NEIL ABERCROMBIE
GOVERNOR

MAR 2 3 2011

KAREN SEDDON
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT AND TOURISM
HAWAII HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
Honolulu, Hawaii 96813
FAX: (808) 587-0600

IN REPLY REFER TO:

11:DEV/0038

March 9, 2011

Memo to: Gary S. Hooser, Director
Office of Environmental Quality Control

From: Karen Seddon
Executive Director

Subject: Draft Environmental Assessment for the
Meheula Vista Senior Affordable Rental Development
95-1080 Lehiwa Drive
Mililani Mauka, Oahu, Hawaii
TMK (1) 9-5-022: 032 (Portion of)

The Hawaii Housing Finance and Development Corporation (HHFDC) has reviewed the Draft Environmental Assessment for the above subject project, and anticipates a Finding of No Significant Impact. Please publish notice in the next available OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and one (1) copy of the document in pdf format on a CD; and one (1) hardcopy of the Draft EA. Please contact Keith Kurahashi of Kusao and Kurahashi, Inc. at 988-2231, or Stan S. Fujimoto, HHFDC Project Manager at 587-0541 should there be any questions or comments regarding this matter.

Enclosures

DRAFT ENVIRONMENTAL ASSESSMENT

MEHEULA VISTA
SENIOR AFFORDABLE RENTAL DEVELOPMENT
95-1080 LEHIWA DRIVE IN MILILANI MAUKA, HAWAII

Tax Map Key: 9-5-022: 032

CATHOLIC CHARITIES HOUSING DEVELOPMENT CORPORATION
and
GSF LLC
C/O 1822 KE'EAUMOKU STREET
HONOLULU, HAWAII 96822

APPLICANTS

Kusao & Kurahashi, Inc.
Planning and Zoning Consultants
2752 Woodlawn Drive, Suite 5-202
Honolulu, Hawaii 96822

Agent

MARCH 2011

DRAFT ENVIRONMENTAL ASSESSMENT

MEHEULA VISTA
SENIOR AFFORDABLE RENTAL DEVELOPMENT
95-1080 LEHIWA DRIVE IN MILILANI MAUKA, HAWAII

Tax Map Key: 9-5-022: 032

CATHOLIC CHARITIES HOUSING DEVELOPMENT CORPORATION
and
GSF LLC
C/O 1822 KE'EAUMOKU STREET
HONOLULU, HAWAII 96822

APPLICANTS

Kusao & Kurahashi, Inc.
Planning and Zoning Consultants
2752 Woodlawn Drive, Suite 5-202
Honolulu, Hawaii 96822

Agent

MARCH 2011

TABLE OF CONTENTS

LIST OF EXHIBITS

APPENDICES

MEHEULA VISTA
A PROPOSED SENIOR AFFORDABLE RENTAL DEVELOPMENT

EXECUTIVE SUMMARY

The applicants, Catholic Charities Housing Development Corporation (CCHDC), a non- profit corporation, together with partner GSF LLC are proposing to develop Meheula Vista a senior affordable rental development located at 95-1080 Lehiwa Drive in Mililani Mauka. Meheula Vista will be available to seniors 55 years and older earning 60% and below the Annual Median Gross Income (AMGI). The proposed Meheula Vista development will remain a senior affordable rental for 61 years.

Meheula Vista will be comprised of 300 senior apartment units, plus one resident manager's unit, a separate multi-purpose building to support senior programs and activities, a total of 187 parking spaces, landscaping, and private park areas that will include meandering pathways, resting benches and victory gardens to help meet park dedication requirements.

The applicants presented a preliminary development concept which was a family affordable rental development to the Mililani Mauka/Launani Valley Neighborhood Board No. 35, on July 6, 2010. The applicants at that time also were considering a possible mix of senior and family affordable rental units. Based on the community concerns (about traffic and school capacity in the area) raised at the July 6th Neighborhood Board No. 35 meeting and in subsequent meetings and discussions with agencies and area representatives, the applicants have finalized their master plan and target market to a senior affordable rental development that addresses the growing senior population needing rental housing opportunities. Other significant factors in the decision to change to a senior affordable rental development were the preliminary results of a market study on the demand for a senior rental housing development at this site, the completed traffic report concluding that a senior affordable rental will have minimal impact on traffic in the area, and discussions with the landowner Castle & Cooke Homes, Hawaii. This type of development complements the overall master planned Mililani community that has a wide range of housing opportunities.

The applicants presented the senior affordable concept to the Mililani Mauka/Launani Valley Neighborhood Board on January 18, 2011 and again on February 15, 2011. The Mililani Mauka/Launani Valley Neighborhood Board voted at its February 15, 2011 meeting in support of the proposed Meheula Vista Senior Affordable Rental development, with conditions.

****

DRAFT ENVIRONMENTAL ASSESSMENT

MEHEULA VISTA
SENIOR AFFORDABLE RENTAL DEVELOPMENT
95-1080 LEHIWA DRIVE IN MILILANI MAUKA, HAWAII
TMK: 9-5-2: 32

I. INTRODUCTION

The applicants, Catholic Charities Housing Development Corporation (CCHDC), a non- profit corporation, together with partner GSF LLC are proposing to develop Meheula Vista a senior affordable rental development located at 95-1080 Lehiwa Drive in Mililani Mauka. The development will be located on a 7.5 acre portion of a 9.024 acre lot zoned B-2 Community Business District, located on Meheula Parkway, between Kuaoa Street and Lehiwa Drive, as indicated in Exhibit 1, Zoning Map. The remaining portion of the property, about 1.5 acres, contains a self storage facility and is not part of this development. The project site is located next to Mililani Mauka Community Park and adjacent to the park is Mililani Middle School.

Meheula Vista will be available to seniors 55 years and older earning 60% and below the area median gross income (AMGI). Meheula Vista will remain a senior affordable rental for 61 years.

Meheula Vista will be comprised of 301 apartment units, a multi-purpose building to support senior programs and activities, a total of 187 parking stalls, and landscaped areas that will help meet park dedication requirements when fully developed. It will be developed in two to four phases depending on the availability and timing of financing. Four phases will be described in this Draft Environmental

Assessment. The phased development will consist of four separate buildings each with a two-story and three-story wing, and each offering 75 one-bedroom units, a multi-purpose room and 33 parking stalls. Phase I will also include a two-bedroom resident manager's unit located within the first apartment building. In addition to the 33 parking stalls allocated to each building, an additional 44 parking spaces will be spread throughout the development site in close proximity to the apartment buildings. Depending on financing, the 3,277 square foot multi-purpose building is planned for the first phase of the development. Eleven parking stalls including one handicapped parking space and a loading space will be located directly in front of the multi-purpose building. When completed Meheula Vista will offer 300 senior affordable apartment units, a resident manager's unit, a total of 187 parking spaces and landscaped gardens to meet park dedication requirements. Please refer to Appendix I - Plans.

The Meheula Vista is zoned B-2 Community Business District with a 60-foot height limit. The height of the two and three story buildings will be about 26 feet and 35 feet, respectively.

This Draft Environmental Assessment Report for a proposed senior affordable rental housing development is prepared pursuant to and in accordance with the requirements of Chapter 343 HRS and Chapter 200 of Title 11, Administrative Rules - Environmental Impact Statement Rules and 24 Code of Federal Regulations part 58. The action that triggers this assessment is the proposed use of Federal, State and City funds.

The applicants presented a preliminary development concept which was a family affordable rental development to the Mililani Mauka/Launani Valley

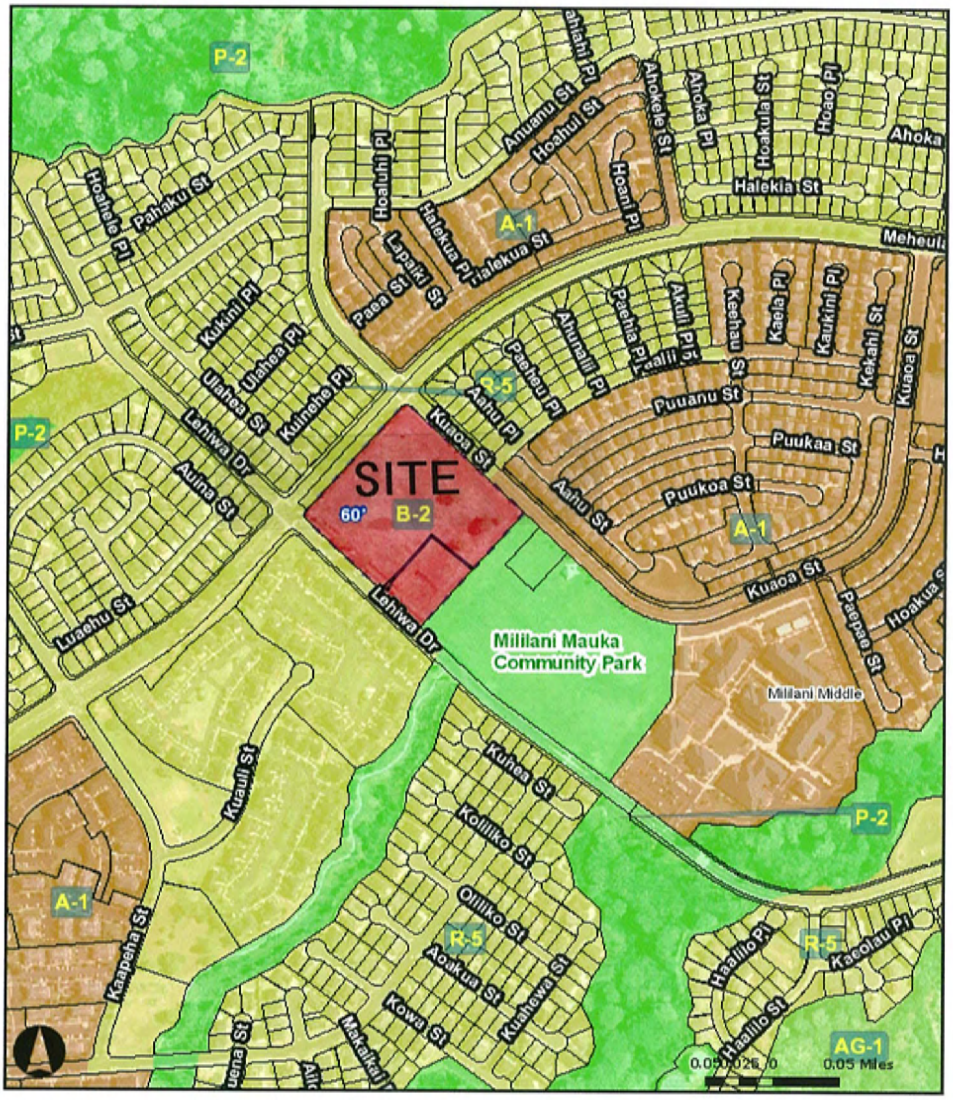
Neighborhood Board No. 35, on July 6, 2010. Please refer to Appendix II. The applicants at that time also were considering a possible mix of senior and family affordable rental units. Based on the community concerns (about traffic and school capacity in the area) raised at the July 6th Neighborhood Board No. 35 meeting and in subsequent meetings and discussions with agencies and area representatives, the applicants have finalized their master plan and target market to a senior affordable rental development that addresses the growing senior population needing rental housing opportunities. Other significant factors in the decision to change to a senior affordable rental development were the preliminary results of a market study on the demand for a senior rental housing development at this site, the completed traffic report concluding the very minimal impact a senior affordable rental has on traffic in the area, and our discussions with the landowner Castle and Cooke Homes Hawaii. This type of development complements the overall master planned Mililani community that has a wide range of housing opportunities. The applicants presented the senior affordable rental concept to the Mililani Mauka/Launani Valley Neighborhood Board (Board) on January 18, 2011 and again on February 15, 2011. The Board voted, at its February 15, 2011 meeting, in support of the proposed Meheula Vista Senior Affordable Rental Development, with conditions. Please refer to Appendix II.

II. GENERAL INFORMATION

A.	Project Name	:	Meheula Vista
B.	Developers/Applicants	:	Catholic Charities Housing Development Corporation (CCHDC)

			1822 Ke'eaumoku Street Honolulu, Hawaii 96814 and GSF LLC 1288 Ala Moana Blvd., Suite 35A Honolulu, Hawaii 96814
C.	Recorded Fee Owner	:	Castle and Cooke Homes Hawaii Inc. P.O. Box 898900 Mililani, Hawaii 96789 8900
D.	Accepting Agency/ Responsible Entity	:	State of Hawaii - Hawaii Housing Finance & Development Corp., Dept. of Business, Economic Development & Tourism 677 Queen Street Honolulu, Hawaii 96813 Phone: (808) 587-0597
E.	Tax Map Key	:	9-5-2-: 32
F.	Agent/Preparer	:	Kusao & Kurahashi, Inc. Planning and Zoning Consultants 2752 Woodlawn Drive, Suite 5-202 Honolulu, Hawaii 96822 Phone: (808) 988-2231
G.	Zoning	:	B-2 Community Business District (Exhibit 1)
H.	Estimated Cost	:	$95,000,000
I.	Lot Area	:	7.5 acre portion of 9.024 acres
J.	Location	:	95-1080 Lehiwa Drive in Mililani Mauka Mililani, Hawaii 96789 (Exhibit 2)
K.	State Land Use	:	Urban District

Meheula Vista



Zoning

- A-1
- A-2
- A-3
- AG-1
- AG-2
- ALOHA TOWER PROJ.
- AMX-1
- AMX-2
- AMX-3
- APT. MIXED USE SUBPRECINCT
- APT. PRECINCT
- B-1

Zoning (continued)

- B-2
- BMX-3
- BMX-4
- COUNTRY
- F-1
- I-1
- I-2
- I-3
- IMX-1
- KAKAAKO COMM. DEV. DISTRICT
- MIXED USE PRECINCT
- P-1
- P-2

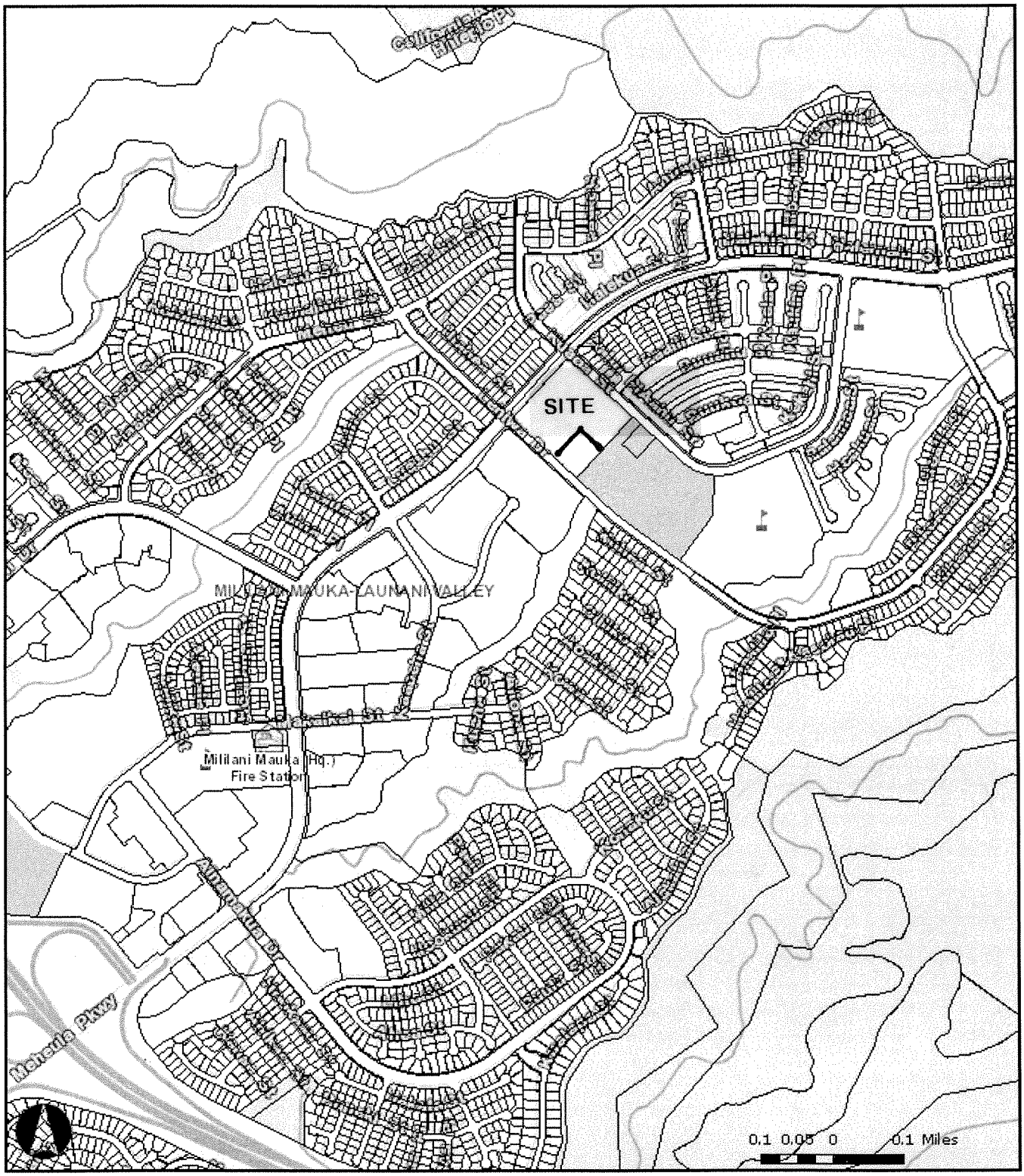
Zoning (continued)

- PUBLIC PRECINCT
- PUBLIC USE PRECINCT
- R-10
- R-20
- R-3.5
- R-5
- R-7.5
- RESORT
- RESORT COML. PRECINCT
- RESORT MIXED USE PRECINCT
- WATERFRONT INDUSTRIAL PRECINCT

