	788	0	0	885	0	0
Stage 1	802	802	-	1074	1074	-	-	-	-	-	-	-
Stage 2	1063	1085	-	802	804	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.31	4.15	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.399	2.245	-	-	2.218	-	-
Pot Cap-1 Maneuver	56	71	395	55	72	335	818	-	-	765	-	-
Stage 1	381	399	-	269	299	-	-	-	-	-	-	-
Stage 2	272	295	-	381	398	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	49	61	395	48	62	329	818	-	-	754	-	-
Mov Cap-2 Maneuver	49	61	-	48	62	-	-	-	-	-	-	-
Stage 1	335	395	-	233	259	-	-	-	-	-	-	-
Stage 2	235	255	-	376	394	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	65	27.4	1	0.1
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	818	-	-	61	167	754	-	-
HCM Lane V/C Ratio	0.122	-	-	0.016	0.036	0.011	-	-
HCM Control Delay (s)	10	-	-	65	27.4	9.8	-	-
HCM Lane LOS	B	-	-	F	D	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1	14	0	2	104	0	0	0	0	231	9
Future Vol, veh/h	5	1	14	0	2	104	0	0	0	0	231	9
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	0	0	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	17	0	0	5	0	0	0	0	4	17
Mvmt Flow	5	1	14	0	2	104	0	0	0	0	231	9

Major/Minor	Minor2			Minor1			Major2		
Conflicting Flow All	300	243	243	243	247	4	0	0	0
Stage 1	243	243	-	0	0	-	-	-	-
Stage 2	57	0	-	243	247	-	-	-	-
Critical Hdwy	7.1	6.5	6.37	7.1	6.5	6.25	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.453	3.5	4	3.345	2.2	-	-
Pot Cap-1 Maneuver	656	662	760	715	659	1071	-	-	-
Stage 1	765	708	-	-	-	-	-	-	-
Stage 2	-	-	-	765	706	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	585	658	755	701	655	1067	-	-	-
Mov Cap-2 Maneuver	585	658	-	701	655	-	-	-	-
Stage 1	765	704	-	-	-	-	-	-	-
Stage 2	-	-	-	750	702	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	10.3	8.8	0
HCM LOS	B	A	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	699	1054	-	-	-
HCM Lane V/C Ratio	0.029	0.101	-	-	-
HCM Control Delay (s)	10.3	8.8	0	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	0.3	-	-	-

Intersection	
Intersection Delay, s/veh	38.7
Intersection LOS	E

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	730	256	116	812
Demand Flow Rate, veh/h	750	278	117	822
Vehicles Circulating, veh/h	624	144	705	391
Vehicles Exiting, veh/h	589	678	669	31
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	64.9	5.4	7.4	30.1
Approach LOS	F	A	A	D

Lane	Left	Left	Left	Left
Designated Moves	LTR	LT	LTR	LTR
Assumed Moves	LTR	LT	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	750	278	117	822
Cap Entry Lane, veh/h	730	1191	672	926
Entry HV Adj Factor	0.974	0.922	0.991	0.988
Flow Entry, veh/h	730	256	116	812
Cap Entry, veh/h	711	1099	667	915
V/C Ratio	1.027	0.233	0.174	0.888
Control Delay, s/veh	64.9	5.4	7.4	30.1
LOS	F	A	A	D
95th %tile Queue, veh	18	1	1	12

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	80	490	353	20	47	122
Future Vol, veh/h	80	490	353	20	47	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	2	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	9	1	2	0	0	2
Mvmt Flow	80	490	353	20	47	122

Major/Minor	Minor2		Major2	
Conflicting Flow All	216	122	0	0
Stage 1	216	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.52	6.2	4.1	-
Critical Hdwy Stg 1	5.52	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4.018	3.3	2.2	-
Pot Cap-1 Maneuver	682	935	-	-
Stage 1	724	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	935	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	SE	NW
HCM Control Delay, s	11.4	
HCM LOS	B	

Minor Lane/Major Mvmt	NWL	NWT	SELn1
Capacity (veh/h)	-	-	935
HCM Lane V/C Ratio	-	-	0.399
HCM Control Delay (s)	-	-	11.4
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	1.9

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	358	165	38	15	0
Future Vol, veh/h	8	358	165	38	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	11	0	0	0
Mvmt Flow	8	358	165	38	15	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	203	0	-	0	558	184
Stage 1	-	-	-	-	184	-
Stage 2	-	-	-	-	374	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1381	-	-	-	494	864
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	700	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1381	-	-	-	491	864
Mov Cap-2 Maneuver	-	-	-	-	491	-
Stage 1	-	-	-	-	846	-
Stage 2	-	-	-	-	700	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1381	-	-	-	491
HCM Lane V/C Ratio	0.006	-	-	-	0.031
HCM Control Delay (s)	7.6	0	-	-	12.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	833	113	702	905	5
Future Vol, veh/h	5	833	113	702	905	5
Conflicting Peds, #/hr	1	0	0	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Yield
Storage Length	140	0	170	-	-	150
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	20	3	2	3	3	0
Mvmt Flow	5	833	113	702	905	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1484	-	906	0	-	0
Stage 1	906	-	-	-	-	-
Stage 2	578	-	-	-	-	-
Critical Hdwy	6.9	-	4.13	-	-	-
Critical Hdwy Stg 1	5.7	-	-	-	-	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-
Follow-up Hdwy	3.69	-	2.219	-	-	-
Pot Cap-1 Maneuver	110	0	749	-	-	-
Stage 1	357	0	-	-	-	-
Stage 2	486	0	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	93	-	748	-	-	-
Mov Cap-2 Maneuver	194	-	-	-	-	-
Stage 1	303	-	-	-	-	-
Stage 2	486	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24	1.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	748	-	194	-	-	-
HCM Lane V/C Ratio	0.151	-	0.026	-	-	-
HCM Control Delay (s)	10.7	-	24	0	-	-
HCM Lane LOS	B	-	C	A	-	-
HCM 95th %tile Q(veh)	0.5	-	0.1	-	-	-

Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	23	9	41	9	68	63	620	18	3	656	36
Future Volume (vph)	18	23	9	41	9	68	63	620	18	3	656	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0			60		0	0		0
Storage Lanes		0		1			1		0	0		0
Taper Length (ft)		100					100			100		
Satd. Flow (prot)	0	0	1765	1561	1589	0	1745	1821	0	0	1770	0
Flt Permitted			0.961				0.362				0.998	
Satd. Flow (perm)	0	0	1488	1324	1423	0	626	1821	0	0	1766	0
Right Turn on Red				Yes	Yes				No			
Satd. Flow (RTOR)				64	301							
Link Speed (mph)			30					30			30	
Link Distance (ft)			417					1123			607	
Travel Time (s)			9.5					25.5			13.8	
Confl. Peds. (#/hr)	37	30		47	30	30	75		49	49		30
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	50	41	9	0	131	638	0	0	727	0
Turn Type	Perm	Perm	NA	Perm	Perm	custom	custom	NA		Perm	NA	
Protected Phases			4				5				6	
Permitted Phases	4	4		4	8	5	2	2		6		
Detector Phase	4	4	4	4	8	5	5	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	4.0	4.0	7.0		7.0	7.0	
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	8.0	8.0	26.0		34.0	34.0	
Total Split (s)	27.0	27.0	27.0	27.0	27.0	8.0	8.0	93.0		85.0	85.0	
Total Split (%)	22.5%	22.5%	22.5%	22.5%	22.5%	6.7%	6.7%	77.5%		70.8%	70.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.5	3.5	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	0.5	0.5	2.0		2.0	2.0	
Lost Time Adjust (s)			0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)			6.0	6.0	6.0		4.0	6.0			6.0	
Lead/Lag						Lead	Lead			Lag	Lag	
Lead-Lag Optimize?						Yes	Yes					
Recall Mode	None	None	None	None	None	None	None	C-Max		C-Max	C-Max	
Act Effct Green (s)			9.7	9.7	9.7		102.9	102.1			89.8	
Actuated g/C Ratio			0.08	0.08	0.08		0.86	0.85			0.75	
v/c Ratio			0.42	0.25	0.02		0.22	0.41			0.55	
Control Delay			62.1	8.6	0.1		2.7	3.9			9.6	
Queue Delay			0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay			62.1	8.6	0.1		2.7	3.9			9.6	
LOS			E	A	A		A	A			A	
Approach Delay			38.0					3.7			9.6	
Approach LOS			D					A			A	
Queue Length 50th (ft)			38	0	0		13	105			226	
Queue Length 95th (ft)			77	18	0		29	184			385	
Internal Link Dist (ft)			337					1043			527	
Turn Bay Length (ft)							60					

Lane Group	SBR2
Lane Configurations	
Traffic Volume (vph)	32
Future Volume (vph)	32
Ideal Flow (vphpl)	1900
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	35
Peak Hour Factor	1.00
Heavy Vehicles (%)	0%
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	

Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)			260	284	497		602	1549			1321	
Starvation Cap Reductn			0	0	0		0	0			0	
Spillback Cap Reductn			0	0	0		0	0			0	
Storage Cap Reductn			0	0	0		0	0			0	
Reduced v/c Ratio			0.19	0.14	0.02		0.22	0.41			0.55	

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.55	
Intersection Signal Delay: 8.3	Intersection LOS: A
Intersection Capacity Utilization 103.7%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: Kuhio Hwy & Kukui St & Huluili St

Lane Group	SBR2
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	10.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	131	361	14	56	399	38
Future Vol, veh/h	131	361	14	56	399	38
Conflicting Peds, #/hr	0	4	4	0	0	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	4	4	6	1	0
Mvmt Flow	131	361	14	56	399	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	496	0	400	319
Stage 1	-	-	-	-	316	-
Stage 2	-	-	-	-	84	-
Critical Hdwy	-	-	4.14	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.236	-	3.509	3.3
Pot Cap-1 Maneuver	-	-	1058	-	608	726
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	942	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1054	-	598	722
Mov Cap-2 Maneuver	-	-	-	-	598	-
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	942	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	24.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	607	-	-	1054	-
HCM Lane V/C Ratio	0.72	-	-	0.013	-
HCM Control Delay (s)	24.7	-	-	8.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	6	-	-	0	-

Intersection	
Int Delay, s/veh	46.8

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	385	258	436	99	56	277
Future Vol, veh/h	385	258	436	99	56	277
Conflicting Peds, #/hr	15	0	0	15	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	1	2	2	1
Mvmt Flow	385	258	436	99	56	277

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	550	0	-	0	1529	501
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	1028	-
Critical Hdwy	4.13	-	-	-	6.42	6.21
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.227	-	-	-	3.518	3.309
Pot Cap-1 Maneuver	1015	-	-	-	129	572
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	345	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1002	-	-	-	69	565
Mov Cap-2 Maneuver	-	-	-	-	69	-
Stage 1	-	-	-	-	331	-
Stage 2	-	-	-	-	341	-

Approach	EB	WB	SW
HCM Control Delay, s	6.5	0	199.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	1002	-	-	-	256
HCM Lane V/C Ratio	0.384	-	-	-	1.301
HCM Control Delay (s)	10.8	0	-	-	199.9
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	1.8	-	-	-	17

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	624	643	70	19	28
Future Vol, veh/h	42	624	643	70	19	28
Conflicting Peds, #/hr	2	0	0	2	0	58
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	3	1	0	0	6
Mvmt Flow	42	624	643	70	19	28

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	715	0	-	0	1388	738
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	708	-
Critical Hdwy	4.23	-	-	-	6.4	6.26
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.317	-	-	-	3.5	3.354
Pot Cap-1 Maneuver	837	-	-	-	159	411
Stage 1	-	-	-	-	507	-
Stage 2	-	-	-	-	492	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	836	-	-	-	146	390
Mov Cap-2 Maneuver	-	-	-	-	146	-
Stage 1	-	-	-	-	467	-
Stage 2	-	-	-	-	491	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	24.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	836	-	-	-	233
HCM Lane V/C Ratio	0.05	-	-	-	0.202
HCM Control Delay (s)	9.5	0	-	-	24.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	332	3	22	718	736	170
Future Volume (Veh/h)	332	3	22	718	736	170
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	332	3	22	718	736	170
Pedestrians	19					
Lane Width (ft)	11.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				607		
pX, platoon unblocked	0.91					
vC, conflicting volume	1517	755	755			
vC1, stage 1 conf vol	755					
vC2, stage 2 conf vol	762					
vCu, unblocked vol	1519	755	755			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	16	99	97			
cM capacity (veh/h)	394	405	850			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	335	22	718	736	170
Volume Left	332	22	0	0	0
Volume Right	3	0	0	0	170
cSH	394	850	1700	1700	1700
Volume to Capacity	0.85	0.03	0.42	0.43	0.10
Queue Length 95th (ft)	202	2	0	0	0
Control Delay (s)	48.4	9.3	0.0	0.0	0.0
Lane LOS	E	A			
Approach Delay (s)	48.4	0.3		0.0	
Approach LOS	E				

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	0	2	0	14	430	738	14	14	688	5
Future Vol, veh/h	1	0	0	2	0	14	430	738	14	14	688	5
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	7	7	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	11	5	4	0	2	2	2
Mvmt Flow	1	0	0	2	0	14	430	738	14	14	688	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2332	2338	691	2331	2333	753	693	0	0	759	0	0
Stage 1	719	719	-	1612	1612	-	-	-	-	-	-	-
Stage 2	1613	1619	-	719	721	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.31	4.15	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.399	2.245	-	-	2.218	-	-
Pot Cap-1 Maneuver	26	37	448	26	37	395	888	-	-	852	-	-
Stage 1	423	436	-	133	165	-	-	-	-	-	-	-
Stage 2	132	164	-	423	435	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	15	19	448	16	19	392	888	-	-	847	-	-
Mov Cap-2 Maneuver	15	19	-	16	19	-	-	-	-	-	-	-
Stage 1	218	429	-	68	85	-	-	-	-	-	-	-
Stage 2	66	84	-	416	428	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	261.5	47.7	4.7	0.2
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	888	-	-	15	100	847	-	-
HCM Lane V/C Ratio	0.484	-	-	0.067	0.16	0.017	-	-
HCM Control Delay (s)	12.8	-	-	261.5	47.7	9.3	-	-
HCM Lane LOS	B	-	-	F	E	A	-	-
HCM 95th %tile Q(veh)	2.7	-	-	0.2	0.5	0.1	-	-

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	1	0	2	3	434	0	0	0	0	226	5
Future Vol, veh/h	9	1	0	2	3	434	0	0	0	0	226	5
Conflicting Peds, #/hr	13	0	0	0	0	13	0	0	0	7	0	16
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	17	0	0	5	0	0	0	0	4	17
Mvmt Flow	9	1	0	2	3	434	0	0	0	0	226	5

Major/Minor	Minor2			Minor1						Major2		
Conflicting Flow All	477	252	245	236	254	20				7	0	0
Stage 1	245	245	-	7	7	-				-	-	-
Stage 2	232	7	-	229	247	-				-	-	-
Critical Hdwy	7.1	6.5	6.37	7.1	6.5	6.25				4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.5	-				-	-	-
Follow-up Hdwy	3.5	4	3.453	3.5	4	3.345				2.2	-	-
Pot Cap-1 Maneuver	502	655	758	723	653	1049				1627	-	-
Stage 1	763	707	-	-	-	-				-	-	-
Stage 2	-	-	-	778	706	-				-	-	-
Platoon blocked, %											-	-
Mov Cap-1 Maneuver	282	642	747	718	640	1031				1617	-	-
Mov Cap-2 Maneuver	282	642	-	718	640	-				-	-	-
Stage 1	763	697	-	-	-	-				-	-	-
Stage 2	-	-	-	777	696	-				-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	17.5	11.1	0
HCM LOS	C	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	299	1025	1617	-	-
HCM Lane V/C Ratio	0.033	0.428	-	-	-
HCM Control Delay (s)	17.5	11.1	0	-	-
HCM Lane LOS	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	2.2	0	-	-

Intersection	
Intersection Delay, s/veh	27.7
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	306	648	751	460
Demand Flow Rate, veh/h	326	661	751	476
Vehicles Circulating, veh/h	514	391	307	1046
Vehicles Exiting, veh/h	1008	667	533	6
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	9.8	16.8	16.9	72.9
Approach LOS	A	C	C	F

Lane	Left	Left	Left	Left
Designated Moves	LTR	LT	LTR	LTR
Assumed Moves	LTR	LT	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	326	661	751	476
Cap Entry Lane, veh/h	817	926	1009	475
Entry HV Adj Factor	0.939	0.980	1.000	0.966
Flow Entry, veh/h	306	648	751	460
Cap Entry, veh/h	767	907	1009	458
V/C Ratio	0.399	0.714	0.744	1.002
Control Delay, s/veh	9.8	16.8	16.9	72.9
LOS	A	C	C	F
95th %tile Queue, veh	2	6	7	13

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	61	137	325	330	141	80
Future Vol, veh/h	61	137	325	330	141	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	0	1	2	0
Mvmt Flow	61	137	325	330	141	80

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	655	0	-	0	749	490
Stage 1	-	-	-	-	490	-
Stage 2	-	-	-	-	259	-
Critical Hdwy	4.1	-	-	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.3
Pot Cap-1 Maneuver	942	-	-	-	379	582
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	784	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	942	-	-	-	352	582
Mov Cap-2 Maneuver	-	-	-	-	352	-
Stage 1	-	-	-	-	573	-
Stage 2	-	-	-	-	784	-

Approach	EB	WB	SE
HCM Control Delay, s	2.8	0	23.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1
Capacity (veh/h)	942	-	-	-	411
HCM Lane V/C Ratio	0.065	-	-	-	0.538
HCM Control Delay (s)	9.1	0	-	-	23.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	3.1

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	207	339	52	14	1
Future Vol, veh/h	5	207	339	52	14	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	5	207	339	52	14	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	391	0	-	0	582	365
Stage 1	-	-	-	-	365	-
Stage 2	-	-	-	-	217	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1179	-	-	-	479	685
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	824	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1179	-	-	-	477	685
Mov Cap-2 Maneuver	-	-	-	-	477	-
Stage 1	-	-	-	-	703	-
Stage 2	-	-	-	-	824	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1179	-	-	-	487
HCM Lane V/C Ratio	0.004	-	-	-	0.031
HCM Control Delay (s)	8.1	0	-	-	12.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	404	745	839	503	85
Future Vol, veh/h	27	404	745	839	503	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	140	0	170	-	-	150
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	0	1	3	1
Mvmt Flow	27	404	745	839	503	85

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2413	503	503	0	-	0
Stage 1	503	-	-	-	-	-
Stage 2	1910	-	-	-	-	-
Critical Hdwy	6.6	6.23	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.319	2.2	-	-	-
Pot Cap-1 Maneuver	32	568	1072	-	-	-
Stage 1	612	-	-	-	-	-
Stage 2	104	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 10	568	1072	-	-	-
Mov Cap-2 Maneuver	231	-	-	-	-	-
Stage 1	187	-	-	-	-	-
Stage 2	104	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.2	7.3	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1072	-	231	568	-	-
HCM Lane V/C Ratio	0.695	-	0.117	0.711	-	-
HCM Control Delay (s)	15.6	-	22.6	25.4	-	-
HCM Lane LOS	C	-	C	D	-	-
HCM 95th %tile Q(veh)	6	-	0.4	5.8	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

TRAFFIC IMPACT ANALYSIS REPORT UPDATE

FOR THE PROPOSED

HOKUA PLACE

KAPA`A, KAUAI, HAWAII
TAX MAP KEY: (4) 4-3-03: 01

APPENDIX D

CAPACITY ANALYSIS WORKSHEETS

PEAK HOUR TRAFFIC WITH PROJECT

Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	37	12	60	1	11	5	751	14	3	824	43
Future Volume (vph)	9	37	12	60	1	11	5	751	14	3	824	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0			60		0	0		0
Storage Lanes		0		1			1		0	0		0
Taper Length (ft)		100					100			100		
Satd. Flow (prot)	0	0	1613	1501	1589	0	1632	1760	0	0	1798	0
Flt Permitted			0.962				0.328				0.998	
Satd. Flow (perm)	0	0	1574	1420	1526	0	560	1760	0	0	1795	0
Right Turn on Red				Yes	Yes				No			
Satd. Flow (RTOR)				60	330							
Link Speed (mph)			30					30			30	
Link Distance (ft)			417					1113			697	
Travel Time (s)			9.5					25.3			15.8	
Confl. Peds. (#/hr)	2	4		7	4	4	4		7	4		4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	15%	0%	4%	0%	6%	9%	4%	0%	0%	1%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	58	60	1	0	16	765	0	0	875	0
Turn Type	Perm	Perm	NA	Perm	Perm	custom	custom	NA		Perm	NA	
Protected Phases			4				5				6	
Permitted Phases	4	4		4	8	5	2	2		6		
Detector Phase	4	4	4	4	8	5	5	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	1.0	1.0	7.0		7.0	7.0	
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	5.0	5.0	26.0		34.0	34.0	
Total Split (s)	30.0	30.0	30.0	30.0	30.0	6.0	6.0	180.0		174.0	174.0	
Total Split (%)	14.3%	14.3%	14.3%	14.3%	14.3%	2.9%	2.9%	85.7%		82.9%	82.9%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	1.0	1.0	2.0		2.0	2.0	
Lost Time Adjust (s)			0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)			6.0	6.0	6.0		4.0	6.0			6.0	
Lead/Lag						Lead	Lead			Lag	Lag	
Lead-Lag Optimize?						Yes	Yes					
Recall Mode	None	None	None	None	None	None	None	C-Max		C-Max	C-Max	
Act Effct Green (s)			13.1	13.1	13.1		186.9	184.9			179.0	
Actuated g/C Ratio			0.06	0.06	0.06		0.89	0.88			0.85	
v/c Ratio			0.59	0.42	0.00		0.03	0.49			0.57	
Control Delay			118.9	26.1	0.0		1.8	4.1			7.0	
Queue Delay			0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay			118.9	26.1	0.0		1.8	4.1			7.0	
LOS			F	C	A		A	A			A	
Approach Delay			71.7					4.0			7.0	
Approach LOS			E					A			A	
Queue Length 50th (ft)			80	0	0		2	180			342	
Queue Length 95th (ft)			136	56	0		6	284			505	
Internal Link Dist (ft)			337					1033			617	
Turn Bay Length (ft)							60					

Lane Group	SBR2
Lane Configurations	
Traffic Volume (vph)	5
Future Volume (vph)	5
Ideal Flow (vphpl)	1900
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	4
Peak Hour Factor	1.00
Heavy Vehicles (%)	0%
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	

Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)			179	215	466		527	1549			1529	
Starvation Cap Reductn			0	0	0		0	0			0	
Spillback Cap Reductn			0	0	0		0	0			0	
Storage Cap Reductn			0	0	0		0	0			0	
Reduced v/c Ratio			0.32	0.28	0.00		0.03	0.49			0.57	

Intersection Summary	
Area Type:	Other
Cycle Length: 210	
Actuated Cycle Length: 210	
Offset: 202 (96%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 10.0	Intersection LOS: A
Intersection Capacity Utilization 70.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Kuhio Hwy & Kukui St & Huluili St

Lane Group	SBR2
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	151	388	19	51	136	9
Future Vol, veh/h	151	388	19	51	136	9
Conflicting Peds, #/hr	0	0	0	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	6	17	0	6	9
Mvmt Flow	151	388	19	51	136	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	539	0	435	345
Stage 1	-	-	-	-	345	-
Stage 2	-	-	-	-	90	-
Critical Hdwy	-	-	4.27	-	6.46	6.29
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.353	-	3.554	3.381
Pot Cap-1 Maneuver	-	-	958	-	571	682
Stage 1	-	-	-	-	708	-
Stage 2	-	-	-	-	924	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	958	-	559	682
Mov Cap-2 Maneuver	-	-	-	-	559	-
Stage 1	-	-	-	-	694	-
Stage 2	-	-	-	-	923	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	13.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	565	-	-	958	-
HCM Lane V/C Ratio	0.257	-	-	0.02	-
HCM Control Delay (s)	13.6	-	-	8.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0.1	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	540	514	152	13	8	108
Future Vol, veh/h	540	514	152	13	8	108
Conflicting Peds, #/hr	7	0	0	7	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	1	5	20	0	0	8
Mvmt Flow	540	514	152	13	8	108

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	172	0	-	0	1760	166
Stage 1	-	-	-	-	166	-
Stage 2	-	-	-	-	1594	-
Critical Hdwy	4.11	-	-	-	6.4	6.28
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.209	-	-	-	3.5	3.372
Pot Cap-1 Maneuver	1411	-	-	-	94	863
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	185	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1402	-	-	-	43	858
Mov Cap-2 Maneuver	-	-	-	-	43	-
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	184	-

Approach	EB	WB	SW
HCM Control Delay, s	4.7	0	19
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	1402	-	-	-	372
HCM Lane V/C Ratio	0.385	-	-	-	0.312
HCM Control Delay (s)	9.2	0	-	-	19
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	1.8	-	-	-	1.3

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	1040	247	13	13	31
Future Vol, veh/h	15	1040	247	13	13	31
Conflicting Peds, #/hr	6	0	0	6	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	4	14	24	19
Mvmt Flow	15	1040	247	13	13	31

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	266	0	-	0	1330	260
Stage 1	-	-	-	-	260	-
Stage 2	-	-	-	-	1070	-
Critical Hdwy	4.1	-	-	-	6.64	6.39
Critical Hdwy Stg 1	-	-	-	-	5.64	-
Critical Hdwy Stg 2	-	-	-	-	5.64	-
Follow-up Hdwy	2.2	-	-	-	3.716	3.471
Pot Cap-1 Maneuver	1310	-	-	-	153	739
Stage 1	-	-	-	-	735	-
Stage 2	-	-	-	-	299	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1303	-	-	-	147	735
Mov Cap-2 Maneuver	-	-	-	-	147	-
Stage 1	-	-	-	-	711	-
Stage 2	-	-	-	-	298	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	17.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1303	-	-	-	337
HCM Lane V/C Ratio	0.012	-	-	-	0.131
HCM Control Delay (s)	7.8	0	-	-	17.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	516	2	18	760	864	105
Future Volume (Veh/h)	516	2	18	760	864	105
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	516	2	18	760	864	105
Pedestrians	8					
Lane Width (ft)	11.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				697		
pX, platoon unblocked	0.90					
vC, conflicting volume	1668	872	872			
vC1, stage 1 conf vol	872					
vC2, stage 2 conf vol	796					
vCu, unblocked vol	1686	872	872			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	99	98			
cM capacity (veh/h)	362	350	776			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	518	18	760	864	105
Volume Left	516	18	0	0	0
Volume Right	2	0	0	0	105
cSH	362	776	1700	1700	1700
Volume to Capacity	1.43	0.02	0.45	0.51	0.06
Queue Length 95th (ft)	669	2	0	0	0
Control Delay (s)	237.5	9.7	0.0	0.0	0.0
Lane LOS	F	A			
Approach Delay (s)	237.5	0.2		0.0	
Approach LOS	F				

Intersection Summary			
Average Delay	54.4		
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	0	1	0	5	118	848	23	8	802	5
Future Vol, veh/h	0	1	0	1	0	5	118	848	23	8	802	5
Conflicting Peds, #/hr	3	0	0	0	0	3	0	0	16	16	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	11	5	4	0	2	2	2
Mvmt Flow	0	1	0	1	0	5	118	848	23	8	802	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1922	1944	805	1933	1935	879	807	0	0	887	0	0
Stage 1	821	821	-	1112	1112	-	-	-	-	-	-	-
Stage 2	1101	1123	-	821	823	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.31	4.15	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.399	2.245	-	-	2.218	-	-
Pot Cap-1 Maneuver	51	66	386	50	67	334	805	-	-	763	-	-
Stage 1	371	391	-	256	287	-	-	-	-	-	-	-
Stage 2	259	283	-	371	391	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	44	55	386	43	56	328	805	-	-	752	-	-
Mov Cap-2 Maneuver	44	55	-	43	56	-	-	-	-	-	-	-
Stage 1	316	387	-	215	241	-	-	-	-	-	-	-
Stage 2	217	238	-	366	387	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	71.7	29	1.2	0.1
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	805	-	-	55	156	752	-	-
HCM Lane V/C Ratio	0.147	-	-	0.018	0.038	0.011	-	-
HCM Control Delay (s)	10.2	-	-	71.7	29	9.8	-	-
HCM Lane LOS	B	-	-	F	D	A	-	-
HCM 95th %tile Q(veh)	0.5	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	1	14	0	2	122	0	0	0	0	308	9
Future Vol, veh/h	5	1	14	0	2	122	0	0	0	0	308	9
Conflicting Peds, #/hr	4	0	0	0	0	4	0	0	0	0	0	7
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	17	0	0	5	0	0	0	0	4	17
Mvmt Flow	5	1	14	0	2	122	0	0	0	0	308	9

Major/Minor	Minor2			Minor1						Major2		
Conflicting Flow All	386	320	320	320	324	4				0	0	0
Stage 1	320	320	-	0	0	-				-	-	-
Stage 2	66	0	-	320	324	-				-	-	-
Critical Hdwy	7.1	6.5	6.37	7.1	6.5	6.25				4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	-	-	-				-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.5	-				-	-	-
Follow-up Hdwy	3.5	4	3.453	3.5	4	3.345				2.2	-	-
Pot Cap-1 Maneuver	576	600	687	637	597	1071				-	-	-
Stage 1	696	656	-	-	-	-				-	-	-
Stage 2	-	-	-	696	653	-				-	-	-
Platoon blocked, %											-	-
Mov Cap-1 Maneuver	504	596	683	623	593	1067				-	-	-
Mov Cap-2 Maneuver	504	596	-	623	593	-				-	-	-
Stage 1	696	652	-	-	-	-				-	-	-
Stage 2	-	-	-	681	649	-				-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	11	8.9	0
HCM LOS	B	A	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	623	1053	-	-	-
HCM Lane V/C Ratio	0.032	0.118	-	-	-
HCM Control Delay (s)	11	8.9	0	-	-
HCM Lane LOS	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	0.4	-	-	-

Intersection	
Intersection Delay, s/veh	31.9
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	595	296	340	855
Demand Flow Rate, veh/h	611	327	349	866
Vehicles Circulating, veh/h	710	112	728	408
Vehicles Exiting, veh/h	564	965	593	31
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	42.1	5.7	14.5	40.7
Approach LOS	E	A	B	E

Lane	Left	Left	Left	Left
Designated Moves	LTR	LT	LTR	LTR
Assumed Moves	LTR	LT	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	611	327	349	866
Cap Entry Lane, veh/h	669	1231	657	910
Entry HV Adj Factor	0.973	0.906	0.974	0.988
Flow Entry, veh/h	595	296	340	855
Cap Entry, veh/h	651	1115	640	899
V/C Ratio	0.913	0.266	0.531	0.951
Control Delay, s/veh	42.1	5.7	14.5	40.7
LOS	E	A	B	E
95th %tile Queue, veh	12	1	3	15

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	176	569	516
Demand Flow Rate, veh/h	179	580	526
Vehicles Circulating, veh/h	224	56	504
Vehicles Exiting, veh/h	806	347	132
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.8	7.3	15.1
Approach LOS	A	A	C

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	179	580	526
Cap Entry Lane, veh/h	1098	1303	825
Entry HV Adj Factor	0.981	0.981	0.981
Flow Entry, veh/h	176	569	516
Cap Entry, veh/h	1077	1279	810
V/C Ratio	0.163	0.445	0.637
Control Delay, s/veh	4.8	7.3	15.1
LOS	A	A	C
95th %tile Queue, veh	1	2	5

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	684	175	3	142	33	24
Future Vol, veh/h	684	175	3	142	33	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	684	175	3	142	33	24

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	859	0	920	772
Stage 1	-	-	-	-	772	-
Stage 2	-	-	-	-	148	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	782	-	301	400
Stage 1	-	-	-	-	456	-
Stage 2	-	-	-	-	880	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	782	-	300	400
Mov Cap-2 Maneuver	-	-	-	-	300	-
Stage 1	-	-	-	-	454	-
Stage 2	-	-	-	-	880	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	17.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	335	-	-	782	-
HCM Lane V/C Ratio	0.17	-	-	0.004	-
HCM Control Delay (s)	17.9	-	-	9.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Intersection	
Int Delay, s/veh	35.5

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	80	506	52	122	353	20
Future Vol, veh/h	80	506	52	122	353	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	9	1	0	2	2	0
Mvmt Flow	80	506	52	122	353	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	174	0	-	0	779	113
Stage 1	-	-	-	-	113	-
Stage 2	-	-	-	-	666	-
Critical Hdwy	4.19	-	-	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.281	-	-	-	3.518	3.3
Pot Cap-1 Maneuver	1361	-	-	-	364	945
Stage 1	-	-	-	-	912	-
Stage 2	-	-	-	-	511	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1361	-	-	-	~ 334	945
Mov Cap-2 Maneuver	-	-	-	-	~ 334	-
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	511	-

Approach	EB	WB	SE
HCM Control Delay, s	1.1	0	106.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1
Capacity (veh/h)	1361	-	-	-	346
HCM Lane V/C Ratio	0.059	-	-	-	1.078
HCM Control Delay (s)	7.8	0	-	-	106.1
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	13.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	358	165	38	15	0
Future Vol, veh/h	8	358	165	38	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	11	0	0	0
Mvmt Flow	8	358	165	38	15	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	203	0	-	0	558	184
Stage 1	-	-	-	-	184	-
Stage 2	-	-	-	-	374	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1381	-	-	-	494	864
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	700	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1381	-	-	-	491	864
Mov Cap-2 Maneuver	-	-	-	-	491	-
Stage 1	-	-	-	-	846	-
Stage 2	-	-	-	-	700	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1381	-	-	-	491
HCM Lane V/C Ratio	0.006	-	-	-	0.031
HCM Control Delay (s)	7.6	0	-	-	12.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	570	0	5	67	0	16
Future Vol, veh/h	570	0	5	67	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	570	0	5	67	0	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	570	0	647	570
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	77	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1002	-	436	521
Stage 1	-	-	-	-	566	-
Stage 2	-	-	-	-	946	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1002	-	434	521
Mov Cap-2 Maneuver	-	-	-	-	434	-
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	946	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	521	-	-	1002	-
HCM Lane V/C Ratio	0.031	-	-	0.005	-
HCM Control Delay (s)	12.1	-	-	8.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	971	136	702	905	6
Future Vol, veh/h	6	971	136	702	905	6
Conflicting Peds, #/hr	1	0	0	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Yield
Storage Length	140	0	170	-	-	150
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	20	3	2	3	3	0
Mvmt Flow	6	971	136	702	905	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1530	-	906	0	-	0
Stage 1	906	-	-	-	-	-
Stage 2	624	-	-	-	-	-
Critical Hdwy	6.9	-	4.13	-	-	-
Critical Hdwy Stg 1	5.7	-	-	-	-	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-
Follow-up Hdwy	3.69	-	2.219	-	-	-
Pot Cap-1 Maneuver	103	0	749	-	-	-
Stage 1	357	0	-	-	-	-
Stage 2	459	0	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	84	-	748	-	-	-
Mov Cap-2 Maneuver	178	-	-	-	-	-
Stage 1	292	-	-	-	-	-
Stage 2	459	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.9	1.8	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	748	-	178	-	-	-
HCM Lane V/C Ratio	0.182	-	0.034	-	-	-
HCM Control Delay (s)	10.9	-	25.9	0	-	-
HCM Lane LOS	B	-	D	A	-	-
HCM 95th %tile Q(veh)	0.7	-	0.1	-	-	-

Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	34	11	48	9	74	63	620	18	3	656	42
Future Volume (vph)	18	34	11	48	9	74	63	620	18	3	656	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0			60		0	0		0
Storage Lanes		0		1			1		0	0		0
Taper Length (ft)		100					100			100		
Satd. Flow (prot)	0	0	1763	1561	1589	0	1745	1821	0	0	1767	0
Flt Permitted			0.960				0.358				0.998	
Satd. Flow (perm)	0	0	1485	1324	1423	0	619	1821	0	0	1763	0
Right Turn on Red				Yes	Yes				No			
Satd. Flow (RTOR)				64	301							
Link Speed (mph)			30					30			30	
Link Distance (ft)			417					1123			607	
Travel Time (s)			9.5					25.5			13.8	
Confl. Peds. (#/hr)	37	30		47	30	30	75		49	49		30
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	63	48	9	0	137	638	0	0	733	0
Turn Type	Perm	Perm	NA	Perm	Perm	custom	custom	NA		Perm	NA	
Protected Phases			4				5				6	
Permitted Phases	4	4		4	8	5	2	2		6		
Detector Phase	4	4	4	4	8	5	5	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	4.0	4.0	7.0		7.0	7.0	
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	8.0	8.0	26.0		34.0	34.0	
Total Split (s)	27.0	27.0	27.0	27.0	27.0	8.0	8.0	93.0		85.0	85.0	
Total Split (%)	22.5%	22.5%	22.5%	22.5%	22.5%	6.7%	6.7%	77.5%		70.8%	70.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.5	3.5	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	0.5	0.5	2.0		2.0	2.0	
Lost Time Adjust (s)			0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)			6.0	6.0	6.0		4.0	6.0			6.0	
Lead/Lag						Lead	Lead			Lag	Lag	
Lead-Lag Optimize?						Yes	Yes					
Recall Mode	None	None	None	None	None	None	None	C-Max		C-Max	C-Max	
Act Effct Green (s)			10.6	10.6	10.6		102.0	101.2			88.7	
Actuated g/C Ratio			0.09	0.09	0.09		0.85	0.84			0.74	
v/c Ratio			0.48	0.27	0.02		0.23	0.42			0.56	
Control Delay			63.3	11.1	0.1		3.0	4.2			10.5	
Queue Delay			0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay			63.3	11.1	0.1		3.0	4.2			10.5	
LOS			E	B	A		A	A			B	
Approach Delay			40.7					4.0			10.5	
Approach LOS			D					A			B	
Queue Length 50th (ft)			47	0	0		15	112			241	
Queue Length 95th (ft)			92	25	0		33	198			413	
Internal Link Dist (ft)			337					1043			527	
Turn Bay Length (ft)							60					

Lane Group	SBR2
Lane Configurations	
Traffic Volume (vph)	32
Future Volume (vph)	32
Ideal Flow (vphpl)	1900
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	35
Peak Hour Factor	1.00
Heavy Vehicles (%)	0%
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	

Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)			259	284	497		593	1535			1303	
Starvation Cap Reductn			0	0	0		0	0			0	
Spillback Cap Reductn			0	0	0		0	0			0	
Storage Cap Reductn			0	0	0		0	0			0	
Reduced v/c Ratio			0.24	0.17	0.02		0.23	0.42			0.56	

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay: 9.4	Intersection LOS: A
Intersection Capacity Utilization 104.3%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: Kuhio Hwy & Kukui St & Huluili St

Lane Group	SBR2
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	22.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	151	410	14	68	485	38
Future Vol, veh/h	151	410	14	68	485	38
Conflicting Peds, #/hr	0	4	4	0	0	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	4	4	6	1	0
Mvmt Flow	151	410	14	68	485	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	565	0	456	363
Stage 1	-	-	-	-	360	-
Stage 2	-	-	-	-	96	-
Critical Hdwy	-	-	4.14	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.236	-	3.509	3.3
Pot Cap-1 Maneuver	-	-	997	-	564	686
Stage 1	-	-	-	-	708	-
Stage 2	-	-	-	-	930	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	994	-	554	682
Mov Cap-2 Maneuver	-	-	-	-	554	-
Stage 1	-	-	-	-	695	-
Stage 2	-	-	-	-	930	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	49.9
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	562	-	-	994	-
HCM Lane V/C Ratio	0.931	-	-	0.014	-
HCM Control Delay (s)	49.9	-	-	8.7	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	11.8	-	-	0	-

Intersection	
Int Delay, s/veh	160.2

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Vol, veh/h	455	327	534	99	56	343
Future Vol, veh/h	455	327	534	99	56	343
Conflicting Peds, #/hr	15	0	0	15	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	1	2	2	1
Mvmt Flow	455	327	534	99	56	343

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	648	0	-	0	1836	599
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	1237	-
Critical Hdwy	4.13	-	-	-	6.42	6.21
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.227	-	-	-	3.518	3.309
Pot Cap-1 Maneuver	933	-	-	-	83	503
Stage 1	-	-	-	-	549	-
Stage 2	-	-	-	-	274	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	921	-	-	-	~ 32	496
Mov Cap-2 Maneuver	-	-	-	-	~ 32	-
Stage 1	-	-	-	-	215	-
Stage 2	-	-	-	-	270	-

Approach	EB	WB	SW
HCM Control Delay, s	7.4	0	$ 714
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SWLn1
Capacity (veh/h)	921	-	-	-	163
HCM Lane V/C Ratio	0.494	-	-	-	2.448
HCM Control Delay (s)	12.7	0	-	-	$ 714
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	2.8	-	-	-	33.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	52	763	807	70	19	39
Future Vol, veh/h	52	763	807	70	19	39
Conflicting Peds, #/hr	2	0	0	2	0	58
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	3	1	0	0	6
Mvmt Flow	52	763	807	70	19	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	879	0	-	0	1711	902
Stage 1	-	-	-	-	844	-
Stage 2	-	-	-	-	867	-
Critical Hdwy	4.23	-	-	-	6.4	6.26
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.317	-	-	-	3.5	3.354
Pot Cap-1 Maneuver	724	-	-	-	101	331
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	415	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	723	-	-	-	88	314
Mov Cap-2 Maneuver	-	-	-	-	88	-
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	414	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	36.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	723	-	-	-	171
HCM Lane V/C Ratio	0.072	-	-	-	0.339
HCM Control Delay (s)	10.4	0	-	-	36.5
HCM Lane LOS	B	A	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	402	3	22	718	736	236
Future Volume (Veh/h)	402	3	22	718	736	236
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	402	3	22	718	736	236
Pedestrians	19					
Lane Width (ft)	11.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				607		
pX, platoon unblocked	0.90					
vC, conflicting volume	1517	755	755			
vC1, stage 1 conf vol	755					
vC2, stage 2 conf vol	762					
vCu, unblocked vol	1519	755	755			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	99	97			
cM capacity (veh/h)	394	405	850			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	405	22	718	736	236
Volume Left	402	22	0	0	0
Volume Right	3	0	0	0	236
cSH	394	850	1700	1700	1700
Volume to Capacity	1.03	0.03	0.42	0.43	0.14
Queue Length 95th (ft)	326	2	0	0	0
Control Delay (s)	85.7	9.3	0.0	0.0	0.0
Lane LOS	F	A			
Approach Delay (s)	85.7	0.3		0.0	
Approach LOS	F				

Intersection Summary			
Average Delay	16.5		
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	0	0	0	14	516	744	14	14	695	5
Future Vol, veh/h	1	0	0	0	0	14	516	744	14	14	695	5
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	7	7	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	11	5	4	0	2	2	2
Mvmt Flow	1	0	0	0	0	14	516	744	14	14	695	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2517	2523	698	2516	2518	759	700	0	0	765	0	0
Stage 1	726	726	-	1790	1790	-	-	-	-	-	-	-
Stage 2	1791	1797	-	726	728	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.31	4.15	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.399	2.245	-	-	2.218	-	-
Pot Cap-1 Maneuver	19	28	444	19	28	392	883	-	-	848	-	-
Stage 1	419	433	-	105	135	-	-	-	-	-	-	-
Stage 2	104	134	-	419	432	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	10	11	444	10	11	389	883	-	-	843	-	-
Mov Cap-2 Maneuver	10	11	-	10	11	-	-	-	-	-	-	-
Stage 1	174	426	-	43	56	-	-	-	-	-	-	-
Stage 2	42	55	-	412	425	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 401.7	14.6	5.9	0.2
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	883	-	-	10	389	843	-	-
HCM Lane V/C Ratio	0.584	-	-	0.1	0.036	0.017	-	-
HCM Control Delay (s)	14.6	-	-	$ 401.7	14.6	9.3	-	-
HCM Lane LOS	B	-	-	F	B	A	-	-
HCM 95th %tile Q(veh)	3.9	-	-	0.3	0.1	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	8.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	1	0	3	2	520	0	0	0	0	275	5
Future Vol, veh/h	9	1	0	3	2	520	0	0	0	0	275	5
Conflicting Peds, #/hr	13	0	0	0	0	13	0	0	0	7	0	16
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	17	0	0	5	0	0	0	0	4	17
Mvmt Flow	9	1	0	3	2	520	0	0	0	0	275	5

Major/Minor	Minor2			Minor1			Major2		
Conflicting Flow All	568	301	294	285	303	20	7	0	0
Stage 1	294	294	-	7	7	-	-	-	-
Stage 2	274	7	-	278	296	-	-	-	-
Critical Hdwy	7.1	6.5	6.37	7.1	6.5	6.25	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.1	5.5	-	-	-	-
Follow-up Hdwy	3.5	4	3.453	3.5	4	3.345	2.2	-	-
Pot Cap-1 Maneuver	437	615	711	671	613	1049	1627	-	-
Stage 1	719	673	-	-	-	-	-	-	-
Stage 2	-	-	-	733	672	-	-	-	-
Platoon blocked, %								-	-
Mov Cap-1 Maneuver	211	603	701	666	601	1031	1617	-	-
Mov Cap-2 Maneuver	211	603	-	666	601	-	-	-	-
Stage 1	719	664	-	-	-	-	-	-	-
Stage 2	-	-	-	732	663	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	21.7	12.1	0
HCM LOS	C	B	

Minor Lane/Major Mvmt	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	226	1025	1617	-	-
HCM Lane V/C Ratio	0.044	0.512	-	-	-
HCM Control Delay (s)	21.7	12.1	0	-	-
HCM Lane LOS	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	3	0	-	-

Intersection	
Intersection Delay, s/veh	29.8
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	242	823	650	510
Demand Flow Rate, veh/h	253	847	650	528
Vehicles Circulating, veh/h	734	151	317	992
Vehicles Exiting, veh/h	786	816	670	6
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.3	14.2	13.3	84.7
Approach LOS	B	B	B	F

Lane	Left	Left	Left	Left
Designated Moves	LTR	LT	LTR	LTR
Assumed Moves	LTR	LT	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	253	847	650	528
Cap Entry Lane, veh/h	653	1183	999	502
Entry HV Adj Factor	0.956	0.971	1.000	0.965
Flow Entry, veh/h	242	823	650	510
Cap Entry, veh/h	624	1149	999	484
V/C Ratio	0.388	0.716	0.651	1.052
Control Delay, s/veh	11.3	14.2	13.3	84.7
LOS	B	B	B	F
95th %tile Queue, veh	2	7	5	16

Intersection	
Intersection Delay, s/veh	14.8
Intersection LOS	B

Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	892	635	259
Demand Flow Rate, veh/h	910	648	264
Vehicles Circulating, veh/h	142	389	437
Vehicles Exiting, veh/h	559	663	600
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	16.0	16.1	7.4
Approach LOS	C	C	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	910	648	264
Cap Entry Lane, veh/h	1194	928	884
Entry HV Adj Factor	0.980	0.981	0.981
Flow Entry, veh/h	892	635	259
Cap Entry, veh/h	1170	910	867
V/C Ratio	0.762	0.698	0.299
Control Delay, s/veh	16.0	16.1	7.4
LOS	C	C	A
95th %tile Queue, veh	8	6	1

Intersection	
Int Delay, s/veh	7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	207	78	11	423	245	7
Future Vol, veh/h	207	78	11	423	245	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	207	78	11	423	245	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	285	0	691	246
Stage 1	-	-	-	-	246	-
Stage 2	-	-	-	-	445	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1277	-	410	793
Stage 1	-	-	-	-	795	-
Stage 2	-	-	-	-	646	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1277	-	405	793
Mov Cap-2 Maneuver	-	-	-	-	405	-
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	646	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	26.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	411	-	-	1277	-
HCM Lane V/C Ratio	0.613	-	-	0.009	-
HCM Control Delay (s)	26.7	-	-	7.8	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	4	-	-	0	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	61	144	338	330	141	80
Future Vol, veh/h	61	144	338	330	141	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	0	1	2	0
Mvmt Flow	61	144	338	330	141	80

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	668	0	-	0	769	503
Stage 1	-	-	-	-	503	-
Stage 2	-	-	-	-	266	-
Critical Hdwy	4.1	-	-	-	6.42	6.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.2	-	-	-	3.518	3.3
Pot Cap-1 Maneuver	931	-	-	-	369	573
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	779	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	931	-	-	-	343	573
Mov Cap-2 Maneuver	-	-	-	-	343	-
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	779	-

Approach	EB	WB	SE
HCM Control Delay, s	2.7	0	24.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SELn1
Capacity (veh/h)	931	-	-	-	401
HCM Lane V/C Ratio	0.066	-	-	-	0.551
HCM Control Delay (s)	9.1	0	-	-	24.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	3.2

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	207	339	52	14	1
Future Vol, veh/h	5	207	339	52	14	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	1	1	0	0	0
Mvmt Flow	5	207	339	52	14	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	391	0	-	0	582	365
Stage 1	-	-	-	-	365	-
Stage 2	-	-	-	-	217	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1179	-	-	-	479	685
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	824	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1179	-	-	-	477	685
Mov Cap-2 Maneuver	-	-	-	-	477	-
Stage 1	-	-	-	-	703	-
Stage 2	-	-	-	-	824	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1179	-	-	-	487
HCM Lane V/C Ratio	0.004	-	-	-	0.031
HCM Control Delay (s)	8.1	0	-	-	12.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	198	0	13	405	0	7
Future Vol, veh/h	198	0	13	405	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	198	0	13	405	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	198	0	629	198
Stage 1	-	-	-	-	198	-
Stage 2	-	-	-	-	431	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1375	-	446	843
Stage 1	-	-	-	-	835	-
Stage 2	-	-	-	-	655	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1375	-	441	843
Mov Cap-2 Maneuver	-	-	-	-	441	-
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	655	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	843	-	-	1375	-
HCM Lane V/C Ratio	0.008	-	-	0.009	-
HCM Control Delay (s)	9.3	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	12

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	447	872	839	503	99
Future Vol, veh/h	30	447	872	839	503	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	140	0	170	-	-	150
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	0	1	3	1
Mvmt Flow	30	447	872	839	503	99

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2667	503	503	0	-	0
Stage 1	503	-	-	-	-	-
Stage 2	2164	-	-	-	-	-
Critical Hdwy	6.6	6.23	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.319	2.2	-	-	-
Pot Cap-1 Maneuver	~ 22	568	1072	-	-	-
Stage 1	612	-	-	-	-	-
Stage 2	75	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 4	568	1072	-	-	-
Mov Cap-2 Maneuver	120	-	-	-	-	-
Stage 1	114	-	-	-	-	-
Stage 2	75	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31.7	10.7	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1072	-	120	568	-	-
HCM Lane V/C Ratio	0.813	-	0.25	0.787	-	-
HCM Control Delay (s)	21.1	-	44.7	30.8	-	-
HCM Lane LOS	C	-	E	D	-	-
HCM 95th %tile Q(veh)	9.5	-	0.9	7.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

TRAFFIC IMPACT ANALYSIS REPORT UPDATE

FOR THE PROPOSED

HOKUA PLACE

KAPA`A, KAUAI, HAWAII
TAX MAP KEY: (4) 4-3-03: 01

APPENDIX E

CAPACITY ANALYSIS WORKSHEETS

PEAK HOUR TRAFFIC WITH PROJECT

WITH IMPROVEMENTS

Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	37	12	60	1	11	5	751	14	3	824	43
Future Volume (vph)	9	37	12	60	1	11	5	751	14	3	824	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0			60		0	0		0
Storage Lanes		0		1			1		0	0		0
Taper Length (ft)		100					100			100		
Satd. Flow (prot)	0	0	1613	1501	1589	0	1632	1761	0	0	1800	0
Flt Permitted			0.962				0.347				0.998	
Satd. Flow (perm)	0	0	1598	1451	1545	0	594	1761	0	0	1797	0
Right Turn on Red				Yes	Yes				No			
Satd. Flow (RTOR)				60	198							
Link Speed (mph)			30					30			30	
Link Distance (ft)			417					1113			697	
Travel Time (s)			9.5					25.3			15.8	
Confl. Peds. (#/hr)	2	4		7	4	4	4		7	4		4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	15%	0%	4%	0%	6%	9%	4%	0%	0%	1%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	58	60	1	0	16	765	0	0	875	0
Turn Type	Perm	Perm	NA	Perm	Perm	custom	custom	NA		Perm	NA	
Protected Phases			4								6	
Permitted Phases	4	4		4	8	2	2	2		6		
Detector Phase	4	4	4	4	8	2	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	26.0	26.0	26.0		34.0	34.0	
Total Split (s)	27.0	27.0	27.0	27.0	27.0	53.0	53.0	53.0		53.0	53.0	
Total Split (%)	33.8%	33.8%	33.8%	33.8%	33.8%	66.3%	66.3%	66.3%		66.3%	66.3%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)			0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)			6.0	6.0	6.0		6.0	6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	Max	Max	Max		Max	Max	
Act Effct Green (s)			8.4	8.4	8.4		55.6	55.6			55.6	
Actuated g/C Ratio			0.12	0.12	0.12		0.77	0.77			0.77	
v/c Ratio			0.31	0.27	0.00		0.03	0.56			0.63	
Control Delay			32.8	11.4	0.0		3.8	7.0			8.2	
Queue Delay			0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay			32.8	11.4	0.0		3.8	7.0			8.2	
LOS			C	B	A		A	A			A	
Approach Delay			21.9					7.0			8.2	
Approach LOS			C					A			A	
Queue Length 50th (ft)			25	0	0		2	132			166	
Queue Length 95th (ft)			53	30	0		7	257			330	
Internal Link Dist (ft)			337					1033			617	
Turn Bay Length (ft)							60					

Lane Group	SBR2
Lane Configurations	
Traffic Volume (vph)	5
Future Volume (vph)	5
Ideal Flow (vphpl)	1900
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	4
Peak Hour Factor	1.00
Heavy Vehicles (%)	0%
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	

Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)			468	467	592		458	1359			1387	
Starvation Cap Reductn			0	0	0		0	0			0	
Spillback Cap Reductn			0	0	0		0	0			0	
Storage Cap Reductn			0	0	0		0	0			0	
Reduced v/c Ratio			0.12	0.13	0.00		0.03	0.56			0.63	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 72	
Natural Cycle: 70	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 8.6	Intersection LOS: A
Intersection Capacity Utilization 70.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Kuhio Hwy & Kukui St & Huluili St

Lane Group	SBR2
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	516	2	18	760	864	105
Future Volume (Veh/h)	516	2	18	760	864	105
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	516	2	18	760	864	105
Pedestrians	8					
Lane Width (ft)	11.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				697		
pX, platoon unblocked	0.79					
vC, conflicting volume	1668	872	872			
vC1, stage 1 conf vol	872					
vC2, stage 2 conf vol	796					
vCu, unblocked vol	1713	872	872			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	99	98			
cM capacity (veh/h)	388	350	776			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	518	18	760	864	105
Volume Left	516	18	0	0	0
Volume Right	2	0	0	0	105
cSH	387	776	1700	1700	1700
Volume to Capacity	1.34	0.02	0.45	0.51	0.06
Queue Length 95th (ft)	608	2	0	0	0
Control Delay (s)	196.5	9.7	0.0	0.0	0.0
Lane LOS	F	A			
Approach Delay (s)	196.5	0.2		0.0	
Approach LOS	F				

Intersection Summary			
Average Delay	45.0		
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	12.9
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	595	296	340	855
Demand Flow Rate, veh/h	611	327	349	866
Vehicles Circulating, veh/h	710	112	728	408
Vehicles Exiting, veh/h	306	965	593	31
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	23.9	5.4	11.1	8.5
Approach LOS	C	A	B	A

Lane	Left	Left	Left	Left	Bypass
Designated Moves	LTR	LT	LTR	LT	R
Assumed Moves	LTR	LT	LTR	LT	R
RT Channelized					Free
Lane Util	1.000	1.000	1.000	1.000	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	
Critical Headway, s	4.328	4.328	4.328	4.328	258
Entry Flow, veh/h	611	327	349	608	1919
Cap Entry Lane, veh/h	777	1291	765	1004	0.990
Entry HV Adj Factor	0.973	0.906	0.974	0.987	255
Flow Entry, veh/h	595	296	340	600	1900
Cap Entry, veh/h	756	1170	745	991	0.134
V/C Ratio	0.787	0.253	0.456	0.606	0.0
Control Delay, s/veh	23.9	5.4	11.1	12.1	A
LOS	C	A	B	B	0
95th %tile Queue, veh	8	1	2	4	

Intersection	
Int Delay, s/veh	19

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	339	16	52	113	9	52	28	506	14	1	0
Future Vol, veh/h	9	339	16	52	113	9	52	28	506	14	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	0	0	2	2	9	2	1	2	2	2
Mvmt Flow	9	339	16	52	113	9	52	28	506	14	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	122	0	0	339	0	0	587	591	347	593	579	118
Stage 1	-	-	-	-	-	-	365	365	-	222	222	-
Stage 2	-	-	-	-	-	-	222	226	-	371	357	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.19	6.52	6.21	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.19	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.19	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.581	4.018	3.309	3.518	4.018	3.318
Pot Cap-1 Maneuver	1465	-	-	1231	-	-	411	420	698	417	426	934
Stage 1	-	-	-	-	-	-	640	623	-	780	720	-
Stage 2	-	-	-	-	-	-	765	717	-	649	628	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1465	-	-	1231	-	-	394	398	698	104	403	934
Mov Cap-2 Maneuver	-	-	-	-	-	-	394	398	-	104	403	-
Stage 1	-	-	-	-	-	-	635	618	-	774	688	-
Stage 2	-	-	-	-	-	-	730	685	-	169	623	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	2.4	34.9	43.2
HCM LOS			D	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	676	1465	-	-	1231	-	-	109
HCM Lane V/C Ratio	0.867	0.006	-	-	0.042	-	-	0.138
HCM Control Delay (s)	34.9	7.5	0	-	8.1	0	-	43.2
HCM Lane LOS	D	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	10.2	0	-	-	0.1	-	-	0.5

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	971	136	702	905	6
Future Vol, veh/h	6	971	136	702	905	6
Conflicting Peds, #/hr	1	0	0	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Yield
Storage Length	140	0	170	-	-	150
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	20	3	2	3	3	0
Mvmt Flow	6	971	136	702	905	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1530	-	906	0	-	0
Stage 1	906	-	-	-	-	-
Stage 2	624	-	-	-	-	-
Critical Hdwy	6.9	-	4.13	-	-	-
Critical Hdwy Stg 1	5.7	-	-	-	-	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-
Follow-up Hdwy	3.69	-	2.219	-	-	-
Pot Cap-1 Maneuver	103	0	749	-	-	-
Stage 1	357	0	-	-	-	-
Stage 2	459	0	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	84	-	748	-	-	-
Mov Cap-2 Maneuver	220	-	-	-	-	-
Stage 1	292	-	-	-	-	-
Stage 2	459	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.8	1.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	748	-	220	-	-	-
HCM Lane V/C Ratio	0.182	-	0.027	-	-	-
HCM Control Delay (s)	10.9	-	21.8	0	-	-
HCM Lane LOS	B	-	C	A	-	-
HCM 95th %tile Q(veh)	0.7	-	0.1	-	-	-

Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	34	11	48	9	74	63	620	18	3	656	42
Future Volume (vph)	18	34	11	48	9	74	63	620	18	3	656	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0			60		0	0		0
Storage Lanes		0		1			1		0	0		0
Taper Length (ft)		100					100			100		
Satd. Flow (prot)	0	0	1763	1561	1589	0	1745	1824	0	0	1777	0
Flt Permitted			0.960				0.322				0.998	
Satd. Flow (perm)	0	0	1601	1410	1479	0	573	1824	0	0	1773	0
Right Turn on Red				Yes	Yes				No			
Satd. Flow (RTOR)				109	184							
Link Speed (mph)			30					30			30	
Link Distance (ft)			417					1123			607	
Travel Time (s)			9.5					25.5			13.8	
Confl. Peds. (#/hr)	37	30		47	30	30	75		49	49		30
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	63	48	9	0	137	638	0	0	733	0
Turn Type	Perm	Perm	NA	Perm	Perm	custom	custom	NA		Perm	NA	
Protected Phases			4				5				6	
Permitted Phases	4	4		4	8	5	2	2		6		
Detector Phase	4	4	4	4	8	5	5	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	4.0	4.0	7.0		7.0	7.0	
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	8.0	8.0	26.0		34.0	34.0	
Total Split (s)	27.0	27.0	27.0	27.0	27.0	8.0	8.0	43.0		35.0	35.0	
Total Split (%)	38.6%	38.6%	38.6%	38.6%	38.6%	11.4%	11.4%	61.4%		50.0%	50.0%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.5	3.5	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	0.5	0.5	2.0		2.0	2.0	
Lost Time Adjust (s)			0.0	0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)			6.0	6.0	6.0		4.0	6.0			6.0	
Lead/Lag						Lead	Lead			Lag	Lag	
Lead-Lag Optimize?						Yes	Yes					
Recall Mode	None	None	None	None	None	None	None	C-Max		C-Max	C-Max	
Act Effct Green (s)			8.5	8.5	8.5		54.1	53.3			44.1	
Actuated g/C Ratio			0.12	0.12	0.12		0.77	0.76			0.63	
v/c Ratio			0.32	0.18	0.03		0.24	0.46			0.66	
Control Delay			32.0	1.8	0.1		4.0	5.9			16.7	
Queue Delay			0.0	0.0	0.0		0.0	0.0			0.0	
Total Delay			32.0	1.8	0.1		4.0	5.9			16.7	
LOS			C	A	A		A	A			B	
Approach Delay			18.9					5.5			16.7	
Approach LOS			B					A			B	
Queue Length 50th (ft)			26	0	0		13	96			218	
Queue Length 95th (ft)			57	3	0		31	187			#475	
Internal Link Dist (ft)			337					1043			527	
Turn Bay Length (ft)							60					

Lane Group	SBR2
Lane Configurations	
Traffic Volume (vph)	32
Future Volume (vph)	32
Ideal Flow (vphpl)	1900
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	0
Flt Permitted	
Satd. Flow (perm)	0
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	35
Peak Hour Factor	1.00
Heavy Vehicles (%)	0%
Shared Lane Traffic (%)	
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	

Lane Group	EBL2	EBL	EBT	EBR	WBR2	NBL2	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)			480	499	572		561	1387			1116	
Starvation Cap Reductn			0	0	0		0	0			0	
Spillback Cap Reductn			0	0	0		0	0			0	
Storage Cap Reductn			0	0	0		0	0			0	
Reduced v/c Ratio			0.13	0.10	0.02		0.24	0.46			0.66	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 11.4 Intersection LOS: B
Intersection Capacity Utilization 104.3% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Kuhio Hwy & Kukui St & Huluili St

Lane Group	SBR2
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	402	3	22	718	736	236
Future Volume (Veh/h)	402	3	22	718	736	236
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	402	3	22	718	736	236
Pedestrians	19					
Lane Width (ft)	11.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				607		
pX, platoon unblocked	0.85					
vC, conflicting volume	1517	755	755			
vC1, stage 1 conf vol	755					
vC2, stage 2 conf vol	762					
vCu, unblocked vol	1520	755	755			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	5	99	97			
cM capacity (veh/h)	422	405	850			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	405	22	718	736	236
Volume Left	402	22	0	0	0
Volume Right	3	0	0	0	236
cSH	422	850	1700	1700	1700
Volume to Capacity	0.96	0.03	0.42	0.43	0.14
Queue Length 95th (ft)	283	2	0	0	0
Control Delay (s)	65.9	9.3	0.0	0.0	0.0
Lane LOS	F	A			
Approach Delay (s)	65.9	0.3		0.0	
Approach LOS	F				

Intersection Summary			
Average Delay	12.7		
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	13.7
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	242	823	650	510
Demand Flow Rate, veh/h	253	847	650	528
Vehicles Circulating, veh/h	734	151	317	992
Vehicles Exiting, veh/h	699	816	670	6
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	9.1	12.5	11.2	20.9
Approach LOS	A	B	B	C

Lane	Left	Left	Left	Left	Bypass
Designated Moves	LTR	LT	LTR	LT	R
Assumed Moves	LTR	LT	LTR	LT	R
RT Channelized					Free
Lane Util	1.000	1.000	1.000	1.000	
Follow-Up Headway, s	2.535	2.535	2.535	2.535	
Critical Headway, s	4.328	4.328	4.328	4.328	87
Entry Flow, veh/h	253	847	650	441	1976
Cap Entry Lane, veh/h	761	1249	1085	611	0.962
Entry HV Adj Factor	0.956	0.971	1.000	0.965	84
Flow Entry, veh/h	242	823	650	426	1900
Cap Entry, veh/h	727	1213	1085	590	0.044
V/C Ratio	0.333	0.678	0.599	0.722	0.0
Control Delay, s/veh	9.1	12.5	11.2	25.1	A
LOS	A	B	B	D	0
95th %tile Queue, veh	1	6	4	7	

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	137	71	338	301	28	38	24	144	5	9	1
Future Vol, veh/h	5	137	71	338	301	28	38	24	144	5	9	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	0	0	1	2	0	2	2	2	2	2
Mvmt Flow	5	137	71	338	301	28	38	24	144	5	9	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	329	0	0	137	0	0	1179	1188	173	1150	1138	315
Stage 1	-	-	-	-	-	-	183	183	-	991	991	-
Stage 2	-	-	-	-	-	-	996	1005	-	159	147	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1231	-	-	1459	-	-	169	188	871	175	201	725
Stage 1	-	-	-	-	-	-	823	748	-	296	324	-
Stage 2	-	-	-	-	-	-	297	319	-	843	775	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1231	-	-	1459	-	-	125	134	871	99	143	725
Mov Cap-2 Maneuver	-	-	-	-	-	-	125	134	-	99	143	-
Stage 1	-	-	-	-	-	-	819	744	-	295	232	-
Stage 2	-	-	-	-	-	-	204	228	-	678	771	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	4.2	21.3	36
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	426	1231	-	-	1459	-	-	131
HCM Lane V/C Ratio	0.484	0.004	-	-	0.232	-	-	0.115
HCM Control Delay (s)	21.3	7.9	0	-	8.2	0	-	36
HCM Lane LOS	C	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	2.7	0	-	-	0.9	-	-	0.4

Intersection	
Int Delay, s/veh	8.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	447	872	839	503	99
Future Vol, veh/h	30	447	872	839	503	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Yield
Storage Length	140	0	170	-	-	150
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	2	0	1	3	1
Mvmt Flow	30	447	872	839	503	99

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2667	-	503	0	-	0
Stage 1	503	-	-	-	-	-
Stage 2	2164	-	-	-	-	-
Critical Hdwy	6.6	-	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	-	2.2	-	-	-
Pot Cap-1 Maneuver	~ 22	0	1072	-	-	-
Stage 1	612	0	-	-	-	-
Stage 2	75	0	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 4	-	1072	-	-	-
Mov Cap-2 Maneuver	120	-	-	-	-	-
Stage 1	114	-	-	-	-	-
Stage 2	75	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	44.9	11.4	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1072	-	120	-	-	-
HCM Lane V/C Ratio	0.813	-	0.25	-	-	-
HCM Control Delay (s)	22.4	-	44.9	0	-	-
HCM Lane LOS	C	-	E	A	-	-
HCM 95th %tile Q(veh)	11.7	-	1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

THE TRAFFIC MANAGEMENT CONSULTANT

Randall S. Okaneku, P.E., Principal ∗ 1188 Bishop Street, Suite 1907 ∗ Honolulu, Hawaii 96813
Telephone: (808) 536-0223 ∗ Facsimile: (808) 537-2985 ∗ Email: TMCHawaii@aol.com

TMC Job No. 201708
October 3, 2017

State of Hawaii
Department of Transportation
Highways Division-Kauai District
1720 Haleukana Street
Lihu`e, Kauai, Hawai`i 96766

Attn.: Mr. Larry Dill, P.E., District Engineer

Dear Mr. Dill:

Subject: Traffic Impact Analysis Report Update
For the Proposed Hokua Place
Tax Map Key: (4) 4-3-003: Portion of 001
Kapa`a, Kauai, Hawaii

Thank you for the review comments in your letter, dated September 29, 2017, on the subject traffic study. Our responses follow:

Comment No. 1

Noted.

Comment No. 2

Noted.

Comment No. 3

The AM and PM Peak Hour Traffic Without Project rows of Table 6 summarize the capacity analysis under existing roadway conditions. The AM and PM Peak Hour Traffic With Project rows of Table 6 summarize the capacity analysis with the recommended site access improvements under Section V.B. of the TIAR Update. The AM and PM Peak Hour Traffic With Project – Improved rows in Table 6 summarize the capacity analysis of the recommended traffic improvements under Section V.A. of the TIAR Update.

Comment No. 4

Noted.

Comment No. 5

Noted.

If you require clarification on any of the above material or have any other questions, please do not hesitate to call me.

Very truly yours,

The Traffic Management Consultant

By

Randall S. Okaneku, P. E.
Principal

DAVID Y. IGE
GOVERNOR

FORD N. FUCHIGAMI
DIRECTOR

Deputy Directors
JADE T. BUTAY
ROSS M. HIGASHI
EDWIN H. SNIFFEN
DARRELL T. YOUNG

IN REPLY REFER TO:

HWAY-K 4.170445

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KAUAI DISTRICT
1720 HALEUKANA STREET
LIHUE, HAWAII 96766

September 29, 2017

Randall S. Okaneku, P.E.
The Traffic Management Consultant
1188 Bishop Street, Suite 1907
Honolulu, Hawaii 96813

Dear Mr. Okaneku:

Subject: Traffic Impact Analysis Report Update
Hokua Place
Kapa'a, Kawaihau District, Island of Kaua'i
TMK: (4) 4-3-03: Por. 001

Thank you for submitting the updated Traffic Impact Analysis Report(TIAR) update that was transmitted via email on June 15, 2017. We have circulated the TIAR for comment through the Highways Division Planning Branch as well as the Traffic Branch. We have also reviewed the comments provided by the County of Kauai Department of Public Works Engineering Division on September 1, 2017.

The combined comments for the Hawaii Department of Transportation Highways Division are as follows:

1. The report discussed the projects that are proposed in the Kapaa Transportation Solutions Report dated August 2015. It should be noted that these projects may not be completed on schedule. Therefore, they should not be considered in this report.
2. It is understood that the proposed Road A will be funded and constructed by the developer.
3. Please clarify the scenarios in Table 7, Summary of Capacity Analysis. What assumed improvements are completed for AM/PM peak hour traffic without project, with project, and with project-improved.
4. Section V of the TIAR recommends traffic improvements without the project. Although these recommendations are appreciated, they are not a consideration for this development.
5. We concur with the comments provided by the County of Kauai Department of Engineering Division.

Please contact Raymond McCormick at 808-241-3015 by telephone or by email at Raymond.j.mccormick@hawaii.gov if you have comments or questions regarding this letter.

Sincerely,

Larry Dill, P.E.
District Engineer
for

THE TRAFFIC MANAGEMENT CONSULTANT

Randall S. Okaneku, P.E., Principal ∗ 1188 Bishop Street, Suite 1907 ∗ Honolulu, Hawaii 96813
Telephone: (808) 536-0223 ∗ Facsimile: (808) 537-2985 ∗ Email: TMCHawaii@aol.com

TMC Job No. 201708
October 3, 2017

Department of Public Works
County of Kauai
4444 Rice Street, Suite 275
Lihu`e, Kauai, Hawai`i 96766

Attn.: Mr. Michael Moule, P.E., Chief, Engineering Division

Dear Mr. Moule:

Subject: Traffic Impact Analysis Report Update
For the Proposed Hokua Place
Tax Map Key: (4) 4-3-003: Portion of 001
Kapa`a, Kauai, Hawaii

Thank you for the thorough review comments in your letter, dated September 1, 2017, on the subject traffic study. Our responses follow:

Comment No. 1 – Introduction, Project Description

a. Concur. The design of the intersection between the Phase 1 access road and Olohena Road, mauka of its intersection with Ka`apuni Road, will include the appropriate vertical and horizontal sight distances in accordance with the AASHTO A Policy on Geometric Design of Highways and Streets and the Hawaii Statewide Uniform Design Manual for Streets and Highways.

Comment No. 2 – Existing Roadways

a. Concur. The stated speed limits are intended to provide guidance to the design of the intersection of Road A and the Kapa`a Bypass Road.

b. Concur.

c. Concur.

Comment No. 3 – Existing Peak Hour Traffic Volumes and Operation Conditions

a. Noted. The traffic impact analysis is based upon the methodology presented in the Highway Capacity Manual (HCM). The HCM methodology consists of a series of mathematical calculations to determine roadway capacity, vehicle delay, vehicle queuing, etc. The LOS concept was defined in the HCM to translate the results of the complex calculations into a simplified "A" through "F" grading system.

b. Corrected. The second sentence in the last paragraph on Page 10 should read "South of Ulu Street, Kuhio Highway carried over 1,700 vph…".

c. Corrected. The revised Figure 6 is attached. The PM peak hour of traffic from 3:45 PM to 4:45 PM on March 15, 2015 was selected for the intersection of Kuhio Highway and the Kapa`a Bypass Road because it corresponded with of the commuter PM peak hour traffic at the intersections in Kapa`a Town. The revised traffic data sheets for the intersection of Kuhio Highway and Kapa`a Bypass Road also are attached.

d. LOS, by definition, is the result of a series of mathematical calculations. For the purpose of the traffic impact analysis, the HCM methodology provides a common basis for comparing future traffic conditions without the proposed project and future traffic conditions with the proposed project.

Comment No. 4 – Kapa`a Transportation Solutions

a. Noted. The Kapa`a Transportation Solutions, cited in the TIAR Update, is dated August 2015. Please transmit the latest version of the Kapa`a traffic study.

b. Noted.

Comment No. 5 – Trip Generation Characteristics

a. Noted. The revised Table 6 is shown below:

Table 1. Hokua Place Trip Generation Characteristics

Land Use (ITE Code)	Units	AM Peak Hour (vph)			PM Peak Hour (vph)		
		Enter	Exit	Total	Enter	Exit	Total
Single-Family Phase 1 (265)	16 DU	5	16	21	13	7	20
Single-Family Phase 2 (265)	100 DU	20	60	80	66	38	104
Condominium/ Townhouse (230)	700 DU	52	256	308	244	120	364
Retail Center (820)	8,000 SFGFA	21	13	34	53	57	110
	Pass-By	0	0	0	(-)45	(-)45	(-)90
Total External Trips		**98**	**345**	**443**	**331**	**177**	**509**

b. The ITE Trip Generation Handbook cites a 9,000-square foot retail center, where 20 percent of the trip generation were primary trips. Comparing the retail center to smaller convenience markets, the Trip Generation Handbook listed sites where the primary trip percentages ranged from 8 percent to 28 percent of the PM peak period trip generation. The retail center is described in the DEIS as a neighborhood-oriented commercial center. Therefore, it is reasonable to assume that a significant portion of the retail trips will be generated from within the proposed project, which can be defined as "internal capture" or "diverted trips".

Comment No. 6 – Site Access Improvements

a. Noted. The AM and PM peak hour traffic demands at the Olohena Road intersections at the Phase 1 Driveway and at Road A do not meet the AASHTO left-turn lane guidelines. During the AM peak hour of traffic, the advancing (mauka bound) volumes on Olohena Road do not meet the AASHTO minimum requirements. The left-turn demands at Road A and at the Phase 1 Driveway do not meet the AASHTO minimum left-turn volumes, during the PM peak hour of traffic. The Olohena Road intersections at Road A and the Phase 1 Driveway are expected to operate at satisfactory LOS during the AM peak hour of traffic. The Phase 1 Driveway also is expected to operate at satisfactory LOS at Olohena Road, during the PM peak hour of traffic. Road A is expected to operate at LOS "D", during the PM peak hour of traffic. However, the average delay of 26.7 seconds/vehicle on Road A is in the upper range of LOS "D". Therefore, a median refuge lane at Road A was not recommended at this time. Furthermore, separate left-turn and right-turn lanes on Road A would not improve the LOS.

Comment No. 7 – Traffic Assignment

a. The traffic assignment for the proposed project was primarily based upon the direction of peak hour traffic at the roundabout intersection of the Kapa`a Bypass Road and Olohena Road, where only about one third of Olohena Road traffic turns to/from the south leg of the Kapa`a Bypass Road. The Phase 2 development is concentrated on the makai half of the project site. Only the trips generated from the mauka-most portion of the site and the estimated AM peak hour school trips are expected to use the mauka access of Road A at Olohena Road.

b. The peak hour trip destinations, mauka of the Ka`apuni Road/Olohena Road intersection, are virtually nil, as observed in mauka bound/makai bound directional splits on Olohena Road. The retail trips generated from the mauka neighboring communities are represented in the "pass-by" trips using Road A.

Comment No. 8 – Figures 11 through 14 (Traffic Assignment)

a. The diverted peak hour trips on Road A are depicted on the attached Figures 12.1 and 14.1.

b. The revised Figure 11 is attached.

c. The revised Figure 13 is attached.

d. The revised Figure 14 is attached.

Comment No. 9 – PM Peak Hour Traffic Analysis With Project

a. The recommendation of extending the median refuge lane/two-way left-turn lane in Section V.A.7. of the TIAR Update is expected to mitigate the "bottle-neck" on Kuhio Highway, north of Lehua Street. Ultimately, the improvement of the north leg of the Kapa`a Bypass Road from a one-way roadway to a two-way bypass road is expected to improve traffic operations in Kapa`a Town.

Comment No. 10 – Recommendation of Traffic Improvements Without Project

a. Noted.

Comment No. 11 – Recommendation of Traffic Improvements With Project

a. Noted. While the MUTCD does not provide warrants for roundabout intersections, it does advise that a roundabout intersection can be considered as an alternative to traffic signal control. Based upon the TIAR Update, the intersection of Olohena Road and Road A is not expected to warrant all-way stop controls or traffic signals. Therefore, a roundabout intersection was not considered. However, a reassessment of the traffic operations at the Road A intersection at Olohena Road may be considered after the project is fully built out and occupied. A roundabout intersection was considered at the intersection of Olohena Road, Ka`apuni Road, and Kaehulua Road. However, based upon a preliminary assessment of the horizontal and vertical alignments of the intersecting roadways, it was determined that a roundabout intersection would not be feasible. The realignment of Kaehulua Road to form a four-legged intersection with the Olohena Road and Ka`apuni Road was recommended in Section V.A.6.

If you require clarification on any of the above material or have any other questions, please do not hesitate to call me.

Very truly yours,

The Traffic Management Consultant

By

Randall S. Okaneku, P. E.
Principal

Attachments:
Figure 6-Revised
Kuhio Hwy Kapa`a Bypass Rd Traffic Count Data-Revised
Figure 12.1
Figure 14.1
Figure 11-Revised
Figure 13-Revised
Figure 14-Revised

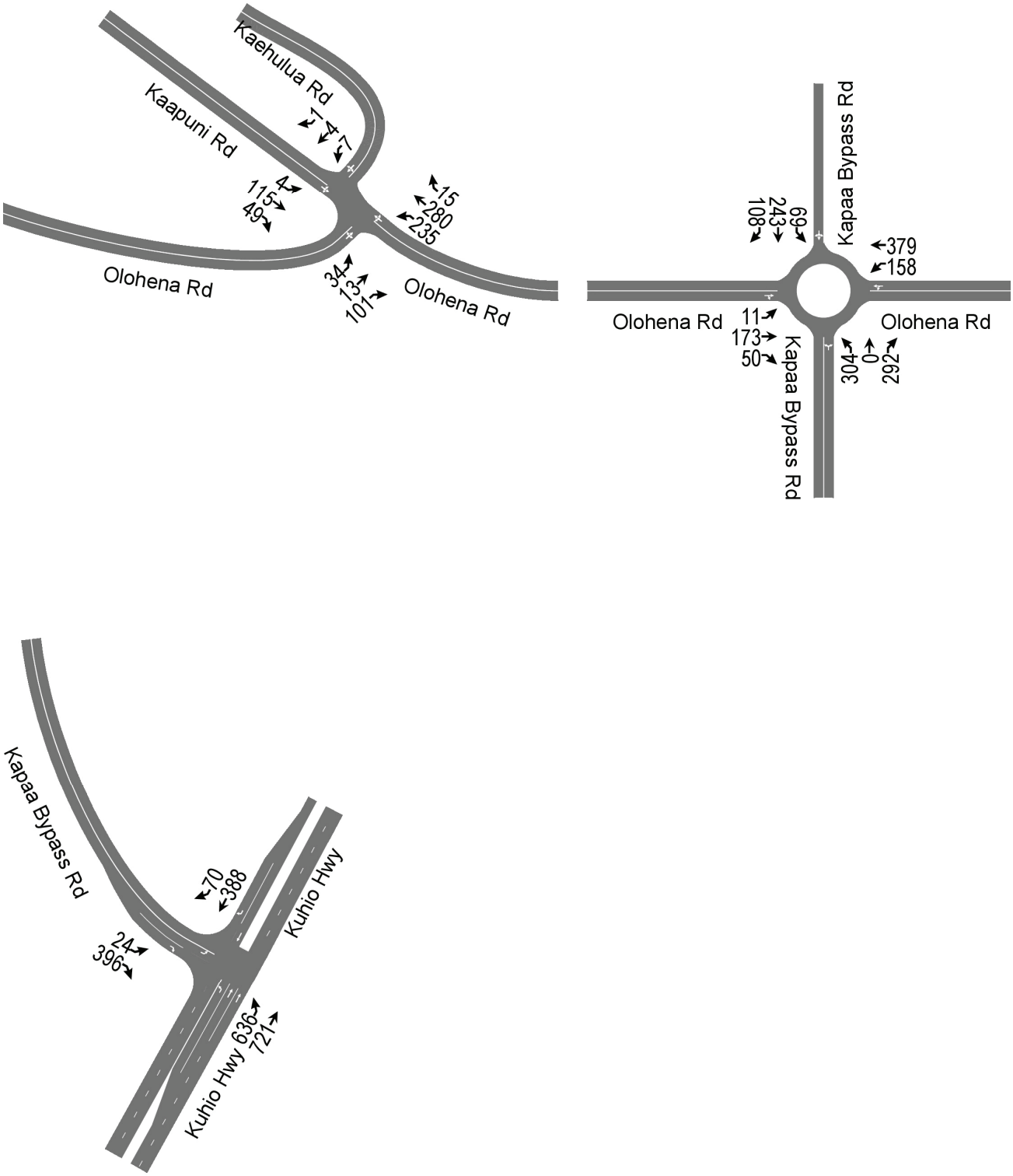


Figure 6. Existing PM Peak Hour Traffic (Cont'd.)