Zoning Map Height Limit

ZONING MAP EXHIBIT 1

Meheula Vista



LOCATION MAP EXHIBIT 2

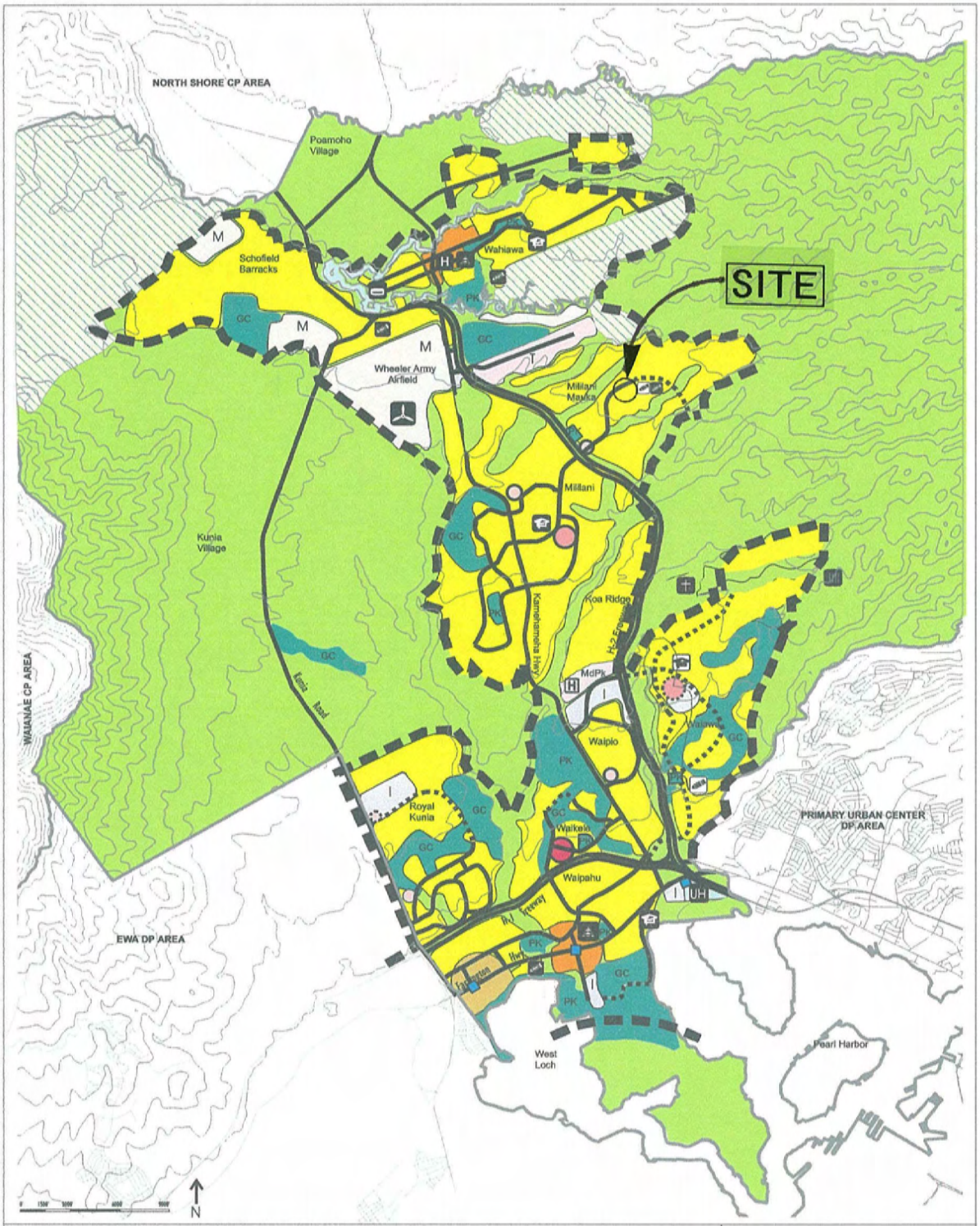
L.	Central Oahu Sustainable Communities Plan		
	Urban Land Use Map	:	Residential and Low Density Apartment (Exhibit 3)
M.	Public Infrastructure Map	:	Park on adjacent parcel (Exhibit 4)
N.	Special District	:	Not in Special District
O.	Existing Use	:	Vacant
P.	List of Agencies Consulted (Pre-Draft EA)	:	State Department of Education Mililani Mauka Elementary School Mililani Ike Elementary School State Department of Transportation Honolulu Fire Department Honolulu Board of Water Supply Honolulu Police Department Department of Planning and Permitting Department of Environmental Services Department of Transportation Services Department of Community Services
Q.	Anticipated Determination:		Finding of No Significant Impact (FONSI)

III. DESCRIPTION OF PROPOSED ACTION

A. PURPOSE AND NEED FOR THE PROPOSAL

1. Purpose

Data@Work, Inc. a market research firm that specializes in analyzing residential real estate markets for developers, was retained by the applicants to



CENTRAL OAHU *SUSTAINABLE* COMMUNITIES PLAN

Map A2: Urban Land Use

EXHIBIT 3

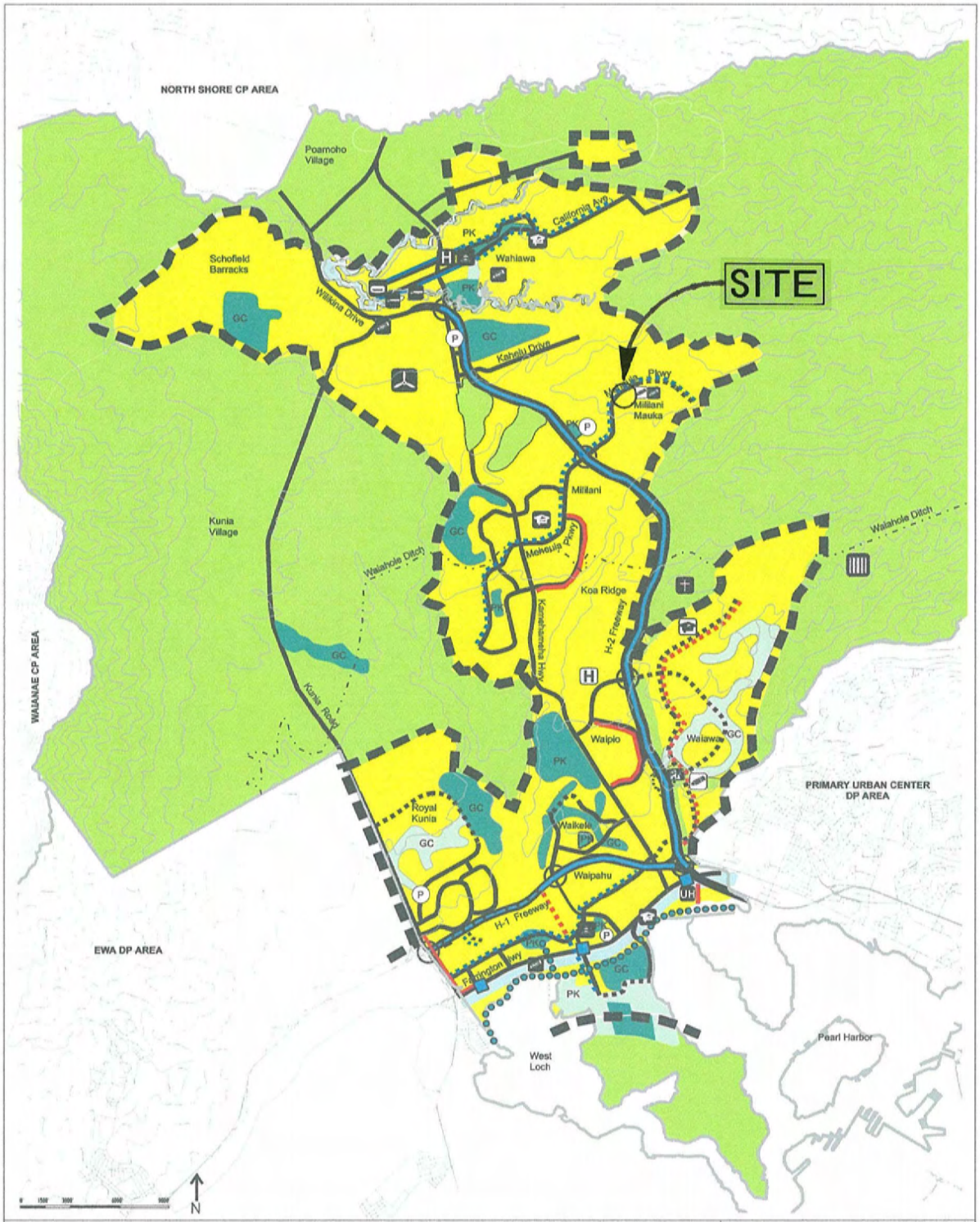
Department of Planning and Permitting
City and County of Honolulu
December 2002

- Residential and Low Density Apartment
- Medium Density Residential/Commercial Mixed Use
- Regional Town Center
- T — Technology Park
- MdPk — Medical Park
- I — Industrial
- M — Military
- PK/GC — Parks and Golf Courses
- Agriculture and Preservation Areas
- Military Training Area
- Institutional

	EXISTING	FUTURE
Community Commercial Center	○	◌
Major Community Commercial Center	◯	◌
Regional Commercial Center	●	
Highways, Arterial & Major Collector Streets	▬	▭
Transit Node (Medium Density Res. and Comm.)		▭
Intermediate School		
High School		

- Urban Community Boundary
- Wetland

	EXISTING	FUTURE
Civic Center		
Hospital	H	H
Cemetery	†	
Correctional Facility		
Wastewater Treatment Plant		
U.H. Leeward Comm. College	UH	
Airfield		



CENTRAL OAHU *SUSTAINABLE* COMMUNITIES PLAN

Map A3: Public Facilities Map

EXHIBIT 4

Department of Planning and Permitting
City and County of Honolulu
December 2002

- Urban Community Boundary
- Urban Areas
- Agriculture and Preservation Areas

EXISTING	FUTURE	
		Highways, Arterial & Major Collector Streets
		Grade Separated Interchange
		Historic Railway/Bikeway Corridor
		Bike Path
		Bike Lane
		High Speed Transit and HOV (High Occupancy Vehicle) Lane
		Park & Ride Site
		Transit Corridor
		Transit Node
PK/GC	PK/GC	Parks and Golf Courses
		Wetlands
		Intermediate School
		High School
		Hospital

EXISTING	
	Civic Center
	Airfield
	Cemetery
	Correctional Facility
	Wastewater Treatment Plant
UH	U.H. Leeward Comm. College
	Corporation Yard

to perform a study analyzing the market for senior affordable family rental housing in Mililani. The market study, conducted in 2010, entitled, "Mililani Senior Affordable Market Study," focused on the historical, current, and projected rental market conditions and trends to help forecast the absorption for the proposed project called Meheula Vista in Mililani Mauka, Central Oahu. Please refer to Appendix III- Market Study.

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. Rental information was collected from rental agencies, condominium resident managers, and the classified ads in the Sunday Honolulu Star Advertiser. Income and demographic information were obtained from the State of Hawaii, City and County of Honolulu, Bureau of the Census, Applied Geographic Systems and National Decision Systems.

The study in Chapter IX, page 23, Description of Comparable Units in the Market Area states as follows:

"AFFORDABLE INVENTORY: In the universe of one bedroom affordable housing units on Oahu being rented to seniors making 60% of Annual Median Gross Income (AMGI), there are approximately eight rental projects, containing about 586 rental units. The following table summarizes this sub-market.

AVAILABLE AFFORDABLE RENTAL INVENTORY, OAHU

Target AMGI	Units	# Projects	Ave. Sq. Feet	Min Months Wait	Max Months Wait
60%	586	8	511	22	38

In terms of units in the vicinity, as defined as Central Oahu, the following table describes the same market:

AVAILABLE AFFORDABLE RENTAL INVENTORY, CENTRAL OAHU

Target AMGI	Units	# Projects	Ave. Sq. Feet	Min Months Wait	Max Months Wait
60%	41	1	488	24	60

First, the long waiting list times, both minimum and maximum, indicates the market is very tight for these units. Second, the absolute number of units in the area is tiny, relative to both the intended supply of the subject project, as well as to the potential demand, which is the whole island in this case.

In sum, there simply are not many units in the area, or on the island that are comparable to the subject property. In addition, the waiting time for a unit is quite long."

The study further states, on page 27, as follows:

"Based on the unit sizes of comparable properties, the Subject's one-bedroom unit sizes are competitive. The proposed in-unit and common area amenities are generally comparable to slightly superior to the competition. As a new construction development in excellent condition with competitive amenities, we anticipate that the Subject will be well-accepted.

Given that this project is well-located and newly built, this project will receive a sufficient number of rental applications to be able to achieve 100% occupancy within the first six to twelve months of availability."

2. Target Market

As currently planned, the proposed senior affordable rental

development will service the needs of seniors, 55 years and older, who earn at or below 60% of the area median gross income (AMGI). The following table is taken from Chapter VIII. Market Analysis of Target Market, page 21,and based on current HUD income and rental rates, as follows:

" **Maximum Incomes by Household Size**

Household Size	30% AMGI*	50% AMGI	60%AMGI
1 Person	$20,880	$34,800	$41,760
2 Person	$23,850	$39,750	$47,700

*AMGI =Annual Median Gross Income - dated May 14, 2010"

"Meheula Vista Project Unit Breakdown & Pricing

Phase I Units	Total Units	Bedroom Count	Sq. Ft.	Tenant Share
75	300	1	432	$1,007

"As seen, any resident applying for a unit can have income up to 60% AMGI. In addition, the maximum rental contribution that can be levied at any affordable project on Oahu targeting households earning 60% of AMGI has been set at $1,118. However, since the effective rate will be reduced by the utility allowance, the effective rate is about $1,007*. (Note: it is seldom that affordable rental projects in Honolulu charge their tenants at this maximum rate.)

B. GENERAL DESCRIPTION

1. Proposed Development

The applicants, CCHDC and GSF LLC propose to develop a senior affordable rental development on a 7.5 acre portion of a 9.024 acre property located at 95-1080 Lehiwa Drive, in Mililani Mauka as

indicated in the Plans in Appendix I. The remaining 1.5 acres of this property contains a self storage facility and is not part of the proposed development. The project site is located next to Mililani Mauka Community Park and adjacent to the park is Mililani Middle School and surrounded on three sides by single family developments and low-rise developments. Please refer to Appendix IV - Photographs.

Meheula Vista will be available to seniors 55 years and older earning 60% and below of the AMGI.

Meheula Vista will be developed in two or more phases based on the timing of financing availability. The phased development will consist of four apartment buildings each with a two-story and three-story wing, and each apartment building will offer 75 one-bedroom units along with 33 parking stalls. In addition to the 33 parking spaces allocated to each building, an additional 44 parking spaces will be spread throughout the development site, in close proximity to the apartment buildings. Each one-bedroom apartment will measure approximately 432 square feet in size and will include a full kitchen and bathroom. Phase I will also include a 640 square foot two-bedroom resident manager's unit located within the first apartment building. When completed the development will include a total of 301 apartment units and 176 parking stalls. In addition, there will be a multi-purpose building along with 11 additional parking stalls to support activities of the seniors. The overall parking count will be 187 stalls. It is anticipated that a fence/wall will be placed at the perimeter of the project site. The property will be fully landscaped

and victory gardens are planned for the use and enjoyment of the senior residents. Please refer to Appendix I - Plans.

a. **Phase I** - The first apartment building will be located at the northwestern corner of the property adjacent to Lehiwa Drive. It will consist of a two-story wing, 26 feet in height and a three-story wing 35 feet in height and offer a total of 75 one-bedroom units and one 2-bedroom resident manager's unit. There will be 33 parking stalls including 5 handicapped stalls and one loading stall located immediately in front of the building. An additional 8 parking stalls will be located on the eastern side of the first phase of the property.

Ground Floor - A common lobby entrance with an elevator will service both the two-story wing and the three-story wing, along with stair wells at either end of each wing. Also on the ground floor will be two rooms for office use, laundry facilities to service the whole building, elevator machine room, electrical room, mail room, trash chute, janitorial room, and a large multi-purpose room of approximately 786 square feet for the enjoyment of the senior residents. The multi-purpose room within the building will include a full kitchen, recreational/ lounge area and restrooms where the seniors can congregate to watch television, play cards and otherwise socialize together. A total of 28 one-bedroom units, approximately 432 square feet in size, will be located on the ground floor arranged in a double

loaded configuration with a hallway separating the two rows of apartment units.

Second Floor - The second floor will house the resident manager's two-bedroom unit, approximately 640 square feet in size, one room for office use and a janitorial room along with 30 one-bedroom units each approximately 432 square feet in size.

Third Floor - The third floor will house 17 one-bedroom units all approximately 432 square feet in size.

Multi-Purpose Building - It is hoped that the multi-purpose building will be built in the first phase of the development, but as stated earlier in this report phasing will depend of the availability of financing. The proposed multi-purpose building will be used for the enjoyment of the senior residents in the development, and will provide space for numerous social activities. The one story building will be built to a height of approximately 35 feet with approximately 3,277 square feet of floor area. Eleven parking stalls including one handicapped parking space and a loading space will be located directly in front of the building. Please refer to Appendix I - Site Plan.

b. **Phases II, III and IV** - The following three phases will contain similar developments and will begin with Phase II fronting on Meheula Parkway at the corner of Kuaoa Street. Phase III will be located just south of Phase II along Kuaoa Street. Phase IV will be situated just south of Phase III between the existing self

storage facility and Kuaoa Street. Each of the three phases will be similar to Phase I, except that there will be no resident manager's unit included, and in Phase II the orientation of the two story wing in relation to the three story wing is different. In Phases III and IV the two wings will be oriented the same as Phase I. An additional 36 parking spaces, over and above the 33 parking spaces dedicated to each phase, will be located in close proximity to the three remaining phases.

c. **Parking and Loading Stalls** - At full development there will be a total of 187 on-site parking stalls. These parking stalls will be provided to residents, with a number of stalls set aside for visitors. 176 parking stalls will be dedicated to the four separate apartment buildings, and 11 parking stalls dedicated to the multi-purpose building for an overall total of 187 parking stalls. Four loading stalls will be provided for the senior development within the four apartment buildings and an additional loading stall will be located next to the multi-purpose building.

As with previous senior affordable developments completed by the applicants on Oahu, each resident will be required to sign a contract stating that the prospective resident who owns a car must obtain a parking space within Meheula Vista. If a parking space is not available, the prospective resident cannot own a car and at the same time live in the development. Please refer to Appendix V- Parking Agreement with Prospective Tenant.

The proposed Meheula Vista development is located right along the municipal #501 bus route in Mililani Mauka and seniors will have a bus stop right in front of the property on Kuaoa Street providing convenient access to the Mililani Mauka Park and Ride that serves as a hub to catch buses into town serving Pearl Harbor (PH2), Downtown (#98), Ala Moana Center (#52) and the University of Hawaii Manoa (#83). The 501 route also provides access to the Mililani Town Center.

Catholic Charities also provides transportation for the seniors to doctors, other medical, entitlement, or financial appointments. They also provide shopping trips and assist clients by doing their marketing (food shopping) or other shopping for them. Meheula Vista seniors will be well served by public transportation and transportation services through Catholic Charities.

d. **Private Park and Recreation Areas**

In addition to the indoor common areas, the exterior open space will include victory gardens and a private park area with meandering walkways and resting benches for the enjoyment of the senior residents. The concept of victory gardens has been used successfully in similar elderly rental projects which the applicants have been involved in. The well-being of the senior residents can be greatly enhanced by offering them the amenities of such gardens. Benches and picnic tables will be provided within the private park areas to allow the residents a

place to relax and socialize outdoors with their fellow residents. Multi-purpose rooms in each Phase and a Community Center (the multi-purpose building)will provide indoor opportunities for recreation and social activities. An irrigation system will be installed to an existing water line that is designed to provide adequate water coverage to all planting areas. The new automatic irrigation system will consist of spray heads and drip emitters. The landscape sprinkler system will be divided into zones, meaning, separate watering schedules in order to conserve and better manage our water supply.

2. Proposed Services

The concept of aging in place will be promoted by this development and seniors will be able to enjoy the company of friends and neighbors until age and/or illness requires 24-hour care that is provided by long term care facilities. The development also hopes to provide a service similar to an assisted living component that will be offered on an "as needed basis" to minimize the maintenance cost for individual residents of the complex. The development planned for seniors in the low income category will try to minimize maintenance cost by developing individual programs of assistance for the seniors as they need it. Catholic Charities Hawaii (CCH) the parent company of one of the applicants, Catholic Charities Housing Development Corporation, is expected to make available the following services:

i. Case Management - which is the comprehensive, holistic approach to the planning delivery of services to meet the client's needs.

ii. Set up classes for social, educational, and/or health needs - to prevent the social isolation of the residents and to foster preventive measures for health related areas.

iii. Provide chore services, such as light housekeeping.

iv. Provide transportation - to doctors, other medical, entitlement, or financial appointments.

v. Provide a shopping service - assist clients by doing their marketing (food shopping) or other shopping for them.

vi. Money management - help with direct deposits, check writing and bill paying.

vii. Arrange for personal care or health related needs - including bath assistance, assistance with other daily hygiene requirements, nurse monitoring and other daily activities that a resident requires assistance with. This may also include having doctors, nurses and other health practitioners come to the site to speak or to provide health related services, including blood pressure and cholesterol screening, and podiatry services.

viii. Establish linkages with all agencies and service providers in the community.

ix. Develop a directory of providers for use by project staff and residents and referring and linking residents to service providers in the community.

x. Educate residents on service availability, application procedures (including food stamps, rent rebates, Supplementary Social

Security Income, Medicare, prescription assistance, energy assistance, etc.) client rights, and other relevant issues.

xi. Develop case plans in coordination with assessment services.

xii. Monitor the ongoing provision of services from community agencies.

xiii. Set up volunteer support programs with service organizations.

xiv. Help the resident build informal support networks with other residents, family and friends.

xv. Educate project staff on issues related to aging in place and service coordination.

xvi. Assess residents' functional abilities so that the appropriate case plans can be developed.

xvii. Increase social interactions between residents and decrease isolation by some through the promotion of social activities and encouraging greater participation by all residents.

The multi-purpose room in each of the apartment buildings along with the multi-purpose building will serve as the focal point for classes and services being offered and will provide gathering places for the residents to socialize, enjoy classes, and participate in other activities.

The multi-purpose room in each of the apartment buildings and the multi-purpose building will also be available for congregate dining, and meal service may be offered and provided by an agency network provider as requested, or the many neighboring restaurants

located nearby. If there is enough demand, a daily meal delivery service from the surrounding restaurants may be operated.

The purpose of providing these services, on a non-denominational basis, is to foster the "aging in place" concept and help the individuals manage living in their own apartments and community environment for as long as possible and as independently as possible.

3. Location and Existing Conditions

The vacant portion (7.5 acres) of this 9.024 acre site is located in Mililani Mauka Phase II, Increment A, on the island of Oahu. The property is located southeast of Meheula Parkway between Kuaoa Street and Lehiwa Drive with a street address of 95-1080 Lehiwa Drive in Mililani Mauka. The development will be located on a 7.5 acre portion of a larger 9.024 acre lot zoned B-2 Community Business District. The remaining portion of the property, about 1.5 acres, contains a self storage facility and is not part of this development.

The property is within the area that is served by the Mililani Mauka/Launani Valley Neighborhood Board No. 35.

4. Immediate Surrounding Area

The Meheula Vista property is situated adjacent to Meheula Parkway on the northwest and across this parkway is the Islander Homes development. Lehiwa Avenue is located to the southwest and across this avenue is the Ku'ulako development. Both the Islander Homes and the Ku'ulako residential developments are zoned R-5 Residential District. The Mililani Mauka Community Park is situated

adjacent to Meheula Vista on the southeast and adjacent to this Park is the Mililani Mauka Community Park, both sites zoned P-2 General Preservation District. Kuaoa Street is located to the northeast and across this street is the Destiny and Island Bungalows developments zoned A-1 Low Density Apartment District and R-5 Residential District, respectively. Located to the north, diagonally across the intersection of Meheula Parkway and Kuaoa Street is the Hoaloha Ike development zoned A-1 Low Density Apartment District. These developments that surround the Meheula Vista site are developed with single-family and low density multi-family units.

5. Land Use Approvals

a. State Land Use

The development site is designated Urban District under State Land Use and the proposed senior affordable rental apartment development is consistent with this designation.

b. General Plan

The City's General Plan is a comprehensive statement of objectives and policies which express the long-range aspirations of Oahu's residents.

Meheula Vista is consistent with the following General Plan policies, as described below:

1) **I. Population**

Objective C - To establish a pattern of population distribution that will allow the people of O'ahu to live and work in harmony.

Policy 2 - Encourage development within the secondary

urban center at Kapolei and the Ewa and Central Oahu urban-fringe areas to relieve developmental pressures in the remaining urban-fringe and rural areas and to meet housing needs not readily provided in the primary urban center.

Policy 4 - Direct growth according to Policies 1, 2, and 3 above by providing land development capacity and needed infrastructure to seek a 2025 distribution of O'ahu's residential population as follows:

Distribution of Residential Population

Location	% Share of 2025 Island Wide Population
Central Oahu	17%

The Meheula Vista Development will result in approximately 301 new affordable senior rental units. These new units will result in an increase to the residential population in the Mililani Mauka area and in Central Oahu. The Department of Planning and Permitting used 2.75 persons per unit as the average household size for dwelling units in Mililani Mauka and in 2035 expects that household size to drop to 2.43. However, based on other existing Vista affordable senior rental developments in Honolulu, the average household size is 1.12. Based on this, the 301 units will result in an increase of about 303 residents (using 2.75 for the resident manager's unit) on the property. Based on the Department of Planning and Permitting's (DPP's) "Annual Report on the Status of Land Use on O'ahu, Fiscal Year 2009" (Report), the Year 2000 population for

Central Oahu was approximately 148,208 which is about 17% of the Year 2000 island-wide population. As noted in Table I-3 Growth Projections in this Report, the projected Resident Population for 2015 is 161,999 which is about 17% of the Island Wide Population projected for 2015. The senior population of Meheula Vista will provide for part of this projected population increase to the Year 2015. However given the lower household size and the fact that some of the seniors may be leaving multi-generational households to relocate to a senior affordable rental unit, the population impact would not be as great as a typical home in Mililani Mauka. Based on DPP's Report and Recommendation on the Zone Change for Mililani Mauka Phase III, dated December 28, 2001, DP and Zoning for Phases I and II approved 6,600 units. Phase III was approved for 800 units. The total units for Mililani Mauka approved through the DP and Zoning total 7,400 units. The actual build-out for Mililani Mauka Phases I, II and III is 6,425 units with no additional units planned other than Meheula Vista. Even with an additional 301 units, the final build-out will be much less than the 7,400 units originally planned and zoned for Mililani Mauka. The original Environmental Impact Statement (EIS) for Mililani Mauka projected 6,640 units and an Environmental Assessment (EA) completed in June of 2001 added 800 units in Phase III. This brings the total number of units covered by environmental reviews to 7,440 units. This current EA proposes 300 affordable senior rental units and 1 resident manager's unit. But actual build-out of Mililani Mauka will be 6,726 units.

2) **IV. Housing**

Objective A - To provide decent housing for all the people of Oahu at prices they can afford.

Policy 12 - Encourage the production and maintenance of affordable rental housing.

Policy 13 - Encourage the provision of affordable housing designed for the elderly and the handicapped.

The Meheula Vista development will meet both of these policies with the provision of affordable rental housing for the elderly.

Objective C - To provide the people of Oahu with a choice of living environments which are reasonably close to employment, recreation, and commercial centers and which are adequately served by public utilities.

Policy 1 - Encourage residential developments that offer a variety of homes to people of different income levels and to families of various sizes.

The Mililani Mauka Development has provided this variety of home types and sizes and this 1-bedroom affordable senior rental development at 60% and below of AMGI will add another component to their mix of units and the variety of units provided.

Policy 2 - Encourage the fair distribution of low- and moderate-income housing throughout the Island.

The Meheula Vista development will add to the mix of low income housing for rent in Mililani Mauka targeted toward seniors.

Policy 4 - Encourage residential development in areas where existing roads, utilities, and other community facilities are not being used to capacity.

The proposed Meheula Vista affordable senior rental

units will generate less traffic than the neighborhood commercial center originally planned for the property. The Board of Water Supply in a letter, dated October 20, 2010 (Appendix VI, Comment Letters Prior to Draft EA), has commented that the existing water system is adequate to accommodate the proposed development. The Department of Planning and Permitting, Wastewater Branch approved the sewer connection application on February 15, 2011. Please refer to Appendix VII. Other existing utilities and community facilities that the seniors would use are not being used to capacity.

3. **VII. Physical Development and Urban Design**

Policy 2 - Coordinate the location and timing of new development with the availability of adequate water supply, sewage treatment, drainage, transportation, and public safety facilities.

As mentioned earlier, the Board of Water Supply has commented that the existing water system is adequate to accommodate the proposed development. The Department of Planning and Permitting, Wastewater Branch, is currently reviewing the sewer connection application for the development. The applicants will provide drainage improvements, designed to City standards, to mitigated drainage impacts. The proposed affordable senior rental units will generate less traffic than the neighborhood commercial center originally planned for the property. The Police Department in a letter dated October 6, 2010 stated that the project

should have no significant impact on the facilities or operations of the Honolulu Police Department (Appendix VI). The Honolulu Fire Department in a letter dated October 11, 2010 noted standard conditions for fire apparatus access and fire flow requirements that the applicants agree to meet. Other existing utilities and community facilities that the seniors would use are not being used to capacity.

c. Central Oahu Sustainable Communities Plan

The Meheula Vista site is designated Residential and Low Density Apartment on the existing Central Oahu Sustainable Communities Plan Land Use Map. The proposed affordable senior rental development is consistent with this designation, as far as use, design and proposed height (up to three stories), however, the density will be about 40 units per acre, which is more than the 10 to 30 units per acre guideline for Low Density Apartment and falls within the 25 to 90 units per acre guideline for Medium Density Apartment.

Meheula Vista is consistent with the following sections of the Central Oahu Sustainable Communities Plan, described below:

1. Central Oahu's Role in Oahu's Development Pattern

- "Provides for the eventual development of up to 25,000 homes in master planned residential developments at Mililani Mauka, Koa Ridge Makai, Waiawa, and Royal Kunia"

Meheula Vista is planned within the Mililani Mauka master planned development.

- "Provides for a variety of housing types from affordable units and starter homes to mid-size multi-family and single family units";
  Meheula Vista will provide affordable multi-family units for seniors.
- "Helps relieve urban development pressures on rural and urban fringe Sustainable Communities Plan Areas (Waianae, North Shore, Koolauloa, Koolaupoko, and East Honolulu) so as to preserve the 'country' lifestyle of the rural areas and sustain the stable, low density residential character of the urban fringe areas."
  Full development of Mililani Mauka and other master planned developments in Central Oahu will help to relieve development pressure on other urban fringe and rural areas.

2. The Vision for Central Oahu's Future

.....

2.1 Vision Statement

.....

Building Communities

... "**Ample housing** should be provided for families needing affordable units and starter homes as well as for those seeking large multi-family and single family units."
Meheula Vista will provide affordable rental units for seniors.

"**Housing for persons of all ages** will be needed, including young adults just moving out on their own, families seeking to buy their first home, and senior

citizens wanting a retirement home close to their children and grandchildren."

Senior citizens that want to live close to their children and grandchildren in Central Oahu will have an opportunity to rent an affordable unit in Meheula Vista.

"**Adequate Infrastructure to Meet the Needs of New and Existing Development**"

As mentioned earlier, infrastructure is adequate to support the new Meheula Vista development or will be provided by the applicants.

2.2 Key Elements of the Vision

.....

2.2.1 Urban Community Boundary

"**Objectives.** The main objectives of the Central Oahu Urban Community Boundary are to:

- Support General Plan policy";
  Meheula Vista supports General Plan policies, as discussed in the previous section.
- "Allow residential development in specified master-planned communities";
  Meheula Vista is located in the Mililani Mauka master-planned community.

2.2.6 Master-Planned Residential Communities

"A network of master-planned residential communities provide a wide variety of housing and accommodate the need for affordable housing. Master plans will guide developments in Mililani Mauka, Royal Kunia, Waikele, Waiawa, Waiawa Castle & Cooke, and Koa Ridge Makai...."

Meheula Vista will provide needed affordable rental housing for seniors in the Mililani Mauka development.

2.2.10 Development Priorities

"Development in Central Oahu shall be characterized by:

- **Completion of existing and approved master-planned residential developments and proposed developments at Koa Ridge and Waiawa...."**
  Meheula Vista will complete the residential component of Mililani Mauka.

3. Land Use Policies, Principles, and Guidelines

.....

3.8 Existing and Planned Residential Communities

3.8.1.1 "Overall Density. To achieve the desired compactness and character of development in planned residential communities, the housing density of the aggregate area zoned for residential use (including streets) should be in the range of 10 to 15 units per acre. (This average does not include areas zoned for commercial or industrial use.)... "
Mililani Mauka has been developed thus far at approximately 5.21units per acre. Including development planned at Meheula Vista, Mililani Mauka will have approximately 5.46 units per acre which is still well below the recommended housing density of this policy.

5. Implementation

.....

5.1 Development Priorities

.....

5.1.2 Private Development Priorities

"The Central Oahu Sustainable Communities Plan provides a clear signal to private landowners and developers as to where development will be supported. The **Urban Expansion** area is shown on the Phasing Map in Appendix A. The Urban Expansion Area shows where new urban development is occurring and where applications for new urban development will be accepted for processing."

Meheula Vista is within the Urban Expansion Area of Mililani Mauka.

e. Central Oahu - Public Infrastructure Map

No improvements affecting this site appear on the Public Infrastructure Map. However, there is a planned Park on the adjacent parcel (Exhibit 4).

f. Zoning

The development site is zoned B-2 Community Business District. The proposed senior affordable rental apartment is not a permitted use within this zoning district. Accordingly, the applicants will seek an exemption from this standard of the B-2 Community Business District during the processing of a Chapter 201H, Hawaii Revised Statutes (HRS) application, which allows exemptions from development standards for the development of affordable housing. In addition to this exemption, the developer will seek several other exemptions

related to development standards for the B-2 Community Business District.

g. Park Dedication

The applicants will provide adequate land areas, including the victory gardens as private parks and multi-purpose rooms to meet park dedication requirements, but may request an exemption from the park improvements normally required with private parks.

h. Fees

The applicants will seek an exemption from the following fees as listed in Appendix VIII Major Exemptions Requested

-Building permit fees

-Plan review fees

-Grading and grubbing permit fees

-Private storm drain connection license fee

-Deferral of payment of wastewater system facility charges and Board of Water Supply water system facilities charges.

C. TECHNICAL CHARACTERISTICS

1. Use Characteristics

The applicants will provide all 300 senior affordable rental apartment units to those residents who earn 60% and below the area median gross income (AMGI). One two-bedroom unit will be provided to the resident manager.

The proposed rental rates are below-market and would offer an attractive alternative to other rental units in the area.

As previously noted, the applicants will seek exemptions from zoning and development standards, including the proposed senior affordable apartment use, as provided for in Chapter 201H, HRS. A list of anticipated exemptions is provided in Appendix VIII.

2. Physical Characteristics

As indicated in the plans included in Appendix I, the applicants propose to develop a senior affordable rental housing development on a 7.5 acre portion of a 9.024 acre lot located in Mililani Mauka on the island of Oahu. The development will consist of four senior apartment buildings each with a two-story wing and a three-story wing, providing a total of 300 one-bedroom dwelling units and one resident manager's unit. Four units in each building will be handicap accessible for a total of 16 units. The development will also provide 176 at grade parking stalls and 4 loading stalls for the apartment buildings, a large multi-purpose building with 11 parking stalls and one loading space for an overall count of 187 parking stalls. It is anticipated that the project will be developed in two or more phases.