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 1

Turning Movement Data

Start Time	Kapaa Bypass Rd Koko Head Bound				Kuhio Hwy Mauka Bound				Kuhio Hwy Makai Bound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
3:00 PM	1	105	0	106	99	191	0	290	0	106	5	0	111	507
3:15 PM	3	100	0	103	122	210	0	332	0	88	7	0	95	530
3:30 PM	8	93	0	101	120	207	0	327	0	73	8	0	81	509
3:45 PM	8	104	0	112	148	201	0	349	0	88	21	0	109	570
Hourly Total	20	402	0	422	489	809	0	1298	0	355	41	0	396	2116
4:00 PM	1	108	0	109	168	161	0	329	0	91	16	0	107	545
4:15 PM	9	94	0	103	154	172	0	326	0	97	14	0	111	540
4:30 PM	6	90	0	96	166	187	0	353	0	112	19	0	131	580
4:45 PM	2	95	0	97	146	176	0	322	0	112	15	0	127	546
Hourly Total	18	387	0	405	634	696	0	1330	0	412	64	0	476	2211
5:00 PM	5	88	0	93	149	232	0	381	0	138	27	0	165	639
5:15 PM	2	91	0	93	149	192	0	341	0	152	25	0	177	611
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	7	179	0	186	298	424	0	722	0	290	52	0	342	1250
6:30 AM	0	78	0	78	14	124	0	138	0	203	0	0	203	419
6:45 AM	2	116	0	118	8	124	0	132	0	190	1	0	191	441
Hourly Total	2	194	0	196	22	248	0	270	0	393	1	0	394	860
7:00 AM	1	161	0	162	20	129	0	149	0	233	0	0	233	544
7:15 AM	1	184	0	185	25	155	0	180	0	200	1	0	201	566
7:30 AM	2	152	0	154	24	152	0	176	0	167	0	0	167	497
7:45 AM	1	155	1	156	33	180	0	213	0	135	0	0	135	504
Hourly Total	5	652	1	657	102	616	0	718	0	735	1	0	736	2111
8:00 AM	0	150	0	150	24	187	0	211	0	132	1	0	133	494
8:15 AM	3	131	0	134	21	177	0	198	0	165	0	0	165	497
8:30 AM	3	130	0	133	33	191	0	224	0	161	1	0	162	519
8:45 AM	1	108	0	109	25	209	0	234	0	189	0	0	189	532
Hourly Total	7	519	0	526	103	764	0	867	0	647	2	0	649	2042
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	5	103	0	108	97	217	0	314	0	96	6	0	102	524
3:15 PM	8	117	0	125	131	156	0	287	0	84	9	0	93	505
3:30 PM	6	83	0	89	138	227	0	365	1	76	8	0	85	539
3:45 PM	2	87	1	89	119	182	0	301	0	76	7	0	83	473
Hourly Total	21	390	1	411	485	782	0	1267	1	332	30	0	363	2041
4:00 PM	2	122	0	124	126	152	0	278	0	96	7	0	103	505
4:15 PM	6	109	1	115	136	158	0	294	0	95	6	0	101	510
4:30 PM	6	96	1	102	143	174	0	317	0	78	2	0	80	499
4:45 PM	5	93	0	98	138	181	0	319	0	83	6	0	89	506
Hourly Total	19	420	2	439	543	665	0	1208	0	352	21	0	373	2020
5:00 PM	2	98	0	100	146	204	0	350	0	85	3	0	88	538
5:15 PM	4	113	0	117	121	159	0	280	0	92	2	0	94	491
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	6	211	0	217	267	363	0	630	0	177	5	0	182	1029
6:30 AM	0	82	0	82	11	115	0	126	0	185	0	0	185	393
6:45 AM	0	89	0	89	10	126	0	136	0	164	3	0	167	392
Hourly Total	0	171	0	171	21	241	0	262	0	349	3	0	352	785
7:00 AM	1	131	0	132	17	133	0	150	0	219	1	0	220	502
7:15 AM	3	168	0	171	32	158	0	190	0	182	3	0	185	546
7:30 AM	1	125	0	126	40	146	0	186	0	166	2	0	168	480
7:45 AM	1	123	0	124	30	165	0	195	0	138	0	0	138	457
Hourly Total	6	547	0	553	119	602	0	721	0	705	6	0	711	1985
8:00 AM	4	116	0	120	20	169	0	189	0	150	0	0	150	459
8:15 AM	1	125	0	126	28	158	0	186	0	133	2	0	135	447
Grand Total	116	4313	4	4429	3131	6537	0	9668	1	5030	228	0	5259	19356
Approach %	2.6	97.4	-	-	32.4	67.6	-	-	0.0	95.6	4.3	-	-	-
Total %	0.6	22.3	-	22.9	16.2	33.8	-	49.9	0.0	26.0	1.2	-	27.2	-
Lights	114	4214	-	4328	3083	6353	-	9436	1	4901	225	-	5127	18891
% Lights	98.3	97.7	-	97.7	98.5	97.2	-	97.6	100.0	97.4	98.7	-	97.5	97.6
Mediums	2	91	-	93	47	171	-	218	0	115	3	-	118	429
% Mediums	1.7	2.1	-	2.1	1.5	2.6	-	2.3	0.0	2.3	1.3	-	2.2	2.2
Articulated Trucks	0	8	-	8	1	13	-	14	0	14	0	-	14	36
% Articulated Trucks	0.0	0.2	-	0.2	0.0	0.2	-	0.1	0.0	0.3	0.0	-	0.3	0.2
All Pedestrians	-	-	4	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-

The Traffic Management Consultant
1188 Bishop Street, Suite 1907

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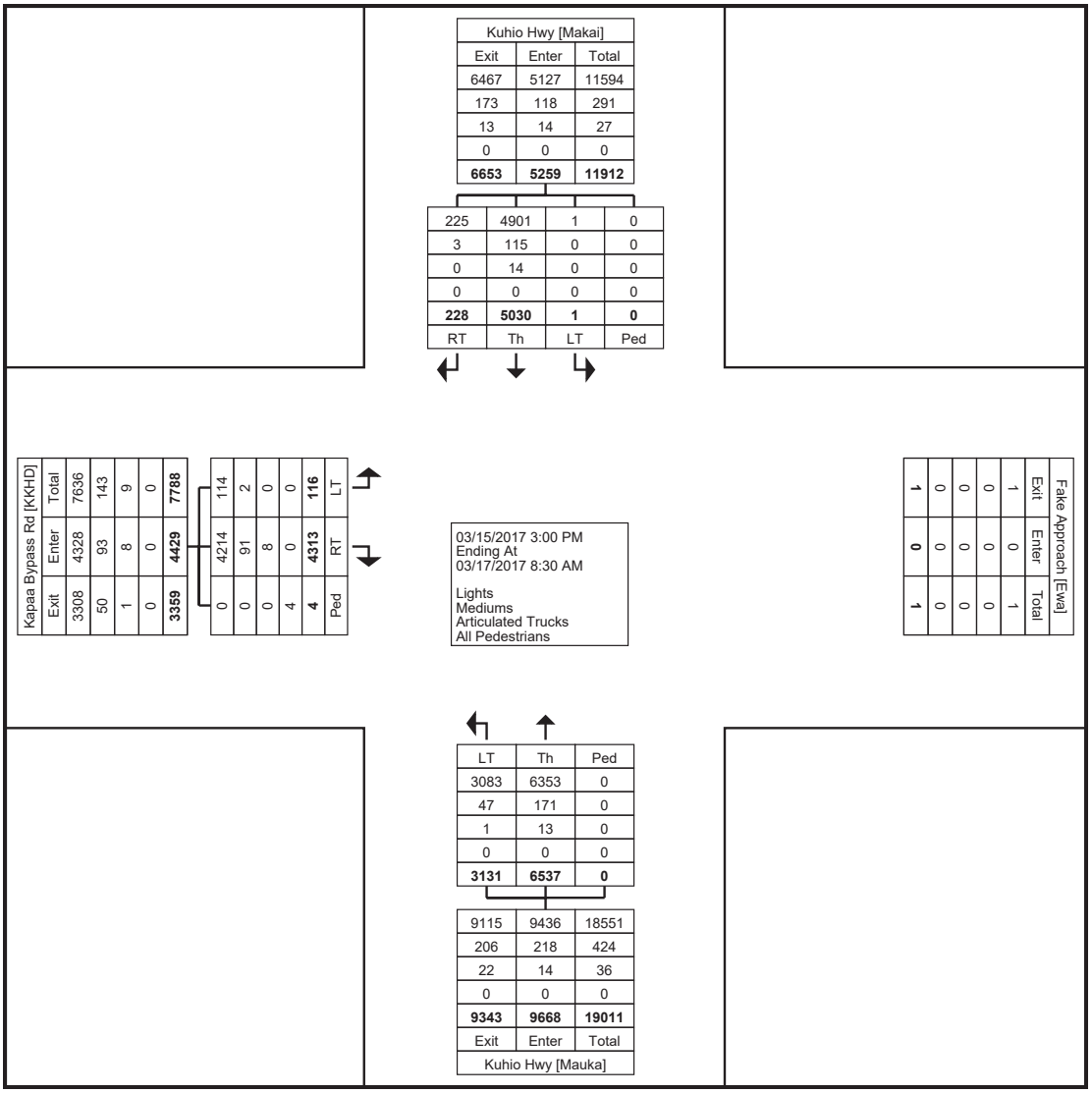
Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 2



Turning Movement Data Plot

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Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Kapaa Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (3:45 PM)

Start Time	Kapaa Bypass Rd Koko Head Bound				Kuhio Hwy Mauka Bound				Kuhio Hwy Makai Bound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
3:45 PM	8	104	0	112	148	201	0	349	0	88	21	0	109	570
4:00 PM	1	108	0	109	168	161	0	329	0	91	16	0	107	545
4:15 PM	9	94	0	103	154	172	0	326	0	97	14	0	111	540
4:30 PM	6	90	0	96	166	187	0	353	0	112	19	0	131	580
Total	24	396	0	420	636	721	0	1357	0	388	70	0	458	2235
Approach %	5.7	94.3	-	-	46.9	53.1	-	-	0.0	84.7	15.3	-	-	-
Total %	1.1	17.7	-	18.8	28.5	32.3	-	60.7	0.0	17.4	3.1	-	20.5	-
PHF	0.667	0.917	-	0.938	0.946	0.897	-	0.961	0.000	0.866	0.833	-	0.874	0.963
Lights	24	390	-	414	633	712	-	1345	0	377	69	-	446	2205
% Lights	100.0	98.5	-	98.6	99.5	98.8	-	99.1	-	97.2	98.6	-	97.4	98.7
Mediums	0	6	-	6	3	9	-	12	0	11	1	-	12	30
% Mediums	0.0	1.5	-	1.4	0.5	1.2	-	0.9	-	2.8	1.4	-	2.6	1.3
Articulated Trucks	0	0	-	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
All Pedestrians	-	-	0	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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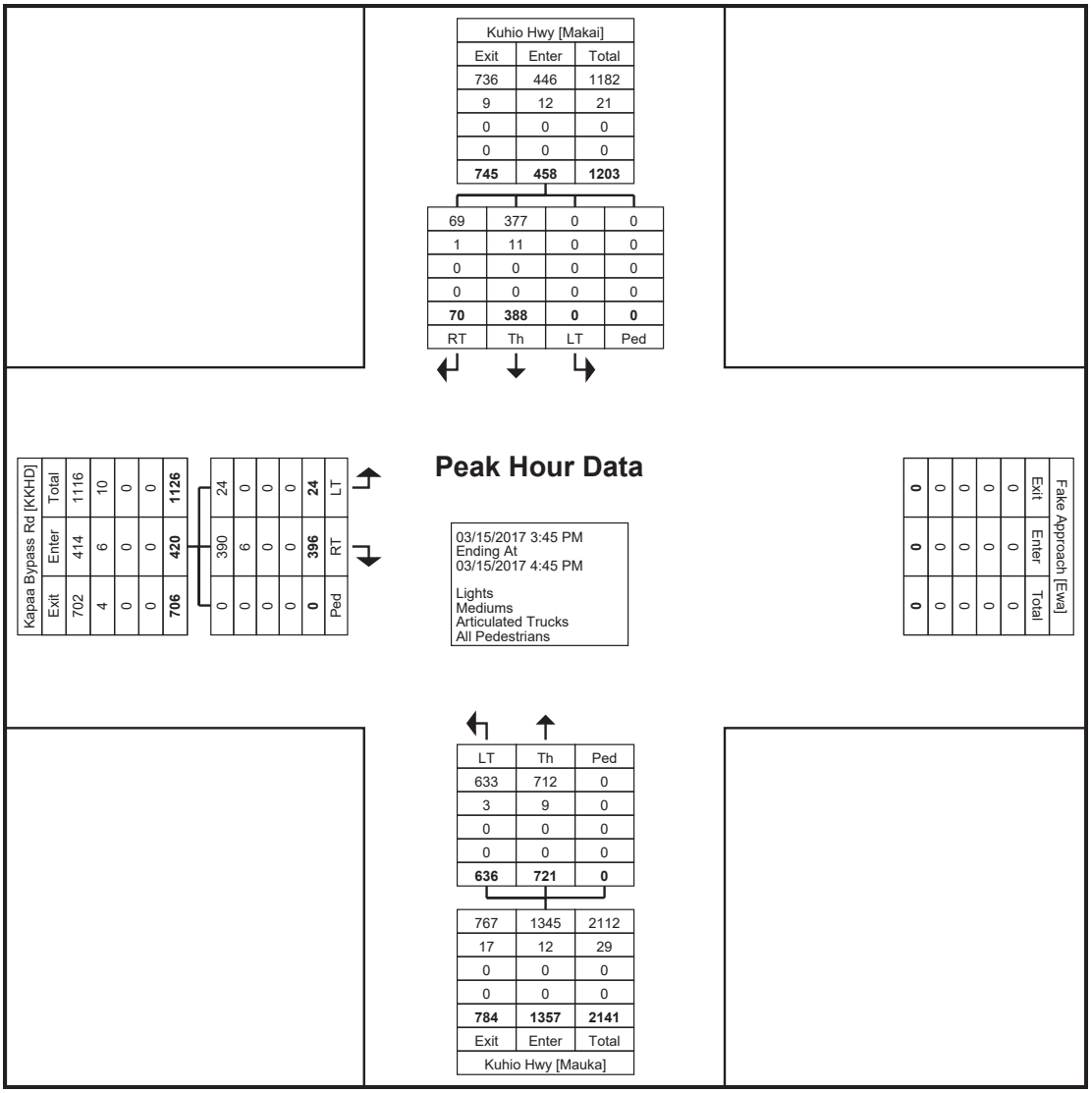
Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 4



Turning Movement Peak Hour Data Plot (3:45 PM)

The Traffic Management Consultant
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Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Kapaa Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Kapaa Bypass Rd Koko Head Bound				Kuhio Hwy Mauka Bound				Kuhio Hwy Makai Bound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
7:00 AM	1	161	0	162	20	129	0	149	0	233	0	0	233	544
7:15 AM	1	184	0	185	25	155	0	180	0	200	1	0	201	566
7:30 AM	2	152	0	154	24	152	0	176	0	167	0	0	167	497
7:45 AM	1	155	1	156	33	180	0	213	0	135	0	0	135	504
Total	5	652	1	657	102	616	0	718	0	735	1	0	736	2111
Approach %	0.8	99.2	-	-	14.2	85.8	-	-	0.0	99.9	0.1	-	-	-
Total %	0.2	30.9	-	31.1	4.8	29.2	-	34.0	0.0	34.8	0.0	-	34.9	-
PHF	0.625	0.886	-	0.888	0.773	0.856	-	0.843	0.000	0.789	0.250	-	0.790	0.932
Lights	4	635	-	639	100	600	-	700	0	711	1	-	712	2051
% Lights	80.0	97.4	-	97.3	98.0	97.4	-	97.5	-	96.7	100.0	-	96.7	97.2
Mediums	1	14	-	15	2	16	-	18	0	23	0	-	23	56
% Mediums	20.0	2.1	-	2.3	2.0	2.6	-	2.5	-	3.1	0.0	-	3.1	2.7
Articulated Trucks	0	3	-	3	0	0	-	0	0	1	0	-	1	4
% Articulated Trucks	0.0	0.5	-	0.5	0.0	0.0	-	0.0	-	0.1	0.0	-	0.1	0.2
All Pedestrians	-	-	1	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-

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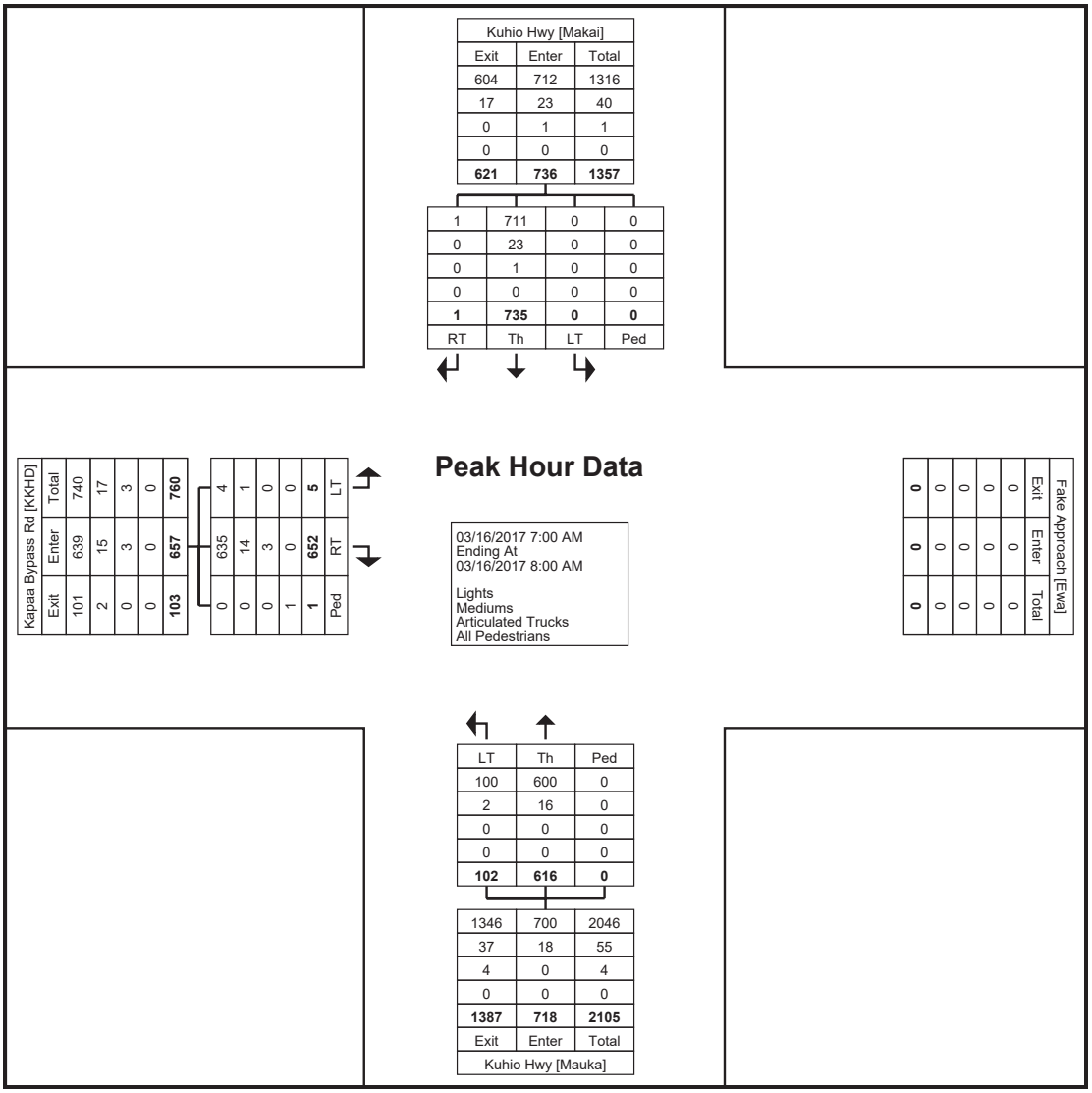
Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 6



Turning Movement Peak Hour Data Plot (7:00 AM)

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Honolulu, Hawaii, United States 96813
808-536-0223 tmchawaii@aol.com

Count Name: Kuhio Hwy Kapaa Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Kapaa Bypass Rd Koko Head Bound				Kuhio Hwy Mauka Bound				Kuhio Hwy Makai Bound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
4:15 PM	6	109	1	115	136	158	0	294	0	95	6	0	101	510
4:30 PM	6	96	1	102	143	174	0	317	0	78	2	0	80	499
4:45 PM	5	93	0	98	138	181	0	319	0	83	6	0	89	506
5:00 PM	2	98	0	100	146	204	0	350	0	85	3	0	88	538
Total	19	396	2	415	563	717	0	1280	0	341	17	0	358	2053
Approach %	4.6	95.4	-	-	44.0	56.0	-	-	0.0	95.3	4.7	-	-	-
Total %	0.9	19.3	-	20.2	27.4	34.9	-	62.3	0.0	16.6	0.8	-	17.4	-
PHF	0.792	0.908	-	0.902	0.964	0.879	-	0.914	0.000	0.897	0.708	-	0.886	0.954
Lights	19	385	-	404	558	710	-	1268	0	337	17	-	354	2026
% Lights	100.0	97.2	-	97.3	99.1	99.0	-	99.1	-	98.8	100.0	-	98.9	98.7
Mediums	0	11	-	11	5	7	-	12	0	4	0	-	4	27
% Mediums	0.0	2.8	-	2.7	0.9	1.0	-	0.9	-	1.2	0.0	-	1.1	1.3
Articulated Trucks	0	0	-	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
All Pedestrians	-	-	2	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-

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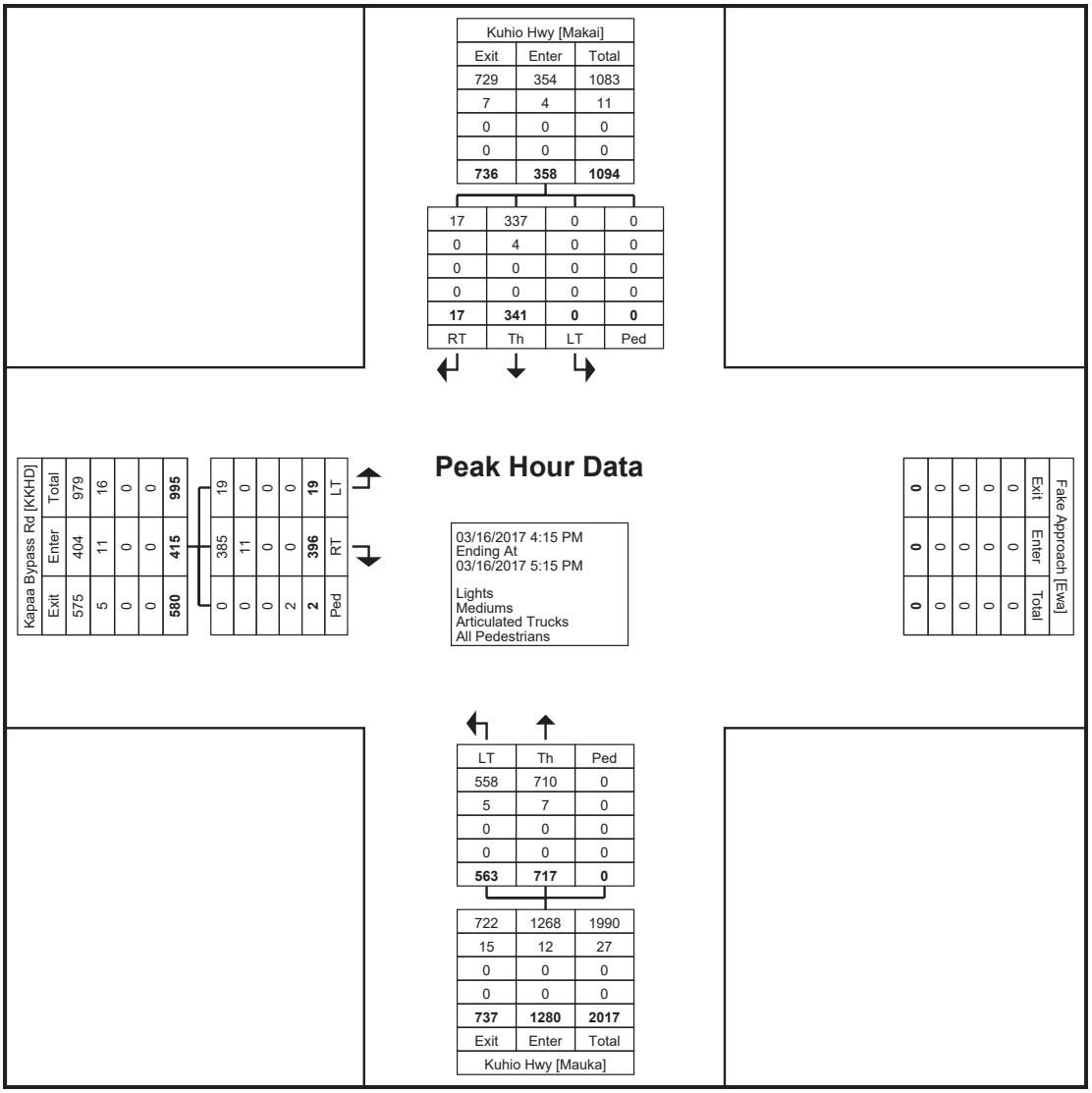
Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017
Page No: 8



Turning Movement Peak Hour Data Plot (4:15 PM)

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Count Name: Kuhio Hwy Kapaa Bypass 3-15-17 to 3-17-17
Site Code: Hokua Place
Start Date: 03/15/2017

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Kapaa Bypass Rd Koko Head Bound				Kuhio Hwy Mauka Bound				Kuhio Hwy Makai Bound					
	Left-Turn	Right-Turn	Peds	App. Total	Left-Turn	Thru	Peds	App. Total	Left-Turn	Thru	Right-Turn	Peds	App. Total	Int. Total
7:00 AM	1	131	0	132	17	133	0	150	0	219	1	0	220	502
7:15 AM	3	168	0	171	32	158	0	190	0	182	3	0	185	546
7:30 AM	1	125	0	126	40	146	0	186	0	166	2	0	168	480
7:45 AM	1	123	0	124	30	165	0	195	0	138	0	0	138	457
Total	6	547	0	553	119	602	0	721	0	705	6	0	711	1985
Approach %	1.1	98.9	-	-	16.5	83.5	-	-	0.0	99.2	0.8	-	-	-
Total %	0.3	27.6	-	27.9	6.0	30.3	-	36.3	0.0	35.5	0.3	-	35.8	-
PHF	0.500	0.814	-	0.808	0.744	0.912	-	0.924	0.000	0.805	0.500	-	0.808	0.909
Lights	5	535	-	540	113	569	-	682	0	688	6	-	694	1916
% Lights	83.3	97.8	-	97.6	95.0	94.5	-	94.6	-	97.6	100.0	-	97.6	96.5
Mediums	1	10	-	11	5	29	-	34	0	15	0	-	15	60
% Mediums	16.7	1.8	-	2.0	4.2	4.8	-	4.7	-	2.1	0.0	-	2.1	3.0
Articulated Trucks	0	2	-	2	1	4	-	5	0	2	0	-	2	9
% Articulated Trucks	0.0	0.4	-	0.4	0.8	0.7	-	0.7	-	0.3	0.0	-	0.3	0.5
All Pedestrians	-	-	0	-	-	-	0	-	-	-	-	0	-	-
% All Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Count Name: Kuhio Hwy Kapaa
Bypass 3-15-17 to 3-17-17
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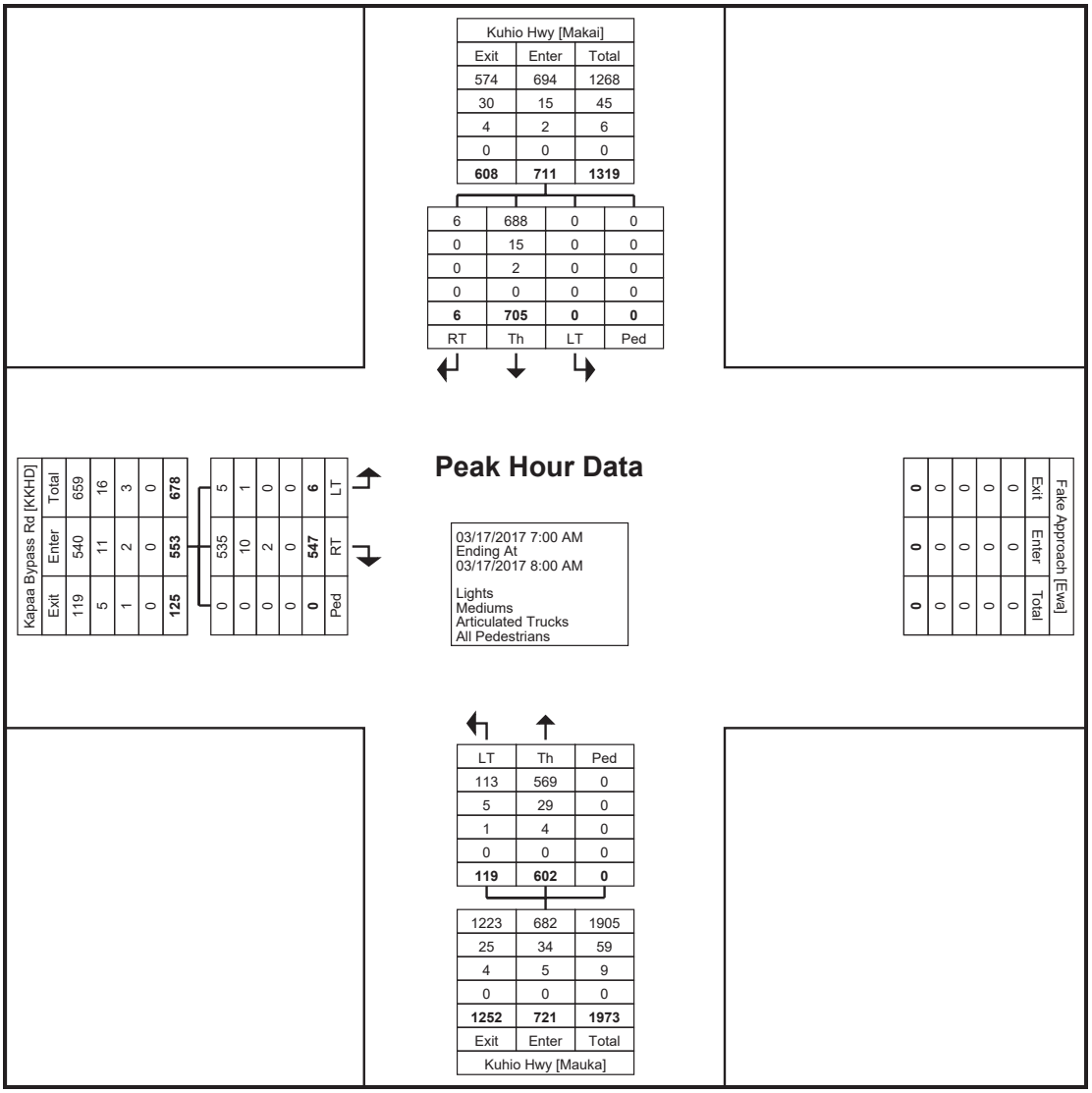
Start Date: 03/15/2017
Page No: 10



Turning Movement Peak Hour Data Plot (7:00 AM)

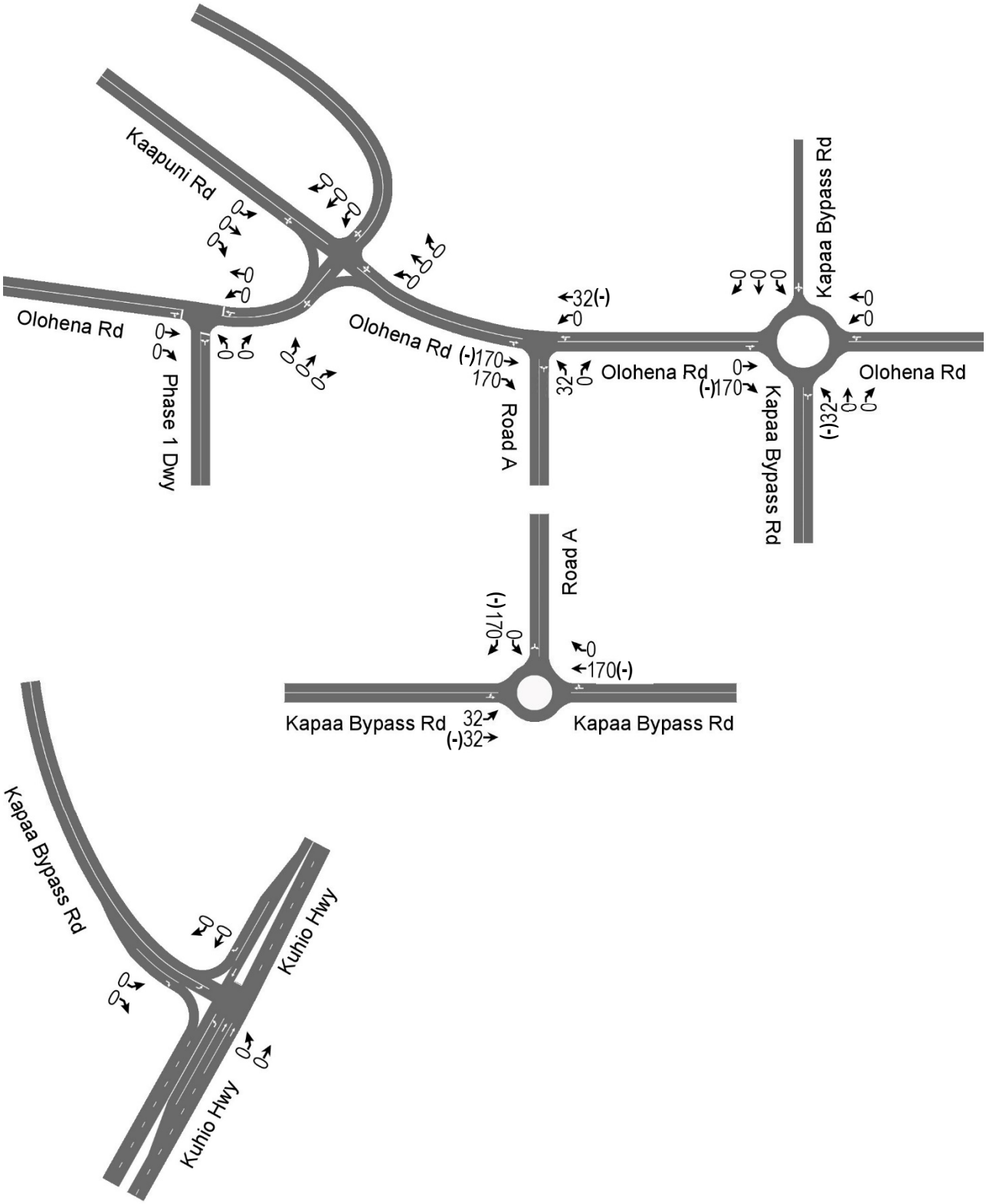


Figure 12.1 AM Peak Hour Diverted Traffic Assignment

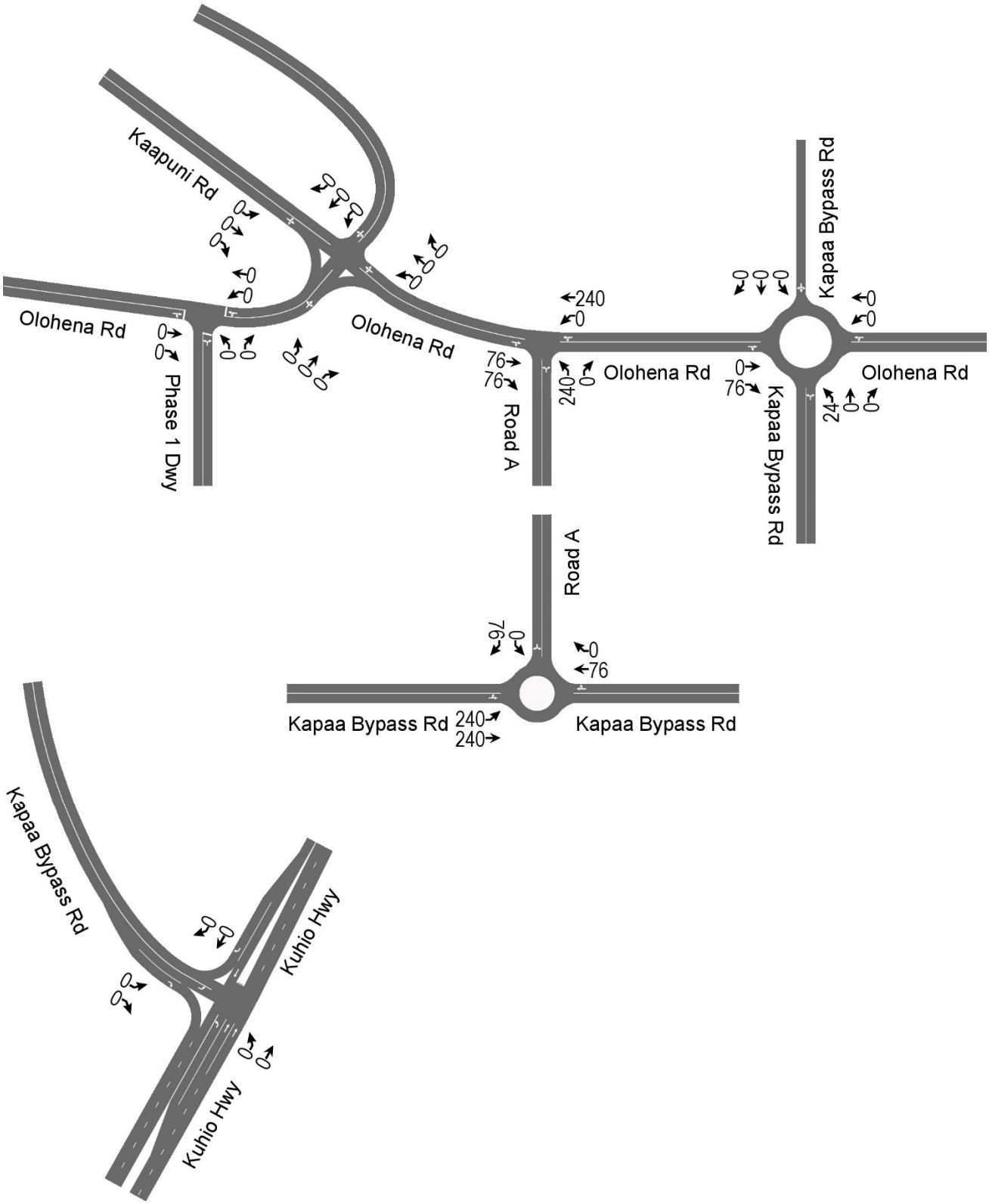


Figure 14.1 PM Peak Hour Diverted Traffic Assignment

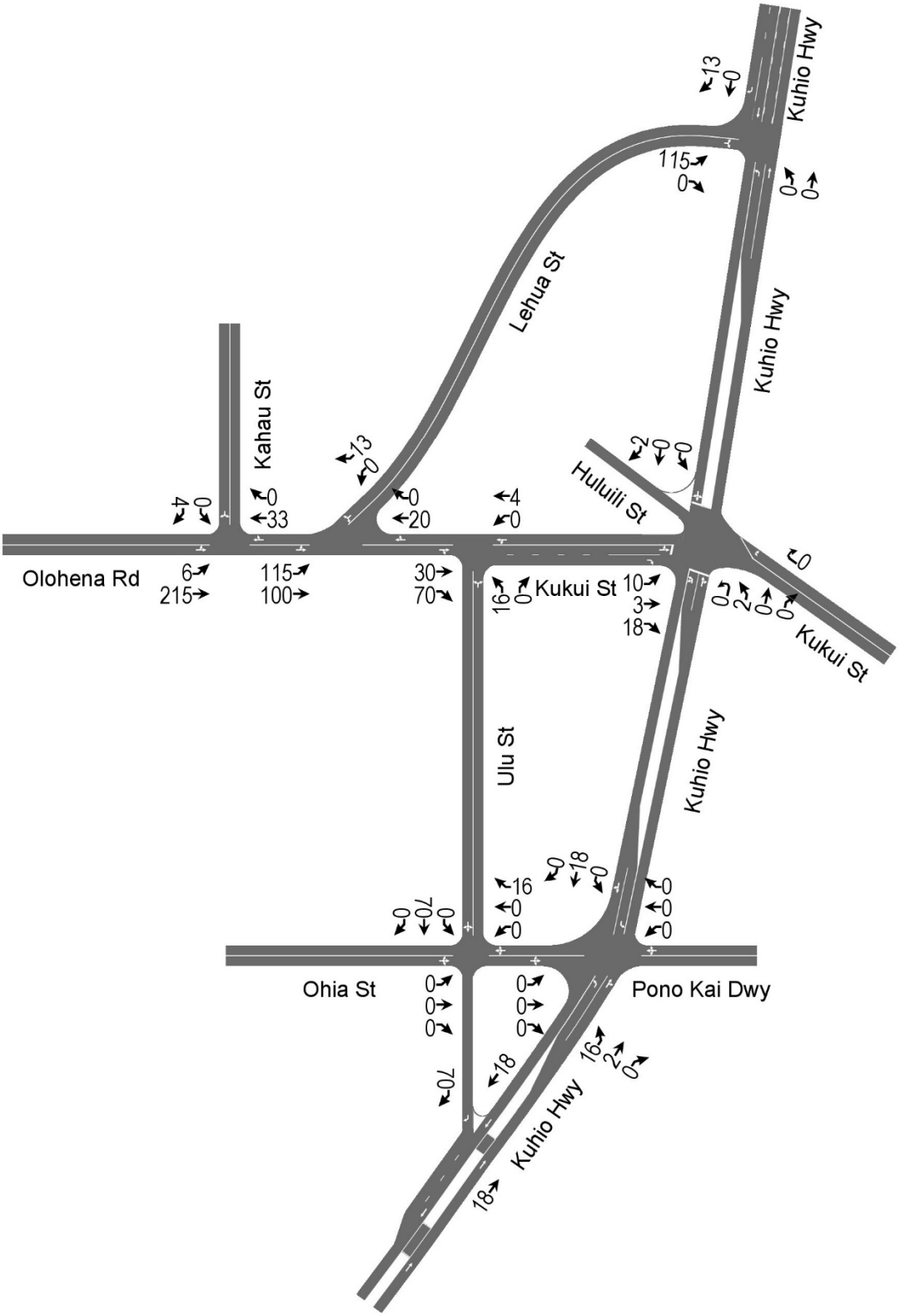


Figure 11. AM Peak Hour Site Traffic Assignment

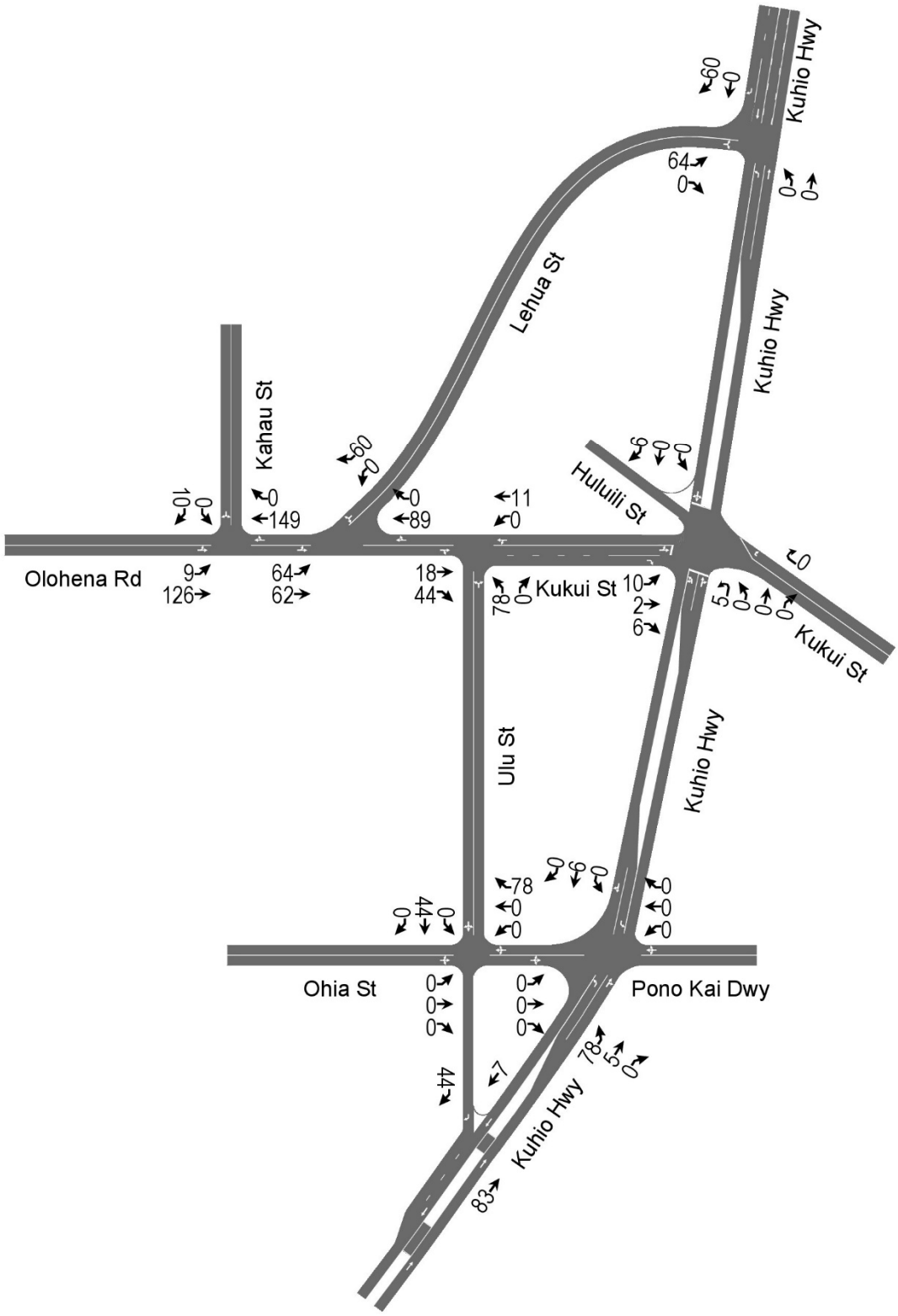


Figure 13. PM Peak Hour Site Traffic Assignment

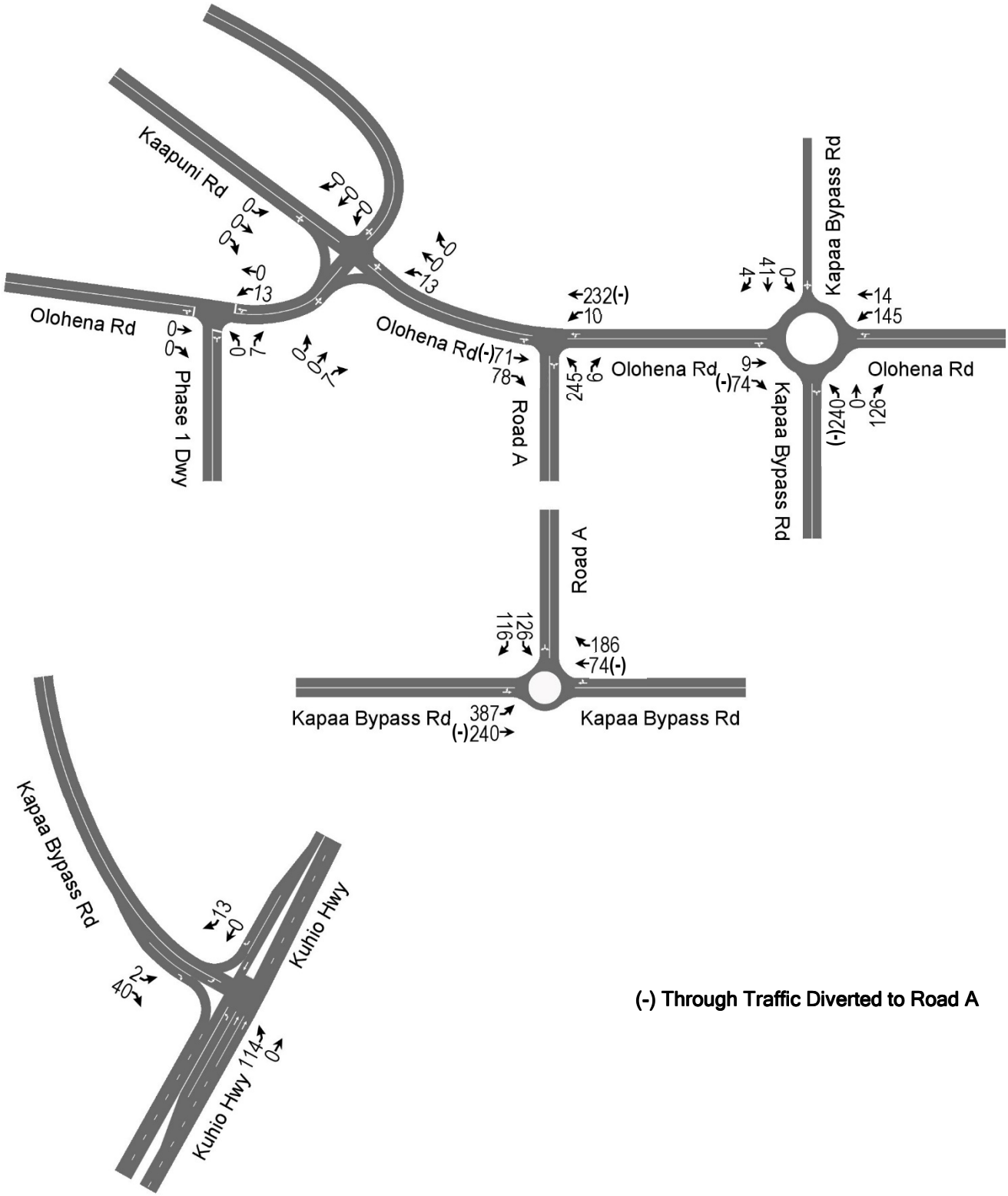


Figure 14. PM Peak Hour Site Traffic Assignment (Cont'd.)

Bernard P. Carvalho, Jr.
Mayor

Wallace G. Rezentes, Jr.
Managing Director

Lyle Tabata
Acting County Engineer

DEPARTMENT OF PUBLIC WORKS
County of Kaua'i, State of Hawai'i
4444 Rice Street, Suite 275, Līhu'e, Hawai'i 96766
TEL (808) 241-4992 FAX (808) 241-6604

September 1, 2017

Randall S. Okaneku, P. E.
The Traffic Management Consultant
1188 Bishop Street, Suite 1907
Honolulu, Hawaii 96813

SUBJECT: Traffic Impact Analysis Report Update
For the Proposed Hokua Place
Kapa`a, Kawaihau District, Island of Kaua'i
TMK: (4) 4-3-03: Por. 001

Dear Mr. Okaneku:

The Engineering Division of the Department of Public Works received the subject Traffic Impact Analysis Report (TIAR) Update that was transmitted via email on June 15, 2017. We appreciate the opportunity to review the TIAR and offer the following comments on the TIAR:

1. **Introduction, Project Description:**
   a. The TIAR indicates that the driveway for phase 1 is proposed to be located on Olohena Road mauka of its intersection with Ka'apuni Road. We have concerns with a proposed intersection at this location, including the proximity to the intersection of Ka'apuni Road as well as concerns about intersection sight distance due to nearby horizontal and vertical curves. Prior to approval of a driveway at this location, additional information will need to be provided about this driveway location, to show that appropriate sight lines can be achieved and that no safety or other problems will be created by the proximity to the intersection of Olohena Road and Ka'apuni Road.
2. **Existing Conditions, Roadways:**
   a. The report states that the Kapa'a Bypass Road speed limit is reduced to 25 mph south of the proposed intersection with Road A. The report should also mention that further south the speed limit is again increased to 35 mph.
   b. The report incorrectly indicates that the posted speed limit for Olohena Road is reduced to 15 mph as it approaches Kapa'a Middle School. The correct statement should be that there is a 15 mph school zone within the vicinity of Kapa'a Middle School during school hours.
   c. Kukui Street and Ulu Street should both be described as collector streets.

3. **Existing Conditions, Existing Peak Hour Traffic Volumes and Operating Conditions:**
    a. The language throughout this segment of the TIAR indicates that intersections "operated at LOS…." However, if we understand correctly, the LOS values given are based on the analysis of the traffic conditions, not actual empirical observations of delay for vehicles at these intersections. The TIAR should instead use language such as "calculated to operate at LOS …." This is an important distinction given that observations of Kūhiō Highway during peak hours of traffic appear to show LOS along the highway worse than the LOS A for movements along Kūhiō Highway as reported in the TIAR, potentially due to other factors than the control delay at the intersections.
    b. Check the traffic volume of 1,500 shown on page 10 for Kūhiō Highway south of Ulu Street in the PM Peak. The volumes shown in Figure 6 do not match.
    c. Figure 6 (Existing PM Peak Hour Traffic) has an error for the southbound through movement on Kūhiō Highway at the Kapa'a Bypass Road. The figure shows an hourly volume of 38, which is way too low for this through movement. The data shown for this intersection in figure 6 does not appear to match either of the two PM peak hour traffic count plots (or their average) in the appendix.
    d. Related to comment "a" above recommending different language for the calculated LOS values, we recommend that the TIAR include some statements comparing the observed traffic conditions with the calculated delays and level of service, ideally offering explanations for the difference in observed level of service and calculated level of service.
4. **Future Traffic Conditions, Kapa'a Transportation Solutions:**
    a. Page 17 of the TIAR refers to removal of on-street parking on Kūhiō Highway. The Kapa'a Transportation Solutions study rejected any potential solutions that removed parking on Kūhiō Highway, since such a change would be detrimental to the economic vitality, multimodal, and safety goals of the study. Removal of parking should not be discussed in the TIAR, as HDOT is not considering removal of parking to add travel lanes or turn lanes.
    b. With respect to a new connector road in the approximate location of Road A, page 18 of the TIAR states, "The construction cost of the connector road was estimated at $25,824,000." The costs in the Kapa'a Transportation Solutions report include right-of-way costs as well as construction cost; therefore it is misleading to state that the full cost shown in the study is the estimated construction cost.
5. **Traffic Impact Analysis, Trip Generation Characteristics:**
    a. The project description in the TIAR's introduction states that there are 700 multi-family dwelling units, but the trip generation calculations are based on 800 multi-family dwelling units. This discrepancy must be corrected, and the accurate trip generation should be reflected in the study.
    b. The pass-by trip percentage of 81.2% is too high, especially given the relatively small amount of traffic traveling through the development on Road A. The diverted volume of 45 vehicles represents approximately 15% of the estimated through vehicles on Road A during the PM Peak Hour. The 8,000 square feet of the Hokua Place shopping center is outside of the sample size in the pass-by trip

chart for shopping centers in the ITE Trip Generation Handbook. A pass-by trip percentage of approximately 30% or 40% would be more reasonable, given the data available in the Trip Generation Handbook. It would also be reasonable for the TIAR to include a calculation of an internal capture rate for trips between the retail portion and the residential portion of the Hokua Place development. However, the combination of the traffic reduction for internal capture and pass-by trips should still be less than 81%.

6. **Traffic Impact Analysis, Site Access Improvements:**
   a. The recommendations for the stop controlled Tee-intersections of Olohena Road with Road A and the phase 1 driveway do not include any statements regarding the recommended lane assignments for these new intersections. The methodologies section of the report describes the use of AASHTO Left-Turn Lane Guidelines, but no such analyses are included in the TIAR for left turn lanes on Olohena Road at these intersections. We believe that at a minimum, a left turn lane would be necessary on Olohena Road at Road A, but analyses must be provided for both intersections. A median refuge lane should also be included on Olohena Road to facilitate the left-turn movement from Road A to Olohena Road. In addition, we believe that Road A should have two approach lanes at Olohena Road, one for right turn movements and one for left turn movements.
7. **Traffic Impact Analysis, Traffic Assignment:**
   a. In the previous TIAR for this project, no traffic was assigned to the left turn movement from southbound Road A to eastbound Kapa'a Bypass (and likewise for the right turn from the Kapa'a Bypass to Road A). In our earlier comments, we recommended that some traffic be assigned to these movements. In almost a complete reversal, the current TIAR assigned nearly all of the traffic to these movements. In the current TIAR, only about 5% to 10% of the project traffic that goes through the existing Kapa'a Bypass roundabout is assigned to go through the intersection of Road A and Olohena Road. A more equitable distribution of traffic should be made, to accurately represent the traffic impact on Olohena Road.
   b. The TIAR assigns no traffic between the project and Olohena Road or Ka'apuni Road north of the project (Wailua Homesteads and Upper Kapahi area). There are relatively few destinations on those roads for the residential traffic from the project, but a small amount of residential traffic is likely to travel to those areas. In addition, much of the traffic generated by the retail portion of the development would have its origin or destination in the residential areas of Wailua Homesteads and Upper Kapahi area. A reasonable (albeit small) amount of traffic must be assigned to those areas.
8. **Figures 11 Through 14 (Traffic Assignment)**
   a. For clarity, the TIAR must show the reassignment of existing traffic on separate figures from the figures for traffic assignment from this project.
   b. On Figure 11, the 989 vehicles shown for northbound Kūhiō Highway at Ulu Street is incorrect. It appears that this volume should be 20.
   c. On Figure 13, the 1,274 vehicles shown for northbound Kūhiō Highway at Ulu Street is incorrect. It appears that this volume should be 92.
   d. On Figure 14, the 30 vehicles shown for the Kapa'a Bypass Road left turn and the

447 vehicles for the Kapa'a Byapss Road right turn appear to be incorrect.

9. **Traffic Impact Analysis, PM Peak Hour Traffic Analysis With Project:**
    a. We recommend that the TIAR further analyze and discuss the impact of the project on the intersection of Kūhi'ō Highway and Lehua Street and recommend measures to mitigate this impact. The TIAR states that "Makai bound Lehua Street is expected to continue at LOS F at Kūhiō Highway during the PM peak hour of traffic with the proposed project." However, Table 7 shows the PM peak hour of traffic without the project to be LOS E. Additionally, while the AM peak hour of traffic with the project continues to be LOS F, the delay increases significantly.
10. **Recommendations and Conclusions, Recommended Traffic Improvements Without Project:**
    a. Item number 3 recommends restricting parking along Kūhiō Highway within Kapa'a Town in order to provide additional through lanes or left turn lanes on Kūhiō Highway. This should not be recommended in the TIAR, because HDOT is not considering removal of parking to add travel lanes. Removal of parking has been determined to be detrimental to businesses and the economic vitality of Kapa'a Town. Discussion of parking removal on Kūhiō Highway in Kapa'a Town should also be removed from other sections of the report, including the conclusions.
11. **Recommendations and Conclusions, Recommended Traffic Improvements With Project:**
    a. Our comments above include several concerns about the intersection of Road A and Olohena Road, including the possibility that additional traffic should be assigned to this intersection. We are concerned that the one-way stop control Tee-intersection proposed will not be sufficient to address traffic operations and safety at intersection. The installation of a roundabout at this intersection shall be evaluated as part of the TIAR, including traffic operations analysis for a roundabout as well as a safety comparison of a roundabout and a one-way stop control intersection. The federal Manual on Uniform Traffic Control Devices (MUTCD) does not include traffic warrants for roundabouts. However, evaluation of the MUTCD's multi-way stop control warrants and/or signal warrants would be instructive with respect to evaluating whether a one-way stop control intersection would be sufficient or if a roundabout is needed instead. Alternatively, we may also accept an evaluation of the need for a roundabout based on roundabout evaluation guidelines from another jurisdiction or research document.
    Consideration should also be given to the construction of a roundabout that combines the intersections of Olohena Road with Ka'apuni Road and Road A (with Kaehulua Road designed as a T intersection with either Ka'apuni Road or Olohena Road). Traffic operations analysis of a roundabout that combines these intersections shall be included in the TIAR.

The comments in this letter should not be construed to be inclusive of all County of Kaua'i recommendations for road improvements required to be constructed as part of the Hokua Place

project. Recommendations and requirements for road improvements will be included as part of future review phases for the project, such as zoning amendments, subdivision applications, and construction plan review. If you have any questions or need additional information, please contact me at (808) 241-4891 or Stanford Iwamoto at (808) 241-4896.

Very truly yours,

MICHAEL MOULE, P.E.
Chief, Engineering Division

MM/SI

Copies to: DPW-Design & Permitting
Lyle Tabata, Acting County Engineer
Larry Dill, HDOT Kaua'i District Engineer

HoKua Place
Section 343-5e HRS Second Draft
Environmental Impact Statement (2nd DEIS)
Volume II-B
Exhibits I to Q

Prepared for:
Accepting Authority
State of Hawai'i Land Use Commission
&
Petitioner
HG Kaua'i Joint Venture LLC
Prepared by:
Agor Jehn Architects, LLC
460 Ena Road, Suite 303
Honolulu, Hawai`i 96815
(808) 947-2467
ron@agorjehnarch.com

October 2018

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Exhibit I

Kapa'a Highlands Legal Description and Maps

Portion of Parcel 1

All of that certain parcel of land, being a portion of Parcel 1 of Tax Map Key 4-3-03 (4th Division), being a portion of Grant 5266 to Rufus P. Spalding situate at Kapaa, Kauai, Hawaii and more particularly described as follows:

Beginning at the "+" on a concrete driveway at the East corner of this parcel of land at the North corner of Grant 8216 to Joe Martins on the Southwest side of Olohena Road, the coordinates of which referred to Government Survey Triangulation Station "NONOU" being 5,660.65 feet North and 11,159.65 feet East and running by azimuths measured clockwise from True South:

1.	35 ° 59'	385.90	feet along Grant 8216 to Joe Martin to a pipe;
2.	22 ° 52'	212.20	feet along Grant 8216 to Joe Martin; and Kapaa Agricultural Lot 1 to a pipe;
3.	100 ° 09'	134.70	feet along Kapaa Agricultural Lot 1 to a pipe;
4.	13 ° 38'	502.70	feet along Kapaa Agricultural Lot 1 to a pipe;
5.	27 ° 12'	171.70	feet along Kapaa Agricultural Lot 1 to a pipe;
6.	37 ° 25'	44.50	feet along Kapaa Agricultural Lot 1 to a "+" on the rock;
7.	96 ° 52'	41.00	feet along Kapaa Agricultural Lot 1 to a pipe;
8.	24 ° 40'	202.40	feet along Kapaa Agricultural Lot 1 to a pipe;
9.	318 ° 05'	87.36	feet along Kapaa Agricultural Lot 1 to a pipe;
10.	30 ° 57'	297.55	feet along Kapaa Agricultural Lot 1 to a pipe;
11.	Thence along Kapaa Agricultural Lot 1 on a curve to the right with a radius of 253.97 feet, the chord azimuth and distance being: 62 ° 33' 30" 266.22 feet to a pipe;		
12.	94 ° 10'	11.52	feet along Kapaa Agricultural Lot 1 to a pipe;
13.	194 ° 30'	134.28	feet along the Cane Haul Road Right-of-Way (Part 4) and Grant 5237 to Hee Fat to a pipe;

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14. 91 ° 26' 1538.50 feet along Grant 5237 to Hee Fat to a pipe;

15. 34 ° 24' 140.00 feet along Grant 5237 to Hee Fat and the Cane Haul Road Right-of-Way (part 4) to a pipe;

16. 124 ° 24' 109.44 feet along Grant 5237 to Hee Fat;

17. 179 ° 07' 328.20 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

18. 161 ° 57' 433.00 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

19. 174 ° 26' 278.80 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

20. 58 ° 03' 228.00 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

21. 83 ° 46' 130.50 feet along Lot 3, Kapaa Rice and Kula Lots;

22. 193 ° 34' 142.10 feet along Lot 3, Kapaa Rice and Kula Lots;

23. 134 ° 25' 37.50 feet along Lot 3, Kapaa Rice and Kula Lots;

24. 61 ° 13' 102.60 feet along Lot 3, Kapaa Rice and Kula Lots;

25. 15 ° 18' 130.60 feet along Lot 3, Kapaa Rice and Kula Lots;

26. 71 ° 49' 37.10 feet along Lot 3, Kapaa Rice and Kula Lots;

27. 137 ° 54' 63.20 feet along Lot 3, Kapaa Rice and Kula Lots;

28. 196 ° 07' 588.10 feet along Lot 3, Kapaa Rice and Kula Lots;

29. 287 ° 25' 74.30 feet along L.C. Aw. 3554:1 to Keo;

30. 204 ° 43' 402.60 feet along L.C. Aw. 3554:1 to Keo to a pipe;

31. 191 ° 23' 213.70 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

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32. 127 ° 12' 175.90 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

33. 93 ° 47' 270.70 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

34. 139 ° 40' 130.10 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

35. 187 ° 18' 168.60 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

36. 145 ° 21' 184.30 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

37. 71 ° 54' 211.50 feet along Lot 3, Kapaa Rice and Kula Lots;

38. 115 ° 21' 123.70 feet along Lot 3, Kapaa Rice and Kula Lots;

39. 166 ° 33' 92.20 feet along Lot 3, Kapaa Rice and Kula Lots;

40. 216 ° 24' 260.40 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

41. 156 ° 33' 153.00 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

42. 73 ° 13' 340.60 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

43. 122 ° 08' 107.50 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

44. 150 ° 30' 118.03 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

45. 226 ° 13' 49.22 feet along Olohena Road to a pipe;

46. Thence along Olohena Road on a curve to the left with a radius of 1,115.00 feet, the chord azimuth and distance being:
218 ° 45' 289.79 feet
to a P-K nail;

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47. 211 ° 17' 145.50 feet along Olohena Road to a P-K nail;

48. Thence along Olohena Road on a curve to the right with a radius of 65.00 feet, the chord azimuth and distance being:
268 ° 48' 30" 109.67 feet
to a pipe;

49. Thence along Olohena Road on a curve to the left with a radius of 50.00 feet, the chord azimuth and distance being:
299 ° 32' 78.54 feet
to a pipe;

50. 272 ° 44' 249.69 feet along Olohena Road to a pipe;

51. 281 ° 55' 203.19 feet along Olohena Road to a pipe;

52. 291 ° 21' 251.40 feet along Olohena Road to a pipe;

53. 261 ° 28' 149.18 feet along Olohena Road to a pipe;

54. 286 ° 25' 226.46 feet along Olohena Road to a pipe;

55. 325 ° 04' 288.93 feet along Olohena Road to a pipe;

56. 317 ° 06' 310.87 feet along Olohena Road to a pipe;

57. 3 ° 37' 476.50 feet along Lot 2, Olohena Road widening parcel and Lot 1, Kapaa Intermediate School, and along the remainder of Grant 5266 to Rufus P. Spalding to a pipe;

58. 323 ° 35' 304.65 feet along Lot 1, Kapaa Intermediate School, and along the remainder of Grant 5266 to Rufus P. Spalding to a pipe;

59. 309 ° 45' 390.14 feet along Lot 1, Kapaa Intermediate School, and along the remainder of Grant 5266 to Rufus P. Spalding to a pipe;

60. 268 ° 25' 554.33 feet along Lot 1, Kapaa Intermediate School, and along the remainder of Grant 5266 to Rufus P. Spalding to a pipe;

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61. 181 ° 14' 848.53 feet along Lot 1, Kapaa Intermediate School, and Lot 2, Olohena Road widening Parcel and along the remainder of Grant 5266 to Rufus P. Spalding to a pipe;

62. 257 ° 37' 127.84 feet along Olohena Road;

63. 297 ° 22' 265.20 feet along Olohena Road to a pipe;

64. 298 ° 02' 25.00 feet along Olohena Road to a pipe;

65. Thence along Olohena Road on a curve to the right with a radius of 375.00 feet, the chord azimuth and distance being:
307 ° 06' 30" 118.30 feet;
to a pipe;

66. 316 ° 11' 29.85 feet along Olohena Road to a pipe;

67. 28 ° 30' 203.12 feet along TMK: 4-3-03:13 and along the remainder of Grant 5266 to Rufus P. Spalding to a pipe;

68. 335 ° 00' 100.00 feet along TMK: 4-3-03:13 and along the remainder of Grant 5266 to Rufus P. Spalding to a pipe;

69. 301 ° 35' 130.00 feet along TMK: 4-3-03:13 and along the remainder of Grant 5266 to Rufus P. Spalding to a pipe;

70. 278 ° 40' 50.00 feet along TMK: 4-3-03:13 and along the remainder of Grant 5266 to Rufus P. Spalding to a pipe;

71. 246 ° 30' 140.00 feet along TMK: 4-3-03:13 and along the remainder of Grant 5266 to Rufus P. Spalding to a pipe;

72. 316 ° 11' 110.00 feet along TMK: 4-3-03:13 and along the remainder of Grant 5266 to Rufus P. Spalding to a pipe;

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73.	272 ° 20'	46.00	feet along TMK: 4-3-03:13 and along the remainder of Grant 5266 to Rufus P. Spalding to a pipe;
74.	300 ° 02'	135.22	feet along Olohena Road;
75.	307 ° 00'	566.89	feet along Olohena Road to the point of beginning and containing an AREA of 163.125 Acres.

SUBJECT, HOWEVER to an easement for the Temporary Kapaa By-Pass Road Right-of-Way containing an AREA of 7.859 Acres.

ALSO, SUBJECT, HOWEVER to Easements E-1, E-2, E-3 (60.00 ft. wide) and E-4 for electrical transmission lines and poles and containing areas of 79,706 s.f., 31,444 s.f., 21,431 s.f., and 1,947 s.f., respectively.

Also subject to a 20 ft. future road widening setback line along Olohena Road.

WAGNER ENGINEERING SERVICES, INC.

RONALD J. WAGNER
LICENSED PROFESSIONAL LAND SURVEYOR
No. 5074
HAWAII, USA

November 13, 1997
P.O. Box 851
Hanalei, Hawaii 96714

Ronald J. Wagner
Licensed Professional Land
Surveyor Certificate No. 5074

Wagner Engineering Services, Inc.
P.O. Box 851 • Hanalei, HI 96714 • (808)826-7258

URBAN STATE LAND USE
Portion of Parcel 1

All of that certain parcel of land being the Urban State Land Use District portion of Parcel 1 of Tax Map Key 4-3-03 (4th Division), being a portion of Grant 5266 to Rufus P. Spalding situate at Kapaa, Kauai, Hawaii and more particularly described as follows:

Beginning at the East corner of this parcel of land on the Southwest side of Olohena Road, the coordinates of which referred to Government Survey Triangulation Station "NONOU" being 5,934.74 feet North and 10,795.91 feet East and running by azimuths measured clockwise from True South:

1.	35 ° 13'	14.72	feet over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement;
2.	305 ° 13'	121.57	feet over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement;
3.	Thence over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way Easement on a curve to the right with a radius of 50.00 feet, the chord azimuth and distance being: 344 ° 48' 44" 63.74 feet;		
4.	Thence over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way Easement on a curve to the left with a radius of 1,030.00 feet, the chord azimuth and distance being: 22 ° 40' 14" 62.45 feet;		
5.	20 ° 56'	150.64	feet over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement;
6.	110 ° 56'	30.00	feet over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement;
7.	20 ° 56'	500.00	feet over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement;

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8. 290 ° 56' 30.00 feet over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement;

9. 20 ° 56' 531.65 feet over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement;

10. 110 ° 56' 30.00 feet over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement;

11. Thence over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement on a curve to the right with a radius of 940.00 feet, the chord azimuth and distance being:
22 ° 33' 53.04 feet;

12. 24 ° 10' 136.41 feet over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement;

13. Thence over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement on a curve to the right with a radius of 940.00 feet, the chord azimuth and distance being:
29 ° 13' 165.49 feet;

14. 34 ° 16' 129.33 feet over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement;

15. Thence over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement on a curve to the right with a radius of 265.00 feet, the chord azimuth and distance being:
63 ° 01' 254.92 feet;

16. 91 ° 46' 938.55 feet over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement;

17. 91 ° 04' 580.00 feet over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement;

18. 181 ° 04' 10.00 feet over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement;

19. 93 ° 59' 104.46 feet over and across Parcel 1, Tax Map Key 4-3-03 along Kapaa By-Pass Road right-of-way easement;

20. 179 ° 07' 165.42 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

21. 161 ° 57' 433.00 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

22. 174 ° 26' 278.80 feet along Lot 3, Kapaa Rice and Kula Lots to a pipe;

23. 273 ° 00' 324.19 feet over and across Parcel 1, Tax Map Key 4-3-03;

24. 192 ° 00' 193.74 feet over and across Parcel 1, Tax Map Key 4-3-03;

25. 113 ° 12' 141.30 feet over and across Parcel 1, Tax Map Key 4-3-03;

26. 225 ° 54' 399.65 feet over and across Parcel 1, Tax Map Key 4-3-03;

27. 171 ° 26' 478.33 feet over and across Parcel 1, Tax Map Key 4-3-03;

28. 261 ° 26' 128.70 feet over and across Parcel 1, Tax Map Key 4-3-03;

29. 233 ° 35' 89.98 feet over and across Parcel 1, Tax Map Key 4-3-03;

30.	323 ° 35'	47.54	feet along Lot 1, Kapaa Intermediate School;
31.	309 ° 45'	390.14	feet along Lot 1, Kapaa Intermediate School;
32.	268 ° 25'	554.33	feet along Lot 1, Kapaa Intermediate School;
33.	181 ° 14'	848.53	feet along Lot 1, Kapaa Intermediate School, and Lot 2, Olohena Road widening Parcel;
34.	257 ° 37'	127.84	feet along Olohena Road;
35.	297 ° 22'	265.20	feet along Olohena Road to a pipe;
36.	298 ° 02'	25.00	feet along Olohena Road to a pipe;

37. Thence along Olohena Road on a curve to the right with a radius of 375.00 feet, the chord azimuth and distance being:
307 ° 06' 30" 118.30 feet;
to a pipe;

38.	316 ° 11'	29.85	feet along Olohena Road to a pipe;
39.	28 ° 30'	203.12	feet along TMK: 4-3-03:13;
40.	335 ° 00'	100.00	feet along TMK: 4-3-03:13;
41.	301 ° 35'	130.00	feet along TMK: 4-3-03:13;
42.	278 ° 40'	50.00	feet along TMK: 4-3-03:13;
43.	246 ° 30'	140.00	feet along TMK: 4-3-03:13;
44.	316 ° 11'	110.00	feet along TMK: 4-3-03:13;
45.	272 ° 20'	46.00	feet along TMK: 4-3-03:13;
46.	300 ° 02'	135.22	feet along Olohena Road;

47.	307 ° 00'	111.44	feet along Olohena Road to the point of beginning and containing an AREA of 96.060 Acres.

BRIAN M. HENNESSY
LICENSED PROFESSIONAL LAND SURVEYOR
No. 14,484
HAWAII, USA

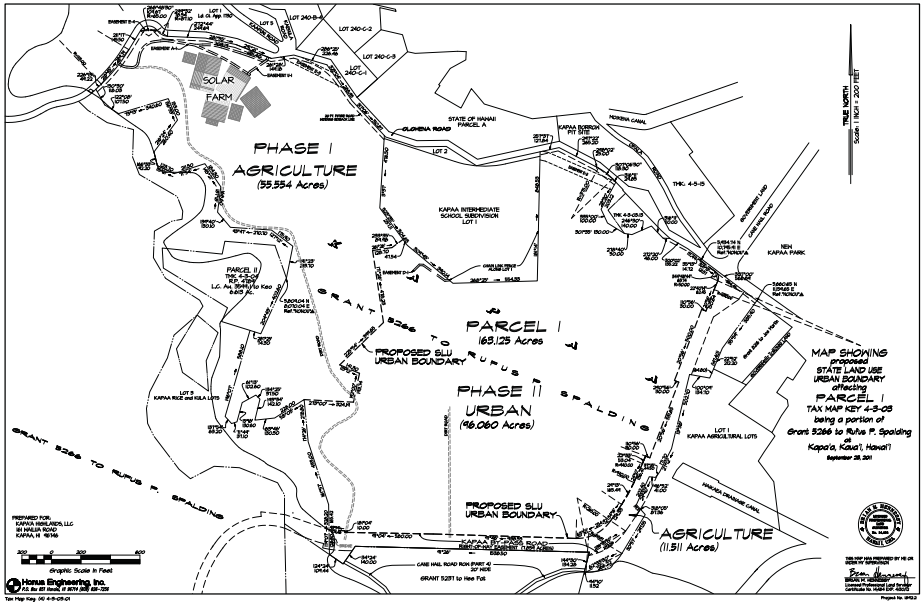
HONUA ENGINEERING INC.

September 23, 2011
P.O. Box 851
Hanalei, Hawaii 96714

Brian M. Hennessy
Licensed Professional Land Surveyor
Certificate No. 14484
Expires: 04/30/2012

Exhibit J

Botanical Survey
Kapa‘a Highlands Phase II
TMK (4) 4-3-003:001
Kaua‘i, Hawai‘i



Botanical Survey
Kapa`a Highlands Phase II
TMK (4) 4-3-003:001
Kaua`i, Hawai`i
April-May
2012

Prepared by

Kenneth R. Wood[1] / Research Biologist
Megan Kirkpatrick / M.S. Environmental Science
[1]P. O. Box 745, `Ele`ele, Kaua`i, Hawai`i, U.S.A. 96705
kwood@ntbg.org

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Botanical Survey
Kapa`a Highlands Phase II
TMK (4) 4-3-003:001
Kaua`i, Hawai`i
April 2012

Kenneth R. Wood, Research Biologist, & Megan Kirkpatrick, M.S. Environmental Science
P.O. Box 745, `Ele`ele, Kaua`i, Hawai`i, U.S.A. 96705, kwood@ntbg.org,

Summary: During April and May of 2012 a botanical survey was conducted on a 97 acre parcel in Kapa`a, Kaua`i, referred to as Kapa`a Highlands Phase II (TMK (4)3-8-003:001). This research documented 44 vascular plant species within the survey area. Forty taxa were non-native plant species, three taxa were very common indigenous native species, and one taxon was a Polynesian introduction (Table 1). NO FEDERALLY LISTED AS THREATENED OR ENDANGERED PLANT SPECIES WERE OBSERVED WITHIN OR NEAR THE SURVEY AREA. This report includes a general description of the study site; the methods of survey; and a vascular plant checklist of all plant species observed.

STUDY AREA. On April 19, 2012 and May 7, 2012, K. R. Wood (Endangered Species Specialist) and assistant Megan D. Kirkpatrick (M.S. Environmental Science) conducted a biological inventory on an undeveloped parcel of property in Kapa`a, Kaua`i (TMK [4]3-8-003:001) (Figures 1 & 2). The survey area is approximately 97 acres of undeveloped land. The primary objectives of this field survey were to:

a) search for threatened and endangered plant species as well as species of concern;
b) provide a complete vascular plant checklist of both native and non-native plant taxa observed on property; and
c) provide a summary concerning the conservation status of all native taxa observed;

SURVEY METHODS. A walk-through survey method was used. Transects included walking/driving around boundaries of property (TMK (4)3-8-003:001) and several transects through the interior portions of property. Plant identifications were made in the field and were recorded by the author (Table 1). Plant names and authors of dicots and monocots follow Wagner et al. (1990) and pteridophytes follow Palmer (2003). Plants of particular interest were collected by the second author (MK) as herbarium specimen vouchers and deposited at the National Tropical Botanical Garden (NTBG) herbarium. Specimens were placed in newspaper sheets and pressed in-between cardboard herbarium presses and dried at the NTBG.

DESCRIPTION OF VEGETATION.

The study area represents a lowland non-native mesic plant community dominated by secondary vegetation of trees, shrubs, and grasses, many of which are considered invasive. The land is vacant and currently undeveloped and has a past history of grazing and sugarcane cultivation. The non-native grass *Panicum maximum* (Poaceae – Guinea grass) and non-native shrub or small tree *Leucaena leucocephala* (Fabaceae – koa haole) are by far the dominant species found at the site. Additional common non-native trees and shrubs include: *Lantana camara* (Verbenaceae – lākana), *Indigofera suffruticosa* (Fabaceae – indigo), *Syzygium cumini* (Myrtaceae – Java plum), *Psidium guajava* (Myrtaceae – guava), *Spathodea campanulata* (Bignoniaceae – African tulip), and *Senna surattensis* (Fabaceae – kolomona). Several less common non-native trees and shrubs include: *Clidemia hirta* (Melastomataceae – Koster's curse), *Cinnamomum camphora* (Lauraceae – camphor tree), *Falcataria moluccana* (Fabaceae – albezia), *Ficus microcarpa* (Moraceae – Chinese banyan), and *Schefflera actinophylla* (Araliaceae – octopus tree). No Hawaiian endemic species (i.e., restricted to only Hawai`i) were observed. One Polynesian introduction was observed, namely *Aleurites moluccana* (Euphorbiaceae – kukui tree) which is common throughout the Hawaiian islands. The three indigenous species found at the site are quite common and include: *Hibiscus tiliaceus* (Malvaceae – hau) which is also often an invasive tree species, the fern species *Psilotum nudum* (Psilotaceae – moa), and Waltheria indica (Sterculiaceae - `uhaloa). For complete checklist of species see Table 1 which also includes the common names and status (i.e., indigenous/naturalized) category of each taxon.

CONCLUSION.

NO THREATENED OR ENDANGERED PLANT SPECIES WERE OBSERVED WITHIN OR ANYWHERE NEAR THE SURVEY AREA DURING RESEARCH -and therefore there are no concerns about possible impacts to rare plant species at the Kapa`a Highlands Phase II project. The current conditions of this study site indicate that the area has been dominated by non-native weedy species for a very long time. The senior author certifies his expertise with more than 25 years conducting biological inventories within the Hawaiian Islands and has specialized in the conservation of Hawai`i's *Federally Listed as Endangered* plant species, including those considered *Candidates* for listing, *Species of Concern*, or *Federally Listed as Threatened* (USFWS 1999a, 1999b, 2004, 2010).

TABLE 1. Checklist of Vascular Plants Observed in Kapa`a Highlands Phase II Survey Area (TMK (4) 4-3-003:001)

Status Symbols: ind=Indigenous (naturally occurring in Hawai`i, yet found in other areas of the world), nat=Naturalized (non-native), pol=Polynesian introduction. Note: Checklist alphabetical by genus. Flowering plants follow Wagner et al. 1990; pteridophytes follow Palmer 2003.