It is anticipated that a fence/wall will be placed at the perimeter of the development site for the security of the residents. Access to the property will be via Kuaoa Street and Lehiwa Drive.

a. **Phase I** - The first apartment building will be located at the northwestern corner of the property adjacent to Lehiwa Drive. It will consist of a two-story wing, 26 feet in height and a three-

story wing 35 feet in height and offer a total of 75 one-bedroom units and one 2-bedroom resident manager's unit. There will be 33 parking stalls including 5 handicapped stalls and one loading stall located immediately in front of the building. Eight additional parking stalls will be located on the eastern side of Phase I.

Ground Floor - A common lobby entrance with an elevator will service both the two-story wing and the three-story wing, along with stair wells at either end of each wing. Also on the ground floor will be two rooms for office use, laundry facilities to service the whole building, elevator machine room, electrical room, mail room, trash chute, janitorial room, and a large multi-purpose room for the enjoyment of the senior residents. An approximate 786 square foot multi-purpose room within the apartment building will include a full kitchen, recreational/lounge area and restrooms for senior programs and where the seniors can congregate to watch television, play cards and otherwise socialize. A total of 28 one-bedroom units, each approximately 432 square feet in size, will be located on the ground floor arranged in a double loaded configuration with a hallway separating the two rows of apartment units.

Second Floor - The second floor will house the manager's two-bedroom unit, approximately 640 square feet in size, one room for office use and a janitorial room along with 30 one-bedroom units, each approximately 432 square feet in size.

Third Floor - The third floor will house 17 one-bedroom units all approximately 432 square feet in size.

Multi-Purpose Building - The planned development of the multi-purpose building in the first phase will depend on the availability of financing. The proposed multi-purpose building, approximately 3,277 square feet in size, will be used for senior programs and for the enjoyment of the senior residents in the development, and will provide space for numerous social activities. The one story building will be built to a height of approximately 35 feet. Eleven parking stalls including one handicapped parking space and a loading space will be located directly in front of the building. Please refer to Appendix I - Site Plan.

b. **Phases II, III and IV** - The following three phases will contain similar developments and will begin with Phase II fronting on Meheula Parkway at the corner of Kuaoa Street. Phase III will be located just south of Phase II along Kuaoa Street. Phase IV will be situated just south of Phase III between the existing self storage facility and Kuaoa Street. Each of the three phases will be similar to Phase I, except that there will be no resident manager's unit included, and in Phase II the orientation of the two story wing in relation to the three story wing is different. In Phases III and IV the two wings will be oriented the same as Phase I. An additional 36 parking spaces, over and above the 33 parking spaces dedicated to each phase, will be located in

close proximity to the three remaining phases.

c. **Parking and Loading Stalls** - At full development there will be a total of 187 on-site parking stalls. These parking stalls will be provided to residents, with a number of stalls set aside for visitors. 176 parking stalls will be dedicated to the four separate apartment buildings, and 11 parking stalls dedicated to the multi-purpose building for an overall total of 187 parking stalls. Four loading stalls will be provided for the senior development within the four apartment buildings and an additional loading stall will be located next to the multi-purpose building.

As with previous senior affordable developments completed by the applicants on Oahu, each resident will be required to sign a contract stating that the prospective resident who owns a car must obtain a parking space within Meheula Vista. If a parking space is not available, the prospective resident cannot own a car and at the same time live in the development. Please refer to Appendix V - Parking Agreement with Prospective Tenant.

d. Parks - In addition to the indoor common areas, the exterior open space will include victory gardens and a private park area with meandering walkways and resting benches for the enjoyment of the senior residents. The concept of victory gardens has been used successfully in similar elderly rental projects which the applicants have been involved in. The well-being of the senior residents can be greatly enhanced by

offering them the amenities of such gardens. Benches and picnic tables will be provided within the private park areas to allow the residents a place to relax and socialize outdoors with their fellow residents. Multi-purpose rooms in each Phase and a Community Center (the multi-purpose building) will provide indoor opportunities for recreation and social activities. An irrigation system will be installed to an existing water line that is designed to provide adequate water coverage to all planting areas. The new automatic irrigation system will consist of spray heads and drip emitters. The landscape sprinkler system will be divided into zones, meaning, separate watering schedules in order to conserve and better manage our water supply.

3. Construction Characteristics.

As previously indicated the development will be constructed in Phases. Phase I will consist of the first apartment building and possible the multi-purpose building. Construction will take approximately 1 to 2 years. Construction will begin as soon as the applicants receive approval for the development from the State of Hawaii and the City and County of Honolulu, including building permit approvals. The second phase will follow the initial construction, depending on financing availability. Please refer to Appendix IX Construction Time Frame.

Construction equipment and materials will be staged on the property which is large enough to accommodate the proposed

development and construction. Public transit will not be impacted during the construction period.

The development will be built at or near existing grade. Excavation for the development should be limited to the footings and foundation of the structure.

Dust control measures appropriate to the situation will be employed by the contractor, including where appropriate, the use of water wagons, erection of dust barriers and other methods for minimizing dust.

IV. IMPACTS

A. DEMOGRAPHIC IMPACTS

1. Residential Population

The Meheula Vista development will result in 300 new affordable senior rental units and a resident manager's unit. These new units will result in an increase to the residential population in the Mililani Mauka area and in Central Oahu. The Department of Planning and Permitting used 2.75 persons per unit as the average household size for dwelling units in Mililani Mauka and in 2035 expects that household size to drop to 2.43. However, based on other existing Vista affordable senior rental developments in Honolulu, the average household size is 1.12. Based on this, the 301 units will result

in an increase of about 303 residents (using 2.75 for the resident manager's unit) on the property.

2. Visitor Population

The affordable senior rental development will not impact the visitor population.

3. Character or Culture of the Neighborhood

The vacant property is adjacent to a self storage facility and surrounded by both single family homes and townhouses, with Mililani Mauka Community Park adjacent to the site. The current zoning for the property is B-2 Community Business District, with a height limit of 60 feet, which permits various commercial uses. The initial master plan envisioned some form of commercial use such as a neighborhood shopping center. However, over the past 15 years, since 1995, no commercial developer has shown interest in this parcel of land.

The property was also proposed in the past for an Oahu Arts Center. The applicant understands that the Oahu Arts Center contractually agreed (with Castle & Cooke) that in order to be entitled to a land donation it had to meet several written milestone responsibilities. Castle & Cooke had granted an extension, but even as extended, OAC did not show that it had the financial ability to construct and operate its $86 million facility.

As stated above the current zoning allows for construction of structures up to the 60-foot height limit. The proposed senior development structures will range in height from 26 feet to 35 feet.

The development of low rise senior apartment buildings spread out on a large parcel of land are designed to be compatible with the existing character of this Mililani Mauka neighborhood with landscaped gardens, resting benches and victory gardens. The affordable senior rentals being proposed for this property will generate less traffic than a commercial development on the property and inject a senior population that would be compatible with the community. In fact, many multi-generational families in Mililani may find the rental project suitable for senior family members who qualify.

4. Displacement

The subject property is vacant and will not displace any businesses or residences.

B. ECONOMIC IMPACTS

1. Economic Growth

As a rental apartment development the Meheula Vista development will provide short-term construction jobs. The development will also provide a limited amount of long-term, full time employment for a resident manager and possibly security personnel. The development will also have a secondary employment impact with businesses that may provide services in maintaining the landscaping on the property and services for the senior residents.

2. Employment

As mentioned earlier, the development will provide short-term construction jobs and a few long-term jobs in the form of a resident manager, security guard and a maintenance personnel. The

development will also benefit existing service contractors, e.g., elevator maintenance companies, security companies, alarm companies, appliance companies etc., as well as businesses in the area. A property manager will be used to manage the property.

3. Government Revenues/Taxes

Tax revenues will be generated by the short-term construction work and also modest revenues by the long-term employment.

The fee exemptions requested in the 201H application are as follows: (See Appendix VIII- Major Exemptions Requested)

-Building permit

-Plan review fees

-Grading and grubbing permit fees

-Private storm drain connection license fee

-Deferral of payment of wastewater system facility charges and Board of Water Supply water system facilities charges.

C. HOUSING IMPACTS

1. Increase Supply

The proposed 300 affordable rental apartment units planned for this development will increase the number of senior affordable rental units available to residents in the Mililani and surrounding areas.

2. Affordable Units

The applicants propose that 100% of the rental apartment units will be affordable to seniors who fall within the category, at or below 60% of the AMGI.

The affordable housing development would be expected to

improve socioeconomic conditions for the growing senior population throughout the island, especially within the Mililani area of Oahu.

D. PUBLIC SERVICES

1. Access and Transportation

Access - Vehicular and pedestrian access to the property will be via Lehiwa Drive and Kuaoa Street in Mililani Mauka. Immediately north and adjacent to the property is Meheula Parkway predominantly a two-way, four-to five-lane roadway generally oriented in the east-west direction.

Public Transportation - 95-1080 Lehiwa Drive, the address of Meheula Vista, is serviced by the City and County of Honolulu Public Transportation Service, known as 'The Bus'. Bus #501, a smaller community access vehicle, runs approximately every hour from 6:05 a.m. to 9:05 p.m. each day. The proposed Meheula Vista development is located right along the municipal #501 route in Mililani Mauka and seniors will have a bus stop right in front of their property on Kuaoa Street providing convenient access to the Mililani Mauka Park and Ride that serves as a hub to catch buses into town serving Pearl Harbor (PH2), Downtown (#98), Ala Moana Center (#52) and the University of Hawaii Manoa (#83). The 501 route also provides access to the Mililani Town Center.

The $4,198,000 Mililani Community Transit Center recently completed is located in Mililani Town Center and provides a hub for commuters to catch municipal buses to various other locations throughout Oahu.

Catholic Charities also provides transportation for the seniors to doctors, other medical, entitlement, or financial appointments. They also provide shopping trips and assist clients by doing their marketing (food shopping) or other shopping for them. With the transportation services provided by Catholic Charities, it is difficult to gauge the impact that the seniors will have on Bus #501. However, if ridership increases and delays are encountered, requests to the City will be made to utilize the 35-foot or 40-foot bus to accommodate the increase in ridership.

Meheula Vista seniors will be well served by public transportation and transportation services through Catholic Charities.

Transportation - Wilson Okamoto Corporation has prepared a traffic impact report for the proposed development. The traffic impact report is titled "Traffic Impact Report Meheula Vista" and dated October 2010. Please refer to Appendix X - Traffic Impact Report.

The report estimates trip generation of about 39 trips during the morning peak hour with 14 vehicles entering and 25 vehicles exiting. In the afternoon it is projected to generate 48 trips with 29 vehicles entering and 19 vehicles exiting.

Chapter VII - RECOMMENDATIONS on page 33, states as follows:

"Based on the analysis of the traffic data, the following are the recommendations of this study:

1. As identified in the traffic study for the development of

commercial uses in the vicinity of the Meheula Parkway and Ainamakua Drive intersection, verify the installation of an additional southbound lane on Ainamakua Drive between Meheula Parkway and Ukuwai Street, as well as other identified mitigating measures. This improvement should facilitate movements at the intersection.

2. Install traffic signal system at the intersection of Meheula Parkway and Kuaoa Street.
3. Coordinate all traffic signals in Mililani Mauka along the Meheula Parkway corridor.
4. Maintain sufficient sight distance for motorists to safely enter and exit all project driveways. Locate project driveways on Lehiwa Drive and Kuaoa Street away from Meheula Parkway as practical to minimize disruptions to traffic operations on both roadways and adjacent intersections.
5. Provide adequate on-site loading and off-loading service areas and prohibit off-site loading operations.
6. Provide an adequate turn-around area for service, delivery and refuse collection vehicles to maneuver on the project site to avoid vehicle-reversing maneuvers onto public roadways.
7. Provide sufficient turning radii at all project driveways/roadways to avoid or minimize vehicle encroachments to oncoming traffic lanes."

The report's Chapter VII- CONCLUSION, states as follows:

> "With the recommendation identified above, the proposed Meheula Vista development is not expected to have a significant impact on traffic operations in the project vicinity. The total traffic volumes traveling along the Meheula Parkway corridor are expected to increase slightly during the AM and PM peak periods with the proposed project. However, traffic generated by the proposed Meheula Vista would represent approximately less than 1% of the total traffic demands at the intersection of Meheula Parkway and Ainamakua Drive during both the AM and PM peak hours of traffic. These values are well within the daily fluctuation of traffic demands traveling along Meheula Parkway in the project vicinity during the peak periods of traffic. The installation, of a traffic signal system at the intersection of Meheula Parkway and Kuaoa Street, coordination of signal timings along Meheula parkway in Mililani Mauka, and the installation of other improvements planned along Ainamakua Drive should not only accommodate traffic generated by Meheula Vista, but also improve the overall traffic conditions of the Meheula Parkway corridor in the project vicinity."

It's important to note that the trips generated by Meheula Vista, an affordable senior rental development, with 39 trips during the morning peak hour with 14 vehicles entering and 25 vehicles exiting and 48 trips during the afternoon peak hour with 29 vehicles entering and 19 vehicles exiting, are significantly less than the trips that would

be generated by a neighborhood shopping center permitted under the B-2 Community Business District zoning. A neighborhood shopping center with about 0.25 floor area and lot coverage on this 7.5 acre lot would generate about 80 trips during the morning peak hour with 49 vehicles entering and 31 vehicles exiting and 548 trips during the afternoon peak hour with 269 vehicles entering and 279 vehicles exiting.

2. Water

The Honolulu Board of Water Supply (BWS) currently provides potable water for the development site. No off-site water improvements are needed to service the proposed development. In a letter dated October 20, 2010, the BWS indicated that the existing water system was adequate to accommodate the proposed development and that the final decision on the availability of water would be confirmed when building permits were submitted for approval. It further stated at the applicants will be required to obtain a water allocation from Castle and Cooke Homes, Hawaii. Please refer to Appendix VI - Comment Letters Prior to Draft EA.

The design of the development will incorporate water efficient toilet fixtures, low flow shower heads and sink faucets for water conservation.

A new 8" x 2" FM meter will be installed to supply water for fire protection and domestic use. The meter will be located behind the sidewalk, in an easement in favor of the BWS and be connected to an

existing set of 8" and 4" stub-outs (the FM meter configuration requires both).

With 301 units over the entire site, the average daily demand is estimated to be 45,150 gallons. This estimate is based on an average consumption rate of 150 gallons per day per unit (gpd/unit) being used by Castle and Cooke for the development's water allocation. This rate, which was accepted by BWS, represents the average use of two similar senior development projects in Mililani - The Plaza at Mililani (110-gpd/units) and Olaloa Retirement Community (190-gpd/unit).

The multi-purpose building is currently sized at 3,277 sf. The average daily demand for the multi-purpose building is estimated to be 330-gallons based on the BWS domestic consumption guideline of 100-gpd/1000 sf.

Fire protection will be handled by a combination of fire hydrants and fire sprinklers. The existing BWS fire hydrants around the perimeter of the site will be supplemented with an onsite fire hydrant network to provide fire hydrant coverage for all the structures. Additionally, each building will have an automatic fire sprinkler system. The total estimated fire flow is 2,000-gpm - 1,500-gpm for fire hydrant flow and 500-gpm for fire sprinkler flow.

3. Wastewater

The Department of Planning and Permitting, Wastewater Branch, approved the Sewer Connection Application on February 15, 2011. Please refer to Appendix VII. The sewer flow generated by the project will be discharged into the City's sewer collection system.

A new 8" sewer lateral will be built to connect the onsite sewer system to an existing 8" sewer in Lehiwa Drive.

The development is estimated to generate a flow of 48,395-gpd using engineering standards of 2 persons per bedroom at 80 gallons per day (gpd) per capita and 5 employees (multi-purpose building) at 15-gpd per capita. By phase, the estimated sewer generation is 12,320-gpd for Phase 1 (75 1-bedroom and one 2-bedroom units) and 12,000-gpd for each of the remaining three phases (75 1-bedroom units each). The sewer generation for the multi-purpose building is 75-gpd.

4. Drainage

The existing site currently drains into a siltation basin adjacent to the self-storage facility along Lehiwa Drive. A 36" drain line collects runoff from the siltation basin and the self-storage site and conveys the runoff to an 8' x 8' box culvert in Lehiwa Drive. The 36" drain line was designed to carry a 50-year storm flow of 34.88-cfs from the 9.02-Acre site (the combined area of the senior residential development and the exiting self-storage facility).

The estimated 10-year storm flow entering the siltation basin from the undeveloped site is 18.26-cfs while an estimated 10-year storm flow of 5.80-cfs is collected by drain inlets within the self-storage site. These estimates are from the Storm Water Quality report for the Mililani Mauka Storage Facility by Kwock Associates, Inc. dated August 10, 2007. The equivalent 50-year storm flows are 22.83-cfs and 7.25-cfs respectively. The total 50-year storm flow

entering the 36" drain line under the existing conditions is 30.08-cfs.

The design of the onsite drainage system will comply with Rules Relating to Storm Drainage Standards, Department of Planning and Permitting, City and County of Honolulu, 2000. Conceptually, the 50-year storm flow from the fully developed site can be as high as 35-cfs, approximately double the existing storm flow from the site. This potential increase will be partially mitigated by incorporating best management practices (BMPs) into the drainage design such as maximized by directing runoff over landscape areas where possible and through the use of infiltration beds. The final drainage design will limit the 50-year storm flow from the developed site to approximately 28-cfs.

Storm water quality will also be controlled through the use of BMP's. In addition to passing runoff over landscape areas and using infiltration beds, hydrodynamic storm water quality systems will be used to remove oil and heavy metal contaminated silt from runoff collected in parking lots and other paved areas.

As the overall site to be developed is over one acre, a Notice of General Permit Coverage (NGPC), National Pollutant Discharge Elimination System (NPDES), will be obtained to cover runoff associated with construction activities. The NGPC will be obtained prior to the start of construction and maintained until construction is completed. A new drainage connection license for the onsite drainage system will also be obtained from the City and County of Honolulu prior to the start of construction.