FAMILY	GENUS / SPECIES	COMMON NAME	STATUS
Asparagaceae	Agave sisalana Perrine	sisal, sisal hemp, century plant, malina	nat
Asteraceae	Ageratum conyzoides L.	maile hohono, maile honohono, maile kula	nat
Euphorbiaceae	Aleurites moluccana (L.) Willd.	kukui, kuikui, candlenut	pol
Blechnaceae	Blechnum appendiculatum Willd.		nat
Poaceae	Brachiaria mutica (Forssk.) Stapf	California grass, Para grass	nat
Fabaceae	Canavalia cathartica Thouars	maunaloa	nat
Fabaceae	Chamaecrista nictitans (L.) Moench var. glabrata (Vogel) H. S. Irwin & Barneby	partridge pea, laukī	nat
Poaceae	Chloris barbata (L.) Sw.	swollen fingergrass, mauʻu lei	nat
Lauraceae	Cinnamomum camphora (L.) J.Presl	camphor tree	nat
Melastomataceae	Clidemia hirta (L.) D.Don	Koster's curse	nat
Asteraceae	Cyanthillium cinereum (L.) H.Rob.	little ironweed	nat
Thelypteridaceae	Cyclosorus dentatus (Forssk.) Ching	paiʻiʻihā	nat
Poaceae	Cynodon dactylon (L.) Pers.	Bermuda grass, mānienie	nat
Cyperaceae	Cyperus pilosus Vahl		nat
Poaceae	Eragrostis brownii (Kunth) Nees ex Steud.	sheepgrass	nat
Fabaceae	Falcataria moluccana (Miq.) Barneby & J.W.Grimes		nat
Moraceae	Ficus microcarpa L.f.	Chinese banyan, Malayan banyan	nat
Cyperaceae	Fimbristylis miliacea (L.) Vahl		nat
Malvaceae	Hibiscus tiliaceus L.	hau	ind
Lamiaceae	Hyptis pectinata (L.) Poit.	comb hyptis	nat
Fabaceae	Indigofera suffruticosa Mill.	indigo, ʻinikō, ʻinikoa, kolū	nat
Verbenaceae	Lantana camara L.	lākana, lāʻau kalakala, lanakana (Niʻihau),	nat

FAMILY	GENUS / SPECIES	COMMON NAME	STATUS
Fabaceae	Leucaena leucocephala (Lam.) de Wit	koa haole, ēkoa, lilikoa	nat
Malvaceae	Malvastrum coromandelianum (L.) Garcke	false mallow	nat
Poaceae	Melinis repens (Willd.) Zizka	Natal redtop, Natal grass	nat
Fabaceae	Mimosa pudica L.	sensitive plant, sleeping grass, pua hilahila	nat
Fabaceae	Neonotonia wightii (Wight & Arn.) Verdc.		nat
Lomariopsidaceae	Nephrolepis brownii (Desv.) Hovenkamp & Miyam.		nat
Poaceae	Panicum maximum Jacq.	Guinea grass	nat
Asteraceae	Parthenium hysterophorus L.	false ragweed, Santa Maria	nat
Asteraceae	Pluchea carolinensis (Jacq.) G.Don	sourbush, marsh fleabane	nat
Myrtaceae	Psidium guajava L.	common guava, kuawa,	nat
Psilotaceae	Psilotum nudum (L.) P.Beauv.	moa, moa nahele	ind
Euphorbiaceae	Ricinus communis L.	castor bean, pāʻaila	nat
Araliaceae	Schefflera actinophylla (Endl.) Harms	octopus tree, umbrella tree	nat
Poaceae	Schizostachyum sp.	ʻohe	nat
Fabaceae	Senna surattensis (Burm.f.) H.S.Irwin & Barneby	kolomona, kalamona	nat
Malvaceae	Sida spinosa L.	prickly sida	nat
Bignoniaceae	Spathodea campanulata P.Beauv.	African tulip tree, fountain tree	nat
Asteraceae	Sphagneticola trilobata (L.) Pruski	wedelia	nat
Verbenaceae	Stachytarpheta jamaicensis (L.) Vahl	Jamaica vervain, ōwī	nat
Myrtaceae	Syzygium cumini (L.) Skeels	Java plum, jambolan plum	nat
Acanthaceae	Thunbergia fragrans Roxb.	white thunbergia, sweet clock-vine	nat
Sterculiaceae	Waltheria indica L.	ʻuhaloa, ʻalaʻala pū loa	ind

Figure 1. Aerial Image of Kapa`a Highlands Project Area.

Figure 2. Kapa`a Highlands Phase II concept plan.

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Exhibit K

Biological Surveys
Conducted on the Kapa'a Highlands Phase II Project Site
TMK: (4)-3-003:001, Island of Kaua'i, Hawai'i

Biological Surveys Conducted on the Kapaʻa Highlands Phase II Project Site, TMK: (4)-3-003:001, Island of Kauaʻi, Hawaiʻi

Prepared by:

Reginald E. David
Rana Biological Consulting, Inc.
P.O. Box 1371
Kailua-Kona, Hawaiʻi 96745

&

Prepared for:
Greg Allen
Kapaʻa Highlands

May 24, 2012

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Executive Summary

Biological field surveys were conducted on an approximately 97-acre parcel of land identified as Tax Map Key (4) 3-8-003:001 located in Kapaʻa, Island of Kauaʻi. The owners are proposing to develop these lands as Phase II of the Kapaʻa Highlands subdivision

The primary purpose of the surveys was to determine if there are any botanical, avian and terrestrial mammalian species currently listed, or proposed for listing under either federal or State of Hawaiʻi endangered species statutes within or adjacent to the study area. The avian and mammalian surveys were conducted May 21, 2012, and the botanical survey was conducted on April 19 and May 7, 2012.

No species currently proposed or listed as threatened or endangered under either the federal or state of Hawaii endangered species statutes was documented during the course of the biological surveys conducted on the subject property in April and May, 2012.

There is no federally delineated Critical Habitat for any species present on or adjacent to the project area. Thus the development and operation of the proposed project will not result in impacts to federally designated Critical Habitat. There is no equivalent statute under State law.

Potential Impacts to Protected Species

Botanical

As all of the plant species recorded are either naturalized species or common indigenous species it is not expected that the development and operation of the proposed subdivision will result in deleterious impacts to any botanical species currently listed or proposed for listing under either federal or State of Hawaiʻi endangered species statutes.

Seabirds

The principal potential impact that construction and operation of the Kapaʻa Highlands Phase II project poses to protected seabirds is the increased threat that birds will be downed after becoming disoriented by lights associated with the project during the nesting season. The two main ways that outdoor lighting could pose a threat to these nocturnally flying seabirds is if, 1) during construction it is deemed expedient, or necessary to conduct nighttime construction activities, and 2) following build-out, the potential operation of streetlights and exterior safety and security lighting.

Hawaiian hoary bat

The principal potential impact that the development of the Kapaʻa Highlands Phase II project poses to bats is during the clearing and grubbing phases of construction as vegetation is removed. The removal of vegetation within the project site may temporarily displace individual bats, which may use the vegetation as a roosting location. As bats use multiple roosts within their home territories, the potential disturbance resulting from the removal of the vegetation is likely to be minimal. During the pupping season, females

carrying their pups may be less able to rapidly vacate a roost site as the vegetation is cleared. Additionally, adult female bats sometimes leave their pups in the roost tree while they forage. Very small pups may be unable to flee a tree that is being felled. Potential adverse effects from such disturbance can be avoided or minimized by not clearing woody vegetation taller than 4.6 meters (15-feet), between June 15 and September 15, the period in which bats are potentially at risk from vegetation clearing.

Introduction and Background

An avian and mammalian survey was conducted on an approximately 97-acre parcel of land identified as Tax Map Key (4) 3-8-003:001 located in Kapa'a, Island of Kaua'i (Figure 1). The owners are proposing to develop these lands as Phase II of the Kapa'a Highlands subdivision.

This report describes the methods used and the results of the avian and terrestrial mammalian surveys conducted on the project site by this author and a summary of the results of the botanical surveys conducted on the site by Wood and Kirkpatrick (2012)[1]. Both surveys were conducted as part of the environmental disclosure process associated with the proposed project.

The primary purpose of the surveys was to determine if there are any botanical, avian and terrestrial mammalian species currently listed, or proposed for listing under either federal or State of Hawai'i endangered species statutes within or adjacent to the study area. The federal and State of Hawai'i listed species status follows species identified in the following referenced documents, (Department of Land and Natural Resources (DLNR) 1998; U. S. Fish & Wildlife Service (USFWS) 2005, 2012). The avian and mammalian surveys were conducted May 21, 2012, and the botanical survey was conducted on April 19 and May 7, 2012.

Hawaiian and scientific names are italicized in the text. A glossary of technical terms and acronyms used in the document, which may be unfamiliar to the reader, are included at the end of the narrative text.

General Site Description

The approximately 97 acre project site is bound to the north by Olohena Road (SR 581) and Kapa'a Middle School, to the east and south by the Kapa'a Bypass Road and to the west by undeveloped land and a new solar power generating facility (Figure 1). The site is made up of gently rolling hills that attain a maximum elevation of ~ 45 meters above mean sea level in the northwestern corner, sloping *makai* in an east-southeast direction down to an elevation of approximately ~ 6 meters ASL at the intersection of Olohena Road and the Kapa'a Bypass Road.

The site has a long history of sugar cultivation, followed by use as cattle pasturage. The vegetation currently on the site is dominated almost to the exclusion of native species by Guinea grass (*Panicum maximum*), *koa haole* (*Leucaena leucocephala*), lantana (*Lantana camara*), with Java plum trees (*Syzygium cuminii*), doted across the landscape (Figure 2). The southwestern boundary of the site has fairly dense stands of *hau* (*Hibiscus tiliaceus)* along the boundary (Figure 3).

[1] Wood, K.R., and M. Kirkpatrick. 2012. Botanical Survey Kapa'a Highlands Phase II TMK (4) 4-3-003:001 Kaua'i, Hawai'i April-May 20212, is appended to this document as Appendix A.

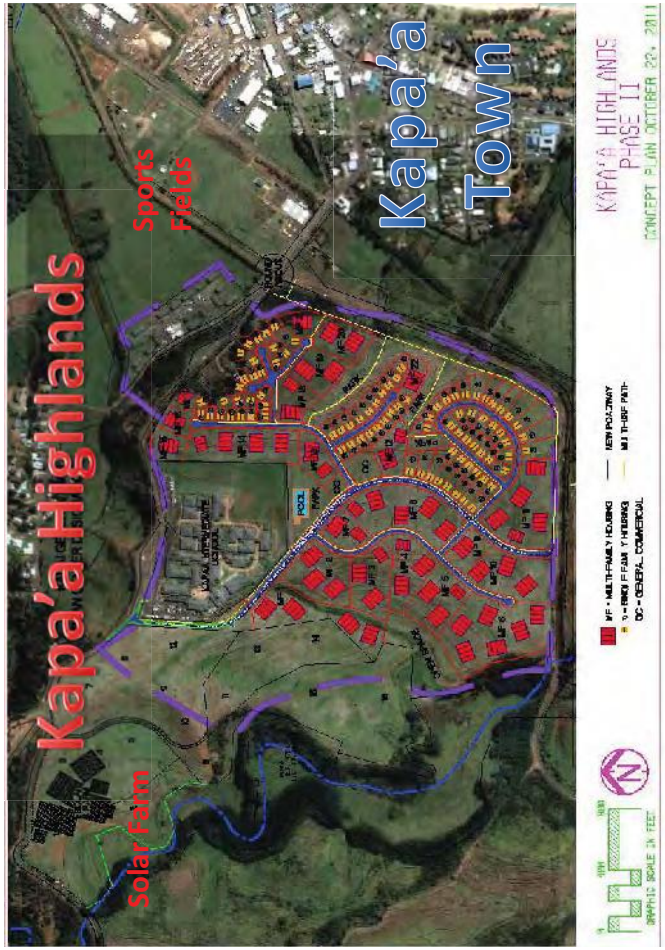

Figure 2 – Typical Guinea grass/koa haole shrub vegetation looking nortwest

Figure 3 – Hau bushes along southwestern bounday

Methods

Plant names mostly follow *Manual of the Flowering Plants of Hawai'i* (Wagner et al., 1990, 1999). The avian phylogenetic order and nomenclature used in this report follows the *AOU Check-List of North American Birds* (American Ornithologists' Union, 1998), and the 42nd through the 52nd supplements to the Check-List (American Ornithologists' Union, 2000; Banks et al., 2002, 2003, 2004, 2005, 2006, 2007, 2008; Chesser et al., 2009, 2010, 2011). Mammalian species scientific names follow (Tomich, 1986). Place names follow (Pukui et al., 1974).

Botanical Survey Methods

The botanical survey was conducted using a pedestrian (walking) transect methodology to cover the project area. Wood and Kirkpatrick's methodologies are detailed in Appendix A.

Avian Survey Methods

A total of six avian point count stations were sited roughly equidistant from each other within the project site. Six-minute point counts were made at each of the count stations. Each station was counted once. Field observations were made with the aid of Leica 8 X 42 binoculars and by listening for vocalizations. Point counts were concentrated during the early morning hours, the peak of daily bird activity. Time not spent counting was used to search the remainder of the project site for species and habitats that were not detected during count sessions.

Mammalian Survey Methods

With the exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or *'ōpe'ape'a* as it is known locally, all terrestrial mammals currently found on the Island of Kaua'i are alien species, and most are ubiquitous. The survey for terrestrial mammalian species was limited to visual and auditory detection, coupled with visual observation of scat, tracks, and other animal sign. No trapping program or heterodyne bat detection survey methods were used during the course of this survey. A running tally was kept of all terrestrial vertebrate mammalian species detected within the project area during time spent within the project site.

Results

Botanical Survey

A total of 44 species of vascular plants were identified from the survey area. Three of the species detected *moa* (*Psilotum nudum*), *hau* (*Hibiscus tiliaceus*) and *'uhaloa* (*Waltheria indica*) are common indigenous species in the Islands. One species *kukui* (*Aleurites moluccana*) is a Polynesian introduction (Wood and Kirkpatrick, 2012).

Wood and Kirkpatrick did not detect any botanical species currently listed as endangered or threatened under either federal or State of Hawai'i endangered species statutes. For a detailed description of their findings please see Appendix A.

Avian Survey Results

A total of 193 individual birds of 17 species, representing 13 separate families, were recorded during station counts (Table 1). All 17 species recorded are alien to the Hawaiian Islands (Table 1).

Avian diversity and densities were in keeping with the location of the property and the habitat presently on the site. Four species, House Finch (*Carpodacus mexicanus*), Nutmeg Mannikin (*Lonchura punctulata*), Japanese White-eye (*Zosterops japonicus*) and Zebra Dove (*Geopelia striata*) accounted for slightly more than 45 percent of all birds recorded during station counts. The most commonly recorded species was House Finch, which accounted for 14 percent of the total number of individual birds recorded. An average of 32 individual birds was recorded per station count; a number that is about average for point counts in this area on the Island of Kaua'i.

No avian species currently proposed or listed under either the State of Hawai'i or federal endangered species statutes was detected during the course of this survey, nor would they be expected given the habitat currently present on the site.

Mammalian Survey Results

Four terrestrial mammalian species were detected while on the site. Numerous dogs (*Canis f. familiaris*) were heard barking from areas adjacent to the site. Tracks and scat of pig (*Sus s. scrofa*) were encountered within the site. Tracks, and scat of both horse (*Equss c. caballus*) and cow (*Bos taurus*), were also encountered within the site.

Table 1 – Avian Species Kapa'a Highlands Phase II Point Counts

Common Name	*Scientific Name*	*ST*	*RA*
	GALLIFORMES		
	PHASIANIDAE – Pheasants & Partridges		
	Phasianinae – Pheasants & Allies		
Red Junglefowl	*Gallus gallus*	A	1.50
	PELECANIFORMES		
	ARDEIDAE - Herons, Bitterns & Allies		
Cattle Egret	*Bubulcus ibis*	A	0.83
	COLUMBIDAE - Pigeons & Doves		
Spotted Dove	*Streptopelia chinensis*	A	2.00
Zebra Dove	*Geopelia striata*	A	2.67
	PASSERIFORMES		
	CETTIIDAE - Cettia Warblers & Allies		
Japanese Bush-Warbler	*Cettia diphone*	A	1.17
	ZOSTEROPIDAE - White-eyes		
Japanese White-eye	*Zosterops japonicus*	A	1.17
	TIMALIIDAE - Babblers		
Chinese Hwamei	*Garrulax canorus*	A	0.50
	TURDIDAE - Thrushes		
White-rumped Shama	*Copsychus malabaricus*	A	1.17
	STURNIDAE - Starlings		
Common Myna	*Acridotheres tristis*	A	2.50
	EMBERIZIDAE - Emberizids		
Red-crested Cardinal	*Paroaria coronata*	A	1.00
	CARDINALIDAE - Cardinals Saltators & Allies		
Northern Cardinal	*Cardinalis cardinalis*	A	1.67
	ICTERIDAE - Blackbirds		
Western Meadowlark	*Sturnella neglecta*	A	0.67
	FRINGILLIDAE - Fringilline and Carduleline Finches & Allies		
	Carduelinae - Carduline Finches		
House Finch	*Carpodacus mexicanus*	A	4.50
	ESTRILDIDAE - Estrildid Finches		
	Estrildinae - Estrildine Finches		
Red Avadavat	*Amandava amandava*	A	0.56
Nutmeg Mannikin	*Lonchura punctulata*	A	4.33
Chestnut Munia	*Lonchura atricapilla*	A	2.17
Java Sparrow	*Padda oryzivora*	A	1.33

Key to Table 1

ST Status

A Alien – Introduced to the Hawaiian Islands by humans

RA Relative Abundance - Number of birds detected divided by the number of count stations (6)

Discussion

Botanical Resources

Only nine percent of the plant species (~4/~44) detected on the subject property were either indigenous or early Polynesian introductions. This proportion is remarkably low for lowland areas on Kaua'i, and graphically illustrates the highly disturbed and depauperate nature of the native vegetation present on this site. Please see Appendix A for a more detailed discussion of the botanical resources present on the site.

Avian Resources

The findings of the avian survey are consistent with the location of the property, and the habitat present on the site. As previously stated all of the avian species detected during the course of this survey are alien to the Hawaiian Islands.

Although not detected during this survey, the endangered Hawaiian Petrel (*Pterodroma sandwichensis*), and the threatened endemic sub-species of the Newell's Shearwater (*Puffinus auricularis newelli*) have been recorded over-flying the project site between April and the end of November each year (David, 1995; Morgan *et al*., 2003, 2004; David and Planning Solutions 2008). Additionally, the Save Our Shearwaters Program has recovered both species from the general project area on an annual basis over the past three decades (Morgan *et al*., 2003, 2004; David and Planning Solutions, 2008; Save our Shearwater Program, 2012).

The petrel is listed as endangered, and the shearwater as threatened under both Federal and State of Hawai'i endangered species statutes. The primary cause of mortality in both Hawaiian Petrels and Newell's Shearwaters is thought to be predation by alien mammalian species at the nesting colonies (USFWS 1983, Simons and Hodges 1998, Ainley *et al*., 2001). Collision with man-made structures is considered to be the second most significant cause of mortality of these seabird species in Hawai'i. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, seabirds can collide with manmade structures, and if they are not killed outright, the dazed or injured birds are easy targets of opportunity for feral mammals (Hadley 1961; Telfer 1979; Sincock 1981; Reed *et al.*, 1985; Telfer *et al.*, 1987; Cooper and Day, 1998; Podolsky *et al*. 1998; Ainley *et al.,* 2001; Hue *et al.,* 2001; Day *et al* 2003). There are no nesting colonies nor appropriate nesting habitat for either of these listed seabird species within the current study site.

Following build out it is probable that cleared areas, especially those that are landscaped as lawns, and or parking lots will provide loafing habitat for Pacific Golden-Plover (*Pluvialis fulva*). The plover is an indigenous migratory shorebird species which nests in the high Arctic during the late spring and summer months, returning to Hawai'i and the Tropical Pacific to spend the fall and winter months each year. They usually leave Hawai'i for their

trip back to the Arctic in late April or the very early part of May each year. This species is a common site around the state during the late fall and winter months.

Mammalian Resources

The findings of the mammalian survey are consistent with the location of the property and the habitat currently present on the site. We did not record Hawaiian hoary bats overflying the site. Hawaiian hoary bats are widely distributed in the lowland areas on the Island of Kaua'i, and have been documented in and around almost all areas that still have some dense vegetation (Tomich, 1986; USFWS 1998, David, 2012).

Although no rodents were detected during the course of this survey, it is virtually certain one or more of the four established alien muridae found on Kaua'i, roof rat (*Rattus r. rattus*), Norway rat (*Rattus norvegicus*), European house mouse (*Mus musculus domesticus*) and possibly Polynesian rats (*Rattus exulans hawaiiensis*) use various resources found within the general project area. All of these introduced rodents are deleterious to native ecosystems and the native faunal species dependant on them.

Potential Impacts to Protected Species

Botanical

As all of the plant species recorded are either naturalized species or common indigenous species it is not expected that the development and operation of the proposed subdivision will result in deleterious impacts to any botanical species currently listed or proposed for listing under either federal or State of Hawai'i endangered species statutes.

Seabirds

The principal potential impact that construction and operation of the Kapa'a Highlands Phase II project poses to protected seabirds is the increased threat that birds will be downed after becoming disoriented by lights associated with the project during the nesting season. The two main ways that outdoor lighting could pose a threat to these nocturnally flying seabirds is if, 1) during construction it is deemed expedient, or necessary to conduct nighttime construction activities, and 2) following build-out, the potential operation of streetlights and exterior safety and security lighting.

Hawaiian hoary bat

The principal potential impact that the development of the Kapa'a Highlands Phase II project poses to bats is during the clearing and grubbing phases of construction as vegetation is removed. The removal of vegetation within the project site may temporarily displace individual bats, which may use the vegetation as a roosting location. As bats use multiple roosts within their home territories, the potential disturbance resulting from the removal of the vegetation is likely to be minimal. During the pupping season, females carrying their pups may be less able to rapidly vacate a roost site as the vegetation is cleared. Additionally, adult female bats sometimes leave their pups in the roost tree while they forage. Very small pups may be unable to flee a tree that is being felled. Potential

adverse effects from such disturbance can be avoided or minimized by not clearing woody vegetation taller than 4.6 meters (15-feet), between June 15 and September 15, the period in which bats are potentially at risk from vegetation clearing.

Critical Habitat

There is no federally delineated Critical Habitat for any species present on or adjacent to the project area. Thus the development and operation of the proposed project will not result in impacts to federally designated Critical Habitat. There is no equivalent statute under State law.

Recommendations

- All exterior lights installed in conjunction with the proposed project should be shielded to reduce the potential for interactions of nocturnally flying seabirds with external lights and man-made structures (Reed *et al.*, 1985; Telfer *et al.*, 1987). Any lighting fixtures that meet the "Dark Skies" guidelines are appropriate.

- It is recommended that woody vegetation taller than 4.6 meters (15-feet), not be cleared between June 1 and September 15, the period in which bats are potentially at risk from vegetation clearing.

- It is recommended that, where appropriate and practicable, native plant species be used in landscaping efforts. Not only is this ecologically prudent, but also if the appropriate plants are used, it will also likely save maintenance and water costs over the long term.

Glossary

Alien – Introduced to Hawai'i by humans
Commensal – Animals that share human food and lodgings, such as rats, mice cats and dogs.
Crepuscular – Twilight hours
Endangered – Listed and protected under the Endangered Species Act of 1973, as amended (ESA) as an endangered species
Endemic – Native to the Hawaiian Islands and unique to Hawai'i
Indigenous – Native to the Hawaiian Islands, but also found elsewhere naturally
*maka*i – Down-slope, towards the ocean
Muridae – Rodents, including rats, mice and voles, one of the most diverse families of mammals
Naturalized – A plant or animal that has become established in an area that it is not indigenous to
Nocturnal – Night-time, after dark
'Ōpe'ape'a – Endemic endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*)
Pelagic – An animal that spends its life at sea – in this case seabirds that only return to land to nest and rear their young
Phylogenetic – The evolutionary order that organisms are arranged by
Ruderal – Disturbed, rocky, rubbishy areas, such as old agricultural fields and rock piles
Sign – Biological term referring to tracks, scat, rubbing, odor, marks, nests, and other signs created by animals by which their presence may be detected
Threatened – Listed and protected under the ESA as a threatened species.

ASL – Above mean sea level
DLNR – Hawai'i State Department of Land & Natural Resources
DOFAW – Division of Forestry and Wildlife
ESA – Endangered Species Act of 1973, as amended
TMK – Tax Map Key
USFWS – United State Fish & Wildlife Service

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Appendix A

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Botanical Survey Kapa‘a Highlands Phase II
TMK (4) 4-3-003:001
Kaua‘i, Hawai‘i April-May 2012.

Exhibit L

An Archaeological Assessment for the Proposed Kapa`a Highlands Phase II Project
Kapa‘a Ahupua‘a, Kawaihau, Kaua‘i

NEIL ABERCROMBIE
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LAND
STATE PARKS

HISTORIC PRESERVATION DIVISION
DEPARTMENT OF LAND AND NATURAL RESOURCES

601 Kamokila Boulevard, Suite 555
Kapolei, HI 96806

March 31, 2014

Nancy McMahon
Exploration Associates, Limited
3-2600 Kaumualii Highway, Suite 1300, PMB 306
Līhuʻe, HI 96766

LOG NO: 2013.5628, 2014.00035
DOC NO: 1403LS26
Archaeology

Dear Ms. McMahon:

SUBJECT: **Chapter 6E-42 Historic Preservation Review –**
Archaeological Assessment for the Kapaʻa Highlands Phase II Project
Kapaʻa Ahupuaʻa, Kawaihau District, Island of Kauaʻi
TMK: (4) 4-3-003:001

Thank you for the opportunity to review the revised draft reports titled *An Archaeological Assessment with Subsurface Testing for the Proposed Kapaʻa Highlands Phase II Project, Kawaihau District, Kauaʻi TMK: (4) 4-3-003:001* (McMahon and Tolleson). We received the first revised draft on September 27, 2013 (Log No. 2013.5628), the second on January 2014 (Log No. 2014.00035), and final revisions, including Figure 9, on March 26, 2014. SHPD made several requests that an archaeological inventory survey including subsurface testing be conducted on the property due to the identification of historic properties on nearby parcels including TMK: (4) 4-3-003:004, 005 (June 28, 2010, Log No. 2010.2441, Doc. No. 1006MV50; and October 1, 2012, Log No. 2012.1541, Doc. No. 1209SL24). The current AIS yielded no historic properties and was re-designated an archaeological assessment pursuant to Hawaiʻi Administrative Rules (HAR) §13-284-5.

The archaeological inventory survey (AIS) was conducted on behalf of Three Stooges LLC in support of a residential subdivision development on a 97-acre property. The AIS involved a 100% pedestrian survey and subsurface testing consisting of excavation of three backhoe trenches. No previously- or newly-identified historic properties were documented in the project area. The project area was assessed as having been extensively subjected to sugar cane plantation agriculture and to now be void of any surface plantation architecture or infrastructure remnants and to lack evidence of subsurface cultural deposits below the agricultural zone.

The revisions adequately address the issues and concerns raised in our earlier correspondence (October 1, 2012; Log No. 2012.1541, Doc. No. 1209SL24) and in our consultations. The revised report provides adequate discussion of the project location, environs, cultural and historical background, previous investigations, field methods, and findings. The report meets the standards set forth in HAR §13-276-5. It is accepted by SHPD. Please send one hardcopy of the document, clearly marked **FINAL**, along with a copy of this review letter and a text-searchable PDF version on CD to the Kapolei SHPD office, attention SHPD Library.

Please contact me at (808) 692-8019 or Susan.A.Lebo@hawaii.gov if you have any questions or concerns regarding this letter.
Aloha,

Susan A. Lebo

Susan A. Lebo, PhD
Oahu Lead Archaeologist

An Archaeological Assessment With Subsurface Testing for the Proposed Kapa`a Highlands Phase II Project, Kapa`a Ahupua`a, Kawaihau, Kaua`i TMK (4) 4-3-3: 1

By

Nancy McMahon, M.A. and Wendy Tolleson, M.A.

Prepared for:
Three Stooges LLC

Exploration Associates, Ltd

Revised September 2013

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INTRODUCTION

Project Background

At the request of Three Stooges LLC., Exploration Associates Ltd. (EAL) conducted an archaeological assessment of a parcel of land (referred to hereafter as Kapa`a Highlands Phase II) in Kapa`a (in TMK 4-3-3:1) (Figures 1 & 2). The survey was performed to address any historic preservation or cultural impact issues that might affect the proposed development.

The proposed development, Kapa`a Highlands Phase II, project involves the development of a residential subdivision on a 97 acre parcel. Approximately 69 acres will be subdivided into residential lots both single family and multi-family units. In addition the breakdown of Phase II will include: roads - 9.4 acres; church - 0.8 acres; general commercial - 0.4 acres; parks - 3.1 acres and open space - 14.3 acres.

Scope of Work

The purpose of this archaeological investigation is to address any archaeological and/or historical concerns. The proposed work includes a surface survey, subsurface testing, and a report detailing methods and any finds. This archaeological work meets the requirements of an inventory-level survey per the rules and regulations of (State Historic Preservation Division/Department of Land and Natural Resources) SHPD/DLNR. The level of work is sufficient to address site types, locations, and allow for future mitigation recommendations if appropriate. Any property over 50 years of age must be evaluated for historic Significance on the National Register of Historic places, and include remnant pr-contact and historic period site.

The scope of work includes:

- Historical research includes study of archival sources, historic maps, Land Commission Awards and previous archaeological reports to construct a history of land use and to determine if archaeological sites have been recorded on or near this property.
- Pedestrian survey of 100% of the subject parcel to identify any surface archaeological features and investigate and assess the potential for impact to such sites, and limited subsurface testing to identify any subsurface sensitive areas that may require further investigation or mitigation before the project proceeds.
- Preparation of a report which will include the results of the historical research and the fieldwork with an assessment of archaeological potential based on that research with recommendations for further archaeological work, if appropriate. It also will provide mitigation recommendations if there are archaeologically sensitive areas that require further consideration.

Figure 1. USGS Map Showing Project Area

Figure 2. Project location and surveyed area outlined in purple.

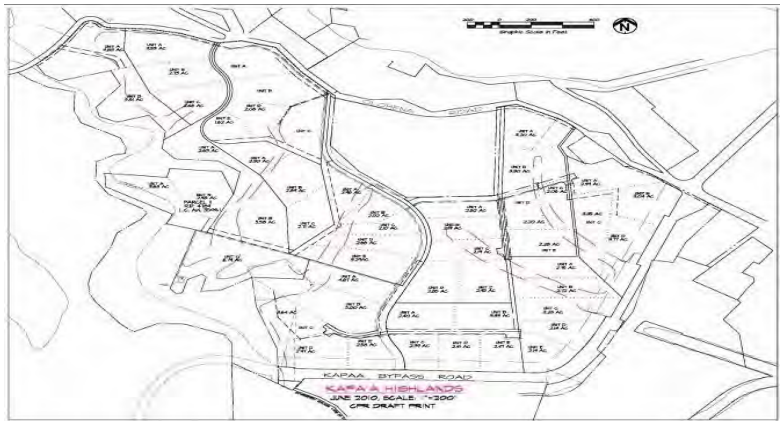

Figure 3. Project development map.

Figure 4 Aerial View of the Kapa`a *Highlands Phase II Looking West.*

Figure 5. Aerial View of Kapa`a *Highlands Phase II Looking Mauka.*

Methods

On January 3, 2012 and April 25, 2012 and November 11, 2012 a survey of the Kapa`a Highlands Phase II project area was conducted by Exploration Associates Ltd. by archaeologist Nancy McMahon, M.A. Survey transects oriented north-south were spaced 10 m. apart where possible through thick guinea grass. Field observations were recorded and photographs were taken of the project area, the surrounding area, and the backhoe trenches. Three test trenches were machine excavated to examine the soils and determine if any stratigraphy or buried cultural deposits was present. Soils were classified using a Munsell color chart, then photographed.

Historical research includes a review of previous archaeological studies on file at the State Historic Preservation Division of the Department of Land and Natural Resources; studies of documents at Hamilton Library UH Manoa, the Kapa`a and Lihue Public Libraries, the Kaua'i Museum, the Kaua`i Historical Society and from the study of maps at the Survey Office of the Department of Land and Natural Resources. Nineteenth-century Land Commission Award claim records were accessed via the Internet from the *Mahele* Database prepared by Waihona `Aina Corp.

Natural Setting/Project Area

The subject parcel is located north of Kapa`a town on former cane lands situated on a bluff adjacent to the coastal plain. It is bordered by Olohena Road to the north and the Kapa`a Bypass Road on the south and east. Kapaa Intermediate School is located on state land near the middle of the northern portion of the property. A Phase I parcel has an existing solar farm and equipment building.

The southern border of the project area is adjacent to the by-pass road within an elevation of approximately 55 feet above msl. The topography or the project area rises in elevation to the northern border approximately 130 feet above msl or an average increase of less than 5%. There are particular areas of the property with 20% slopes. The project area is currently fallow and is vegetated with Guinea Grass (*Panicum maximum*), Koa Haole (*Leucaena leucocephala*), and Java Plum (*Syzygium cumini*). The last cultivation of sugar cane on the project area was 15 years ago, but due to the poor soil, strong trade winds and the salt spray from the ocean, the viability of agricultural crops is limited. Solar farming, goat and cattle grazing are the current utilization of the property

Foote et al (1972) described the soil in this area as Lihue-Puhi association, deep, nearly level to steep, well drained soils with fine texture and moderately fine texture subsoil. Permeability is moderately rapid, run-off is slow and erosion hazard is slight. The mean annual rainfall throughout the study area is about 22 inches per year. Average temperatures in the region range from the 60s to the low 90s, Fahrenheit. Temperature differences between day and night are about 15 degrees. The consistent direction of the tradewinds is from the northeast at between 10 and 15 miles per hour.

HISTORICAL BACKGROUND

From Puna District to Kawaihau District

The *ahupua`a* of Kapa`a belongs in the ancient district of Puna, one of five ancient districts on Kaua`i (King 1935: 228). Puna was the second largest district on Kaua`i, behind Kona, and extended from Kipu, south of Lihue to Kama`oma`o`o, just north of Kealia. For taxation, educational and judicial reasons, new districts were created in the 1840s. The Puna District, with the same boundaries became the Lihu`e District, named for an important town in that district. In 1878, King Kalakau'a in securing a future name for the new *Hu`i* Kawaihau, created the new district of Kawaihau. This new district encompassed the *ahupua`a* ranging from Olohena on the south to Kilauea on the north. Subsequent alterations to district boundaries in the 1920s left Kawaihau with Olohena as its southernmost boundary and Moloa'a as its northernmost boundary (King 1935:222).

Traditional and Legendary Accounts of Kapa`a

A more in depth study of the legends and mythology of Kapa`a can be found in the Cultural Impact Assessment for the Proposed Kapa`a Highlands Phase II [EAL 2012]. Just a few of some of the legends of the area are included in this report.

Palila and Ka`ea

High in the *mauka* region of Kapa`a in the Makaleha mountains at a place called Ka`ea, is reported to be the supernatural banana grove of the Kaua`i kupua or demigod Palila, grandson of Hina (Handy and Handy 1972:424). In a 1913 edition of the newspaper Ka`oko`a Joseph Akina describes Pahla's banana grove:

> The stalk could hardly be surrounded by two men, and was about 35 feet high from the soil to the lowest petiole. The length of the cluster from stem to lowest end of the bunch of bananas was about 1 3/4 fathoms long (one anana and one muku). There were only two bananas on each about 4 inches around the middle. There were just two bananas, one on the east side and one on the west, each about a foot or more in length. The one on the east side was tartish, like a *waiawi* (Spanish guava) in taste and the one on the west was practically tasteless. The diameter of the end of the fruit stem of this banana seemed to be about 10 feet. This kind of banana plant and its fruit seemed almost supernatural... (Akina, 1913:5).

Ka Lulu o Mo`ikeha

Kapa`a was the home of the legendary Mo`ikeha. Born at Waipi`o on the island of Hawai`i, Mo`ikeha sailed to Kahiki (Tahiti), the home of his grandfather Maweke, after a disastrous flood. On his return to Hawai`i, he settled at Kapa`a, Kaua`i. Kila, Mo`ikeha's favorite of three sons by the Kaua`i chiefess Ho`oipoikamalani, was born at Kapa'a and was said

to be the handsomest man on the island. It was Kila who was sent by his father back to Kahiki to slay his old enemies and retrieve a foster son, the high chief La`amaikahiki (Handy and Handy 1972:424; Beckwith 1970:352-358; Kalakaua 1888:130-135; Fornander 1916, vol.4 pt.1:160). Mo`ikeha's love for Kapa`a is related in the *`olelo no`eau*: Ka lulu o Mo`ikeha i ka laula o Kapa`a. "The calm of Moikeha in the breadth of Kapa`a" (Pukui, 1983: 157).

"Lulu-o-Mo`ikeha" is described as being situated "near the landing and the school of Waimahanalua" (Akina, 1913: 5). The landing in Kapa`a was known as the Makee Landing and was probably constructed in the late 1870s, along with the Makee sugar mill. Today, in place of the old Makee Landing is part of a breakwater located on the north side of Mo`ikeha Canal near the present day Coral Reef Hotel, and approximately half-a-mile north of Waikaea Bridge.

Akina (1913) tells the story of how Mo`ikeha's son, Kila stocks the islands with the fish *akule*, *kawakawa* and *`opelu.* When Kila travels to Kahiki, he seeks out his grandfather Maweke and explains that he is the child of Mo`ikeha. When Maweke asks Kila if Mo`ikeha is enjoying himself, Kila answers with the following chant:

> My father enjoys the billowing clouds over Pohaku-pili,
>
> The sticky and delicious poi,
>
> With the fish brought from Puna,
>
> The broad-backed shrimp of Kapalua,
>
> The dark-backed shrimp of Pohakuhapai,
>
> The potent awa root of Maiaki`i,
>
> The breadfruit laid in the embers at Makialo,
>
> The large heavy taros of Keahapana
>
> The crooked surf of Makalwa too
>
> The bending hither and thither of the reed and rush blossoms,
>
> The swaying of the kalukalu grasses of Puna The large, plump, private parts of my mothers,
>
> Of Ho`oipoikamalanai and Hinau`u, The sun that rises and sets,
>
> He enjoys himself on Kaua`i,
>
> All of Kaua`i is Mo`ikeha's. (Akina, 1913: 6)

Maweke was delighted and when the boy is questioned as to his purpose, Kila tells his grandfather he is seeking fish for his family. Maweke tells Kila to lead the fish back to his homeland. This is how Kila led the *akule, kawakawa* and *opelu* to Hawai`i.

Paka`a and the wind gourd of La`amaomao (Keahiahi)

Kapa`a also figures prominently in the famous story of Paka`a, and the wind gourd of La`amaomao. Paka`a was the son of Kuanu`uanu, a high-ranking retainer of the Big Island ruling chief Keawenuie`umi (the son and heir to the legendary

Chief, Umi), and La`amaomao, the most beautiful girl of Kapa`a and member of a family of high status *kahuna.* Kuanu`uanu left the island of Hawai`i, traveled throughout the other islands and finally settled on Kaua`i, at Kapa`a. It was there that he met and married La`amaomao, although he never revealed his background or high rank to her until the day a messenger arrived, calling Kuanu`uanu back to the court of Keawenuia` umi.

Intent on seeking out his real father and making himself known to him, Paka`a prepared for the journey to the Big Island. His mother presented to him a tightly covered gourd containing the bones of her grandmother, also named La`amaomao, the goddess of the winds. With the gourd and chants taught to him by his mother, Paka`a could command the forces of all the winds in Hawai`i. While this story continues on at length about Paka`a and his exploits on the Big Island and later on Moloka`i, it will not be dwelt upon further here. It is important to note that several versions of this story do include the chants which give the traditional names of all of the winds at all the districts on all the islands, preserving them for this and future generations (Nakuina 1990; Rice 1923:69-89; Beckwith 1970:86-87; Thrum 1923:53-67; Fornander 1918-19 vol. 5 pt.1:78- 128).

Frederick Wichman (1998:84) writes that Paka`a grew up on a headland named Keahiahi. Here, Paka`a learned to catch *malolo*, his favorite fish. After studying the ocean and devising his plan to fabricate a sail, Paka`a wove a sail in the shape of a crab claw and tried it out on his uncle's canoe. One day, after going out to catch *malolo*, he challenged the other fishermen to race to shore. He convinced them to fill his canoe with fish suggesting it was the only way he could truly claim the prize if he won:

> The fishermen began paddling toward shore. They watched as Paka`a paddled farther out to sea and began to fumble with a pole that had a mat tied to it. It looked so funny that they began to laugh, and soon they lost the rhythm of their own paddling. Suddenly Paka`a's mast was up and the sail filled with wind. Paka`a turned toward shore and shot past the astonished fishermen, landing on the beach far ahead of them. That night, Paka`a, his mother, and his uncle had all the *ma`o`o* they could eat (Wichman 1998:85).

Kaweloleimakua

Kapa`a is also mentioned in traditions concerning Kawelo (Kaweloleimakua), Ka`ililauokekoa (Mo`ikeha's daughter, or granddaughter, dependent on differing versions of the tale), the mo 'o Kalamainu'u and the origins of the *hina`i hinalea* or the fish trap used to catch the hinalea fish, and the story of Lonoikamakahiki (Fornander 1917, vol.4 pt.2:318, vol.4 pt. 3:704- 705; Rice 1923:106-108; Thrum 1923:123-135; Kamakau 1976:80).

Kalukalu grass of Kapa`a

"Kiimoena kalukalu Kapa`a" or "Kapa`a is like the *kalukalu* mats" is a line from a chant recited by Lonoikamakahiki. Kalukalu is a sedge grass, apparently used for weaving mats (Fornander 1917, Vol. IV, Pt. 2, pp. 318-19). Pukui (1983: 187) associates the kalukalu with lovers in "ke kalukalu moe ipo o Kapa`a; the *kalukalu* of Kapa`a that sleeps with the lover". According to Wichman (1998:84), "a kalukalu mat was laid on the ground under a tree, covered with a thick pile of grass, and a second mat was thrown over that for a comfortable bed", thus the association with lovers. Kaua`i was famous for this peculiar grass, and it probably grew around the marshlands of Kapa`a. It is thought to be extinct now, but an old-time resident of the area recalled that it had edible roots, "somewhat like peanuts." Perhaps it was a famine food source (Kapa`a Elementary School 1933:VI).

Heiau of Kapa`a

During their expeditions around Hawai`i in the 1880's, collecting stories from *ka po`e kahiko*, Lahainaluna students stopped in Kapa`a and Kealia and gathered information regarding *heiau* of the region. Altogether, fourteen *heiau* were named in Kapa`a and Kealia, suggesting the two *ahupua`a* were probably more politically significant in ancient times. Table 1 lists the names of the ten *heiau* identified in the *ahupua`a* of Kapa`a, their location if known, their type, and associated chief and priest.

Table 1. *Heiau* of Kapa‘a

Name	Location	Type	Associated
Mailehuna	Kapa‘a (Mailehuna is the area of the present day Kapa`a School)	Unknown	Kiha, Kaumuali‘i/ Lukahakona
Pueo	Kapa‘a	Unknown	Kiha, Kaumuali‘i/
Pahua	Kapa‘a/Kealia	Unknown	Kiha/ Lukahakona
Kumalae	Kapa‘a/Kealia	Unknown	Kiha/ Lukahakona
Waiehumalama	Kapa‘a/Keilia	Unknown	Kiha/ Lukahakona
Napu'upa'akai	Kapa‘a/Kealia	Unknown	Kiha/ Lukahakona
Noeamakali`i	Kapa‘a/Kedlia	Heiau for birth of Kaua`ii Chiefs, like Holoholoku	Unknown
Pu'ukoa	Kapa‘a/Kealia	Unu type heiau	Unknown
Piouka	Kapa‘a/Kealia	Unu type heiau	Unknown
Una	Kapa‘a/Kealia	Unknown	Kiha/ Lukahakona
Mano	Kapa‘a/Kealia	Unknown	Kiha/ Lukahakona
Kuahiahi	Kapa‘a (govmt) school stands on site now)	Unknown	Kaumuali‘i/ Lukahakona
Makanalimu	Upland of Kawaihau	Unknown	Kaumuali‘i
Kaluluomoikeha	Kapa‘a	Unknown	Moikeha

The exact locations of these *heiau* are unknown. The locations of two of the *heiau* correlate with the locations of *wahi pana* which are known to be close to Kuahiahi and Kaluluomo'ikceha. Kuahiahi (also spelled Kaahiahi and Keahiahi) is the rocky headland at the north end of Kapa'a where the first Kapa`a School was once located. Kaluluomo`ikeha is thought to be the general area near the Mo`ikeha Canal and the present day Coral Reef Hotel.

The Mahele: Kapa'a Land Commission Awards

The Organic Acts of 1845 and 1846 initiated the process of the *Mahele*, the division of Hawaiian lands, which introduced private property into Hawaiian society. In 1848 the crown and the *ali`i* received their lands. The common people received their *kuleana* in 1850. It is through records for Land Commission Awards (LCAs) generated during the Mahele that specific documentation of traditional life in Kapa`a Ahupua`a comes to light. During the *Mahele*, Kapa'a was taken as Crown Lands (Office of the Commissioner of Public Lands of the Territory of Hawaii, 1929). The i1i of *Paikahawai* and *Ulakiu* in Kapa`a *Ahupua`a* were retained as Government Lands.

Table 2. Mahele Land Claims in Kapa`a Ahupua`a

LCA Number	Ahupuaʻa	Claimant	ʻIli of the Ahupuaʻa	Village/Farm	Land Use	Number of Āpana
3971	Kapa`a	Honolii,	Kapana	Kupanihi Village	6 *loʻi* (uncult), house lot	2 (2 acres, 1 rood, 1 rod)
3554	Kapa`a	Keo	Kahanui	Puhi Village	15 *loʻi*, house lot	2 (7 acres, 1 rood, 17 rods)
3638	Kapa`a	Huluili	Maeleele	Kaloko Village	12-15 *loʻi*, house lot	2 (5 acres, 1 rood, 19 rods)
8247	Kapa`a	Ehu	Moalepe/Noalepe		20 *loʻi*,	1 (3 rods)
8837	Kapa`a	Kamapaa	Ulukiu lalo Awawaloa Ulukiu		3 *loʻi*, 2 *loʻi*, house lot	1 (2 acres, 2 rods, 27 rods)
8843	Kapa`a	Kiau	Apopo	Kalolo Village	6 (5) *loʻi* and *kula*, house lot	2 (2.75 acres 3 rods)
10564	Kapa`a	Oleloa Daniel		Hikinui Farm	Fishpond, 10 *loʻi*	

The land claims during this period show that only five individuals were awarded land parcels in the relatively large *ahupua`a* of Kapa`a. The five awardees were Kiau (#08843), Kamapaa (#08837), Mane Honolii (#03971) Hulili (#03638) and Ehu (#08247). All four had lo`i or irrigated *kalo* fields on the *mauka* side of the lowland swampy area, sometimes extending a short distance up into small, shallow gulches and valleys. Many of these *lo`i* parcels name *pali* or hills/cliffs as boundaries. Each LCA also had a separate house lot located on the *makai* side of the swamp, near the beach. Three of the land claims name ponds on their lands, including Puhi Pond (LCA #03554), and fishponds in Kupanihi 'Ili (LCA #03971) and Hahanui 'Ili (LCA #10564). *Loko* Kihapai may be the same as the fishpond in the same land claim. The other two *loko* are associated with house lots, situated on the *makai* edge of the Kapa'a swamplands suggesting modification of the natural swamplands.

Other natural and cultural resources mentioned in the LCAs include freshwater springs, pig pens, *hau* bushes, *hala* clumps, streams, `*auwai*, and *kula* or pasturelands.

Interestingly, the residential "village" of Kapa'a did not exist as a single entity, but was likely a series of small settlements or compounds, perhaps even individual house lots which stretched along the shoreline of the *ahupua`a* and included (south to north) Kupanihi (Makahaikupanihi), Kalolo (Kaulolo), Puhi, and Uluki.

The fifth individual, Ehu (LCA #08247), was the only person to be awarded a single parcel in the upland area of Kapa`a, Moalepe Valley, approximately five miles one mile southwest of the project area. In 1848, when Ehu made his claim, he was the only one living there. A few years later, according to Honolii's testimony to support Ehu's claim, "There are no houses and no people now living on the land. Ehu found himself lonely there, all his neighbors having either died or left the land. Ehu now lives in Wailua." Evidently Ehu may have been the last person to live at and cultivate in the traditional way, the far *mauka* region of Kapa`a (Van Ryzin and Hammat 2004).

Early Historic Accounts of Kapaa (1830s-1900s)

Although most of the historic record documents for Kaua`i in this period revolve around missionary activities and the missions themselves, there was indication that the Kapaa area was being considered for new sugar cane experiments, similar to those occurring in Kōloa In 1835 Ladd and Company received a 50 year lease on land in Kōloa from Kamehameha III and Kaua`i Governor Kaikio`ewa of Kaua`i. The terms of the lease allowed the new sugar company "the right of someone other than a chief to control land" and had profound effects on "traditional notions of land tenure dominated by the chiefly hierarchy" (Donohugh, 2001: 88). In 1837, a very similar lease with similar terms was granted to Wilama Ferani, a merchant and U.S. citizen based in Honolulu (Hawai`i State Archives, Interior Dept., Letters, Aug. 1837). The lease was granted by Kauikeaouli for the lands of Kapaa, Kealia and Waipouli for twenty years for the following purpose:

> ...for the cultivation of sugar cane and anything else that may grow on said land, with all of the right for some place to graze animals, and the forest land above to the top of the mountains and the people who are living on said lands, it is to them whether they stay or not, and if they stay, it shall be as follows: They may cultivate the land according to the instructions of Wilama Ferani and his heirs and those he may designate under him... (Hawai`i State Archives, Interior Dept. Letters, Aug. 1837).

Unlike Ladd & Company which eventually became the Kōloa Sugar Company, there is no further reference to Wilama Ferani and his lease for lands in Kapaa, Kealia and Waipouli. In a brief search for information on Honolulu merchant, Wilama Ferani, nothing was found. It is thought that perhaps Wilama Ferani may be another name for William French, a well-known Honolulu merchant who is documented as having experimented with grinding sugar cane in Waimea, Kaua`i at about the same time the 1837 lease for lands in Kapaa, Kealia and Waipouli was signed (Joesting 1984: 152).

In 1849, son of Wai`oli missionary, William P. Alexander, recorded a trip he took around Kaua`i. Although, he focuses on the larger mission settlements like Kōloa and Hanalei, he does mention Kapa`a.

> A few miles from Wailua, near Kapaa we passed the wreck of a schooner on the beach, which once belonged to Capt. Bernard. It was driven in a gale over the reef, and up on the beach, where it now lies. A few miles further we arrived at Kealia. We had some difficulty crossing the river at this place, owing to the restiveness of our horses. The country here near the shore was rather uninviting, except the valley which always contained streams of water (Alexander 1991: 123).

In later years, the notorious Kapaa reef was to become the location of many shipwrecks once a landing was built there in the 1880s.

The first large scale agricultural enterprise was begun in Kapaa in 1877 by the Makee Sugar Plantation and the *Hui* Kawaihau (Dole 1916: 8). Originally a choral society begun in Honolulu its membership consisted of many prominent names, both Hawaiian and *haole*. It was Kalakau'a's thought that the *Hui* members could join forces with Makee, who had previous sugar plantation experience on Maui, to establish a successful sugar corporation on the east side of Kaua`i. Captain Makee was given land in Kapaa to build a mill and he agreed to grind cane grown by *Hui* members. Kalakau'a declared the land between Wailua and Moloaa, the Kawaihau District, a fifth district and for four years the *Hui* attempted to grow sugar cane at Kapahi, on the plateau lands above Kapaa town. After a fire destroyed almost half of the *Hui*'s second crop and after the untimely death of one of their principal advocates, Captain James Makee, the *Hui* began to disperse and property and leasehold rights passed on to Makee's son-in-law and new Makee Plantation owner, Colonel Z.S. Spalding (Dole 1916: 14).

As part of the infrastructure of the new plantation, a sugar mill was erected and the Makee Landing was built in Kapaa during the early years of operation of the Makee Sugar Plantation. Following Captain Makee's death, Colonel Spalding took control of the plantation and in 1885 moved the mill to Kealia (Cook 1999: 51). The deteriorating stone smokestack and landing were still there well into the 1900s (Damon 1931:359). Conde´ and Best (1973:180) suggest that railroad construction for the Makee Plantation began just prior to the mid-1890s. There is one reference to a railroad line leading from the Kapaa landing to Kealia in 1891. During Queen Lili`uokalani's visit to Kaua`i in the summer of 1891, the royal party was treated to music by a band, probably shipped in from O`ahu. "The band came by ship to Kapaa and then by train to Kealia" (Joesting 1984:252). This railroad line is depicted on a 1910 USGS map which shows the line heading south from Kealia Mill and splitting near the present Coral Reef Hotel, another line going to the old Kapaa Landing (Makee Landing) and another line heading *mauka*, crossing the present Moikeha Canal, traveling southwest up Lehua Street and through what is now goat pasture, along a plateau and into the *mauka* area behind Kapaa swamplands. This railroad line was part of a twenty mile network of plantation railroad with some portable track and included a portion of Kealia Valley and in the *mauka* regions of the plateau lands north of Kealia (Conde´ and Best 1973:180).

By the late 1800s hundreds of Portuguese and Japanese immigrants found work on Makee Plantation and the new influx of immigrants required more infrastructure (Cook 1999:51). In 1883, a lease for a school lot was signed between Makee Sugar Company and the Board of Education (Kapaa School 1983: 9). Stipulations in the Portuguese immigrant contracts with Makee Sugar Company stated that "children shall be properly instructed in the public schools" (Garden Island April 1, 1983). The original Kapaa School was constructed in 1883 on a rocky point adjacent to the Makee Sugar Company railroad. Traditionally, this point was known as Kaahiahi (Kapaa School 1983: 10). In 1908, Kapaa School was moved to its present site directly *mauka* and up the hill at Mailehune.

Narrow wagon roads gave way to macadamized roads in the early part of the 20th century. One of these new roads was called the Kaua`i Belt Road and parts of it are thought to have followed along the "Old Government Road" (Cook, 1999). In Kapaa, the present day Kuhio Highway likely follows the same route as the original Government Road and subsequent Kaua`i Belt Road. In fact, the locations of the *kuleana* awards in Kapaa indicate that the majority of the house lots were situated along the Government Road. LCA 3243 names a "road" as one of its boundaries.

In the latter half of the 1800s, following Makee's death, Chinese rice farmers began cultivating the lowlands of Kapaa with increasing success. Several Hawaiian *kuleana* owners leased or sold their parcels *mauka* of the swamp land to Chinese rice cultivators. Other Chinese rice cultivators appealed to the government for swamplands, first leasing and later buying the land. The economic activity displaced the house lot *kuleana* on the *maka*i side of the marsh for increasing commercial and residential development (Lai 1985:148-161).

20th Century History of Kapa`a (1900 - Present)

In the early 1900s, to help with the burgeoning plantation population, government lands were auctioned off as town lots in Kapaa. One *kama`aina* mentioned that in the 1930s and 1940s, the area north of Moikeha Canal in Kapaa was mostly settled by Portuguese families (Bushnell et al 2002). The Japanese were also very prominent in the 1920s and 1930s largely replacing the Chinese merchants in the Kapaa business sector (Bushnell et al. 2002). Starting in 1926, the territorial Board of Health ran a dispensary in Kapaa, which was located at the *makai* edge of Niu Street, near the extant Kapaa Beach Park parking lot and bike path. The location of the former dispensary currently is a vacant lot. Elsewhere in the vicinity, a fire station occupies the location of the former Coral Reef Hotel, and a courthouse and a jail once stood where the present Kapaa Neighborhood Center is located. It is not known when these structures were abandoned or removed.

In 1913, Hawaiian Canneries opened in Kapaa at the site now occupied by Pono Kai Resort (Cook, 1999: 56). Through the Hawaiian Organic Act, Hawaiian Canneries Company, Ltd. purchased land they were leasing, approximately 8.75 acres, in 1923 (Bureau of Land Conveyances, Grant 8248). A 1923 sketch of the cannery shows only four structures, one very large structure assumed to be the actual cannery and three small structures *makai* of the cannery. By 1956, the cannery was producing 1.5 million cases of pineapple. By 1960, 3400 acres were in pineapple and there were 250 full time employees and 1000 seasonal employees (Honolulu Advertiser, March 20, 1960). In 1962, Hawaiian Canneries went out of business due to competition from third world countries.

The Ahukini Terminal & Railway Company was formed in 1920 to establish a railroad to connect Anahola, Kealia, Kapaa to Ahukini Landing and "provide relatively cheap freight rates for the carriage of plantation sugar to a terminal outlet" (Conde´ and Best, 1973: 185). This company was responsible for extending the railroad line from the Makee Landing, which was no longer in use, to Ahukini Landing, and for constructing the original Waikaea Railroad Bridge and the Moikeha Makai Railroad Bridge.

In 1934, the Lihue Plantation Company absorbed the Ahukini Terminal & Railway Company and Makee Sugar Company (Conde´ and Best, 1973: 167). The railway and rolling stock owned by Makee Sugar Company became the Makee Division of the Lihue Plantation. At this time, besides hauling sugar cane, the railroad was used to haul plantation freight including "fertilizer, etc... canned pineapple from Hawaiian Canneries to Ahukini and Nawiliwili, pineapple refuse from Hawaiian Canneries to a dump near Anahola and fuel oil from Ahukini to Hawaiian Canneries Co., Ltd." (Hawaiian Territorial Planning Board, 1940: 11). Former plantation workers and *kama`aina* growing up in Kapaa remember when the cannery would send their waste to the pineapple dump, a concrete pier just north of Kumukumu Stream (State Site No. 50- 30-08-789) by railroad. The structure is built over the water where the rail cars would dump the pineapple waste. The current would carry the waste to Kapaa which would attract fish and sharks (Bushnell et al. 2002).

Lihue Plantation was the last plantation in Hawaii to convert from railroad transport to trucking (Conde´ and Best, 1973: 167). "By 1957 the company salvaged a part of their plantation railroad, which was being supplanted by roads laid out for on or close to the old rail bed" (Ibid: 167). By 1959, the plantation had completely converted over to trucking. The Cane Haul Road which begins near the intersection of Haua`ala Road and Kuhio Highway is thought to date to the late 1950s and follows the alignment of the old railroad until just before or near `Alibi Point.

Severe floods in Kapaa in 1940 led to the dredging and construction of the Waikaea and Mokeha Canals sometime during that decade. (Hawaii Territorial Planning Board, 1940: 7). Although the Waikaea Canal, bordering the Kapaa Pineapple Cannery, had been proposed as early as 1923, nothing was constructed until after the floods (Bureau of Land Conveyances, Grant 8248). A Master Plan for Kapaa, published in 1940, asks the Territorial Legislature for funds to be set aside for the completion of a drainage canal and for filling *makai* and *mauka* of the canal (Hawaii Territorial Planning Board, 1940:7). In 1955, the local newspaper reported the dredging of coral from the reef fronting Kapaa Beach Park for the building of plantation roads (Garden Island Newspaper, September 21, 1955). This dredging was later blamed for accelerated erosion along Kapaa Beach (Garden Island Newspaper, October 30, 1963). Today, there are several sea walls along the Kapaa Beach Park to check erosion. Old time residents claim the sandy beach in Kapaa was once much more extensive than it is now (Bushnell et al. 2002).

In the 1930s after the incorporation of Makee Sugar Company into Lihue Plantation, Kealia Town was slowly abandoned. Many of the plantation workers bought property of their own and moved out of the plantation camps. The camps which bordered Kuhio Highway were disbanded in the 1980s. In the last part of the 20th century the Lihue Plantation began to phase out and Kapaa Town suffered after the closing of the Kapaa Cannery; however the growing tourist industry helped to ease the economic effects of the Cannery's closing.

PREVIOUS ARCHAEOLOGICAL RESEARCH

Archaeological Studies and Sites in Kapa`a *Ahupua`a*

The following table outlines the archaeological research (Table 3) and historic properties (Table 4) identified in Kapa`a *Ahupua`a*. These tables are followed by discussion of the research and historic properties. Table 3 provides a list of archaeological research conducted within Kapa`a *Ahupua`a*, including columns for source, location, nature of study, and findings. The locations of these archaeological studies are shown in Figure 4. Table 4 is a list of known historic properties within the *ahupua`a* and includes columns for state site numbers, site type, location and reference. The locations of identified sites within Kapa`a *Ahupua`a* are shown in Figure 5. All site numbers are numbered 50-30-08-SHIP site number. Here only the SHIP sit number designation will be used

Table 3. Previous Archaeological Studies in coastal Kapa`a.

EXPLORATION ASSOCIATES LTD

Source	Location	Nature of Study	Findings
Bennett 1931	Island wide: identifies 2 sites: Site 110 Taro terraces and bowl and Site 111 A large simple dirt Hawaiian ditch	Archaeological Reconnaissance	Identifies 2 sites: Site 110 Taro terraces and bowl and Site 111 A large simple dirt Hawaiian ditch
Handy and Handy 1972	Archipelago-wide	Native Planter study	Discusses "highly developed irrigation system"
Ching 1976	Just south of the Waikaea Drainage Canal	Archaeological Reconnaissance	No significant findings
Hammatt 1981	Upland Kapaa	Archaeological Reconnaissance	No significant findings
Hammatt 1986	Upper reaches of the Makaleha stream valley.	Archaeological Reconnaissance	No significant findings
Hammatt 1991	Along Kuhio Highway	Subsurface Testing	Identifies two sub-surface cultural layer sites
Kikuchi and Remoaldo 1992	Around Kapaa Town	Cemeteries of Kauai	Identifies six cemeteries
Spear 1992	South side Waikaea Canal, *mauka* of Kuhio Highway. (TMK: 4-5-05:04, 09)	Monitoring Report	Designated subsurface Site 547

Source	Location	Nature of Study	Findings
Chaffee, Burgett & Spear 1994a	A house lot near the corner of Kukui and Ulu Streets in *mauka* Kapaa Town. [TMK: 4-5-09:10]	Archaeological Inventory Survey	No significant findings
Chaffee, Burgett & Spear 1994b	Mamane Street Kapaa Town. [TMK: 4-5-09:51]	Archaeological Inventory Survey	No significant findings
Hammatt, Ida & Chiogioji 1994	Proposed bypass routes *mauka* of Kapaa Town	Archaeological Assessment	No new field work, literature review only
Hammatt, Ida & Folk 1994	South side Waikaea Canal, *mauka* of Kuhio Highway [TMK: 4-5-05:06]	Archaeological Inventory Survey	Weak cultural layer designated Site 748
Kawachi 1994	Inia Street (Jasper) [TMK 4-5-08:33]	Burial Report	Designated Site 871
McMahon 1994	"behind the armory in Kapa`a near the god stones" The location is uncertain, and at "Buzz's near the Coconut Marketplace"	Documents a report of two burials	16 sets of human remains. Site numbers unknown
Creed, Hammatt, Ida, Masterson & Winieski 1995	Kapa`a Sewer line project, Kuhio Highway, south and central Kapaa Town	Archaeological Monitoring Report	Documents cultural layer of Site - 1848 and (an enlarged) Site - 1849 & recovery of thirty burials at Sites —867, -868, -871, and - 1894
Jourdane 1995	1382-A Inia Street, *makai* of Kuhio Highway, central Kapaa Town	Burial Report	Site 626
McMahon 1996	South side Waikaea Canal, *mauka* of Kuhio Highway [TMK: 4-5-05:08]	Archaeological Inventory Survey	No significant cultural material
Hammatt, Chiogioji, Ida & Creed 1997	Test excavations focused inland of Kapaa Town	Archaeological Inventory Survey	Four test trenches were excavated inland of Kapaa Town
Borthwick and Hammatt 1999	Kapaa Seventh-Day Adventist Church at 1132 Kuhio Highway	Archaeological Monitoring and Burial Treatment Plan	Monitoring was indicated as this parcel lay within designated Site 1848.

Figure 6. Map showing previous archaeological studies in Kapa'a.

Table 4. Historic Properties in Kapa`a **Ahupua'a**

Site #	Ahupua'a	Site Type/ Name (if any)	Location	Site Constraints	Reference
B001	Kapa'a	Historic Cemetery	South of bend of Kapa`a Stream, a kilometer *mauka* from Kuhio Hwy	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B002	Kapa'a	Historic Cemetery	Just *mauka* from Kuhio Highway, south of Kapa`a Stream	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B003	Kapa'a	Kapa'a Public Cemetery	South of Kanaele Road, one kilometer inland of Kuhio Highway	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B004	Kapa'a	Historic Cemetery	North of Apopo Road, one kilometer inland of Kuhio Highway	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B013	Kapa'a	Historic Cemetery	Just *mauka* from Kuhio Highway, north of the Waikaea Canal	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B014	Kapa'a	All Saints Episcopal Church Cemetery	Just *mauka* from Kuhio Highway, south of the Waikaea Canal	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo. 1992:62-65
547	Kapa'a	Sub-surface features including a firepit and a possible house foundation	South of bend of Waikaea Canal, *mauka* of Kuhio Highway	Archaeological monitoring in the vicinity recommended	Spear 1992:3
626	Kapa'a	Burial	Inia Street, *makai* of Kuhio Highway,	Consultation and monitoring in vicinity indicated	Jourdane 1995
748	Kapa'a	Minimal findings, a weak cultural layer (buried A-horizon)	South of the bend of the Waikaea Canal, *mauka* of Kuhio Highway	Considered no longer significant within project area	Hammatt et al. 1994
789	Kapa'a/Kealia	Historic Road	Coastal Cane Haul Road near Kawaihau Road turn off	Unknown	Perzinski et. al. 2000

Site # 50-30-08-	Ahupua'a	Site Type/ Name (if any)	Location	Site Constraints	Reference
867	Kapa`a	1 set of human remains	Kukui Street, just *mauka* of Kuhio Highway, Kapa`a Town	Consultation and monitoring in vicinity indicated	Creed et al. 1995:50
868	Kapa`a	1 set of human remains	Lehua Street *mauka* of Kuhio Highway, Kapa`a Town	Consultation and monitoring in vicinity indicated	Creed et al. 1995:50
871	Kapa`a	13 sets of human remains (Creed et al. 1995:50)	Inia Street, *makai* of hio Highway	Consultation and monitoring in vicinity indicated	Kawachi 1994; Creed et al. 1995:50
1848	Kapa`a	Cultural layer and sub-surface features	Along Kuhio Highway between Wana Road and the Waikaea Drainage Canal	Archaeological monitoring in the vicinity recommended	Hammatt 1991; Creed et al. 1995
1849	Kapa`a	Cultural layer and sub-surface features; Creed et al. 1995:53 expands boundaries to incl. burial sites 626, -867, -868 - 871, and -1894	Along Kuhio Highway between Inia Street and Kauwila Street extending to the coast	Consultation and monitoring in vicinity indicated	Hammatt 1991; Creed et al. 1995
1894	Kapa`a	11 sets of human remains	Ulu Street, just north of Kuhiö Highway, Kapaa Town	Consultation and monitoring in vicinity indicated	Creed et al. 1995:50
2075	Kapa`a/Kealia	Highway Bridge Foundation (old Kaua'i Belt Road)	Kuhio Highway at Kapa`a/ Kealia River	Unknown	Bushnell et al. 2002:55
2076	Kapa`a	Petroglyph	Rocky coast below former cane haul road (Site -789)	Preservation	Bushnell et al. 2002:55
2077	Kapa`a	Concrete steps (related to historic beach pavilion)	Near present Kapaa Beach Park Pavilion	Unknown	Bushnell et al. 2002:55

Site #	Ahupua'a	Site Type/ Name (if any)	Location	Site Constraints	Reference
2078	Kapa'a	Historic Railway Alignment (2 Railroad Bridges, & RR Culvert Foundation)	Both railroad bridges span the Moikeha Canal; the RR culvert foundation is located north of the Kapaa Swimming Pool.	Unknown	Bushnell et al. 2002:55

Figure 7. Map showing previously documented archaeological sites in Kapa`a

The majority of study areas are located within urban Kapa'a along the shoreline and away from the mountain areas.

Pattern of Archaeological Sites in Kapa`a

The pattern of archaeological studies in Kapa`a *Ahupua`a* is somewhat skewed with a dozen projects in urban Kapaa Town and very little work along the coast (Figure 4). Major archaeological sites have been found in area include extensive cultural layers with burials and other cultural features underlying Kuhio Highway near All Saints Gym, and near the older part of Kapaa Town between Waikaea Canal and Kapaa Beach Park, *makai* of Kuhio Highway (Hammatt 1991; Kawachi 1994; Creed et al. 1995; Jourdane 1995; Callis 2000). The *mauka-makai* extent of these

cultural layers has not been clearly defined. The five *kuleana* awarded during the *Mahele* are located adjacent to the present coastal highway. The areas directly *mauka* of Kapaa Town are marshy though much of it has been filled in recent decades for the ByPass Road and shopping centers and housing. These cultural deposits associated with pre-historic and early historic habitation are known to exist in a relatively narrow sand berm that makes up the physiogeography of Kapa`a. The more *mauka* studies but still lower coastal areas, suggest they are located towards the *mauka* fringe of the sand berm, approaching more marshy conditions and have generally reported no significant or minimal findings (Spear 1992; Chaffee et al. 1994a & 1994b; Hammatt et al. 1994, 1997; McMahon 1996). Less than 1.5 km to the south of Waikaea Canal at the southern boundary of Waipouli adjacent to Uhalekawa`a Stream (Waipouli Stream) and the ocean is another extensive subsurface cultural deposit which is associated with a pre-contact fishing encampment located (Hammatt et al. 2000).

Anticipated sites based on historic and archaeological studies in *mauka* Kapa`a are the remains of cane cultivation infrastructure such as ditches and pre-contact too historic period Native Hawaiian terracing for *lo`i* cultivation with nearby habitation sites in the gulches, however the gulches lay outside the current project area.

RESULTS OF FIELD WORK

Pedestrian Survey

On January 3 and April 25, 2012 Exploration Associates Ltd. archaeologist Nancy McMahon, M.A. made field inspections on proposed Kapa`a Highlands project area. Access was made via Olohena Road (two gates). North-south oriented transects were utilized to 100% survey the project area. Because of known historic cane cultivation in this area of Kapa`a, predicted sites might be historic plantation related infrastructure such as ditches, flumes, roads, temporary cane-haul railroad berms and reservoirs. None were observed during the survey. The shallow ravine the project area were surveyed and tested, however no pre-Contact or historic era terraces or habitation sites were revealed. The parcel contains no surface archaeological sites. The access road is related to access for construction of the buildings already present on the Phase I parcel.

Subsurface Testing

On November 11, 2012, three trenches were excavated with a backhoe with a 24 in. width bucket (Figure). Trench 1 was excavated to a depth of 183 cm with a length of 10 meters. Trench 2 was excavated to a depth of 160 cm and a length of 3 m. Trench 3 was excavated to a depth of 260 cm and a length of 2.5 m. Each evinced the same soil composition. A description of the soils representing all three trenches is presented here.

A representative profile description evinced the same stratigraphy consisting in all three trenches, consisting of three soil layers with only a single clear boundary delineating the topsoil from the underlying soils. Soil differences could only be determined utilizing the Munsell Color Chart. The topsoil in each trench 5 YR 4/3 *reddish brown organic*. The other two layers are classified as 5 YR 5/6 *yellowish red* [20 cmbs] and 5 YR 4/6 *yellowish red* [20cmbs to base of excavation]. Characteristics are dry to very dry, crumbly, medium firm, clayey silt. It is pretty much cultivated soils. A local informant, Mr. Vasquez, who worked for the Lihue plantation most of his life Informant stated the plantation chain and ball dragged this land several time over.

A geologic survey was undertaken on the adjacent Phase I parcel prior to the construction of a solar farm. Soils extracted and examined in test trenches revealed only agricultural soils. No buried cultural layers or plantation infrastructure was present.

Figure 8. Trench locations, facing northeast.

Figure 9. Profile Test Trench 2 on the left and Trench 3 right.

Figure 10. Entrance off Olohena Road looking makai in the distance the Solar Farm part of Phase I

Figure 11. Access Road to Solar Farm with Cattle Grazing in the Distance.

Figure 12. Lower Elevation Outside Project Area from the access road.

Figure 13. View Across the Project Area, Facing Makai and Northeast.

Figure 14. The Roof of Kapaa Middle School on State land

RECOMMENDATIONS

As no archaeological sites are present, there are no historic preservation concerns for this project. We recommend no further historic preservation work. Though highly unlikely, if any human remains or other significant subsurface deposits are encountered during the course of development activities all work in the immediate area should stop and the State Historic Preservation Division promptly notified.

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APPENDIX A

Photos of the Area Surveyed

Figure 1. View of Project Area from the gate at the top of Olohena Road.

Figure 2. Solar Farm on Phase I Property view to north

Figure 3. Cattle Grazing in the Project Area.

Figure 4. Fence in the left side of photo indicating property boundary.

Figure 5. Goats Grazing in the Project Area.

APPENDIX B

State Historic Preservation Letter (June 2010) Requesting Survey

State Historic Preservation Letter (December 1999) Subdivision
"No Effect"

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

June 28, 2010

LOG NO: 2010.2441
DOC NO: 1006MV50

Greg Allen, Kapaa Highlands Inc.
161 Wailua Road
Kapaa, HI 96746

SUBJECT: **Historic Preservation Review-**
Consultation Letter on TMK (4)-4-3-002:001, Kaua'i Kauai

Thank you for the opportunity to provide a current determination letter on the property with TMK# (4)-4-3-002:001. According to our records, there has not been an Archaeological Inventory Survey (AIS) of this property. In addition, Archaeological Inventory Surveys of nearby properties (TMK (4)-4-3-003:004 and TMK (4)-4-3-003:005) recorded multiple historic properties (SHPD Log No. 2008.1916). However, aerial photos indicate that this property was previously cultivated with sugar cane, which may have destructive implications for pre and post contact Native Hawaiian sites within the project area. However, current aerial photos indicate the presence of potentially historic irrigation features as well as terrain that may not have been subject to intensive cultivation.

The historic preservation requirements for any proposed action within this project area would vary depending on the extent of the action's impact on the parcel. If the action were to take place on previously cultivated land the only historic preservation requirement would be to document the irrigation features. However, if the action takes place in a part of the property that was not cultivated an Archaeological Inventory of that area may be required. It would be highly beneficial for all proposed actions to have an Archeological Inventory Survey for the entire property in order to document the presence or absence of historic sites in this parcel.

Please call Mike Vitousek at (808) 692-8024 if you have any questions or concerns regarding this letter.

Aloha,

Nancy McMahon

Nancy McMahon, Deputy SHPO/State Archaeologist
and Historic Preservation Manager

2-16-2010 8:54AM FROM RUSSHARD/BRUNSTEIN 808 245 8929 P.2

DEC-19-99 12:40P GREG KAMM 1 808 7421751 P.02

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION

December 14, 1999

Mr. Greg Kamm
P.O. Box 1200
Kalaa, HI 96756

LOG NO: 24572
DOC NO: 9912NM02

Dear Mr. Kamm:

SUBJECT: **Chapter 6E-42, Historic Preservation Review --**
Subdivision Permit Application 5-99-45 (Silagi Family Trust and Hillside Corp. Center L.L.C.)
TMK: 4-3-03: 01 por
Kapaa, Kawaihau, Kaua'i

Thank you for submitting the 1975 air photo of the above subject parcels. We agree that the land has been extensively altered by cane cultivation and filling. Therefore, we now believe that this project will have "no effect" on significant historic sites.

If you have any questions, please call Nancy McMahon at 742-7033.

Aloha,

DON HIBBARD, Administrator
State Historic Preservation Division

NM:lm

c: D. Crowell, Planning Department County of Kauai

APPENDIX C

Report of Geotechnical Evaluation Kapaa Solar Field

d. a. evans inc.

REPORT OF
GEOTECHNICAL EVALUATION-
KAPAA SOLAR FIELD
KAPAA, KAUAI

PREPARED FOR
WAGNER ENGINEERING SERVICES, INC.

PREPARED BY:

D.A.Evans, Inc.
P.O. Box 745
Kilauea, HI., 96754

d. a. evans inc.

REPORT OF
GEOTECHNICAL EVALUATION-
KAPAA SOLAR FIELD
KAPAA, KAUAI

PREPARED FOR
WAGNER ENGINEERING SERVICES, INC.

PREPARED BY:

D.A.Evans, Inc.
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Kilauea, HI., 96754

d. a. evans inc.

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d. a. evans inc.

INTRODUCTION

This report summarizes the results of our evaluation of the geotechnical feasibility of construction of a solar farm west of the town of Kapaa, Kauai. We understand the installation will be used to supply electric power to the Kauai Island Utility Cooperative.

PURPOSE

This report is for the exclusive use of our client, Wagner Engineering Services, Inc. Its purpose is to satisfy the terms of the contract between our two firms. The report summarizes the findings, conclusions and recommendations which were generated by the evaluation. The intent of the report has been to present conclusions and recommendations of a geotechnical nature in such a way as to assist the owner and their design team in preparing plans and specifications for construction.

SCOPE

As outlined in our contract dated August 22, 2010, the following work elements were performed.

- Review of available geologic data and stereographic aerial photographs.
- Subsurface exploration using a rubber-tired "Extendahoe" backhoe.
- Laboratory testing of selected samples of soil collected during subsurface exploration.
- Preparation of a formal report summarizing our findings, conclusions and recommendations.

LOCATION

The site is located slightly less than three miles west of the town of Kapaa. It is accessed by an unpaved road exiting from Olohena Road. The site is shown on Plate 1- Location Map.

REFERENCES

The following references were used in preparing our proposal, conducting our evaluation and preparing this report.

d. a. evans inc.

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SITE CONDITIONS AND PROPOSED DEVELOPMENT

The site, as evidenced by preliminary topography and USGS mapping, is located on an elevated stream terrace on the south side of Olohena Road, 2.8 miles west of old Kapaa town and about 4000 feet northeast of the Nonou Forest Reserve. At the time of our exploration, vegetation was sparse due to the ongoing drought. Topography slopes toward the ancestral channel with the steepest portion immediately below Olohena Road.

Detailed plans of the proposed development were not available at the time of our exploration although, because of the nature of the development, the knowledge that it is a solar field is sufficient for our purposes. Drawings which have been provided by your office indicate that the project will consist of six solar panel arrays of varying size mounted on a shallow foundation system.

GEOLOGIC CONDITIONS

The Lihue Depression is the dominant geologic feature which has influenced thesite. The Lihue Depression is apparently the remains of the caldera of the ancestral Wai'ali'ali shield volcano. The caldera was displaced during the massive landsliding which caused the collapse of the portion of the island now occupied by Kapaa and Waipouli. The site is on the northern edge of the depression

Although there is evidence to suggest that the island is still undergoing some settlement associated with the collapse of the volcano, the amount of movement is apparently so small as to be undetectable without instrumentation and there is no longer volcanic activity on the island.

d. a. evans inc.

Our subsurface exploration indicates that the site is an erosion terrace formed by previous stream action. Subsequent erosion has produced a residual soil profile which grades from a fully developed, moderately firm, surface soil to very stiff weathered rock at a depth of about six feet. In this area, as is the case on the majority of the eastern side of the island, the underlying rock is part of the Koloa series of volcanic flow material.

TSUNAMIS

The island of Kauai is susceptible to damage from tsunamis. Although there is a comparatively sophisticated early warning system in place world-wide, the ability of the system to predict the size of any particular event is limited. The general consensus is that tsunamis are certain to occur but their frequency is uncertain. Published data suggest that the site is not vulnerable to damage from tsunami run-up of the magnitude experienced in the Hawaiian Islands historically.

SURFACE AND SUBSURFACE WATER

Drainage on the property occurs as southwesterly sheet flow from the slope below Olohena Road toward the established stream. At the time of our exploration, drought conditions existed on the island and surface was non-existent.

We found no subsurface water to the depth of exploration. Because of the existing drought conditions, the near-surface soil was dry and brittle.

CONCLUSIONS

Based on the results of our geotechnical evaluation, we can offer the following conclusions.

FEASIBILITY

In our opinion, it is geotechnically feasible to develop the site essentially as proposed provided the improvements are properly designed and constructed.

SITE PREPARATION

We have assumed that little or no grading, other than that required for the creation of an access road and support facilities will be needed. Moreover, it is our understanding that the arrays will be supported by some form of pipe piles. As a result, it is likely that site preparation will be minimal.

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EARTHQUAKES

The island of Kauai is in Uniform Building Code seismic zone 1, a designation indicative of a low level of seismic activity. Published data indicate that, during the period 1962 to 1980, for example, there were no recorded earthquakes with a Richter Magnitude greater than 3.0 with an epicenter on or near Kauai. Within the last two years, however, earthquakes in the Richter Magnitude 3 to 4 range have occurred offshore of Maui and Oahu as well as the Loihi seamount east of the Big Island and magma production from Kilauea has altered perceptibly. Of particular importance was the October 15, 2006, M=6.7 and the November 23, 2006, M=5.0 events off the Kona Coast .This may be indicative of shifts in the Pacific tectonic plate which could generate an increase in seismic activity for the near future .As part of our evaluation, we have provided below the numeric parameters necessary to perform the site characterization analysis required by the 1997 Uniform Building Code.

Soil Profile- S_D
$z = 0.075$
$c_a = 0.12$
$c_v = 0.18$
$N_a = 1.0$
$N_v = 1.0$

In our opinion, it is likely that the site will experience low-level ground shaking due to volcanic activity on or near the Big Island, but the magnitude and number of these events will not be larger than those in the historic record.

TSUNAMI

Tsunami run-up of historic proportions has been in the 10 to 40 foot range and, historically, has been concentrated on the north shore of the island. Although the pre-historic "monster" tsunami is still a theoretical possibility, the design practice in coastal areas of the island has apparently been to consider the run-up of historic proportion. The site of the proposed solar field is well above the elevation of historic run-up.

FOUNDATION DESIGN

The upper two feet of the surface soil in the area of the arrays is poorly consolidated and should not relied for either foundation support or uplift resistance. Below two feet, the soil is stiff and capable of generating more than 2500 pounds per square foot for bearing. Uplift resistance can be determined using the relationship (1100)d + Wl where "d" is outside shaft diameter, "W" is unit weight of the shaft and "l" is shaft length below two feet. This assumes that the shaft consists of a

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protected metal shaft encased in concrete. A passive pressure of 300 pounds per cubic foot (equivalent fluid) is reasonable for the soil below a depth of two feet.

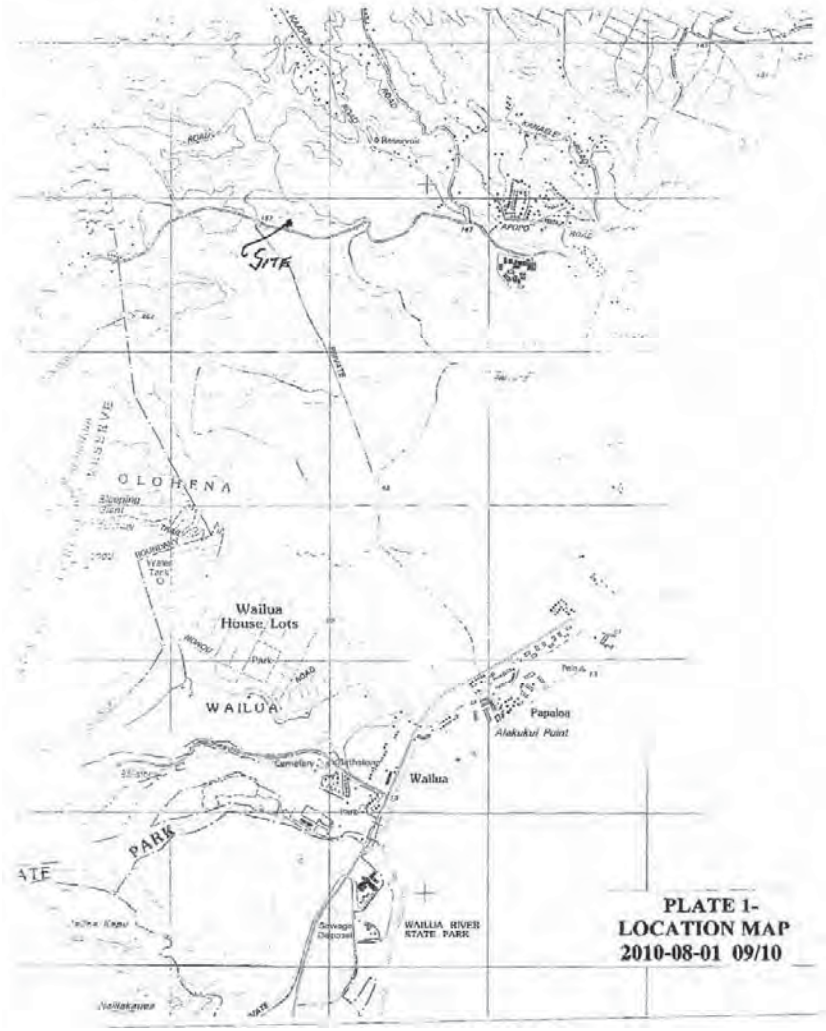
Laboratory tests to determine the relative corrosivity of the soil are currently being performed and the results will be reported under separate cover. However, our work on the island has shown, as the result of a number of tests, that the soil derived from the Koloa volcanic material is highly to severally corrosive to both concrete and metal. The results of the on-site tests will be submitted under separate cover.