5. Solid Waste Disposal

The solid waste generated by the proposed development will be collected by a private refuse firm and will not impact municipal refuse services.

6. Schools

School aged children will not be permitted to live in Meheula Vista a Senior Affordable Rental. Therefore, the proposed senior affordable rental development will not impact the local school system.

7. Parks

There are a variety of parks and other recreational opportunities in the vicinity of the development site. Mililani Mauka Community Park is adjacent to the proposed senior development. Meheula Vista will meet park dedication with the exterior open space including victory gardens and private park areas with meandering walkways, benches and picnic tables to allow the residents a place to relax and socialize outdoors with their fellow residents. Multi-purpose rooms in each Phase and a Community Center will provide indoor opportunities for recreation and social activities and will also help in meeting park dedication.

8. Police

The development site will be serviced by patrol officers from Wahiawa Police Station, District 2 located at 330 North Cane Street in Wahiawa. The Police Department in a letter, dated October 6, 2010, stated that the project should have no significant impact on the

facilities or operations of the Honolulu Police Department (Appendix VI).

9. Fire

The development site will be serviced by Fire Station #41 located at 95-1990 Meheula Parkway in Mililani Mauka. The Fire Department in a letter, dated October 11, 2010 (Appendix VI), stated as follows:

"1. Provide a fire apparatus access road for every facility, building, or portion of a building hereafter constructed or moved into or within the jurisdiction when any portion of the facility or any portion of an exterior wall of the first story of the building is located more than 150 feet (45 720 mm) from a fire apparatus access road as measured by an approved route around the exterior of the building or facility. (1997 Uniform Fire code, Section 902.2.1).

2. Provide a water supply, approved by the county, capable of supplying the required fire flow for fire protection to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed or moved into or within the county.

On-site fire hydrants and mains capable of supplying the required fire flow shall be provided when any portion of the facility or building is in excess of 150 feet (45 720 mm) from a water supply on a fire apparatus access road, as measured by an approved route around the exterior of

the facility or building. (1997 Uniform Fire Code, Section 903.2, as amended.)

3. Submit civil drawings to the HFD for review and approval."

The applicants will comply with these requirements.

10. Utilities

a. Electric

The Hawaiian Electric Company has existing power lines serving this area and the applicants will coordinate development of Meheula Vista to ensure that the power lines will be adequate to support the proposed rental apartment development. In addition, the design of the project incorporates energy efficient light fixtures and energy star appliances for energy conservation.

The applicants are providing battery back up emergency lights, which in the event of a power failure will provide safe access to stairs should evacuation become necessary. The resident manager can be called for assistance and if necessary request help from nearby businesses or other service providers to assist in the event of a power outage.

Should the power failure continue for an extended period of time the resident manager, with possible assistance from service providers, will provide bottled water for drinking purposes.

b. Telephone

Hawaiian Telcom has existing utility service lines in the area. It is expected that these existing lines will be used to service this proposed apartment development. Development of Meheula Vista will be coordinated with Hawaiian Telcom to determine if new lines will be required. No off-site work is expected.

c. Others

Cable television presently services other buildings in the surrounding area and arrangements will be made with the appropriate firms to provide cable service to these rental apartments as well.

E. ENVIRONMENTAL IMPACTS

1. Historical and Archaeological Resources

The development site is not on the State or Federal Register of Historic Places.

On July 15, 1985, Mr. William Barrera, Jr., President of Chiniago Inc. Archaeological Consulting reported on their literature search and archaeological reconnaissance survey for Mililani Mauka, including the Meheula Vista property. Their fieldwork found no evidence of archaeological or historical remains on the property.

The literature search included inspection of Handy's "The Hawaiian Planter" (1940), McAllister's "Archaeology of Oahu" (1933), Sterling and Summers' "Sites of Oahu" (1978), old maps on file at the State of Hawaii Survey Office, site maps on file at the State

Historic Preservation Office, and reports and publications in the Hawaiian collection of the University of Hawaii. The literature search revealed a legend referring to Waikakalaua and Kipapa Gulches, quoted in McAllister's 1933 study "Archaeology of Oahu":

> "Site 132. Waikakalaua and Kipapa Gulches. According to Fornander Waikakalaua is the place where the invading chiefs from Hawaii met Mailikukahi, moi of Oahu, in battle:
> "The fight continued from there to Kipapa Gulch. The invaders were thoroughly defeated, and the gulch is said to have been literally paved with the corpses of the slain, and received its name 'Kipapa" from this circumstance. Punaluu was slain on the field which bears his name, the fugitives were pursued as far as Waimano, and the head of Hilo was cut off and carried in triumph to Honouliuli, and stuck up at a place still called Poo-Hilo."

Also , McAllister recorded two sites in Kipapa Gulch:

> "Site 130. Moaula heiau, on the Honolulu side of Kipapa Gulch just above Heiau o Umi, to which it is said to be a companion structure. The site is now covered with cane.
> "Site 131. Heiau o Umi, was just northeast of the government road in the bottom of Kipapa Gulch on the slight elevation at the foot of the pali on the Honolulu side. The level elevation can still be seen, though planted in cane."

Handy's 1940 "The Hawaiian Planter" provides the following (on page 82):

> "It is said that terraces formerly existed on the flats in Kipapa Gulch for at least 2 miles upstream above its junction with Waikele. Wild taros grow in abundance in upper Kipapa Gulch."

Mr. Barrera concluded that if any structural remains of an archaeological or historical nature ever existed on the subject property, pineapple cultivation has long since erased any such evidence.

In June of 2001, Cultural Surveys Hawaii prepared a Cultural Impact Assessment titled "A Traditional Practices Assessment for the Proposed Mililani Mauka Phase III Development in Waipi'o Ahupua'a 'Ewa District, Island of O'ahu". The archaeology and cultural assessment included discussions of not only the project site of Mililani Mauka Phase III but also the surrounding area, which would have included the nearby Meheula Vista property, if significant archaeological, historical or cultural finds occurred. The Cultural Assessment included a section on Previous Archaeology summarized as follows:

> The earliest archaeological work in the Waipi'o and Waikele Ahupua'a was conducted by J Gilbert McAllister in the 1930's. Sites 130, 131 and 132 were described previously, by Mr. Barrera. Site 204 is named O'ahunui and is described as a stone "whose outline is said to resemble that of O'ahu. Presumably the location of the O'ahunui stone is in Waikakalaua Gulch. McAllister described the stone as follows:

> "The stone was formerly visited by the Hawaiians, for no one could say that he had been entirely around the island of O'ahu, unless he had been around the stone. In the nineties it seems to have been a favorite expedition for Honoluluans to ride out to O'ahunui and walk around the stone. O'ahunui is also the name of one of the chiefs of O'ahu. He came under the influence of the cannibal chief (Site 220), lo Aikanaka, and learned to like human flesh. It is reported that he killed and ate two nephews, the children of his older sister, who shared with him the royal power and prerogative. Lehuanui avenged the death of his children by killing O'ahunui and his wife Kilikiliula, who had it within her power to save her children. It is said that O'ahunui and Kilikiliula and the attendants that participated in the killing and cooking of the children were turned to stone and are still to be seen (77, pp. 139-147)."

This section goes on to identify and discuss other archaeological surveys and studies done for the property and surrounding area, including reconnaissance survey of Hawaii (Mililani) High Technology Park in 1983, final phase of Mililani Town (Mililani Mauka) in 1985 (Chiniago study discussed previously), 70-acre reconnaissance survey of Waikakalaua Gulch in 1985 (reassessed in 1990), Waikele Branch of the Lualualei Naval Magazine (264 acres) in 1986, reconnaissance survey of a 2.75 acre parcel west of Mililani High School in 1987, reconnaissance survey of 422 acres of Waikakalaua Gulch (Ammunition Storage Tunnels Site)

in 1988, stream clearing of Melemanu Woodlands Phase III in 1992, archaeological inventory survey of proposed Mililani Summit in 1992, archaeological inventory survey for the proposed drainage of Mililani Mauka Subdivision in a tributary gulch of Kipapa Gulch in 1993, Launani Valley Townhouse development in 1994, archaeological inventory survey of 1,339 acres in the mauka areas of Waipi'o and Waiawa Ahupua'a in 1996, and archaeological inventory survey of 162 acres in Waikele Ahupua'a.

2. Cultural Impact Assessment

"A Traditional Practices Assessment for the Proposed Mililani Mauka Phase III Development in Waipi'o Ahupua'a 'Ewa District, Island of O'ahu (TMK 9-05-49: portion of 27)", dated June 2001, was prepared by Cultural Surveys Hawaii. An important part of the scope of work for this report was to conduct oral interviews with persons knowledgeable about the historic and traditional practices in the project area and region, which would have covered surrounding areas such as the balance of Mililani Mauka, including the Meheula Vista property. Primary concerns raised were for native plant gathering including access, hunting access and access and buffer for O'ahunui, a cultural site, all located in Waikakalaua Gulch. The summary and recommendations are provided below:

> "This assessment has examined the effects the proposed Mililani Mauka Phase III development may have on Hawaiian culture relating to specific practices and traditions. Specific issues addressed were possible burials, Hawaiian trails, hunting

and gathering practices for plant and animal resources, and cultural sites in order to identify potential traditional practices which may be affected. Three traditional practices have been indicated in relation to the project area: native hunting practices, native plant gathering, and practices involved with a cultural site known as O'ahunui."

"Most directly, the development may impact gathering of native plants within the study parcel, or directly outside of the property on the gulch edge. The impact may be not only on the possible destruction of such plants, but the denial of access to gather such plants. The Waikakalaua Gulch and areas along the rim of the gulch, including the project area boundary, have traditionally been used for plant gathering by one of the interviewees and his family. Plants harvested include 'a'ali'i, pukiawe, lehua and various ferns. Most of the time, these plants were gathered for the purpose of making lei, but sometimes they were used for food or medicine. The lehua in particular was indicated for medicinal purposes as well as for lei. The specific plant species indicated as the focus of traditional cultural practices are common in undisturbed lands in the vicinity of the project area. The area of concern in which traditional gathering practices are operative appears to be quite limited within the present project area to a previously undisturbed area on the northern margin along Waikakalaua Gulch. This native gathering concern is understood to relate to

a small portion of the project area."

The proposed development of Meheula Vista will not affect the gathering area's along the slopes of Waikakalaua Gulch. Access to the Waikakalaua Gulch area is provided by a public access way at the end of the Hookowa Street cul-de-sac which abuts Waikakalaua Gulch just east of Mililani Mauka Phase III. This access way provides access to a pathway adjacent to the gulch slope that is maintained by the Mililani Town Association as common areas and can be used to continue gathering practices on the slopes of the Waikakalaua Gulch.

> "Although hunting has not been identified in the project area, the general feeling of the hunters who traditionally have hunted in more mauka regions is that access to those traditional hunting grounds is being blocked off. This is particularly so considering the exponential growth the area has experienced in the last decade."
>
> "There is no consensus at this time regarding possible native Hawaiian rights to traverse privately owned land for purposes of hunting or possible native Hawaiian rights to hunt on privately owned lands. Large land owners have pointed out safety concerns in their opposition to allowing armed groups of Hawaiian hunters with dogs to enter, camp and hunt on their property. Hawaiians involved with native rights issues have tended not to push such controversial issues as hunting. In the present case it is to be emphasized that while our study did

> identify access for pig hunting and pig hunting as issues in the Mililani Mauka area in general, it did not identify these as issues specifically in the project area. A hunter who was interviewed claimed that most of the hunting grounds, both used traditionally and presently are in the mauka regions of Waikakalaua and Kipapa, up the stream valleys. The development of the present study area would not appear to restrict access to these preferred hunting areas."

Similarly, development of Meheula Vista surrounded by other urban residential development will not affect those preferred hunting areas or access to those areas.

> "Finally, there is evidence that O'ahunui, a cultural site located in the adjacent Waikakalaua Gulch has cultural practitioners. This study has developed a substantial body of information pertaining to O'ahunui which is regarded by some Hawaiians as an area of historic and spiritual significance. This study documents the concern of certain individuals for a buffer zone on the top of the gulch as part of a transition into the cultural site of O'ahunui. It should be made clear that the cultural site of O'ahunui, while understood variously, is not understood by us to lie within the present project area. There is no consensus at this time regarding the appropriate size and nature of a buffer zone for such cultural sites. It has been suggested that the Wahiawa Hawaiian Civic Club be consulted regarding this matter of a buffer zone for the O'ahunui site."

Development of Meheula Vista will not affect the cultural O'ahunui site and would not be considered in a buffer zone with significant existing residential development in Mililani Mauka situated between Meheula Vista and Waikakalaua Gulch.

3. Natural Resources

   a. Water Resources

      There are no perennial streams in Mililani Mauka, Phase II, Increment A.

   b. Flood Plain Management

      According to the Flood Insurance Rate Map (FIRM) Number 15003CO226 E, the property is in Zone D, areas in which flood hazards are undetermined.

   c. Wetlands Protection

      The development site is an urbanized lot that contains no wetlands.

   d. Coastal Zone Management

      The development site is not within the Special Management Area, which is regulated by the City under Chapter 25, Revised Ordinances of Honolulu. The property is located in Central Oahu about six miles from the shoreline and will not affect shoreline processes or shoreline recreational areas.

   e. Unique Natural Features

      The Meheula Vista site is fairly level with soil suitable to support urban development as can be seen from development on adjacent lots. There are no unique natural features such as

sand dunes or sloped areas where erosion would be a concern.

f. Flora and Fauna

A Biological Survey of flora and fauna for the proposed Meheula Vista development site was prepared by AECOS, Inc. dated February 4, 2011, and is included in Appendix XI. Its findings are summarized as follows:

Flora - "The vegetation on the subject parcel is dominated by various grasses, particularly Guinea grass (*Urochloa maxima*) and a number of other weedy herbs kept low by regular mowing (see Fig. 2). Trees are widely scattered over the lot, and most are certainly plantings. The Meheula Parkway (northwest) side is landscaped (plants are mostly ornamentals) some 20 ft (7 m) from the roadway curb in towards the site (Fig. 3)."

"A plant checklist compiled from the field observations is presented as Table 1. Entries (plants observed) are arranged alphabetically under family names. Included in the listing are scientific name, common name, and statu (whether native or non-native) of each species. In addition to identifying the plants present within the study site, qualitative estimates of plant abundance were made. These estimates are coded in the table as explained in the legend and pertain only to plants occurring outside of the landscaped border areas."

"In all, 58 species of ferns, conifers, and flowering

plants were recorded from the site (Table 1). Of this number, only 2 species or 3% are plants native to Hawai'i. These are *'uhaloa* and *'ihi'ai* (yellow wood sorrel), both, very common plants on O'ahu in disturbed areas."

"Of the total number of plant species recorded, some 15 species (26%) are regarded as either ornamentals or are naturalized species planted here as ornamentals. The distinction in status is that ornamentals persist but do not spread on their own; naturalized species may start as ornamental plantings somewhere, but then spread out on their own. Because the parcel is mowed with some regularity, the number of "weedy" species is actually higher than might be the case if Guinea grass were allowed to grow unhindered. Typically, this grass will grow to a large size and block off sunlight to lower growing herbs, which then disappear. The mowing at this location likely selects for certain low-growing herbs over others, but small pockets of unmowed ground (occupied by trees, shrubs, rock piles) provide areas that support the plant species diversity observed."

Fauna - "The only animals observed during the brief, morning survey were birds. The surrounding street and house lot trees are attractive to a wide range of common urban birds. Observed were House Finch (*Carpodacus*

mexicanus), Common Mynah (*Acridotheres tristis*), and Spotted Dove (*Streptopelia chinensis*); Northern Cardinal (*Cardinalis cardinalis*) was heard in the area."

"The lot is attractive to Pacific Golden-Plover (*Pluvialis fulva*), two of which were seen. The latter is perhaps the only Hawai'i native vertebrate anticipated to utilize the parcel in its present state. Pacific Golden Plover are attracted to open, grassy areas and, as noted above regarding the dominance by Guinea grass, would not be regular visitor to the property except for the fact that regularly mowing is occurring."

Discussion - "The results of a biological survey conducted in January 2011 indicate there are no special concerns or legal constraints to development arising from biological resources found on the subject property. Central O'ahu has long supported agricultural development and in more recent decades, expansive urban/suburban development. Native plant species are no longer a significant part of the flora found here. No environments of special concern, such as wetlands, occur on the property."

"No plant or animal species listed as endangered, threatened, or currently proposed for listing under either

federal or State of Hawai'i endangered species statutes are known from the project site (USFWS, 2005a, b, 2011), nor are any expected given the highly disturbed nature of the site and its urban location."

g. Agricultural Lands and the Federal Farmland Protection Policy

The development site is in Mililani Mauka an urban area where its use will not impact agricultural lands or lands with the potential for agricultural use. It is zoned B-2 Community Business District.

h. Environmental Justice

The Environmental Protection Agency (EPA) defines Environmental Justice (EJ) as the "fair treatment for people of all races, cultures, and incomes, regarding the development of environmental laws, regulations and policies." The applicants will adhere to all the required City, State and Federal environmental laws in the development of Meheula Vista, a senior affordable rental apartment development. Furthermore, the development of this project is intended to improve the living standards and quality of life for those seniors who earn 60% or below the AMGI.

i. Wild and Scenic Rivers Act - Federal

According to a discussion with staff at the Federal Commission on Water Resources there are no wild or scenic rivers designated in the State of Hawaii.

F. TOPOGRAPHY

The Meheula Vista site is relatively flat and is located in an urban setting in Mililani Mauka. Phase II, Increment A of Mililani Mauka, where Meheula Visa is proposed, is located in the central portion of the Schofield Plateau. The area slopes gently upwards towards the Koolau Mountains from approximately 800 feet above sea level along its makai edge to about 1,000 feet in elevation along its mauka boundary. Slopes below the 900-feet elevation average less than 5%; above that level, slopes are slightly steeper and range between 5 - 10%.

G. SOILS

The predominant soil within Phase II, Increment A of Mililani Mauka, where Meheula Vista is proposed, is Leilehua silty Clay 2-6 percent slopes (LeB) and 6-12 slopes (LeC); a small portion of the site contains Wahiawa Silty Clay 3-8 percent slopes (WaB). LeB soil is dark reddish-brown silty clay about 12 inches thick which contains concentrations of heavy minerals. The subsoil is about 3 feet thick, is dark reddish-brown and dusky-red silty clay and clay that has subangular blocky structure. The substratum is dark reddish-brown clay mixed with weathered gravel. LeB soil is extremely acid throughout the profile. Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.3 inches/foot of soil. The soil is used for sugarcane, pineapple and home sites.

H. NOISE

Short term noise impacts at construction sites are a normal result of construction activity. The State Department of Health administers rules and

regulations relating to the hours during which construction is permitted and the noise levels permitted during those hours. The contractor will be required to apply for a permit from the State Department of Health should noise from construction activities exceed regulatory limits. The contractor will abide by the noise regulations incorporated into the permit.

Long term noise impact from the proposed development are not expected to be significant due to the nature of the proposed senior residential rental apartment use. All of the proposed rental units will be equipped with air conditioning. The south side of the property that adjoins the Mililani Mauka Community Park will have a 20-foot setback. The west side of the property on Lehiwa Drive will have a 20-foot setback and the apartments on the east side, Kuaoa Street will have between a 20-foot and 45' 6" setback. As mentioned earlier, the increase in traffic is not expected to have a significant impact on the surrounding area.

J. AIR QUALITY

Short term impacts on air quality are expected to be primarily related to dust generated by the construction activity. Dust will be generated in the course of excavating for foundations and utility lines. Dust control measures appropriate to the situation will be employed by the contractor, including where appropriate, the use of water wagons, erection of dust barriers and other methods for minimizing dust.

Due to the minimal impact from traffic projected for the development vehicular emissions will have a minimal impact on the surrounding area.

K. VISUAL IMPACT

The site is zoned B-2 Community Business District with a height limit

of 60 feet. The proposed Meheula Vista will range in height from 26 feet to 35 feet, well below the allowable height of 60 feet on this property.

The visual impact of this development will be an in filling of an existing B-2 Community Business District underutilized vacant lot with a low-rise residential development. As the proposed Meheula Vista is developed, the primary visual impact will be to existing nearby residential properties. However, since many of the existing nearby structures are low-rise town homes the proposed development will be compatible with these existing low-rise structures. The proposed development will not affect any important view planes in this area of Mililani Mauka.

L. HAZARDS

The development site does not contain any known nuisances, airport clear zones, or other features which would jeopardize its development.

V. MAJOR IMPACTS AND ALTERNATIVES CONSIDERED

As mentioned throughout this report the proposed senior affordable rental apartment development will not have a significant impact on the surrounding area in terms of public services and the environment.

Positive socio-economic impacts are projected with the provision of affordable housing, and increases in employment both short term and long term.

A. NO ACTION

This alternative was considered and rejected due to the continuing negative cash flow that would result from payment of property taxes, maintenance costs, and liability expenses on the vacant land.

B. COMMERCIAL DEVELOPMENT

The project site is designated for commercial development with an allowable height of 60 feet. This commercial property has sat vacant since being subdivided, except for a small 1.024 acre portion developed as a self-storage facility. Castle & Cooke Hawaii has been trying to bring commercial users to its lower Mililani Mauka commercial zoned area since 1993 and to the Meheula Vista site since 1995. With Wal-Mart at the lower Mililani Town Center which is extremely convenient to all Mililani residents, it has taken a long time to attract retailers to Mililani Mauka. Castle & Cooke Hawaii has finally signed a deal with Longs Drugstore to move into the lower commercial zoned site. There is still about 6 acres of vacant commercial land available for development in the lower Mililani Mauka that has extremely convenient access to the freeway. Even at full development at Mililani Mauka, it is extremely difficult to entice retailers to the property.

The property was also proposed in the past for an Oahu Arts Center. The applicant understands that the Oahu Arts Center (OAC) had contractually agreed (with Castle & Cooke) that in order to be entitled to a land donation it had to meet several written milestone responsibilities. Castle & Cooke had granted an extension, but even as extended, OAC did not show that it had the financial ability to construct and operate its $86 million facility.

C. FAMILY AFFORDABLE RENTAL DEVELOPMENT

The applicants initially proposed developing this site with a family affordable rental development targeted for families earning 60% and below

AMGI. At the Mililani Mauka/Launani Valley Neighborhood Board meeting in July of this year, residents and Board members made it clear that the impacts this development would have on the schools and traffic was unacceptable. Based on the community concerns raised at this Board meeting and in meetings and discussions with agencies and area representatives, the applicants have modified the initial affordable target group from a family affordable rental development to a senior affordable rental development that addresses the growing senior population needing rental housing opportunities. Other factors in the decision to change to a senior affordable rental development are the preliminary results of a market study on the demand for a senior rental housing development at this site and our discussions with Castle and Cooke Homes Hawaii.

D. SENIOR AFFORDABLE RENTAL DEVELOPMENT

This, the preferred alternative, was selected to meet the need for senior affordable rental units in the Mililani area and on Oahu. The applicants, through the use of HOME and CDBG funding and other funding mechanisms, have been able to develop affordable rentals for the elderly and families that have been well received by the residents of the development and the surrounding communities on other parts of the island. This affordable senior rental development will not impact area schools and will have minimal impact on peak hour traffic, even significantly less than a neighborhood shopping center that could be developed on the property.

VI. MITIGATION MEASURES

Impacts from the proposed development are not expected to be significant, however, in order to mitigate traffic impacts the applicants plan to follow the mitigative measures:

"1. As identified in the traffic study for the development of commercial uses in the vicinity of the Meheula Parkway and Ainamakua Drive intersection, verify the installation of an additional southbound lane on Ainamakua Drive between Meheula Parkway and Ukuwai Street, as well as other identified mitigating measures. This improvement should facilitate movements at the intersection.

2. Install traffic signal system at the intersection of Meheula Parkway and Kuaoa Street.

3. Coordinate all traffic signals in Mililani Mauka along the Meheula Parkway corridor.

4. Maintain sufficient sight distance for motorists to safely enter and exit all project driveways. Locate project driveways on Lehiwa Drive and Kuaoa Street away from Meheula Parkway as practical to minimize disruptions to traffic operations on both roadways and adjacent intersections.

5. Provide adequate on-site loading and off-loading service areas and prohibit off-site loading operations.

6. Provide adequate turn-around area for service, delivery and refuse collection vehicles to maneuver on the project site to avoid vehicle-reversing maneuvers onto public roadways.

7. Provide sufficient turning radii at all project driveways/roadways to avoid or

minimize vehicle encroachments to oncoming traffic lanes."

In order to minimize construction impacts of the development, the applicants' contractor will employ dust control measures where appropriate, including the use of water wagons, erection of barriers, and other methods for minimizing dust. The contractor will also be required to apply for a permit from the State Department of Health should noise from construction activities exceed regulatory limits. The contractor will abide by the noise regulations incorporated into the permit.

VII. GOVERNMENT PERMITS AND APPROVALS REQUIRED

The development will require the following governmental permits or approvals:

- 201H Permit Approval from the Honolulu City Council.
- Building Permits from the Department of Planning and Permitting, City and County of Honolulu.
- Grading Permits from the Department of Planning and Permitting, City and County of Honolulu
- Subdivision for creation of a sewer easement.

VIII. SIGNIFICANCE CRITERIA

The following review of the significance criteria indicates that the development will not have a significant impact on the environment.

- **No irrevocable commitment to loss or destruction of any natural or cultural resource would result.**

The vacant undeveloped site is a lot surrounded by urban development and represents an infill development. The site has introduced ground cover with overgrown shrubs, weeds and trees.

The property is not listed on either the State or Federal Registers of Historic Places. With no previous record of historic or archaeological discoveries, the proposed development is not expected to have an impact on archaeological resources.

During the construction of the development, should any previously unidentified archaeological resources such as artifacts, shell, bone, or charcoal deposits, human burial, rock or coral alignments, pavings or walls be encountered, the applicants will stop work and contact the Historic Preservation Office for review and approval of mitigation measures.

- **The action would not curtail the range of beneficial uses of the environment.**

The proposed development will not curtail, but will instead enhance the range of beneficial uses of the environment. The present vacant property partially covered in ground cover, overgrown shrubs, weeds and trees, offering no beneficial use to the public. The development site will provide much needed senior affordable rental units to meet the growing housing demands for our rapidly growing senior population.

- **The proposed action does not conflict with the state's long-term environmental policies or goals and guidelines.**

The State's environmental policies and guidelines are set forth in Chapter 343, Hawaii Revised Statutes, "State Environmental Policy". The broad policies set forth include conservation of natural resources and

enhancement of the quality of life. As discussed earlier, the development does not adversely affect significant natural resources. With the proposed development, the existing vacant property will be developed to provide our community with senior affordable rental units. This will enhance the quality of life for future senior residents of Meheula Vista.

- **The economic or social welfare of the community or state would not be substantially affected.**

The development will give a temporary boost to the State's economy with the provision of short-term construction employment and related tax impacts, and a few long-term operational jobs in the form of a resident manager, security and a maintenance person.

The social welfare of the community would be positively affected by the development of this senior affordable rental development which will serve qualified seniors who otherwise may be unable to rent a home of their own. The Meheula Vista affordable senior rental development will offer an attractive living environment for seniors in close proximity to public transit and goods and services.

The senior residents in Meheula Vista will have a long term positive economic effect on businesses in the area, by providing a source of new customers.

- **The proposed action does not substantially affect public health.**

The proposed action will not affect public health. The proposed land use is compatible with the surrounding residential and commercial development (self storage building).

- **No substantial secondary impacts, such as population changes or effects on public facilities, are anticipated.**

As previously noted, the Meheula Vista Development will result in approximately 300 new senior affordable rental units. These new units will result in an increase to the residential population in the Mililani Mauka area and in Central Oahu. The Department of Planning and Permitting used 2.75 persons per unit as the average household size for dwelling units in Mililani Mauka and in 2035 expects that household size to drop to 2.43. However, based on other existing Vista affordable senior rental developments in Honolulu, the average household size is 1.12. Based on this, the 301 units will result in an increase of about 303 residents (using 2.75 for the resident manager's unit) on the property. Based on the Department of Planning and Permitting's (DPP's) "Annual Report on the Status of Land Use on O'ahu, Fiscal Year 2009" (Report), the Year 2000 population for Central Oahu was approximately 148,208 which is about 17% of the Year 2000 island-wide population. A noted in Table I-3, Growth Projections in this Report, The projected Resident Population for 2015 is 161,999 which is about 17% of the Island Wide Population projected for 2015. The senior population of Meheula Vista will provide for some of this projected population increase to the Year 2015. However given the lower household size and the fact that some of the seniors may be leaving multi-generational households to relocate to a senior affordable rental unit, the population impact would not be as great as a typical home in Mililani Mauka.

Based on DPP's Report and Recommendation on the Zone Change for Mililani Mauka Phase III, dated December 28, 2001, DP and Zoning for

Phases I and II approved 6,600 units. Phase III was approved for 800 units. The total units for Mililani Mauka approved through the DP and Zoning total 7,400 units. The actual build-out for Mililani Mauka Phases I, II and III is 6,425 units with no additional units planned other than Meheula Vista. Even with an additional 301 units, the final build-out will be much less than the 7,400 units originally planned and zoned for Mililani Mauka. The original Environmental Impact Statement (EIS) for Mililani Mauka projected 6,640 units and an Environmental Assessment (EA) completed in June of 2001 added 800 units in Phase III. This brings the total number of units covered by environmental reviews to 7,740 units. This current EA proposes 300 affordable senior rental units and 1 resident manager's unit. But actual build-out will be 6,726 units.

The proposed increase in population falls within the master planned population for Mililani Mauka and will provided needed affordable rental development for seniors.

The existing municipal water and wastewater systems are adequate to accommodate the proposed development.

- **No substantial degradation of environmental quality is anticipated.**

The development will not result in a substantial degradation of the environment. Only minimal impact is projected during the construction phase. Excavation for the development should be limited to the footings and foundation of the structure. Dust control measures appropriate to the situation will be employed by the contractor, including where appropriate, the use of water wagons, erection of dust barriers and other methods for minimizing dust. Only minimal impact is projected during the construction

phase of the proposed development.

- **The proposed action does not involve a commitment to larger actions, nor would cumulative impacts result in considerable effect on the environment.**

The proposed development at 95-1080 Lehiwa Drive in Mililani does not involve a commitment to larger actions nor will it result in cumulative impacts to the environment. The proposed Meheula Vista senior affordable rental development will not generate future developments on this site or in the surrounding area that would create a cumulative impact.

- **No rare, threatened or endangered species or their habitats would be affected.**

No rare, threatened, or endangered species or their habitats would be affected in the proposed development.

- **Air quality, water quality or ambient noise levels would not be detrimentally affected.**

Short term impacts on air quality are expected to be primarily related to dust generated by the construction activity. Dust will be generated in the course of excavating for foundations and utility lines. Dust control measures appropriate to the situation will be employed by the contractor, including where appropriate, the use of water wagons, erection of dust barriers and other methods for minimizing dust.

Short term noise impacts at construction sites are a normal result of construction activity. The State Department of Health administers rules and regulations relating to the hours during which construction is permitted and the noise levels permitted during those hours. The contractor will be required to apply for a permit from the State Department of Health should

noise from construction activities exceed regulatory limits. The contractor will abide by the noise regulations incorporated into the permit.

Long term noise impact from the proposed development are expected to be minimal due to the nature of the proposed senior rental apartment and the minimal increase in traffic projected.

Water quality would not be detrimentally affected by the proposed development. The proposed residential development will not have an adverse impact on aquifers or water resources.

- **The project would not affect environmentally sensitive areas, such as flood plains, tsunami zones, erosion-prone areas, geologically hazardous lands, estuaries, fresh waters or coastal waters.**

The proposed development is not in a flood plain, tsunami zone, erosion-prone area, or geologically hazardous lands, or near any estuaries, fresh water or coastal waters. The proposed development will not affect any environmentally sensitive areas.

- **The action will not substantially affect scenic vistas and view planes identified in county or state plans or studies.**

The proposed development will not substantially affect scenic vistas and view planes identified in county or state plans or studies. The property involves an infill development with housing similar to that in the developed surrounding area. The Central Oahu Sustainable Communities Plan recognizes important view planes in the Communities of Waipahu, Wahiawa and Plantation Villages, but not in the Mililani Mauka community. The proposed development will be developed at heights lower than the 60-foot height limit for the property and will not have a significant impact on view planes.

- **The action will not require substantial energy consumption.**

  The Hawaiian Electric Company has existing power lines serving this area and the applicants will coordinate development of Meheula Vista to ensure that the electrical system and power lines will be adequate to support the proposed senior rental apartment development. The buildings will be designed to incorporate energy saving light fixtures, energy star appliances (including air conditioners) and energy efficient hot water heaters.

IX. RECOMMENDATION

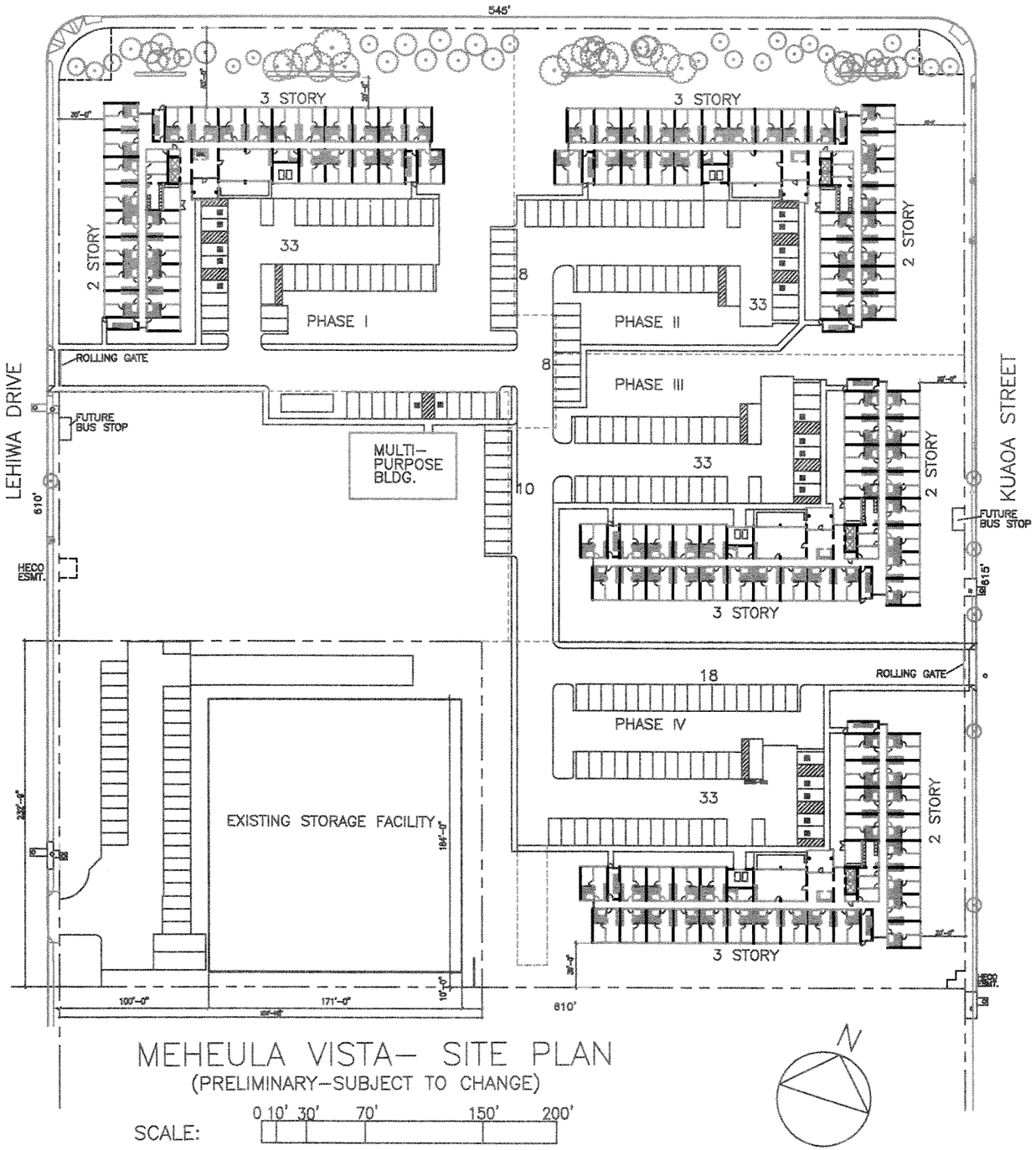
Based on this Draft Environmental Assessment, a Finding of No Significant Impact (FONSI) for the proposed Meheula Vista Senior Rental Development is anticipated.