SURFACE DRAINAGE

Runoff from rainfall and irrigation should be directed away from the proposed structures to an approved drainage device.

The Plates which are attached and complete this report are listed in the Table of Contents.

oOo



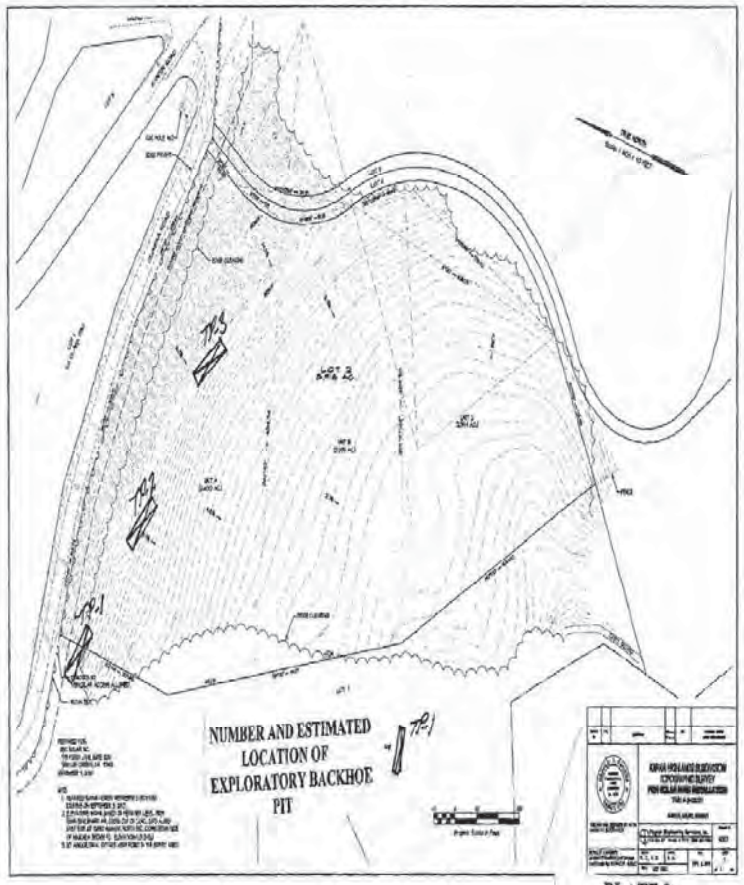


PLATE 2-
GEOTECHNIC L MAP
2010-08-01 09/10

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APPENDIX
SUPPORTING DATA AND PROCEDURES

SURFACE GEOLOGIC MAPPING

A limited amount of surface geologic mapping was performed as part of our evaluation. This mapping was performed both physically and with the aid of topographic maps before and during the subsurface exploration. The results of this work were assimilated with the subsurface exploration.

SUBSURFACE EXPLORATION

Subsurface exploration at the site consisted of the excavation of three trenches using a rubber-tired backhoe with a three-foot-wide bucket. The trenches were located to (a) aid in establishing a "picture" of probable subsurface conditions at the site, and (b) provide access to the subsurface for possible sampling of soil and/or rock. To that extent, both the geomorphology of the site and the type and location of proposed improvements have a bearing on the location of subsurface exploration points. Our estimate of the location of each backhoe trench is shown on Plate-2 Geotechnical Map. Graphic logs, using standard United States Geological Survey, United States Corps of Engineers and United States Bureau of Reclamation nomenclature are included as Plates A-1.1 through A-1.3- Log of Test Pit. Upon completion, all pits were backfilled, tamped and wheel-rolled. The location of each test pits was also marked with a stake and flagging.

LABORATORY TESTING

Moisture/Density. Field moisture content and in-place dry density were determined for each "undisturbed" sleeve sample obtained during exploration. The field moisture content was determined according to ASTM Test Method D2216-66 by obtaining one-half of the moisture sample from each end of the sleeve. The in-place wet and dry density was determined by using the wet weight of the entire sleeve.

At the same time the field moisture content and in-place dry density were determined, the soil material at each end of the sleeve was classified according to the Unified Soil Classification System and pocket penetrometer readings were taken in the cohesive samples. The results of the field moisture content and in-place dry density tests are presented on Plates- A.1 and A-1.2-Log of Test Pit.

Index Tests. For purposes of this report, we have grouped grain-size distribution and Atterberg Limits under "index tests". The bulk sample taken from test pit TP-1 at a depth of two to

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three feet was also subjected to an analysis of its distribution of grain size and its Liquid Limit, Plastic Limit, and Plasticity Index were determined. The distribution of grain size was determined according to ASTM Test Method D422-63. Relative plasticity was determined according to ASTM Test Methods D423-66 and D424-59. Using these data, the soil can, among other things, be provided a positive Unified Soil Classification System group name. The tests indicate that the soil has no gravel-sized particles, 18 percent sand-sized particles, 80 percent silt-sized particles, two percent clay-sized particles, a Liquid Limit of 59, a Plastic Limit of 46 and a Plasticity Index of 13. The soil has been given a Unified Soil Classification System group name and symbol of Sandy Silt (MH). The results are summarized on Plate A-2- Relative Plasticity Data and Plate A-3- Grain Size Distribution Data.

Direct Shear Tests. Undisturbed samples taken from test pits TP-1 and Test Pit TP-2 at two feet were subjected to consolidated, drained direct shear tests to determine the shearing resistance of the soil. In each case, samples were allowed to stabilize in a suitable loading frame under the normal stress for the test (in this case, 500, 750 and 1000 pounds per square foot). The samples were then flooded, allowed to stabilize and then sheared at a constant rate of 0.008 inches per minute to failure. The applied normal and induced shear stresses were monitored with electronic load cells and the displacement in the normal and shear directions monitored with linear variable displacement transducers (LVDT's). The force and displacement in the direction of shear were plotted electronically. The results of the tests are summarized graphically on Plates A-4 - Shear Strength Data.

Corrosion Tests. Tests to determine the relative corrosivity of the on-site soil are currently being completed and will be submitted under separate cover.

With the exception of the corrosion tests, all laboratory testing was performed for us by Evans, Colbaugh & Associates, Inc. in San Marcos, California.

Log of Test Pit No. TP- 1

Date: 09/11/10 Elevation: +60 (Map Datum)

Logged By: DAE Hole Size/ Type: 2'x 6'x 6' Backhoe

Depth (feet)	Sample Type	Blow count	Dry Density	Moisture Content	Other Tests	USCS	Graphic Log	Description
1								SOIL (Residual), Clayey Silt (ML), medium-brown, moderately firm, dry, to very dry
2	[redacted] D,SS		72	30	DS,ALL GS	MH		stiff at two feet
3								
4								very stiff, at 4 feet, mottled light brown and yellow grading to highly weathered Koloa volcanic rock at six feet.
5								
6								
7								
8								
9								
10								Bottom at 6 feet. No water. No caving. Hole backfilled, tamped and wheel-rolled
11								

Water level shown is at time of measurement and may be different at different times.
Blow counts are per foot; dry density is in pounds per square foot; moisture content is percent of dry weight.

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Date: 09/12/10 Project No.: 2010-08-01

SOLAR PANEL FIELD
LOG OF TEST PIT TP-1

PLATE A-1.1

Log of Test Pit No. TP- 2

Date: 09/11/10 Elevation: +60 (Map Datum)

Logged By: DAE Hole Size/ Type: 2'x 6'x 6' Backhoe

Depth (feet)	Sample Type	Blow count	Dry Density	Moisture Content	Other Tests	USCS	Graphic Log	Description
1								SOIL (Residual), Clayey Silt (ML), medium-brown, moderately firm, dry, to very dry
2	[redacted] D		70	28	DS	MH		stiff at two feet
3								
4								very stiff, at 4 feet, mottled light brown and yellow grading to highly weathered Koloa volcanic rock at six feet.
5								
6								
7								
8								
9								
10								Bottom at 6 feet. No water. No caving. Hole backfilled, tamped and wheel-rolled
11								

Water level shown is at time of measurement and may be different at different times.
Blow counts are per foot; dry density is in pounds per square foot; moisture content is percent of dry weight.

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Date: 09/12/10 Project No.: 2010-08-01

SOLAR PANEL FIELD
LOG OF TEST PIT TP-2

PLATE A-1.2

Log of Test Pit No. TP- 3

Date: 09/11/10 Elevation: +60 (Map Datum)

Logged By: DAE Hole Size/ Type: 2'x 6'x 6' Backhoe

Depth (feet)	Sample Type	Blow count	Dry Density	Moisture Content	Other Tests	USCS	Graphic Log	Description
1								SOIL (Residual), Clayey Silt (ML), medium-brown, moderately firm, dry, to very dry.
2								four inch dia. "bomb" at three feet.
3								
4								
5								
6								stiff at six feet.
7								
8								
9								
10								Bottom at 6 feet. No water. No caving Hole backfilled, tamped and wheel-rolled
11								

Water level shown is at time of measurement and may be different at different times.
Blow counts are per foot; dry density is in pounds per square foot; moisture content is percent of dry weight.

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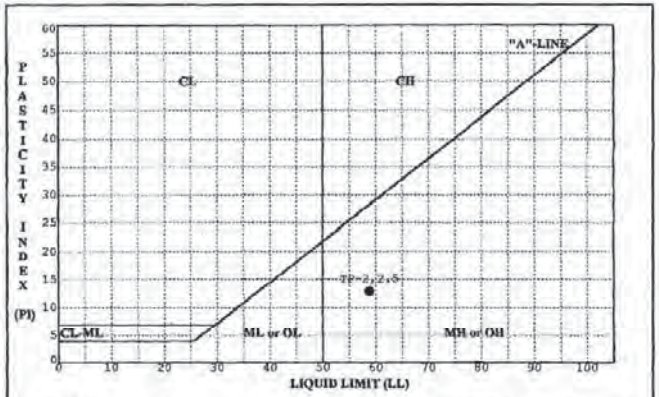
Date: 09/12/10 Project No.: 2010-08-01

SOLAR PANEL FIELD
LOG OF TEST PIT TP-3

PLATE A-1.3

EXPLORATION ASSOCIATES LTD



Symbol Type	Sample Location	Sample Depth (ft)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	USCS Group Symbol and Name
●	TP-2	2.5	59	46	13	ML

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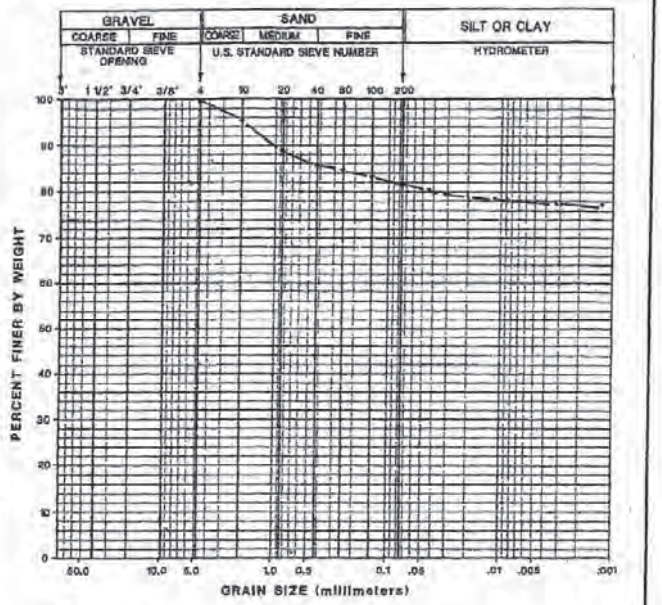
2010-08-01

Relative Plasticity
D A Evans

A-2
1 of 1

AN ARCHAEOLOGICAL ASSESSMENT FOR KAPAA HIGHLANDS 59



SYMBOL	SAMPLE NUMBER	SAMPLE DEPTH (feet)	SOIL DESCRIPTION
— · —		TP-1 @ 2'	SILT (MH)

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GRAIN SIZE DISTRIBUTION DATA

Job Number 2010-08-01 Plate A-3

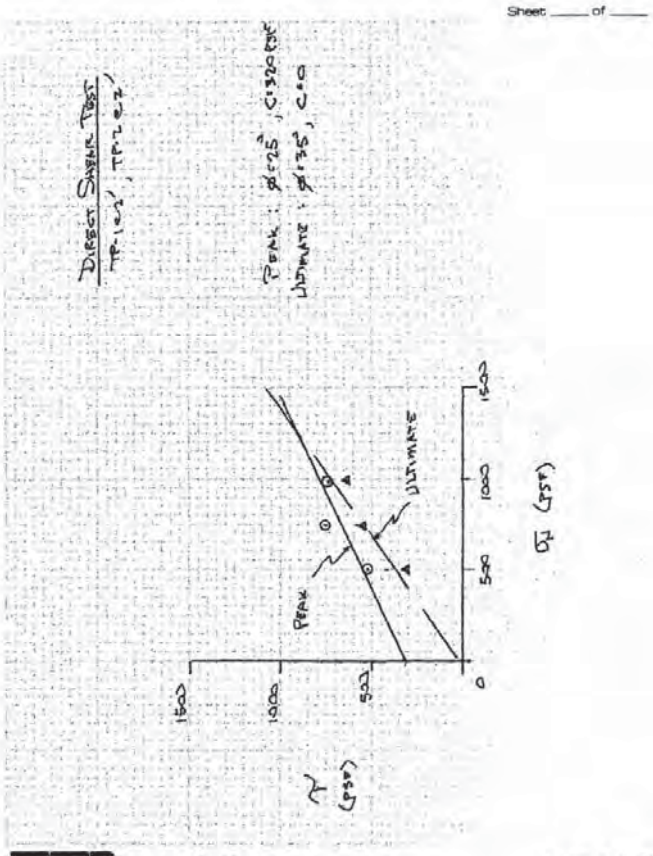

Exhibit M

A Cultural Impact Assessment for the Proposed Kapaʻa Highlands Phase II
Kapaʻa Ahupuaʻa, Kawaihau District, Kauaʻi

Exploration Associates Ltd.

A Cultural Impact Assessment for the Proposed Kapa`a Highlands Phase II, Kapa`a Ahupua`a, Kawaihau District, Kaua`i

TMK (4) 4-3-03:01

by

Nancy McMahon, M.A.

Prepared for
Three Stooges LLC

By
Exploration Associates, Ltd.
May 2012

EAL 3-2600 Kaumualii Hwy 1300-306 **T** 808 639 6695 poipunan@me.com

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INTRODUCTION

Scope of Work

The following scope of work was agreed upon to fulfill the requirements of a cultural impact assessment, as outlined by the Office of Environmental Quality Control guidelines:

1) Further background research with the goal of identifying traditional Hawaiian activities including gathering of plant, animal and other resources or agricultural pursuits as may be indicated in the historic record.
2) Examination of historical documents, Land Commission Awards, and historic maps, with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal and other resources or agricultural pursuits as may be indicated in the historic record to develop a Cultural landscape background study,
3) A review of the existing archaeological information pertaining to the sites in the study area as they may allow us to reconstruct traditional land use activities and identify and describe the cultural resources, practices and beliefs associated with the parcel and identify present uses, if appropriate.
4) Conduct oral interviews with persons and agencies knowledgeable about the historic and traditional practices in the project area and region. This includes eight formal interviews and more informal interviews plus coordination with relevant community groups.
5) Preparation of a report on items 1-3 summarizing the information gathered related to traditional practices and land use. The report will assess the impact of the proposed action on the cultural practices and features identified.

Methods

1. Historic Research

Research was conducted to find historic maps at the Hawai'i State Survey Office, the State Historic Preservation Division library and the Kaua'i Historical Society. Historical research was conducted at the State Historic Preservation Division Library, the Hawai'i State Archives and the Bishop Museum where information on historic land use and past cultural traditions was sought. The Bishop Museum also provided historic photographs for

the report. In an attempt to obtain more regional or local sources, historic documents were sought at the Kaua'i Historical Society, Kaua'i Museum and the Kapa'a Public Library.

2. Archaeological Review

The library at the Department of Land and Natural Resources, State Historic Preservation Division were used to obtain information regarding previous archaeological and cultural studies in the Kapa'a area. Previously identified archaeological sites are presented for each section separately and are discussed in the context of associated cultural traditions. A complete review of archaeological sites, including descriptions, *ahupua'a*, settlement patterns and archaeological constraints is available in a separate archaeological assessment document (McMahon 2012).

3. Identification of Knowledgeable Informants

Hawaiian organizations, community members and cultural and lineal descendants with lineal ties to the greater Kapa'a area were contacted to: (1) identify potential knowledgeable individuals with cultural expertise and knowledge of the project area and surrounding vicinity, and (2) identify cultural concerns and potential impacts relative to the project. An effort was made to locate informants who either grew up in the project area or who, in the past, used the area for cultural purposes. These included lifetime residents of Kapa'a Town, families with ties to the historic rice industries of Kapa'a and former employees of Lihue Plantation who may have lived in one of the residential camps near the study area. Other potential user groups were residents in the Kapa'a who have their roots in Kapa'a, and continue to utilize the *makai* areas for cultural reasons. In addition, informal talk-story with community members familiar with the study area is ongoing. The organizations consulted were the State Historic Preservation Division (SHPD), The Office of Hawaiian Affairs (OHA), the Kaua'i/Ni'ihau Islands Burial Council, the Royal Order of Kamehameha, Kaumuali'i Chapter, Kaua'i County Council, Kaua'i County Mayor, Kaua'i Health Heritage Coastal Corridor Committee, Kaua'i Historical Society, Kaua'i Historic Preservation Commission.

4. Interviews

Interviews were conducted for this assessment. Once the participant was identified, she/he was contacted and interviewed. Excerpts from the interview are used throughout this report, wherever applicable.

5. Report

This study documents relevant information on traditions and practices from the historic record as well as from contemporary oral sources. The report includes cultural and historic documentation of Kapa'a, a summary of archaeological studies, the results of

community consultation, and an assessment of traditional resources/traditional practices. The report is organized in such a way that reflects the effort of data and information gathering. This is the information used in the final assessment of Traditional Resources/ Cultural Practices reported in the Conclusions Section IV and V.

KAPA'A

The Kapa'a Highlands Phase II is located in Kapa'a, above the Kapa'a Bypass Road and adjacent to Kapa'a Middle School. The property is further identified by Kaua'i Tax Map Key No. (4) 4-3-03:01. The total acreage of the area is 163.125. (Figure 1 and 2).

The project area lies in the traditional *ahupua'a* of Kapa'a belongs' to the ancient district of Puna (now the district is more commonly called "Kawaihau"), one of five ancient districts on Kaua'i (King 1935: 228). Puna was the second largest district on Kaua'i, behind Kona, and extended from Kipu south of Lihu'e to Kamalomalo'o, just north of Kealia. For taxation, educational and judicial reasons, new districts were created in the 1840's. The Puna District, with the same boundaries became the Lihu'e District, named for an important town in that district. In 1878, by the act of King Kalakaua in securing a future name for the new Hui Kawaihau, created the new district of Kawaihau. This new district encompassed the *ahupua'a* ranging from Olohena on the south to Kilauea on the north. Subsequent alterations to district boundaries in the 1920's left Kawaihau with Olohena as its southernmost boundary and Moloa'a as its northernmost boundary (King 1935:222).

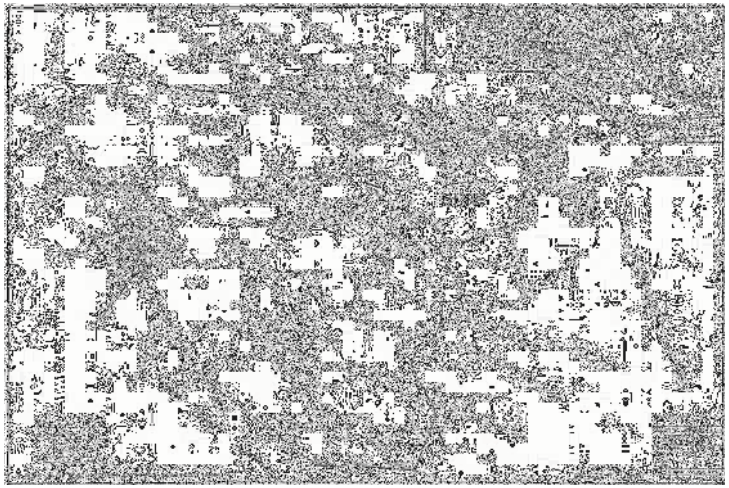

Figure 1. Tax Map Showing the Project Area for Kapaa Highlands Phase II.

Figure 2. Aerial View of Project Area Looking North

Natural Setting

The *ahupua'a* of Kapa'a, is located on the eastern side of the island of Kaua'i, in the old district or *moku* of Puna. Adjacent and to the north is the *ahupua'a of* Keālia, and to the south, Waipouli. Like other *ahupua'a* in Puna, Kapa'a is exposed to the northeast tradewinds and receives 40 to 50 inches of rain a year at the shore and considerably more precipitation inland. The area of the *ahupua'a* of Kapa'a, is approximately 6,394 acres (Gay 1872 R.M. 159, Commission of Boundaries Record, Kaua'i, vol.1, 1873:23; Commission of Boundaries Record, Kauai, vol. 1, 1872:109). Wichman (1998:84) notes the paradox that Kapa'a "is one of the largest *ahupua'a* of the Puna District [of Kaua'i] and the most bereft of legends."

Alluvium, colluvium and terrigenous sediments resulting from the erosion of the primary island building events in Kaua'i history, the Waimea Canyon Volcanic Series and the Koloa Volcanic Series, are the major sources of sediment for the formation of Kaua'i's non-mountainous region, including Kapa'a (MacDonald and Abbott 1970:382-384). Kapa'a is located within the physiographic division known as the Līhu'e Plain (Armstrong 1973:30). During higher sea levels, terrigenous sediment accumulated further inland as streams released their sediment loads further inland from where the shoreline had encroached. Also, reefs grew with the rising sea level, and, as the sea receded, marine sediments were created and deposited on shore by the erosion of these reefs. Both of these processes were part of the formation of the Līhu'e Plain.

The soils of the project area reflect the original geologic sediments deposited and the erosional processes induced by climatic agents. Backshore of the sand berm in Kapa'a, are found sandy loams associated with the Mokuleia soil series (Foote et al. 1972:95). These soils consist of mostly recent alluvium deposited over coral sand and are typical of the eastern and northern coastal plains of Kaua'i. Behind Kapa'a Town and north of Moikeha Canal is found mixed fill. South of Moikeha Canal are Mokuleia clay loams, similar to the sandy loams fronting them. The soils found in the sand berm in Waipouli and Olohena are of the Lihue Series, which are characterized as well-drained soils derived from igneous material originating in Kapa'a's uplands (Foote et al. 1972:82).

Historically, these *ahupua'a* contained two prominent landscape features, a coastal plain with sand dunes and a large marsh. An 1872 map (Figure 2) by James Gay delineating the boundaries of Kapa'a and adjacent lands shows that much of the *makai* region was a "swamp" that extended from Waipouli into Kapa'a. This "swamp" appears to be the most prominent natural feature of the seaward end of Waipouli and Kapa'a. The *makai* areas of the *ahupua'a* can be characterized as fairly flat. Kapa'a has an irregularly-

shaped gulches and small valleys in the uplands, through which small tributary streams run, including the Kapahi, Makaleha, Moalepe and Konohiki Streams. While some of these streams combine with other tributaries in neighboring Keālia to form Kapa'a Stream, which empties into the ocean at the northern border of the *ahupua'a*, others flow directly into the marsh areas of Kapa'a and Waipouli (Handy and Handy 1972:394,423; Territorial Planning Board 1940:9).

Kapa'a Town areas is built on a sand berm with ocean on the *makai* side and marsh on the *mauka* side. The sand berm was probably slightly wider here than in other localities, but dry land was probably always at a premium.

Mo'olelo of Kapa'a

A brief overview of some of the better documented mythological and traditional accounts of Kapa'a is presented below and is followed by a brief summation of their import.

The Puna district of Kaua'i is well known for two legendary chiefs, Kawelo and Mō'īkeha. Kawelo is more closely associated with Wailua and Hanamā'ulu and Mō'īkeha is linked to Kapa'a. Mō'īkeha is understood to be the grandchild of Maweke, one of the principal genealogical lines from which Hawaiians today trace their ancestry (Beckwith 1970:352). Sometime between the eleventh and twelfth centuries marks the arrival of Maweke to the Hawaiian Islands. Mō'īkeha succeeds his older brother Kumuhonua as ruling chief during the time of Mailikūkahi. Kapa'a is mentioned in traditions concerning Kawelo (Kaweloleimākua), the *mo'o* Kalamainu'u and the origins of the *hina'i hinālea* fish, and the story of Lonoikamakahiki (Fornander 1917:IV:318, 704-705; Rice 1923: 106-108; Thrum 1923: 123-135; Kamakau 1976:80).

1. Mō'īkeha

Kapa'a was the final home of the legendary chief Mō'īkeha. Born at Waipi'o on the island of Hawai'i, Mō'īkeha sailed to Kahiki (Tahiti), the home of his grandfather, Maweke, after a disastrous flood. On his return to Hawai'i, he settled at Kapa'a, Kaua'i. Kila, Mō'īkeha's favorite of three sons by the Kaua'i chiefess Ho'oipoikamalani, was born at Kapa'a and was considered the most handsome man on the island. It was Kila who was sent by his father back to Kahiki to slay his old enemies and retrieve a foster son, the high chief La'amaikahiki (Handy and Handy 1972:424; Beckwith 1970:352-358; Kalākaua 1888:130-135; Fornander 1917:IV:160). Mō'īkeha's love for Kapa'a is recalled in the *'olelo no'eau*: *Ka lulu o Mo'ikeha i ka laulā o Kapa'a* "The calm of Mō'īkeha in the breadth of Kapa'a " (Pukui 1983: 157).

The place "Lulu-o-Mō'īkeha" is described as being situated "near the landing and the school of Waimahanalua" (Akina 1913: 5). The landing in Kapa'a was known as the Makee Landing and was probably constructed in the late 1870s, along with the Makee sugar mill. Today, in place of the old Makee Landing is part of a

breakwater located on the north side of Moikeha Canal, near the present day Coral Reef Hotel (Bushnell et al. 2002:7).

In the Hawaiian newspaper *Ku'oko'a* published at the turn of the century, Akina (1913: 6) also tells the story of how Mō'īkeha's son, Kila stocks the Hawaiian Islands with the *akule*, *kawakawa* and *'opelu* fish. When Kila travels to Kahiki, he seeks out his grandfather Maweke and explains that he is the child of Mō'īkeha. When Maweke asks Kila if Mō'īkeha is enjoying himself, Kila answers with the following chant of Puna, Kaua'i:

My father enjoys the billowing clouds	*I walea no ku'u makuakāne i ke ao*
over Pōhaku-pili,	*ho'okanunu, iluna o Pōhakupili*
The sticky and delicious poi,	*I ka poi uouo ono ae no a,*
With the fish brought from Puna,	*Me ka i'a i na mai o ka Puna,*
The broad-backed shrimp of Kapalua,	*Ka opae hoainahanaha o Kapalua;*
The dark-backed shrimp of Pohakuhapai,	*Na opae kua hauli o Pohakuhapai,*
The potent awa root of Maiakii,	*Na puawa ona mai no o Maiakii,*
The breadfruit laid in the embers at Makialo	*Me ka ulu moelehu mai no o Makialo,*
The large heavy taros of Keahapana	*Me na kalo pehi hua o Keahapana,*
The crooked surf of Makaiwa too	*A i kekee nalu ae no hoi o Makaiwa,*
The bending hither and thither of the reed and rush blossoms,	*A i ke kahuli aku kahuli mai o ka pua uku me ka pua neki,*
The swaying of the kalukalu Puna,	*A i ka nu'a ae no o ke kalukalu o Puna,* grasses of
The large, plump, private of my mothers,	*A i na mea nui nepunepu no a ku'u mau* parts *makuahine*
Of Ho'oipoikamalanai and Hinau-u,	*O Ho'oipoikamalanai me Hinau-u,*
The sun that rises and sets,	*A i ka la hiki ae no a napoo aku,*
He enjoys himself on Kaua'i,	*Walea ai no ka nohona ia Kaua'i,*
All of Kaua'i is Mō'ikeha's	*Ua puni a puni Kaua'i ia Mō'ikeha*

Maweke was delighted and when the boy is questioned as to his purpose, Kila tells his great grandfather he is seeking fish for his family. Maweke tells Kila to lead the fish back to his homeland. This is how Kila led the *akule*, *kawakawa* and *'opelu* to Hawai'i (Fornander 1917:IV:162-163).

In another legend of Kila, Mō'ikeha sends his son to Tahiti to slay his enemies. Upon reaching Tahiti, Kila meets his father's aunt, Kanepohihi, in the form of a blind, supernatural rat. He introduces himself, sending his father Mō'ikeha's greetings. Kanepohihi asks of Mō'ikeha, and Kila responds:

He is indulging in ease in Kaua'i	*I walea ia Kaua'i*
Where the sun rises and sets again,	*I ka lā hiki ae a pō iho*
Where the surf of Makaiwa curves and	*I ke kee a ka nalu o Makaiwa* bends,
Where the sun comes up over	*I ka hiki mai a ka la maluna*
The kalukalu of Kewa;	*O ke kalukalu o Kewa*
The stretched out waters of Wailua,	*O ka wai halau o Wailua*
And the entrancing favors of my mother	*O ka lealea o ka mai o kuu makuahine*
Ho'oipoikamalanai	*O Ho'oipoikamalanai*
He will live and die in Kaua'i	*O kahi noho no o Kaua'i a make*

(Fornander 1916:IV:162-163)

2. Ka'ililauokekoa the Chiefess of Kapa'a and the Lute Kanikawi

Waipouli and Kapa'a are mentioned in the legend of Ka'ililauokekoa, a chiefess of Kapa'a and granddaughter or daughter of Mō'ikeha. Thomas Thrum (1907: 83-84) relates that:

> [Kaililauokekoa's] greatest desire was to play konane, a game somewhat resembling checkers, and to ride the curving surf of Makaiwa (*ke'eke'e nalu o Makaiwa*), a surf which breaks directly outside of Waipouli, Kapa'a. She passed the larger part of her time in this matter every day, and because of the continual kissing of her cheeks by the fine spray of the sea of Makaiwa, the bloom of her youth became attractive 'as a torch on high,' so unsurpassed was her personal charm.

In the Thrum (1923:123-135) version, Ka'ililauokekoa is seduced by the nose flute of Kauakahiali'i who is at the time residing in Wailua uka at a place called Pihanakalani. She travels up to Pihanakalani with her companion where she joins Kauakahiali'i as his wife. They are found by Mō'ikeha's people and taken down to Kapa'a where Kauakahiali´i is imprisoned. A boy named Kalukaluokewa takes pity on Kauakahiali´i and sneaks

through the *kalukalu* grass and the *ahuawa* rushes to bring the prisoner food and water. Meanwhile, Ka´ililauokekoa tells her parents of her calling by Kanikawi to the home of Kahalelehua at Pihanakalani and her encounter with Kauakahiali'i.

3. Kalukalu grass of Kapa'a

"*Kūmoena kalukalu Kapa'a*" or "Kapa'a is like the *kalukalu* mats" is a line from a chant recited by Lonoikamakahiki. *Kalukalu* is a sedge grass, apparently used for weaving mats (Fornander 1917:IV:318-319). Pukui (1983:187) associates the *kalukalu* with lovers in "*ke kalukalu moe ipo o Kapa'a*"; "the *kalukalu* of Kapa'a that sleeps with the lover." According to Wichman (1998:84), "a *kalukalu* mat was laid on the ground under a tree, covered with a thick pile of grass, and a second mat was thrown over that for a comfortable bed," thus the association with lovers. Kaua'i was famous for this peculiar grass, and it probably grew around the marshlands of Kapa'a. It is thought to be extinct now, but an old-time resident of the area recalled that it had edible roots, "somewhat like peanuts." Perhaps it was a famine food source (Kapa'a Elementary School 1933: VI).

4. Pāka'a and the wind gourd of La'amaomao (Keahiahi)

Kapa'a also figures prominently in the famous story of Pāka'a and the wind gourd of La'amaomao. Pāka'a was the son of Kuanu'uanu, a high-ranking retainer of the Big Island ruling chief Keawenuia'umi (the son and heir to the legendary chief 'Umi), and La'amaomao, the most beautiful woman of Kapa'a and member of a family of high status *kahuna*. Kuanu'uanu left the island of Hawai'i, traveled throughout the other islands and finally settled on Kaua'i, at Kapa'a. It was there that he met and married La'amaomao, although he never revealed his background or high rank to her until the day a messenger arrived, calling Kuanu'uanu back to the court of Keawenuia'umi. By that time, La'amaomao was with child but Kuanu'uanu could not take her with him. He instructed her to name the child, if it turned out to be a boy, Pāka'a. Pāka'a was raised on the beach at Kapa'a by La'amaomao and her brother Ma'ilou, a bird snarer. He grew to be an intelligent young man and it is said he was the first to adapt the use of a sail to small fishing canoes. Although Pāka'a was told by his mother from a very young age that his father was Ma'ilou, he suspected otherwise. After constant questioning by Paka'a, La'amaomao told her son the truth about Kuanu'uanu.

Intent on seeking out his real father, Pāka'a prepared for the journey to Hawai'i Island. His mother presented him with a tightly covered gourd containing the bones of her grandmother, also named La'amaomao, the goddess of the winds. With the gourd and chants taught to him by his mother, Pāka'a could command the forces of all the winds in Hawai'i. While this story continues on at length about Pāka'a and his exploits on Hawai'i and later

on Moloka'i, it will not be dwelt upon further here. It is important to note that several versions of this story do include the chants which give the traditional names of all the winds at all the districts on all the islands, preserving them for this and future generations (Nakuina 1990; Rice 1923:69-89; Beckwith 1970:86-87; Thrum 1923:53-67; Fornander 1918:V: 78-128).

Frederick Wichman (1998:84) writes that Pāka'a grew up on a headland named Keahiahi just south of Kapa'a River. Here, Pāka`a learned to catch *mālolo*, his favorite fish. After studying the ocean and devising his plan to fabricate a sail, Pāka'a wove a sail in the shape of a crab claw and tried it out on his uncle's canoe. One day, after going out to catch *mālolo*, he challenged the other fishermen to race to shore. He convinced them to fill his canoe with fish suggesting it was the only way he could truly claim the prize if he won:

> The fishermen began paddling toward shore. They watched as Pāka'a paddled farther out to sea and began to fumble with a pole that had a mat tied to it. It looked so funny that they began to laugh, and soon they lost the rhythm of their own paddling. Suddenly Pāka'a's mast was up and the sail filled with wind. Pāka'a turned toward shore and shot past the astonished fishermen, landing on the beach far ahead of them. That night, Pāka'a, his mother, and his uncle had all the mālolo they could eat [Wichman 1998:85].

5. Kaweloleimakua

Kapa'a is also mentioned in traditions concerning Kawelo (Kaweloleimakua), Keililauokekoa (Moikeha's daughter, or granddaughter, dependent on differing versions of the tale), the *mo'o* or reptile Kalamainu'u and the origins of the *hina'i hinalea* or the fish trap used to catch the *hinalea* fish, and the story of Lonoikamakahiki (Fornander 1917, vol.4 pt.2:318, vol.4 pt.3:704-705; Rice 1923:106-108; Thrum 1923:123-135; Kamakau 1976:80).

6. Kanaka-Nunui-Moe-The Sleeping Giant

Frederick B. Wichman relates an account of Kaua'i's Sleeping Giant:

> A long time ago, there was a giant living in Kawaihau among the low hills behind Kapa'a town. He was so tall he could see above the coconut trees. If he sat very still, it was easy to mistake him for one of the hills. Anyone who did not know him was afraid of his great size, fearing

the damage he might cause. However the people of Kawaihau loved him, for he was very friendly and went out of his way to be useful.

This giant was always careful where he stepped so that he would not injure anyone and he never destroyed taro patches or houses with a careless foot. When he wished to rest, he sat on one of the small hills above Kapaʻa. The villagers were glad when this happened for his weight flattened the hilltop, making another plot of ground fit for cultivation.

"He is very helpful," the Kapaʻa people said to astonished stranger who came to their land. "He does many things for us quickly that otherwise we could not do in many months."Wherever this giant stepped he left keep footprints and in these deep holes the people planted banana trees. The villagers threw leaves, taro peelings, and other vegetable rubbish into these holes. When compost had been formed, they planted banana sprouts. In this way, the people of Kapaʻa always had ripe bananas to give to the giant, for banana was his favorite food.

The giant yawned very often, for he was always sleepy. The gust of wind from his mouth often knocked down houses and blew the grass thatch into the sea. The giant was always very apologetic whenever this happened and he quickly brought logs from the uplands to rebuild the fallen houses and gathered *pili* for the thatching.

He found it difficult to stay awake more than a hundred years at a time. When he could no longer fight against the drowsiness overpowering him, he would sleep using a small hill for a pillow. Because of this, the people called him Kanakanunui-moe, the sleeping giant.

When he slept, Nunui slept for hundreds of years while the winds blew dirt over him and seeds were dropped there by the birds. The gently showers sent by *Kahale-lehua,* goddess of the gentle rains, fed these seeds and forest grew up over the giant. When Nunui awoke and stretched, the people of Kapaʻa fled in great fear, for what they had thought to be a hill had come alive.

One time, while Nunui was still awake, the high chief of Kawaihau wanted to build a large *heiau* to honor one of his gods. This was to be no ordinary temple. The chief wanted water-polished rocks for the walls and hard *koa* wood from Kokee for the framework of the god's house.

So the chief told the Kawaihau people what he wanted them to do. They must gather rocks from the golden brown waters of the Koke`e streams and

cut *koa* trees on the edges of Waimea canyon, and gather *pili* grass that grew at Mana. "All this must be done in the turn of one moon," he ordered.

The unhappy people left their chief and silently returned to their village. The giant Nunui, stepping carefully among them, saw the long faces of the people.

"What is wrong?" he asked.

The Kapaʻa villagers told him what they must do within the impossibly short time. "This cannot be done," the people said in low, sad voices. "How can we go to Kokee and bring back stones enough to build the walls in that time? And cut down the *koa* trees and bring the logs here and build the sacred house? And even if we do these things, who will cultivate our fields?"

Nunui smiled gently. "Tend to your fields," he said. "This work is nothing for me, and I'll gladly help you. Besides, it will give me something to do."

The giant went to Kokee and scooped up smooth, round boulders from the golden brown waters and brought them to Kapaʻa. "Chief," he called to the astonished ruler, "show me where you wish to build this *heiau.*"

The amazed chief pointed out the place set aside for the temple. Nunui placed the rocks to form a wall, fitting them so closely together that not even a mouse could squeeze between the cracks. Within a week, he had built a strong, thick, handsome wall around the sacred place.

Nunui returned to the edge of Waimea Canyon and cut down *koa* trees and trimmed them into the shaped he needed. He carried these back and made the framework of the house. He gathered *pili* grass form Wild and wrapped the stems into bundles, tied these bundles to the framework, and within half the time the chief had set, the *heiau* was finished.

Everyone was happy. The farmers had been able to keep up with their chores, the chief had his *heiau,* and Nunui had something to do. There was even time enough a celebration. The chief ordered all his people to gather bananas and to pound sweet potatoes and taro into poi. Some people hurried to slaughter pigs and dogs to be cooked in the *imu,* while other paddled out to sea to fill their canoes with fish and sent their wives to gather seaweed and *opihi* from the reef. At last, enough food for everyone was ready, and the chief, the villagers, and Nunui sat down before the overflowing bowls and platters.

"Eat," said the chief to Nunui. "After the work you have done, you must be hungry."

> The giant ate all the food that had been put before him. When he was through, his stomach bulged and he was very sleepy. He chose a comfortable hill just a short distance above Kapa'a town. Nunui stretched a last time, lay down along the top of the hill, and soon was sound asleep.
>
> As he slept through the years, the winds blew dirt over him and the birds brought seeds. Ka-hale-lehua, goddess of the gentle rains, sent showers to water the plants that now covered the giant.
>
> So Kanaka-nunui-moe sleeps and sleeps and has come to resemble a long hill with a lump at one end where his nose is and lumps at the other ends where his feet are. He no long looks like a living being, but one day, perhaps soon, his eyes will open, he'll yawn and stretch his arms, and sit up. [Wichman 1985:13-16]

7. Lepeamoa

In the Legend of "Lepeamoa (The Chicken Girl of Palama)"(Thrum 1923:177) is a reference to a fantastic battle at Kapa'a between Lepeamoa's brother, the hero Kauilani and a supernatural kupua called Akuapehuale ("god of swollen billows"):

> Kauilani struck him a heavy blow and the spear leaped again and again upon him, till he rolled into a mountain stream at a place called Kapa‘a, out of which he crawled, almost drowned. Then he was driven along even to the image houses, where a fierce battle took place, in which the wooden images took part, many of them being torn to pieces by the teeth of Akuapehuale.

8. Palila and Ka`ea

High in the *mauka* region of Kapa‘a in the Makaleha mountains at a place called Ka`ea, is reported to be the supernatural banana grove of the Kaua`i *kupua* or demigod Palila, grandson of Hina (Handy and Handy 1972:424). Joseph Akina for *Kieoko 'a* Newspaper in 1913 describes Palila's banana grove:

> The stalk could hardly be surrounded by two men, and was about 35 feet high from the soil to the lowest petiole. The length of the cluster from stem to lowest end of the bunch of bananas was about 1 3/4 fathoms long (one *anana* and one *muku).* There were only two bananas on each about 4 '/2 inches around the middle. There were just two bananas, one on the east side and one on the west, each about a foot or more in length. The one on the east side was tartish, like a *waiawi* (Spanish guava) in taste and the one on the west was practically tasteless. The diameter of the end of the fruit stem of this banana seemed to be about 11/2 feet. This kind of banana plant and its fruit seemed almost supernatural... (Akina, 1913:5).

9. Winds

The winds of Kapa‘a and Waipouli are named in the *mo‘olelo* of Kuapaka‘a and these include the *kehau* for Kapa‘a, the *ho‘olua* for Makaiwa and the *inuwai* for Waipouli (Fornander 1917:IV:96). A *kama‘āina* interviewed for the 50th anniversary book of Kapa‘a School in 1933 (p. 28) identified the winds of Kapa‘a:

> ...Some persons call the wind MAKANI LIHUE: That is, those who live here in Kapa‘a, because the wind comes from Lihue. The wind we had on Jan. 30 was really, MAKANI LIHUE. The wind that comes from Hanalei is called MAKANI KIU which means, a very cold wind. The wind that comes from the northeast—(tradewind) is called MAKANI HOOLUA. This is the plant destroying wind...

Place Names and Wahi Pana of Kapa‘a

Place names and *wahi pana* (“legendary place”) (Pukui and Elbert 1986:377) are an integral part of Hawaiian culture. “In Hawaiian culture, if a particular spot is given a name, it is because an event occurred there which has meaning for the people of that time” (McGuire 2000:17). The *wahi pana* were then passed on through language and the oral tradition, thus preserving the unique significance of the place. Hawaiians named all sorts of objects and places, points of interest that may have gone unnoticed by persons of other cultural backgrounds.

Hawaiians named taro patches, rocks and trees that represented deities and ancestors, sites of houses and *heiau* (places of worship), canoe landings, fishing stations in the sea, resting places in the forests, and the tiniest spots where miraculous or interesting events are believed to have taken place. (Pukui et al. 1974:x)

The following is a list of place names for Kapa‘a, mentioned in this report. This list should by no means be considered complete. Place names were gathered from traditional literature (*mo‘olelo*, chants), historical sources, maps and the Māhele records. Almost all of the *‘ili* names were taken from Land Commision Award records. Sadly, none of these *‘ili* names were documented on historic maps researched for this project, and their meanings and cultural associations appear to be lost and forgotten.

Place Names of Hawai‘i (Pukui et al. 1974) was used as the primary source for all place name translations. Where there were no known translations, a literal translation of the place name was sometimes made using the *Hawaiian Dictionary* (Pukui and Elbert 1986). The intent of the author is merely to present the available information and let the reader come to his/her own conclusions.

An attempt was made to include the proper diacritical marks for all known and generally accepted translations of place names. Making incorrect assumptions about the pronunciation and where to place the diacritical marks in a name can entirely change the meaning of a name, (e.g. *pū'ā'ā*: "scattered; to flee in disorder and fright"; *pua'a*: "pig, pork"). Therefore, in cases where the pronunciation of a name was uncertain, diacritical marks were not used and no attempt was made to translate the name. In some cases, cultural relationships were made based on the literal translation of the root word.

One of the beauties of the Hawaiian language is the dualism in names and the double meanings—the literal meaning and the *kaona* or hidden meaning. It should be remembered that the true significance of a place name lies only with the people who use them and know their history.

The following abbreviations are used throughout the Place Names section for ease and efficiency. (Refer to the References section for complete citations.)

LCA=Land Commission Award

PE=Hawaiian Dictionary by Pukui and Elbert, 1986

PEM=Place Names of Hawai´i by Pukui, Elbert and Mookini, 1974

Table 1 Place Names of Kapa'a.

Name	Meaning	Reference
Apopo	Land division, possibly 'ili in Kapa'a, pali, Literally "tomorrow"?	(LCA #10907/#8343) Soehren (2002:265)
Awawaloa	The name of a land division, possibly an 'ili in Kapa'a in which lo'i were cultivated meaning - long valley, gulch, ravine.	(LCA #8843/#8837), (Soehren, 2002:265)
Hahanui /Kahanui	The name of an 'ili in Kapa'a where lo'i were claimed pali, stream, Lobelia plant?	(LCA #10564/#3554/#3599), (Soehren, 2002:265)
Hoa	Pali, Literally "Friend"?	(LCA#3638:1) (Soehren, 2002:265)
Ho'opi'i	Wailele, Literally "To cause to rise?"	(Soehren, 2002:265)
Humu'ula	Pu'u, Literally "Jasper stone?"	(LCA #8247) (Soehren, 2002:265)
Kahana	The name of a land, possibly an 'ili in Kapa'a where uncultivated lo'i were claimed Literally, "cutting"	(LCA 3971). (PEM: 63), (Soehren, 2002:265)

Name	Meaning	Reference
Kaiakea/Kaikea	Name of area encompassing Kuahiahi Point. "Kaikea: White sea foam, especially as washed up on a beach: ka'ike'a: Station of the cross (Catholic); procession of the cross"	(PE:116).
Kalolo/Kaloko	The name of a village or houselot in Kapa'a Ahupua'a Kauhale, kula, Literally, "the pond", " liquor"	(LCA#3638, #8843), (Soehren, 2002:265)
Kalokoku	Name of swamp in back of Kapa'a and Waipouli	
Kamahuna	Pu'u	(Soehren, 2002:265)
Kamali'i	Ridge, Literally "Children"	(Soehren, 2002:265)
Kapa'a	Ahupua'a name, Literally "solid" or "the closing"	(Wichman, 1988:84 and Soehren, 2002:265)
Kapahi	Village, stream, Literally "the Knife"	(Soehren, 2002:265)
Kapeku	Lo'i, Literally "the Kick"	LCA# 8837, (Soehren, 2002:265)
Kaulolo	Kauhale	LCA# 3638, (Soehren, 2002:265)
Kehau	Name of wind of Kapa'a	(Fornander, 1918:V:96, 97)
Keiwa	Ridge, boundary point, Literally "The ninth"	(Soehren, 2002:265)
Koalua	Surf, Literally "Two coral heads",	Finney 1959, (Soehren, 2002:265)
Kolehaka	Pali,	LCA#3971/#3243 (Soehren, 2002:265)
Kolokolo	Name of deep fresh water pond, Literally "Soap Plant"	Wichman (1988:84)
Kolouna	Pali,	LCA# 8247, (Soehren, 2002:265)
Kuahiahi/Kaahiahi	Name of rocky headland at north end of Kapa'a Ahupua'a;	
Kuahiahi/Keahiahi	Location of first Kapa'a School (1883-1908); location of former heiau called Kuahiahi, place where the legendary figure Paka'a, keeper of the wind gourd of La'amaomao, grew up and fished Literally "twilight"	(PEM 211 :216) ; (Wichman 1998 : 85)
Kupali'i	Name of a pond in Puna district famed in chant for the rustling of the manienie grass	(PEM: 211-216)

Name	Meaning	Reference
Kupanihi	The name of a pond in the Puna district associated with Kaeo, Kaumuali‘i’s older brother, ili, kauhale, Name of fishpond and land in Kapa‘a claimed	(PEM:216); in LCA #3971/#3243, (Soehren, 2002:265)
Maeleele	The name of a land division, possibly an ‘ili in Kapa´a in which lo‘i Literally “Numb” were cultivated,	(LCA #3638), (Soehren, 2002:265)
Makaleha	Pu‘u, boundary point, Eyes looking about as in wonder and admiration,	Boundary Commission, (Soehren, 2002:265)
Makanalimu	Place, heiau, Literally “Gift of seaweed”	PEM:141
Makea	‘Auwai, Literally “fallow land”	LCA# 3599/#3554 (Soehren, 2002:265)
Moalepe/Moalepi	Hill in the mauka region of Keālia (HAS, Interior Dept., Land, June 23, 1862); land division, stream possibly an ‘ili in mauka region of Kapa‘a	LCA #8247 (Soehren, 2002:265)
Moikeha Canal	Canal which is traversed by two plantation era railroads near the present day Kapa‘a Public Library and the Coral Reef Hotel	
Naele	Pali, Literally “swamp, big”	LCA #8837, (Soehren, 2002:265)
Paikahawai	‘ili,	(Soehren, 2002:265)
Pohakiikii	Pu‘u, Tilted stone,	(Soehren, 2002:265)
Pohakupili	Pu‘u, boundary point, Literally “ joined stone”,	(Soehren, 2002:265)
Poo	Surf, Literally “Head”	Finney 1959, (Soehren, 2002:265)
Pueo	Pali, Literally “owl”,	LCA# 8843, (Soehren, 2002:265)
Puhi	The name of a village or household in Kapa‘a Ahupua‘a, Kauhale, pond, Literally “eel”,	LCA #3554/#3599, (Soehren, 2002:265)
Puohomaka	Pali,	LCA# 8837, (Soehren, 2002:265)
Pupukai	Pali,	LCA# 3638, (Soehren, 2002:265)
Puu Ekeeke	Pali,	LCA# 8837, (Soehren, 2002:265)
Puu Lauii	Pu‘u, boundary point, Laui‘i fern hill,	Boundary Commission,(Soehren, 2002:265)
Ulakiu	Ku,	LCA# 8837, (Soehren, 2002:265)
Ulukiu	Name of a houselot or village in Kapa‘a	(LCA #8837

Name	Meaning	Reference
Waika‘ea	Canal and boat ramp in Kapa‘a adjacent to the present day Pono Kai Resort, ditch,	(Clark 2002:374), (Soehren, 2002:265)
Waikaeee	A place described as being located in the uplands near Nounou	(PEM Placenames, Ku‘oko‘a, May 2, 1913)
Waileia	Rock, boundary point, Literally “Abundant Water”	Boundary Commission, (Soehren, 2002:265)
Waimahanalua	Name of a stream and school located near the old Makee The name mahanalua suggests the stream was forked and fed by multiple streams which could well be the case since the backlands of Kapa‘a were swamplands fed by many streams. near the present day Moikeha Canal.	(PEM Placenames, Ku‘oko‘a May 9, 1913).
Waitala	“local” name used to refer to Waika ´ea Canal	(T. Sokei, July 28, 2003 in Bushnell et.al. 2004)

Summary of the Mythological and Traditional accounts of Kapa‘a

A survey of traditional mythological literature shows Kapa‘a prominently associated with some of the most famous legendary and historical figures including Maui, Kawelo, Mo‘ikeha, Maweke, Palila, Paka‘a and Kanaka Nunui Moe. What few specific references there are suggest that high status habitation was focused near the coast with less intensive utilization of the uplands which were regarded as wild places. The most notable feature of the traditional accounts are the references to grasses and sedges (*Kalukalu* grass and *Ahuawa* rushes) which undoubtedly reflects in part the natural marsh lands near the coast but may also reflect transformation of the landscape through a denudation of trees by the activities of a relatively dense population harvesting slow growing trees for firewood and construction materials over many centuries.

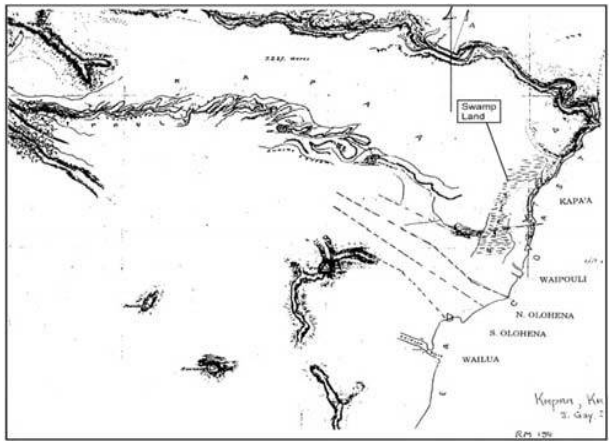

Figure 3. Portion of 1872 Survey Map by James Gay, Showing Swamp Land in Puna.

Early Post-Contact Period

Very few recorded observations exist for this period in Kapa'a's history. George Vancouver (1798:2:221-223) examined the east coast of the island from his ship in 1793 and stated that it was the "most fertile and pleasant district of the island..." However, he did not anchor nor go ashore there due to inhospitable ocean conditions.

Kiaimakani stands out as a particularly interesting Hawaiian chief in the early post-contact history of Waipouli. In 1824, the brig, "Pride of Hawaii," owned by Liholiho (Kamehameha II), ran aground in Hanalei Bay. Hiram Bingham (1847:221-222) recorded the efforts of a great crowd of Hawaiians to pull the vessel to shore for salvage:

> Kiaimakani passed up and down through the different ranks, and from place to place, repeatedly sung out with prolonged notes, and trumpet tongue... 'be quiet - shut up the voice.' To which the people responded...'say nothing,' as a continuance of the prohibition to which they were ready to assent when they should come to the tug. Between the trumpet notes, the old chieftain, with

> the natural tones and inflections, instructed them to grasp the ropes firmly, rise together at the signal, and leaning inland, to look and draw straight forward, without looking backwards toward the vessel. They being thus marshalled and instructed, remained quiet for some minutes, upon their hams.

The salvage efforts ultimately failed and the brig was lost. Bingham's account vividly suggests the force of personality of the chief and further betokens an authority and stature that may have been founded upon the traditional prestige of his domain, Waipouli.

Kiaimakani appears in Samuel Kamakau's account (1961:267) of the 1824 rebellion of the chiefs of Kaua'i upon the death of Kaumuali'i. Kalanimoku, representative of Kamehameha II, had called a council of the Kaua'i chiefs at Waimea during which he announced

> "The lands shall continue as they now stand. Our son, Kahala-i'a, shall be ruler over you." A blind chief of Waipouli in Puna, named Ki'ai-makani, said, "That is not right; the land should be put together and re-divided because we have a new rule," but Ka-lani-moku would not consent to this.

After some Kaua'i chiefs, including Kiaimakani, rebelled against the imposed decrees:

> On August 8 [1824] the battle of Wahiawa was fought close to Hanapepe. The Hawaii men were at Hanapepe, the Kauai forces at Wahiawa, where a fort had been hastily erected and a single cannon (named Humehume) mounted as a feeble attempt to hold back the enemy...Large numbers of Kauai soldiers had gathered on the battleground, but they were unarmed save with wooden spears, digging sticks, and javelins...No one was killed on the field, but as they took to flight they were pursued and slain. So Kia'imakani, Na-ke'u, and their followers met death [Kamakau 1961: 268].

Kamakau´s singling out of Kiaimakani for special mention reinforces the impression that the chief and his *ahupua'a* may have shared a traditional prestige.

In 1840, Peale and Rich, with Charles Wilkes' United States Exploring Expedition, traversed the coastline there on horseback heading north from Wailua:

> The country on the way is of the same character as that already seen. They passed the small villages of Kuapau, Keālia, Anehola, Mowaa, and Kauharaki, situated at the mouths of the mountain streams, which were closed with similar sand-bars to those already described. These bars afforded places to cross at, though requiring great precaution when on horseback. The streams above the bars were in most cases deep, wide, and navigable a few miles for canoes. Besides the sugarcane, taro, &c., some good fields of rice were seen. The country may be called open; it is covered

> with grass forming excellent pasture-grounds, and abounds in plover and turnstones, scattered in small flocks [Wilkes 1845:69].

James Jarves (1844:157), who tracked much of the same route as Peale and Rich, noted "nothing of particular interest is met with on the road, until arriving at Anahola."

The Mahele Period

The Organic Acts of 1845 and 1846 initiated the process of the Mahele, which introduced private property into Hawaiian society. It is through information garnered from records for Land Commission Awards (LCAs) generated during the Mahele that specific documentation of traditional life in Kapa‘a come to light.

Table 2. Mahele Land Claims and Land Use of Kapa‘a.

LCA Number	Ahupua‘a	Claimant	‘Ili of the Ahupua‘a	Land Use	Number of ‘Āpana
3243 (See 3971)	Kapa‘a	Honolii, Ioane	Kahana, Kupanihi Village	6 *lo‘i* (uncult), house lot	2 (2 acres, 1 rood, 1 ord)
3554	Kapa‘a	Keo	Kahanui Puhi Village	15 *lo‘i*, house lot	2 (7 acres, 1 rood, 17 rods)
3638	Kapa‘a	Huluili	Maeleele Kaloko Village	12-15 *lo‘i*, house lot	2 (5 acres, 1 rood, 19 rods)
8247	Kapa‘a	Ehu	Moalepe / Noalepe	20 *lo‘i*,	1 (3 roods)
8837	Kapa‘a	Kamapaa	Ulukiu lalo Awawaloa Ulukiu	3 *lo‘i*, 2 *lo‘i*, house lot	1 (2 acres, 2 roods, 27 rods)
8843	Kapa‘a	Kiau	Apopo Kalolo Village	6 (5) *lo‘i* and *kula*, house lot	2 (2.75 acres, 3 rods)
10564	Kapa‘a	Oleloa, Daniel	Hikinui farm	fishpond, 10 *lo‘i*	

Kapa’a Land Commission Awards

Documents relating to Land Commission Awards (*kuleana*) during this period show, surprisingly, that only six individuals were awarded *kuleana* parcels in the relatively large *ahupua‘a* of Kapa‘a. Five of the six received multiple parcels and show characteristic similarities. They are Keo (LCA #3554, 3599), Kiau (#8843), Kamapaa (#8837), Ioane Honolii (#3971), and Huluili (#3638) (See Table 1). All five had *lo‘i* on the *mauka* side of the lowland swamp area, sometimes extending a short distance up into small, shallow gulches and valleys. Each also had a separate house lot located on the *makai* side of the swamp, adjacent to the beach.

Interestingly, the residential "village" of Kapa‘a did not exist as a single entity, but was a series of small settlements or compounds that stretched along the shoreline of the *ahupua‘a* and included (south to north) Kupanihi (Makahaikupanihi), Kalolo (Kaulolo), Puhi, and Ulukiu. The sixth individual, Ehu (#8247), was the only person to be awarded a single parcel in the upland area of Kapa‘a at Moalepe valley, approximately five miles from the shore. In 1848, when Ehu made his claim, he was the only one living there. A few years later, according to Honoli‘i’s testimony to support Ehu’s claim, "There are no houses and no people now living on the land. Ehu found himself lonely there, all his neighbors having either died or left the land. Ehu now lives in Wailua." Ehu may have been the last person to live at and cultivate in the traditional way the far *mauka* region of Kapa‘a.

A check of the Foreign Testimony (F.T) for *Kuleana* Claims to Quiet Land Titles in the Hawaiian Islands (1848-50) reveals the names of three *‘auwai* in Kapa‘a. Cross-referencing this information with various maps gives a general indication of their location: Makahaikupanihi, along the southern border near the shore and the settlement in Waipouli; Makea, near the current Kapa‘a Public Library on the *mauka* side of Kūhiō Highway; and Kapa‘a, probably along the current Kanaele Road.

There were no *kuleana* claims found within the project area.

The Late 1800s

In 1849, a son of Wai‘oli missionaries, William P. Alexander, recorded a trip he took around Kaua‘i. Although, he focuses on the larger mission settlements like Koloa and Hanalei, he does mention Kapa‘a:

> A few miles from Wailua, near Kapa‘a, we passed the wreck of a schooner on the beach, which once belonged to Capt. Bernard. It was driven in a gale over

> the reef, and up on the beach, where it now lies. A few miles further we arrived at Kealia. We had some difficulty crossing the river at this place, owing to the restiveness of our horses. The country here near the shore was rather uninviting, except the valley which always contained streams of water (Alexander, 1991: 123).

In later years, the notorious Kapaʻa reef was to become the location of many shipwrecks particularly once a landing was built there in the 1880s.

Although most of the historic record documents for Kauaʻi in this period revolve around missionary activities and the missions themselves, there was indication that the Kapaʻa area was being considered for new sugar cane experiments, similar to those occurring in Koloa. In a historic move, Ladd and Company received a 50 year lease on land in Koloa from Kamehameha III and Kauaʻi Governor Kaikioʻewa of Kauaʻi. The terms of the lease allowed the new sugar company "the right of someone other than a chief to control land" and had profound effects on "traditional notions of land tenure dominated by the chiefly hierarchy" (Donohugh, 2001: 88). In 1837, a very similar lease with similar terms was granted to Wilama Ferani, a merchant and U.S. citizen based in Honolulu (Hawai`i State Archives, Interior Dept., Letters, Aug. 1837). The lease was granted by Kauikeaouli or Kamehameha III for the lands of Kapaʻa, Kealia and Waipouli for twenty years for the following purpose:

> ...for the cultivation of sugar cane and anything else that may grow on said land, with all of the right for some place to graze animals, and the forest land above to the top of the mountains and the people who are living on said lands, it is to them whether they stay or not, and if they stay, it shall be as follows: They may cultivate the land according to the instructions of Wilama Ferani and his heirs and those he may designate under him... (Hawai`i State Archives, Interior Dept., Letters, Aug. 1837).

Unlike Ladd & Company which eventually became the Koloa Sugar Company, there is no further reference to Wilama Ferani and his lease for lands in Kapaʻa, Kealia and Waipouli. In a brief search for information on Honolulu merchant, Wilama Ferani, nothing was found. It is thought that perhaps Wilama Ferani may be another name for William French, a well known Honolulu merchant who is documented as having experimented with grinding sugar cane in Waimea, Kauaʻi at about the same time the 1837 lease for lands in Kapaʻa, Kealia and Waipouli was signed (Joesting, 1984: 152).

The sugar industry came to the Kapaʻa region in 1877 with the establishment of the Makee Sugar Company and subsequent construction of a mill near the north end of the present town. Cane was cultivated mainly in the upland areas on former *kula* lands. The first crop was planted by the *Hui* Kawaihau, a group composed of associates of King

David Kalākaua. The king threw much of his political and economic power behind the project to ensure its success (Dole 1929:8-15). The *Hui* Kawaihau was originally a choral society begun in Honolulu whose membership consisted of many prominent names, both Hawaiian and *haole*. It was Kalakaua's thought that the *Hui* members could join forces with Makee, who had previous sugar plantation experience on Maui, to establish a successful sugar corporation on the east side of Kauaʻi. Captain Makee was given land in Kapaʻa to build a mill and he agreed to grind cane grown by *Hui* members. Kalakaua declared the land between Wailua and Moloaʻa, the Kawaihau District, a fifth district and for four years the *Hui* attempted to grow sugar cane at Kapahi, on the plateau lands above Kapaʻa. After a fire destroyed almost one half of the *Hui's* second crop of cane and the untimely death of one of their principal advocates, Captain James Makee, the *Hui* began to disperse and property and leasehold rights passed on to Makee's son-in-law and new Makee Plantation owner, Colonel Z. S. Spalding (Dole, 1916: 14). As part of the infrastructure of the new plantation, a sugar mill was erected and the Makee Landing was built in Kapaʻa during the early years of the Makee Sugar Plantation. Following Captain Makee's death, Colonel Spalding took control of the Plantation and in 1885 moved the mill to Kealia (Cook, 1999: 51). The deteriorating stone smokestack and landing were still there well into the 1900s (Damon, 1931:359).

A train line went inland from Kapaʻa Town from the coast along the present Lehua Street alignment heading south behind Kapaʻa Town. This railroad line skirts the rice lands behind Kapaʻa Town. Another branch ran between Hauaala and Hundley Roads and the branch from behind Kapaʻa Town joined the Hauaala/Hundley railroad alignment where the proposed corridors for this project join the present Kūhiō Highway. The train line continued north to the Keālia (Kapaʻa) River. Chinese rice farmers had begun to cultivate the lowlands of Kapaʻa with increasing success about this same time. Several Hawaiian *kuleana* owners leased or sold outright their parcels *mauka* of the swampland to rice cultivators. Concurrently, the economic activity as a result of the rice and sugar cultivation sparked interest in the house lot *kuleana* on the *makai* side of the marsh for increasing commercial and residential development (Lai 1985:148-161). This land was drained and used for cane in the early 20th century before more recent urbanization of the area.

Narrow wagon roads gave way to macadamized roads in the early part of the 20th century. This new road was called the Kauaʻi Belt Road and parts of it are thought to have followed the "Old Government Road" (Cook, 1999). In Kapaʻa, the present day Kuhio Highway probably follows the same route as the original Government Road and subsequent Kauaʻi Belt Road. The location of the *kuleana* awards in Kapaʻa indicates that the majority of the house lots were situated along the Government Road. LCA 3243 names a "road" as one of its boundaries.

20th Century History of Kapaʻa

In the early 1900s, government lands were auctioned off as town lots in Kapaʻa Town to help with the burgeoning plantation population. Many of these lots were purchased by Portuguese and Japanese laborers who had fulfilled their contract duties with Makee Plantation. One *kamaʻāina* interviewed for a previous project in Kapaʻa mentioned that in the 1930s and 1940s, the area north of Moʻikeha Canal in Kapaʻa was mostly settled by Portuguese families (W. Kaneakua in Bushnell et al. 2002:28). The Japanese were also very prominent in the 1920s and 1930s, largely replacing the Chinese merchants of the turn of the century in the Kapaʻa business sector.

Though most of the large plantation camps were located in neighboring Keālia, there were a few in Kapaʻa. Many people consulted had clear memories of the plantation camps in Kapaʻa: a fairly large camp located just behind Kapaʻa Town and three smaller camps located in the hills above Kapaʻa. The large camp, Pueo Camp (Figure 6), was located adjacent to the intersection where the current Kapaʻa Bypass Road turns off of Olohena Road (Interview w/ A. Paik, 5/14/03 in Bushnell et. al. 2004). One Kapaʻa resident who grew up in Pueo Camp remembers the camp being quite large with between 75 and 100 people, mostly single Filipino and Chinese men with some Japanese families and a few Hawaiian and Portuguese families Pueo Camp is thought to be a fairly early Makee Plantation Sugar Camp built strategically adjacent to the railroad tracks which accessed the sugar fields in the upland areas of Kapaʻa. Though no one consulted knew the date Pueo Camp was established, the oldest of our informants, Mrs. Alice Paik, born in 1912, knew the camp was there before she was born (Interview w/ A. Paik, 5/14/03 in Bushnell et. al. 2004). Pueo camp was destroyed sometime in the 1950s. The other three camps located in the hills adjacent to or just off of Olohena Road were considerably smaller than Pueo Camp. These consisted of Stable Camp, 35 Camp and 18 Camp (See Figure 6). Two other camps in the Kapaʻa/Waipouli area were also mentioned. Aguiar camp was a residential camp for employees of the pineapple industry, and Mundon Camp was thought to be a residential camp for Lihue Plantation workers (Interview w/ G. Hiyane, 5/14/03 in Bushnell et. al. 2004).

Pineapple became the next largest commercial enterprise in the region. In 1913, Hawaiian Canneries opened in Kapaʻa at the site now occupied by Pono Kai Resort (Cook 1999:56; Figure 6). The Kapaʻa Cannery provided employment for many Kapaʻa residents and many of the informants for this project mentioned having worked in the cannery during some time of their lives. By 1960, 3400 acres were in pineapple and there were 250 full time employees and 1000 seasonal employees for the Kapaʻa Cannery. However, in 1962, Hawaiian Canneries went out of business due to competition from third world countries.

The Ahukini Terminal & Railway Company was formed in 1920 to establish a railroad to connect Anahola, Keālia and Kapaʻa to Ahukini Landing at Hanamāʻulu and to "provide relatively cheap freight rates for the carriage of plantation sugar to a terminal outlet" (Condé and Best 1973:185). This company was responsible for extending the Makee Sugar Company railroad line from the Makee Landing [formerly located near the present day Coral Reef Hotel] to the Ahukini Landing at Hanamāʻulu Bay. This railroad line traversed near much of the study area (Figures 4 & 5) and was in use from 1921, through the take-over by Lihue Plantation Company in 1934 and until Lihue Plantation converted from railroad transport to trucking in the late 1950s.

Lihue Plantation was the last plantation in Hawaiʻi to convert from railroad transport to trucking (Condé and Best 1973: 167). In 1955, reports came out on the dredging for coral proposed for the reef fronting Kapaʻa Beach Park (*Garden Island Newspaper*, September 21, 1955). This coral was to be used for building plantation roads. The dredging was later blamed for accelerated erosion along Kapaʻa Beach (*Garden Island Newspaper*, October 30, 1963). Today, there are several sea walls along the Kapaʻa Beach Park to check erosion. Old time residents claim the sandy beach at Kapaʻa was once much more extensive than it is now. "By 1957 the company was salvaging a part of their plantation road, which was being supplanted by roads laid out for the most part on or close to the old rail bed" (Condé and Best 1973: 167). By 1959, the plantation had completely converted over to trucking.

Severe floods in Kapaʻa in 1940 led to the dredging and construction of the Waikaea and Moikeha Canals sometime in the 1940s (Territorial Planning Board 1940:7). Although the Waikaea Canal, bordering the Kapaʻa Pineapple Cannery, had been proposed as early as 1923, nothing was constructed until after the floods (Bureau of Land Conveyances, Grant 8248). A Master Plan for Kapaʻa, published in 1940, asks the Territorial Legislature for funds to be set aside for the completion of a drainage canal and for filling *makai* and *mauka* of the canal (Territorial Planning Board 1940:7). In 1955, reports came out on the dredging for coral proposed for the reef fronting Kapa'a Beach Park *(Garden Island Newspaper,* September 21, 1955). The coral was to be used for building plantation roads. This dredging was later blamed for accelerated erosion along Kapa'a Beach (Garden Island Newspaper, October 30, 1963).

Today, there are several sea walls along the Kapa'a Beach Park to check erosion. Old time residents claim the sandy beach in Kapa'a was once much more extensive than it is now (Bushnell et al. 2002).

Many of the plantation workers bought property of their own and moved out of plantation camps. The plantation camps which bordered Kahio Highway were disbanded in the 1980s. The Lihue Plantation began to phase out in the last part of the 20th century. Kapa'a Town suffered after the closing of the Kapa'a Cannery, however the growing tourist industry helped to ease the economic affects of the Cannery's closing.

Figure 4. Aerial View of Kapa'a, Kaua'i, looking west, circa 1933 (Bishop Museum Archives)

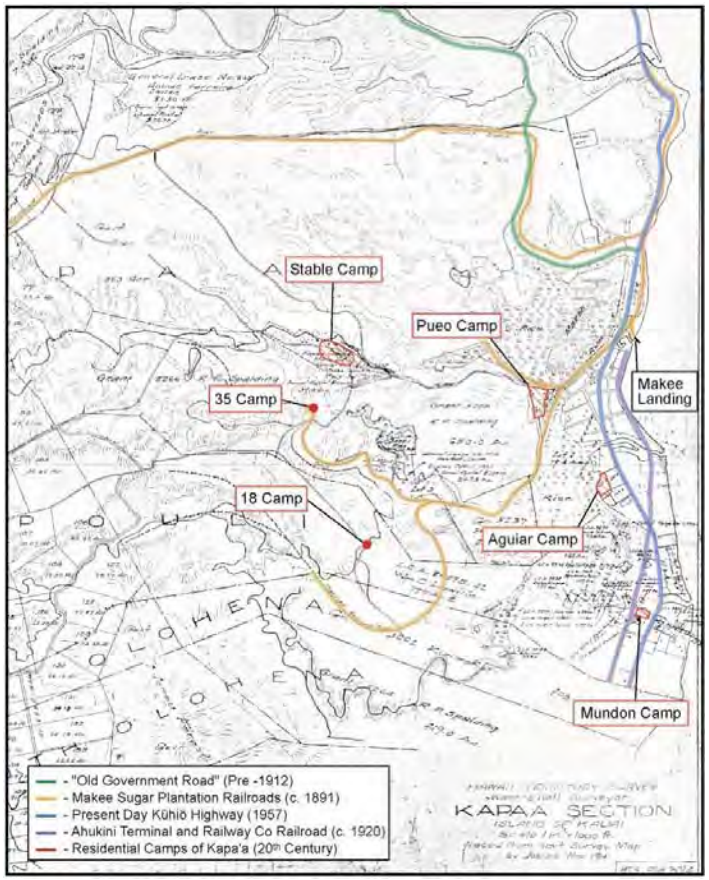

Figure 5. Hawai'i Territory Survey Map (Iao 1914) of Kapa'a Section Showing Roads, Railroads and Camps

Previous Archaeological and Cultural Studies of Kapaʻa

During their expeditions around Hawaiʻi in the 1880s collecting stories from *ka pōʻe kahiko*, Lahainaluna students stopped in Kapaʻa and Kealia and gathered information regarding *heiau* of the region (Bishop Musuem Archives (HEN I:214). Fourteen *heiau* were named, suggesting that these two *ahupuaʻa* were probably more socially/politically/religiously significant in ancient times and a testament to the substantial population of these *ahupua ʻa*.

Unfortunately, the locations for most *heiau* were given as Kapaʻa/Kealia, indicating that the exact location of the *heiau* was not identified. Of the fourteen *heiau*, five are definitely located in Kapaʻa. These include the locations of *wahi pana* or sacred places, Mailehuna (in the area of the present day Kapaʻa School), Pueo, Kuahiahi ((also spelled Kaahiahi and Keahiahi) the site of the first Government School in Kapaʻa—adjacent to the Kuhiö Highway near the northern boundary of Kapaʻa Ahupuaʻa), Makanalimu (in upland of Kawaihau) and Kaluluomoikeha. Kaluluomolkeha is thought to be the general area near the Mo`ìkeha Canal and the present day Coral Reef Hotel.

There are no known remains of these *heiau* today. The exact locations of these *heiau* are unknown.

Table 3. Heiau of Kapaʻa

Name	Location	Type	Associated
Mailehuna	Kapaʻa (Mailehuna is the area of the present day Kapaʻa School)	unknown	Kiha, Kaumualiʻi/ Lukahakona
Pueo	Kapaʻa	unknown	Kiha, Kaumualiʻi/ Lukahakona
Pahua	Kapaʻa/Kealia	unknown	Kiha/ Lukahakona
Kumalae	Kapaʻa/Kealia	unknown	Kiha/ Lukahakona
Waiehumalama	Kapaʻa/Keilia	unknown	Kiha/ Lukahakona
Napuʻupaʻakai	Kapaʻa/Kealia	unknown	Kiha/ Lukahakona
Noeamakalì`i	Kapaʻa/Kedlia	"heiau for birth of Kauaʻi Chiefs, like Holoholoku"	Unknown
Puʻukoa	Kapaʻa/Kealia	"unu type heiau"	Unknown
Piouka	Kapaʻa/Kealia	"unu type heiau"	Unknown
Una	Kapaʻa/Kealia	Unknown	Kiha/ Lukahakona
Mano	Kapaʻa/Kealia	Unknown	Kiha/ Lukahakona

Name	Location	Type	Associated
Kuahiahi	Kapaʻa (govnʻt school stands on site now)	Unknown	Kaumualiʻi/ Lukahakona
Makanalimu	Upland of Kawaihau	Unknown	Kaumualiʻi
Kaluluomoikeha	Kapaʻa	Unknown	Moʻikeha

4. Historic Properties in Kapaʻa Ahupuaʻa (see Figure 6)

Site # 50-30-08-	Ahupuaʻa	Site Type/ Name (if any)	Location	Site Constraints	Reference
B001	Kapaʻa	Historic Cemetery	South of bend of Kapaʻa Stream, a kilometer mauka from Kuhiö Hwy	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B002	Kapaʻa	Historic Cemetery	Just mauka from Kuhiö Highway, south of Kapaʻa Stream	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B003	Kapaʻa	Kapaʻa Public Cemetery	South of Kanaele Road, one kilometer inland of Kuhiö Highway	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B004	Kapaʻa	Historic Cemetery	North of Apopo Road, one kilometer inland of Kuhiö Highway	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B013	Kapaʻa	Historic Cemetery	Just mauka from Kuhiö Highway, north of the Waikaea Canal	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B014	Kapaʻa	All Saints Episcopal Church Cemetery	Just mauka from Kuhiö Highway, south of the Waikaea Canal	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992:62-65
547	Kapaʻa	sub-surface features including a firepit and a possible house foundation	South of bend of Waikaea Canal, mauka of Kuhiö Highway	Archaeological monitoring in the vicinity is recommended	Spear 1992:3

Site # 50-30-08-	Ahupuaʻa	Site Type/ Name (if any)	Location	Site Constraints	Reference
626	Kapaʻa	Burial	ʻInia Street, makai of Kuhiö Highway, central Kapaʻa	Consultation and monitoring in vicinity indicated	Jourdane 1995
748	Kapaʻa	Minimal findings, a weak cultural layer (buried A-horizon)	South of the bend of the Waikaea Canal, mauka of Kuhiö Highway	Considered no longer significant within project area	Hammatt et al. 1994
789	Kapaʻa/ Kealia	Historic Road	Coastal Cane Haul Road near Kawaihau Road turn off		Perzinski et al. 2000
867	Kapaʻa	1 set of human remains	Kukui Street, just mauka of Kuhiö Highway, Kapaʻa Town	Consultation and monitoring in vicinity indicated	Creed et al. 1995:50
868	Kapaʻa	1 set of human remains	Lehua Street mauka of Kuhiö Highway, Kapaʻa Town	Consultation and monitoring in vicinity indicated	Creed et al. 1995:50
871	Kapaʻa	13 sets of human remains (Creed et al. 1995:50)	Inia Street, makai of Kuhiö Highway	Consultation and monitoring in vicinity indicated	Kawachi 1994; Creed et al. 1995:50
1848	Kapaʻa	Cultural layer and sub-surface features	Along Kuhiö Highway between Wana Road and the Waikaea Drainage Canal	Archaeological monitoring in the vicinity is recommended	Hammatt 1991; Creed et al. 1995
1849	Kapaʻa	Cultural layer and sub-surface features; Creed et al. 1995:53 expands boundaries to incl. burial sites, - 626, -867, -868 -871, and -1894	Along Kuhiö Highway between Inia Street and Kauwila Street extending to the coast	Consultation and monitoring in vicinity indicated	Hammatt 1991; Creed et al. 1995
1894	Kapaʻa	11 sets of human remains	Ulu Street, just north of Kuhiö Highway, Kapaʻa Town	Consultation and monitoring in vicinity indicated	Creed et al. 1995:50

Site # 50-30-08-	Ahupuaʻa	Site Type/ Name (if any)	Location	Site Constraints	Reference
2075	Kapaʻa/Ke ālia	Highway Bridge Foundation (old Kauaʻi Belt Road)	Kuhiö Highway at Kapaʻa/ Keālia River		Bushnell et al. 2002:55
2076	Kapaʻa	Petroglyph	Rocky coast below former cane haul road (Site -789)	Preservation	Bushnell et al. 2002:55
2077	Kapaʻa	Concrete steps (related to historic beach pavilion)	Near present Kapaʻa Beach Park Pavilion		Bushnell et al. 2002:55
2078	Kapaʻa	Historic Railway Alignment (2 Railroad Bridges, & RR Culvert Foundation)	Both railroad bridges span the Moikeha Canal; the RR culvert foundation is located north of the Kapaʻa Swimming Pool.		Bushnell et al. 2002:55

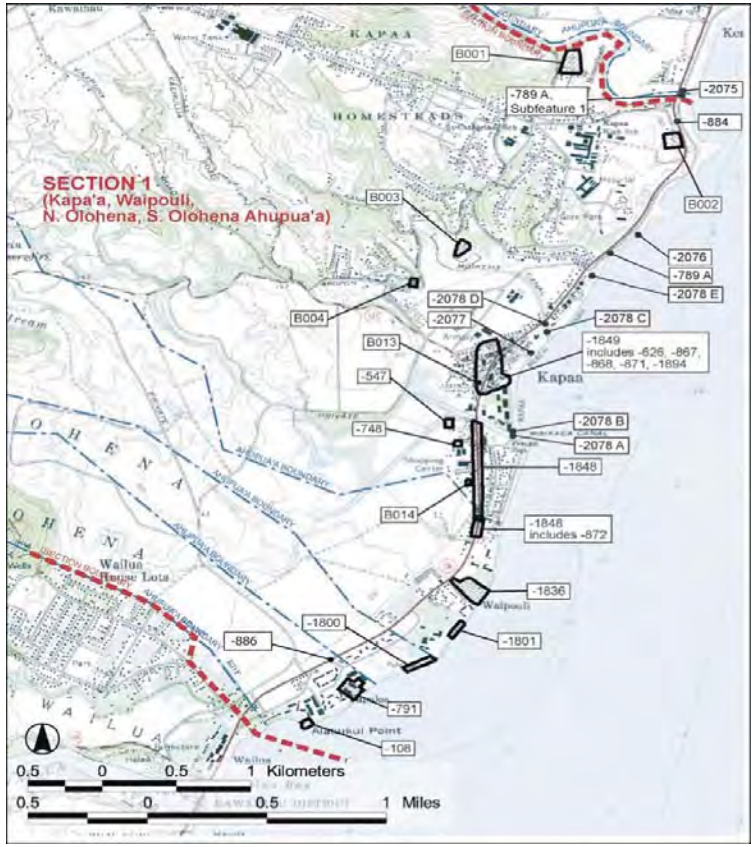

Figure 6. Historic Properties in Kapa'a, Waipouli and Olohena Ahupua'a.

In summary, the archaeological research of the Kapa'a, area has been somewhat skewed to development which has mostly occurred along the coast. Early 20th century archaeological studies attested to the existence of upland terraces, however subsequent studies in the 1980s found no record of upland sites. Although there is little in the way of surface archaeology of Kapa'a that has been able to withstand the test of time (with the exception of Kukui Heiau), archaeological studies have illustrated the vast potential for intact subsurface cultural layers. These cultural deposits extend throughout modern day Kapa'a Town, on the shorelines between the Waipouli Town Center and the Coconut Plantation Resort and along the coast in Olohena *makai* of the old Coconut Plantation Cinema. These cultural deposits suggest a long occupation of the area over many centuries beginning by the late 15th or early 16th centuries.

RESULTS OF COMMUNITY CONSULTATION

As partial fulfillment of the Scope of Work, consultation with organizations and the community was conducted to identify knowledgeable *kāpuna* and participants to be interviewed, as well as others who could inform on the history of the subject area and previous land use. The organizations consulted were the State Historic Preservation Division, the Department of Land and Natural Resources (DLNR), the Office of Hawaiian Affairs, the Kaua'i/Ni'ihau Islands Burial Council, the Kaua'i Historical Society, and the Kaua'i Historic Preservation Review Committee (KHPRC).