****

APPENDIX I

PLANS

MEHEULA PARKWAY



MEHEULA VISTA- SITE PLAN

(PRELIMINARY-SUBJECT TO CHANGE)

SCALE: 0 10' 30' 70' 150' 200'

N

UNIT COUNT & PARKING COUNT

SENIOR RENTAL

PHASE I
- 75-1BR UNITS
- 1-2BR UNIT
- 33 PARKING
- MULTI-PURPOSE BUILDING

PHASE II
- 75-1BR UNITS
- 33 PARKING

PHASE III
- 75-1BR UNITS
- 33 PARKING

PHASE IV
- 75-1BR UNITS
- 33 PARKING

TOTAL
301 UNITS
- 300 ONE BR UNITS
- 1 TWO BR UNIT

PROJECT DATA:

TMK:1-9-5-02:32
LOT AREA= 7.5 ACRES
ZONE=B-2
F.A.R.=2.5
ALLOWABLE F.A.=18.75 ACRES
OCCUPANCY GROUP= R-2
TYPE OF CONSTRUCTION=VB

PROPOSED:

FLOOR AREA(UNITS)=4x41,727.6
=166,910.4SF
MULTI-PURPOSE BUILDING=3277SF
TOTAL FLOOR AREA=170,187SF

NO. OF UNITS= 301
- 300 1BR UNITS
- 1 2BR UNIT

15 ACCESSIBLE UNITS REQUIRED.
16 ACCESSIBLE UNITS PROVIDED.

PARKING CALCULATION:

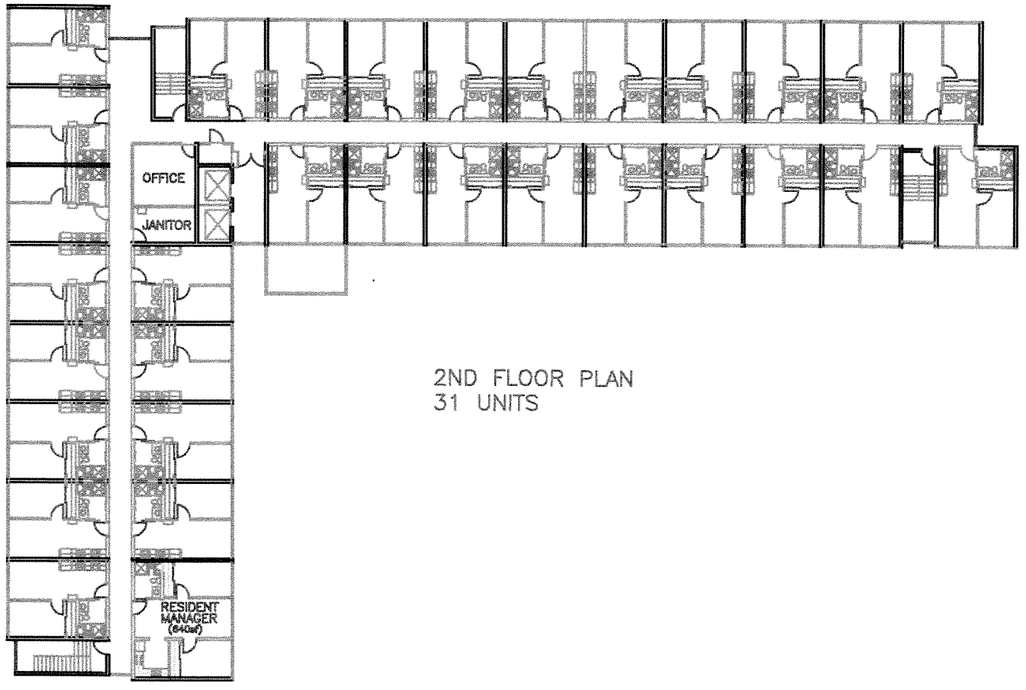
REQUIRED=300X1=300
1X1.5=1.5
GUEST=301X.1=30
TOTAL REQ'D=332
PROVIDED=132+44=176

MULTI-PURPOSE BUILDING
REQUIRED=3277/400=8
PROVIDED=11

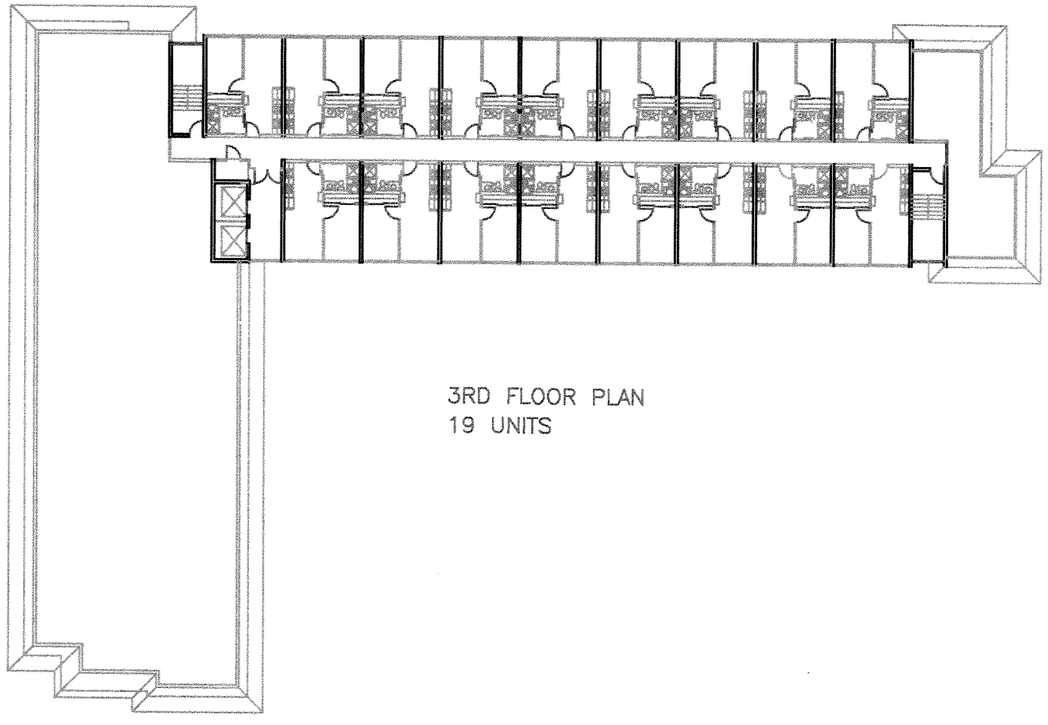
LOADING:
REQUIRED=2 (1@12'X35'&
1@19'X8.5')

PROVIDED=1@12'X35',
4@19'X8.5'

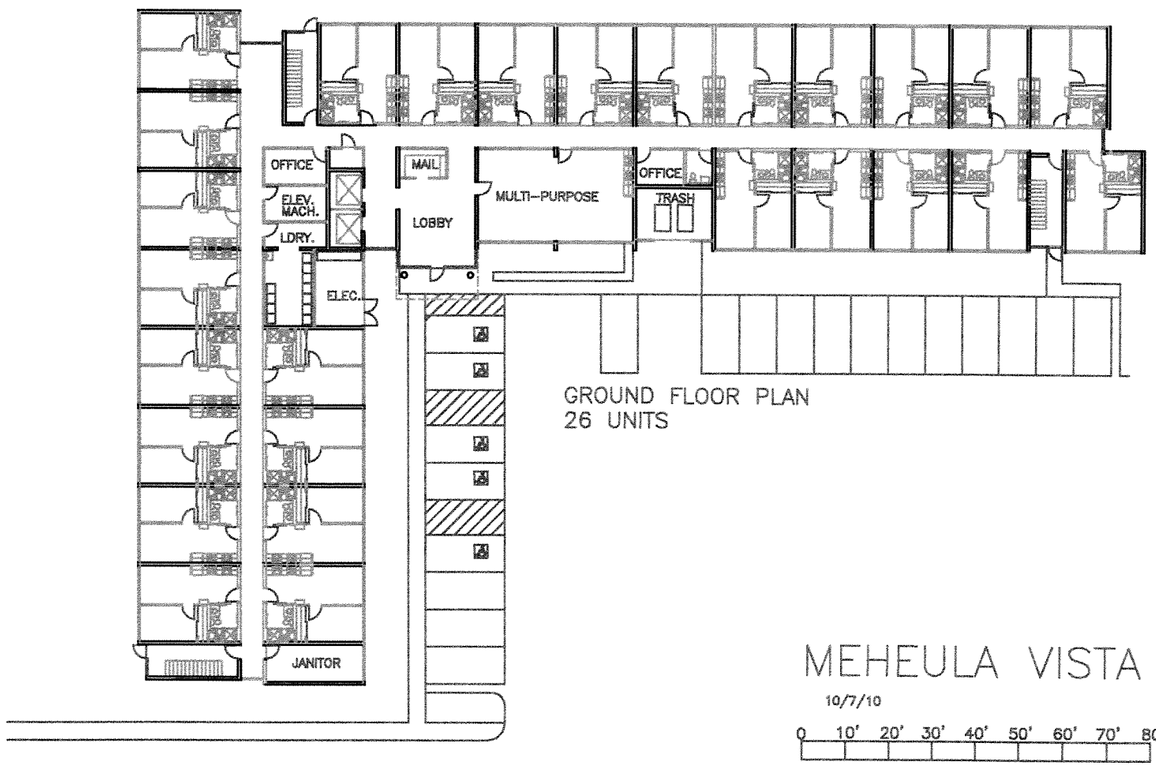
EXHIBIT 29
2/26/11



2ND FLOOR PLAN
31 UNITS



3RD FLOOR PLAN
19 UNITS



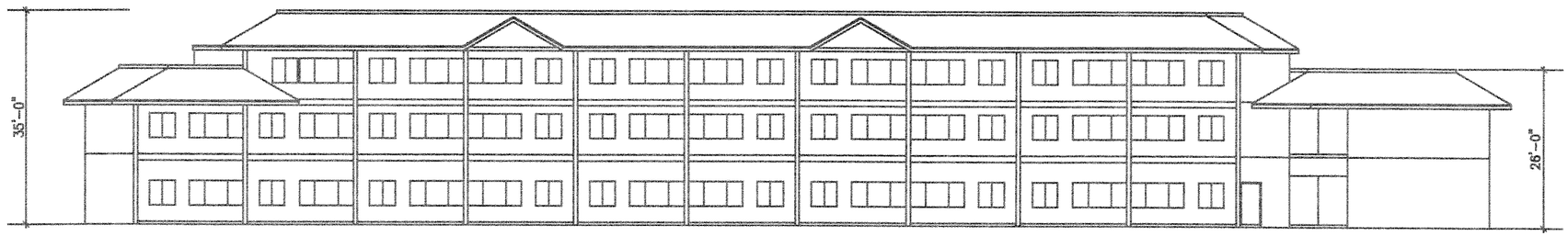
GROUND FLOOR PLAN
26 UNITS

MEHEULA VISTA PHASE I– FLOOR PLANS

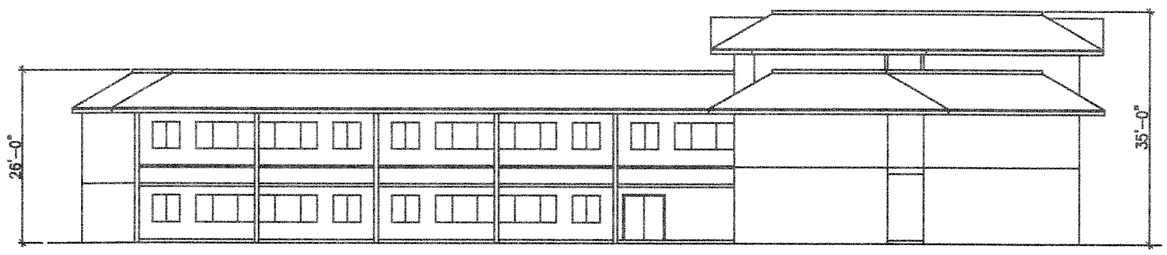
10/7/10

0 10' 20' 30' 40' 50' 60' 70' 80'

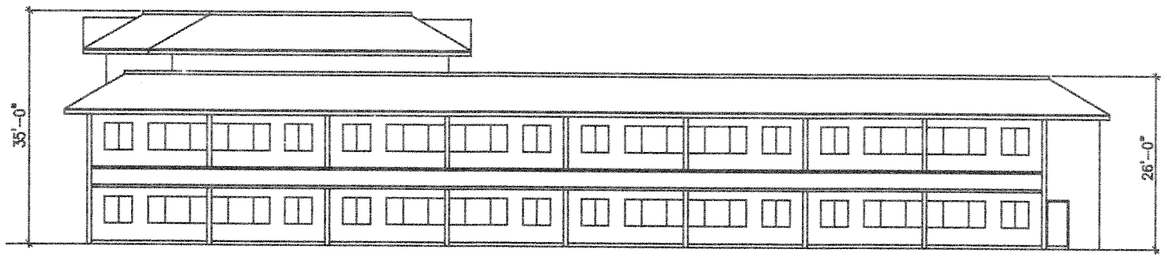
2/28/11



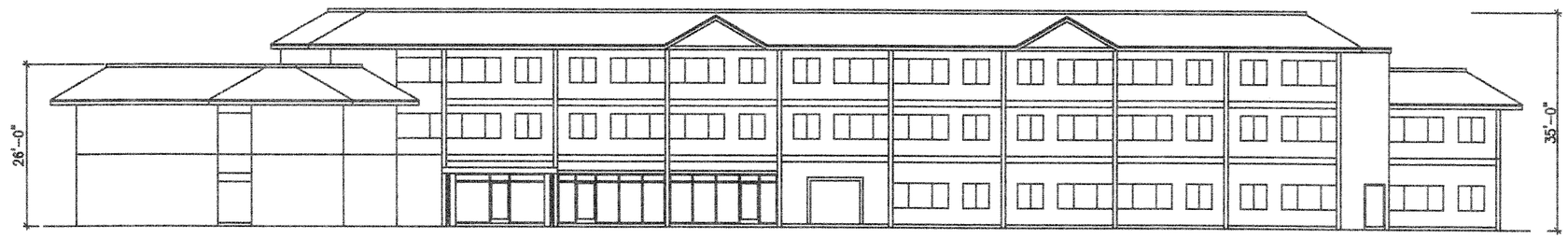
NORTH ELEVATION



EAST ELEVATION



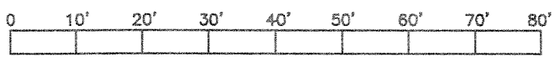
WEST ELEVATION



SOUTH ELEVATION

MEHEULA VISTA PHASE I– EXTERIOR ELEVATIONS

2/26/11



MEHEULA PARKWAY

Existing landscaping to remain

545'

Vertical trees/palms

Accent trees/palms

Existing street tree

Large canopy tree

Small canopy tree

Existing street tree

Accent trees/palms

Vertical trees/palms

LEHIWA DRIVE

KUAOA STREET

610'

615'

HECO ESMT.

PHASE I

PHASE II

PHASE III

PHASE IV

MULTI-PURPOSE BLDG.

grass

EXISTING STORAGE FACILITY

610'

HECO ESMT.

N

MEHEULA VISTA—CONCEPTUAL LANDSCAPE PLAN

SCALE: 1"=40'

0 40' 80' 120' 160'

MEHEULA PARKWAY

Existing Landscaping to remain

545'

Vertical trees/palms

Accent trees/palms

Existing street tree

Large canopy tree

Small canopy tree

Existing street tree

Accent trees/palms

Vertical trees/palms

LEHIWA DRIVE

KUAOA STREET

610'

615'

HECO ESMT.

PHASE I

PHASE II

PHASE III

PHASE IV

MULTI-PURPOSE BLDG.

grass

EXISTING STORAGE FACILITY

610'

N

MEHEULA VISTA—CONCEPTUAL LANDSCAPE PLAN

SCALE: 1"=40'

0 40' 80' 120' 160'

APPENDIX II

MINUTES OF FEBRURY 15, 2011 NEIGHBORHOOD BOARD MEETING
MINUTES OF JANUARY 18, 2011 NEIGHBORHOOD BOARD MEETING
MINUTES OF JULY 6, 2010 NEIGHBORHOOD BOARD MEETING
AND
JANUARY 3, 2011 NOTIFICATION LETTER SENT TO ADJOINING PROPERTY OWNERS

MILILANI MAUKA/ LAUNANI VALLEY NEIGHBORHOOD BOARD NO. 35

c/o NEIGHBORHOOD COMMISSION • 530 SOUTH KING STREET ROOM 406 • HONOLULU, HAWAII, 96813
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET: http://www.honolulu.gov

February 28, 2011

Honolulu City Council
530 S. King Street, Room 202
Honolulu, Hawaii 96813

Hawaii Housing and Finance Development Corporation
677 Queen Street
Honolulu, Hawaii 96813

Subject: MEHEULA VISTA SENIOR AFFORDABLE HOUSING PROJECT

Dear Council Members and Hawaii Housing and Finance Development Corporation Directors,

The Mililani Mauka/Launani Valley Neighborhood Board 35, voted at our February 15, 2011 board meeting in support of the proposed Meheula Vista senior affordable rental project with the following conditions, that:

a. The developer, GSF, LLC insure a traffic signal and crosswalks be installed at the intersection of lower Kuaoa Street and Meheula Parkway to alleviate traffic and pedestrian safety concerns
b. Access out of the Meheula Vista project on to Lehiwa Drive be restricted during morning and afternoon school rush hours due to heavy traffic congestion in the area
c. The development be restricted to two-story units, as there are no three-story residential units in the community
d. Occupancy in the project be restricted to seniors age 62 and older
e. Management establish and enforce strict visiting hours to prevent non-senior occupancy
f. The number of resident parking stalls exceed the per unit quota of similar senior projects in the City and County of Honolulu
g. A mandate be established so that occupant's addresses cannnot be used for public school district exceptions for family members

GSF, LLC has experience and expertise in building similar senior projects throughout the island and is dedicated to insuring Meheula Vista blends in with the surrounding community. The planned non-profit management partnership with Catholic Charities, a reliable and responsible social services organization, will benefit our kupuna for years to come.