A substantial effort was made to locate knowledgeable informants for the area of Kapa'a. An attempt was made to contact as many individuals as possible. These led us to the 5 knowledgeable parties that were interviewed for this project. A cultural impact assessment conducted for the Kapa'a-Kealia Bike and Pedestrian Path included a narrow corridor from the Waikaea Drainage Canal to Hōmaikawa'a, a small inlet beyond Kealia (Bushnell et al. 2002). In addition cultural impact assessment was also conducted for the Kapa'a Relief Route (Bushnell et. al. 2004). Only one cultural impact assessment has been conducted for the uplands of Kapa'a for the proposed Water Reservoir *Mauka* Locale in Kapa'a, Kaua'i Island (Mitchell et. al. 2004). These CIA and historic research of the project area, community consultation and informant interviews were combined to provide an assessment of cultural traditions, both past and present.

Traditions were also collected in connection to the streams, canals and marsh areas where *'ōpae* and *'o'opu* were once found in abundance. Fishing for *'oama* in Kapa'a's canals continues to be a lively family tradition during the summers.

Consultation Process

Through the consultation process, five individuals were identified as potential informants. Three had written letters of their knowledge of the area (Stanley Vasques,

Willie Sanchez, and Albert Fukashima) [see Appendix]. Two others informants gave a verbal interviews. One of these the Martin family spoke about the use of the lands for pasture when the Plantation ceased using the land for cane. The other informant was from the East Kauai Soil and Water District (Les Milnes) and had no knowledge any plantation ditches that were still intact within the project area. The old maps he had, showed the ditch system around Twin Reservoir which is located directly across Olohena Road from this property but the maps stop before this project area. This indicates that there were no permanent plantation ditch lines on this parcel.

Mr. Fukashima drew a map of his recollection of the land uses of the project area, which matched some of the historic maps for Kapa'a.

Figure 7 and 8 Showing Cattle and Goats (in the Distance) Grazing.

No Native Hawaiian informants came forward to discuss any traditional gather associated with this project area. The Office of Hawaiian Affairs gave a list of possible indiviuals with extensive knowledge of traditional cultural practices and resources but none knew of any for this project area.

Figure 9. KIUC's Solar Farm and Equipment Buildings.

TRADITIONAL CULTURAL PRACTICES OF KAPA' A

Burials

The coastline in Kapa'a once contained extensive sand dunes that were documented in travels throughout the nineteenth century (Knudsen 1991; Alexander 1991). Most of the sand dunes were modified or destroyed at the onset of the twentieth century. This was due to the extensive use of the coastal areas for ranching, settlement, and new transportation routes like trains and roads. Archaeological studies in the Kapa'a area demonstrate the widespread prehistoric use of sand as a medium for burials. Burials have been idenfied along the coast and extending well *mauka* of the coastline into present day Kapa'a Town. Cultural deposits found associated with burials in the Kapa'a area shed light on the Hawaiian tradition of burying members of the *'ohana* in the *kulaiwi*, or birth land.

For Hawaiians, "man's immortality was manifest in his bones...Even the bones of the living became symbols of the link between man's progenitors and his own eventual immortality" (Pukui et al. 1972:106). Thus, the discovery of *iwi* (bones) is a very sensitive issue for the Hawaiian community requiring much mediation and protocol.

No burials are believed to be present within the project area and none are known in the vicinity.

Marshlands of Kapa'a

The areas inland of Kapa'a and Waipouli Towns were formerly the marshlands of Kapa'a. During the 20th century, portions of the marshlands of Kapa'a and Waipouli were filled, drained and designated as marginal agricultural lands. Traditionally, however, these marshlands were once much more significant. Westerners may call them "swamps," but Hawaiians who grew up in the Kapa'a and Waipouli area knew they were fishponds (Bushnell et. al. 2004). Many *kama'aina* recall fishing for freshwater shrimp and

gobies, the *'opae* and *'o'opu*. For the Kaneakua brothers, their childhood memories of *'opae* are tied to the old Chinese vendors who once traversed the neighborhood selling the shrimps.

> I can remember Chinese, they used to catch shrimp, fresh water shrimp in big five gallon can. They put it in there, both side and they have their stick across, walking through the little village that we were over there and used to come out and say, "'*Opae, 'Opae*" and families who want buy the *'Opae* and they used to dig it out in a big a scoop, bowl, and was so much you know. Yeah, those were the days. Our streams used to be loaded with shrimp (Interview with J. & W. Kaneakua 8/1/02 in Bushnell et al. 2002).

One informant said that his experience catching *'opae* centered on the irrigation ditches that drained the marshlands behind Kapa'a. "My first lessons in swimming were in the drain ditches the sugar people created to dry out their cane lands. Also in the ditches were the *'opae* or river shrimp. I caught *'opae* and cooked them with soy sauce in recycled oil sardine cans." (Interview with G. Hiyane, 5/14/03 in Bushnell et. al. 2004). One individual who grew up in Pueo Camp adjacent to the marsh recalls frequenting the irrigation ditches in Waipouli for *'ōpae*, *'o'opu*, and *pantat* (catfish) that were then sold to the old Chinese men in the camp for 10¢ (Personal communication with G. Mukai, 8/5/03 in Bushnell et. al. 2004).

Mr. Sokei who grew up in a rice growing family in the back of what is known as All Saints Church in Kapa'a shared some memories of his home in the 1930s that may reflect the landscape a hundred years prior. Mr. Sokei remembers the family home located on high ground above the marsh. "Back then, the land was natural, full of mounds. Rice was cultivated in fields all the way to the hills. The water level in the marsh would go up and down with the tide and when there was lots of water, one could find *'o'opu*, *'ōpae*, catfish, frogs and mud turtles for eating" (Personal communication with T. Sokei, 7/28/03 in Bushnell et. al. 2004). Likewise, the *kuleana* awards of the 1840s and 1850s present a picture of homes scattered on the edges of the marsh and on islands of high ground within the marsh. Numerous *'auwai* were constructed to irrigate *lo'i kalo*. *Hau* bush was shaped into fences to separate *kuleana* or physical features and fishponds were built to stock fish. For Hawaiians living the marsh was an extremely productive area constituting the basis of their existence.

The notion that the marshlands were quite significant traditionally is also evident in the Hawaiian place names, particularly the *wahi pana* (storied places) associated with the Kapa'a/Waipouli marsh. Mākaha-o-Kupānihi was a pond, a "deep pool set aside for *ali'i* to bathe in" located at the border of Kapa'a and Waipouli Ahupua'a presumably within the marsh (Lahainaluna Students Compositions, No. 15). It was here that Kaumuali'i's half-brother Keawe was shot to death forever defiling the waters of Kupānihi. Another *wahi pana* in this district was Kēwā. The proverb '*ke kalukalu o Kēwā*' refers to a certain type

of grass, *kalukalu* (used in making a very soft gauze or *kapa*) found growing in the marshlands of Kapa'a and Waipouli (Fornander 1916:IV:162).

Gathering for Plant Resources

Hawaiians utilized upland resources for a multitude of purposes. Forest resources were gathered, for not only the basic needs of food and clothing, but for tools, weapons, canoe building, house construction, dyes, adornments, hula, medicinal and religious purposes. The present project area is dominated by alien vegetation (albezia, ginger, California grass) although some traditional cultigens (banana, bamboo, *kid* and historically introduced food plants (papaya) are present as well. Within the project area itself no specific documentation was found regarding gathering of plants during traditional Hawaiian times. During this assessment there were no ongoing practices related to traditional gathering of plant resources identified in the present project area. None of the individuals contacted for this assessment identified any native plant gathering practices within the project area.

Historic Properties

No historic properties were identified within the project area or in the vicinity. The density of identified historic properties is far greater near the coast of Kapa'a Ahupua'a. For a listing of the historic properties of Kapa'a, Kaua'i, see Table 4.

Trails

Based on nineteenth and twentieth century maps the primary transportation routes *mauka/makai* correlated closely to the existing major roadways. During this assessment there were no trail systems identified in the proposed project area.

Planation Ditch System or 'Auwai

Based on the archaeological assessment (McMahon, 2012), field checks, documentation from land records, plantations records and maps, and informants information, no remnants of these historic properties exist. Several pieces presumed to be rem-

nant of the metal flumes (transportable irrigation) were found. It is also thought that the existing roads on the property might be filled.

Figure 10. Remnant Road and Cattle Grazing in the Project Area.

SUMMARY AND CONCLUSIONS

A cultural impact assessment was conducted for the proposed Kapaʻa Highlands Phase II. Historic research of the project area was carried out to identify any cultural resources or traditional cultural practices associated with the area encompassing the proposed Kapaʻa Highlands Phase II. In addition, community consultation was conducted. An attempt was made to contact parties regarding cultural knowledge, land use history, cultural sites and traditional Hawaiian or other cultural practices in the vicinity of the project area. Five individuals came forward as knowledgeable informants. In addition to the informants, other community members shared valuable information regarding traditional land use, attitudes and practices associated with the project area.

The marshlands of Kapaʻa were once a significant resource prior to Western contact. The fringes of the marsh were utilized for *loʻi kalo*, and other resources including the gathering of *kalukalu*, a type of grass utilized for *kapa*. Places in the marshes also served as fishponds. Vestiges of the cultural significance of the marshlands are retained in the *moʻolelo* and *ʻolelo noʻeau* particular to this area. With the establishment of the sugar plantations in the late nineteenth century, the marshlands were significantly altered. Marsh areas were drained and filled to create more dryland for commercial agriculture and pasture land. Several individuals consulted and interviewed grew up fishing for *ʻōpae* and *ʻoʻopu* in the irrigation ditches which once drained the swamps. They expressed sadness at the changing of the landscape and the passing of their childhood traditions with the final draining and filling of the swamps. No further concerns regarding the marshlands were expressed other than the presumed low potential of possibly encountering habitation deposits and burials related to former LCA parcels.

This report documents the use of the *ʻauwai* or plantation ditches for irrigation and water use by the residents up until the 1960s. The *ʻauwai* were also utilized for a variety of activities beyond their primary irrigation purpose. The bulk of the *ʻauwai* have been lost through modern pasturage, disuse and adjacent road improvements.

In general the community emphasized the importance of communicating with the *ʻohana* of Kapaʻa regarding changes to the land. This includes asking permission of the *ʻohana*, including *ʻuhane* (immortal spirits) for opening up the land to proposed new

uses. It was stressed that this and other protocols are necessary to "open the path" for change, thus avoiding accidents and potential obstacles of a cultural nature.

In summary, there are no known traditional resources or cultural practices associated with the Kapaa Highlands Project Area.

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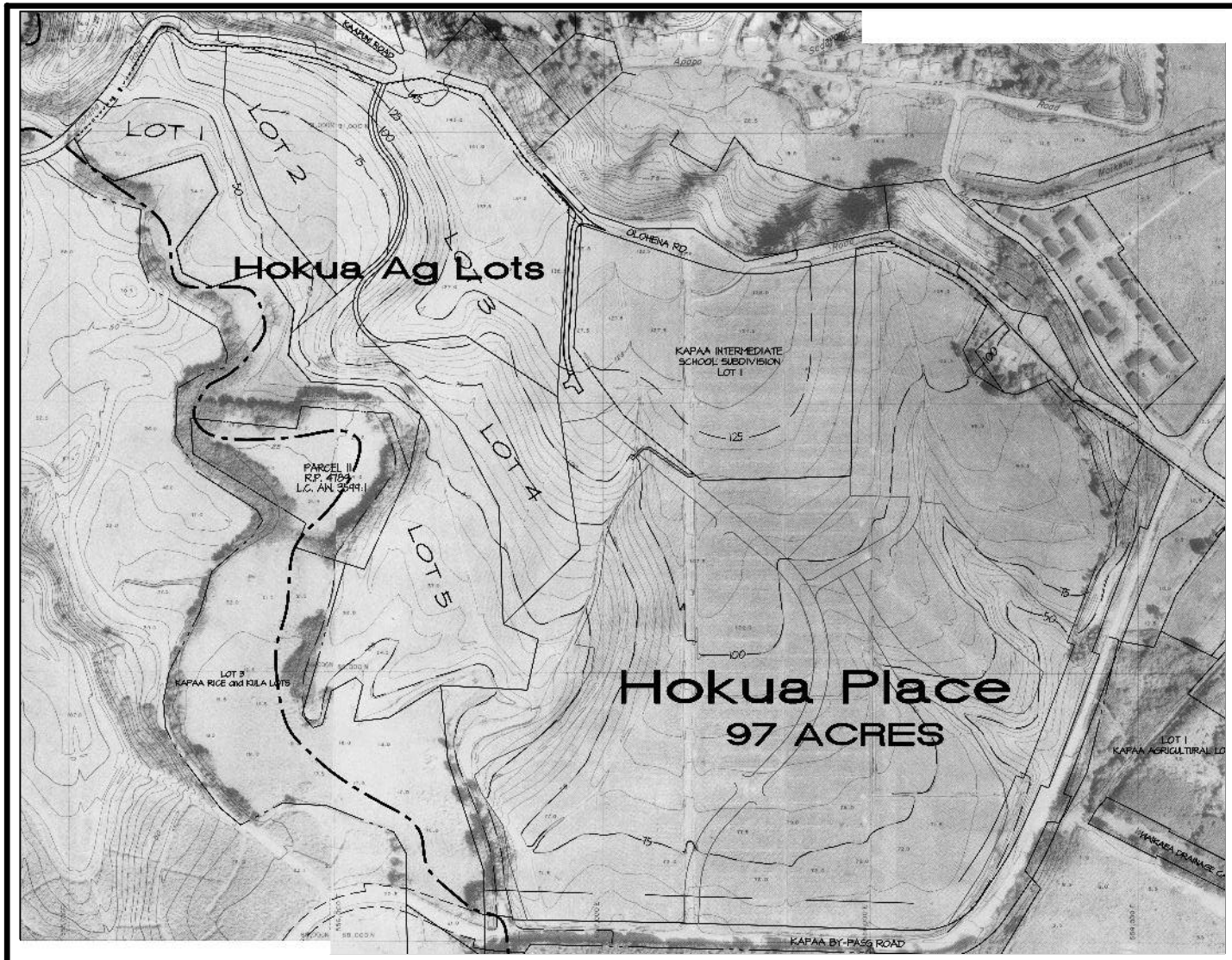
APPENDIX

Letters from Informants

Exhibit N.1



0 400 800

GRAPHIC SCALE IN FEET

N

HOKUA PLACE

SCALE: 1 INCH = 400 FEET

AERIAL TOPOGRAPHY

Source: County of Kaua'i - 1977

Exhibit N.2

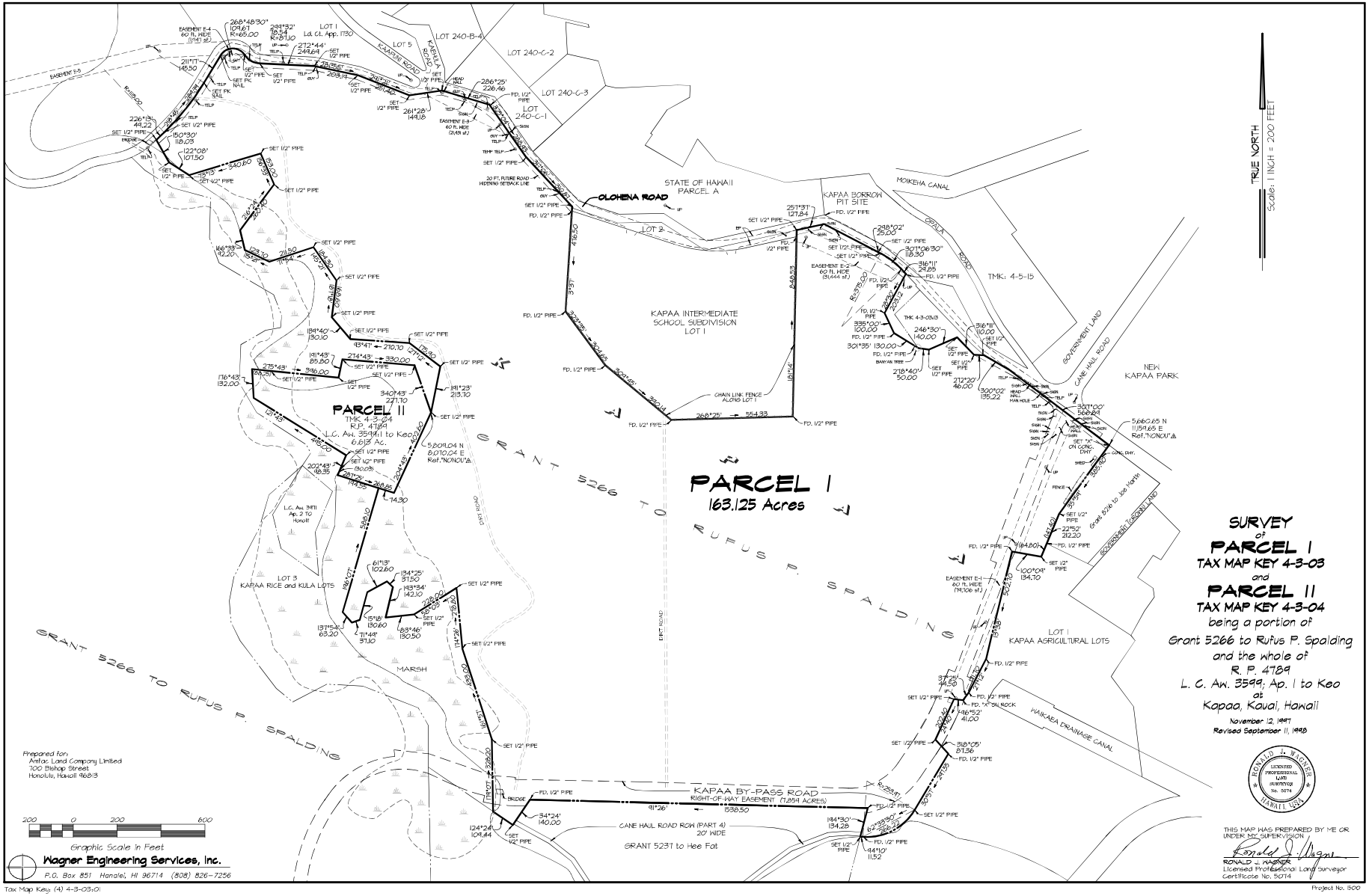

SURVEY
of
PARCEL 1
TAX MAP KEY 4-3-03
and
PARCEL 11
TAX MAP KEY 4-3-04
being a portion of
Grant 5266 to Rufus P. Spalding
and the whole of
R. P. 4789
L. C. Aw. 3599; Ap. 1 to Keo
at
Kapaa, Kauai, Hawaii
November 12, 1997
Revised September 11, 1998
TRUE NORTH
Scale: 1 INCH = 200 FEET
PARCEL 1
163.125 Acres
PARCEL 11
TMK 4-3-04
R.P. 4789
L.C. Aw. 3599;1 to Keo
6.615 Ac.
OLOHENA ROAD
STATE OF HAWAII
PARCEL A
KAPAA BORROW
PIT SITE
KAPAA INTERMEDIATE
SCHOOL SUBDIVISION
LOT 1
LOT 2
LOT 3
KAPAA RICE and KULA LOTS
LOT 1
KAPAA AGRICULTURAL LOTS
NEW
KAPAA PARK
GOVERNMENT LAND
CANE HAUL ROAD
MOIKEHA CANAL
KAPAA BY-PASS ROAD
RIGHT-OF-WAY EASEMENT (7.254 ACRES)
CANE HAUL ROAD ROW (PART 4)
20' WIDE
GRANT 5237 to Hee Fat
GRANT 5266 TO RUFUS P. SPALDING
HAIKAEA DRAINAGE CANAL
MARSH
TMK: 4-5-15
Prepared for:
Amfac Land Company Limited
700 Bishop Street
Honolulu, Hawaii 96813
Graphic Scale in Feet
Wagner Engineering Services, Inc.
P.O. Box 851 Hanalei, HI 96714 (808) 826-7256
THIS MAP WAS PREPARED BY ME OR UNDER MY SUPERVISION
RONALD L. WAGNER
Licensed Professional Land Surveyor
Certificate No. 5074
Tax Map Key: (4) 4-3-03:01
Project No. 1500

Exhibit O

Kaua'i County Planning Commission
Tentative Subdivision Approval for HoKua Farm Lots
June 19, 2014

Jan Kimura
Chair

Angela Anderson
Vice-Chair

Bernard Blake
John Egan
Wayne Katagiri
Sean Mahoney
Amy Menacho
Members

Michael A. Dahlig
Clerk of the Commission

PLANNING COMMISSION
County of Kaua'i, State of Hawai'i
4444 Rice Street
Kapule Building, Suite A-473
Lihue, Hawai'i 96766-1326
TEL (808) 241-4050 FAX (808) 241-6699

JUN 19 2014

Mr. Brian M. Hennessy
HOKUA ENGINEERING, INC.
Ching Young Center, Suite D9
P.O. Box 85
Hanalei, Kaua'i 96714

Subject: Hokua Farm Lots, being the Subdivision of Parcel 1 into Lots 1 to 6 inclusive and designating Reserves "AU-1", "AU-2", "D-1", and "W-1", being a portion of Land 5355 to Anna P. Scribling at Kapa'a, Kaua'i, Hawai'i.
(S-2014-02, HO Kaua'i Joint Venture LLC)

Dear Mr. Hennessy,

This letter communicates the action taken by the Kaua'i Planning Commission effective JUNE 10, 2014 concerning TENTATIVE APPROVAL of the above subject application. Final subdivision map approval, per your request, is subject to the following conditions:

1. Requirements of the Planning Department:

   a. An updated preliminary title report for the existing lot shall be submitted to the Planning Department for review.

   b. All existing and proposed easements shall be identified in the deed descriptions of affected lots and shown on the final subdivision map. Draft copies of the deed descriptions shall be submitted to the Planning Department for review and approval.

   c. Pursuant to section 9-4.8(b) of the Subdivision Ordinance, Kaua'i County Code (1987), the applicant shall submit to the Planning Department an electronic record (digitized format) of the final subdivision map(s) on disk for record keeping purposes prior to final subdivision approval.

An Equal Opportunity Employer

Rcd 6/20/14

Jho 5417

d. The following fees shall be paid to the County of Kauai:

1) Park Dedication fee: $900.00

2) Environmental Impact Assessment fee: $1,250.00

e. A future road widening reserve shall be established along the frontage of Olohena Road and Kapa'a By-Pass Road which shall be subject to the specifications of the Public Works Department for future use. There shall be no new structures permitted within the reserve, and any new structures should be setback from the reserve. The reserve along with its restrictions shall be incorporated into the deed descriptions of the affected lots, draft copies of which shall be submitted to the Planning Department for review and approval.

f. Prior to final subdivision approval, the subdivider shall delineate the Class "B" classified lands on the final subdivision map. In addition and pursuant to Act 195, Session Laws of Hawai'i, 1978, the applicant shall enter into an agreement with the County to incorporate agricultural restriction into the instrument of conveyance for those lots which contain the Class "A" and/or "B" soils.

g. The Applicant is advised that uses on the newly created lots shall be limited to those listed as permissible uses within the "A" Agricultural District in the State Land Use Commission Rules and Regulations. Dwellings on the lots shall mean a single-family dwelling located on and used in connection with a farm where agricultural activity provides income to the family occupying the dwelling. These restrictions shall be included in the covenants for the proposed lots, draft copies of which shall be submitted to the Planning Department for review and approval.

h. Prior to final subdivision approval, the Applicant shall submit to the Planning Department a deed restriction for each lot which will be subject to review and approval of the Department. These restrictions shall be included in the covenants and deed descriptions of the proposed lots, draft copies of which shall be submitted to the Planning Department for review and approval. The Planning Department reserves the right to impose additional conditions relating to this matter while in the process of resolving this condition.

i. The pole routing of the double flag lots shall be designated as common accessibility easements in favor of each other and shall be incorporated into the deed descriptions of the affected lots (Lot 1 and Lot 2), draft copies of which shall be submitted to the Planning Department for review and approval.

j. The subdivider shall coordinate with the Planning and Public Works Departments the following:

1) Participation in the upgrading of the intersection of Olohena Road, Ka'apuni and Kuhio Roads by providing necessary lands to accommodate the future improvements.

2) Installing setback access points onto Olohena Road.

3) Establishing a road reserve within the project area in order to accommodate future construction of further roadway improvements that would allow connection for Olohena Road to the Kapa'a By-Pass Road and relieve traffic off Olohena Road.

The Planning Department reserves the right to impose additional conditions relating to this matter while in the process of resolving this condition.

k. The Applicant shall prepare and file for preservation plan approvals for necessary road, water, drainage, electrical and telephone utilities and facilities, and either improve the same or provide surety bond for completion.

l. In order to ensure that the subdivision and development of property complies with the land use requirements contained in Chapter 205 of the Hawai'i Revised Statutes ("HRS"), the following matter shall be resolved prior to final subdivision approval:

(1) The Applicant shall provide the following documents to the Subdivision Committee of the Planning Commission ("Subdivision Committee") for its review and approval:

(A) An Agricultural Master Plan shall describe the proposed agricultural uses of the property, the marketing and business plans associated with such activities, and the manner in which the agricultural and related uses on the property will comply with HRS Chapter 205.

(B) A map of the property showing the proposed location of Agricultural Activities, Building Areas and Agricultural Easements.

(C) A Declaration of Conditions, Covenants and Restrictions ("Restrictive Covenants") which will be recorded in the Bureau of Conveyances of the State of Hawai'i ("Bureau"), which will encumber and run with the property, and which will provide and require that the owners of the lots in the subdivision ("Subdivision Lots") shall comply with the Agricultural Plan and the provisions of HRS Chapter 205; that the owners of all the Subdivision Lots shall be members in an association ("Association") which will have the power and duty to enforce the Restrictive Covenants; that the Association shall file periodic reports (as determined by the Planning Department) with the Planning Department verifying compliance with the Agricultural Master Plan; and that the Agricultural Master Plan shall not be amended without prior approval of the Planning Department.

(D) An Agricultural Subdivision Agreement which will be recorded in the Bureau, run with and encumber the property, and which will provide and require that each Subdivision Landowner shall indemnify, defend and hold the County harmless from any claims arising out of the failure of the Subdivision Landowner to comply with the Agricultural Master Plan under HRS Chapter 205; and that in the

[illegible] in compliance with the Applicant Manual [illegible] Chapter [illegible] as determined by the Planning Department, the County and the State of Hawaii's [illegible] shall have the rights to [illegible] permits or approvals for work to be [illegible] Subdivision Ordinance [illegible] and [illegible] laws, rules and [illegible] shall be [illegible] to be [illegible] to the Planning Department.

m. The subdivider shall comply with the Planning Department's [illegible] public roads within the subdivision. The applicant shall provide an access plan for the review and approval of the Planning and Public Works Departments. Additionally, due to the [illegible] the subdivision will work with the Planning Department on an [illegible] pedestrian access and [illegible].

Proper documents shall be prepared and recorded, [illegible] that will [illegible] approval. The Planning Department reserves the right to impose [illegible] conditions relating to the [illegible] in the process of reviewing the [illegible].

2. Requirements of the Department of Public Works:

[illegible]

a. The subject subdivision [illegible] and the Kapa'a by Pass Road [illegible] Kapa'a (KTP). Several [illegible] changes in [illegible] [illegible] months. The [illegible] changes [illegible] will be [illegible] [illegible] and provisions need to be established to prevent [illegible] from being built in flood prone areas and to conserve the flood capacity of the natural water courses.

The construction and [illegible] of facilities and other improvements [illegible] will increase [illegible] water flows. A drainage study needs to be made [illegible] the impacts of the increased storm runoff. Measures to keep flow at [illegible] pre-development conditions [illegible].

b. Street [illegible] to include the existing bridge at the Kapa'a By Pass Road [illegible] the bridge [illegible] [illegible] the Kapa'a By Pass Road.

c. The flood zoning, FIRM panel no. [illegible] and the date of the FIRM [illegible] 16, 2010 needs to be updated on the final map [illegible] the determined flood [illegible] 4th bar flood elevations. The applicant and [illegible] shall be [illegible] of new structures in flood prone areas [illegible] and [illegible].

ROAD

d. The [illegible] Road needs to be [illegible] "Main Street". The Kapa'a By Pass Road [illegible] to be [illegible] 3.0 6. We recommend that the Kapa'a By Pass Road be [illegible] to the [illegible] [illegible].

e. The subject [illegible] Road on the North. Olohena Road has a right of way width of 40 feet and an average pavement width of 20 feet. The pavement width is adequate for two way passage with car traffic. The right of way width is inadequate [illegible] (50 feet right of way). We recommend [illegible] Olohena Road, or in the [illegible] to the County to call for [illegible] to Olohena Road to [illegible] Safe Route to School and Complete Streets [illegible].

f. Access [illegible] Olohena Road must be [illegible]. Access for lots 1, 2 and 4 shall be [illegible] to the [illegible] lots 5 and 9. Document "A-2" [illegible] and utility purposes [illegible] access for lots 3 and 5. Comments should be solicited from the State Department of Transportation [illegible] would be allowed for lot 1 from the Kapa'a By Pass Road.

[illegible]

g. Complete Streets and Safe Route to School design [illegible] needs to be incorporated with the subdivision improvements to Olohena Road. Complete Streets and Safe Route to School features include [illegible] networks, [illegible] [illegible] and bicycle [illegible] and [illegible] policies for [illegible] children. Comments should be solicited from the County's Transportation Planner.

3. Requirements of the Department of Water:

a. The subdivider shall pay the Department of Water a Facilities Reserve Charge of $23,500 (1 lot @ $4,500 per lot). The subdivider shall pay any fees [illegible] applicable charges in effect at the time of receipt.

b. The subdivider shall provide the Department of Water's approval or a [illegible] for [illegible] water system. Additional [illegible] and [illegible] shall be [illegible] [illegible] Water Offices shall also include:

1) Additional [illegible]. The Applicant may [illegible] the Department of Water to [illegible] all fees [illegible].

2) The domestic service connection.

c. Issue and show a valid [illegible] with appropriate valid water number(s) on the tentative subdivision map for the Department of Water's review and approval. Also identify the proposed subdivision so that the existing water meters will be assigned to. The DOW reserves the right to change the number or the specified meter size.

4. Requirements of the State Health Department:

a. The existing cesspool wastewater system accommodates to serve the existing building. However, wastewater generated from any additional dwelling units and other buildings shall be disposed. The wastewater system shall meet the requirements of the State of Hawaii Department of Health regulations.

b. Noise will be generated when construction occurs after Lots 1 through 6 are subdivided. Noise shall not exceed the applicable maximum permissible sound levels as stated in Title 11, Hawaii Administrative Rules (HAR), Chapter 11-46, entitled "Community Noise Control" unless a noise permit is obtained from the State Department of Health (DOH).

c. Temporary fugitive dust emissions could be created during construction, especially when Lots 1 through 6 are subdivided. As the Lots, in accordance with Title 11, HAR, Chapter 11-60.1, entitled "Air Pollution Control", effective measures for dust pollution control shall be provided to minimize or prevent any fugitive dust pollution caused by the construction work from impacting the surrounding areas. This includes the offsite roadways used to enter / exit the project. The control measures include, but are not limited to, use of water sprinkler systems, dust screens, etc.

d. In accordance with Title 11, HAR, Chapter 11-58.1, entitled "Solid Waste Management Control", the construction waste that is generated when the subdivided Lots are developed shall be either recycled, reused or taken to a solid waste disposal facility that complies with the DOH. The open burning of any of these wastes or debris is prohibited.

e. Any project and its potential impacts to flora and fauna must meet the following criteria:

1) Anti-degradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the allowed uses of the receiving State water to maintained and protected.

2) Designated uses (HAR, Section 11-54-6), as determined by the classification of the receiving State waters.

3) Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

f. Please call for Army Corps of Engineers at (808) 438-9258 to see if there are any Department of the Army (DA) permits. Permits may be required for work performed in, over, and under navigable waters of the United States. Projects requiring a DA permit also require a Section 401 Water Quality Certification (WQC) from our office.

g. You are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters.

(HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form:

1) Storm water associated with industrial activities, as defined in Title 40, Code of Federal Regulations, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi).

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

3) Treated effluent from leaking underground storage tank remedial activities.

4) Once through cooling water less than one (1) million gallons per day.

5) Hydro-testing water.

6) Construction dewatering effluent.

7) Treated effluent from petroleum bulk stations and terminals.

8) Treated effluent from well drilling activities.

9) Treated effluent from a potable water distribution system.

10) Storm water from a small municipal separate storm sewer system.

11) Circulation water from decorative ponds or tanks.

h. You must submit a separate NOI form for each type of discharge at least 30 days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge the NOI must be submitted 30 days prior to the start of construction activities.

i. For types of wastewater not listed in item 3 above or wastewater discharging into Class 3 or Class AA waters, you must obtain an NPDES individual permit. An application for an NPDES individual permit must be submitted at least 180 days before the commencement of the discharge.

j. You must also submit a copy of the NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or

demonstrate to the satisfaction of the CWB that SHPD has not, or is in the process of evaluating your project. Please submit a copy of your request for review by SHPD or SHPD's determination letter for the project along with your NOI or NPDES permit application, as applicable.

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

5. Requirements of the Housing Agency:

a. Chapter 7A of the Kaua'i County Code, 1987, as amended, is applicable to the proposed subdivision, pursuant to Section 7A-1.3(a)(1).

Prior to final subdivision approval, the Applicant shall receive the applicable housing requirements and shall execute a Workforce Housing Agreement with the Kaua'i County Housing Agency, as to the method of meeting the workforce housing requirement pursuant to Chapter 7A. The executed agreement shall be recorded on the deed of the project prior to recordation with final subdivision approval.

The Kaua'i County Housing Agency reserves the right to change this determination if the facility or application changes from the above, or if the project incorporates or becomes part of a larger residential or resort project, such that provisions of Kaua'i County Code, Section 7A-1.4 become applicable.

6. Requirements of the Department of Wastewater:

a. The proposed subdivision is near the County's sewer service area. If sewer service is needed, the Applicant shall apply for County sewer service and shall be responsible for design and construction of all infrastructure necessary to connect to the County sewer and shall be responsible for payment of all applicable fees.

7. Requirements of the State Historic Preservation Division (SHPD):

a. Pursuant to Hawaii Administrative Rules §13-284 we request an archaeological inventory survey be conducted by a qualified archaeologist in order to adequately determine the potential impacts of this subdivision on both surface and subsurface historic properties. We look forward to the opportunity to review the archaeological report prior to commenting further on the subdivision application. We recommend the final subdivision approval be deferred until the archaeological inventory survey report has been completed and appropriate mitigation measures/plans are in place.

b. As recommended by the State Historic Preservation Division (SHPD) of the Department of Land and Natural Resources (DLNR), in the event that historic resources, including human skeletal remains are identified during ground or shoreline activities, all work needs to cease in the immediate vicinity of the find, and the find needs to be protected from additional disturbance, and the State Historic Preservation Division, Kaua'i office, needs be contacted immediately at (808)692-8015.

8. The Applicant's official has prior to and/or during construction, and the additional conditions may be imposed by government agencies, should this occur, the Applicant shall comply these conditions with the applicable agency(ies).

Sincerely Yours,

MICHAEL A. DAHLIN
Chief, Kaua'i Planning Commission

xc: DOE Public Works Dept.
DOE Water Dept.
DOE Real Property – Assessment Div.
State Dept. of Health
State Historic Preservation Dept.

Survey of Native Invertebrate Resources in proposed HoKua Place project area

January 24, 2018

Prepared by:
Steven Lee Montgomery, Ph. D., Waipahu, Hawai‘i

Submitted to:
Agor Jehn Architects, LLC

For:

HG Kaua‘i Joint Venture LLC

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SUMMARY

This report summarizes the findings of an invertebrate[1] survey conducted within approximately 97-acre parcel, TMK (4) 4-3-003: 001 (portion) in Kapa‘a of the Kawaihau District on the island of Kaua‘i. (Figure 1, 2)

INTRODUCTION

The primary purpose of this survey was to determine the presence or absence on the property of any endemic or indigenous terrestrial invertebrates, especially any species with legal status under federal or state threatened and endangered species statutes (DLNR 1998, USFWS, 2017). Invertebrates are often the dominant fauna in natural Hawaiian environments. Native Hawaiian plant, vertebrate, and invertebrate populations are interdependent. Invertebrates are the food of some birds and the pollinators of plants. Certain insects are obligatorily attached to specific host plants and are able to use only that plant as their food. Those insect - host relationships are ancient and intertwined. Native invertebrates have proven inventive in adapting to opportunities in changed ecosystems. A surprising number of native arthropod species survive even in degraded habitats. Nevertheless, the overall health of native Hawaiian invertebrate populations depends upon habitat quality and absence or low levels of predators introduced from the continents. Sufficient food sources, host plant availability, and the absence or low levels of introduced, continental predators and parasites comprise a classic native, healthy ecosystem. Consequently, where appropriate in the survey discussion, host plants, and some introduced arthropods are also noted.

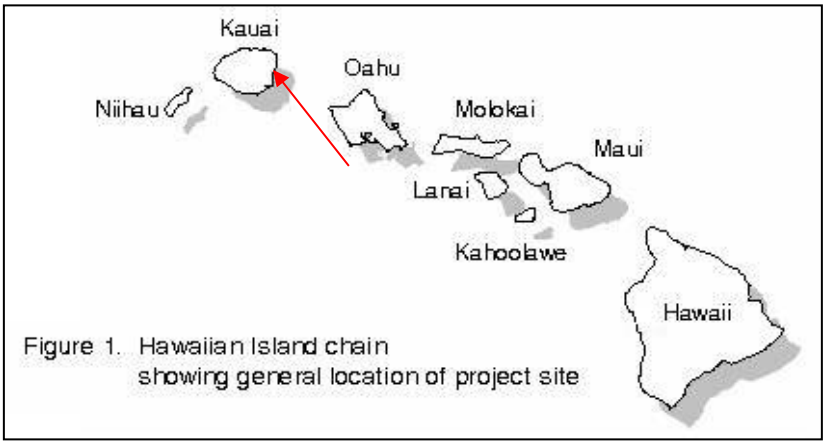

Figure 1. Hawaiian Island chain showing general location of project site

[1] Animals without backbones: insects, spiders, snails, shrimp, etc.

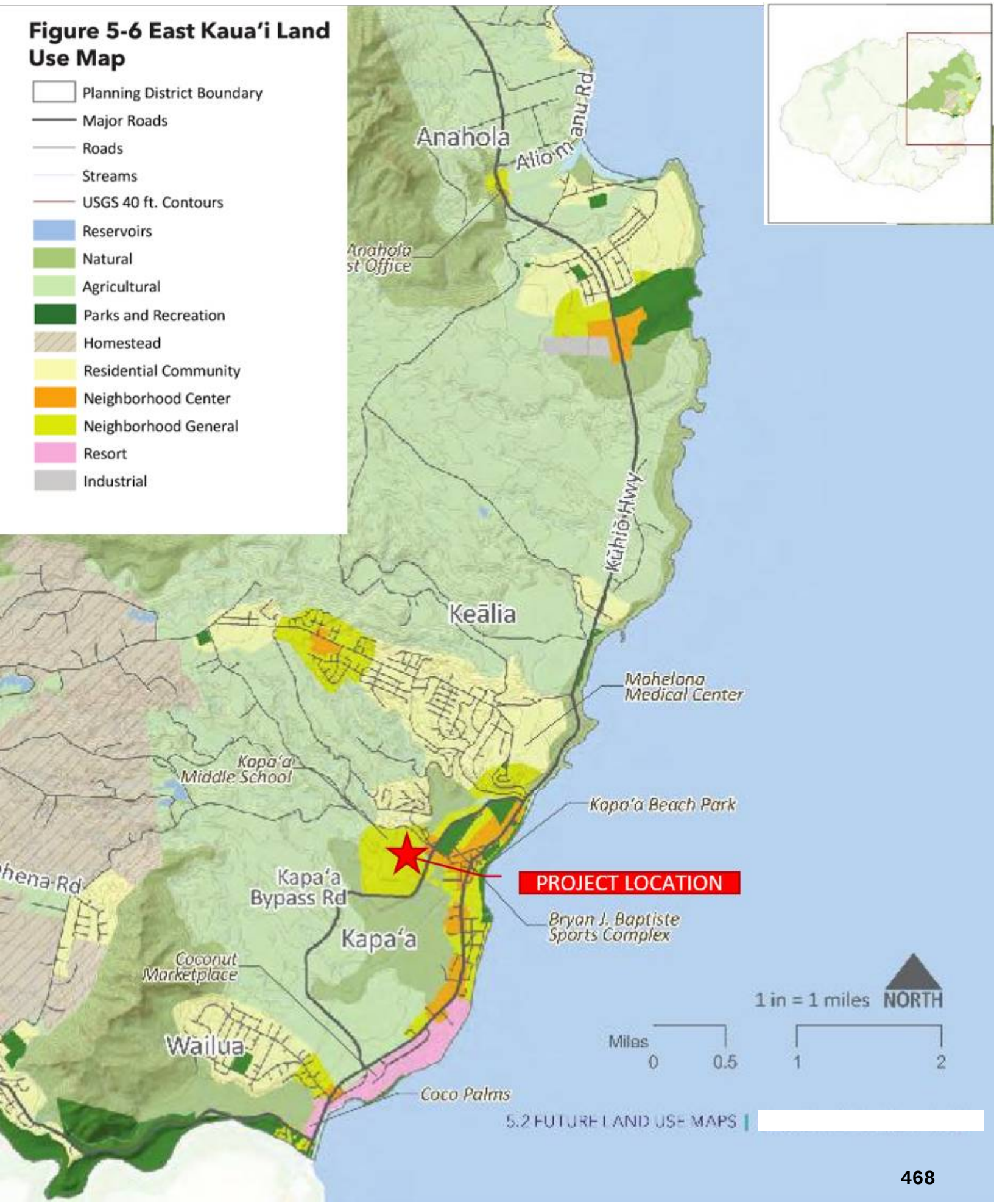

Figure 5-6 East Kaua'i Land Use Map

GENERAL SITE DESCRIPTION

The botanical survey describes the site (Figure 2) as "a lowland non-native mesic plant community dominated by secondary vegetation of trees, shrubs, and grasses, many of which are considered invasive. The land . . . has a past history of grazing and sugarcane cultivation. . . . No Hawaiian endemic species . . .were observed. One Polynesian introduction was observed, namely *Aleurites moluccana* (kukui tree) . . . The three indigenous species found at the site are quite common and include: *Hibiscus tiliaceus* (hau) which is also often an invasive tree species, the fern species *Psilotum nudum* (moa), and *Waltheria indica (*ʻuhaloa)." (Wood 2012) As many invertebrates are dependent on plant hosts, the botany report findings are predictive of the invertebrate survey results.

INVERTEBRATE SURVEY METHODS

Previous Surveys

Prior to the field survey, a search was made for publications relating to invertebrates associated with this particular site or with nearby sites, and for other projects in the general area that generated an Environmental Assessment or Environmental Impact Statement filed at the web site of the State's Office of Environmental Quality Control (2017). This review did not show any previous large scale invertebrate surveys in the area.

Searches were made in the University of Hawai'i and Bishop Museum library catalogs and in the University of Hawai'i, Hamilton Library's Hawai'i-Pacific Journal Index (2017). Searches were made for publicly available articles mounted on the web through Google Scholar. Surveys for avian and mammalian (David 2012) and botanical resources (Wood 2012) at the project area were very helpful in preparing for this study, but had no reference to other invertebrate surveys or sightings. A review of the online collection databases of the Bishop Museum entomological collections (2017 a,b) and University of Hawaii Insect Museum (UH 2017)and a search of the index of the *Proceedings of the Hawaiian Entomological Society* using place names did not reveal any prior studies. Available field reports of early Kaua'i studies by Bishop Museum entomologists were also reviewed as available.

Fieldwork

Since 1968, I have taken part in field projects in environments similar to the project site, at other locations on the island of Kaua'i, and throughout the island chain. Those experiences and the results of those surveys provided the basis for my study design and my analysis of results.

Field surveys in January 2018 were conducted at the project site over a period of three days. I conducted a general assessment of terrain and habitats after reviewing maps and prior reports (above). Survey efforts were conducted by day and night, a technique which is vital for a thorough survey. The property was traversed across all habitat types, alternately following pathways to search for any water sources or native botanical resources and substitute host plant options for native invertebrates. The areas designated "greenbelt" were a special focus as most likely to attract invertebrates (Figure 3).

FIELD SCHEDULE:

January 7	recon; day field survey, night light survey; sunset 6:10 p.m. moonset 11:56 a.m.
January 8	day field survey; night light survey; moonrise 12:19 a.m. [midnight] [2]
January 9	day field survey

COLLECTING METHODS

The following collecting methods for terrestrial invertebrates were used as appropriate to the terrain, botanical resources, and target species.

Host plant searches: Host plants, both native and introduced, were sampled for arthropods that feed or rest on plants. Searches included visual inspection of resting sites and searching known feeding or breeding sites such as under dead bark or rocks.

Sweep nets: This is a general method of censusing most flying and perching insects. A fine mesh net was swept across plants, leaf litter, etc. to sample any flying or perching insects. Transfer from the net was either by aspiration, or by placing the net contents into a holding container.

Visual observation: At all times, I was vigilant for any visual evidence of arthropod presence or activity. Visual observations provide valuable evidence and are a cross check that extends the reach of sampling techniques. Visual observation also included turning over rocks, dead wood, and other debris.

Light sampling: A survey of insects active at night is vital to a complete record of the fauna. Many insects are active only at night to evade birds, avoid desiccation and high temperatures, or to use night food sources, such as night opening flowers. Light sampling uses a bright light in front of a white cloth sheet. Night active insects seem to mistake the collecting light for the light of the moon, which they use to orient themselves. In attempting to navigate by the entomologist's light, confused insects are drawn to circle the light and land on the cloth in confusion. This type of collecting is most successful during the dark phase of the moon, or under clouds blocking starlight. On level sites vegetation usually blocks the light from being seen over long distances, and moths and other night fliers are not drawn from distant locations outside the survey area.

The locations for my light were chosen based on experience, potential native host plant proximity, and to obtain a variety of terrain types (Figure 3). Screening vegetation meant that the nearby housing areas contributed little competing light. The primary light source was a mantel propane lantern bulb. Light wave lengths from the bulb are known to be attractive to night active insects. The sheet was monitored and visiting species observed and recorded.

[2] all moon data from U.S. Naval Observatory [USNO]

Survey Limitations / Conditions

My ability to form advisory opinions is limited or influenced in the following ways:

Collecting conditions

Weather was favorable for surveying during the fieldwork. Day one had some light passing showers. Day two and three had patchy clouds and light breezes on the second night. Night monitoring was not influenced by the partial moon as the rise and set times caused the moo n to be visible only after light surveying had ceased (USNO). Nights were dark making stars quiet visible. Street and school lights presented no competition to the collecting light as I was able to position my site to mask their light.

Seasons: Monitoring at a different time of the year might produce a different arthropod list. Weather and seasonal vegetation changes play an especially important role in any survey of invertebrates. Many arthropods time their emergence and breeding to overlap or follow seasonal weather or to coincide with growth spurts of an important plant food. Host plant presence/absence, and seasonal changes, especially plant growth after heavy rains, affect the species collected. Winter 2017 rains put vegetation into a normal seasonal condition optimal for invertebrate growth. However, the low level of native plants found at the site is the strongest factor in determining the invertebrates encountered. Given the very short inventory of native plants at this site, even with positive seasonal factors, native insects traveling across HoKua simply do not find the flora to support them or their eggs are soon eaten by ants.

Limited duration: Surveying for a longer period of time might change the list of species; however, given the size of the property, I believe the survey provides an adequate review of the property's resident native invertebrates. (See below: INVERTEBRATES NOT PRESENT, for exceptions)

Physical limitations: The size of the property allowed the survey to cover the area adequately. The overall study strategy and light survey site selections were designed to achieve this aim. The resulting survey was representative and targeted in favor of locating and examining the few native host plants.

Selectivity: My survey was focused on finding endemic and indigenous Hawaiian species. No attempt was made to collect or completely document the many common alien arthropod species present in the area. Several invertebrates of human health concern are noted later in this report. See MEDICALLY IMPORTANT SPECIES.

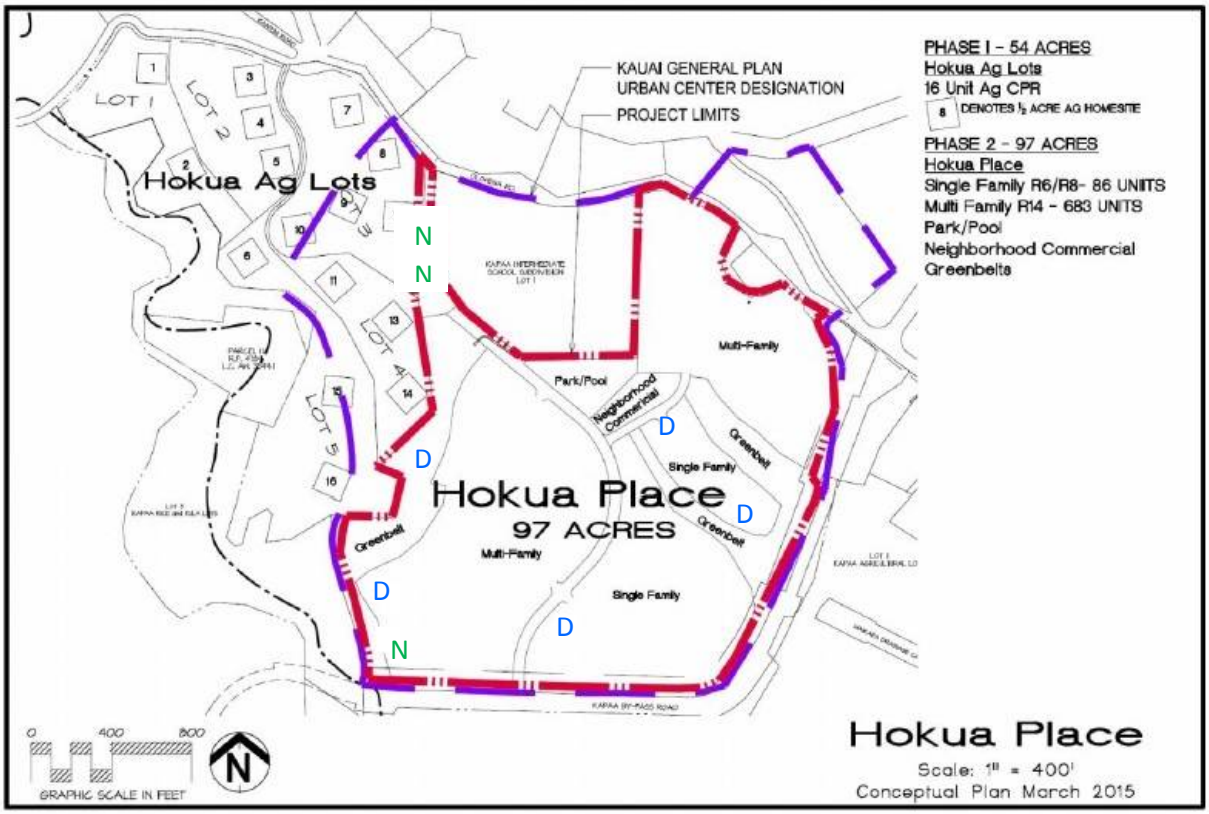

Figure 3: Map of project site showing light survey locations
[from "HoKua Place ...Final EIS Vol. 1"]

N = night light survey sites

D = areas of day survey concentration

INVERTEBRATE SURVEY RESULTS:

This discussion focuses on native species encountered, on species that affect native invertebrate survival, and on adventive species of concern in human health or commonly feared.

MOLLUSCA: PULMONATA

Giant African Snail
Lissachatina fulica (Bowdich)
The Giant African Snail (Figure 4) is an introduced pest common throughout the island chain lowlands. The Rosy Wolf snail, introduced as a control species, was not seen, but may be present. Rosy Wolf snail has done great damage to populations of native land snails, but there are no longer native snails here.

Figure 4: Rosy Wolf snail (R) approaching Giant African Snail (L)

ARTHROPODA: ARANEAE (spiders)

Araneidae
Orb Weaver Spiders
Argiope appensa (Walckenaer 1841)
Orb Weaver spiders (Figure 5) were found in bushes especially well placed to host the spiders as breezes deliver flying insects to their webs. They are easily spotted by the distinctive white X where they rest ready to rush out and wrap up the next item snagged by their web. These spiders pose no threat to people or pets and are a good control on pest alien species. They should be allowed to scramble off to find a new home during clearing operations.

Figure 5: Orb Weaver spiders are common in home gardens throughout the island chain.

Heteropodidae
Heteropoda venatoria
Large Brown Spider or Cane Spider

Although the fast running Cane spider (Figure 6) is often startling to people, they are not known to bite or harm humans. Conversely, they are helpful in controlling pests such as cockroaches. They hunt mostly at night and do not pose a risk to people or pets. They may be encountered by work crews in clearing the site. They should be allowed to run away.

NOTE [3]

Figure 6: Adult cane spider with egg case

ARTHROPODA: INSECTA
DIPTERA (Flies and Mosquitoes)

Lauxaniidae

Homoneura hawaiiensis (Grimshaw 1902) is the Gray-thorax pomace fly look-alike species that, despite the species name "hawaiiensis", is now known to be adventive and widespread in Oceania to Solomon Islands.

HYMENOPTERA (wasps, bees, ants)
Formicidae (ants):
Big-headed ant
Pheidole megacephala, especially fierce predators on other insects, are present. They are a known threat to native species of invertebrates. Alien ants are known to prey on other insects (Zimmerman 1948-80) and are well documented as a cause of low levels of native arthropods, especially in elevations up to 2000 ft. (Perkins 1913). They are not a common threat to humans.

[3] For anyone skeptical of the safety of either spider: we have used Cane spiders in close 'encounters' filming on numerous occasions; we used orb weavers in filming scenes for the TV series LOST where the actors had to have the spider ON them; we use orb weavers with children's wildlife classes.

LEPIDOPTERA (butterflies and moths)

Cosmopterygidae (Case-bearer micro-moths)
Hyposmocoma sp. 1 nocturnal
Hyposmocoma sp. 2 larvae on slender cases on stones

Figure 7: *Hyposmocoma* sp.
Photo# starr-030724-0089
credit: "Forest & Kim Starr" (HEAR)

Adult *Hyposmocoma* or Case-bearer moths responded to the light. *Hyposmocoma* (Figure 7) are called "case-bearers" because after an early beginning inside a leaf curl or similar hiding place, caterpillars create protection in intricately constructed portable shells of silk. For camouflage, they add bits of their surroundings to the case: snips of dry grass / leaves, flakes of bark, maybe a little dirt. The case is then easily mistaken by a predator as another part of the inedible landscape. These bunkers are fitted with a hinged lid (operculum), pulled shut by mandibles to defend them from enemies, especially ants now. They are dependent on their case, and die if removed – even if protected from predators and given food. They don't move far, feed while partly emerged from the case, dragging along the protective armor by six true legs. Cases are sometimes attached to rocks or tree trunks and foliage. (Manning/Montgomery in Liittschwager & Middleton 2001) With over 500 kinds, these micromoths are the greatest assemblage of Hawaiian Island moths, with astonishing diversity. After writing 630 pages on them, Dr. Zimmerman lamented the inadequacy of his study. He noted an enormous cluster of species with explosive speciation and diverging radiation (Zimmerman 1978). Much remains to be learned about them by University of Hawaii's Daniel Rubinoff and his graduate students (Rubinoff & Haines 2006).

Crambidae (micro-moths)

Mestolobes minuscula (Butler 1881)
The commonest of the small moths or micro-moths, *Mestolobes* (Figure 8), responded to the light survey. It is known from every major island. Although a large genus of over 30 species, 9 known from Kaua'i, it has not been studied in depth despite a 1906 plea to study its habits by R. C. L. Perkins (1907). It has been collected while visiting flowers for nectar diurnally and when responding to light. *Mestolobes* was reported to "often fly actively in cane fields" (Williams 1931). In the 1800s it was reported to fly in small groups and was seen at lower elevations (Perkins 1913). The host plant of this endemic is not certain. There is one record of one larvae reared from a host - the roots of sugar cane on O'ahu in 1930, yet it was never considered even a minor pest (Swezey 1931.) (HBS 2002a, HOSTS, Zimmerman 1958)

Figure 8: *Mestolobes* sp.
Photo# starr-030825-0008
credit: "Forest & Kim Starr" (HEAR)

Lepidoptera: continued

Orthomecyna phaeophanes Meyrick 1899
This is a little known ½ inch long moth known from 3 other islands that may feed on grass roots.

ODONATA (Dragonflies, Damselflies)
Coenagrionidae

Ischnura posita (Hagen, 1862) Fragile Forktail Damselfly

This damselfly was introduced to Hawaiian Islands in 1936 and is now found on all the main islands up to 1000 ft. It originated in Canada and is considered an indicator of disturbed aquatic habitat (Polhemus & Asquith 1996).

Libellulidae

Pantala flavescens (Fabricius) (Globe Skimmer)

An indigenous dragonfly (*Pantala flavescens)* (Figure 9) was observed on the property. Among the most readily observed native insects, Globe Skimmers are large, easily approached by people, and graceful in flight. Any small amount of fresh water will attract them and they often colonize human maintained water sources such as golf-course water hazards and stock tanks. Globe skimmers are widely distributed throughout the Hawaiian Islands, from Kure to Hawai'i Island (HBS 2002a, Nishida 2002) and have even been found flying at sea (Howarth & Mull 1992). They will adapt or move to a nearby water source.

Figure 9: Globe skimmers are found through the Pacific.

ORTHOPTERA

Tettigoniidae

Euconocephalus nasutus (Thunberg) (Aggravating Grasshopper)

This noisy cone-headed grasshopper might be heard on site at night. It makes a variety of sounds by rubbing the base of its wings against its body. Variously described as "loud, shrill, and continuous", "wind whistling through telephone wires," "long, steady buzzing," and the buzz of high voltage wires, it is always irritating. It also can 'throw' it's voice or project the sound to another part of the underbrush, diverting you from their hiding place if you are trying to hunt them. (Tenorio and Nishida 1995)

Table 1: List of Invertebrates: HoKua Place, Kaua'i

PHYLUM ARTHROPODA		
CLASS ARACHNIDA		**MITES, SPIDERS, AND RELATIVES**
ORDER ARANEAE		**spiders**
		Araneidae
	adv	*Argiope appensa* (Walckenaer 1841) (Orb weaver spiders)
		Heteropodidae
	adv	*Heteropoda venatoria* (Linnaeus), 1767 (Cane spiders)

CLASS CHILOPODA		
ORDER SCOLOPENDROMORPHA		**centipedes**
		Scolopendridae
	adv	*Scolopendra subspinipes* Leach 1815

CLASS INSECTA		**INSECTS**
ORDER COLEOPTERA		**beetles**
		Scolytidae
	adv	*Xylosandrus compactus* (Eichhoff)
ORDER DIPTERA		**flies**
		Asteiidae
	end	*Asteiia sabroskyi* Hardy & Delfinado, 1980
		Lauxaniidae
	adv	*Homoneura hawaiiensis* (Grimshaw, 1902)
ORDER HETEROPTERA		**true bugs**
		Lygaeidae
	adv	*Pseudopachybrachius pacificus (Stal, 1874)*
ORDER HYMENOPTERA		**wasps, bees, ants**
		Anthophoridae
	adv	*Xylocopa sonorina* F. Smith, 1874 (Sonoran Carpenter Bee)
		Apidae
	pur	*Apis mellifera* (Honey bee)
		Formicidae
	adv	*Pheidole megacephala* (Fabricius 1793)

ORDER LEPIDOPTERA		**butterflies, moths**
		Cosmopterygidae (Case-bearer micro-moths)
	end	*Hyposmocoma* sp. 1 2 adults at light
	end	*Hyposmocoma* sp. 2 9 larvae in slender cases
		Crambidae (micro-moths)
	end	*Mestolobes minuscula* (Butler 1881)
	end	*Orthomecyna phaeophanes* Meyrick 1899
		Limacodidae
	adv	*Darna pallivitta* Moore, 1877
ORDER ODONATA		**dragonflies, damselflies**
		Coenagrionidae
	adv	*Ischnura posita* (Hagen, 1862) (Fragile Forktail Damselfly)
		Libellulidae
	ind	*Pantala flavescens* (Fabricius) (Globe Skimmer)
ORDER ORTHOPTERA		**grasshoppers, crickets**
		Tettigoniidae
	adv	*Euconocephalus nasutus* (Thunberg) (Aggravating Grasshopper)

Status:
End endemic (only in the Hawaiian Islands)
Ind indigenous (naturally in the Hawaiian Islands but also elsewhere)
Adv adventive (inadvertently introduced)
Pur purposeful (deliberately introduced)

Names authority: Hawaii Biological Survey 2002a,b; Nishida 2002; Zimmerman 1948-80; Zimmerman 2001

INVERTEBRATES NOT PRESENT:

Plant and invertebrate populations are interdependent; consequently, host plant availability is one way to review invertebrate health. As discussed in the botanical survey (Wood 2012) and archaeology report (McMahon Tolleson 2013), the area has a long history of human use, Hawaiian agriculture, sugar production, and current sheep, goat and cattle grazing, all activities that removed native plants. The resulting extremely low level of native flora serving as arthropod hosts leads to the low level of Hawaiian arthropods at this site. Wood did find some Hawaiian plants: *Hibiscus tiliaceus* (hau) is the sole host of a tiny moth with a leaf mining larva, *Philodoria hauicola*, reared from Kaua'i and 3 other islands, often scarce, but at this site, none were present. *Psilotum* has no insect specialists in Hawaii.

SPECIES NOT FOUND

Any survey for federally protected species should include consideration of all native invertebrates (snails, spiders, and insects).

Cave-adapted Species

A review of the archaeological survey of the area (McMahon Tolleson 2013) indicated no lava tubes at the project site which could support cave-adapted native invertebrate species, nor did this survey show any evidence of lava tubes.

MOLLUSCA:

No native mollusks were observed during this survey.

Of the family Lymnaeidae, *Erinna newcombi* Adams & Adams, 1855 *or* Newcomb's Snail, this threatened species was not found by my survey. The habitat (stream flow and moisture levels) makes the survey area unsuitable for this snail (USFWS 2006).

DIPTERA

Drosophilidae: *Drosophila*

No native *Drosophila* were observed. The property is now unsuitable habitat for any of the endemic Kauai *Drosophila*, two in the uplands being listed as endangered or threatened. These native Hawaiian picture wing flies require a much cooler native environment, with host flora not offered at this property (*Federal Register* 2006a, b).

Invertebrates not present: continued

HETEROPTERA

Based on other Kaua'i lowland surveys, I expected, but did not find, native *Nysius* seed bugs.

HYMENOPTERA

No native bees were observed on the property.

LEPIDOPTERA

Based on other Kaua'i lowland surveys, I expected to encounter the native micro- moths *Tamsica*, *Thyrocopa*, and *Philodoria*, but at this site ants and cane plows appear to have extirpated them.

Sphingidae: *Manduca blackburni*

The Blackburn's sphinx moth[4] (*Manduca blackburni*), an endangered species (Fed Reg 1999-2000) was not found in this survey. Historically, the moth is known from the Island but only in the Nāwiliwili area and has not been seen for a century. There is no critical habitat established for the moth on Kaua'i. (USFWS 2002) Neither the moth's solanaceous native host plant, 'aiea (*Nothocestrum* sp.), nor the best alien host, tree tobacco (*Nicotiana glauca*), were observed on the property or found by the botanical survey (Wood 2012).

ODONATA (Dragonflies, Damselflies)
No native Damselflies were observed on the property.

MEDICALLY IMPORTANT SPECIES

Centipedes, scorpions, black or brown widow spiders:

Centipedes were observed but scorpions, black or brown widow spiders are also likely. They typically hide in dry leaves, under dead wood or rocks. Surveyors, crews clearing debris, etc. should be alert for all these species which may pose a serious risk to some individuals. When moving stones or piled brush, wearing gloves, covered shoes, long sleeves, and long pants will greatly reduce the risk of accidental contact and bites [for example: pull socks up over pant cuffs to deter disturbed critters from crawling up pants; use cut off socks to slide over connect between gloves and long sleeve shirt cuff]. Supervisors should be aware of any allergy by employees. Some individuals can experience anaphylactic reactions to venom of any of the mentioned arthropods, not just bees. Please see *What Bit Me?* (Nishida and Tenorio 1993) for additional information.

[4] Blackburn hawk moth is the official common name recognized by the HES Committee on Common Names of Insects (1990). Blackburn's sphinx moth has come into popular usage.

Medically Important Species-continued

HYMENOPTERA:

Anthophoridae

Carpenter bees (*Xylocopa sonorina*) were observed on the property. They favor dry, dead wood on site. The black carpenter bee females and golden males are easily seen. Carpenter bees carve out a short tube tunnel in soft wood (fence post, dry branches) as their home (Figure 10). They do not form colonies, but live individually. Carpenter bees are not a danger to people under normal circumstances, but if cornered can sting.

© Figure 10: Black female, golden male Carpenter bees; tunnel housing.

Apidae

Honey bees were noted on the property although the hive was not located. As in many wild locations in the islands, there are likely hidden, wild honey bee (*Apis mellifera)* colonies on the property. Dead trees with hollows are a favored location for a hive. If in clearing areas bees are encountered, a beekeeper should be contacted to remove the colony safely. Employees with an allergy to stings should inform their supervisor and carry their response kit at all times.

Vespidae

Common Paper Wasps (*Polistes* sp.) are on the property. This wasp favors dry, sheltered sites. These wasps are common throughout the lowlands and especially like to build their 'paper' nests under natural overhangs, including tree branches. (Figure 11). They are a danger to humans. They sting repeatedly as unlike honey bees they do not die when they sting. Nests are best destroyed at night when all wasps are on the paper nest. Destroying the nest during daylight hours will result in rebuilding when the wasps return later in the day. Protection should be worn and the task should not be attempted alone for safety backup.

Figure 11: Typical paper wasp nest

Medically Important Species-continued

LEPIDOPTERA

Stinging Nettle caterpillar (*Darna pallivitta*)

This introduced pest has spreading across the islands and reached Kaua'i in 2011. The adult responded to my light survey. DOA personnel inform me the level of infestation on Kaua'i has not been high (Conant 2018). Nevertheless, survey and crews clearing the area should be alert for the caterpillar which has numerous spines. The stinging spines may cause burning and itching sensations on the skin. Swelling and welts can last for several days, then a persistent rash may last for weeks. For any severe symptoms, especially breathing difficulty, seek medical help immediately. (DOA 2005, 2011)

Figure 12. Avoid contact with the spines of the Stinging Nettle caterpillar (HDA photo)

POTENTIAL IMPACTS

Potential Impacts on Native, Rare, Federally or State Listed Species

No federally or state listed endangered species was found in this survey. No anticipated actions related to the proposed project activity in the surveyed locations are expected to threaten an entire species.

General Recommendations for promotion and protection of native invertebrates

Landscape with native plants:

The 2012 botanical survey recommended landscaping with native plants as the project develops (Wood / David 2012). In addition to their beauty and the positive cultural and social values communicated by the use of native plants, these plants would provide habitat for native arthropods while creating a more interesting botanical area. Native plants will remain green and thus more fire resistant throughout the summer. Native plantings often have lower maintenance costs and water needs when chosen to match area needs. As native plants tend to reach a predictable height and foliage spread, well-chosen plantings usually mean less hedge trimming and weed whacking. In the areas to be left undeveloped or used to screen some areas or along roadways, native plants in a mixture of ground cover, shrub, and tree heights will slow run off, retain moisture and recharge aquifers while holding soil at low cost. The plantings can provide educational, visual, and aesthetic benefits to residents. Native insects and other creatures may use this refuge over time.

Native plants can be as convenient for mass plantings as the introduced plants commonly used to re-vegetate after new construction. A list of suppliers of native plants is available at http://nativeplants.hawaii.edu/nursery/

ACKNOWLEDGMENTS

Steven Lee Montgomery conducted all surveying and is responsible for all conclusions. Anita Manning assisted with database searches and contributed to preparation of this report.

Photos are by Anita Manning or Steven Montgomery unless otherwise attributed.

STANDARD NOMENCLATURE

Invertebrate names follow

Freshwater & Terrestrial Mollusk Checklist (HBS 2002b)
Common Names of Insects & Related Organisms (HES 1990)
Hawaiian Terrestrial Arthropod Checklist (HBS2002a; Nishida 2002)

Plant names follow

Manual of the Flowering Plants of Hawai'i (Wagner et al. 1999)
A Tropical Garden Flora (Staples and Herbst 2005)

Mammal names follow *Mammals in Hawai'i* (Tomich 1986).

Place name spelling follows *Place Names of Hawaii* (Pukui et al. 1976).

ABBREVIATIONS

asl	above sea level
DLNR	Department of Land and Natural Resources, State of Hawai'i
DOA	Department of Agriculture, State of Hawai'i
DOFAW	Division of Forestry and Wildlife
ESA	Endangered Species Act of 1973, as amended.
HBS	Hawai'i Biological Survey
n.	new
sp.	species
spp.	more than one species
TMK	Tax Map Key
USFWS	United States Fish and Wildlife Service

GLOSSARY[5]

Adventive: organisms introduced to an area but not purposefully.

Alien: occurring in the locality it occupies ONLY with human assistance, accidental or purposeful; not native. Both Polynesian introductions (e.g., coconut) and post-1778 introductions (e.g., guava, goats, and sheep) are aliens.

Arthropod: insects and related invertebrates (e.g., spiders) having an external skeleton and jointed legs.

Diurnal: active in the daylight hours

Endangered: A species listed and protected under the Endangered Species Act of 1973, as amended.

Endemic: naturally occurring, without human transport, ONLY in the locality occupied. Hawaii has a high percentage of endemic plants and animals, some in very small microenvironments.

Indigenous: naturally occurring without human assistance in the locality it occupies; may also occur elsewhere, including outside the Hawaiian Islands. (e.g., Naupaka kahakai (*Scaevola sericea*) is the same plant in Hawai'i and throughout the Pacific).

Insects: arthropods with six legs, and bodies in 3 sections

Invertebrates: animals without backbones (insects, spiders, snails / slugs, shrimp)

Larva/larval: an immature stage of development in offspring of many types of animals.

Mollusk: invertebrates in the phylum Mollusca. Common representatives are snails, slugs, mussels, clams, oysters, squids, and octopuses.

Native: organism that originated in area where it lives without human assistance. May be indigenous or endemic.

Naturalized: an alien organism that, with time, yet without further human assisted releases or plantings, has become established in an area to which it is not native.

Nocturnal: active or most apparent at night.

Pupa: the stage between larva and adult in insects with complete metamorphosis, a non-feeding and inactive stage often inside a case

Purposefully introduced: an organism brought into an area for a specific purpose, for example, as a biological control agent.

5 Glossary based largely on definitions in *Biological Science: An Ecological Approach*, 7th ed., Kendall/Hunt Publishing Co., Dubuque, a high school text; on the glossary in *Manual of Flowering Plants of Hawai'i*, Vol.2, Wagner, et al., 1999, Bishop Museum Press, and other sources.

Polyphagous: eating many different types of food

Rare: threatened by extinction and low numbers.

Species: all individuals and populations of a particular type of organism, maintained by biological mechanisms that result in their breeding mostly with their kind.

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COMMENTS AND RESPONSES

TO

DRAFT EIS

Group 1 – Letters of Support

Group 2 – Responses to Primarily Traffic Comments

Group 3 – Responses to Comments on Community Concerns

Group 4 – Responses to Other Misc. Concerns

Group 5 – Responses to Government Agencies and Organizations

Group 1 Comments

Letters of Support

Peter T Young

From: sheldonr001@hawaii.rr.com <no-reply@weebly.com>
Sent: Friday, June 05, 2015 9:20 PM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Richard Sheldon

Email
sheldonr001@hawaii.rr.com

Comment
I am a long time resident of Kapaa. I was born, raised in this small plantation community that experienced its growth through plantations in agriculture, beginning with Rice farmers followed by Sugar and Pineapple plantations. Plantation camps were the first developed areas for housing of its workers and families. Lots for residential housing in Kapaa became available about 1915. Kapaa has not seen a housing development of this magnitude in the HoKua Place project. I am writing IN SUPPORT of this project. This projects attention to address Kauai's need for affordable housing can only have good results of providing and integrating needed housing without the stigma of public housing. HoKua Place can only improve the quality of life for all throughout the Kawaihau community. I do not see this project as adding to our traffic congestion as most of those purchasing or living in Hokua Place will be those already living in the area. I believe State Highway Officials should be the ones to address the traffic concerns . The plans for this development seems to meet the needs for those who want to remain home on Kauai . Recent developments on Kauai have not addressed the housing crisis addequately except for the upper middle socio economic families, and driving up housing and property costs and value. I am sincerely asking all in approval process to give this project, HoKua Place your support.

Peter T Young

From: lindasprengeler@yahoo.com <no-reply@weebly.com>
Sent: Saturday, March 12, 2016 2:23 PM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Linda Sprengeler

Email
lindasprengeler@yahoo.com

Comment
Kauai desperately needs affordable housing and the HoKua Place development addresses this critical need. The relatively flat land parcel is above the flood zone, making it ideal for housing. The subdivision will be away from the ocean beaches and will not spoil the Oceanside beauty and will not negatively impact tourist attractions. The pedestrian/bike paths will encourage some folks to transport themselves to Kapa'a Town via walking or biking (thus reducing auto traffic on Kapa'a roads). The nearby community pool will keep local people safe from ocean drownings and reduce auto/pedestrian traffic near tourist beach areas.
The 17 acres of parks and open spaces will add to quality of life of the local residents and reduce traffic of local folks traveling to highly touristed sites to hike, bike, play, relax, etc. If a community food mart is opened on the parcel, auto traffic into Kapa'a will be reduced.

Peter T Young

From: Scott Dandos Prescott Glass [prescottglass@qwestoffice.net]
Sent: Monday, May 18, 2015 1:37 PM
To: info@hookuleana.com
Subject: HoKua Place

To Whom It May Concern,
My name is Scott Dandos. I have been a business owner in Arizona for over 20 years. My family has been visiting Kauai for many years and we love the Island and it's citizens. Lately I have read about the proposed development, HoKua Place, and I really like what HoKua Place adds to the Island. The developers have thoroughly thought of all aspects of development; environmental, community, traffic and even affordable housing. I am writing you, showing my strong support for this much needed community. I feel it will be an asset to Kauai and its people.
Sincerely,
Scott Dandos
Prescott Glass & Mirror, Inc.

Peter T Young

From: Dakauai@gmail.com <no-reply@weebly.com>
Sent: Saturday, May 16, 2015 7:09 AM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Pete Gallardo

Email
Dakauai@gmail.com

Comment
This is very important that the housing is going to affordable and they keep east side so it don't get too crowded I looked and read all that is available it looks good for everyone not just real estate agents but for first time buyers as well and possible rentera thanks for giving east side residents a chance to have something of their own. Mahalo Pete gallardo

Peter T Young

From: Dakauai@gmail.com <no-reply@weebly.com>
Sent: Sunday, June 14, 2015 2:30 AM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Pete Gallardo

Email
Dakauai@gmail.com

Comment
This a good thing, with no rentals available on KAUAI, locals and kamaainas can secure their future with a purchase of affordable houses and condominiums, some of us will be able to live like middle class citizens with out working three jobs, that would be great to offer something to the regular families on KAUAI where the county has failed time and time again to do as they promised so many times they need help expedite the process instead of hendering it that is not good for KAUAI people that the planning commission makes decisions for us the people if they want to stop the progress of Kauai maybe they have stopped Costco or Home Depot the big box stores before they close all the mom and pop stores now abc stores are making too new stores south side there goes seokas and Kukiula store already approved buy commission pushed threw the system instead of hendering it funny how that works they don't want it to be like other islands but they do everything in there power to do so thanks for your consideration on this matter help these developers and coco palms I am tired of seeing such beautiful property go to the waste side mahalo concerned citizen

Peter T Young

From: sgifford808@gmail.com <no-reply@weebly.com>
Sent: Thursday, June 11, 2015 8:37 AM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
sherri gifford

Email
sgifford808@gmail.com

Comment
I support this project and think it will be a great addition to our island and communities.

Peter T Young

From: info@empowermaui.com [no-reply@weebly.com]
Sent: Tuesday, June 23, 2015 10:05 AM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
James Hall

Email
info@empowermaui.com

Comment
To whom it may concern,
Although I grew up on Maui and have only visited Kauai, I support this project named Hokua Place.
Having watched Maui's growth since 1969, I have seen many developments passed through with little realistic planning and the negative results over the years afterwards.
I have known Greg Allen and his family for years and believe that they operate from the best of intentions when planning a developement such as this. I believe that the people, especially the families of Kauai are foremost in their thoughts for this project.
I won't comment on the specifics of the project, I just want to support the project overall and support Greg Allen and his family in going forth on this project.
After 44 years of living on Maui, I was put on disability and subsequently went through bankruptcy and foreclosure of the home I owned for 13 years.
Many of my friends and family have lost their homes over the years and like myself, forced to leave Hawaii due to the high cost or lack of housing on Maui.
I support allowing people and families to at least have a choice to remain on an island they call home.
Please consider this project carefully and allow it to move foreward.
Mahalo
Jim Hall
808-281-6633

Peter T Young

From: scham6316@yahoo.com <no-reply@weebly.com>
Sent: Thursday, June 11, 2015 8:40 AM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Steve Hammond

Email
scham6316@yahoo.com

Comment
I think the project is great. I want to live there. I think that the community and outlining areas will benefit greatly from this project.

Peter T Young

From: rch9876@aol.com [no-reply@weebly.com]
Sent: Wednesday, June 03, 2015 9:25 AM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Robert Hastings

Email
rch9876@aol.com

Comment
I have been familiar with the HOKUA PLACE project for a number of years and have driven across and around the site. In my opinion the location, terrain, surrounding infrastructure, school and development plan combine to make HOKUA PLACE deserving of approval. The benefits to the community are enormous and the costs are few. In terms of market demand, now is the time.

In addition, Greg Allen and his family and partners appear to be caring and very deserving of an approval of HOKUA PLACE at this time.

Robert C. Hastings, Jr. CRE
rch9876@aol.com

Peter T Young

From: tkhornman@gmail.com <no-reply@weebly.com>
Sent: Wednesday, July 15, 2015 5:37 AM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
thomas Horn

Email
tkhornman@gmail.com

Comment
we need more housing on Kauai..this is a excellent plan ..affordable housing with these amenities will be a positive addition to our island..its well planned with its own solar farm and its own well..these are the kind of projects that we need more of to alleviate the shortage of housing ..
i have been a resident since 76 and seen many projects..this is one of the best

Thomas Horn

Peter T Young

Subject: FW: New Form Entry: HoKua Place

Comment

To Whom It May Concern:

This might sound odd to kick off a letter of support, but I am not big on development and generally favor beautiful vast fields of wild growth, especially when developments have already overwhelmed an area. AND YET, after reviewing the plans for HoKua Place and evaluating some of the issues that this project hopes to alleviate and lives it anticipates improving, I add my voice of SUPPORT to this endeavor.

First of all, I really appreciate the effort Hokua Place makes to strengthen the community through diversity, both socioeconomically and developmentally in terms of the types of housing and the uses of extra space. The solar farm and large open spaces built into the design are progressive and will enhance the area.

Another element of this project I appreciate is the acknowledgment and RESPONSE by the planners to concerns about traffic. Rather than ignoring this issue and trying to eclipse it with an agenda or push beyond it with platitudes, the developers have addressed it with detailed plans that will prevent those problems from ever arising. I especially like the proposed bike and pedestrian overpass!

While we like to imagine living in a blissfully underpopulated, pristine place, it is important to face the reality that growth is inevitable. To accommodate this growth, the HoKua Place project has created a solid, thorough, thoughtful, informed, forward-looking vision of how to address this issue and is ready to make it happen for the island.

I hope that you will APPROVE this project!

Thank you,
Kelli Isakson
kelliisakson@yahoo.com

Peter T Young

From:	dwjames@investlpg.com <no-reply@weebly.com>
Sent:	Sunday, May 10, 2015 4:40 AM
To:	PeterYoung@Hookuleana.com
Subject:	New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
David James

Email
dwjames@investlpg.com

Comment
It's about time. The residents of Kauai and others who love the island have been waiting too long for an affordable option for owning their own place in paradise.

Peter T Young

From: gjepps@gmail.com [no-reply@weebly.com]
Sent: Tuesday, June 16, 2015 1:27 PM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Garry Jeppesen

Email
gjepps@gmail.com

Comment
I believe that unplanned sprawl, especially in the more rural areas of Kauai is much worse than a well planned development close to a major town. There is going to be growth on the island and something that is well planned is going to have less impact than random single homes going up all over. I believe that concentrating the development close to Kapaa will mean less traffic and less miles driven than the same number of homes spread all over. The other amenities like the new swimming pool and roads will benefit all and this is something that doesn't come with single homes being built. It's time for almost all growth to be done in a simular manner to HoKua Place. Planned growth is necessary to provide the best future for all of Kauai. Garry Jeppesen

Peter T Young

From: copydoc@hotmail.com <no-reply@weebly.com>
Sent: Wednesday, June 10, 2015 5:29 PM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
LeGrand Lee

Email
copydoc@hotmail.com

Comment
I don't understand the dilemma Hokua place is answering many of the problems that have plaqued Kapa'a and Kaua'i for years. they will be putting in roads and helping Kapa'as traffic problems. they will be making Kapa'a middle school safer to get to and from. Supplying parks, pool, and most important housing for the working class. It is in an area planned for housing, all with no significant negative impacts. obviously anyone complaining about this has not looked at all of the facts and are merely reacting with no investigation. the more I look at the facts the more excited to see Hokua place move forward.

Peter T Young

From: christy_kaui@hotmail.com <no-reply@weebly.com>
Sent: Sunday, May 10, 2015 3:20 PM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Christy Kaui Lindstrom

Email
christy_kaui@hotmail.com

Comment
I will be amazing to have homes we can afford.

Peter T Young

From: PeterYoung@Hookuleana.com <no-reply@weebly.com>
Sent: Wednesday, June 10, 2015 9:56 PM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Micah Mokuahi

Email

Comment
I hope that Hokua place will be truely affordable and attainable for the people who live and contribute to our community. We don't need another vacation home community, that our working people can't afford. Which is another multifaceted issue, but I think this is a step in the right direction.

They seem to have done their due diligence in fitting in with the area they want to build. Addressing traffic concerns, giving the whole community usable spaces like the pool and bike paths. Also using an area that was already in the plans for residential usage. All in all, this is a food good thing for Kapaa.

Peter T Young

From: phil@pachawaii.com <no-reply@weebly.com>
Sent: Thursday, June 11, 2015 7:48 PM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Phil Mulligan

Email
phil@pachawaii.com

Comment
I feel that this would be a good fit for Kauai and wish we had something like this on Maui. It is being done the right way at the right time. Affordable housing is truly needed and should be fast tracked to help the working people.
Please approve this project to help the community to provide jobs, housing and a new community.

Phil Mulligan

Peter T Young

From: NewBuild75@aol.com
Sent: Tuesday, May 12, 2015 6:16 AM
To: Info@Hookuleana.com
Subject: HoKua Place

To whom it may concern ,

I wish to send my letter of support for HoKua Place development and housing .
The housing and development is well thought out , friendly to the area and environment in addition to the fact that housing is very much needed in this area .

Peter T Young

From: newbuild75@aol.com <no-reply@weebly.com>
Sent: Wednesday, June 03, 2015 4:57 PM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Rick Newton

Email
newbuild75@aol.com

Comment
What an an amazing project ! A development like HoKua is just what Kauai needs ! Let's push this through !

Peter T Young

From: nitta@kapaahs.k12.hi.us <no-reply@weebly.com>
Sent: Thursday, October 08, 2015 5:52 PM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Ian Nitta

Email
nitta@kapaahs.k12.hi.us

Comment
Aloha Land Use Commission,

I am the father of a young family, with long roots that stem from Kekaha. We rent in Wailua. Our dreams for our family is to be able to own a home here on the island as our parents before us. Small communities like this can make those dreams possible.

I understand that changes to our local neighborhood can be scary. In the past decade we have seen many. However, there is great potential for positive change in the local community, especially with a future of new young residents who know the communities intimately and are vested in it's positive growth.

I foresee young local families being able to set roots and raise a generation aware of the local needs of the community. Our local schools will benefit from the young families. Local families currently residing in multi-generational houses may find opportunity to develop their own strong roots in Kapaa, building upon the already long rich history.

Young families will also benefit the businesses of the city. We have 3 large schools that will benefit from growing enrollment, providing jobs. Local commerce in Kapaa will also benefit. With more regular residents, small Kapaa businesses can lessen their volatile dependence on the tourism market.

I think there is a lot of potential in this neighborhood and it looks like Hokua Place is really doing their part to make it beneficial to the local population. Besides, if we don't make place for our young generation here on Kauai, we'll lose them to Maui.

Sincerely,
Ian Nitta
Teacher, Kapaa High School

Peter T Young

From: dpr2000@msn.com <no-reply@weebly.com>
Sent: Monday, June 15, 2015 6:37 AM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Doug Richards

Email
dpr2000@msn.com

Comment
I think this would be a positive planned community for Kauai

Peter T Young

From: kitrobinson@digis.net <no-reply@weebly.com>
Sent: Wednesday, June 03, 2015 10:02 PM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Kit Robinson

Email
kitrobinson@digis.net

Comment
I am in total support of the development of HoKua Place. Kauai needs all kinds of single and family affordable housing and HoKua Place will greatly assist in fulfilling that requirement. Smart growth for Kauai is mandatory and the developers have the only well constructed plan that will provide for the immediate needs of our community and sustainability for our future.

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

Peter T Young

From: cherievas@gmail.com <no-reply@weebly.com>
Sent: Wednesday, June 03, 2015 9:32 PM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Cherie Sarme

Email
cherievas@gmail.com

Comment
My family of seven children are now young adults and we are excited at this opportunity for them to become homeowners in our community
We hope to see your project move forward.

Peter T Young

From: surfski@aloha.net <no-reply@weebly.com>
Sent: Friday, June 05, 2015 1:20 PM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Kathleen Schmidt

Email
surfski@aloha.net

Comment
Aloha OEQC

It is very important that we all give our support to the development of HoKua Place. The future for our children and their ability to stay on Kauai when they grow into adults depends on the development of more housing like HoKua Place. Our adult children have been forced to move off the island in order to afford a home due to the shortage of affordable homes on Kauai. HoKua Place offers more than affordable housing and will benefit the entire community and schools.

We ask that OEQC please take the time to consider all of the benefits that this development has to offer the people of Kauai. It is badly needed.

Mahalo,
Kathleen A Schmidt
Kenneth J Terheggen

Peter T Young

From: kauairoostercards@gmail.com <no-reply@weebly.com>
Sent: Wednesday, June 10, 2015 5:05 PM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Andy Stennett

Email
kauairoostercards@gmail.com

Comment

This is definitely the way to grow our infrastructure, and increase the supply of much needed housing in Kauai. I know of so many people who can't even find a reasonably priced place to rent, let alone buy because of the housing shortage. Kauai, especially the east shore, is going to need to grow no matter what--and this is the way to make sure that it happens professionally, orderly, and beneficially for all.

As far as I can see, what, if any serious concerns, have the developers failed to address?

And in return for the proper clearances and approval they are going to give us sooo much.

How is this not a good idea?!?

Andy Stennett
Lihue

Peter T Young

From: Story@coffman.com <no-reply@weebly.com>
Sent: Wednesday, June 10, 2015 4:23 PM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Elias Story

Email
Story@coffman.com

Comment
Hokua Place is a smart investment for our community on Kauai. I will be very happy to see the improvements that it will bring. It appears to be a good use of the land that follows the plans that Kauai has made.

I give my support for Hokua Place.

Peter T Young

From: surfer1949@yahoo.com <no-reply@weebly.com>
Sent: Sunday, May 10, 2015 9:39 AM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Vivian Walker

Email
surfer1949@yahoo.com

Comment
I like the idea of the parks, bike path, single family homes and most of all to alleviate traffic in Kapaa. A road from the south end of the bypass going to Olohena would help. This is such a great plan for the island of Kauai, we should all be on board.

Peter T Young

From: surfer1949@yahoo.com <no-reply@weebly.com>
Sent: Thursday, June 11, 2015 12:39 AM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Vivian Walker

Email
surfer1949@yahoo.com

Comment
Reading about HoKua Place makes one think this is what is needed here on Kauai and the other islands, to have affordable housing, in an environment where we can feel safe. In a community with everything within ones reach, parks, swimming pool, and traffic to flow better. We need this type of life style now. We need traffic to improve especially when we have an accident and get backed up for hours. This seem like a simple solution to many problems we face now. Where the future for the children can offer them to live here and work here instead of moving to the mainland to buy homes. This is the future for Kauai.

Peter T Young

From: cgwithers8@gmail.com <no-reply@weebly.com>
Sent: Thursday, June 11, 2015 10:01 AM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
William Withers

Email
cgwithers8@gmail.com

Comment
Knowing Greg Allen and all involved, this will be a subdivision of highest quality and integrity. This is a vision to do the right thing for Kauai. There will always be growth but this subdivision is focused on enjoyment and conveniences for the family community.Please support HoKua Place.

Group 2 - Responses to Primarily Traffic Concerns

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 9:26 AM
To: zimmermanstuart2013@icloud.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Stuart Zimmerman.pdf

Aloha Mr. Zimmerman,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Stuart Zimmerman [zimmermanstuart2013@icloud.com]
Sent: Monday, June 08, 2015 [illegible]:24 PM
To: info@hokuleana.com; luc@dbedt.hawaii.gov
Cc: Zimmerman; Mahikua
Subject: Hokua Place DEIS

Peter Young

State Land Use Commission

6/8/2015
RE: Lokua Place DEIS

Aloha,

We do not support this project under the pretext that it's 769 residences will not impact our horrendous traffic situation or that our schools will only be impacted by an additional 150 students as opposed to approximately 1500. We also cannot support any development of this size in that crowded location and without any required financial contribution toward extra traffic lanes on Kuhio Highway and the Bypass other than a left turn lane in road A. The financial impacts of extra police, fire, and emergency medical personnel also will borne by the public and not the developers which is a large problem.

The 97 acre parcel should be left at its current agricultural designation until proper infrastructure is in place prior to development.

Stuart Zimmerman

Evelyn Mosihura Zimmerman

Kilauea

Stuart Zimmerman
office: (808) 828-0858
mobile: (808) 635-0440
Zimmermanstuart2013@icloud.com

Response, 10/01/20187:

Mr. Zimmerman,

The following addresses your concerns on KoKua Place.

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

The capacity of the Kapa'a Elementary School is 1,373, the Kapa'a Intermediate School capacity is 1,059, and the capacity for Kapa'a High School is 1,445 students. The excess capacity of the three schools are 571, 424, and 392 respectively. The DOE representative
Heidi Meeker has indicated that the aforementioned schools have the capacity to accommodate student counts generated by this project.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

Please refer to the County of Kauai Important Agriculture Lands Study of 2015 for more in depth information concerning Kauai's plan for farming, food security, and self sufficiency.

Also, refer to Exhibit "C.1", an Agricultural Suitability Report conducted in June of 2018.
This proposed development is on land that is not considered Important Agriculture Lands, and does not play a part in Kauai's goals of becoming self-sufficient. Basically, Kauai has an abundance of good agricultural lands. The problem with sustainable agriculture is the lack of farmers and workers.

Ron Agor

Mailed to
5620 Keapana Rd
Kapaa, HI 96746

PUBLIC COMMENTS: DEIS re. HOKUA PLACE, KAUAI

From: Gabriela Taylor, Kapaa, Hi. **June 11, 2015**
TO: uc@dbedt.hawaii.gov & info@hookuleana.com

I've waded through the dense almost 400 page DEIS, Volume1 and Volume 2 for Hokua Place. I saw that the developer only responded to those 85 people in the public sector (who made the effort to comment against this zoning change/ development), with stock comments, nothing specific, and no answers. However, they did respond directly to some of those commenting from the various offices of the County and State governments. Although water, sewage and storm runoff are important infrastructure considerations to consider, the majority of public comments addressed traffic congestion and how this project will make it unbearable to navigate through, in, and around Kapa'a with another 1600 (or more) cars entering the Bypass Rd, Olohena Rd and downtown Kapa'a. Don't forget that there will also be mega -traffic created from two, already approved Waipouli hotels, as well as Coco Palms—all on Kuhio Highway.

I didn't receive adequate responses to my questions posted in Volume 2, of the DEIS, nor were they answered in the body of Volume1 of the DEIS. I gave specific examples with time and place of traffic congestion that I have experienced and continue to experience in areas that will be exacerbated by 1600 cars added from Hokua Place. I still want answers.

a. Kukui St going east onto Kuhio Highway at the traffic light .
b. Kapaa roundabout on the all of the 4 entries, No, South, East, West which is heavily impacted by the Middle School traffic as well as commute traffic, morning and afternoon and Wed. during the Sunshine market time when it turns into gridlock. What is the solution?
c. Traffic is frequently backed up on Kuhio Highway between downtown Kapaa and Kuamoo Rd., in ***both*** directions, turning the normal 10 minute trip into 3/4 hr., as I have experienced . And at the same time, Bypass Rd.traffic is stopped, or creeping along. What will be done?
d. It is stated in the EISPN that if the Bypass is closed, that Kuhio Highway won't be able to handle the additional load. Then what?

Note: Another fantasy the developers are promoting is the notion that Rd A will decrease all the traffic problems, not only those generated by Hokua Place. I'm not a road engineer, but I'm astute enough to realize that adding one cut-through road in a development, which is generating 1600 plus more cars to the already heavy traffic is unlikely to decrease traffic congestion in that area.

A Glimmer of Hope from the County Public Works Dept.

Note: The county Dept of Public Works did ask the developer for a new TIAR, to include traffic counts at 2 more intersections .The ratings on all of the intersections impacted by this development were in the range of A to F (flunk) in the EISPN. Now referring to p133 in the DEIS **Volume 1. p133, #2.** Dept of Public Works is asking for more detailed comments in the final EIS & **2.b** they ask that the TIAR be revised to update traffic studies at Lehua/Kuhio Highway intersection. **2.c** They ask the TIAR be revised with traffic studies for the Lehua St.& Olohena Rd. intersection, as well.

The response from developers in the DEIS is Shocking! They essentially say they did revise it in 2012 and furthermore it doesn't seem appropriate to ask for additional intersections to be analyzed after the TIAR was already reviewed and finalized in 2012.

What I'm asking the Dept. of Public Works to require from developers

In the 3 years since the TIAR was finalized, the traffic in Kapaa has grown exponentially. Not only should current traffic studies be executed for those 2 new intersections cited by the Dept. of Public Works, but also for the intersection of Ulu Rd & Kuhio Highway, another hot spot. . And traffic studies need to be updated for all the other intersections onto Olohena Rd, the Bypass, all entrances/exits on the roundabout as well as the south end of the Bypass onto Kuhio Highway. Three year-old traffic numbers are obsolete and must be updated now with a new TIAR required..

Reality Check regarding new state HDOT Transportation Plan 2035

The new HDOT Transportation Plan 2035, Exhibit 4-4, has revealed plans to build roads in other areas of Kauai, but doesn't include plans to add any roads/lanes to central Kapaa, add lanes to the northern Bypass, or to build another lane on Kuhio Highway in front of Coco Palms up to the south end of the Bypass. These improvements in the road system are stated as fact by the developer; however, they're not in writing. Gov. Ige came to Kauai June 8, and admitted that the state DOT is under funded because essentially there is a lack of money. Would approval be given to Kokua Place prior to guaranteed road expansion? I hope not.

More Evidence—No Plans for Kapaa HDOT Roads even in the STIP!

Please see See p 45 of Hawaii Statewide Transportation Improvement Program (STIP) CURRENT UPDATE, FISCAL YEAR 2011 TO 2014. After reading this outdated "Current Update", I have totally given up hope for HDOT road building projects to materialize on Kauai. It states: "Currently, HDOT is in the process of updating the STIP for the next 4-year cycle. Priorities and needs, project readiness and eligibility and public opinion of highway and transit projects statewide have been reviewed for inclusion in the next Federal Fiscal Year 2011-2014 (+2) STIP". When will that be published?

Summary:

1.The state and county departments must require updated (current) traffic data-collected now for *all of the intersections* that will be affected by the built-out of nearly 800 dwellings in the Hokua Place Development.

2. HDOT as well as Public Works and the County Planning Dept. need to factor in the 3 already approved hotels in the Wailua Corridor as well as the projected population growth for residents and visitors in the next 20 years and consider that in relation to (nor) reality of proposed road/lane building projects before any approval is given.

3. There's *no documentation* with a specific road plan, nothing in writing in the HDOT Transportation 2035 Plan, the HDOT STIP, or by the county Public Works Dept. to expand the road system in the area affected by this project.. Promises don't cut it. Even if it does materialize, another lane in front of Coco Palms to the So. Bypass exit/ won't be enough. Future road plans for Kapaa need to be guaranteed by the county and HDOT so they will be held accountable if it fails to materialize. Sidewalks and bike paths are desirable but won't decrease the traffic significantly.

Conclusion:

The proposed Hokua Place subdivision traffic will disrupt our rural life style as well as discourage visitors who choose Kauai because of its relaxed pace & natural environment. It will impact travel from the north shore to the airport and add to the impacts of traffic headed north.

See TGI June 12, '15 column by Walter Lewis "Future development threatens life as we know it in Kauai" where he states: "Hokua Place and Coco Palms would add 3000 cars to the "notorious Kapaa to Lihue traffic congestion." And he adds that there should be no approval of multi-unit residential development without infrastructure first.

The EIS needs to include social, emotional and community impacts of this development on our lifestyle. Please read all the public comments.
If you do, you will be convinced that this is not the right place or time for the Hokua Place Development.

Please: No Up-zoning for Hokua Place. Roads first, development later!

Response, 9/01/2018:

Ms. Taylor,

The following is attempt to address the concerns you have expressed on HoKua Place.

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily be 1600 new cars. People who live in the area already contribute to the current congestion that is experienced at times. As you pointed out, there are two, possibly 3 major projects that will be completed in the next 5 years. HoKua Place will provide housing for workers of these new projects. These workers will be encouraged to use the bus or car pool to work from HoKua Place. This will be better than the alternate of them driving through town from the east and west to get to work. Please not that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town. Please read Section 5.1 of the 2nd DEIS.

Thank you for voicing your concerns,

Ron Agor

Mailed to
7173 Aina Pono Street
Kapaa, HI 96746

DO NOT APPROVE THE HOKUA PLACE DEVELOPMENT
beacottage to: luc 06/15/2015 11:09 PM

Hokua Place Development is very damaging to the Eastside of Kauai.
Kauai roads cannot handle any more cars from the proposed houses in the Kapaa Area with the Hokua Place Development.
Daily Traffic along the main Highway Wailua through Kapaa is horrendous as everyone knows.
You are also aware of the major problems getting from the North Shore through this Kapaa Corridor.

New housing cannot be allowed until a better road and bypass is built through the East side of Kauai.

As a resident of Wailua I urge you to do all you can to prevent these houses from being approved.

Marilyn Anne Townsend
7173 Aina Pono Street
Kapaa HI 96746
808-822-0188

Response, 7/10/2017:

Ms. Townsend,

The follow are responses to you expressed concerns on HoKua Place.

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

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It is the intention of this project to first provide housing to those who live and work in Wailua-Kapaa area. People who live in the area already contribute to the current congestion that is experienced at times. As you may know, there are two, possibly 3 major projects that will be completed in the next 5 years. HoKua Place will provide housing for workers of these new projects. These workers will be encouraged to use the bus or car pool to work from HoKua Place. This will be better than the alternate of them driving through town from the east and west to get to work. Please not that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home and work in the area they grew up.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 9:36 AM
To: iamcarey.lt@gmail.com
Subject: FW: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Carey Tinsley.pdf

Aloha Ms. Tinsley,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Carey <iamcarey.lt@gmail.com>
Sent: Thursday, June 04, 2015 2:30 PM
To: luc@dbedt.hawaii.gov; info@hookuleana.com
Subject: No Hokua place development at this time

I am writing to express that the Hokua place' development in Kapaa is not a good idea right now considering the major traffic struggles we already face. Unless a feasible solution to the traffic problem is presented, the development should not take place.

Thank You,
Sincerely, Carey Tinsley
Kapaa, Kauai

Response10/01/2018:

Ms. Tinsley,

The following addresses your comments on HoKua Place.

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add 1500 new cars. People who live in the area already contribute to the current congestion that is experienced at times. As you pointed out, there are two, possibly 3 major projects that will be completed in the next 5 years. HoKua Place will provide housing for workers of these new projects. These workers will be encouraged to use the bus or car pool to work from HoKua Place. This will be better than the alternate of them driving through town from the north and south to get to work.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up.

Thank you for voicing your concerns,

Ron Agor

NO RETURN ADDRESS OR EMAIL PROVIDED

Comments on the proposed Hokua Place development in Kapa'a, submitted to:
Peter Young (developers): [illegible]
State Land Use Commission: luc@dbedt.hawaii.gov

Anne Thurston, June 18, 2015

I was one of the nearly a hundred people who objected to the zoning change from Agriculture to Urban Land Use, which is necessary for the Hokua Place project to go forward. Along with large numbers of others in the Kaua'i community, I do not believe that the concerns we expressed have been addressed. The Draft Environmental Impact Statement (DEIS), published online on May 8, makes only a few helpful changes regarding potential infrastructure problems, such as water and storm runoff. Most significantly, it does not realistically address our most serious and very significant concern: severe traffic congestion.

We have studied the section in the DEIS on traffic related measures, particularly those outlined on pages 130-137, and we find them to be wholly inadequate. We are aware that the Kaua'i County Public Works Department has asked the developers to make several changes to its Traffic Impact Assessment Report, and also that the Hawaii State Department of Transportation has plans in place to address some of these issues. However, even if these plans are implemented in a timely manner (which is not assured), we do not believe that they will be adequate to address the major problems that this development would cause for the local community. The suggested changes, including repaving roads, adjusting the timing of various traffic lights, and adding another south bound lane from the Wailua Bypass exit on Kuhio Highway, do not address the major issue of severe traffic congestion. Nor does the '2035 Transportation Plan for Kaua'i District' suggest significant and adequate road improvements to alleviate traffic.

The Hokua Project proposes 86 single-family lots and 683 multi-family units in townhouse units, or 769 family homes. Assuming the current Kauai average of 2.99 persons per household from the last census, we are talking about adding approximately 2,300 people to the Kapaa area population. The data contained in the '2012 Kauai Transportation Data Book' demonstrates that Kauai has the highest ratio of registered vehicles to population in the state and is the only county where there is more than one vehicle registered per person. Even taking a conservative estimate of two vehicles per household, the proposed project would add over 1500 vehicles to our roads in the Kapa'a area and would result in severe congestion, making it increasingly difficult to navigate in and around Kapa'a or to enter the the bypass road.

We understand that developer has denied the need for significant changes, saying that traffic studies done in 2012 are adequate and that 'traffic impacts due to the project are not considered significant.' Page 18 of the DEIS report notes that 'The Kapa'a By-Pass Road furnishes an alternative route for those traveling between the North Shore and Lihue. Contractor roads link the By-Pass to Kuhio Highway providing alternatives to reach commercial areas along the coast and improving circulation within the valley. Traffic is minimized and dispersed through the road network.' This statement alone indicates the inadequate nature of the DEIS and how badly out of touch the developer is with the realities of traffic congestion in the Kapa'a area.

We feel that the statements in the DEIS are unrealistic and that they gloss over substantial potential problems. The developer's own Traffic Impact Assessment Report, written in 2012, as part of the Draft Environmental Impact Statement for the HoKua Place development recognised that the traffic flow through the Kapaa roundabout and the intersection of the Kapaa bypass and Kuhio Highway were already at faling grades for level-of-service or traffic flow. Little or no traffic mitigation has been done since that report was written and the traffic has grown noticeably worse over the last three years. Moreover, the developer's Traffic Impact Assessment Report did not take into account the recently approved projects in Kapaa at Coco Palms, the Coconut Beach Resort, and the Coconut Plantation Village.

This Hokua development should not go forward unless and until there are sustainable solutions in place to address traffic issues and infrastructure issues. To build an additional 769 housing units before there is evidence that the traffic impact can be realistically and conceretely addressed is a highly dangerous and unacceptable proposition that is of grave concern to our community. We feel that the needs of the people of Kaua'i, rather than profit for developers, should be the determining factor in determinign the adequacy of the DEIS.

We strongly urge the State Land Commission to reject the DEIS.

Response, 7/10/2017:

Ms. Thurston,

The following addresses your comments on HoKua Place.

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

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It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add 1500 new cars. People who live in the area already contribute to the current congestion that is experienced at times. As you pointed out, there are two, possibly 3 major projects that will be completed in the next 5 years. HoKua Place will provide housing for workers of these new projects. These workers will be encouraged to use the bus or car pool to work from HoKua Place. This will be better than the alternate of them driving through town from the east and west to get to work.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 9:40 AM
To: tcsteinberg@yahoo.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Ted Steinberg.pdf

Aloha Mr. Steinberg,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Ted Steinberg <tcsteinberg@yahoo.com>
Sent: Sunday, June 07, 2015 10:16 AM
To: info@hookuleana.com
Subject: Hokua Place

Aloha:
Please fix the existing roads and the traffic jams before allowing new development.
Mahalo,
teds

Response, 10/01/2018:

Mr. Steinberg,

The following addresses your comments on HoKua Place.

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

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The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 9:44 AM
To: rigginsha@yahoo.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Heather Riggins.pdf

Aloha Ms. Riggins,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Heather Riggins [rigginsha@yahoo.com]
Sent: Wednesday, June 17, 2015 1:56 PM
To: Peter Young@Hookuleana.com
Subject: HoKua

I'm writing to express my total opposition to the proposed Hokua Place. I do not know what they mean by "multi-family units" but assuming at least 2 families in each plus single family homes, you are talking about at minimum 1,452 families. If each use a minimum of 2 cars each (and for some it will be more than that) you are adding at least 2,904 cars to the overburdened Kapa'a area. Then you need to account for all the additional school children. Where are all these people going to work? I still know people struggling to finding jobs. Sure a lot of people want to move here, but I don't see way we need to accommodate them. Look what has happened to Oahu (the state known for traffic and the worst highway in the US). People live here because we are not like Oahu. Tourists love it for the same reason. The major complaint I hear from tourists is about the congestion in Kapa'a.

Please turn down this proposal and keep the ag land or we will no longer be called the Garden Isle.

Mahalo,

Heather Riggins
Northshore

Response, 7/10/2017:

Ms. Riggins,

The following addresses your comments on HoKua Place.

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Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up.

Multi-family may include multi-floor building with several units within.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 9:47 AM
To: rockyriedel@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Rocky Riedel.pdf

Aloha Ms. Riedel,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

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Mahalo,

Sara Jehn, RA
Agor Jehn Architects

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O: 808.947.2467
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Peter T Young

From: Rocky Riedel <rockyriedel@gmail.com>
Sent: Friday, May 29, 2015 4:03 AM
To: info@hookuleana.com
Subject: Please DO NOT build the Hokua Place Development

Kapaa traffic is already horrendous. Please DO NOT build the Hokua Place Development until the traffic situation is rectified.

Thank you,
Patricia Riede.
4344 Hokualele Road
Anahola, HI 96703
808-635-7625

Response, 10/01/2018

Mr. Riedel,

The following is an attempt to address your comments on HoKua Place.

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add 1500 new cars. People who live in the area already contribute to the current congestion that is experienced at times. As you pointed out, there are two, possibly 3 major projects that will be completed in the next 5 years. HoKua Place will provide housing for workers of these new projects. These workers will be encouraged to use the bus or car pool to work from HoKua Place. This will be better than the alternate of them driving through town from the east and west to get to work.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up.

Multi-family may include multi-floor building with several units within.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 9:53 AM
To: therhudes@hawaii.rr.com
Subject: FW: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Jean Rhude.pdf

Our apologies, the prior attachment is missing a portion of the response. Please refer to this attachment instead,

Thank you again for voicing your concerns,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

CONFIDENTIALITY NOTICE: The contents of this email message and any attachments are intended solely for the addressee(s) and may contain confidential and/or privileged information and may be legally protected from disclosure. If you are not the intended re cipient of this message or their agent, or if this message has been addressed to you in error, please immediately alert the sender by reply email and then delete this message and any attachments. If you are not the intended recipient, you are hereby notifi ed that any use, dissemination, copying, or storage of this message or its attachments is strictly prohibited.

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 9:50 AM
To: therhudes@hawaii.rr.com
Subject: Response to Hokua Place DEIS 2015 Comment

Aloha Ms. Rhude,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environ mental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

Peter T Young

From: Jean Rhude <therhudes@hawaii.rr.com>
Sent: Thursday, May 28, 2015 1:03 PM
To: info@hookuleana.com
Subject: Hokua Place Development

Dear Committee;

As you consider HoKua Place development in Kapa'a I am sensitive that you will have to balance housing needs against the impact on the community. I know you are well aware of the traffic issues in Kapa'a. Plus there are three new resorts soon to be built.

It is already a nightmare to get through Kapa'a enroute North or South. The round about is the most obvious back up. The High Way and the By Pass are also
at issue. Just getting out of the Safeway parking lot can be a challenge. These new residents
will have to get to work, to school, to appointments and to the beach as do the rest of us. Tourist will resent being stuck in traffic and will choose a neighbor island
for their next vacation. Traffic is already a problem and a problem that is about to get much larger. Admittedly I'm not fond of so many new residents
in my neighborhood but this is largely because the issues, like traffic, are not being addressed.

Moving forward I do not think it unreasonable to require the developers to help pay for the infrastructure to support this project. We should have a traffic solution budgeted before approval and under construction before the project can begin.

Thank you for considering these issues in making your decision.

Respectfully,

Jean Rhude
Kapa'a resident

Response, 10/01/2018

Ms. Rhude,

The following addresses your comments on HoKua Place.

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

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It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add 1500 new cars. People who live in the area already contribute to the current congestion that is experienced at times. As you pointed out, there are two, possibly 3 major projects that will be completed in the next 5 years. HoKua Place will provide housing for workers of these new projects. These workers will be encouraged to use the bus or car pool to work from HoKua Place. There are discussions of having the Project and the hotels provide a shuttle for workers to and from their workplace. This will be better than the alternate of them driving through town from the north and south to get to work.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:00 AM
To: paulunlimited@mac.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Paul Reynolds.pdf

Aloha Mr. Reynolds,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

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Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Paul Reynolds <paulunlimited@mac.com>
Sent: Sunday, June 07, 2015 11:56 AM
To: info@hookuleana.com
Cc: luc@dbedt.hawaii.gov
Subject: Hokua Place Proposal Let's not make things worse

The traffic situation here on the island is already of major concern adding more to our environment is setting up a scenario for safety issues that will affect residents and visitors alike. The area in question already has major traffic issues. A more intricate study is needed before the go ahead is given -

Let's stop looking myopically and looking at the bigger picture here. The Traffic situation changes drastically every year here - we can't rely on reports from 2012 to adequately give a clear picture of what is going on in the proposed area. Proper infrastructure must be in place - there has been no assurance of this to this point…

Take a step back, e-look at the situation before compromising a good portion of our islands residents.

Regards

Response, 10-01-2018:

Ms. Riedel,

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Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up.

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:07 AM
To: allanjudy@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Allen Rachap.pdf

Aloha Mr. Rachap,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Allan Rachap <allanjudy@gmail.com>
Sent: Friday, May 22, 2015 6:35 AM
To: luc@dbedt.hawaii.gov; info@hookuleana.com
Subject: HoKua Place DEIS

As a resident of Kauai, I already suffer with the heavy traffic and frequent long delays in the Kapaa area. Allowing the HoKua Place development would only serve to exacerbate that situation. It should NOT be allowed to proceed.

Allan Rachap
1714 Keonilea Pl.
Kalua HI 96756

Response, 10-01-2018:

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The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:09 AM
To: laurelq@hawaiiantel.net
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Laurel Quarton.pdf

Aloha Ms. Quarton,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Laurel Quarton <laurelq@hawaiiantel.net>
Sent: Thursday, June 18, 2015 4:58 PM
To: info@hookuleana.com; luc@dbedt.hawaii.gov
Subject: Hokua Place

To Peter Young, developer, and State Land Use Commission:

In the face of intensive public objection, the critically unaddressed traffic and infrastructure issues, the paucity of proposed solutions to the above, and inadequate response to DEIS questions, we respectfully plead with you to stop the proposed development known as Hokua Place in Kapaa. Suspension of this project is essential to prevent total dysfunction of traffic in the Kapaa area and to retain the trust of residents in our County government. Thank you.

Laurie Quarton
Kapaa

Response, 10/01/2018:

Ms. Quarton,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

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The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 3:25 PM
To: sacredearth70@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Eve Powers.pdf

Aloha Ms. Powers,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Eve Powers <sacredearth70@gmail.com>
Sent: Saturday, June 13, 2015 11:26 AM
To: info@hookuleana.com; luc@dbedt.hawaii.gov
Subject: Proposed Hokua Place development

Anyone who has lived on Kaua'i for a number of years can tell you that the Kapa'a corridor is the worst traffic bottleneck on the island. Recently, it took me 2 1/2 hours to drive from Kilauea to Koloa, most of the time spent not moving at all, then occasionally moving by inches til the next time traffic stopped. This area is already the most heavily developed on Kaua'i. Additional thousands of residents, all with cars, would bring traffic to a standstill, use up more agricultural land and the ability to provide for food locally. Only 24% of the proposed residences could conceivably be afforded by local families on an island with bloated home prices. We who live here would bear the many ongoing costs of the proposed development, while developers walk away with millions and most of the residences are purchased by the wealthy.
Please do not, do not approve this project.
Sincerely,
Eve Powers
5200 Pa'anau Rd.
Koloa

Response, 10/01/2018:

Ms. Powers,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

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Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up.

HoKua Place is committed to following the Kauai Affordable Housing policies. Homes will be available for all income brackets. Nearly 200 homes will be very affordable. Please refer to Pages 11-14 of Volume I, 2nd DEIS.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:11 AM
To: nectargardenskauai@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Scott Pomeroy.pdf

Aloha Mr. Pomeroy,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: nectargardenskauai@gmail.com
Sent: Friday, June 19, 2015 7:08 AM
To: info@hookuleana.com
Subject: Hokum place

Sent from my iPad. We don't need more house until we improve the roads and all the infrastructure involved. We re just shooting ourselves in the foot and you developers know what you are doing and just want to get your money and get out. You make me sad! Scott Pomeroy

Response, 10/01/2018:

Mr. Pomeroy,

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Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic should not prevent our young families from pursuing a good life, liberty and happiness.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:14 AM
To: ashlypoblacion@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Ashly Poblacion.pdf

Aloha Ms. Poblacion,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

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Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Ashly Poblacion <ashlypoblacion@gmail.com>
Sent: Thursday, June 04, 2015 12:36 PM
To: luc@dbedt.hawaii.gov; info@hookuleana.com
Subject: Hokua place DEIS

Aloha,

I don't approve on the proposal for the new development at HoKua place. As a kapa'a residence for 28 years, traffic has not improved. Adding this new subdivision would increase the traffic.

Ashly
Kapaa

Response, 10/01/2018:

Dear Ashly,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

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Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:16 AM
To: elphaba43@yahoo.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Celia Carlin.pdf

Aloha Ms. Carlin,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Celia Carlin <elphaba43@yahoo.com>
Sent: Sunday, June 14, 2015 11:40 AM
To: info@hookuleana.com
Subject: Fw: No HoKua!

----- Forwarded Message -----
From: Celia Carlin <elphaba43@yahoo.com>
To: "luc@dbedt.hawaii.gov" <luc@dbedt.hawaii.gov>; "info@hookuleana.com" <info@hookuleana.com>
Sent: Sunday, June 14, 2015 11:36 AM
Subject: No HoKua!

The HoKua and the Coco Palms projects are ridiculous.
The infrastructure does not exist to warrant them.
The east side traffic is already beyond capacity, and those in "power" are authorizing adding to the problem? Why aren't existing cane roads upgraded and used? This could be worked out if we had decision makers with vision instead of short-term greed goals.
Please. No HoKua. Please listen to the aina. It is yelling.

Sue Pickard
elphaba43@yahoo.com
808 431-4258

Response, 10/01/2018:

Ms. Pickard,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add much new cars. People who live in the area already contribute to the current congestion that is experienced at times.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic should not prevent our young families from pursuing a good life, liberty and happiness.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:22 AM
To: seabillpeterson@gmail.com
Subject: FW: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Susan and Bill Peterson.pdf

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:19 AM
To: seabillpeterson@hawaii.rr.com
Subject: Response to Hokua Place DEIS 2015 Comment

Aloha Peterson Ohana,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will b e published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Response, 10/01/2018:

Bill and Susan Peterson,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

Peter T Young

From: Sea & Bill Peterson [seabillpeterson@gmail.com]
Sent: Wednesday, June 13, 2018 9:28 AM
To: luc@dbedt.hawaii.gov
Cc: nfo@honoluloana.com; MWilliams@kauai.gov
Subject: HoKua Place Development, Phase 2 - Comments on DEIS and TIAR

Dear State of Hawaii Land Use Commission

As long term residents of Kapa'a, we wish to review our opposition to the HoKua Place development, Phase 2, as currently proposed.

In response to several letters to the Editor in "The Garden Island" newspaper and statements in the HoKua Place project DEIS claiming that the traffic impact from the proposed 739 home development in Kapa'a would be "minimal", my wife and I spent two recent mornings near the Kapa'a Middle School while school was still in session, observing the existing traffic flow. I also spoke to a school administrator and one of the safety patrol officers about their thoughts. Both were concerned about the potential increase in traffic.

We observed that the existing traffic can be quite dense already, even without the likely addition of 1,500 plus vehicles in the morning and afternoon rush hours through the Kapa'a corridor. We also noted that most of the student "drop-off" traffic to the Middle School is actually coming up hill from the roundabout and turning left across the downhill traffic to enter the school parking lot. Coming back out of the parking lot, most vehicles turn right, downhill, back towards the roundabout.

The flow of traffic through the school parking lot itself appeared to go smoothly.

We also noted several parents dropping off their children along the side of the road, near to where the entrance to the proposed HoKua Place "Road A" is supposed to be located. Both the school administrator and the safety officer told me independently that there have been several close calls along that section of the road. The school is currently building a fence (partially intended to stop this practice and force the parents to drive onto school grounds to drop off their children where it is relatively safe.

If the HoKua Place Project is built as proposed, without additional road improvements being made first, parents dropping children off at the Middle School on their way to work will have to enter the school parking, then exit and turn right, downhill, to the roundabout. If they try to turn left when exiting the school grounds, they will have to turn against both the downhill traffic and parents turning left into the parking lot. Then again cross the downhill traffic to enter "Road A". Since that entrance to "Road A" is at a curve in the road, the potential for accidents is significant. I believe most parents will instead choose to turning in, coming out of the school grounds and end up in the heavy traffic at the roundabout.

It is difficult to see how the impact of adding another 1,500 plus vehicles entering the Kapa'a corridor during rush hour at what is already one of its most congested locations can be considered "minimal". The proposed HoKua Place Development has a lot to recommend it, but until the County and the State can improve the existing traffic flow through Kapa'a corridor, changing the existing designation for the property involved from "Agricultural" to "Residential" would be premature.

And, of course, the developer's TIAR, written in 2012, did not take into account the recently approved projects in Kapa'a at Coco Palms, the Coconut Beach Resort and the Coconut Plantation Village. In fact, the TIAR specifically states "...we are not aware of any approved projects in the vicinity that will impact traffic conditions along Kapa'a Bypass or Kuhio Road before the design year of this project." (paragraph 3, page 134, DEIS)

At a minimum, the developer should be required to revise the TIAR section of the DEIS to take these approved projects into consideration.

To illustrate our point, we have posted videos on YouTube that can be seen at:

[illegible]

http://youtu.be/U2YBzWTLEVI

Respectfully Submitted, Please confirm receipt

Bill and Sea Peterson
Kapa'a

Enclosures:
"HoKua Place Section 343 Se HRS Draft Environmental Impact Statement" available as a PDF at
http://oeqc.info.hawaii.gov/Search/2008search/media/EA_and_EIS_Online_Library/Kauai/2010s/2010-08-08-KA-DEIS-HoKua-Place.pdf
"2012 Kauai Transportation Data Book" Final Version
http://www.kauai-data.com/Kauai_Data_Book.html

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add 1500 new cars. People who live in the area already contribute to the current congestion that is experienced at times. As you pointed out, there are two, possibly 3 major projects that will be completed in the next 5 years. HoKua Place will provide housing for workers of these new projects. These workers will be encouraged to use the bus or car pool to work from HoKua Place. There is discussion about the Project and the upcoming major projects providing a shuttle for workers to and from their place of work. This will be better than the alternate of them driving through town from the north and south to get to work.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must still do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic (at times) should not deny our young families from pursuing a good life, liberty and happiness.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Thank you for your comments,

Ron Agor

Peter T Young

From: Sea & Bill Peterson <seabillpeterson@gmail.com>
Sent: Friday, May 22, 2015 6:51 PM
To: info@hookuleana.com
Subject: Hokua Place EIS

Dear Mr. Young,

As long term residents of Kapa'a, we wish to register our opposition to the proposed Hokua Place development. As proposed, the development will have a significant negative impact on the flow of vehicular traffic through the Kapa'a Traffic Corridor. This section of State and County roads already has a serious problem with traffic flow. Several of the existing intersections were already rated "F" during the Traffic Impact Assessment Report done in 2012. They have not improved since then. This is not just a traffic issue. Since Kapaa houses the greater part of the island's population, much of this corridor is also part of the Tsunami Evacuation Plan. Having inadequate and congested roads on a daily basis is one thing. Having them during a major disaster is another. The potential for loss of life is staggering.

This issue is barely addressed in the current Draft Environmental Impact Statement. The developers, HG Kaua'i Joint Venture LLC, have proposed no real solution to the existing traffic congestion, yet wish to build an additional 760 housing units that would feed directly into the most congested section of the corridor. Approval of this project under the current DEIS, with no additional significant improvements to the flow of traffic is unacceptable.

We have included a Youtube link to a recent video of the traffic congestion on a relatively normal Wednesday in Kapa'a at the traffic roundabout -- the very place that would see the most impact from the new development. We believe the video speaks eloquently as to the traffic flow problem we already have.

http://youtu.be/RZ2P2vVTsVI

Respectfully,

Bill and Susan Peterson
(808) 822-0163
4885 Laipo Road
Kapa'a, HI 96746

Response, 10/01/2018:

Bill and Susan Peterson,

Please refer to our response to your June 10, 2015 comments.

Thank you for voicing your concerns,

Ron Agor

1

ter T Young

om: seabillpeterson@hawaii.rr.com
nt: Thursday, May 28, 2015 12:16 PM
: luc@dbedt.hawaii.gov
: info@hookuleana.com
tachments: KapaaTraffic1.jpg; KapaaTraffic2.jpg

ar State of Hawaii Land Use Commission,

long term residents of Kapa'a, we wish to register our opposition to the Hokua Place development, Phase 2, as rrently proposed. Although there is much to like about the project, we believe the development will have a significant gative impact on the flow of vehicular traffic through the Kapa'a Traffic Corridor.

e existing Phase 2 plans call for 86 single-family lots and 683 multi-family units in 57 townhouses. That is a total of 769 nily homes. Assuming the current Kauai average of 2.99 persons per household from the last census, that would be proximately 2,300 people added to the local Kapa'a population.

cording to the final version of the "2012 Kauai Transportation Data Book", the County's own "Multimodal ansportation Plan": "Kauai has the highest ratio of registered vehicles to population in the state, and is the only county ere there is more than one vehicle registered per person."

at would indicate those 2,300 people could have as many as 2,500 vehicles. That number seems exceptionally high. A ore realistic estimate would seem to be two vehicles per household, or 1,539 vehicles added to the flow of traffic rough the Kapa'a corridor.
e developer's own Traffic Impact Assessment Report (TIAR), written in 2012, as part of the Draft Environmental pact Statement (DEIS) for the HoKua Place, Phase 2 Development, suggested a much more modest estimate of an ditional 394 vehicles will be added to the peak morning rush hour and 487 to the afternoon peak rush hour. The TIAR o noted that the traffic flow through the Kapa'a Roundabout and the intersection of the Kapa'a Bypass and Kuhio ghway were already rated "E" and "F" (failing grades for Level of Service or traffic flow). Little or no traffic mitigation s been done since that report was written and the traffic has grown noticeably worse over the last three years.

nsidering the Kapa'a Roundabout already resembles a parking lot during these peak periods it is difficult to see how en these optimistic numbers could be sustained.
d, of course, the TIAR, written in 2012, did not take into account the recently approved projects in Kapa'a at Coco lms, the Coconut Beach Resort and the Coconut Plantation Village. In fact, the TIAR specifically states "...we are not vare of any approved projects in the vicinity that will impact traffic conditions along Kapa'a Bypass or Olohena Road fore the design year of this project." (paragraph 3, page 124, DEIS)

a minimum, the developer should be required to revise the TIAR section of the DEIS to take these approved projects to consideration.

e TIAR also projects minimal traffic impact on the intersection of Kuhio Highway and the Kapa'a Bypass — an tersection already rated "F" within their own report. Since most of the employment on the island for those 2,300 new pa'a residents is in the Lihue area, it is difficult to understand how the most direct route between HoKua Place and hue could not be significantly impacted.

is is not just a traffic issue. Since Kapa'a houses the greater portion of the island's population, much of it within the w lying designated Tsunami Flood Zone, this corridor is an integral part of the Tsunami Evacuation Plan. Having

inadequate and congested roads on a daily basis is one thing. Having them during a major disaster is another. The potential for loss of life is staggering.

This issue is barely addressed in the current Draft Environmental Impact Statement. The attitude of the developers, as reflected in the TIAR, appears to be "The traffic situation in Kapa'a is so bad now, we can hardly make it much worse." They have proposed no real solution to the existing traffic congestion, yet wish to build an additional 769 housing units that would feed directly into the most congested section of the corridor. They appear to be depending upon the State and the County to take care of the traffic problems along the Kapa'a corridor.

Even the County of Kauai has evidenced some misgivings about the traffic impact from the project, as noted in the "Comments from County of Kauai Department of Public Works and Responses...Dated June 6, 2014..." quoted on Page 133 of the Hokua Place DEIS.

Approval of this project under the current DEIS, with no additional significan: improvements to the flow of traffic is unacceptable.

As a reminder to the members of the Land Use Commission, We have attached two still photos and included a Youtube link to a recent video of the traffic congestion on a relatively normal Wednesday in Kapa'a at the traffic roundabout -- the very place that would see the most impact from the new development. We believe the video speaks eloquently as to the traffic flow problem we already have.

http://youtu.be/RZ2P2vVTsVI

Respectfully,

Bill and Susan Peterson
(808) 822-0163
4885 Laipo Road
Kapa'a, HI 96746

References:
"HoKua Place Section 343-5e HRS Draft Environmental Impact Statement"
"2012 Kauai Transportation Data Book" - Final Version http://www.city-data.com/county/Kauai_County-HI.html

Response, 10/01/2018:

Bill and Susan Peterson,

Please refer to our response to your June 10, 2015 comments.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:21 AM
To: losterer@hotmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A L Osterer.pdf

Aloha Ms. Osterer,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Response, 10/01/2018:

Ms. Osterer,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

Peter T Young

From: L Osterer <losterer@hotmail.com>
Sent: Sunday, June 21, 2015 3:01 PM
To: luc@dbedt.hawaii.gov; info@hookuleana.com
Subject: Hokua Place EIS

Attention: State Land Use Commission Peter Young (developers),

The majority of DEIS public comments have not been answered regarding traffic congestion and infrastructure needed before development approval. Even the County Department of Public Works agrees. Comments from County of Kauai Department of Public Works and Responses, dated June 6, 2014, quoted on Page 133 of the Hokua Place DEIS:
"Unfortunately, until the issue of traffic congestion can be adequately addressed, it is a development that the Eastside of Kauai cannot afford. If it is allowed to go forward, then it will be clear that money — not the needs of the people of Kauai — speaks loudest to our elected officials." Ref: Hokua Place Section 343-5e HRS Draft Environmental Impact Statement.

769 housing units are planned, and with most families owning more than one vehicle, that means approximately 1500 more cars in the area. The existing plan to pave roads adds significant traffic delays, and does not help throughput. Traffic congestion is already extremely burdensome for current paving and road improvements, costing lots more for night work. The new hotels planned in the Wailua corridor would also make delays intolerable. Together, these projects will downgrade Kauai for residents and tourists. The county will pay the cost for infrastructure if they do not demand it of the developer in advance. This means roads, expanded septic systems, expanded school programs, fire and police protection and other public services. How can the county consider accepting this proposal when it hasn't even answered the most basic road infrastructure needed?

Thank you for your reconsideration.
Lorraine Osterer, Koloa resident, who already finds traffic too much to get past Kapaa.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add 1500 new cars. People who live in the area already contribute to the current congestion that is experienced at times. As you pointed out, there are 3 major projects that will be completed in the next 5 years. HoKua Place will provide housing for workers of these new projects. These workers will be encouraged to use the bus or car pool to work from HoKua Place. There is discussion about the Project and the upcoming major projects providing a shuttle for workers to and from their place of work. This will be better than the alternate of them driving through town from the north and south to get to work.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must still do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic (at times) should not deny our young families from pursuing a good life, liberty and happiness.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

HoKua Place will not be burdensome on sewer, water, schools, fire and police services. Please refer to Chapter 4 of Volume I, 2nd DEIS.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:25 AM
To: moloaagirl@hawaiiantel.net
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Caroline Okasako.pdf

Aloha Ms. Okasako,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Caroline Okasako [moloaagirl@hawaiiantel.net]
Sent: Wednesday, June 24, 2015 9:50 AM
To: info@hookuleana.com; uc@dbedthawaii.gov; mwiliams@kauai.gov
Subject: Hookuleana

Peter Young, and others making decisions about new proposed development,

Have you sat in the line of cars on the road (Kuhio Hwy.) north of the Wailua Bridge heading south? Also, going north is not any easier. We do not need additional cars (800+) which will come with the development.

Please do not grant "OK" for development until the present traffic problems are solved.

Mahaʻo nui loa,
Caroline Okasako

Response, 10/01/2018:

Ms. Okasako,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

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It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add 800 new cars. People who live in the area already contribute to the current congestion that is experienced at times.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must still do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic (at times) should not deny our young families from pursuing a good life, liberty and happiness.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapaʻa Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapaʻa Town's future paths, etc. The project is intended to help preserve the rural character of Kapaʻa town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:26 AM
To: mmulhall@hawaii.rr.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Mary Mulhall.pdf

Aloha Ms. Mulhall,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

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O: 808.947.2467
C: 808.373.6025

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Response, 10/01/2018:

Ms. Mulhall,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add substantial amounts of new cars. People who live in the area already contribute to the current congestion that is experienced at times.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must still do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic (at times) should not deny our young families from pursuing a good life, liberty and happiness.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

HoKua Place will have walking and bicycle paths intergrated with Kapa'a Town's future paths. The paths will extend to the Middle School. You can be assured that the project will be designed with our children's saftey in mind.

HoKua Place will not be burdensome on sewer, water, schools, fire and police services. Please refer to Chapter 4 of Volume I, 2nd DEIS.

Thank you for voicing your concerns,

Ron Agor

Peter T Young

From: M.Mulhall <mmulhall@hawaii.rr.com>
Sent: Monday, June 22, 2015 3:21 PM
To: luc@dbedt.hawaii.gov; info@hookuleana.com; mwilliams@kauai.gov
Subject: Re: DEIS Hokua Pl. pub. 5-8-15 by OECQC --- Please hat the Hokua Place development in Kapaa, Kauai

Dear Members of the Commission:
Please halt the development of HoKua Place in Kapaa, Kauai.

It is an insane idea to add homes in that area of Kapaa, and if you had to drive through it daily as many of us do, you would understand what I mean.

1. Kapaa's traffic is legend.....in a horrifying way.
   Personally, I often drive from the Wailua Homesteads down Kuamoo to the highway and then to Lihue to shop during the daylight hours rather than sit in traffic in Kapaa, wasting time and getting more and more irritated.
   Five years ago, some visitors commented to me that they would never again stay in Kapaa or North of Kapaa because, they said, the "traffic is murder!" (their words.)
   My point: **traffic is not only affecting us, the residents of Kauai.**
   Kapaa traffic has a negative effect on tourism as well.

2. We do not even have sidewalks most places on Kauai.
   The kids have to walk or ride bikes along the roads to school.
   Olohena Road, where HoKua place would be built, is so hazardous that bike riders have been sent head-over-heels into roadside ditches as people come down the hill and are unable to see people on bikes in time to stop or slow down.
   Olohena is a county road, poorly engineered for today's needs. It is winding, with poor visibility along its many curves.
   The increased traffic plus the increased number of children on the road is a setup for disaster.

The cost burden to the County for improvements to the roads, sewers, water supply, utilities, added to the loss of tourism due to the terrible traffic adds up to an economic disaster for Kauai.

Please, please, please.....either halt or re-locate the HoKua development.

Mahalo,
Mary Mulhall, Kapaa resident
1210 Crossley Rd.
Kapaa, Hi. 96746

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:28 AM
To: anaholabon@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Bonnie Morris.pdf

Aloha Ms. Morris,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Bonnie <anaholabon@gmail.com>
Sent: Thursday, June 18, 2015 3:27 PM
To: info@hookuleana.com
Subject: Stop Selling Out

If you are really considering this project without having first resolving our current traffic problem, you are showing the residents & every visitor your lack of intelligent planning. There are some very knowledgeable people visiting who are speaking out about Kaua'i's seemingly ridiculous way of planning infrastructure. One man, a firmer Utah mayor, had some strong opinions & very creative ideas; our mayor declined to talk with him, he was incredulous as he had revitalized Ogden with transportation & planning expertise. Don't embarrass yourself, but more importantly, don't sell out our very unique island and its people.

Aloha...

Bonnie Morris
Anahola homeowner & 36+ year resident watching the aina being sold off.
Aloha...

Response, 10/01/2018:

Ms. Morris,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add substantial amounts of new cars. People who live in the area already contribute to the current congestion that is experienced at times.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must still do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic (at times) should not deny our young families from pursuing a good life, liberty and happiness.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:31 AM
To: burnitbro@yahoo.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Jess Montgomery.pdf

Aloha Ms. Montgomery,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Jess Montgomery [burnitbro@yahoo.com]
Sent: Monday, June 18, 2018 8:34 AM
Subject: Hokua Place Etc

To Whom It May Concern

Regarding the upcoming decisions as apply to HoKua Place Housing Development, Coco Palms Resort, and the 2 other pending resort projects in the Wailua corridor

It is irresponsible for the Land Use Commission, Planning and/or Building Department to even consider allowing any of these projects without a reasonable and realistic plan for upgrading Kuhio Highway to 4 lanes between the south end of the Kapaa bypass and the Wailua River Bridge. Indeed, the sum, arguably, we should show [illegible] square, thus facilitating the contraflow lanes every day than it would have cost to widen and pave the highway in the first place.

In addition, if helping the local economy is the true goal of any of the projects, then the work should ALL be performed by Kauai-based contractors/workers. This is a multi-year, long-term fix. In a time-to-completion, the local economy would be more sustainably served, and local people might in fact be able to afford some of the homes or visit the resorts they are building.

Respectfully,

Jess Montgomery

Response, 10/01/2018:

Ms. Montgomery,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add substantial amounts of new cars. People who live in the area already contribute to the current congestion that is experienced at times.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must still do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic (at times) should not deny our young families from pursuing a good life, liberty and happiness.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

It is the intent of the Petitioner to hire local contractors for the build-out.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:33 AM
To: kauaimuse@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Richard Diamond.pdf

Aloha Mr. Moll,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Response, 10/10/2018:

Mr. Moll,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add substantial amounts of new cars. People who live in the area already contribute to the current congestion that is experienced at times.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must still do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic (at times) should not deny our young families from pursuing a good life, liberty and happiness.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

HoKua Place will provide a healthy and quality way of life for it's residents. It will be a walkable and bicycable community. Opportunities for businesses to grow in town to service residents and employment opportunities for the residents will be avialable.

Thank you for voicing your concerns,

Ron Agor

Peter T Young

Subject: FW: Hokua Place Development

From: Richard Diamond [mailto:kauaimuse@gmail.com]
Sent: Monday, June 22, 2015 5:09 PM
To: info@hookuaeane.com; luc@dbedt.hawaii.gov
Subject: Hokua Place Development

Aloha,

Considering the increasingly burdensome traffic in the Kapaa area, the Hokua Place project will severely exacerbate our dire problems. The massive amounts of materials needed and then using them for construction here will make an unacceptably substantial contribution to global carbon dioxide pollution, not to mention erosion, increasing our already desperate climate situation.

The Hokua Project proposes 86 single-family lots and 683 multi-family units in townhouse units, or 769 family homes. It has been estimated that as much as 1,500 vehicles or more could be added to our roads in the Kapaa area, resulting in overwhelming congestion on our already taxed road system.

It is outrageous that the developer has denied the need for significant changes in road construction, saying that traffic studies done in 2012 are adequate and that 'traffic impacts due to the project are not considered important. It is obvious that the traffic impacts of 1,500 vehicles added to our roads would actually be quite significant!

Further, the developer's own Traffic Impact Assessment Report, written in 2012, as part of the Draft Environmental Impact Statement for the HoKua Place development recognized that the traffic flow through the Kapaa roundabout and the intersection of the Kapaa bypass and Kuhio Highway were already at failing grades for level-of-service or traffic flow. Little or no traffic mitigation has been done since that report was written and the traffic has grown noticeably worse over the last three years.

It is clear that the substantial potential problems of this massive development will contribute, inevitably, to the lowered quality of life on our tiny garden island.

We implore you to urge the State Land Commission to reject the DEIS.

Thank you for your attention to this, and to the numerous other letters you have received in opposition to this proposed development.

Aloha

Richard (Diamond) Moll

P.O. Box 113

Kapaa, HI 96746

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:38 AM
To: glennruth2030@gmail.com
Subject:
Attachments: Q-A Glenn Mickens.pdf

We apologize, the prior attachment did not include the second response to your additional concern. Please refer to this attachment for both response to your concerns,

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:35 AM
To: glennruth2030@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment

Aloha Mr. Mickens,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

Peter T Young

From: [illegible]
Sent: Tuesday, June 23, 2015 2:04 PM
To: info@hokuaplace.com
Subject: Traffic and infrastructure

Until new roads and wider roads are put in, NO NEW DEVELOPMENT SHOULD BE PERMITTED.

TRAFFIC IS AT A CRISIS NOW AND BY ALLOWING MORE UNITS TO BE BUILT UNDER THE PRETENSE THAT IT IS GOING TO GIVE US MORE AFFORDABLE HOUSING IS COMPLETELY WRONG!! Any [illegible] based, rental HS that is done would HAVE TO SHOW THAT INFRASTRUCTURE MUST BE PUT IN PLACE BEFORE ANY DEVELOPMENT BEGINS.

PLEASE DO NOT LET THIS PROJECT OR ANY OTHER PLANNED PROJECT BEGIN UNTIL INFRASTRUCTURE IS FIRST PUT IN PLACE.

GLENN MICKENS
3520 KINI PLACE
KAPAA, HI 96746

808 [illegible]

Response, 10/10/2018:

Mr. Mickens,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add substantial amounts of new cars. People who live in the area already contribute to the current congestion that is experienced at times.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must still do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic (at times) should not deny our young families from pursuing a good life, liberty and happiness.

The Petitioner's intent is to provide housing for all income brackets and is not focused on only affordable housing for the lower income brackets.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

HoKua Place will provide a healthy and quality way of life for it's residents. It will be a walkable and bicycable community. Opportunities for businesses to grow in town to service residents and employment opportunities for the residents will be avialable.

Thank you for voicing your concerns,

Ron Agor

Peter T Young

From: Glenn Mickens <glennruth2030@gmail.com>
Sent: Friday, June 19, 2015 1:26 PM
To: info@hookuleana.com
Subject: NO KNEW DEVELOPMENTS

There is no way that this new development of 800 units should be approved UNTIL INFRASTRUCTURE IS SOLIDLY IN PLACE TO TAKE CARE OF THE ADDED CARS AND PEOPLE.

I have been on that bypass road (I use it at least twice a week or more) when traffic is backed up from the round a bout to Kuhio highway and obviously a potential 1600 more cars exiting on Kuhio Highway will only exacerbate the problem

Not just this projec: but ALL AND ANY NEW PROJECTS' should be mandated to improve our infrastructure before construction begins or put a moratorium on building until new roads are built to carry the traffic.

Sincerely,
Glenn Mickens
5920 Kini Pl
Kapaa, 96746
822 0998

Response, 10/10/2018:

Mr. Mickens,

Please refer to our response to your June 23, 2015 comments.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:40 AM
To: halawaihale42@hawaii.rr.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Joni Benton.pdf

Aloha Ms. Lesser-Benton,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

Response, 10/10/2018:

Ms. Lesser-Benton,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

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It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add substantial amounts of new cars. People who live in the area already contribute to the current congestion that is experienced at times.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must still do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic (at times) should not deny our young families from pursuing a good life, liberty and happiness.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please reac[1]Section 5.1 of the 2nd DEIS.

HoKua Place will provide a healthy and quality way of life for it's residents. It will be a walkable and bicycable community. Opportunities for businesses to grow in town to service residents and employment opportunities for the residents will be avialable.

HoKua Place will not be burdensome on sewer, water, schools, fire and police services. Please refer to Chapter 4 of Volume I, 2nd DEIS.

Please note that without developers, you most likely not have a home on Kauai. Developers do developments because that is what they do, that is what their monies are earmarked for. With increasing government regulations and increase resistance by some people, developer's profit margins are minimal these days. But they continue to develop because that's what they do. They also take pride in providing good living and working environments for us.

Thank you for voicing your concerns,

Ron Agor

Peter T Young

Subject: FW: Hoku Place Development

From: Joni Benton [mailto:halawaihale42@hawaii.rr.com]
Sent: Monday, June 08, 2015 10:25 PM
To: info@hookuleana.com
Cc: uc@dbedt.hawaii.gov
Subject: Hoku Place Development

To Whom It May Concern:

I am a psychotherapist in private practice. I reside on the East side of Kauai island in the Wailua Houselots. This used to be the perfect commute until traffic increased and the waste management site on the corner of the highway and Hale Ilio Road began to regularly malfunction; causing quite an unpleasant smell to overwhelm the lengthy wait at this light.

My clientele include adults who are unable to leave their homes due to medical and or mental health issues. To that end, I have chosen to bring my services to them. That means that I drive a great deal throughout the weekdays. As recently as two years ago, I was able to drive from the Wailua Houselots into downtown Lihue within 15 to 20 minutes; these days
I have to budget my time to at least a half hour or more for the same distance. In the afternoons, I am often in the Waipoli area and
find tha: the current traffic is at a virtual standstill in both directions, often backed up all of the way into Kapaa proper in one direction and
the stop light at Coco Palms (the entrance to Wailua Homesteads. In the past two years, this snarl of traffic has included the bypass road.

The idea of adding more long and short term accommodations in the Kapaa area without having first completed extensive expansions to
the infrastructure, both in terms of actual roads and upgrading the waste management systems currently in place is frankly ludicrous.
Yes, housing is at a premium but a rush to put housing that is not affordable to most current residents on this island without a well thought out
long term plan to address the current burdens placed on the existing systems demonstrates a short sited, greedy and rather cynical perspective.

This year, Kauai beat out the other islands in this state for increases in visitor presence and spending. That is due in great part to the rural nature
of our island. Becoming Maui or Oahu by thoughtlessly over building to simply make developers wealthy shoots the goose who is beginning to lay
golden eggs for our lit island.

Take your time and complete studies that provide you with answers based in reality.

Thank you,
Joni Lesser-Benton M.S.W., L.C.S.W.
Joni Benton [mailto:halawaihale42@hawaii.rr.com]

1

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:43 AM
To: k2yogafitness@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Karen Kenny.pdf

Aloha Ms. Kenny,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Karen Kenny <k2yogafitness@gmail.com>
Sent: Sunday, June 07, 2015 11:20 AM
To: info@hockuleana.com
Subject: Hokua Place

This is a terrible and inappropriate idea. I'm a former real estate developer and I doubt that you see yourself as a creator of misery, which is what will happen if this project is built. Just try to drive in Kapa'a any afternoon and you will see.

Be kind whenever possible. It is always possible. -The Dalai Lama

Response, 10/10/2018:

Ms. Kenny,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add substantial amounts of new cars. People who live in the area already contribute to the current congestion that is experienced at times.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must still do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic (at times) should not deny our young families from pursuing a good life, liberty and happiness.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:45 AM
To: abi@aloha.net
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Abilgail Jones.pdf

Aloha Ms. Jones,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Response, 10/10/2018:

Ms. Jones,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

Peter T Young

From: abi <ABI@ALCHA.NET>
Sent: Sunday, June 14, 2015 11:45 AM
To: info@hookuleana.com
Cc: luc@dbedt.hawaii; mwilliams@kauai.gov
Subject: Make HoKua Place Go Away !!!

Hi Peter, State Land Use Commission, and Planning Department,
I am writing this letter in response to the proposed HoKua Development in Kapaa. I have lived in Kapaa for 20 years and watched the traffic increase to the point of currently being horrific. I have had to change my lifestyle around the traffic. Please do not change the zoning on the proposed parcel from "agriculture" to "urban zoning". We need more agriculture on this island, which is why it was zoned for farming, as we are overly dependent on food shipments, which is not a good position to be in when there is a crisis, such as a dock strike in California. We already have an overloaded infrastructure, ie our schools, water, etc. why make it worse? Don't sell out to Greg Alllen and his Mainland investors, and add1600 cars and at an average of 4 people per household 3000 people to the already overloaded Kapaa corridor. You are all in excellent positions to help this island, please don't add to its destruction. Infrastructure first, moritorium on bulding in the most conjested areas, until the infrastructure has been upgraded to the point where it can handle it. Think less cars, less crowding in schools, clean air, clean water, organic farms, industrial hemp fields ! Have respect for this aina a and it's people!

Much Aloha,
Abilgail Jones

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area so the traffic will not necessarily add substantial amounts of new cars. People who live in the area already contribute to the current congestion that is experienced at times.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must still do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic (at times) should not deny our young families from pursuing a good life, liberty and happiness.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving (less cars). Please read Section 5.1 of the 2nd DEIS.

HoKua Place will not be burdensome on sewer, water, schools, fire and police services. Please refer to Chapter 4 of Volume I, 2nd DEIS.

Also, refer to Exhibit "C.1", an Agricultural Suitability Report conducted in June of 2018.
This proposed development is on land that is not considered Important Agriculture Lands, and does not play a part in Kauai's goals of becoming self-sufficient. Basically, Kauai has an abundance of good agricultural lands. The problem with sustainable agriculture is the lack of farmers and workers.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:49 AM
To: pennylynnwendel@msn.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Penny Heiple.pdf

Aloha Ms. Heiple,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Penny Heiple <pennylynnwendel@msn.com>
Sent: Saturday, June 20, 2015 12:22 PM
To: info@hookulsana.com; luc@dbedt.hawaii.gov
Subject: Hokua Place DEIS

Aloha,

I am writing to share my concern about this project. While I recognize and appreciate the need for housing on Kauai, I do not believe the proper infrastructure is in place (nor will it be in place by the time development is completed) to support the project at this time. The traffic in Kapaa -- with the approval of the Waipouli Hotels, the Coco Palms Hotel, and then the traffic from this development -- would be severely impacted, to put it mildly. This affects people's lives in major ways -- not only residents, but also tourists. Please keep this land in it's current agricultural designation until the proper infrastructure is in place prior to development.

Sincerely,

Penny Heiple
Kalaheo, HI

Response, 10/10/2018:

Ms. Heiple,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

Also, refer to Exhibit "C.1", an Agricultural Suitability Report conducted in June of 2018.
This proposed development is on land that is not considered Important Agriculture Lands, and does not play a part in Kauai's goals of becoming self-sufficient. Basically, Kauai has an abundance of good agricultural lands. The problem with sustainable agriculture is the lack of farmers and workers.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must still do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic (at times) should not deny our young families from pursuing a good life, liberty and happiness.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving (less cars). Please read Section 5.1 of the 2nd DEIS.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:52 AM
To: esti@bobstropicals.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Esti Grinpas.pdf

Aloha Ms. Grinpas,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Esti Grinpas <esti@bobstropicals.com>
Sent: Tuesday, June 02, 2015 9:33 AM
To: info@hookuleana.com
Subject: NO to Hokua Place

Dear Peter Young
I do not approve of Hokua Place subdivision being built in Kapaa. I live in Kapaa and the traffic is very difficult as it is, and during tourist season, Kapaa comes to a total stand-still. Until the traffic problem is improved, we cannot with good conscious approve any more large subdivisions to be built in Kapaa. This subdivision is not being built for the reason to make Kapaa a better place! Please use your power to make Kauai a better place, not worse!
Thank you,
Esti Grinpas
Kapaa resident since 35 years

Esti

Esti Grinpas
NORDIC WALK Hawaii
Bob's Tropicals
[illegible]
esti@bob-tropicals.com
www.bobstropicals.com

Response, 10/10/2018:

Ms. Grinpas,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

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Also, refer to Exhibit "C.1", an Agricultural Suitability Report conducted in June of 2018.
This proposed development is on land that is not considered Important Agriculture Lands, and does not play a part in Kauai's goals of becoming self-sufficient. Basically, Kauai has an abundance of good agricultural lands. The problem with sustainable agriculture is the lack of farmers and workers.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must still do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic (at times) should not deny our young families from pursuing a good life, liberty and happiness.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 10:55 AM
To: shinyhappyislandgrl@yahoo.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Rebecca Gorsline.pdf

Aloha Ms. Gorsline,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the week to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Rebecca Gorsline <shinyhappyislandgrl@yahoo.com>
Sent: Friday, June 19, 2015 11:32 AM
To: info@hookuleana.com
Subject: Hokua Place is a Bad Idea

Aloha,

I live right down the road from the proposed location of the Hokua Place Development. This is not a good idea. Traffic is already a crazy nightmare. Right now this is a country area. Building this there would start to change all that. Please consider all of us who live and work in this area and ditch this plan. Thank you.

Rebecca Gorsline
Kapaa, Hi

Response, 10/10/2018:

Ms. Gorsline,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

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Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up. While we sit in congested traffic at times, we must still do all we can to provide housing for our young families. The way to prosperity for young families is to have their home equity work for them as soon as possible. Congested traffic (at times) should not deny our young families from pursuing a good life, liberty and happiness.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving (less cars). Please read Section 5.1 of the 2nd DEIS.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 2:07 PM
To: sharonmokihana@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Sharon Goodwin.pdf

Aloha Ms. Goodwin,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Sharon Goodwin <sharonmokihana@gmail.com>
Sent: Wednesday, June 17, 2015 1:45 AM
To: luc@dbedt.hawaii.gov; info@hookuleana.com; mwilliams@kauai.gov; counciltestimony@kauai.gov
Subject: DEIS HoKua Pl published 5-8-15 by OEQC

Dear Members, Land Use Commission
Members, Hookuleana EIS Co and Mr Peter Young
Ms Marie Williams, Kaua`i County Planning Dept
Kaua'i County Council Members

Mr. Young, thank you for your email response to my 1-22-15 EISPN email regarding HoKua Place. You touched on many of my concerns of how this development would impact Kaua`i Island, its land and its citizens--Traffic, Affordable Housing, Problems with Access Into and From HoKua Pl, Construction Waste, Ample (not just adequate) Sewage Treatment, Abundant Clean Water Supply, Pedestrian (especially school children) Safety, School Capacity. I also want to reiterate the impact of "enormous density" (my last paragraph) which would result in major infrastructure stresses, and I hereby add, environmental stresses.

On 12-27-14 Mr. Greg Allen (Developer) presented HoKua Concept Plan at Wailua-Kapa`a Business Assoc meeting. He calls Kapa`a a "City" and an "Urban" area, and desires a zoning change from Agriculture to Urban Land Use. His plan shows an 800+ dwelling subdivision.

On Wednesday, May 27, 2015 between 2:30 to 3:15pm (a 45 minute interval) a citizens' vehicle count was taken to grasp awareness of road usage in vicinity of Kapa`a Middle School (KMS) / Kapa`a Bypass Rd / Kapa`a Roundabout / Kapa`a Farmers' Market (KFM).
To begin. Wednesdays. KMS dismisses 2:55pm. KFM begins 3:00pm.

Two counters, one situated across KMS entrance on Olohena Rd. 60 vehicles parked on grounds (i.e. personnel, visitors). From Mauka (mountain) 23 vehicles entered School. 48 vehicles exited and drove Mauka. 236 non-school vehicles drove directly Mauka.

From Makai (oceanside) 35 vehicles entered School. 44 vehicles exited School driving Makai. 192 non-school vehicles drove directly Makai.

Counter #2 situated adjacent to Kapa`a Skate Rink. 251 vehicles (including at least 6 School buses) drove from Mauka (Olohena) into Roundabout. 248 vehicles entered Roundabout from South Entrance Bypass Rd. From the Roundabout 84 vehicles drove onto Kahau Rd where KFM, Police Station, Park, etc are located, going against traffic from Kukui and Lehua Sts. This number does NOT include any vehicles entering Kahau Rd from Kukui and Lehua Sts.

We needed 1-2 more persons to tally to gain fuller understanding of magnitude of traffic numbers. There was almost steady stream of vehicles from North Entrance Bypass Rd (including Malu St) entering Roundabout. These were not tallied, as vehicles from Kukui/Lehua Sts were not, neither vehicles traveling South on Bypass Rd, an important # to have since HoKua Pl project plans an Entrance/Exit on that Road.

Tallying, as it was, is inexact. Traffic at times extremely intense. At moments the jam was so full, only 1 vehicle could go. Worse yet, sometimes NO vehicle moved. This happened when vehicle from Roundabout wanted to turn Left on to Kahau Rd (KFM) and vehicle leaving Kahau wanted to turn Left on to Kukui.

The State Dept of Transportation (DOT) identified at least 2 Kapa`a intersections they score a Level of Service F . (LOS) F = severe congestion with stop and go conditions, what I just described above!

Another potential serious traffic hazard is the Main Rd through HoKua Pl designed to exit West on to Olohena adjacent to KMS's parking lot. Equally compelling to resolve is the 3-way intersection where drivers on Ka`apuni have a blind roadway to their Right and drivers on Olohena must negotiate a steep upward incline.

Kaua`i County Public Works Dept, in their " 2035 Transportation Plan for Kaua'i District" plans only to repave existing roads and add a Southbound lane from Wailua Bypass exit, fronting Coco Palms to Kuamo`o Rd. Think about it ! 800 - 1600+ vehicles owned by HoKua Pl occupants, combined with cars from 2 recently approved hotels in Waipouli, plus our existing traffic problems, would certainly put Kaua'i traffic right up there with Oahu's traffic woes.

In the face of HoKua Place's "enormous density", Kaua`i Island's infrastructure, in my opinion, is seriously lacking. To avoid further sewage problems, shouldn't HoKua Pl have a plan for their own septic systems? For this many dwellings, septic systems must be a minimum requirement ! Mr. Allen informed us raw sewage/effluent would travel all those miles to Lydgate Sewage Plant. It seems foolhardy, to me, for the County Wastewater Dept to go along with this plan. Kaua'i County wants to require residences with out-dated cesspools to install septic systems upon their sale. To not do so would result in environmental degradation. I think HoKua Place needs to take care of its own waste. The services of the Waste-water station at Kuhio Hwy/Hale`ili`o St and the Wailua Waste Water Treatment Plant will already be in high demand once the 2 new Waipouli hotels are hooked up.

At present this 97 acre property is designated "agricultural". Until traffic impacts and environmental impacts are responsibly addressed, I think a change in zoning should not take place.

Sharon Goodwin, Wailua Homestead
PO Box 446
Kapa`a, HI 96746
808-822-7646

Response, 10/01/2018:

Ms. Goodwin,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 (Exhibit "H") for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area. People who live in the area already contribute to the current congestion that is experienced at times.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Thursday, October 4, 2018 2:10 PM
To: montessorihale@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-A Noreen Dougherty.pdf

Aloha Ms. Dougherty,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

Subject: FW: letter

Noreen Dougherty
P.O. Box 685
Kapa'a, Hawaii 96746

June 2, 2015

State Land Use Developers,
It seems that the State of Hawaii Land Use Dept. should be able to come up with positive developments that can improve the life of the residents and encourage Visitors to come and enjoy Kauai. The visitors do not want to spend their time in a traffic Jam
The present traffic situation on Kauai indicates, without a doubt, that the roads and infrastructure are not ready for the proposed Hokua Place Subdivision

The roads are maxed out right now with the number of vehicles in the Kapaa area. As a resident of the Wailua/Kapa'a/Kapaa area for almost 40 years, I have seen alot. Never has the situation been this serious.

The condition of the roads that our people are using daily to get their family members to school and work are not being properly maintained. Actually some of the roads are extremely unsafe since the yellow lines are worn down and in many of the most critical places they are totally worn away. Reflectors that were once in place are long gone. There are areas where there are no signs indicating a pedestrian crosswalk or dead ahead on extremely traveled roads. There are signs that are not visible due to vegetation or fading.

Actually live near the proposed subdivision and I am always experiencing the traffic congestion, the slow "crawl" through Kapaa, the dead stop when there is an accident, and the "bowling pins" along Kuhio Highway.

It is only lately, in the last year or so, that I have seen many drivers stuck in a line or cars, knowing they will not get to their destination in time to do their very important business, we see them give up and do a U turn in disgust. Twice last month I did exactly this. (Once on Kuhio Highway and once on the By Pass). As I turned around heading back to the round about, from a dead stop on the bypass I thought "Well, at least I can go to the bank, have a Kapa'a". When I got back to the round about and get onto Kuhio Hwy I realized the traffic was not moving well enough to even accomplish that. This is not OK.

We need to stop developing until all necessary related concerns have been addressed.
Stop putting the cart before the horse. Kauai needs to formulate reasonable, attainable, comprehensive, consciously designed plans taking into consideration all aspects including our community and the safety of our people.

Now is NOT the time for more subdivisions.

Sincerely
Noreen Dougherty
(808)823-6615

Response, 10/01/2018:

Ms. Dougherty,

Please note that a "Second Draft Evironmental Impact Assessment 2nd DEIS" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 (Exhibit "H") for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area. People who live in the area already contribute to the current congestion that is experienced at times.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness.
Thank you for voicing your concerns,

Ron Agor

Group 3 - Responses to Comments on Community Related Concerns

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 11:36 AM
To: jxenofos@yahoo.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Judy Xenofos.pdf

Aloha Ms. Xenofos,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: judy xenofos <jxenofos@yahoo.com>
Sent: Tuesday, June 16, 2015 4:55 PM
To: info@hookuleana.com; luc@dbedt.hawaii.gov; mwilliams@kauai.gov
Subject: Protesting

Aloha,
I am adding my protest to the other voices of Kauai who do not want more housing development in the Kapaa area until the necessary infra-structure is in place. There have been times when it took me nearly one hour to get from Safeway to Kuamoo Rd. The bypass road feeding into the highway makes traffic crawl. Imagine how awful it will be if even more cars come down that road.
Also, agricultural land must be protected and used only for that purpose and not for development.
When housing s planned for development it should reflect prices more in line with the incomes of those who are middle to low income - and not the rich.
Thank you.
Judy Xenofos,

Response, 10/01/2018:

Dear Judy Xenofos,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in.

Exhibit "C.1" Agricultural Suitability Report states what most people in the agricultural business have known for some time now. That is, Kaua'i has an abundance of agricultural lands to sustain our island. The problem is the lack of farmers and the lack of farm workers. The economics for farming just does not work. The comfortable fact is that should Kaua'i be forced to grow its own food due to some national economic disaster, we do have an abundance of agricultural lands to sustain ourselves. The County of Kauai Important Agriculture Lands Study of 2015 supports the attached Agricultural Suitability Report.

Thank you for voicing your concerns,

Ron Agor

1

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 11:38 AM
To: cwelti@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Cynthia Welti.pdf

Aloha Ms. Welti,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Cynthia Welti <cwelti@gmail.com>
Sent: Monday, June 22, 2015 10:19 PM
To: info@hookuleana.com; luc@dbedt.hawaii.gov
Cc: Bruce Welti
Subject: Welti Comments on Hokua Place

Dear Mr Young,

We have read the extensive Draft Environmental Impact Statement for Hokua Place and remain opposed to this development for 2 reasons.

1. Traffic. Though the DEIS addresses traffic along with many subjects, the fact remains Kapaa is already overloaded with vehicular traffic and the new improvements will not go enough to alleviate what we already have. The DEIS study dates from almost 2 years ago for its Existing Conditions, and traffic has grown significantly worse since then. Indeed between the hours of 8-6 traffic comes practically to a halt in at least one direction of the highway if not both, and beyond these hours as well.

2. Upzone. We are opposed to upzone without significant mitigation. While there is clearly some good mitigation in the proposal, we are unable to determine if it compensated for the enormous financial benefit of changing the zoning to urban.

Despite the impressive amount of content in the document about the site and beyond, we have severe misgivings about it for multiple reasons and wish to voice our strong opposition to the development.

Sincerely,

Bruce and Cynthia Welti
Kapaa

Response, 10/01/2018:

Dear Bruce and Cynthia Welti,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness. Think about of young families please.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Thank you for voicing your concerns,

Ron Agor

1

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 12:23 PM
To: valerieweiss31@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Valerie Weiss.pdf

Aloha Ms. Weiss,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Valerie Weiss <valerieweiss31@gmail.com>
Sent: Friday, May 22, 2015 11:28 AM
To: luc@dbedt.hawaii.gov; Peter Young
Subject: DEIS HOKUA PLACE

5/22/2015

RE: Hokua Place DEIS

Aloha,

I do not support this project under the pretext that it's 769 residences will not impact our horrendous traffic situation or that our schools will only be impacted by an additional 156 students as opposed to approximately 1500. I also cannot support any development of this size in that crowded location and without any required financial contribution toward extra traffic lanes on Kuhio Highway and the Bypass other than a left turn lane to road A. The financial impacts of extra police, fire, and educational personnel also will borne by the public and not the developers which is a large problem.

This 97 acre parcel should be kept in it's current agricultural designation until proper infrastructure is in place prior to development.

Valerie Weiss
Kapaa

Response, 7/10/2017:

Ms. Weiss,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness. Think about of young families please.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 11:42 AM
To: elaloha@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Elli Ward.pdf

Aloha Ms. Ward,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Elli Ward <elaloha@gmail.com>
Sent: Saturday, June 20, 2015 5:27 PM
To: luc@dbedt.hawaii.gov, info@hookuleana.com, mwilliams@kauai.gov, counciltestimony@kauai.gov,; info@hookuleana.com; mwilliams@kauai.gov; counciltestimony@kauai.gov> >
Subject: Hokua Place Development

Aloha Land Use Commission Members and Friends of Kauai. We are writing you to request that you DENY the developer's request for a Zone Change of their 97 acre Agricultural parcel. You have heard from several residents of Kauai about this matter, some in support, others in opposition like us. We oppose the development for these reasons: (1) health and safety concerns. We have experienced the serious traffic congestion and pedestrian safety issues, particularly during the Kapaa Farmers Market days. School children dodging cars to get to their rides, the absence of crosswalks and cross guards, and the popularity of the Market itself all contribute to a serious safety issue. (2) Any large scale development at this point, on top of the three hotels that are scheduled for the TOWN of Kapaa, will only be one more nail in the coffin to bury this special town with its small town charm that appeals to residents and tourists alike. The existing infrastructure cannot support any additional demands on it, such as the waste water treatment, pollution and environmental stress from additional population and vehicles, and the overall quality of life for the year round population. (3) The Agricultural zoning for this parcel should not be changed for any developer. Zoning laws are meant to protect our island and her people, not to be changed, chopped up, trimmed down here and there. There have been too many exceptions, special use permits, conditional uses with no safeguards in place to assure that the conditions are met, granted to too many developers over the years.

We respectfully request that you DENY a zone change so we can preserve our Agricultural lands and retain our semi-rural character that makes our island special to us, the residents of Kauai. Thank you for your consideration and careful study of what is before you.

Sincerely,

David and Elli Ward
Kilaua (808-651-5618)

Response, 10/01/2018:

Dear David and Elli,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness. Think about of young families please.

HoKua Place addresses and will help our water system and waste water system. The Petitioner will be providing a well to serve water for the Project and further proposes to contribute to the County water system. They will also be contributing to the upgrade of the waste water system to handle the project and future developments.

Exhibit "C.1" Agricultural Suitability Report states what most people in the agricultural business have known for some time now. That is, Kaua'i has an abundance of agricultural lands to sustain our island. The problem is the lack of farmers and the lack of farm workers. The economics for farming just does not work. The comfortable fact is that should Kaua'i be forced to grow its own food due to some national economic disaster, we do have an abundance of agricultural lands to sustain ourselves. The County of Kauai Important Agriculture Lands Study of 2015 supports the attached Agricultural Suitability Report.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 11:45 AM
To: bartwalton@hotmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Bart Walton.pdf

Aloha Mr. Walton,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Basically, at times there will be real heavy traffic, however, this project will have a positive impact to the traffic in the area. The additional Road "A" and a round-a-bout at Road"A" and the Bypass Road in particular will help traffic going north and south. The Bypass Road is owned by HoKua along the roadway boundary of the project. Should this project be approved, the Bypass Road will be dedicated to the State for continued use in the long future.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness. Think about of young families please.

HoKua Place addresses and will help our water system and waste water system. The Petitioner will be providing a well to serve water for the Project and further proposes to contribute to the County water system. They will also be contributing to the upgrade of the waste water system to handle the project and future developments. You can be assured that the final design will address on-site retention of rain run-off generated by the Project.

1

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Businesses are expected to be positively impacted by HoKu Place. The residents can walk bicycle into town. HoKua Place will bring new business to Kapa'a Town to service the needs of residents who are within walking distances.

Section 5.1, Volume I of this 2nd DEIS addresses the Goals of the General Plan. HoKu Place will contribute to "A Sustainable Island", protect the "Unique and Beautiful Place", contribute to a "Healthy and Resilient People", and contribute to "An Equitable Place with Opportunity for All".

Thank you for voicing your concerns,

Ron Agor

Peter T Young

From: Bart Walton [bartwalton@hotmail.com]
Sent: Thursday, May 14, 2015 2:14 PM
To: luc@dbedt.hawaii.gov
Cc: info@hokuleana.com
Subject: Hokua Place Deve-opment

Dear Land Use Commission,

As a full time resident of Kauai, I am very concerned about the proposed Hokua Place Development that will add some 800 dwelling units in Kapaa. I currently live in Wailua Homesteads and already the traffic congestion in kapaa is near gridlock for much of the work day. At the present time, my wife and I have to plan our day in order to avoid going through Kapaa between 10:00 A.M. and 5:30 P.M. During these times, the traffic congestion is so bad that it takes 25 minutes to drive from the Kuamoo Rd. intersection, to the Public Library in Old Kapaa, a distance of less than 3 miles.

If you add to the Hokua Place proposal, the proposed new development at Coco Palms, Coconut Beach resort and Coconut Plantation, it's expected that an additional 1800 vehicles will be added to the traffic load along the Kapaa-Wailua corridor. Has anyone considered how this is going to work in light of the current gridlock that already exists in Kapaa from 10:00 A.M. to 6:30 P.M. every day?

As a resident of Wailua Homesteads, we are particularly affected by any increase in traffic volume on the East side. As you know, we have only two routes down to the main highway; 1) Olohena Rd., or 2) Kuamoo Rd. Let me address each of these.

1) Olohena Rd. is a winding, narrow, two lane country road. Adding 800 housing units proposed by Hokua Place will turn this road into a congested main feeder into old Kapaa town. Neither the road, nor the traffic circle at the bottom of the hill were designed to handle the volume of traffic being proposed. Also, have you considered the effect this development will have on Kapaa Middle School? When school lets out in the afternoon, traffic on Olohena Rd. essentially comes to a halt until all the busses can leave. During this time, the whole Hokua development will be essentially unable to get in or out.

The Kapaa Bypass road is not going to be sufficient to serve as any solution to this problem. As with Olohena, it's a winding road and can be dangerous at the speeds people often drive there. With this new development, you can predict terrible congestion and a lot more traffic fatalities.

2) Kuamoo Rd. is somewhat wider and straighter than Olohena Rd., but still it's already congested at certain times of the day. For example, if you try to go down the hill at 7:30 A.M., the traffic is sometimes backed up 1.5 miles, all the way to Opaekaa Falls.

It's my understanding that the traffic plans developed in 1997 have not been completed. Since that time, the Kapaa area has grown substantially. New long-term plans have to be developed before any new development is approved.

I am not against development per se. But before development is approved, the roads, drainage, sewage and refuse infrastructure have to be updated in order to handle the substantially increased volume of cars and people.

Other problems that concern me are:

a. **Environmental impacts** on storm drainage, land fill and recycling centers, as well as the impact on the land from sewage and septic systems.

b. **Impact on Retail Business** - Already the traffic is so bad that many people are avoiding Kapaa retail businesses and finding ways to do their shopping on-line, or on other parts of the Island.

c. **Impact on Quality of Life and Tourism** - The main reasons people want to visit our Island is to enjoy the rural lifestyle and to get away from the stress of urban living. Already in parts of the Island, we have turned this benefit. What effect do you think it has on vacationers who come here and find they have to spend an hour in traffic just to buy groceries?? Are we going to continue down this path until Kauai is simply no longer a pleasant place to live and visit?

In my opinion, Hokua Place should not be approved until ALL the impacts on our community can be thoroughly addressed.

Thank you for considering our comments.

Bart and Anne Walton

Response, 7/10/2017:

Bart and Anne Walton,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

1

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 11:48 AM
To: mailemichiko@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Maile Walters.pdf

Aloha Ms. Walters,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Hokua Place Development
Maile Walters
to:
luc
06/15/2015 03:47 PM
Hide Details
From: Maile Walters <mailemichiko@gmail.com>
To: luc@dbedt.hawaii.gov

Aloha,

My email is to express my concern that the development behind the Kapaa Middle School will have a big impact on the already terrible traffic congestion in Kapaa. Also, there should be more than 25% affordable housing included in the development.

Thank you. Maile

Response, 10/01/2018:

Ms. Walters,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness. Think about of young families please.

HoKua Place is committed to develop housing in accordance with the Kaua'i Housing Policy Ordinance 860. It is the mission of the Petitioner to provide housing for people in all income categories.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 11:51 AM
To: Robbwall@aol.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Robb Wall.pdf

Aloha Mr. Wall

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Response, 10/01/2018:

Mr. Wall,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

The lots you are referring to are available because they have inflated sales prices.

HoKua Place will be a well designed, walkable, bicyclable community within a 10 minute walking distance to Kapa'a Town. Businesses will be positively impacted by the nearby population of the Project. New businesses will move into Kapa'a Town to service residents of HoKua Place. The Petitioner is looking to profit from the Project, but the main mission is to provide housing for Kaua'i at all income categories. HoKua Place will be profitable for it's residence and nearby businesses as well.

Please note that the Petitioner at one time had the property virtually approved for an ag subdivision. At that time, the former planning director met with the Petitioner and asked that the land be used to provide housing for the Kapa'a-Wailua area. The request included providing affordable housing in accordance with the County Housing Policy. Greg Allen thought about it and decided to forego the potentially profitable ag subdivision and committed to the planning director's request.

1

Please refer to the updated Traffic Impact Analysis Report from May 2017 for your traffic concerns and the solutions proposed. Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness. Think about of young families please.

Thank you for voicing your concerns,

Ron Agor

Peter T Young

Subject: FW: Proposed 800 new housing units surrounding Kapaa Middle School

From: Robb Wall (RS) Kauai [mailto:robbwall@aol.com]
Sent: Friday, June 19, 2015 9:29 AM
To: info@hookuleana.com; luc@dbedt.hawaii.gov; mwilliams@kauai.gov; judydalton123@gmail.com; gabriell_aires@hotmail.com
Subject: Proposed 800 new housing units surrounding Kapaa Middle School

Dear Kauai Leaders,
Please consider the attached testimony of my concerns about allowing "up-zoning" of valuable AG lands surrounding the Kapaa Middle School. If Developers wish to build new neighborhoods, there are plenty of residential zoned lots for sale.
The Wailua uplands scheduled for the Hawaiians should be a priority - not rezoning.
Up-zoning hurts property values and our burdened roadways can NOT handle another car.
Please see the attached.
Sincerely,
Robb Wall, Realtor Broker
Wailua Houselots
Cell: 808-635-4606

---------- *cut here* ----------

JUST SAY "NO" TO UP-ZONING OUR PRECIOUS AG LANDS

THERE ARE CURRENTLY 76 LOTS FOR SALE ON THE EAST SIDE OF KAUAI - as of 6/17/15

THERE ARE CURRENTLY 87 UNSOLD HOMES FOR SALE ON THE EAST SIDE OF KAUAI

THERE ARE CURRENTLY 47 UNSOLD CONDOS FOR SALE ON THE EAST SIDE OF KAUAI

50% OF KEALIA KAI HAS NEVER SOLD - ANOTHER AG "UP-ZONED PROJECT."

THE 50 PLUS UP-ZONED AG UNITS AT KEALANANI HAVE GONE UNSOLD.

THERE IS CLEAR EVIDENCE THAT UP-ZONING AG LANDS ON THE EAST SIDE IS NOT PROFITABLE.

THE OWNER OF THE KAPAA MIDDLE SCHOOL AG LANDS CAN LEGALLY CPR AND SELL AG FARMS RIGHT NOW WITHOUT UP-ZONING.

THE EMERGENCY BY-PASS SHOULD *NEVER* BE CONSIDERED FOR ANY FURTHER BURDEN OF USE - WE ALREADY HAVE A CHURCH ON THE BY-PASS.

EMERGING PROJECTS ALREADY APPROVED:

350 TIMESHARE UNITS IN FRONT OF PLANTATION HALE
250 CONDOS IN COCONUT GROVE BY COURTYARD MARRIOTT

TRAFFIC IS ALREADY AT GRIDLOCK - DEVELOP THE WAILUA UPLANDS FOR THE HAWAIIANS.

AN EIS *MUST* BE DONE ASAP TO REDIRECT THIS PROJECT INTO AG PURSUITS.
THERE ARE TWO PLANNED HOUSING DEVELOPMENTS COMING FROM GROVE FARM IN AREAS THAT CAN HANDLE THE BURDEN OF DEVELOPMENT IN PUHI AND HANAMAULU.

THANK YOU FOR CONSIDERING THESE PERTINENT FACTS.

Sincerely,
Robb Wall, Realtor Broker
Wailua Houselots

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 11:53 AM
To: jwskatz@yahoo.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Jill W.pdf

Aloha Ms. Jill W,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: jwskatz@yahoo.com <no reply@weebly.com>
Sent: Saturday, May 23, 2015 7:44 AM
To: PeterYoung@HookuJeana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Jill W

Email
jwskatz@yahoo.com

Comment
I understand and agree with need for increased affordable housing development. There is much talk of traffic and road infrastructure and that is just a fragment of the impact of a large scale housing development. I understand that most of what is printed on you website speaks to the mass cry but there are other items that are missing on your list of improvements that might help sell your project as well. There is only one mention of building a new school and that is hidden in with other items. As a parent and educator I know of the overcrowded schools. That should be a priority in pushing your plan as well as a shopping center.

The density of families that will be living in the new community will not only impact roads. It is the assumption of the public that all residents will get in their cars. bypass Kapaa and head to work in Lihue. That's just not real life. They will have children who need to go to school and EAT. I would not choose a neighborhood where my child will be on of 40+ students in a classroom. There are already 30+ per class in many of the Kapaa schools as Hawaii has no class size limits, only what is dictated by the fire department. I would not choose to purchase in a community where I would need to drive down a hill to a grocery store where I would still get caught in Kapaa traffic because the roads near the groceries were not being improved and then waiting on even longer check out lines....I'd choose to move elsewhere. This is not a simple "If I build it they will come".

I would happily move into a planned community with a grocery and school in my neighborhood. Bike paths and a pool are just to placate. You need to stop reacting to the superficial cries, but that is

cheaper, isn't it. As developers you are aware that communities like the one I described are successfully built and sold all over the world. It's what people want. It does cost more and take more time to build, as you know. However, if you presented the public with a livable plan, a plan for the future with shopping, schools, a bike path and a pool, the public would accept it with open arms and you would appear to have been listening all along.

Response, 7/10/2017:

Jill,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

The Department of Education (Heidi Meeker) accepted the information about the Kapa'a Elementary, Kapa'a Middle, and Kapa'a High schools having a excess capacity of 1,387 students collectively.

Please refer to the updated Traffic Impact Analysis Report dated May 2017 for your traffic concerns and the solutions proposed. This TIAR has addressed the State DOT and the County PW department's comments. It also discribes the North-South circulation plan for the area. A note, there is discussions of having the project association providing a shuttle bus from the project to Kapa'a town.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness. Think about of young families please.

The General Plan discusses the preservation of the rural characteristics of our community.HoKua Place is intended to be designed to offer a healthy lifestyle. The project is substantially within a 10-minute walk to Kapa'a Town. It entails walking/bicycle paths that will be integrated in future town paths. The Project is a proposed to be a walkable/bicyclable community to minimize driving. The Petitioner has been having dialogue with The Kauai Bus about offering one bus pass for each housing unit to encourage members of each unit to use the bus... Diversified housing units will provide homes for all people. The increase in housing units adjacent to Kapa'a Town provides economic opportunities to the businesses and residents. HoKua Place contributes to the preservation of Kapa'a rural charactor.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 11:57 AM
To: taylork021@hawaii.rr.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Ken Taylor.pdf

Aloha Mr. Taylor,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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6/22/15

Daniel E. Orodenker
Land Use Commission
235 S. Beretania St. Suite 406
Honolulu, Hawaii 96813

Daniel Orodenker and Land Use Commissioners

Re: Comments on Hokua Place
Draft Environment Impact Statement Volumes 1 & 2

NO ZONE CHANGE SHOULD BE GIVEN, UNTIL THERE IS ADEQUATE INFRASTRUCTURE IN PLACE.

Because the applicant has failed to answer most of the questions raised back in Jan.2015, this document should not be accepted. It should be returned for clearer and more precise answers to all questions.

LET'S BE CLEAR, THIS PROJECT IS NOT SUSTAINABLE.

What's the first law of sustainability? You've heard thousands of people talking endlessly about sustainability; did they ever tell you the first law? Here it is: **population growth and/or growth in the rates of consumption of resources cannot be sustained.**

Traffic

Traffic is the major issue, and the project should not go forward until the infrastructure is in place to take the traffic from this project and all other known projects. We can document the discussion for the construction of the Kapaa relief route between Kapule Highway and Kapaa Stream all the way back to 1973. 42 years of growth without the relief route, it's time has come.

1) **Kapaa, Wailua Development Plan 1973 Bill# 304 (As Amended) Ordinance # 304**
2) **Kauai Long Range Land Transportation Plan 1997**
3) **Kauai General Plan (KGP) Ordinance # 753 adopting the KGP was approved by County Council on Nov. 29, 2000**
4) **Federal-Aid Highway 2035 Transportation Plan**

We have received all the development from these documents, but very, very little new road capacity to deal with the increase in traffic. The many or frequent traffic jams and bump to bump traffic is not only a social impact on the community and tourism, it has a very heavy economic impact on the whole Island wide business community. Also one must consider the movement of emergence equipment during these times.

We have "DOUG OURSELF's INTO A HOLE". Please, "NO" more zone changes till we get the Kapaa relief route between Kapule Highway and Kapaa Stream in place.

The traffic studies for this project were done in 2012-2013 maybe even earlier, as we were still feeling the effects of the 2008-09 economic down turn. The economic activity since late 2014 has been picking up to a point where we may have a 12-20 % increase or more in visitors. If you have 18,000 visitor per day on Island, and you have 2.75 people per car that equals a potential of 6,500 cars on the road, at 22,000 visitors the number jumps to 8,000 cars per day.

The traffic studies also neglected to look at the traffic increases from Coco Palms Hotel, two condo projects with about 500 units total, just north of Coconut Market Place, the potential increase in traffic from the remodel of Coconut Market Please. Then west of the proposed project you have a 130 unit Ag. Subdivision, further west between Kuamoo Rd. (580) all the way over to Kawaihau, there is about 4000 buildable lots that do not need zone changes. Property owners could go in for building permits at any time.

Just to the south of Coco Palms Hotel along Kuhio Hwy. and across the Wailua River there is a 700 unit Hawaiian Homelands Proposed project.

And looking north we have a 3000 unit project. Because Lihue, is the center of commerce of Kauai, all the residents from this project will be traveling from time to time to Lihue.

Traffic from all projects will have substantial adverse effects on human beings now living on Kauai.

These impacts, which are cumulatively considerable, when viewed in conjunction with the effects of other past, present and probable future projects must be considered The project's contribution must be significant, but need not itself constitute a substantial percentage of the entire cumulative impact.

The major traffic corgestion comes when these projects come together at the intersections of Kukui street and Kuhio Highway and then at Kapaa Bypass and Kuhio Highway.

Project Alternatives:

The (DEIS) Must discuss both mitigation and alternatives to the proposed project. Each alt. must be described in sufficient detail to permit a clear and precise comparison with the proposed project.
The EIS should focus on alternatives, capable of "substantially lessening " adverse environmental effects This has not been done.

Storm water/ Drainage

Because of the slopes on this site, a plan must show how the wet-lands will be protected from polluted storm water runoff. The developments hard surfaces could cover (12-15 acres) which will concentrate runoff and create a situation difficult to absorb. Before granting a zone change, require a full storm water/ drain plan.

Waste Water

Today there is a question as to the capacity and plant's ability to treat the current flow let-a- loan any additional flow. There also is a law suit in place and "NO REZONE" should take place till we see the outcome of the suit. If the County looses they could be required to build a new treatment plant, which may take 3-5 years or more.

Water

The project is within Kauai County Department of Water service area and must be required to deal with the water district. They must not be able to build their own water system.

ADA

Show how all walks, paths, and streets meet ADA requirement? A map is needed showing the grades of all walks, paths and streets, as well as the

connectivity to old town. It should also show how one may get to the church across the street, swimming pool and commercial areas of the project.

Show a complete North/South circulation plan.

How does the transportation plan and its mitigation promote resiliency for the community?

Please, "NO ZONE CHANGE" till the Kapaa relief route, is in place.

luc@dbedt.hawaii.gov

info@hookuleana.com

4 pages

Thank You

Ken Taylor

taylork021@hawaii.rr.com

Response, 10/01/2018:

Mr. Taylor,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report dated May 2017 for your traffic concerns and the solutions proposed. This TIAR has addressed the State DOT and the County PW department's comments. It also discribes the North-South circulation plan for the area. There is a discussion about having the project association providing a shuttle service from the project to Kapa'a Town.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness. Think about of young families please.

Chapter 3 of the 2nd DEIS states the Environmental Impact Statement Alternative.

Page 94 of the 2nd DEIS has a preliminary drainage plan with detention basins to be incorporated in the final drainage design. Run-Offs in the detention basins will be used for landscape irrigation.

The General Plan developed "Visions" and "Goals" to guide Kauai in future developments. Goal # 1 specifically states that "Sustainability means growing responsibility to meet the needs of current and future generations without depleting important resources".

HoKua Place provides opportunity for housing for all people as they aspire for a better life. The need for housing is very current. The Project will substantially address the current need for housing in the area. The development will not deplete our important resources. HoKua Place is designated as "Neighborhood General" in the General Plan. It is substantially within a 10 minute walking distance to Kapa'a Town. It's close proximity to Kapa'a Town offers opportunity for town businesses to grow and provide economic opportunities for the businesses as well as the residents of the project. Phase I of HoKua Place offers agricultural lots that will offer opportunies for local food production. In anticipation of this Project, Phase I has an existing 1.8 MW solar voltaic system that is contributing to clean energy. Thus, HoKua Place contributes to Goal # 1 of the General Plan, a Sustainable Island.

HoKua Place will be contributing to the upgrade of the existing wastewater facility to handle the Project and future growth in the area. The Project has a tested water well capable of supplying more water for the project than required. The Petitioner is currently in discussion with the County DOW about having the well dedicated to the County for the general public use.

The ADA design for the HoKua Place will be done during the final design of the subdivision.

HoKua Place is intended to be designed to offer a healthy lifestyle. The project is substantially within a 10-minute walk to Kapa'a Town. It entails walking/bicycle paths that will be integrated in future town paths. The Project is a proposed to be a walkable/bicyclable community to minimize driving. The Petitioner has been having dialogue with The Kauai Bus about offering one bus pass for each housing unit to encourage members of each unit to use the bus.. Diversified housing units will provide homes for all people. The increase in housing units adjacent to Kapa'a Town provides economic opportunities to the businesses and residents. HoKua Place contributes to Goal #3, a Healthy and Resilient People.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 11:59 AM
To: isobel148@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Isobel Storch.pdf

Aloha Ms. Storch,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: isobel <isobel148@gmail.com>
Sent: Monday, June 22, 2015 9:46 AM
To: info@hookuleana.com; luc@dbedt.hawaii.gov; mwilliams@kauai.gov
Subject: Re: HoKua Place Draft EIS -Kauai - public comment

I am a permanent resident of Kauai and live at 5837 Olohena Road. As such I will be directly impacted by the proposal to open an entrance onto Olohena Road from the proposed housing project. My house is only a few feet from the road and I already observe a great deal of traffic on a regular basis coming in both directions day and night. In addition, despite the extremely curvy nature of the road, many vehicles drive at an excessive speed. Creating an opportunity for more traffic to use this road will only increase the noise and potential for accidents, especially since I read nothing in the EIS that would reduce the speed limit allowed on this road.

I am opposed to the proposal to open an entrance to Olohena Road from Hokua Place due to the negative impact it will create on the community already living here. If, however, such an opening were to be built, then I would recommend a change in the speed limit to 15 mph.

Lastly, I oppose the proposed zoning change from agriculture to urban. My family and I are farmers; we live on Kaua'i precisely because of its agricultural history. We strongly believe the economic future of this little island lies in sustainable agriculture and not in housing development. There could be sufficient affordable housing here if the county would step up and create regulations for rent control as well as other appropriate means to allow our families to live affordably. Furthermore, the prices listed in your proposal are hardly affordable!

Thank you for the opportunity to make my comments.

Isobel Storch

Response, 10/01/2018:

Ms. Storch,

Please refer to the updated Traffic Impact Analysis Report dated May 2017 for your traffic concerns and the solutions proposed. This TIAR has addressed the State DOT and the County PW department's comments. It also discribes the North-South circulation plan for the area. There is a discussion about having the project association providing a shuttle service from the project to Kapa'a Town.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness. Think about of young families please.

Exhibit "C.1" Agricultural Suitability Report states what most people in the agricultural business have known for some time now. That is, Kaua'i has an abundance of agricultural lands to sustain our island. The problem is the lack of farmers and the lack of farm workers. The economics for farming just does not work. The comfortable fact is that should Kaua'i be forced to grow its own food due to some national economic disaster, we do have an abundance of agricultural lands to sustain ourselves. The County of Kauai Important Agriculture Lands Study of 2015 supports the attached Agricultural Suitability Report.

Ms. Storch, I applaud your and your family's determination and fortitude to continuing farming. It is not an easy task

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 12:01 PM
To: oz77@hawaiiantel.net
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Robert Rowny.pdf

Aloha Mr. Rowny,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Robert Rowny <oz77@hawaiiantel.net>
Sent: Thursday, June 04, 2015 9:04 AM
To: luc@dbedt.hawaii.gov; info@hookuleana.com
Subject: Hokua Place!

Robert Rowny opposes the pending Hokua Place development because of the negative impact on the infrastructure & quality of life... for all residents & tourists on Kauai. Sincerely, Robert Rowny

Response, 10/01/2018:

Mr. Rowny,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report dated May 2017 for your traffic concerns and the solutions proposed. This TIAR has addressed the State DOT and the County PW department's comments. It also discribes the North-South circulation plan for the area. There is a discussion about having the project association providing a shuttle service from the project to Kapa'a Town.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness. Think about of young families please.

The 2nd DEIS adequately addresses the concern of infrastucture.

The General Plan developed "Visions" and "Goals" to guide Kauai in future developments. Goal # 1 specifically states that "Sustainability means growing responsibility to meet the needs of current and future generations without depleting important resources".

HoKua Place provides opportunity for housing for all people as they aspire for a better life. The need for housing is very current. The Project will substantially address the current need for housing in the area. The development will not deplete our important resources. HoKua Place is designated as "Neighborhood General" in the General Plan. It is substantially within a 10 minute walking distance to Kapa'a Town. It's close proximity to Kapa'a Town offers opportunity for town businesses to grow and provide economic opportunities for the businesses as well as the residents of the project. Phase I of HoKua Place offers agricultural lots that will offer opportunies for local food production. In anticipation of this Project, Phase I has an existing 1.8 MW solar voltaic system that is contributing to clean energy. Thus, HoKua Place contributes to Goal # 1 of the General Plan, a Sustainable Island.

HoKua Place will be contributing to the upgrade of the existing wastewater facility to handle the Project and future growth in the area.The Project has a tested water well capable of supplying more water for the project than required. The Petitioner is currently in discussion with the County DOW about having the well dedicated to the County for the general public use.

HoKua Place is intended to be designed to offer a healthy lifestyle. The project is substantially within a 10-minute walk to Kapa'a Town. It entails walking/bicycle paths that will be integrated in future town paths. The Project is a proposed to be a walkable/bicyclable community to minimize driving. The Petitioner has been having dialogue with The Kauai Bus about offering one bus pass for each housing unit to encourage members of each unit to use the bus... Diversified housing units will provide homes for all people. The increase in housing units adjacent to Kapa'a Town provides economic opportunities to the businesses and residents.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 12:03 PM
To: sdaver1@mac.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 David Rosenberg.pdf

Aloha Mr. Rosenberg,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: S. David Rosenberg <sdaver1@mac.com>
Sent: Monday, June 22, 2015 1:24 PM
To: luc@dbedt.hawaii.gov
Cc: info@hookuleana.com
Subject: Hokua Place Development

Dear Land Use Commission,

As a full time resident of Kauai, I am very concerned about the proposed Hokua Place Development that will add some 800 dwelling units in Kapaa. I am trying to understand why this is even on the table and can come up with only three possibilities

- The members of the Land Use Commission are ignorant of the reality of life in Kapaa.
- The members of the Land Use Commission don't care about the reality of life in Kapaa.
- The members of the land use commission have contempt for the citizens of Kapaa and Kauai.

I know that these sentiments are harsh, but given that the traffic congestion in Kapaa is near gridlock for much of the work day, it is hard to think otherwise. I regularly avoid going through Kapaa during the day between 10:00 A.M. and 6:30 P.M. The congestion during theses times means that a trip from Kapahi (Helena Lane where I live) to Safeway and back takes no less than an hour. I know I'm not the only one who avoids Kapaa during these times and that's got to have an adverse impact on Kapaa businesses.

If you add to the Hokua Place proposal, the proposed new development at Coco Palms, Coconut Beach resort and Coconut Plantation, it's expected that an additional 1800 vehicles will be added to the traffic load along the Kapaa/Wailua corridor. Has anyone considered how this is going to work in light of the current gridlock that already exists in Kapaa from 10:00 A.M. to 6:30 P.M. every day?

As you know people in Wailua, have only two routes down to the main highway; 1) Olohena Rd., or 2) Kuamoo Rd.

1) Olohena Rd. is a winding, narrow, two lane country road. Adding 800 housing units proposed by Hokua Place will turn this road into a congested main feeder into old Kapaa town. Neither the road, nor the traffic circle at the bottom of the hill were designed to handle the volume of traffic being proposed. Also, have you considered the effect this development will have on Kapaa Middle School? When school lets out in the afternoon, traffic on Olohena Rd. essentially comes to a halt until all the busses can leave. During this time, the whole Hokua development will be essentially unable to get in or out.

The Kapaa Bypass road is not going to be sufficient to serve as any solution to this problem. As with Olohena, it's a winding road and can be dangerous at the speeds people often drive there. With this new development, you can predict terrible congestion and a lot more traffic fatalities.

2) Kuamoo Rd. is somewhat wicer and straighter than Olohena Rd., but still, it's already congested at certain times of the day. For example, if you try to go down the hill at 7:30 A.M., the traffic is sometimes backed up 1.5 miles, all the way to Opaekaa Falls.

It's my understanding that the traffic plans developed in 1997 have not been completed. Since that time, the Kapaa area has grown substantially. New long-term plans have to be developed before any new development is approved.

I am not against development per se. But before development is approved, the roads, drainage, sewage and refuse infrastructure have to be updated in order to handle the substantially increased volume of cars and people.

Other problems that concern me are:

a. **Environmental impacts** on storm drainage, land fill and recycling centers, as well as the impact on the land from sewage and septic systems.

b. **Impact on Retail Business** - Already the traffic is so bad that many people are avoiding Kapaa retail businesses and finding ways to do their shopping on-line, or on other parts of the Island.

c. **Impact on Quality of Life and Tourism** - The main reasons people want to visit our Island is to enjoy the rural lifestyle and to get away from the stress of urban living. Already in parts of the Island, we have ruined this benefit. What effect do you think it has on vacationers who come here and find they have to spend an hour in traffic just to buy groceries?? Are we going to continue down this path until Kauai is simply no longer a pleasant place to live and visit?

In my opinion, Hokua Place should not be approved until ALL the impacts on our community can be thoroughly addressed.

Thank you for considering my comments.

Dave Rosenberg

Response, 10/01/2018:

Mr. Rosenberg,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report dated May 2017 for your traffic concerns and the solutions proposed. This TIAR has addressed the State DOT and the County PW department's comments. There is a discussion about having the project association providing a shuttle service from the project to Kapa'a Town.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness. Think about of young families please.

Page 94 of the 2nd DEIS has a preliminary drainage plan with detention basins to be incorporated in the final drainage design. Run-Offs in the detention basins will be used for landscape irrigation.

The General Plan developed "Visions" and "Goals" to guide Kauai in future developments. Goal # 1 specifically states that "Sustainability means growing responsibility to meet the needs of current and future generations without depleting important resources".

HoKua Place provides opportunity for housing for all people as they aspire for a better life. The need for housing is very current. The Project will substantially address the current need for housing in the area. The development will not deplete our important resources. HoKua Place is designated as "Neighborhood General" in the General Plan. It is substantially within a 10 minute walking distance to Kapa'a Town. It's close proximity to Kapa'a Town offers opportunity for town businesses to grow and provide economic opportunities for the businesses as well as the residents of the project. Phase I of HoKua Place offers agricultural lots that will offer opportunies for local food production. In anticipation of this Project, Phase I has an existing 1.8 MW solar voltaic system that is contributing to clean energy. Thus, HoKua Place contributes to Goal # 1 of the General Plan, a Sustainable Island.

HoKua Place is intended to be designed to offer a healthy lifestyle. The project is substantially within a 10-minute walk to Kapa'a Town. It entails walking/bicycle paths that will be integrated in future town paths. The Project is a proposed to be a walkable/bicyclable community to minimize driving. The Petitioner has been having dialogue with The Kauai Bus about offering one bus pass for each housing unit to encourage members of each unit to use the bus. Discussions are also taking place on having the project association provide a shuttle to Kapa'a Town. Diversified housing units will provide homes for all people in all income levels. The increase in housing units adjacent to Kapa'a Town provides economic opportunities to the businesses and residents.

HoKua Place will be contributing to the upgrade of the existing wastewater facility to handle the Project and future growth in the area.

The Project has a tested water well capable of supplying more water for the project than required. The Petitioner is currently in discussion with the County DOW about having the well dedicated to the County for the general public use.

The ADA design for the HoKua Place will be done during the final design of the subdivision.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 12:08 PM
To: karen@landofmist.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Karen Mavec.pdf

Aloha Ms. Mavec,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Land of Mist <karen@landofmist.com>
Sent: Thursday, May 21, 2015 8:58 PM
To: info@hookuleana.com
Subject: Hokua Place Development / for Peter young

Dear Peter,

I would appreciate your taking another look at the Hokua Place project proposal. I am a 20 year resident of Wailua and have great concern for what I hear about the development.

The DEIS is supposed to be the official response to previous comments and concerns raised by the community. It appears that the document not only fails to address most of the concerns raised by the community it also fails to resolve potential infrastructure problems.

1) The developers have denied the need for changes, saying that traffic studies done in 2012 are adequate. How valid is that?

I travel from my home down Olohena Rd to the roundabout on work days between 7:30-7:45am every morning and I can tell you the traffic regularly gets backed up to the Middle School. There is not one morning where there is less traffic than that unless school is not in session or it is a holiday.

Adding more density to the environment before we resolve traffic issues is a great mistake. It may look great to everyone who is looking at the proposal on paper but I can tell you from personal experience that if the development is allowed to go ahead it will have a very negative impact on the entire Kapaa corridor as there will be gridlock at the Roundabout, in Kapaa town, at the Wailua Bridge multiple times a day which will affect

- being able to get from point A to point B on a timely basis
- local businesses
- the tourist industry in a negative way. Who will want to come visit if they can't travel with ease from one area of the island to another. No one wants to sit in traffic as if it were LA.

2) The DEIS also fails to address the very real problem of lack of adequate water pressure and storm runoff issues that will increase due to re-contouring the land.

For 10's of years the big concern about building in the Wailua corridor has been the lack of adequate water pressure. Moreover when there is heavy rainfall the water run-off is a serious

problem. There is always flooding and road closure that goes on due to water running off from Non-Near 34.

3) The development fails to address the issue of affordable housing.

Moreover, the most egregious error is the lack of provision for affordable housing. According to the DEIS only 38 out of 183 dwellings in the multi-family apartments are to fall in the affordable housing category which is mandated by the County. Single-family dwellings on lots will be in the "$450,000 to $950,000 range with projected prices as stated in 2015 dollars".

Who can afford that?? Your average Kauaian already holds two jobs to try to make ends meet. There is not enough time in the week to work even more hours.

Please re-consider what is at stake here!!

Aloha - Karen Mavec

Wailua resident

Response, 10/01/2018:

Ms. Mavec,

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The ADA design for the HoKua Place will be done during the final design of the subdivision.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 12:09 PM
To: wailuat@hawaiiantel.net
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Lynn.pdf

Aloha Ms. Lynn,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

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Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Scott Derrickson <SDerrick@dbedt.hawaii.gov> on behalf of &LUC <luc@dbedt.hawaii.gov>
Sent: Friday, May 22, 2015 8:34 AM
To: info@hookuleana.com
Subject: Fw: hokua place subdivision

Aloha Peter:

Forwarded on response to DEIS. Aloha, Scott

State of Hawaii, Land Use Commission
Phone: (808) 587-3822
Fax: (808) 587-3827
Website: http://luc.state.hi.us
----- Forwarded by Scott Derrickson/DBEDT on 05/22/2015 08:34 AM -----

From: wailuat@hawaiiantel.net
To: luc@dbedt.hawaii.gov
Date: 05/20/2015 03:16 PM
Subject: hokua place subdivision

I am in total opposition to this subdivision. As a life long resident of this island I have seen the changes

that have impacted our highways and lives some good, but for the most part not.To me this is not smart growth.

Before homes, we need our highways and roadways updated and improved. Let us not put the cart before the horse.

Seen way to many of those happen on our island. Do it rite and correct.Not after the fact.

Affordable housing has become such a trite word. For whom is it affordable to? I know that anything above

500,00 dollars is not affordable for the local people, my question then is to whom are these homes targeted to.

I say No Adequate Highways, No Homes. Am just saying Not here and not now

aloha

Lynn

Response, 10/01/2018:

Lynn,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

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The 2nd DEIS adequately addresses the concern of infrastucture.

The General Plan developed "Visions" and "Goals" to guide Kauai in future developments. Goal # 1 specifically states that "Sustainability means growing responsibility to meet the needs of current and future generations without depleting important resources".

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The Project has a tested water well capable of supplying more water for the project than required. The Petitioner is currently in discussion with the County DOW about having the well dedicated to the County for the general public use.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 12:11 PM
To: joanlevy47@icloud.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Joan Levy.pdf

Aloha Ms. Levy,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

Subject: FW: serious concerns about the proposed Hokua Place development

From: Joan Levy [mailto:joanlevy47@icloud.com]
Sent: Saturday, June 20, 2015 1:53 AM
To: bbuley@thegardenisland.com; Mayor@kauai.gov; KauaiCountyCouncil; mwilliams@kauai.gov; luc@dbedt.hawaii.gov; info@bookuleana.com
Subject: serious concerns about the proposed Hokua Place development

Aloha,

I live in the Wailua house lots in Kapaa. It is unimaginable and I think completely irresponsible to consider allowing agreement for this development (by re-zoning ag to urban land use) before we have the infrastructure in place to accommodate the increased traffic, waste treatment, and classroom overcrowding.

Not to mention whatever other unforeseen negative impacts on our rural kauai lifestyle the proposed increase in island resident and tourist population will bring.

We must be righteously committed to only sustainable growth here on Kauai. Developers promises of environmental sensitivity and sustainability have no basis in what actually happens Their concerns are on the profits they will make. Not on any ill effects that the community will suffer because of what they have built here.

This particular developer has pointed to written safeguards and allowances that are ambiguous at best with no tangible dates, financing, or definitive plans. Pie in the sky hopes that will only turn into mud on our faces.

Just today the bypass was considerably backed up, going south. Market day on Wednesday in Kapaa is already a horrendous traffic mess. Adding 1600 cars from the Hokua Place development right smack into the congestion that already exists there can only lead to a total nightmare for us.

The waste treatment substation at haleilio road already smells like you know what. The traffic light can last 6 minutes with a bunch of cars having to sit right next to that stench. If we can't manage our waste now, what will happen as the proposed Coco Palms opens it's doors - especially with the existing plan to route their guests right onto Haleilio. Then there are the Waipouli Hotels planned. Do we really need 3 new hotels in Kapaa???? With no beautiful beach to offer their customers, none will be hanging out at the hotel. They will be on the roads from dawn till …

Numerous times I have ventured out along Haleilio planning to go south or north only to turn back not wanting to deal with the traffic congestion and delays. The post office can wait. I'll get that food I need later. I hope my bank balance can wait to deposit this check another day…

Do you really think tourists (who remain Kauai's bread and butter) will continue to flock here to sit locked in traffic congestion while they have to smell noxious waste treatment failures?

This is such a no brainer. Our future is in YOUR hands. We have entrusted you to watch over our a'ina and island community needs.

Please deny the application for a zone change form ag to urban for the proposed Hokua Place Development.

Thank You!
Joan Levy
POB 160, Kapaa, HI 96746

Joan Levy
joanlevy47@icloud.com

Response, 10/01/2018:

Ms. Levy,

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Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 12:12 PM
To: makotolane@yahoo.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Makoto Lane.pdf

Aloha Ms. Lane,

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Peter T Young

From: Makoto Lane (makotolane@yahoo.com)
Sent: Monday, June 15, 2015 8:31 AM
To: [illegible]
Subject: HoKua Place development

Aloha,

The traffic congestion on Kuhio is an issue where county planners can be found negligent in approving and certifying the existing place roadways. It is a serious concern and [illegible] alone rezoning of agricultural lands approved.

The Kuhio corridor will already cause major traffic congestion at the end of Kapa'a when those vehicles coming of traffic at the other end. There are no other points along the main highway of Kauai. Any development will add to the congestion of these already choke points.

Kauai's food is usually available in only 30% of our food. The state, county, UH system and private entities are working towards food sustainability initiatives and we cannot afford to lose any agriculturally zoned land to residential development and we fully address and solve our food sustainability issue.

We have many other issues that need to be taken care of before we start [illegible] Sprawl, HIDE (recycling), run off water lead agric pollutes streams, traffic, water rights. All of which have to be addressed before we add any more people to the mix.

We need affordable housing, but building 650 high end condominiums in the name of affordable housing is a problem. This project will not be solved by the proposed new routes. How much affordable housing has gone to those poor and raised in past developments?

Since when did big, long more houses ever have [illegible] Look at Honolulu or Los Angeles. Building more [illegible] median cost of housing, over [illegible]

Please do not let us end up being the new Orange County.

Makoto Lane
Vice-President Kauai Young Democrats
[illegible]

Response, 7/10/2017:

Mr. Lane

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Exhibit "C.1" Agricultural Suitability Report states what most people in the agricultural business have known for some time now. That is, Kaua'i has an abundance of agricultural lands to sustain our island. The problem is the lack of farmers and the lack of farm workers. The economics for farming just does not work. The comfortable fact is that should Kaua'i be forced to grow its own food due to some national economic disaster, we do have an abundance of agricultural lands to sustain ourselves. The County of Kauai Important Agriculture Lands Study of 2015 supports the attached Agricultural Suitability Report.

The intention of the Petitioner to provide housing for all, including for all income brackets. HoKua Place is committed to providing housing in conformance to the County Affordable Housing Policy.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 12:13 PM
To: kenxxden@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Ken Jopling.pdf

Aloha Mr. Jopling,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Ken Jopling <kenxxden@gmail.com>
Sent: Sunday, June 21, 2015 7:23 PM
To: info@hookuleana.com
Subject: Kapaa Highlands development

As a citizen resident of upper Kapahi I cannot support the proposed Hokua Place development. The highway infrastructure cannot support such development with 800 new homes and the cars that each home will have entering Kapaa at the current roundabout. As far as your proposed feeder road from the current Bypass to Olohena Road goes against the initial purpose of the Bypass to not have intersections along its route.

Also I feel strongly that Agricultural Land should remain for the production of local food sources and not be re zoned for residential purposes.

Ken Jopling, RN, BSN
Support Your Health

Response, 7/10/2017:

Mr. Jopling,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report dated May 2017 for your traffic concerns and the solutions proposed. This TIAR has addressed the State DOT and the County PW department's comments. It also discribes the North-South circulation plan for the area. There is a discussion about having the project association providing a shuttle service from the project to Kapa'a Town.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness. Think about of young families please.

Exhibit "C.1" Agricultural Suitability Report states what most people in the agricultural business have known for some time now. That is, Kaua'i has an abundance of agricultural lands to sustain our island. The problem is the lack of farmers and the lack of farm workers. The economics for farming just does not work. The comfortable fact is that should Kaua'i be forced to grow its own food due to some national economic disaster, we do have an abundance of agricultural lands to sustain ourselves. The County of Kauai Important Agriculture Lands Study of 2015 supports the attached Agricultural Suitability Report.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 12:15 PM
To: 2da1wahine@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Sandra Herndon.pdf

Aloha Ms. Herndon,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

Subject: FW: Proposed HoKua Place development

From: Sandra Herndon [mailto:2da1wahine@gmail.com]
Sent: Saturday, June 20, 2015 12:42 AM
To: Info@hookuleana.com
Cc: Marie Williams; Mayor Bernard Carvalho; counciltestimony@kauai.gov; raymond.j.mccormick@hawaii.gov; rodney.y.funakoshi@dbedt.hawaii.gov; michael.k.hinazumi@hawaii.gov; donald.l.smith@hawaii.gov; mmoule@kauai.gov
Subject: Proposed HoKua Place development

Aloha Mr Young and other interested parties,

I am writing in opposition to the proposed Hokua Place development. While I certainly agree that Kaua`i needs more affordable housing, I don't believe that this is the appropriate time nor place for this project to go forward.

Until such time as the infrastructure has been established, it does a huge disservice to the rest of the community, to accommodate the new construction.

I live in the Wailua House Lots division, having moved recently from Kapahi. I used to have to schedule trips past the middle school, so as not to encounter the backed up traffic from parents dropping off / picking up their children. With the additional homes planned for this area, the congestion will only be worse, but likely not as bad as it is now, on Kuhio Hwy through Kapaa town. The roads need to be in place before the construction commences.

I'm also concerned that these homes will not be affordable for the average citizen of Kaua`i, but instead will be priced out of the market. Pricing these homes out of financial reach of the majority of the community only increases the homeless situation, which we're dealing with particularly on the Eastside area.

Another concern is the sewage system. For years, traversing the area around Coco Palms/ Haleilio intersection is a strong reminder that the waste water treatment plant is insufficient to handle the current load. The odor is so strong at times you have to hold your breath, even with the windows up. It's inconceivable that 800 new residences could be added to this already overloaded system, without major pollution problems. Again, we need to have infrastructure in place prior to construction.

Although this testimony may be regarded as merely "anecdotal", it is what we live with on a daily basis; If the intention is to increase the quality of life here on Kauai, consider locating the development in Lihue, where residents can walk to the shopping centers, etc. The roads have already been widened to accommodate more traffic, there is plenty of vacant land across from the centers and it would serve to centralize the community.

Mahalo for the opportunity to speak to this issue.

Sandra Herndon

Kapaa, HI

"Thought is Creative, and YOU are the Thinker"

Response, 10/01/2018:

Ms. Herndon,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report dated May 2017 for your traffic concerns and the solutions proposed. This TIAR has addressed the State DOT and the County PW department's comments. It also discribes the North-South circulation plan for the area. There is a discussion about having the project association providing a shuttle service from the project to Kapa'a Town.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness. Think about of young families please.

The 2nd DEIS adequately addresses the concern of infrastucture.

The General Plan developed "Visions" and "Goals" to guide Kauai in future developments. Goal # 1 specifically states that "Sustainability means growing responsibility to meet the needs of current and future generations without depleting important resources".

HoKua Place provides opportunity for housing for all people as they aspire for a better life. The need for housing is very current. The Project will substantially address the current need for housing in the area. The development will not deplete our important resources. HoKua Place is designated as "Neighborhood General" in the General Plan. It is substantially within a 10 minute walking distance to Kapa'a Town. It's close proximity to Kapa'a Town offers opportunity for town businesses to grow and provide economic opportunities for the businesses as well as the residents of the project. Phase I of HoKua Place offers agricultural lots that will offer opportunies for local food production. In anticipation of this Project, Phase I has an existing 1.8 MW solar voltaic system that is contributing to clean energy. Thus, HoKua Place contributes to Goal # 1 of the General Plan, a Sustainable Island.

HoKua Place is intended to be designed to offer a healthy lifestyle. The project is substantially within a 10-minute walk to Kapa'a Town. It entails walking/bicycle paths that will be integrated in future town paths. The Project is a proposed to be a walkable/bicyclable community to minimize driving. The Petitioner has been having dialogue with The Kauai Bus about offering one bus pass for each housing unit to encourage members of each unit to use the bus.. Diversified housing units will provide homes for all people in all income categories. The increase in housing units adjacent to Kapa'a Town provides economic opportunities to the businesses and residents.

HoKua Place will be contributing to the upgrade of the existing wastewater facility to handle the Project and future growth in the area.

The Project has a tested water well capable of supplying more water for the project than required. The Petitioner is currently in discussion with the County DOW about having the well dedicated to the County for the general public use.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 12:17 PM
To: mdente@hawaii.rr.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Marj Dente.pdf

Aloha Marj Dente,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Marj Dente <mdente@hawaii.rr.com>
Sent: Sunday, June 21, 2015 9:03 PM
To: luc@dbedt.hawaii.gov; info@hookuleana.com
Cc: raymond.j.mccormick@hawaii.gov; rodney.y.funakoshi@dbedt.hawaii.gov; michael.k.hinazumi@hawaii.gov; donald.l.smith@hawaii.gov; mwilliams@kauai.gov; mmoule@kauai.gov; Kauai Council
Subject: Concerns related to the Hokua Place, Kapa'a Zoning Change

RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS), MAY 2015 FOR APPLICATION OF ZONING CHANGE FROM AGRICULTURAL TO URBAN LAND USE as prepared by Ho'okuleana LLC, known as HOKUA PLACE in Kapa'a, HI.

Aloha to all personnel. State and Kauai County, who will be reviewing the above application DEIS.

I have spent a considerable amount of time reading the (DEIS) for the above application. Among many important items outlined in this document, I have time to write the issues only I am most concerned about, after having researched information that has prompted me to comment on issues and ask the following questions.

1) Page 130: TRAFFIC RELATED ISSUES: The applicant suggests that to mitigate a potential problem for pedestrians and bicycles to safely cross the Kapa'a By-Pass Road, that a multi-use overpass be constructed. According to Don Smith of the Hawaii Department of transportation (HDOT), overpasses are seldomly used and are not a good investment in State funds. The DEIS does not indicate who would be responsible for building the overpass if approved. I find this suggestion unacceptable.

2) Page 131: TRAFFIC RELATED ISSUES: The applicant admits that the intersection of Olohena, Ka'apuni and Keahulua Roads is presently poor. They are proposing a round-a-bout be constructed near this intersection, leading into their project at their main drive-through road which is immediately at the property corner of their project and the Kapa'a Middle School. Not only is this probably the worst possible sighting for a round-a-bout being so close to a steep grade from and to Olohena Road (causing all traffic including school buses to consistently stop and start on this hill, but there is a huge drop off on both sides of this area. Should navigation by school buses be impaired for any reason, buses could easily fall over the edge of the embankments. Also, the cost of round-a bouts has been quoted to me by the HDOT as costing between 5 and 7 million dollars. Since this intersection is NOT a state highway, the County of Kauai would have to pay for this suggested mitigation as the applicant is not offering to do so in the DEIS. This is an unacceptable solution.

3) Page 136: TRAFFIC RELATED ISSUES: In a letter dated February 11, 2015 from Raymond Mc Cormick, then District Engineer of the HDOT, he states that one of the solutions being proposed to hasten traffic around Kapa'a, is to add an additional lane to the North end of the Kapa'a Bypass. Not only is there no time line for funds to be available for this addition, but according to the HDOT, a traffic signal would have to be installed at the intersection with Kuhio Highway, causing more of a traffic tie up than what already exists. Since no funds have been allocated by the KDOT, it could be many years after any development is approved and constructed on the applicant's property. This is not an acceptable solution.

4) Page 79: WATER RESOURCES: The applicant admits that there may be a contamination problem with the well that they are proposing would either be connected to the Department of Water (DOW) storage tank on Ka'apuni Road, or used directly within their project development. Regardless, I find these two proposals are assuming that their well water will be potable water for human consumption since this exploratory well is not indicated as having been already tested by the Hawaii Department of Health (HDOH), and not now meeting the requirements of the DOW. The well is indicated as being on two separate maps in two separate places in the DEIS as being within a few feet from an existing stream and about 300 feet from the stream. QUESTION: Which map is correct?

Regardless, the stream that flows through or near the applicant's property originates west and northwest of Olohena Road, flowing through major cattle, goat and pig country for years and years. Plus, is there any research to be done regarding overflowing or leaching cesspools within the uplands of this stream?

5) Page 80: WASTEWATER: The applicant is proposing that all wastewater from any potential development will be routed to the sewer lines that traverse through Kapa'a and Wailua into the Wailua Water Treatment Plant (WWTP). This plant, originally

constructed in 1964 meets only the minimum requirements for wastewater treatment per Hawaii Administrative Rules. Although the WWTP has been expanded to deal with a higher peak flow, it still is pumping a minimally treated outflow into the ocean at Lydgate Park as well as being used as irrigation for the Wailua Golf Course.

QUESTION: What kind of testing and how often is the outflow pipe into the ocean researched? Also, are there signs at both the Lydgate beach location and the golf course advising swimmers, surfers and golfers that they may be subject to pollution and bodily harm, particularly if studies and research are not done consistently and independently of the management of the WWTP?

I would appreciation your consideration of my concerns as you review the DEIS for this project and will expect detailed responses via e mail and/or at a future public hearing to be held on Kauai.

Mahalo and with Aloha.

Marj Dente, resident and property owner for over 25 years
6335-B Waipouli Road, Kapa'a, HI 96746 808-823-8162

Response, 10/01/2018:

Dear Marj Dente,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Please refer to the updated Traffic Impact Analysis Report dated May 2017 for your traffic concerns and the solutions proposed. This TIAR has addressed the State DOT and the County PW department's comments. It also discribes the North-South circulation plan for the area. There is a discussion about having the project association providing a shuttle service from the project to Kapa'a Town.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in. Owning a home is the key to families growing equity to better their lifestyle. I don't believe having to stay in traffic should prevent a family from having a home in pursuit of a good life, liberty and happiness. Think about of young families please.

The 2nd DEIS adequately addresses the concern of infrastucture.

HoKua Place will be contributing to the upgrade of the existing wastewater facility to handle the Project and future growth in the area. I have not been able to get information on the effluent discharged into the ocean and the golf course for irrigation. I will have to get back to you on this issue.

The Project has a tested water well capable of supplying more water for the project than required. The Petitioner is currently in discussion with the County DOW about having the well dedicated to the County for the general public use.

HoKua Place is intended to be designed to offer a healthy lifestyle. The project is substantially within a 10-minute walk to Kapa'a Town. It entails walking/bicycle paths that will be integrated in future town paths. The Project is a proposed to be a walkable/bicyclable community to minimize driving. The Petitioner has been having dialogue with The Kauai Bus about offering one bus pass for each housing unit to encourage members of each unit to use the bus. Diversified housing units will provide homes for all people in all income categories. The increase in housing units adjacent to Kapa'a Town provides economic opportunities to the businesses and residents.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 12:19 PM
To: liladevi@yahoo.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Lila Devi.pdf

Aloha Lila Devi,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: lila devi <liladevi@yahoo.com>
Sent: Friday, June 12, 2015 7:00 AM
To: info@hookuleana.com
Cc: luc@dbedt.hawaii.gov
Subject: 800 house development Kapaa

Please don't ask for approval for this development until the infrastructure in Kapaa can be improved by the DOT.
The sanitation needs improving and the flow of traffic through the Kuhio Highway shopping area.
The tourists are not going to continue to visit here once they experience the traffic gridlock.

the locals will have to do our shopping in the evening or early morning hours to stay out of the gridlock. It is already slow most weekday afternoons and we don't even have the traffic from the approved 3 hotels yet to experience.

Is the developer going to live and commute from his development. I doubt it!

Hold off till DOT and local politicians can improve the traffic and sanitation.

Thank you, Lila Devi (Wailua Homesteads homeowner)

Response, 10/01/2018:

Dear Lila Devi,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

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Kauai is on the verge of forcing people to use the Bus, shuttles and car pooling. We have no other choice. People have the freedom to own homes, to visit and not go home. We cannot control the population. Government is and will always be slow in catching up with tranportation improvements.

The three projects you mentioned will most likely be completed within 5 years. HoKua Place will have housing available for the workers of the projects. Innovative ways of getting the workers to and from their work place are being discussed. A shuttle by the hotels and the project association from the Project to and from the hotels is a viable.

HoKua Place is intended to be designed to offer a healthy lifestyle. The project is substantially within a 10-minute walk to Kapa'a Town. It entails walking/bicycle paths that will be integrated in future town paths. The Project is a proposed to be a walkable/bicyclable community to minimize driving. The Petitioner has been having dialogue with The Kauai Bus about offering one bus pass for each housing unit to encourage members of each unit to use the bus.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 12:21 PM
To: goodwinkip@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-3 Michael Goodwin.pdf

Aloha Mr. Goodwin,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Response, 7/10/2017:

Mr. Goodwin,

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Thank you for voicing your concerns,

Ron Agor

Peter T Young

From: Michael Goodwin <goodwinkip@gmail.com>
Sent: Monday, June 22, 2015 10:35 AM
To: luc@dbedt.hawaii.gov; info@hookuleana.com; Michael Goodwin
Subject: Draft EIS, Hokua Place

Aloha to those reviewing this application,

After reviewing the Draft Environmental Impact Statement of May 15 for application of zoning change from agriculture to urban use as proposed by Ho'okuleana LLC, aka Hokua Place in Kapa'a on Kaua'i, I do not think the developer has made a convincing case for this development in this location being a better use than its current designation for agriculture.

Attending a meeting with Dept. of Transportation personnel Ray McCormick and Don Smith, I learned that funding for road upgrades that would mitigate the increased traffic on the already overburdened Kapa'a-Wailua corridor, arising from this development, will not be forthcoming for a long time, if ever. Traffic congestion is already a real safety issue for buses transporting children to the adjacent Kapa'a Middle School, for children crossing Olohena Road in front of the school, and for emergency vehicles being delayed in dense traffic on Kuhio Highway.

The developer is claiming an on-site water source sufficient to serve all 800 homes. There is no independent corroboration of this claim. An independent study, paid for by developer, needs to verify the quantity and potability of water from a well on the property.

Wastewater is proposed to go to Lydgate where it would be partially treated and much of it then pumped into the ocean. Please consider there are three already permitted, yet to be built resorts in Waipoli/Wailua, all to be served by the 1960s era Lydgate waste treatment plant. Developers, not taxpayers, should pay for waste treatment upgrades. But first and foremost it should be determined that the already stressed eastside ecosystem can absorb all this added waste at all.

On a personal note, I used to drive from my home on Olohena Road to Wailua Beach frequently, but I have stopped because of the stress and personal risk of confronting the traffic tie-up at the Kuhio Highway, Kuamo'o Road intersection. It's a small example of a loss of quality of life, difficult to measure and quantify, endured by residents of the east side of Kaua'i.

Kaua'i needs housing for its people in areas that have the capacity to receive them. Kapa'a-Wailua is not one of those places.

Thank you for your consideration,

Michael Goodwin
Member of the executive committee, Kaua'i Chapter, Sierra Club

Group 4 - Responses to Other Individual Comments

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 12:57 PM
To: createaloha@hawaiiantel.net
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-4 Karen Wood.pdf

Aloha Ms. Wood,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Karen Wood <createaloha@hawaiiantel.net>
Sent: Friday, June 12, 2015 2:47 PM
To: info@hookuleana.com
Subject: Just say nooooooo to hokua place

Sent from my iPad

Response, 10/01/2018:

Ms. Wood,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

We cannot address your concerns at this time without specific examples. However, I would like to share the following information.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area. People who live in the area already contribute to the current congestion that is experienced at times.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Please note that the Petitioner's survey of young people in the Wailua-Kapa'a area puts housing needs in front of congested traffic. Some say yes, they are willing to wait a little longer in traffic if they can buy a home in the area they grew up in.

Exhibit "C-1" Agricultural Suitability Report states what most people in the agricultural business have known for some time now. That is, Kaua'i has an abundance of agricultural lands to sustain our island. The problem is the lack of farmers and the lack of farm workers. The economics for farming just does not work. The comfortable fact is that should Kaua'i be forced to grow its own food due to some national economic disaster, we do have an abundance of agricultural lands to sustain ourselves. The County of Kauai Important Agriculture Lands Study of 2015 supports the attached Agricultural Suitability Report.

Thank you.

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 1:00 PM
To: juan@islandbreath.org
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-4 Juan Wilson.pdf

Aloha Mr. Wilson,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Juan Wilson <juan@islandbreath.org>
Sent: Saturday, June 20, 2015 1:06 PM
To: luc@dbedt.hawaii.gov
Cc: info@hookuleana.com; mwilliams@kauai.gov; CouncilTestimony@kauai.gov; Bernard Carvahlo; Bill Buley
Subject: HoKua Place DEIS Testimony to LUC

Testimony regards DEIS Hokua Place

published 5-8-15 by OEQC

Aloha Land Use Commissioners,

Land Use Commission planning and decision making for Hawaii must take into consideration the long term interests of the people and environment of our islands. In recent decades our needs have become predominately dependent on imported of goods, services, energy and food.

We now rely on the mainland for approximately 90% of our food. This over dependance from far off places extends to our sources of energy, and our sources of consumer and industrial products.

On top of that the economy of Hawaii has need for tourism for income that is fragile and fickle. Obviously our isolation from alt other land masses in the world will be a factor of planning for the future if those importations are threatened.

So, if ever there was a time that self sustainability was a top priority for planning the future of Kauai - NOW is that time.

SUSATAINABILITY

The proposed Kohua Place advertises its plan as "Sustainable". But they use the word only as a talisman. This project is quite the opposite of "Sustainable" planning. It's more of the kind of development that makes us vulnerable to food riots within weeks of any serious disruption of Matson Line containerships from California.

The plan is car-centric. It will require getting in your car to do most anything. This will be place where people have to commute to work and commute to find food. The plan requires new roads, parking and accommodation for high-density multi-story living. Three quarters of the land is used for multi-unit housing requiring extensive parking lots, the rest is suburban single family sprawl on cul-de-sacs.

There will be little opportunity to grow food, pick fruit, raise chickens, keep goats, or house hunting dogs in this development.

The proposed density of the project is needed only to cover the debts and maximize profits to the speculators and investors promoting it - and from that springs the necessity to change it to an Urban District. In tomorrows rearview mirror that will be seen as shortsighted and impoverishing to Kauai.

Unfortunately, the wasteful use of fossil fuels, and the resources needed for the extravagant consumer lifestyle the modern world has become accustomed to has brought us to situation in which we are facing real declines in sources of cheap energy and resources.

Since 2008 we have been living in a collapsed world consumer-based industrial economy that faces negative growth forecasts. Although characterized as a financial collapse, the crash in 2008 was largely driven by having reached world Peak Oil production at that time.

Cheap, plentiful, fossil fuels to "grow the world economy indefinitely" will not recur again. As a result there is little reason to believe that the technology and industry supported by cheap oil will persevere. Tais would include affordable world-wide shipping across oceans of containers filled with consumer products or packaged and refrigerated food.

In Hawaii we already face some of the highest consumer costs in the world. It is certain that we in Hawaii will face ever increasing costs to import food and all other industrial products to our islands.

CLIMATE CHANGE

But even more tragic is that the by product of modern industrialism and food production has been the ever increasing CO2 content of our atmosphere. This "greenhouse" gas is wreaking havoc with the climate of the Earth and driving worldwide temperatures higher.

In Hawaii we are already seeing impacts on the environment. The jetstream has become more erratic. Here on Kauai our regular north-east tradewind has become irregular and supplanted by drier polluted Kona winds.

Climate scientists at the University of Hawaii have found an association with rising ocean temperatures and the elevations of the clouds over Hawaii. On Kauai rainfall on Mount Waialeale has been falling for decades. Much of Kauai is now in a moderate drought.

Climate Change and Global Warming are identified with the state-wide extreme drought in California that is quickly returning the Central Valley to desert conditions. Less snowfall in the mountains of California will continue due to Global Warming and has doomed agriculture there. And desert is what much California was before the last unusually wet century and the diversion of Colorado River.

Up until 2014 more than half of America's vegetables, fruits and nuts were grown in California. That will no longer be the case.

As California returns to the old -normal we will see end of the recent cornocopia of fruits and vegetables in the supermarkets of America and Hawaii.

Why is this relevant to the LUC decision on Kohua Place to convert the land its to sit on from an Agricultural District to an Urban District?

In one simple word it is patently "UNSUSTAINABLE!" And we need to be self sustaining in Hawaii. Not only will Kauai have to provide the food for its residents, but all the outer islands will have to contribute food to Oahu with its overburden of hundreds of thousands of people.

FOOD SECURITY

All agriculture land in Hawaii should now be viewed as a lifeboat to the future. We now know that industrial mono-crop farming requiring high energy inputs, synthetic fertilizers and massive pesticide use and will not work in Hawaii.

Sustainable food growing practices such as Organic Farming, Permaculture and Food Forests as well as some traditional farming, pasturing and orcharding should be practiced. We need to find what works as quickly as possible.

In general, I would suggest that the LUC evaluate proposals in Agricultural Districts with a strict set of criteria regarding an increase in local food production, and avoiding increased automobile dependance, population growth, and suburban sprawl.

If any changes in designation of mauka Agricultural Districts is contemplated it should be to either Conservation or Rural Districts. To sustain water resources we will need more forestation and to meet our food security requirements we will need more residents on small farms.

And projects on designated Rural Districts should be required to be at least self sustaining in the production of such things as fruits, vegetables, chickens, or eggs.

How else shall we live on Kauai in the future?

Mahalo for your considerations of this matter.

Juan Wilson
Architect/Planner
Executive Committee member
of the Kauai Group
of the Hawaii Chapter
of the Sierra Club

See also:
Ea O Ka Aina: HoKua Place Comment Deadline 6/18/15

Response, 10/01/2018

Mr. Wilson,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Exhibit "C.1" Agricultural Suitability Report states what most people in the agricultural business have known for some time now. That is, Kaua'i has an abundance of agricultural lands to sustain our island. The problem is the lack of farmers and the lack of farm workers. The economics for farming just does not work. The comfortable fact is that should Kaua'i be forced to grow its own food due to some national economic disaster, we do have an abundance of agricultural lands to sustain ourselves. The County of Kauai Important Agriculture Lands Study of 2015 supports the attached Agricultural Suitability Report.

The General Plan developed "Visions" and "Goals" to guide Kauai in future developments. Goal # 1 specifically states that "Sustainability means growing responsibility to meet the needs of current and future generations without depleting important resources".

HoKua Place provides opportunity for housing for all people as they aspire for a better life. The Project will substantially address the current need for housing in the area for all income brackets. The Project will not deplete our important resources. HoKua Place is designated as "Neighborhood General" in the General Plan. It is substantially within a 10 minute walking distance to Kapa'a Town. It's close proximity to Kapa'a Town offers opportunity for town businesses to grow and provide economic opportunities for the businesses as well as the residents of the project. Phase I of HoKua Place offers 16 agricultural lots that will offer opportunies for local food production. In anticipation of this Project, Phase I has an existing 1.8 MW solar voltaic system that is contributing to clean energy. Thus, HoKua Place contributes to Goal # 1 of the General Plan, a Sustainable Island.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 1:01 PM
To: annehugginswalton@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-4 Anne Walton.pdf

Aloha Ms. Walton,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Anne Walton <annehugginswalton@gmail.com>
Sent: Sunday, June 21, 2015 8:43 AM
To: info@hookuleana.com; luc@dbedt.hawaii.gov
Subject: Hokua Place

Dear Land Use Commission,

If you add to the Hokua Place proposal, the proposed new development at Coco Palms, Coconut Beach resort and Coconut Plantation, it's expected that an additional 1800 vehicles will be added to the traffic load along the Kapaa/Wailua corridor. Has anyone considered how this is going to work in light of the current gridlock that already exists in Kapaa from 10:00 A.M. to 6:30 P.M. every day? On top of that, DoT does not have a sufficient plan in place to address the current gridlock, much less adding 1800 vehicles to the mix in Kapaa alone.

This approach to land use planning is ad hoc at best, without consideration of the appropriate infrastructure to support new development - and in the end only responsive to the interests of developers. What is at risk is the loss of quality of life, the loss of tourism revenue - a major source of income for this island, and most of all, the loss of agriculture land to housing developments turning the garden isle into the suburban isle.

The project has been presented under the guise of being a low income housing project, however with full disclosure it is clear that 76% of the project does not fall within this category. As of today, 784 houses are on the market on Kauai, do we really need more mid to high value housing? Given the number of available mid to high value homes, do we really want to lose land, lose our quality of life, and lose our major income generator to the interest of a single developer?

I am a full time resident and property owner in the Homesteads, I do have an interest in the outcome of your decision. **Please do not change the land use designation from agricultural to residential in order to accommodate the building of Hokua Place.**

Mahalo,
Anne Walton
Wailua Homesteads

Response, 10/01/2018:

Ms. Walton,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area. People who live in the area already contribute to the current congestion that is experienced at times. As you mentioned, there are three major projects that will be completed in the next 5 years. These projects will add as much as 500 jobs to the area. HoKua Place will provide housing opportunities for workers of these new projects. These workers will be encouraged to use the bus or car pool to work from HoKua Place. There is discussion about having the developments and the project association providing shuttles for employess to and from work. I know Coco Palms have already committed to this concept. This will be better than the alternate of them driving through town from the north and south to get to work.

HoKua Place intends to provide housing opportunties for all income brackets. The Petitioner has committed to the policies of the County Affordable Housing policy.

Thank you for voicing your concerns,

Ron Agor

1

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 1:03 PM
To: roebro@aol.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-4 Randall Roe.pdf

Aloha Mr. Roe,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Randall <roebro@aol.com>
Sent: Monday, June 22, 2015 12:04 PM
To: info@hookuleana.com
Subject: NO TO HOKUA PLACE!

To Peter Young:

For the record, I am against the Hokua Place development. This land is agricultural land. It should remain agricultural land and be put to that use. Otherwise, this is another example of someone from out of state buying AG land on Kauai without the least intention of using it as agricultural and instead trying to make as much money as they can from it. This is not for the Community. How naive can they expect us to be?

I understand that Greg Allen is trying to get this pushed through for his own profit. This is the same person that built that monstrosity on Anini Beach and also is just finishing up another inappropriate structure on State Conservation land along the Wailua River.

Sincerely,

Randall Roe
Wailua

Response, 10/01/2018:

Mr. Roe,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Exhibit "C.1" Agricultural Suitability Report states what most people in the agricultural business have known for some time now. That is, Kaua'i has an abundance of agricultural lands to sustain our island. The problem is the lack of farmers and the lack of farm workers. The economics for farming just does not work. The comfortable fact is that should Kaua'i be forced to grow its own food due to some national economic disaster, we do have an abundance of agricultural lands to sustain ourselves. The County of Kauai Important Agriculture Lands Study of 2015 supports the attached Agricultural Suitability Report.

Phase I of HoKua entails 16 ag lots that will offer opportunities for farming.

Mr. Roe, you should know that Greg Allen had the subject land ready to go out for sale with agricultural lots. (gentlemen farms) In 2015 he was asked by the planning director to develop the property with 1000 housing units. Greg deliberate on the issue for quite a while. He eventually thought that the gentlemen farms would attract only the rich and that he was not doing anything for the locals. Thus, he is complying to his commitment to the planning director of providing housing opportunities for the locals.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 1:07 PM
To: michael_ritz@ymail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-4 Michael Ritz.pdf

Aloha Mr. Ritz,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: MICHAEL RITZ <michael_ritz@ymail.com>
Sent: Monday, June 15, 2015 4:44 PM
To: info@hookuleana.com
Subject: HoKua Place

We are opposed to the proposed development in Kapaa mauka of the alternate round-about. Any further developments should be south of the river until the East Side traffic can be resolved. Mike and Donna Ritz Princeville

Response, 10/01/2018:

Mr. Ritz

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Both the 2000 General Plan and the current General Plan depicts the housing needs for East Kauai. The General Plan was generated with the input of the people of Kaua'i. HoKua Place provides housing opportunies for people living on the east side, thus following the current General Plan.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 1:09 PM
To: wendywailua@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-4 Wendy Raebeck.pdf

Aloha Mr. Raebeck,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Response, 10/01/2018:

Wendy,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Exhibit "C.1" Agricultural Suitability Report states what most people in the agricultural business have known for some time now. That is, Kaua'i has an abundance of agricultural lands to sustain our island. The problem is the lack of farmers and the lack of farm workers. The economics for farming just does not work. The comfortable fact is that should Kaua'i be forced to grow its own food due to some national economic disaster, we do have an abundance of agricultural lands to sustain ourselves. The County of Kauai Important Agriculture Lands Study of 2015 supports the attached Agricultural Suitability Report.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area. People who live in the area already contribute to the current congestion that is experienced at times. There are upcoming projects that will be completed in the next 5 years. These projects will add jobs to the area. HoKua Place will provide housing for workers of these new projects. These workers will be encouraged to use the bus or car pool to work from HoKua Place. Discussions are underway on the aforementioned developments and this project providing shulttes to and from work for the workers. Coco Palms have already committed to this concept. This will be better than the alternate of them driving through town from the north and south to get to work.

Thank you for voicing your concerns,

Ron Agor

Peter T Young

From: Wendy <wendywailua@gmail.com>
Sent: Friday, June 19, 2015 4:41 PM
To: LUC@DBEDT.Hawaii.gov; info@hookuleana.com; mwilliams@kauai.gov; councilmembers@kauai.gov
Cc: Raymond McCormick; rodney.y.funakoshi@dbedt.hawaii.gov; michael.k.hinazumi@hawaii.gov; donald.j.smith@hawai.gov; mmoule@kauai.gov; Mayor Bernard Carvalho
Subject: strong opposition to the proposed Hokua Place development

June 19, 2015

re: *DEIS Hokua Place, published 5-8-15 by OEQC*

Aloha Land Use Commission,

Planning for the small island of Kaua`i is about proper long-term management of limited resources.

Piling more layers of population and traffic upon our already-congested East Side makes no sense. Aside from our clean air and relatively clean oceans, the Garden Island's phenomenal natural beauty, rural character, and relaxed ambiance are its primary attractions. There's nothing relaxing about traffic jams; they're what we and our visitors are here to *escape*. Why is our County even considering a development on the scale of the Hokua housing project proposed for Kapa`a?

Kapa`a and Wailua residents are already tearing their hair out trying to get to and fro from work or errands. It now takes hours to perform the simplest tasks of shopping, banking, and getting gas. (I work mostly on the North Shore and have actually moved from the House Lots to the north end of Kapa`a to save numerous hours per week not negotiating traffic.) Meanwhile our County has approved three more **HUGE** resorts smack in the middle of the congestion. And now a whole new *city*—86 new houses, 683 new apartments, and at least 1500 more commuting vehicles daily? And re-zoning the land from Agricultural to Urban so this development may proceed?

Who are the winners, and why?

The single protection that land has is to be *zoned* as Ag, wilderness, preserve, park, or the like. Zoning with a long view as to how things will play out later is key. Zoning laws are LAWS. And we are to follow them. To make exception for ANY developer sets a precedent that mocks our county's guidelines and protections. It makes a sham of government itself—when government breaks its own laws, we're all in trouble.

The land in question is zoned Agricultural to *protect* Kapa`a Town and vicinity against over-development, and was thusly zoned by those who respected the `aina, wanted our island to remain special through the decades and centuries ahead, and recognized that food would one day be critical and having enough land to grow it would mean the very survival of our tiny remote island.

Now there's talk of trading away this food land for fancy houses, token rentals for low-income locals (a broad demographic that can easily include newcomers from the Mainland), and a vast sweep of concrete, access roads, lights, utility grids, sewer infrastructure, roads, telephone poles and lines, signage, sidewalks, driveways, not to mention the tremendous disruption, noise, and traffic impediments that come with two years of construction. Plus the thousands of humans to be installed and the burden they'll place on the small town of Kapa`a.

And we lose forever the land, the opportunity to grow food on it, the lush foothills of Sleeping Giant, the lovely vistas that restore our souls, and the *irreplaceable habitat* for all the flora, fauna, birds, bees, and crawly things we know, love, and depend on for the overall ecosystem. Not to mention whatever befalls our watershed.

The consideration of something such as Hokua Place sincerely questions why we've even conversed about honoring Hawaiian culture, and protecting our environment and our Ahupua`a. It questions whether we care about our island at all, and questions the vows our public officials took upon entering office. I know that common sense and any kind of conservation are dinosaurs from a day gone by, yet Kaua`i was always a breath of fresh air. Is it not our kuleana to keep Kaua`i that special place?

Approval of this development is unwise, unpopular, and requires *changing the law* to service the few at the expense of the many. (And the solution is not new roads—as the Hokua developers and others are proposing—but putting new housing and resorts in areas of Kaua`i that can accommodate them. Not Kapa`a or Wailua.)

Dont let Hokua happen.

With deep love for the `aina and commitment to protecting it,

Wendy Raebeck

P.S. Keeping a place pristine and beautiful has never been bad for its economy, but quite the reverse.

1

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 1:10 PM
To: terryoshaun@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-4 Terry O'Shaughnessy.pdf

Aloha Terry O¡¯Shaughnessy,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

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Peter T Young

From: Terry O'Shaughnessy <terryoshaun@gmail.com>
Sent: Sunday, June 14, 2015 9:17 AM
To: info@hookuleana.com
Subject: Please stop proposed HoKua Place Development

Dear Sir,
My husband and I have been residents of Wailua Homesteads for the past 43 years. I am writing to tell you that I disagree strongly with the proposed change of zoning for the Kapaa property that will be called HoKua Place. This land should remain as agriculture zoning in hopes that in the future it will be used in Ag capacity. A change to residential zoning will create a huge increase in vehicles on our already clogged Eastside roads. We MUSt fix the traffic problems Now before any more housing or hote: projects can be added to this mess. Please do the right thing and vote against this foolish zone change. Thank you, Sincerely, Terry OShaughnessy

Response, 10/01/2018:

Ms. O'Shaughnessy,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

Exhibit "C.1" Agricultural Suitability Report states what most people in the agricultural business have known for some time now. That is, Kaua'i has an abundance of agricultural lands to sustain our island. The problem is the lack of farmers and the lack of farm workers. The economics for farming just does not work. The comfortable fact is that should Kaua'i be forced to grow its own food due to some national economic disaster, we do have an abundance of agricultural lands to sustain ourselves. The County of Kauai Important Agriculture Lands Study of 2015 supports the attached Agricultural Suitability Report.

It is the intention of this project to provide housing to those who live and work in Wailua-Kapaa area. People who live in the area already contribute to the current congestion that is experienced at times. There are upcoming projects that will be completed in the next 5 years. These projects will add jobs to the area. HoKua Place will provide housing for workers of these new projects. These workers will be encouraged to use the bus or car pool to work from HoKua Place. Discussions are underway on the aforementioned developments and this project providing shulttes to and from work for the workers. Coco Palms have already committed to this concept. This will be better than the alternate of them driving through town from the north and south to get to work.

Thank you for voicing your concerns,

Ron Agor

Sara Jehn

From: Sara Jehn <sara@agorjehnarch.com>
Sent: Friday, October 5, 2018 1:13 PM
To: kmuzik@gmail.com
Subject: Response to Hokua Place DEIS 2015 Comment
Attachments: Q-4 Katherine Muzik.pdf

Aloha Ms. Muzik,

The attached response addresses your concerns about Hokua Place. Thank you for taking the time to reach out and voice your concerns. This concern has been included within Exhibit Q of the DEIS.

A second Draft Environmental Impact Assessment (DEIS) will be published for comments in the weeks to come.

Mahalo,

Sara Jehn, RA
Agor Jehn Architects

AgorJehnArch.com
O: 808.947.2467
C: 808.373.6025

CONFIDENTIALITY NOTICE: The contents of this email message and any attachments are intended solely for the addressee(s) and may contain confidential and/or privileged information and may be legally protected from disclosure. If you are not the intended recipient of this message or their agent, or if this message has been addressed to you in error, please immediately alert the sender by reply email and then delete this message and any attachments. If you are not the intended recipient, you are hereby notified that any use, dissemination, copying, or storage of this message or its attachments is strictly prohibited.

Q

1

Peter T Young

From: kmuzik@gmail.com
Sent: Sunday, June 21, 2015 7:14 PM
To: Raymond McCormick; rodney.y.funakoshi@dbedt.hawaii.gov; michael.k.hinazumi@hawaii.gov; donald.l.smith@hawaii.gov; mmoule@kauai.gov; luc@dbedt.hawaii.gov; info@hookuleana.com; mwilliams@kauai.gov; counciltestimony@kauai.gov; Marj Dente; Ken Taylor; Juan Wilson; Richard Diamond
Subject: Fwd: DEIS HoKua Pl testimony due June 22, 2015

June 21, 2015

Dear Aloha Land Use Commission,

Simply put, to remain inhabitable by humans, this Island of Kaua'i needs for us to restore its soils and protect its waters. It does not, repeat NOT, need further development.

The Hokua Place project is not an appropriate solution to our indeed dire problems. It pretends to provide affordable housing, but in reality it does not. Worse, importing the massive amounts of materials needed and then using them for construction here will make an unacceptably substantial contribution to global carbon dioxide pollution, not to mention erosion, increasing our already desperate climate situation.

I am a marine biologist, with a PhD in Hawaiian corals, 4 years here recently in Kaua'i and 45 years of familiarity with coral reefs worldwide.

I am appalled at the current condition of our coral reefs here in Kaua'i. I have begun a small restoration project in Kapa'a, and encounter only three (3!) species, barely surviving. It is quite frightening. Bioerosion (disintegration) of the reef substrate is being favored by our human activities on land. These activities, including construction projects, poor sewage management, poor farming techniques and excessive traffic (for example the 30+ chemicals that wear away from automobile tires and are flushed with the rains directly to the sea) send nutrients and biocides into the sea, and consequently wipe out the corals.

As so many have written to you quite elegantly and convincingly already, we are a tiny remote island. We here need to become self-sufficient, starting immediately. As I beg in my opening sentence, we need to restore our soils, and protect our waters.

I am against the Hokua Housing project.

Katherine Muzik, Ph.D.
Associate in Natural Sciences, Bishop Museum and
Marine Biologist, National Tropical Botanical Garden

Response, 10/01/2018:

Ms. Muzik,

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in the weeks to come. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

1

Both the 2000 General Plan and the current General Plan depict the housing needs for East Kauai. The General Plan was generated with the input of the people of Kaua'i. HoKua Place provides housing opportunies for people living on the east side, thus following the current General Plan.

The General Plan now designates the project site as "Neighborhood General". It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town and intended to minimizing driving. Please read Section 5.1 of the 2nd DEIS.

Thank you for voicing your concerns,

Ron Agor

NO RETURN ADDRESS OF EMAIL PROVIDED

Peter T Young

From: PeterYoung@Hookuleana.com <no-reply@weebly.com>
Sent: Wednesday, January 06, 2016 6:27 AM
To: PeterYoung@Hookuleana.com
Subject: New Form Entry: HoKua Place

You've just received a new submission to your HoKua Place.

Submitted Information:

Name
Aaron Higa

Email

Comment
Why can't it be like the Kakaako project in Oahu where it's being sold for less but if Owner sells in future they must pay back the difference? This Kakaako project is being geered towards Hawaii families and not people moving here from the Mainland. How many Hawaii families can afford a 600k home!

Response, 10/01/2018:

Mr. Higa,

It is the intention of the Petitioner to provide housing for our local population as the General Plan expressed for this need on East Kaua'i. This project will provide local housing for all income brackets. HoKua has commited to following the County Affordable Housing policy.

Ron Agor

Group 5 - Responses to Gov. Agencies and Organzitions

AGOR JEHN ARCHITECTS, LLC
460 Ena Road, Suite 303
Honolulu, Hi 96815
ron@agorjehnarch.com
808-947-2467

Date: 10-01-2018

RE: Response to Comments on HoKua Place DEIS

TO: Mr. Edward Tschupp
Division of Waste Water Management
Department of Public Works
4444 Rice Street, Suite 275
Lihue, Hi 96766

Please note that a "Second Draft Environmental Impact Assessment (2nd DEIS)" will be published for comments in November. In order to address concerns of the already published Draft Environmental Impact Assessment, new information in the form of reports, and studies, including a new TIAR, an Agricultural Suitability Report, an Invertebrate Study, as well as references to the updated County General Plan were added. Therefore, the submittal of the 2nd DEIS will allow the public and agencies to comment on the new information.

Thank you very much for your comments on the Draft EIS for the HoKua Place.

HoKua Place is committed, during the design phase, to comply with all requirements of the County Sewer Design Standards (1973) and State of Hawai'i, Department of Health requirements. Prior to subdivision approval by the Department of Public Works, all required sewer improvements shall be constructed or bonded, and all required fees shall be paid at the rates applicable at the time of payment, including but not limited to the Wastewater Treatment Capacity Assessment (WTCA) and Sewer Connection Charges (SC).

Respectfully Submitted,

Ron Agor, Architect

Bernard P. Carvalho, Jr.
Mayor

Gary K. Heu
Managing Director

Larry Dill, P.E.
County Engineer

Lyle Tabata
Deputy County Engineer

DEPARTMENT OF PUBLIC WORKS
County of Kaua'i, State of Hawai'i
4444 Rice Street, Suite 275, Līhu'e, Hawai'i 96766
TEL (808) 241-4992 FAX (808) 241-6604

August 13, 2012

Ho'okuleana LLC
25 Kāne'ohe Bay Drive, Suite 212
Kailua, HI 96734
Attention: Mr. Peter T. Young, President

Via email only to PeterYoung@Hookuleana.com

SUBJECT: PRE-ASSESSMENT CONSULTATION, ENVIRONMENTAL ASSESSMENT, KAPA'A HIGHLANDS II PROJECT (TMK (4) 4-3-003:001)

Dear Mr. Young:

The County of Kaua'i, Department of Public Works, Division of Wastewater Management (Division) has reviewed the information submitted with your request for pre-consultation on an Environmental Assessment (DEA) for the subject project.

The Division concurs with your assessment of the feasibility for connection of the project to the County sewer system, and also with the anticipated wastewater flow volumes identified in the Preliminary Engineering report included with the DEA. The Division also concurs that the proposed connection of the project to the County sewer system will not negatively affect the existing wastewater system capacity.

During the design of the wastewater system for the project, the applicant shall comply with all requirements of the County Sewer Design Standards (1973) and State of Hawai'i, Department of Health requirements. Prior to final subdivision approval by the Department of Public Works, all required sewer improvements shall be constructed or bonded, and all required fees shall be paid at the rates applicable at the time of payment, including but not limited to the Wastewater Treatment Capacity Assessment (WTCA) and Sewer Connection Charges (SCC).

We appreciate the request for pre-consultation on this proposed project. If you have any questions, please call, at (808) 241-4084.

Very truly yours,

EDWARD TSCHUPP
Chief, Wastewater Management Division

AGOR JEHN ARCHITECTS, LLC
460 Ena Road, Suite 303
Honolulu, Hi 96815
ron@agorjehnarch.com
808-947-2467

Date: 10-01-2018

RE: Response to Comments on HoKua Place DEIS

TO: Kenneth G. Masden
Public Works Manager, DOE
PO Box 2360
Honolulu, Hi 96804

Please note that a "Second Draft Environmental Impact Assessment (2nd DEIS)" will be published for comments in November. In order to address concerns of the already published Draft Environmental Impact Assessment, new information in the form of reports, and studies, including a new TIAR, an Agricultural Suitability Report, an Invertebrate Study, as well as references to the updated County General Plan were added. Therefore, the submittal of the 2nd DEIS will allow the public and agencies to comment on the new information.

We are pleased to respond to your June 4, 2015 comments on the DEIS for HoKua Place as follows:

Thank you for your comment. The Developer is committed to working with you as necessary during the final planning stages and the construction phase of HoKua Place.

Respectfully Submitted,

Ron Agor, Architect

DAVID Y. IGE
GOVERNOR

KATHRYN S. MATAYOSHI
SUPERINTENDENT

STATE OF HAWAI`I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI`I 96804

OFFICE OF SCHOOL FACILITIES AND SUPPORT SERVICES

June 4, 2015

Mr. Peter T. Young
Ho`okuleana LLC
25 Kaneohe Bay Drive, Suite 212
Kailua, Hawaii 96734

Dear Mr. Young:

The Department of Education (DOE) has reviewed the draft environmental impact statement preparation notice (DEIS) HoKua Place project in Kapaa, Kauai.

The DOE has no comment or concern about the DEIS or the proposed project. We appreciate the opportunities we have had to review these plans several times over the past several years.

If you have any questions, please call Heidi Meeker of the Facilities Development Branch at 377-8301.

Respectfully,

Kenneth G. Masden
Public Works Manager
Planning Section

KGM:jmb

AGOR JEHN ARCHITECTS, LLC
460 Ena Road, Suite 303
Honolulu, Hi 96815
ron@agorjehnarch.com
808-947-2467

Date: 10-01-2018
RE: Response to Comments on HoKua Place DEIS
TO: Alec Wong PE, Chief
Clean Water Branch, DOH
PO Box 3378
Honolulu, Hi 96801

Please note that a "Second Draft Environmental Impact Assessment (2nd DEIS)" will be published for comments in November. In order to address concerns of the already published Draft Environmental Impact Assessment, new information in the form of reports, and studies, including a new TIAR, an Agricultural Suitability Report, an Invertebrate Study, as well as references to the updated County General Plan were added. Therefore, the submittal of the 2nd DEIS will allow the public and agencies to comment on the new information.

We are pleased to respond to your June 3, 2015 comments on the DEIS for HoKua Place as follows:

Page 1, Item 1: The Developer is committed to reviewing policies HAR, Section 11-54-1.1, HAR, Section 11-54-3 and HAR, Sections 11-54-4-11-54-8 during the final development document phase and incorporate all applicable sections stated above into the construction of HoKua Place.

Page 2, Item 2: The Developer intends to obtain a NPDES permit to address discharges of wastewater, storm water runoff into State surface waters according to Chapter 11-55, HAR.

Page 2, Item 3: The project does not involve work in, over, or under waters of the United States. However, the preliminary development plans will be forward to the Army Corp of Engineers for comment. Furthermore, the final grading and drainage plan will reflect not allowing any runoffs from the subject site to go beyond the boundaries of the project and into federal and state water.

Page 2, Item 4: The developer is committed to complying to the State's Water Quality Standards.

Page 2, Item 5a. to 5e: The developer intends to treat storm waters as a resource for irrigation of the entire project. The final construction plans for grading and drainage will incorporate basins to store storm waters for use in the proposed irrigation system.

The final development plans will incorporate methods of conserving natural resources, especially storm waters.

A Best Management Practice (BMP) will be part of the development of the subject land and will focus on the use of storm waters for irrigation.
Basins will be incorporated on site to store storm waters and allow
the opportunity to revitalize natural underground water's natural hydrology.

The use of green building practices will be incorporated in the final development plans and specifications, including but not limited to, pervious pavements, the use of native landscape vegetation, reducing runoffs, and minimize use of fertilization.

HoKua Place is a new development and opportunities to have design storm infrastructure to restore ecological function while maintaining and enhancing hydraulic capacities.

Respectfully Submitted,

Ron Agor, Architect

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD/CWB

06004PJF.15

June 3, 2015

Mr. Peter T. Young
Ho'okuleana LLC
1539 Kanapu'u Drive
Kailua, Hawaii 96734

Dear Mr. Young:

SUBJECT: Draft Environmental Impact Statement for the HoKua Place Project Kawaihau, Island of Kauai, Hawaii

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated May 8, 2015, requesting comments on your project. The DOH-CWB has reviewed the subject document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: http://health.hawaii.gov/epo/files/2013/05/Clean-Water-Branch-Std-Comments.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:

   a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

   b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.

   c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. You may be required to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55).

For NPDES general permit coverage, a Notice of Intent (NOI) form must be submitted at least 30 calendar days before the commencement of the discharge. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the applicable form ("CWB Individual NPDES Form" or "CWB NOI Form") through the e-Permitting Portal and the hard copy certification statement with the respective filing fee ($1,000 for an individual NPDES permit or $500 for a Notice of General Permit Coverage). Please open the e-Permitting Portal website located at: https://eha-cloud.doh.hawaii.gov/epermit/. You will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool and locate the appropriate form. Follow the instructions to complete and submit the form.

3. If your project involves work in, over, or under waters of the United States, it is highly recommended that you contact the Army Corp of Engineers, Regulatory Branch (Tel: 835-4303) regarding their permitting requirements.

   Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and HAR, Chapter 11-54.

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

5. It is the State's position that all projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters. Project planning should:

   a. Treat storm water as a resource to be protected by integrating it into project planning and permitting. Storm water has long been recognized as a source of irrigation that will not deplete potable water resources. What is often overlooked is that storm water recharges ground water supplies and feeds streams and estuaries; to ensure that these water cycles are not disrupted, storm water cannot be relegated as a waste product of impervious surfaces. Any project planning must recognize storm water as an asset that sustains and protects

natural ecosystems and traditional beneficial uses of State waters, like community beautification, beach going, swimming, and fishing. The approaches necessary to do so, including low impact development methods or ecological bio-engineering of drainage ways must be identified in the planning stages to allow designers opportunity to include those approaches up front, prior to seeking zoning, construction, or building permits.

b. Clearly articulate the State's position on water quality and the beneficial uses of State waters. The plan should include statements regarding the implementation of methods to conserve natural resources (e.g., minimizing potable water for irrigation, gray water re-use options, energy conservation through smart design) and improve water quality.

c. Consider storm water Best Management Practice (BMP) approaches that minimize the use of potable water for irrigation through storm water storage and reuse, percolate storm water to recharge groundwater to revitalize natural hydrology, and treat storm water which is to be discharged.

d. Consider the use of green building practices, such as pervious pavement and landscaping with native vegetation, to improve water quality by reducing excessive runoff and the need for excessive fertilization, respectively.

e. Identify opportunities for retrofitting or bio-engineering existing storm water infrastructure to restore ecological function while maintaining, or even enhancing, hydraulic capacity. Particular consideration should be given to areas prone to flooding, or where the infrastructure is aged and will need to be rehabilitated.

If you have any questions, please visit our website at: http://health.hawaii.gov/cwb/, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

ALEC WONG, P.E., CHIEF
Clean Water Branch

JF:ay

AGOR JEHN ARCHITECTS, LLC
460 Ena Road, Suite 303
Honolulu, Hi 96815
ron@agorjehnarch.com
808-947-2467

Date: 10-01-2018

RE: Response to Comments on HoKua Place DEIS

TO: Laura Leialoha Phillips, Mcintyre,AICP
Program Manager, Environmental Planning Office, DOH
PO Box 3378
Honolulu, Hi 96801

Please note that a "Second Draft Environmental Impact Assessment (2nd DEIS)" will be published for comments in November. In order to address concerns of the already published Draft Environmental Impact Assessment, new information in the form of reports, and studies, including a new TIAR, an Agricultural Suitability Report, an Invertebrate Study, as well as references to the updated County General Plan were added. Therefore, the submittal of the 2nd DEIS will allow the public and agencies to comment on the new information.

We are pleased to respond to your May 12, 2015 comments on the DEIS for HoKua Place as follows:

The Developer has reviewed the Land Use Planning Review Program and is committed to adhere to all the applicable standard comments set forth in the program in the development of HoKua Place.

We have examined the Hawaii Environmental Health Portal and are committed to visit it regularly during the final planning of HoKua Place.

The Developer acknowledges the updated Water Quality Standards Maps and is committed to using the updated maps for Kaua'i during the final planning of HoKua Place.

Respectfully Submitted,

Ron Agor, Architect

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to
File

EPO 15-106

May 12, 2015

Mr. Peter T. Young
Ho'okuleana, LLC
HG Kaua'i Joint Venture, LLC
9911 S. 78th Avenue
Hickory Hills, Illinois 60457

Dear Mr. Young:

SUBJECT: Draft Environmental Impact Statement (DEIS) for HoKua Place

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your DEIS dated April 27, 2015. Thank you for allowing us to review and comment on the HoKua Place project available on the OEQC website at:
http://oeqc.doh.hawaii.gov/Shared%20Documents/EA_and_EIS_Online_Library/Kauai/2010s/2015-05-08-KA-5E-DEIS-HoKua-Place.pdf

The DEIS was routed to various branches. The various branches will provide specific comments to you if necessary. EPO recommends that you review the standard comments and available strategies to support sustainable and healthy design provided at: http://health.hawaii.gov/epo/home/landuse-planning-review-program/. Projects are required to adhere to all applicable standard comments.

We encourage you to examine and utilize the Hawaii Environmental Health Portal. The portal provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings. The Portal is continually updated. Please visit it regularly at:
https://eha-cloud.doh.hawaii.gov

You may also wish to review the revised Water Quality Standards Maps that have been updated for all islands. The Water Quality Standards Maps can be found at:
http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/water-quality-standards/

We request that you utilize all of this information on your proposed project to increase sustainable, innovative, inspirational, transparent and healthy design.

Mahalo nui loa,

Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office

c: Hookuleana LLC
LUC
CWB, WWB, HEER, DHO Kauai, DOH-DDEH (via email only)

AGOR JEHN ARCHITECTS, LLC
460 Ena Road, Suite 303
Honolulu, Hi 96815
ron@agorjehnarch.com
808-947-2467

Date: 10-01-2018

RE: Response to Comments on HoKua Place DEIS

TO: Sina Pruder, PE, Chief
Wastewater Branch
State of Hawaii Department of Health
PO Box 3378
Honolulu, Hi 96801

Please note that a "Second Draft Environmental Impact Assessment (2nd DEIS)" will be published for comments in November. In order to address concerns of the already published Draft Environmental Impact Assessment, new information in the form of reports, and studies, including a new TIAR, an Agricultural Suitability Report, an Invertebrate Study, as well as references to the updated County General Plan were added. Therefore, the submittal of the 2nd DEIS will allow the public and agencies to comment on the new information.

We are pleased to respond to your May 20, 2015 comments on the DEIS for HoKua Place as follows:

Page 102 of Volume I, 2nd DEIS and Exhibit G of Volume II describes the preliminary finding for the capacity of the Kaua'i Wailua Wastewater Treatment Plant's (KWWTP) capacity and the Developer's agreement to facility cost contribution to the repair and upgrade of the system.

Attached please find a letter from the County Division of Wastewater Management confirming the viability of HoKua Place tying into the KWWTP. Furthermore, the Developer will be submitting the final scope of work that will be required for HoKua to connect to KWWTP to your branch for approval.

Respectfully Submitted,

Ron Agor, Architect

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

LUD – 4 4 3 003 001 DEIS
HoKua Place-ID2250

May 20, 2015

Mr. Benjamin David Johnson
Manager
HG Kauai Joint Venture LLC
9911 South 78th Avenue
Hickory Hills, IL 60457

Dear Mr. Johnson:

Subject: Draft Environmental Impact Statement (DEIS)
Hokua Place (Kapaa Highalands), Kapaa Town, Kauai, 96746
TMK (4) 4-3-003: 001

Thank you for allowing us the opportunity to provide comments on the above subject project. We have the following information to offer.

The subject project is located in the critical wastewater disposal area as determined by the Kauai County Wastewater Advisory Committee. We have two (2) treatment individual wastewater systems (IWSs) (septic tanks) for the subject tax map key (TMK) number, i.e., for the Kapaa Intermediate School and the Kapaa Solar Farm located on Olohena Road.

The wastewater generated from the proposed Hokua Place project is planned to be connected to the County of Kauai Wailua Wastewater Treatment Plant (WWTP) for treatment and effluent disposal. However, the DEIS did not clearly demonstrate that the existing Wailua WWTP has available capacity and required operation equipment to treat and dispose of the additional wastewater from the proposed Hokua Place project in compliance with Hawaii Administrative Rules, Chapter 11-62, Wastewater Systems. Accordingly, we defer making any determination regarding this project until a detailed review and plan addressing any necessary facility upgrades to the existing Wailua WWTP and effluent disposal system, including implementation schedules, to accommodate the additional wastewater flows from the proposed project is addressed.

Should you have any questions, please contact Mr. Mark Tomomitsu of my staff at (808) 586-4294.

Sincerely,

SINA PRUDER, P.E., CHIEF
Wastewater Branch

LM/MST:lmj

c: Ms. Laura McIntyre, DOH-Environmental Planning Office (15-106)
Ms. Lori Vetter, DOH-WWB's Kauai Staff
Mr. Daniel E. Orodenker, State of Hawaii, Land Use Commission
Mr. Peter T. Young, Hookuleana LLC

AGOR JEHN ARCHITECTS, LLC
460 Ena Road, Suite 303
Honolulu, Hi 96815
ron@agorjehnarch.com
808-947-2467

Date: 10-01-2018

RE: Response to Comments on HoKua Place DEIS

TO: Scott Nakasone
Assistant Division Administrator
Department of Human Services
820 Mililani Street, Suite 606
Honolulu, Hi 96813

Please note that a "Second Draft Environmental Impact Assessment (2nd DEIS)" will be published for comments in November. In order to address concerns of the already published Draft Environmental Impact Assessment, new information in the form of reports, and studies, including a new TIAR, an Agricultural Suitability Report, an Invertebrate Study, as well as references to the updated County General Plan were added. Therefore, the submittal of the 2nd DEIS will allow the public and agencies to comment on the new information.

We are pleased to respond to your May 19, 2015 comments on the DEIS for HoKua Place as follows:

The Developer is committed to safeguard the nearby and surrounding properties from fugitive dust. The permit plans and specifications will address the provisions of the Hawai'i Administrative Rules 5-11-60.11.33 on Fugitive Dust.

Respectfully Submitted,

Ron Agor, Architect

AGOR JEHN ARCHITECTS, LLC
460 Ena Road, Suite 303
Honolulu, Hi 96815
ron@agorjehnarch.com
808-947-2467

Date: 10-01-2018

RE: Response to Comments on HoKua Place DEIS

TO: Laura Leialoha Phillips, Mcintyre,AICP
Program Manager, Environmental Planning Office, DOH
PO Box 3378
Honolulu, Hi 96801

Please note that a "Second Draft Environmental Impact Assessment (2nd DEIS)" will be published for comments in November. In order to address concerns of the already published Draft Environmental Impact Assessment, new information in the form of reports, and studies, including a new TIAR, an Agricultural Suitability Report, an Invertebrate Study, as well as references to the updated County General Plan were added. Therefore, the submittal of the 2nd DEIS will allow the public and agencies to comment on the new information.

We are pleased to respond to your May 12, 2015 comments on the DEIS for HoKua Place as follows:

The Developer has reviewed the Land Use Planning Review Program and is committed to adhere to all the applicable standard comments set forth in the program in the development of HoKua Place.

We have examined the Hawaii Environmental Health Portal and are committed to visit it regularly during the final planning of HoKua Place.

The Developer acknowledges the updated Water Quality Standards Maps and is committed to using the updated maps for Kaua'i during the final planning of HoKua Place.

Respectfully Submitted,

Ron Agor, Architect

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to
File

EPO 15-106

May 12, 2015

Mr. Peter T. Young
Ho'okuleana, LLC
HG Kaua'i Joint Venture, LLC
9911 S. 78th Avenue
Hickory Hills, Illinois 60457

Dear Mr. Young:

SUBJECT: Draft Environmental Impact Statement (DEIS) for HoKua Place

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your DEIS dated April 27, 2015. Thank you for allowing us to review and comment on the HoKua Place project available on the OEQC website at:
http://oeqc.doh.hawaii.gov/Shared%20Documents/EA_and_EIS_Online_Library/Kauai/2010s/2015-05-08-KA-5E-DEIS-HoKua-Place.pdf

The DEIS was routed to various branches. The various branches will provide specific comments to you if necessary. EPO recommends that you review the standard comments and available strategies to support sustainable and healthy design provided at: http://health.hawaii.gov/epo/home/landuse-planning-review-program/. Projects are required to adhere to all applicable standard comments.

We encourage you to examine and utilize the Hawaii Environmental Health Portal. The portal provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings. The Portal is continually updated. Please visit it regularly at:
https://eha-cloud.doh.hawaii.gov

You may also wish to review the revised Water Quality Standards Maps that have been updated for all islands. The Water Quality Standards Maps can be found at:
http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/water-quality-standards/.

We request that you utilize all of this information on your proposed project to increase sustainable, innovative, inspirational, transparent and healthy design.

Mahalo nui loa,

Laura Leialoha Phillips McIntyre, AICP
Program Manager, Environmental Planning Office

c: Hookuleana LLC
LUC
CWB, WWB, HEER, DHO Kauai, DOH-DDEH (via email only)

AGOR JEHN ARCHITECTS, LLC
460 Ena Road, Suite 303
Honolulu, Hi 96815
ron@agorjehnarch.com
808-947-2467

Date: 10-01-2018

RE: Response to Comments on HoKua Place DEIS

TO: Mr. Edward Doi
Department of Water
PO Box 1706
Lihue, Hi 96766

Please note that a "Second Draft Environmental Impact Assessment (2nd DEIS)" will be published for comments in November. In order to address concerns of the already published Draft Environmental Impact Assessment, new information in the form of reports, and studies, including a new TIAR, an Agricultural Suitability Report, an Invertebrate Study, as well as references to the updated County General Plan were added. Therefore, the submittal of the 2nd DEIS will allow the public and agencies to comment on the new information.

Thank you very much for your comments on the Draft EIS for the HoKua Place.

HoKua Place has tested for a well on site and has made a proposal to dedicate the well site to the DOW to serve HoKua Place as well as other areas.

The Developer acknowledges Conditions 1 through 6 of your recommendations. The recommendations will be addressed during the permitting phase4. Recommendation 1 has been incorporated in the 2nd DEIS.

Respectfully Submitted,

Ron Agor, Architect

Department of
Water
County of Kaua'i

Water has no substitute.....Conserve it

June 23, 2015

UID #682

Mr. Peter T. Young
Ho`okuleana LLC.
1539 Kanapu`u Drive
Kailua, HI 96734

Dear Mr. Young:

Subject: Draft Environmental Impact Statement for the Hokua Project (Formerly Referred to as Kapaa Highlands), TMK: 4-3-03:001 por, Kapaa, Kauai

This is in regard to your letter received on May 7, 2015. We have no objections to the proposed Draft Environmental Impact Statement. The following are our comments to the subject Draft Environmental Impact Statement for the Hokua Project (formerly referred to as Kapaa Highlands).

Any actual subdivision or development of this area will be dependent on the adequacy of the source, storage, and transmission facilities existing at that time. At the present time, the existing source, storage, and transmission facilities are not adequate for the proposed project which includes 86 single family lots, 683 multifamily residential units, a 3.1 acre park, and 1.4 acres for commercial use.

Prior to the Department of Water (DOW) recommending building permit or water service approval, the applicant will be required to:

1. Be made aware that the Water Master Plan for the subject project has **not** been approved by the DOW. The DOW recommends that the following statement on Page 77 of the DEIS: "*A Water Master Plan for Hokua Place and Hokua Farm Lots (formerly known as Kapa'a Highlands), has been approved, in concept, by the County Department of Water (DOW),*" be changed or corrected in the Final Environmental Impact Statement.
2. Prepare and receive DOW's approval of a Water Master Plan for full development of the area.
3. Submit a formal request for water service. The applicant shall describe the proposed water meter use. For non-residential use, the applicant shall submit detailed water demand calculations, along with the proposed water meter size, to the DOW for review and approval. DOW conditions for approval may change based on the approved water demands and use.
4. Prepare and receive DOW's approval of construction drawings for the necessary water system facilities and construct said facilities as required in the approved water master plan for the proposed project.

4398 Pua Loke St., P.O. Box 1706, Lihue, HI 96766 Phone: 808-245-5400
Engineering and Fiscal Fax: 808-245-5813, Operations Fax: 808-245-5402, Administration Fax: 808-246-8678

5. Pay the applicable charges in effect at the time of payment to the DOW. At the present time, these charges include the Facilities Reserve Charge (FRC) which is based on $4,600 per 5/8-inch water meter/unit or the FRC based on the approved water meter size, whichever amount is greater. FRC offsets may apply for source, storage, and transmission facilities that qualify for offsets, in accordance with the DOW's Rules and Regulations.

6. Receive a "Certification of Completion" notice for the construction of necessary water system facilities from the DOW.

All conditions stated above are subject to the Rules and Regulations of the DOW as amended or as will be amended.

If you have any questions concerning the construction drawings, please contact Mr. Roman Silvestre at (808) 245-5412. For questions concerning the Certification of Completion, please contact Mr. Dustin Moises at (808) 245-5459. For other questions, please contact Mr. Joel Bautista at (808) 245-5441.

Sincerely,

Edward Doi

Edward Doi
Chief of Water Resources and Planning Division

c: Ken Taylor (taylorko21@hawaii.rr.com)

4-3-03-001por, T-17058, Hokua Project DEIS, Young/JB:loo

AGOR JEHN ARCHITECTS, LLC
460 Ena Road, Suite 303
Honolulu, Hi 96815
ron@agorjehnarch.com
808-947-2467

Date: 10-01-2018

RE: Response to Comments on HoKua Place DEIS

TO: Division of Aquatics, DLNR
PO Box 621
Honolulu, Hi 96809

Please note that a "Second Draft Environmental Impact Assessment (2nd DEIS)" will be published for comments in November. In order to address concerns of the already published Draft Environmental Impact Assessment, new information in the form of reports, and studies, including a new TIAR, an Agricultural Suitability Report, an Invertebrate Study, as well as references to the updated County General Plan were added. Therefore, the submittal of the 2nd DEIS will allow the public and agencies to comment on the new information.

We are pleased to respond to your May 19, 2014 comments on the DEIS for HoKua Place as follows:

Page 2, Comment 1: The Developer is committed to implement BMPs during all phases of the project development to assure minimizing or eliminating negative impacts resulting from construction debris, petroleum products and /or other toxic pollutants entering into the nearby bodies of waster as a result of runoffs.\

Page 2, Comment 2: HoKua Place will maintain public access in and out of the Waikaea Fishing Area so the fishing public continues to have access to resources in the fishing area.

Respectfully Submitted,

Ron Agor, Architect

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RECEIVED LAND DIVISION
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DEPT OF LAND & NATURAL RESOURCES HAWAII

RECEIVED
MAY 20 2015
AQUATIC RESOURCES

DAR #5114

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 19, 2014

MEMORANDUM

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

JK
MF
BK
GH

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Draft Environmental Impact Statement (DEIS) for the HoKua Place project (formerly referred to as Kapa`a Highlands)
LOCATION: "Situated at (4) 4-3-003:001 (portion) in the Kawaihau District on the island of Kauai"
APPLICANT: HG Kauai Joint Venture, by its consultant, Ho`okuleana LLC

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document which can be found here:

1. Go to: https://sp01.ld.dlnr.hawaii.gov/LD
2. Login: Username: LD\Visitor Password: 0pa$$word0 (first and last characters are zeros)
3. Click on: Requests for Comments. Click on the subject file "Draft Environmental Impact Statement (DEIS) for the HoKua Place project (formerly referred to as Kapa`a Highlands)", then click on "Files" and "Download a copy". (Any issues accessing the document should be directed to Jonathan Real, Applications/Systems Analyst at 587-0427 or Jonathan.C.Real@hawaii.gov)

Please submit any comments by June 17, 2015. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(X) Comments are attached. Previous comments from DAR #5046 still apply They are attached

Signed: Alton Miyasaka
Print Name: Alton Miyasaka
Date: 6-4-15

Signed: [signature]
Print Name: Suzanne D. Case
Date: 6/8/2015

Theatre - comments

DAVID Y. IGE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

JESSE K. SOUKI
FIRST DEPUTY

WILLIAM M. TAM
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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

December 18, 2014

RECEIVED
DEC 19 2014
AQUATIC RESOURCES

DAR #5046

MEMORANDUM

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

JK
KN
BK
OH
MF

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Environmental Impact Statement Preparation Notice (EISPN) for the HoKua Place project (formerly referred to as Kapa`a Highlands)
LOCATION: "Situated at (4) 4-3-03: por 01 (portion) in the Kawaihau District on the island of Kauai"
APPLICANT: HG Kauai Joint Venture, by its consultant, Ho`okuleana LLC

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document which can be found here:

1. Go to: https://sp01.ld.dlnr.hawaii.gov/LD
2. Login: Username: LD\Visitor Password: 0pa$$word0 (first and last characters are zeros)
3. Click on: Requests for Comments. Click on the subject file "Environmental Impact Statement Preparation Notice (EISPN) for the HoKua Place project (formerly referred to as Kapa`a Highlands)", then click on "Files" and "Download a copy". (Any issues accessing the document should be directed to Jonathan Real, Applications/Systems Analyst at 587-0427 or Jonathan.C.Real@hawaii.gov)

Please submit any comments by January 20, 2015. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(X) Comments are attached.

Signed: _____
Print Name: Carty S. Chang
Date: 2/19/15

A stream within the HoKua Farm Lots flows from north to south along the western boundary of HoKua Place. The path of the stream passes under a bridge on the By-Pass Road at the southwest corner of the property, and empties into the Waikaea drainage canal about 800 ft. downstream from the property. The Waikaea Canal is a regulated fishing area managed by on Kauai. HoKua Place is committed to keeping the flow of the stream consistent to prevent potential health and mosquito problems associated with streams when not flowing naturally.

The Applicant proposes to adhere to applicable laws to minimize soil movement, erosion and compaction during the various phases of the project. Additionally

A Preliminary Report has been prepared and a detailed drainage and erosion mitigation plan will be prepared and submitted to the County Engineer for approval during the design and development stages. The Applicant proposes to provide major drainage improvements in connection with development of the property. Multiple detention ponds are being proposed for the property, catch basins, drainage pipes and culverts to be utilized for directing run off to major drainage areas on the property are also being proposed.

The EIS submitted for review and comments states that the proposed drainage system for the project will be designed to minimize impacts to the near shore coastal waters. Additionally, water quality treatment and detention basins will be built to prevent runoff and sedimentation from impacting groundwater resources. The Applicant proposes to use BMPs to maintain storm and surface-water runoff and that the BMPs will be designed to prevent violations of State water quality standards.

Comments:
DAR recommends BMPs be implemented during all phases of project development to assure minimizing/eliminating negative impacts resulting from construction debris, petroleum products and/or other toxic pollutants entering into the nearby bodies of water as a result of run-off.

DAR also recommends maintaining public access in and out of the Waikaea Fishing Area so that the fishing public continues to have access to resources in the fishing area.

Thank you for providing DAR the opportunity to review and comment on the proposed project. Should there be any changes to the project plans, DAR requests the opportunity to review and comment on those changes.

AGOR JEHN ARCHITECTS, LLC
460 Ena Road, Suite 303
Honolulu, Hi 96815
ron@agorjehnarch.com
808-947-2467

Date: 10-01-2018

RE: Response to Comments on HoKua Place DEIS

TO: Roy Hardy
Commission on Water Resource Management
PO Box 621
Honolulu, Hi 96809

Please note that a "Second Draft Environmental Impact Assessment (2nd DEIS)" will be published for comments in November. In order to address concerns of the already published Draft Environmental Impact Assessment, new information in the form of reports, and studies, including a new TIAR, an Agricultural Suitability Report, an Invertebrate Study, as well as references to the updated County General Plan were added. Therefore, the submittal of the 2nd DEIS will allow the public and agencies to comment on the new information.

We are pleased to respond to your May 19, 2014 on HoKua Place as follows:

Page 1, Item 1: The Developer currently is in negotiations with the Kauai Department of Water (DOW) to include HoKua Place proposed water well in the DOW water system. The testing of the proposed well concluded that the well is anticipated to generate more water than the need for HoKua Place.

Page 1, Item 3: Contact by the Developer has been made with HDOA to coordinate the reclassification of agricultural zoned land and redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan.

Page 1, Item 4: The Developer is committed to incorporate water efficient fixtures and practices in this development to reduce the consumption of water.

Page 1, Item 5: The project does include Best Management Practices (BMP) for storm water management to minimize the impact of the project's existing area hydrology while maintaining on-site infiltration and polluted runoff from storm events.

Page 1, Item 6: The Developer is committed to using stored storm water for an alternate source of irrigation.

Page 2, Item 8: Landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii will be incorporated in the irrigation system as deemed practical.

Page 2, Item 9: The Developer will be coordinating with the State Health Department on issues of ground and surface water measures to minimize surface water degradation and/or contamination.

Page 2, Item 11: It is the intent of the Developer to secure a Well Construction Permit before well construction begins.

Page 2, Item 12: The Developer will secure a Pump Installation Permit before any ground water is used for HoKua Place.

Page 2, Item 13: Should any well on or adjacent to this project be abandoned, a permit for abandonment will be secured by the Developer.

Page 2, Other: The Developer will coordinate with Kauai DOW to incorporate this project into the County water use and development plan.

This project will be incorporate recommendations by the Handbook for Storm Water Reclamation and Reuse Best Management Practices in Hawaii (2008).

The Developer intends to use water efficient fixtures and water conservation measures throughout the project.

Respectfully Submitted,

Ron Agor, Architect

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 19, 2014

MEMORANDUM

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

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Draft Environmental Impact Statement (DEIS) for the HoKua Place project (formerly referred to as Kapa'a Highlands)
LOCATION: "Situated at (4) 4-3-003:001 (portion) in the Kawaihau District on the island of Kauai"
APPLICANT: HG Kauai Joint Venture, by its consultant, Ho'okuleana LLC

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document which can be found here:

1. Go to: https://sp01.ld.dlnr.hawaii.gov/LD
2. Login: Username: LD\Visitor Password: 0pa$$word0 (first and last characters are zeros)
3. Click on: Requests for Comments. Click on the subject file "Draft Environmental Impact Statement (DEIS) for the HoKua Place project (formerly referred to as Kapa'a Highlands)", then click on "Files" and "Download a copy". (Any issues accessing the document should be directed to Jonathan Real, Applications/Systems Analyst at 587-0427 or Jonathan.C.Real@hawaii.gov)

Please submit any comments by June 17, 2015. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(x) Comments are attached.

Signed: /s/ W. Roy Hardy
Print Name: Acting Deputy Director
Date: June 3, 2015

FILE ID: RT-04052
DOC ID: 12930

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON

DENISE ANTOLINI
KAMANA BEAMER, PH.D.
MICHAEL G. BUCK
MILTON D. PAVAO
VIRGINIA PRESSLER, M.D.
JONATHAN STARR

W. ROY HARDY
ACTING DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

June 3, 2015

REF: RFD.4105.2

TO: Russell Tsuji, Administrator
Land Division

FROM: W. Roy Hardy, Acting Deputy Director
Commission on Water Resource Management

SUBJECT: Hokua Place Project (formerly Kapaa Highlands)

FILE NO.:
TMK NO.: (4) 4-3-003:001 (portion)

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore, all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://www.hawaii.gov/dlnr/cwrm.

Our comments related to water resources are checked off below.

☒ 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

☐ 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

☒ 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.

☒ 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EPA as having high water efficiency can be found at http://www.epa.gov/watersense/.

☒ 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://hawaii.gov/dbedt/czm/initiative/lid.php.

☒ 6. We recommend the use of alternative water sources, wherever practicable.

☐ 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program

☒ 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf

☒ 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

Permits required by CWRM:
Additional information and forms are available at http://hawaii.gov/dlnr/cwrm/info_permits.htm.

☐ 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.

☒ 11. A Well Construction Permit(s) is (are) required before any well construction work begins.

☒ 12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☒ 13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 14. Ground water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☐ 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration(s) can be made to the bed and/or banks of a stream channel.

☐ 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is (are) constructed or altered.

☐ 17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

☐ 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

☒ OTHER:
The State Water Code requires each county to update its water use and development plans as necessary to maintain consistency with its zoning and land use policies (§174C-31 HRS). Should a change in zoning be approved for this project, please coordinate with the respective Planning Department and/or Department of Water to incorporate this project into the county water use and development plan. An update of the County of Kauai's Water Use and Development Plan is being initiated by the Department of Water.

The project is located in the Anahola Aquifer System Area (ASYA). The sustainable yield of the ~~Anahola~~ AYSA is 17 million gallons per day (mgd). Reported pumpage as of December 2014 is 2.33 mgd, The projected average water demand associated with this project, 0.451 mgd, was based on the Domestic Consumption Guidelines in the County Water System Standards.

Due to the location of this project makai of the UIC, the establishment of an onsite wastewater reclamation and reuse facility and the installation of a dual water system should be considered. Recycled non-potable water and stormwater capture and reuse may be used to meet the irrigation needs of the development, while conserving our natural supplies of ground water for environmental needs. The Commission has published a Handbook for Stormwater Reclamation and Reuse Best Management Practices in Hawaii (2008). Please visit the Commission's website at http://hawaii.gov/dlnr/cwrm to view or download a copy.

The Commission strongly supports the proposed installation of water efficient fixtures and water conservation measures. A listing of fixtures certified by the EPA as having high water efficiency can be found at http://www.epa.gov/watersense/products/index.html.

If there are any questions, please contact Lenore Ohye of the Planning Branch at 587-0218 or Ryan Imata of the Regulation Branch at 587-0225.

AGOR JEHN ARCHITECTS, LLC
460 Ena Road, Suite 303
Honolulu, Hi 96815
ron@agorjehnarch.com
808-947-2467

Date: 10-01-2018

RE: Response to Comments on HoKua Place DEIS

TO: Leo R. Asuncion, Director
Office of Planning
State of Hawaii
PO Box 2359
Honolulu, Hi 96804

Please note that a "Second Draft Evironmental Impact Assessment (2nd DEIS)" will be published for comments in November. In order to address concerns of the already published Draft Environmental Impact Assessement, new information in the form of reports, and studies were added. Therefore, the submittal of the 2nd DEIS will allow the public to comment on the new information.

We are pleased to respond to your June 15, 2015 comments on the DEIS for HoKua Place as follows:

Page 1, Item 1: An effort has been made to replace some of the maps that had poor resolution.

Page 1, Item 2: The Second Page (Page326) of Exhibit "L" in Volume I is SHPD's letter of approval of the Archaeology Assessment.

Page 1, Item 3: -An updated LSB map is included in Exhibit "C", Page 54.
-An updated ALISH map is included in Exhibit "C", Page 55.
-An updated Soils Map, Page 45, Exhibit "C".
-Please refer to Soils Maps, Page 76 of Volume I. Pages 77 to 78 of Volume I describes the soils type.

Page 1, Item 4: To the best of our knowledge the HoKua Place petition meets HRS 205-17 and the project is outside the Coastal Zone Management Area.

Page 2, Item 5: An Invertebrate Study is attached as Exhibit "P".

Respectfully Submitted,

Ron Agor, Architect

OFFICE OF PLANNING
STATE OF HAWAII

DAVID Y. IGE
GOVERNOR

LEO R. ASUNCION
ACTING DIRECTOR
OFFICE OF PLANNING

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: http://planning.hawaii.gov/

Ref. No. P-14777

June 15, 2015

Mr. Peter T. Young, President
Hookuleana, LLC
1539 Kanapuu Drive
Kailua, Hawaii 96734

Dear Mr. Young:

Subject: HoKua Place
HG Kauai Joint Venture
Draft Environmental Impact Statement
TMK: (4) 4-3-003: por. 001
Kawaihau District, Wailua, Kauai, Hawaii

Thank you for the opportunity to review the Draft Environmental Impact Statement (DEIS). The 97-acre project is proposed for approximately 683 multi-family and 86 single family units including parks, and 1.4 acres of commercial use. The document also indicates that the adjacent HoKua farm lots share some of the project infrastructure.

The Office of Planning (OP) has the following comments:

1. The resolution and clarity of some of the maps were poor.
2. Archaeological Resources, Appendix L. We could not locate any letters or comments from the State Department of Land and Natural Resources, State Historic Preservation Office commenting on the adequacy of this study. These should be provided if available.
3. Agricultural Resources, Exhibit C. Information is included on the designations for the Land Study Bureau, but we could not locate any information on ALISH designations. If the document does not include this information, then the DEIS should include additional information on agricultural resources. The soils and LSB maps included should be clarified, as these were of poor resolution and clarity.
4. The entire site is within the State Agricultural District. The proposal will require that the Property be reclassified to the State Urban District by the Land Use Commission (LUC). OP represents the State as a mandatory party in proceedings before the LUC. In developing its position, OP evaluates whether the project meets the LUC decision-making criteria in

HRS § 205-17, as well as its conformance with Coastal Zone Management objectives and policies in HRS § 205-A-2.

5. Invertebrate Survey. In a letter dated January 29, 2015, for the Environmental Impact Statement Preparation Notice (EISPN), OP commented that the DEIS should include an invertebrate survey. In Exhibit K, Biological Surveys Conducted on the Kapaa Highlands Phase II Project Site, TMK: (4) 3-003: 001, Island of Kauai, Hawaii, an invertebrate survey was not included within the document.

Thank you for the opportunity to review this project. If you have any questions please call either Josh Hekekia of our Coastal Zone Management Program at (808) 587-2845 or Lorene Maki of our Land Use Division at (808) 587-2888.

Sincerely,

Leo R. Asuncion
Acting Director

c: Land Use Commission

AGOR JEHN ARCHITECTS, LLC
460 Ena Road, Suite 303
Honolulu, Hi 96815
ron@agorjehnarch.com
808-947-2467

Date: 10-01-2018

RE: Response to Comments on HoKua Place DEIS

TO: Marie Williams, Planner
Planning Director Michael Dahilig
4444 Rice Street, Suite A-473
Lihue, Hi 96766

Please note that a "Second Draft Environmental Impact Assessment (2nd DEIS)" will be published for comments in November. In order to address concerns of the already published Draft Environmental Impact Assessment, new information in the form of reports, and studies, including a new TIAR, an Agricultural Suitability Report, an Invertebrate Study, as well as references to the updated County General Plan were added. Therefore, the submittal of the 2nd DEIS will allow the public and agencies to comment on the new information.

This is in response to your comments on the DEIS for HoKua Place. The General Plan was updated and signed by the Mayor in early 2018. Our response will focus on the updated General Plan.

The General Plan establishes priorities for managing growth and community development over a 20-year planning timeframe.

The General Plan is a direction-setting document and not a regulatory in the sense of a zoning code or other land use entitlement. The policies guide County decision-making by mapping land use patterns, describing what type of development is desirable, and by setting high-level priorities for infrastructure and programs.

“The General Plan is based on the community’s vision for Kaua’i’s future by establishing the following “Goals” and “Policies”.

The vision sets the desired long-range outcome through a series of statements organized by the following Goals:

Goal #1 - A Sustainable Island
Goal #2 - A Unique and Beautiful Place
Goal #3 - A Healthy and Resilient People
Goal #4 - An Equitable Place, With Opportunity for All

The follow are policies articulating the County’s path forward toward meeting the community’s visions and goals:

Policy #1	Manage Growth to Preserve Rural Character
Policy #2	Provide Local Housing
Policy #3	Recognize Kaua’i’s Individual Towns and Districts
Policy #4	Design Healthy and Complete Neighborhoods
Policy #5	Make Strategic Infrastructure Investments

Policy #6	Reduce Cost of Living
Policy #7	Build Balanced Multimodal Transportation Systems
Policy #8	Protect Kaua'i's Scenic Beauty
Policy #9	Uphold Kaua'i as a Unique Visitor Destination
Policy #10	Help Business Thrive
Policy # 11	Help Agricultural Lands be Productive
Policy # 12	Protect our Watersheds
Policy #13	Complete Kaua'i's Shift to Clean Energy
Policy #14	Prepare for Climate Change
Policy #15	Respect Native Rights and Wahi Pana
Policy #16	Protect Access to Kaua'i's Treasured Places
Policy #17	Nurture Our Keiki
Policy #18	Honor Our Kupuna
Policy #19	Communicate with Aloha

HoKua Place is in the East Kaua'i district. The East Kaua'i district extends from the Wailua River north to Moloa'a, including the Kapa'a-Wailua basin, Kealea and Anahola. The Kapa'a-Wailua basin is home to a large portion of Kaua'i's population. An urban corridor extends along Kuhio Highway from Haleilio Road in Wailua to Kawaihau Road, at the northern edge of Kapa'a Town.

Visions for East Kaua'i include the following:

Residents enjoy a high quality of life in a rural setting

Natural resources are protected and open spaces and public access are preserved

Agricultural lands are farmed, productive, and protected. Affordable housing opportunities exist for local families.

Archaeological, historic, and cultural places in our community are honored, preserved, and maintained.

New recreational facilities provide safe and healthy opportunities for youth and adults.

Historic Kapa'a Town maintains its western plantation character, is livable and walkable with mixed uses, pedestrian-friendly streets, bike paths, new parking and public transit.

A range of visitor accommodation types are in place and new attractions have opened.

Deferred infrastructure needs have been addressed.

Public transit services have grown and do integrated into new developments.

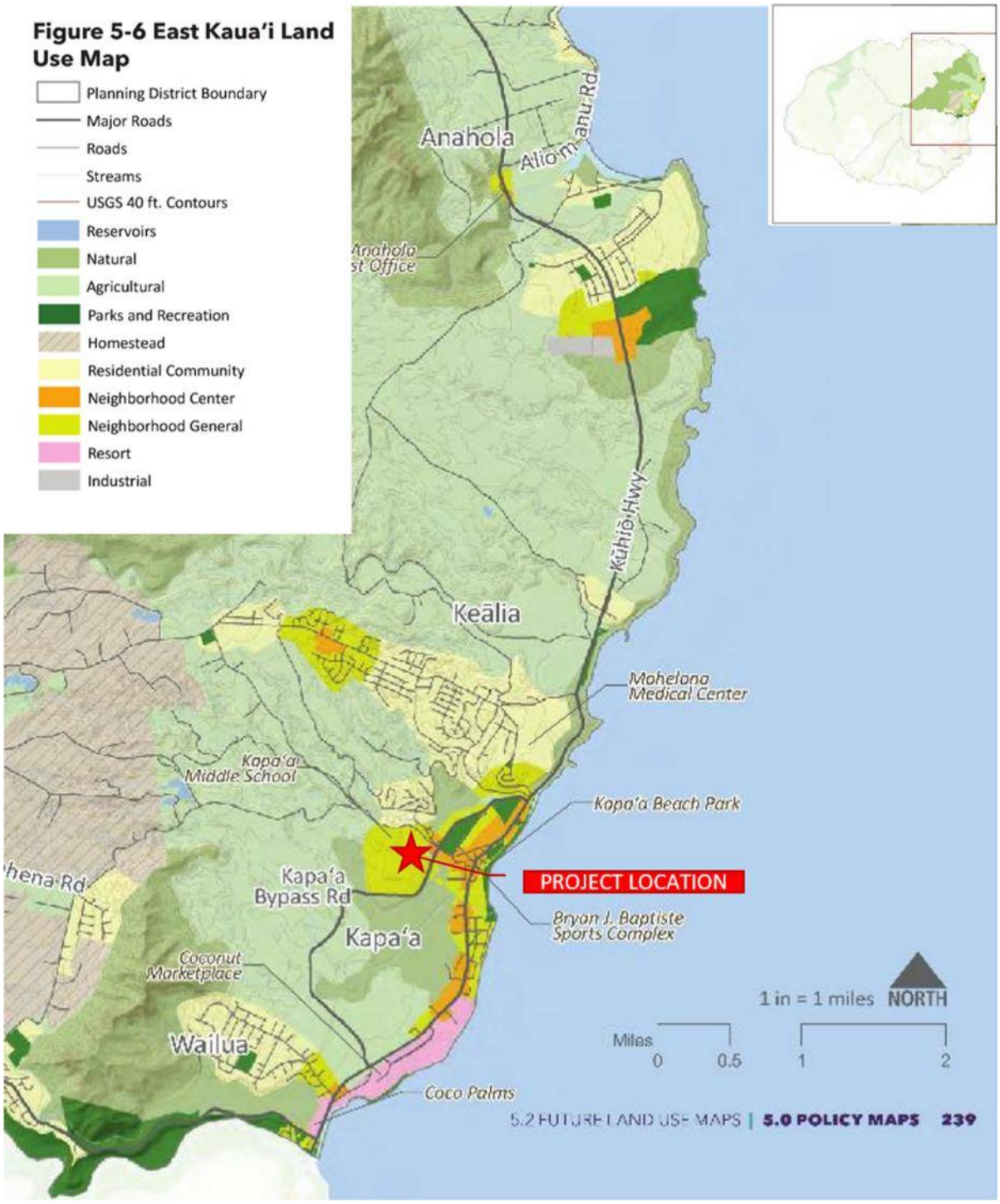


Figure 5-6 East Kaua'i Land Use Map
Planning District Boundary
Major Roads
Roads
Streams
USGS 40 ft. Contours
Reservoirs
Natural
Agricultural
Parks and Recreation
Homestead
Residential Community
Neighborhood Center
Neighborhood General
Resort
Industrial
Anahola
Aliomanu Rd
Anahola Post Office
Kūhiō Hwy
Keālia
Mahelona Medical Center
Kapa'a Middle School
Kapa'a Beach Park
PROJECT LOCATION
Kapa'a Bypass Rd
Kapa'a
Bryan J. Baptiste Sports Complex
Coconut Marketplace
Wailua
Coco Palms
1 in = 1 miles
NORTH
Miles
0
0.5
1
2
5.2 FUTURE LAND USE MAPS | 5.0 POLICY MAPS 239

The HoKua Place meets the Goals of the General Plans as follows:

HoKua Place provides opportunity for housing for all people as they aspire for a better life. The need for housing is very current. The Project will substantially address the current need for housing in the area. The development will not deplete our important resources. HoKua Place is designated as "Neighborhood General" in the General Plan. It is substantially within a 10 minute walking distance to Kapa'a Town. It's close proximity to Kapa'a Town offers opportunity for town businesses to grow and provide economic opportunities for the businesses as well as the residents of the project. Phase I of HoKua Place offers agricultural lots that will offer opportunies for local food production. In anticipation of this Project, Phase I has an existing 1.8 MW solar voltaic system that is contributing to clean energy. Thus, HoKua Place contributes to **Goal # 1** of the General Plan, a Sustainable Island.

The HoKua Place offers beautiful and unique views of the lower Kapa'a, the ocean and mountains. The development will offer views of surrounding beauty to residents from their homes. HoKua Place will not negatively impact public views of the beautiful lands surrounding area. Environmental studies are attached as exhibits and they determined that endangered species, historic structures, archaeological sites, cultural traditions, etc, for the area will not be negatively impacted. Therefore the project is in line with **Goal # 2**, respecting a Unique and Beautiful Place.

HoKua Place is intended to be designed to offer a healthy lifestyle. The project is substantially within a 10-minute walk to Kapa'a Town. It entails walking/bicycle paths that will be integrated in future town paths. Diversified housing units will provide homes for all people. The increase in housing units adjacent to Kapa'a Town provides economic opportunities to the businesses and residents. HoKua Place contributes to **Goal #3**, a Healthy and Resilient People.

HoKua Place is in line with **Goal #4** as the project will offer diversified housing for everyone. It's close walking proximity to Kapa'a town provides economic opportunities for all as Kapa'a town businesses will grow to support the increased population via the project. The project will foster a diverse and equitable community with access to housing and economic opportunities.

HoKua Place project substantially conforms to and implements the General Plan's 19 Policies to Guide Growth.

HoKua Place is strategically placed in a Neighborhood General designation. It is substantially within a 10-minute walk to Kapa'a Town. The development will include smart street design, short residential blocks, walking and bicycle paths integrated with Kapa'a Town's future paths, etc. The project is intended to help preserve the rural character of Kapa'a town, therefore conforms to **Policy #1**.

The purpose of HoKua Place is to provide local housing in line with **Policy #2**. The development will provide 683 multi-family units and 86 single family units. The project will comply with the County's affordable housing policy. HoKua Place will preserve Kapa'a town's separate distinctiveness with its elevated lands and walking/bicycle paths connecting the development with the town as **Policy #3** emphasizes.

HoKua Place is intended to be designed to where it's residents will be safe in walking and bicycling. The development is substantially within a 10-minute walking distance to town, thus creating a healthy life to its residents. HoKua Place is a place designed for a healthy and complete neighborhood per **Policy #4**.

HoKua Place will include roadways accepted by the State Department of Transportation and the County Public works. These roadways will help the traffic congestion in the immediate area. (See TIAR). The project will be providing water source to the project and contribute to the Department of Water system. HoKua Place will also be contributing to the wastewater system for increasing its capacity. Therefore HoKua Place is contributing to infrastructure per **Policy # 5**.

Policy #6 emphasizes to reduce the cost of living. HoKua Place will help to reduce the cost of living by reducing the need for driving into Kapa'a town. With the increase in population created by this project in the area, more businesses will develop thus creating jobs where residents can live and work without the use of vehicle transportation.

HoKua Place's contribution to **Policy #7** in order to reduce traffic congestion is creating a real opportunity for a walking/bicycle community integrated with Kapa'a town.

HoKua Place will not impact Kaua'i's scenic beauty. The scenic beauty around and beyond the development will not be harmed. This development will also not impact Kaua'i's visitor destinations. Therefore, HoKua Place meets the **Policy #8** and **Policy #9**.

The HoKua Place development will contribute to **Policy #10**, help business thrive, by providing a population that will creating more businesses and support existing businesses.

The petitioner is including HoKua Phase I Ag Lots adjacent and west of HoKua Place. There will be 16 ag lots within 54 acres of land. Therefore, the project will help agricultural lands be productive per **Policy # 11**.

In accordance to **Policy #12**, HoKua Place will incorporate water conservation and reuse policies to protect our Watersheds. Rain runoff's created by the development will be taken care of on site with retention basins. Water reuse from the basins will be used to landscape irrigation.

A large 1.18 MW solar farm was constructed on Phase I, HoKua Place adjacent to this development. There will be opportunities to expand the facility to contribute to Kaua'i's shift to clean energy. The development will include solar water heaters, thus helping on a limited basis to shift to clean energy per **Policy #13**.

HoKua Place land is elevated above the sea rise level maps for the area. The General Plan for the area emphasize developing two housing locations. One at Hokua Place and the other area in Kapa'a Town. Developing HoKua Place will conform to **Policy #14** in preparing for climate change.

Policy #15 entails respecting Native Hawaiian rights and Wahi Pana. HoKua Place will not have a negative impact on Native Hawaiian rights and Wahi Pana. The land for many decades had been in sugar cultivation.

HoKua Place will not have an impact on access to any of Kaua'i's treasured places, thus is in line with **Policy #16**.

HoKua Place will contribute to the nurturing of our Keiki as emphasized in **Policy #17**. Housing will be available to our young families. They will grow up in a community where walking and bicycling will foster a good and healthy lifestyle. Some parents will be able to work in Kapa'a Town, thus reducing time spent away from their children sitting in traffic.

There will be opportunities to develop senior housing in this development. HoKua Place will be a Kupuna friendly community. Considerations for our Kupuna to walk or bicycle from home to Kapa'a town is incorporated in HoKua Place. Therefore, the development is in line with **Policy #18**.

HoKua Place is committed to work and communicate with government and concerned citizens in the actual design and development of this project. This process will take place during the entitlement process on the County level. The public will have ample opportunity to state their concerns during the process. The Petitioner and their consultants are committed to communicate with Aloha per **Policy #19**.
The HoKua Place project conforms to and implements the policies of the General Plan as stated above by developing within Neighborhood General designation. The rural character of the area will be preserved.

Page 2, Paragraph 5: Chapter 5.1 of the 2nd DEIS states the General Plan's Goals and Policies.

Page 3, Paragraph 1: The updated General Plan is complete and approved. This 2nd DEIS reflects the Goals and Polices of the General Plan.

Page 3, Community Plan Consistency: Change to only reference to the General Plan and the Kapa'a-Wailua Development Plan.

Page 3-4, Consistency with Recent Plans and Policy Initiatives: Although the petition is focused on what the LUC's task is, which is a Boundary Amendment, the Developer acknowledges the Goals and Policies of the updated General Plan. Furthermore, the Developer desires to be flexible in the design of the site at this time so planning, during the county entitlement process, can take place with the implementation of the "Complete Streets", Multi-Model Land Transportation Plan, and the Smart Code. The Developer recognizes that the "Form-Based Code" is part of the General Plan update. HoKua is committed to shifting vehicle trip mode to pedestrian, bicycle and transit trips.

Other Comments:

- Exhibit H has the updated TIAR and responses to DPW and DOT comments.
- Pages 19 and 20 elaborates more on the Kapa'a Town Park and the Kapa'a By Pass.
- Page 21 clarifies "reserved areas" as "zoned" areas.
- Page 24 elaborates on "Social Sustainability".

Respectfully Submitted,

Ron Agor, Architect

Bernard P. Carvalho, Jr.
Mayor

Nadine K. Nakamura
Managing Director

Michael A. Dahilig
Director of Planning

Ka'āina S. Hull
Deputy Director of Planning

PLANNING DEPARTMENT
County of Kaua'i, State of Hawai'i
4444 Rice Street, Suite A-473, Līhu'e, Hawai'i 96766
TEL (808) 241-4050 FAX (808) 241-6699

JUN 18 2015

Mr. Peter T. Young
Hookuleana LLC
1539 Kanapuu Drive
Kailua, Hawai'i 96734

RE: A11-791 HG Kaua'i Joint Venture
Kapa'a Highlands II
Comments on the Draft Environmental Impact Statement (DEIS)

Dear Mr. Young:

Thank you for the opportunity to review the Draft Environmental Impact Statement (DEIS) for the State Land Use District Boundary Amendment Petition to the State Land Use Commission for HoKua Place (HG Kaua'i Joint Venture, LLC) which is located on a portion of TMK (4) 4-3-003:001 in the East Kaua'i Planning District.

According to the DEIS, the petition area, named "HoKua Place", is sited on 97 acres located on a bluff mauka of the existing Kapa'a Town Core and adjacent to the Kapa'a Middle School. The area is hemmed by Olohena Road, the Temporary Kapa'a Bypass, and an agricultural subdivision, "HoKua Agriculture Lots." The initial plans show a predominantly residential development characterized by large pockets of single family (86 lots) and multi-family dwelling units (683 units). The County's affordable housing requirements will be fulfilled onsite. The plans include limited space for complementary commercial uses. The public facilities include land for a police/fire station and 14.3 acres of open space, including greenways and a 3.1-acre park. The project area is designated State Land Use District – Agricultural and zoned "Agriculture" by the County.

Based on the DEIS, the Planning Department has the following comments and concerns, primarily in relation to the County's long range plans and land use policy initiatives:

Consistency with the General Plan Update (2000)

Thank you for providing statements addressing how the project conforms to existing County long-range plans. By County Charter, the General Plan guides the future physical development of the County and is adopted by ordinance. The Kaua'i County Code states

that amendments and updates of land use regulations and maps shall be consistent with the policies of the General Plan (Section 7-2.5, Land Use Regulations).

The existing General Plan (2000) identifies the project site for future urban growth under the "Urban Center" designation. This carried over the 1984 General Plan's designation for the area (Urban Mixed Use). The policy for Urban Center-designated land is stated in Section 5.4.1.1 of the General Plan:

> *"(a) Lands included within the Urban Center designation shall be centers of government, commerce and transportation that serve the entire county or a large region. Uses may include shopping centers, government offices, churches and other institutions, office complexes, and industrial facilities. Residential or resort uses may also be located within the Urban Center designation, where compatible.*
>
> *(b) Urban Center areas are typically served by wastewater collection and treatment facilities and major roads. Urban Center lands may be zoned for any type of use, including General Commercial, General Industrial, Resort, and Residential."*

Since the project map is conceptual at this point, the Planning Department reserves the right to confirm that the project's boundaries are entirely within the "Urban Center" designation before assessing if a General Plan Amendment is required.

Land use policies specific to the Kawaihau District are contained in Section 6.2. This section includes a preliminary planning district vision statement and a discussion on issues and opportunities related to growth and development. Specific to the project site is the following statement (Section 6.2.4.1):

> *"Lands previously designated for urban use but as yet mostly undeveloped include an area located near Kapa'a, south of Olohena Road. This area was previously designated for Urban Mixed Use and is shown as Urban Center on the new GP Land Use Map. Owned partly by the State and partly by Amfac/JMB (or its successor), this "expansion area" for Kapaa has already accommodated the Kapa'a Middle School."*

It must be considered that in the late 1990s, when the General Plan was developed, a major assumption influencing the final land use map was that the Kapa'a Bypass Road, also known as the Permanent Relief Route, would be completed, thus increasing highway capacity. This critical infrastructure project has stalled and does not appear to be moving forward at the State Department of Transportation (DOT).

Also, while the General Plan identified this area as Urban Center, the plan did not adopt policy that allocated housing units to the area nor identified the desired build-out scenario or intensity of uses. Likewise, the zoning capacity figures in the build-out analysis conducted for the existing General Plan should not be construed as desired growth policy. Please clarify this in the DEIS.

<u>Ongoing General Plan Update Process</u>

In November 2014, the Planning Department launched the General Plan Update, contracted to SSFM International. The project is envisioned to last two years and will

utilize extensive public input and new data to amend the existing General Plan's vision, policies and maps.

In May 2015, the public process for the General Plan Update was initiated with multiple Island-wide events and meetings. The planning department received a large number of comments related to traffic congestion throughout the Kapa'a-Wailua corridor and the desire to limit future growth until vehicular level-of-service improves. The applicant should be aware that these public comments, along with other public concerns, will factor into the discussion regarding potential General Plan land use map amendments. The FEIS should acknowledge that the General Plan Update is underway and could result in General Plan land use map amendments.

In Section 4.8, Socioeconomic Conditions & Public Service Facilities, please utilize information from the General Plan Technical Study: Socioeconomic Analysis and Forecast (2013) in the discussion of population growth and housing demand. This technical study was prepared for the ongoing General Plan Update and provides regional population and housing allocation forecasts for all six planning districts, including the East Kaua'i Planning District. It is a foundation study for the ongoing General Plan Update process and will be utilized in General Plan policy discussions related to growth and land use map amendments.

Community Plan Consistency

In several places, the DEIS incorrectly states that HoKua Place is consistent with the Kapa'a Town Development Plan and the Kapa'a-Wailua Basin Community Plan.

The existing development plan for the area, the Kapa'a-Wailua Development Plan, focuses on the Kapa'a Town Core and does not address regional growth nor touch on future plans for the project area. Despite the age of the plan, which was adopted in the 1970s, this is the correct plan to reference when addressing consistency with the regional plan.

The Planning Department has been working on an update of the Kapa'a-Wailua Development Plan (also known as the East Kaua'i Community Plan) for several years. This plan is not yet in public draft form and cannot be considered when addressing consistency with the project area's regional plan. However, it would be appropriate to mention that the planning process is ongoing. Unfortunately, the Planning Department cannot provide a clear timeline for project completion as the project's status is under review by County Administration.

There is no existing or draft Kapa'a Town Development Plan. A Kapa'a Town Urban Design Plan was submitted as part of the Mayor's Annual Budget Submittal to Council (FY2015-16), but it was not included in the final annual budget. Please exclude mention of this plan from the Final Environmental Impact Statement.

Consistency with recent plans and policy initiatives

Complete Streets (2010) and Complete Streets Subdivision Ordinance (2013)
The County's Complete Streets Policy requires that new projects safely accommodate travel by pedestrians, bicyclists, public transit, and motorized vehicles. Therefore, we appreciate the inclusion of active transportation design in the initial project concepts and the

acknowledgement of the positive health impacts when such infrastructure is carefully integrated into community design. However, the conceptual plans in the DEIS do not appear to reflect a recent amendment to the subdivision code which requires short block lengths in the Residential District. Please review Ordinance 946, as said standards have the potential to significantly alter the project layout.

Multi-Modal Land Transportation Plan (2013)
The Kaua'i Multimodal Land Transportation Plan (MMLTP), approved by Council in 2013, sets a goal of flatlining total annual vehicle miles travelled via trip mode shifts to active transportation modes, such as walking, biking and transit. For this to occur, the walkability of towns and urban centers must improve which will require stronger linkages between land use and travel modes. The FEIS should acknowledge this goal and address how the project will support vehicular trip mode shift to pedestrian, bicycle and transit trips.

Smart Code (Form-Based Code)
The Sustainability Plan for HoKua Place refers to "Smart Code" and states that the conceptual plans implement Smart Code principles. The County is currently implementing Smart Code's transect-based (or place-based) zoning, also known as Form-Based Code, via two community plans. As shown in the DEIS, the project would create a community segregated into two building types: the single-family house and the multi-family apartment complex. Form-Based Code supports a seamless mix of building types to meet diverse housing needs at a range of price points. This mix includes the "missing middle" building types that provide medium-scale, higher density housing such as the duplex, carriage house, mansion apartment, and cottage court. This zoning approach is codified in the Draft South Kaua'i Community Plan and is supported in the Draft Līhu'e Community Plan. Please be aware that the General Plan Update will explore how an Island-wide approach to form-based code could be implemented.

Other Comments:

- In regards to the TIAR and recommendations for the design of the proposed new connector road from the Temporary Bypass Road to Olohena Road, please address comments from the Department of Public Works.

- On Page 18, Paragraph 1, a description of Kapa'a Town Park is used but it reflects the vision for the facility and is not an accurate description of the existing facility. Likewise, Paragraph 2 on the same page reflects a vision statement for the Bypass Road and does not illustrate current conditions.

- Section 2.2, Page 19, states that the project will address housing needs "without significantly affecting reserve areas for foreseeable urban growth". Please clarify the meaning of this statement, including what is meant by "reserve areas for forseeable future growth."

- Page 21, please clarify the meaning of "social sustainability."

Should you have any questions, please contact Marie Williams, Planner, at (808) 241-4050.

Mahalo,

Michael A. Dahilig
Planning Director

CC: Jodi Higuchi, Office of the County Attorney
State Land Use Commission

AGOR JEHN ARCHITECTS, LLC
460 Ena Road, Suite 303
Honolulu, Hi 96815
ron@agorjehnarch.com
808-947-2467

Date: 10-01-2018

RE: Response to Comments on HoKua Place DEIS

TO: Rayne Regush
Chairperson of W-KNA

Please note that a "Second Draft Environmental Impact Assessment (2nd DEIS)" will be published for comments in November. In order to address concerns of the already published Draft Environmental Impact Assessment, new information in the form of reports, and studies, including a new TIAR, an Agricultural Suitability Report, an Invertebrate Study, as well as references to the updated County General Plan were added. Therefore, the submittal of the 2nd DEIS will allow the public and agencies to comment on the new information.

We are pleased to respond to W-KNA's comments on the DEIS for HoKua Place as follows:

Page 1:

It is highly unlikely that the developer would commit to install any infrastructure (Road A) prior to approval of a Boundary Amendment or achieving of entitlements on the County level. The completion of the any infrastructure will most likely be a condition of entitlements at the state and county levels..

Page 1, Item 1:

Please refer to above response.

Page 1, Item 2:

The LUC most certainly will assess the project's financial plan during the entitlement process. Because of the rigorous process and enormous cost processing of entitlements, innately , the property's market value will increase proportionately.

Page 1, Traffic Circulation and Congestion:

Again, an update TIAR is included in the 2nd DEIS along with the State DOT and the County DPW comments, as well as the consultant's response to the comments. (See Exhibit "H", Volume II) The consultant and applicant believe that while the regional traffic is congested at times, HoKua traffic plan will help ease the traffic congestion in the area.

Page 2:

a) Refer to the updated TIAR with the State DOT and the County DPW comments, as well as the consultant's response are included as Exhibit "H", Volume II.
b) Please refer to the updated TIAR.
c) The updated TIAR discusses solutions to the intersection of "Road A" and Olohena Road intersection.
d) Currently there is no planned overpass over the bypass road.

e), f), & g): The updated TIAR herein discusses these items.

Page 2 Density:

a) This petition entails the proposal of 683 multi-family units and 86 single family lots and homes.
b) This petition includes 683 multi-family units and 86 single family lots Alternative 3 is depicted as not an option to fulfill the housing needs as expressed by the planning department at the inception of HoKua Place. At that time the county planning department asked for 700 to 800 units. Alternative 3 would yield a maximum approximate of 300 single family units, far short of the planned total units and will not effectively meet the current General Plan's demand for housing in the area.
c) HoKua Place is committed to providing affordable housing in accordance with the Kaua'i Housing Code. Please refer to Page 12 of the 2nd DEIS, Volume I.
d) The applicant recognizes that challenges of the sloped lands where some of the multi-family units are proposed. The final designs will accomplish the most effective use and will minimize the cost of construction on sloped lands. Detailing of housing units and multi-family units will be disclosed during the entitlement process with the County Planning Department and Planning Commission.

Page 2 Phasing:

a) The HoKua Farm Lots will be developed separately from Hokua Place. The Farm Lots are zoned for their proposal. Hokua Place is petitioning for a Boundary Amendment.

Page 2, DEIS Maps:

a) This petition is not intended to show details of the housing units. The map on Page 22 depicts the greenbelts, neighborhood commercial space, public pool facility space and the proposed areas for multi-family designations and single family designations.

   Although this petition is based on the updated General Plan, the applicant recognizes that the County Planning Department has submitted an update to the Kapa'a-Wailua Development Plan to the Kauai County Council for approval. Currently, there is no foreseeable timeline as to when the updated plan will be approved or rejected by the council. However, the applicant is cognizant of the "Form Base Code" that planning department is emphasizing in the updated plan. Therefore, to allow for flexibility to design for the "Form Base Code" particulars, the applicant is submitting this petition for a total amount of units that is plausible for the site and not committed to the final site planning of the units.

   The blue-line indicates the current general plan "Urban" designation boundaries as indicated on the map.
b) The detailed planning of the housing units will be developed for the entitlement process for the County Planning Commission. W-KNA will have opportunities to scrutinize the plan during that process.
c) Please refer to Exhibit P.1 for a full size aerial topography map.
d) Refer to Exhibit P.2 for a full size survey showing dirt roads etc.
e) An updated Firm Map is provided in the 2nd DEIS, Volume I.

Page 3, Stream Impacts:

a) The "unnamed" stream is outside of the HoKua Place Development and it does come from Olohena Road and ultimately crosses the bypass road. The stream then goes to Waikaea Canal. The development of Hokua Place will include on site retention basins which will not

allow development run-off into the stream. A more detailed development drainage plan will be provided for the County entitlement process. It will include a drainage plan that will safeguard the stream from negative impacts.

b) Item a) above address this item.

c) The exploratory hole for propose water well is located approximately 175 feet from the stream. The spring shown on the subject map is outside the boundaries of Hokua Place, but is approximately 180 feet away from the stream.

Page 3, Inconsistent Information:

a) To the best of my knowledge, all information provided for the 2nd DEIS is pertinent to the project. There may be references to Kapa'a Highlands Phase II, which is the former name of the Project.

b) The provided Exhibit "P" delineates an aerial topography which clearly shows the sloped areas.

c) A licensed Archaeologist will make the determination of "significance" if there are findings during construction.

d) HoKua Place is in concert with the current General Plan. The Kapa'a-Wailua Development Plan (East Kauai Community Plan) is in the process of being updated.

Page 3, Drainage:

a) & b) The applicant believes that the Preliminary Drainage Engineering Report on Drainage improvements is adequate for this EIS petition. The applicant will follow the normal procedure of providing a complete and detailed report of drainage during the County permitting process.

Page 4, Visual and Aesthetic Resources:

a) The Nounou Mountain Range is to the North East of the Middle School. Mount Waialeale is to the North and partly North West of the Middle School. The average difference in grade from the school to potential building areas adjacent to the school is 25 feet in both directions. Therefore, the applicant can visualize that views of the subject mountain ranges will not be significantly impaired.

b) Most of the proposed units will have substantial views of either the ocean or mountains. To avoid having more traffic than the projected residential traffic in the area, the applicant is reserved about creating a public viewing area for tourists and the like.

c), d), e) and f): The photographs have been replaced with your recommended photographs. Exhibit P.1 for a full size survey showing dirt roads etc.

g) and h): The developer is committed to providing "affordable housing". The cost for underground utilities could cost each unit owner 25k to 30k each. The option of not not going underground should rest with the developer in order to achieve their commitment to "affordable housing".

Page 4, Secondary and Cumulative Impacts:

a) The 2nd DEIS has addressed the current General Plan and has recognized that the Kapa'a-Wailua Development Plan is currently being update. Refer to Page 21.

b) The projected property taxes generated from this affordable housing project is a minimum of approximately 1.5 million dollars a year. There is no forecast of a plan to take care of the regional traffic system, therefore a statement of generated taxes versus cost of future solutions is not available at this time.

Police and Fire protection is already available for the proposed development area.

Page 6, c) It is the Developer's assessment that the tourist population increase from the Coconut Beach Resort, the Coconut Plantation Village and the Coco Palms will have a positive impact on the HoKua Place. The subject resorts will provide hundreds of jobs for the local residences of this development. The housing of many of our young local residences and the jobs provided by the afore mentioned resorts, in short vicinity of each other, cumulates what should be achieved in building a sustainable community.

Page 6, d) The population census graphics for the 2010 remains the same to 2017 (10,699). Therefore the submitted report can still apply as written.

Page 6, a) Volume 2 has been paginated.

Respectfully Submitted,

Ron Agor, Architect

WAILUA - KAPA'A
NEIGHBORHOOD
ASSOCIATION

June 22, 2015

Daniel E. Orodenker
State Land Use Commission
P. O. Box 2359
Honolulu, HI 96804-2359
luc@dbedt.hawaii.gov

Peter T. Young
Ho`okuleana LLC
1539 Kanapu`u Drive
Kailua, HI 96734
info@hookuleana.com

Greg Allen, Jr.
HG Kaua`i Joint Venture
161 Wailua Road
Kapa`a, HI 96746
gallen@harbormall.net

RE: Draft EIS for HoKua Place, Kapa`a - Petition for District Boundary Amendment for 97-acres from Agriculture District to Urban District, TMK (4)4-3-03:001

The Wailua-Kapa`a Neighborhood Association (W-KNA) cannot support this Boundary Amendment at this time. It is imperative that roadway infrastructure improvements are implemented first and foremost to resolve long-standing traffic congestion in Kapa`a. Development and population growth has outpaced the town's roadway infrastructure and HoKua Place (even if phased) may intensify this problem.

Members of the W-KNA board have recently served on the State Department of Transportation's Citizen Advisory Committee for the Kapa`a Transportation Solutions Study. We understand the urgency to address traffic needs before increasing residential density in Kapa`a. Yet, we understand the acute need for affordable housing and support siting urban expansion adjacent to the Kapa`a town core. But, allowing more density now is a risk to the community until roadway solutions are implemented.

Within the role of the Land Use Commission (LUC), can specific conditions be imposed on the applicant to mitigate critical transportation concerns? For example, could an agreement be negotiated to grant the Boundary Amendment once HoKua Place "Road A" is operational for public use? This way, a transportation solution is guaranteed in advance of any housing construction.

The petition for the boundary amendment for Urban District entitlements should not be granted until:

1. One or more traffic congestion mitigation solutions are in the construction phase, and
2. The project's financial plan is vigorously assessed by the LUC to indicate that funds are sufficient to execute the 97-acre Phase II development. Otherwise, the project may be speculative in nature, seeking entitlements that will increase the property's market value.

Traffic Circulation and Congestion.

HoKua Place represents a dramatic increase in housing for East Kaua`i and once occupied, it will contribute significantly to regional traffic. Utilization of multi-modal design will not alleviate existing congestion problems.

The *1997 Kaua`i Long-Range Land Transportation Implementation* Plan has not met its 2000 and 2006 deadlines for Kapa`a roadway widening in areas affected by the proposed boundary change. And, recommendations in the *2035 Transportation Plan for the Kauai District* (July 2014) have not been implemented. Recommendations in the *Kapa`a Transportation Solutions Study (2015)* have not yet been published, but will include some priority projects which could be completed in five years.

a) What is the status of the Draft TIAR dated June 6, 2014?
b) What are the specific times described as "peak hours" in the TIAR? Please include a description of weekend traffic congestion in the DEIS.
c) Discuss how the Applicant might partner with the county to design and construct a roundabout or a 4-way intersection alternative where Olohena, Ka`apuni, Keahulua Roads and HoKua Place "Road A" meet. What partnership terms might the Applicant agree to as a condition for granting the Boundary Amendment?
d) Provide a topographical rending of the proposed Overpass that will cross the Bypass Road.
e) We concur with the County's recommendation for a left turn storage lane from the Kapaa Bypass (northbound) into "Road A" and a southbound right turn lane into "Road A". Please provide an overlay illustration of how the Bypass Road will accommodate these turn lanes and explain whether or not the Applicant will agree to <u>not</u> deferring these improvements.
f) We agree with the County's recommendation that the TIAR analyze: a) the intersection of Kuhio Highway and Lehua Street, and b) Olohena Road and Lehua Street.
g) The DEIS should describe the anticipated traffic impacts at the Kapa`a Roundabout, but <u>not</u> in the context of Bypass Road closure.

<u>Density.</u>

a) The proposed 769 housing units on 97-acres is high density for a rural island. Why didn't the EISPN provide alternatives for reduced residential density by decreasing the 683 multi-family units? Please provide alternate scenarios.
b) Alternative 3 Residential Lot Subdivision (page 23) does not disclose the number of single family housing lots proposed. Please provide that number and describe how it will "pencil out".
c) Why are there no Kaua`i Housing Code designated affordable single family homes and instead, only affordable multi-family housing?
d) Siting multi-family, multi-story housing along sloped topography involves additional cost and other challenges. Please provide more narrative about this and a visual aid showing the multi-story designs built on the hillside.

<u>Phasing.</u>

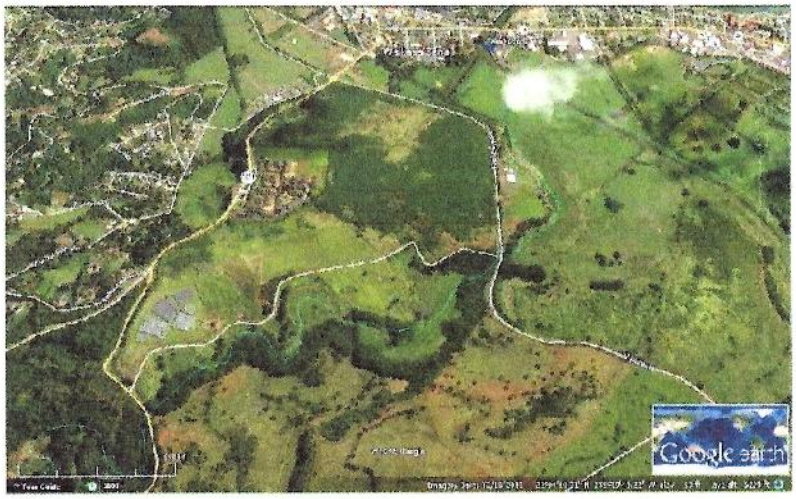
a) Explain the relationship between Phase I-HoKua Farm Lots and Phase II-Hokua Place describing in detail any constraints (especially financial) that one may have upon the other.

<u>DEIS Maps.</u>

a) The EISPN Concept Plan Map October 2010 (which gave a good visual representation of the placement of all the housing units, greenbelts and roads) was replaced by Conceptual Plan Map March 2015 that has far less detail (see pages 13, 20 and 161). What do the unlabeled blue boundary lines represent? Why are they drawn through several proposed houses?
b) Providing a full page, color configuration of the proposed 769 housing unit buildout similar to the Concept Plan Map October 2010, would be very helpful.
c) A full page topographic map should be included with legible elevation lines, streams, ditches, diversions, wells, bridges and other pertinent notations including boundaries of adjacent landowners with TMK numbers.
d) Provide a site map showing existing cane haul roadways (paved and unpaved) and the proposed roadways sited throughout the development.
e) A current FIRM Map needs to replace the FIRM Map Overlay dated 2005 (page 146).

Stream Impacts.

a) Provide confirmation whether or not the "unnamed" Stream referenced in the DEIS (eg. Water Resources, page 77, Section 4.6.1) is actually Waikaea Stream which crosses Olohena Road and the Bypass Road from Hokua Place and empties into the Waikaea Canal. The Google Earth picture we inserted here identifies Waikaea Stream with a blue line.



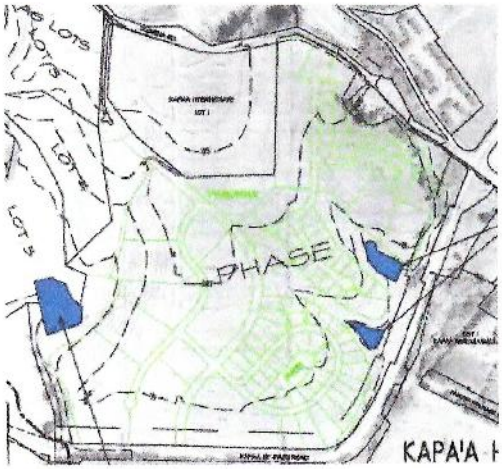
b) On page 77, the DEIS says: "HoKua Place is committed to keeping the flow of the stream consistent". Therefore, please include base flow information for this stream.
c) Provide the distance between the location of the Potable Well and the Stream, and to the Spring identified on page 86 on the map.

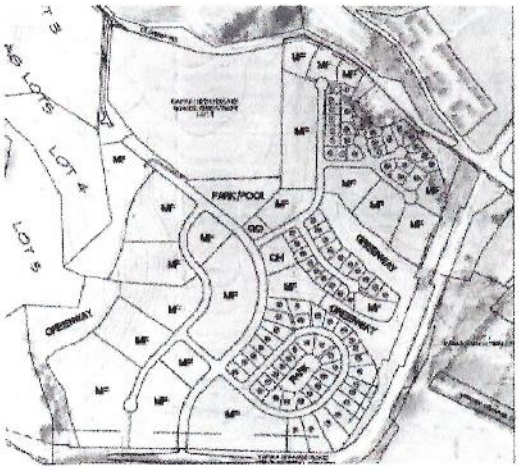
Inconsistent Information.

a) Many documents in the DEIS were prepared years earlier for Kapa`a Highlands. Please describe each instance where the information may not apply to HoKua Place.
b) HoKua Place is a hillside development so we question why there are so few references to this fact. The aerial photos also appear to flatten out the terrain.
c) On Page 19: Natural & Cultural Resources, it notes: "Should any archaeologically **significant** artifacts, bones, or other indicators be uncovered during construction…". Since a cultural site monitor is not proposed, who is qualified to determine whether finds are "significant"?
d) Page 19: Land Use. To our knowledge, there is no county document called the "Kapa`a-Wailua Basin Community Plan". However, there is a 1973 Kapa`a Wailua Development Plan. It has not been updated. So, saying the project is consistent with that Plan, evades that fact that a 4-decade old plan is not optimal.

Drainage.

a) The Preliminary Engineering Report on Drainage Improvements (Exhibit F) is extremely brief. As stated: "the topography varies from gently sloping, bluff top property, to steep areas that drop off into drainage gullies" therefore a more detailed analysis on the impacts of storm water runoff and maintaining pre-development drainage flow volumes and patterns is warranted.
b) The drainage system refers to three detention basins which are also labelled as "Greenways" on the maps. Please provide photographs of these areas and also a visual rendering of how these dual-purposed gullies will be used.





Visual and Aesthetic Resources.

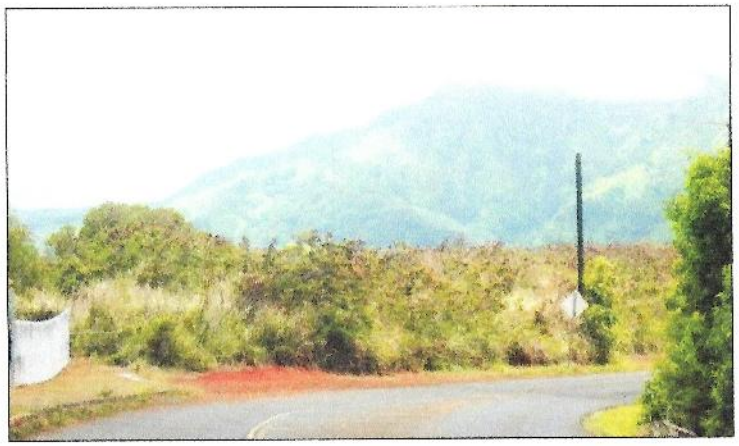
a) Significant views of Nounou Mountain Range and Mount Waialeale can be seen from the Middle School property. Discussion has been omitted concerning how the development will impact the line of sight to this spectacular scenery.
b) The surrounding landscape offers sweeping vistas looking makai to the ocean and mauka towards the mountains. The development needs to provide scenic overlooks and vista points for public benefit. The 3-acre park may not offer sufficient views of these dramatic panoramas.
c) The "Photo Tour" in section 4.4.1 Environmental Setting (pages 63-69) minimizes the project's visual impacts from different public vantage points along the Bypass and from Olohena Road.
d) The two photos below are far more representative of the views "approaching HoKua Place, driving North on the Bypass Road" than Photo Tour picture #1 (page 64) in the DEIS.

The downhill slopes below the Middle School campus will be populated with new urban district housing, replacing the existing agricultural vistas.

e) From Olohena Road near the fork at Ka`apuni, views such as the panoramic photo below, is far more representative than DEIS photos #15 and #16 (pages 68-69).

Panorama of the HoKua Place development site looking southeast with expansive ocean views and in the far distance is Hoary Head/Haupu Mountain Range in Lihu`e.

f) DEIS photo #13 (page 68) is a poor representation of "Looking across the west side of the Middle School parking lot, Hokua Place is beyond." In contrast, our photo below shows the school parking lot fence (lower left corner) and the dirt road (proposed "Road A") where it meets Olohena Road, traveling mauka just before the fork. Makaleha Mountain Range and the "lei of pearls" (waterfalls) are visible.



g) There are also spectacular views of Mount Waialeale on days without a cloud cover. Scenic and open space resources are important assets to the community.
h) To preserve views, we strongly encourage the developer to commit to undergrounding electric lines, which currently, they state is "dependent on funding".

Secondary and Cummulative Impacts.

a) The DEIS fails to note that the County's General Plan 2000 is outdated and that many of the recommended implementing actions did not occur. A General Plan update has just launched, therefore the first paragraph on page 153 is inaccurate.
b) Secondary impacts relate principally to overburdened roadway infrastructure and public facilities and services which don't meet demand. Please describe the extent to which increased tax revenues from new housing will offset and exceed the demand for additional police and fire protection and new roadway improvements.

c) Cumulative impacts relate to HoKua Place in the context of two large resort developments approved just a few miles away – Coconut Beach Resort (343 units) and Coconut Plantation Village (198 units) along with pending permit approvals for the Coco Palms Resort's 350-unit hotel. Please discuss the social impacts or diminished quality of life from the anticipated population growth from these resorts.
d) The information provided from the DOE's Classroom Utilization Report 2007-2008 and the School Status and Improvement Reports for School Year 2010-2011 (pages 112-113) would be more meaningful if you provide charts showing multiple years, and include more current data.

DEIS Volume II.

a) Volume II is almost 400 pages in length and should have been paginated. It is extremely challenging to navigate the Appendices.
b) W-KNA did not receive the consultant's undated letter acknowledging our EISPN comments, but we did see it reproduced near the end of Volume II.

Thank you for the opportunity to comment. We look forward to a detailed response from the consultant, Ho`okulcana LLC and a copy of the FEIS.

Sincerely,

Rayne Regush
Chairperson, on behalf of the W-KNA Board