Please feel free to contact me at 226-7430 if you have any questions or concerns.

Aloha,

Dean I. Hazama
Chairperson
Neighborhood Board No. 35

cc: Mayor Peter Carlisle
GSF LLC
Catholic Charities
Castle & Cooke Homes Hawaii

Printable version (copy and paste into browser):

http://www1.honolulu.gov/nco/nb35/11/35201101Min.PDF

Mililani Mauka / Launani Valley Neighborhood Board No. 35

DRAFT- MINUTES OF REGULAR MEETING
TUESDAY, JANUARY 18, 2011
MILILANI MAUKA ELEMENTARY SCHOOL CAFETERIA

CALL TO ORDER: Chair Dean Hazama called the meeting to order at 7:00 p.m., **with a quorum of seven (7) members.** The Scouts from Troop 664 were asked to present the United States and State of Hawaii colors; Troop 664 led the pledge of allegiance, posted the colors, and retired from the meeting. Note: This nine (9) member Board requires five (5) votes to have a quorum and take official Board action. Chair Hazama read the rules of speaking listed at the top of tonight's agenda.

Members Present: Dana Agader (departed 8:22 p.m.), Luella Costales (arrived at 7:05 p.m./departed 9:10 p.m.), Dave Ellis, Dean Hazama, Shelly Nakasone (appointed tonight), Stanton Oishi (departed at 9:17 p.m.), Alan Suwa, Keith Tamashiro.

Members Absent: Lance Yoshimura.

Vacancies – There was one at-large vacancy.

Guests: Erwin Kawata (Board of Water Supply), Mary Liles, Randy Johnson, Doreen Johnson, Pearl Peiler, Margie Peary, Keith Fukumoto, Christina Frolik, Kari DeBusca, Jodie Fujita, Sandy Ramiscal, Lloyd Chong, Stephanie Yoda, Shelly Nakasone, Isidora Bauaguoa, Linda Conroy, Michael Dame, May Fujii Foo, Charlene Malecha, Eiji Takeuchi, Agnes Mayfield, Geoff Mayfield, Craig Neibarr, Corinne Neibarr, Kurt Andrews, Edna Nazareno, Raymond Seto, James Kotake, J. Thomason, Harold H. Harrison, Jr., Nancy Harrison, Dave Patrick, Lia Patrick, Shaun Kawakami, Saisopin Kobayashi, Kevin Kobayashi, Jim and Grace Hurlouck, Stephen Robinson (130th Engineer Brigade, U.S. Army Schofield), Bill Carreira, Susan Knox, Mel Apana, Ed Aperocho, Paul Chaulk, Danny Fosco, Sheryl Sanchez, Calvin Domingo, John Parse, Pete Emerson, Megan Cieslak, Randy Cieslak, Bill Rooka, Linda Fukuya, Lauren Aki, Jennifer Kelley, Maybelinda Hayashi, Cris Alvin, Valerie Endo, Nicolette Uemoto, Dan Huleshosed, Satsuko J. Mitaemi, Daniel Hulesbohed, Jamie Yoshino, Monica Ornellas, John and Tairita Waite, Fred Romero, Kelvin R., Mary Peddie, Dan Peddie, F.H. Kuhn, Michael Magaoay, Michelle Bumanglag, Tremayne Bumanglag, Esme Nii, Cory Sakata, Representative Marilyn Lee, Joyce Yee, Keith Miyahara, Ernie and Leilani Jun, Jin Lim, Kendal Ibarra, Matt Perry, Donald Bonilla, Jesse Tano, Andrea Diaz, Katrina Dick, Kent Anderson, Marlene Blackwell, Jonathan Wung, Renee Yoshimura-Valdez, Jackie Standiford, Lorrie Kanno, Med Aczon, Rod and Maki Dubquois, Gail S. Watanabe, Cynthia Damaslire, Yuki Takenaka, Carol Hamilton, Gerald Hamilton, Chris Jansen, Martin and Luisa Ortogero, Pamela Young, Laura Lee, Shari Aguilar, Senator Michelle Kidani, Ray Aguilar, Shirley Whitfield, James Whitfield, Will Kane (Mililani Town Association), Darrel Ito (Longs Drugs), Derek Fraze, Eric Roth, Melissa Vomvoris, Wanda Thayne, Hoon Hee, Farouk Wang (Mililani Town Association), Captain Brian Carvalho (Honolulu Fire Department), Lt. Ben Ballesteros (Honolulu Police Department), Collins Lam (Office of the Mayor/ Director, Department of

Design & Construction), Councilmember Ernie Martin, Kimberly Ribellia (Office of Councilmember Martin), Keith Kurahashi and Anne Kusao (GFS LLC), Jerry Rauckhorst and Eddie Ontai (Catholic Charities, Bruce Barrett and Richard Mirikitani (Castle & Cooke Homes Hawaii, Inc.), Boy Scout Troop 664, and Nola J. Frank (Neighborhood Commission Office staff).

RECOGNITION: None.

FILLING OF BOARD VACANCY (One At-large Seat) – Chair **Hazama** asked if there were **anyone** interested in filling the vacancy. Shelly M. Nakasone and Bo Aki offered to fill the vacancy. **Hearing no other volunteers, Ellis moved to close nominations; there were no objections.** The neighborhood assistant explained that a roll call vote would be taken in the order of the volunteers, and since Nakasone was the first to volunteer to fill the vacancy votes for her would be taken first. The nominee receiving five (5) or more votes would fill the vacancy. Vote for Shelly Nakasone – **By UNANIMOUS VOTE, Shelly Nakasone was appointed to fill the at-large vacancy, 7-0-0 (AYE**: Agader, Costales, Ellis, Oishi, Suwa, Tamashiro, Hazama).

7:12 p.m. Recess called to administer the oath of office; 7:15 the agenda resumed; **Luella Costales arrived, eight (8) members now present.**

MONTHLY REPORTS:

Honolulu Fire Department (HFD) – Captain B. Carvalho reported the following:

- December 2010 Statistics – Fires included 1 structure (Wahiawa), 1 wildland (near Hanalani School), and 1 rubbish (Mililani Middle School; Emergencies included 31 medical, 15 miscellaneous (smoke scare, water evacuation, auto accident clean up, activated alarms), and 1 major incident at Aloun farms with 4 units responding.

- Fire Safety Tip – It is critical if an emergency occurs that responders quickly identify the correct location. Fire, building, U.S. postal codes, and City ordinances state that property owners shall place their house numbers so it is legible and readily visible from the street. If your property is difficult to locate and/or access, provide 911 dispatch with additional information to assist emergency responders in locating your property.
- Changes to City and County of Honolulu Fireworks Regulations – Starting January 2, 2011, consumers may only purchase firecrackers after applying for a permit to set off no less than ten days prior to the event. The report also included requirements for the sale and use of firecrackers which have no changes. For more information contact the Fire Prevention Bureau at 723-7162.

Honolulu Police Department (HPD) – Lt. B. Ballesteros reported the following:

- Beat 255 December 2010 Statistics Compared with November 2010 – Included 2 unauthorized control of a propelled vehicle (UCPV), 2 auto thefts, 4 burglaries, 6 unauthorized entries into a motor vehicle (UEMV), 0 graffiti, and 2 thefts.

Questions, comments and concerns:

1. Shooting at Mililani Safeway – The early morning incident at the Mililani Safeway is still under investigation;
   no information was available. It was advised if you see someone with a weapon, do not confront the person, call 911 and take cover.

2. Advice was given do not confront anyone with a weapon, call 911 and take cover.

Military – Stephen Robinson reported the following:

- Deployment – There are currently 50,000 soldiers in Iraq.
- Makua Valley – Per Lt. General Nixon, the Army will not resume live fire training in Makua Valley.
- Adopt-a-School Program – Soldiers continue to participate in this successful program with area schools.

RESIDENT'S'/COMMUNITY CONCERNS:

- Potholes – It was request that all potholes in Mililani be repaired.
- Real Property Tax Assessment – The Board was asked to adopt a resolution deferring the increase of property taxes for seniors living in a designated senior facility.
- Written Reports – Area legislators written reports were available on the table at the back of the room.

Hearing no objection, the agenda was taken out of order to VII. Board Business.

BOARD BUSINESS:

Liquor License Application Submitted for Mauka Longs/CVS Project – Architect Bill Brizee introduced Darryl Ito, Manager for the Mauka Longs/CVS; and reported that a Board presentation was made in October 2010. Tonight is to inform the Board that the liquor application was submitted early January 2011.

Questions, comments and concerns:

1. School Area Requirement(s) – The issue if the store is within the 600 foot requirement away from a school will be brought up at the Liquor Commission hearing.

2. Fast Stop – In 1994 when Fast Stop was applying for a liquor license the consensus of the community was that no liquor be sold in Mililani Mauka and the area of the Castle & Cooke sales office. A petition was signed by approximately 500 residents.

3. Liquor Commission Decision – It was asked at what point the Liquor Commission makes a decision and how that decision would affect Longs/CVS decision.

Suwa moved that a letter of support of the liquor application for Longs/CVS Mauka be sent to the Liquor Commission.

Discussion followed:

1. Tesoro – Tesoro does not sell liquor.

2. Off-Street Parking – Suwa mentioned that issues were raised at the October 2010 meeting regarding off-site parking and initiated that employee parking remain within the building area. Brizee replied ample parking will be provided for Longs patrons. The property from McDonald's to Aina Makua Drive is owned by Longs/CVS.

3. Comments – a) Chair relayed that residents are concerned why there are no other stores in the **community**. b) Longs is not asking for anything thing different from other stores such as Foodland. Longs have been responsible in the community for 61 years.

4. Liquor Application Process – Meetings with the Liquor Commission and hearing date(s) are forthcoming. Mauka Longs is currently in the process of designs for building permits which is a two to three month process.

The motion to send a letter in support of the Longs/CVS liquor application to the Liquor Commission was ADOPTED, 6-2-0 (AYE: Agader, Costales, Oishi, Suwa, Tamashiro, Hazama; **NAY** – Ellis, Nakasone).

Presentation of Proposed Meheula Vista Senior Affordable Rental Project – Keith Kurahashi representing GFS LLC introduced Jerry Rauckhorst of the Catholic Charities; and presented the following:

- Meheula Vista – The applicants, Catholic Charities Housing Development Corporation (CCHDC) and its partner GSF LLC will be submitting a Draft Environmental Impact Assessment and a 201-H application for an affordable senior rental development in Mililani Mauka to the Hawaii Housing Finance Development Corporation (HHFDC). Applications will also be sent to government agencies for credits, rental housing trust funds, CDBG, Home and DURF funds to provide these affordable rental units for a period of just over 60 years. The development will be located southeast of Meheula Parkway between Kuaoa Street and Lehiwa Drive on 7.5 acres of a B-2 Community Business **zoned** lot. A self storage facility occupies the remaining 1.5 acres of the property. The project site is located next to a park site which is adjacent to Mililani Middle School. Mililani Elementary Schools is located further east on Meheula Parkway.
- Rental Development Plans – Plans are to have a senior affordable rental development consisting of four buildings each with a two-story and three-story wing, to be constructed in four phases. Each building will contain 75 one-bedroom senior units with 33 parking stalls. A two-bedroom resident manager's unit will be included in Phase 1. A total of 301 apartment units and 132 parking stalls will be developed. A Multi-Purpose Building will be provided for senior activities with an addition of 11 parking stalls; totaling 143 parking stalls on the site.
- Rentals to Seniors – Rentals will be available to seniors age 55 and older, earning less than 60% of the median income. The average age in six other senior affordable rentals has been in the upper 70's. Children will not be allowed to live in these senior affordable rental units.
- Property Zoning – The property is zoned **B-2 for commercial use** with a 60-foot height limit.
- Proposed Requirement Exemption Requests – This proposed development will require exemptions, including an exemption from the Land Use Ordinance use table to allow multi-family dwellings on this zoned lot; parking requirements exemption, based on the lower rate of vehicle ownership for seniors and a

  rental declaration restricting tenants owning vehicles to just the numbered that can be accommodated by the tenant parking provided on-site; and an exemption to allow construction of a hollow tile wall that will be about 8 to 10 feet in height, 2 to 4 feet over the allowable 6-foot height limit at new property lines to be created through a subdivision to create separate parcels for Meheula Vista and exiting the self storage
  facility; exemptions from certain application and infrastructure fees and deferral of water and sewer correction fees.
- Traffic Impacts – Estimation was provided regarding senior rental versus the neighborhood shopping center trip generation. Traffic impacts would be minimal with the senior rental development.
- Permits Required – a) A finding of No Significant Impact on a Final Environmental Assessment. B) A 201-H affordable housing development approved by the Housing and Community Development Corporation of Hawaii and the City Council. c) Grading permit and building permits from the City Department of Planning and Permitting (DPP).
- Impact on Surrounding Community – Current school enrollment would not be affected. Traffic will be minimal because most low-income seniors do not own a car. The number of tenants with vehicles will be restricted to the number of available parking stalls that can accommodate

tenant parking.

Chair announced that the meeting will be conducted in a civil manner, and respect given to all opinions and view points, and reminded everyone about the rules of speaking.

A lengthy discussion followed:

1. Shopping – Shopping is Inaccessible for seniors.

2. Traffic Generated Impacts – Increase traffic in an already traffic impacted area.

3. 201H Category – Under the 201H category if 40% of the units are not rented, could the units be rented at

   market costs? Federal standard require that rentals be according to income brackets.

4. Kuaoa Street Exit – A storage lane was suggested for safety due to speeding on Meheula Parkway.

5. Parking Restrictions Per Resident – a) Are there exemptions allowing one parking stall per **unit?**

Audience Members **–. Approximately 30 guests gave testimony in opposition for the following reasons:**

1. Planned Community – Mililani Mauka is a planned community and the property should remain commercial use. **Since Mauka is at its developing capacity, how much more underground infrastructure must be put in to accommodate this new development?** Agreements were signed with Castle & Cooke at the closing of purchasing a home that this is a planned community.

2. Board Members – The Board is here to support the majority which is in opposition to the project. The Board should think of the community's best interest that no new residential development is built on the commercial lot.

3. Oahu Arts Center – Many in attendance continue support having an arts center on the site.

4. Citizens Against Residential Expansion Mililani (Care Mililani) – A handout was circulated with concerns, and The Board was asked to consider the community's opposition and promises made to the community by Castle & Cooke.

5. Visitors – If there are no restrictions on visitations, what is to prevent overnight stays and who would be enforcing the rules?

6. No Development – Community members do not want housing on the proposed lot; the property

should be left for a park, art center, etc.

7. Profit – If the monthly profit is about $336,000, how much of the profit goes to the Catholic Charities, the developer, and the community.

8. School Concerns – The schools are already overcrowded and more school space is needed in Mauka. It was suggested that the property be sold to the State, State Department of Education (DOE), or keep Castle & Cooke's promise for the arts center.

9. Board Stand – The Board was asked to take a stand and override Castle & Cooke's promises. The Board was asked what could be done to stop the project.

8:22 p.m. Agader departed the meeting; **7 member present.**

10. Tax Credits – Low income project receive tax credits. Will the developer or the renters get the tax credits? There are many people 55 and older still working.

11. Castle & Cooke – Bruce Barrett explained that the key issue is change. There is a lack of demand for commercial use. Changes were made to the master plan due to economic circumstances.

9:10 p.m. Costales departed the meeting; **6 members present.**

12. Services Provided by Catholic Charities – Catholic Charities have many different services are provided island wide and this facility would be added to the transportation program already utilized on Oahu.

13. Services Provided by Catholic Charities – Catholic Charities have many different services are provided island wide and this facility would be added to the transportation program already utilized on Oahu.

14. Guest Parking – Parking for guests will meet the standard code which is one(1) guest stall per 10 units; totaling 30 parking stalls for visitors.

9:17 p.m. Oishi departed the meeting; **5 members present**.

15. Rental Costs – Per the handout the units will be available to seniors earning less than 60% of the median income which should be about $700 per month.

16. End of 60-Year Term – At the end of the term the project would continue into the future.

17. Board of Directors – The project would be governed by a Board of Directors. Danny Ontai, Subsidiary of Catholic Charities Housing was introduced. Ontai oversees 300 staff members,

30 programs state wide, and funding from different government agencies.

18. Guests were reminded that all questions be addressed to the Chair.

Due to audience member continuing speaking out of turn, Chair Hazama once again reminded everyone that the meeting will be conducted in a civil manner, respect given to all opinions and viewpoints. If the outbursts continued a recess would be called or the meeting adjourned.

Ellis called a point of order to take the last speaker. The neighborhood assistant explained to the Chair that per the Sunshine Law all persons wishing to speak must have a turn.

Chair Hazama reiterated that the Board's capacity is advisory only. The issue will go forward to City Council and HHFDC would have hearings. Several audience members were intimidating the Board by aggressively reminding Board member that the community votes them on to the Board and can vote them off.

Suwa moved that a letter be sent to the State, City, and entities involved in the decision process in support of the project with conditions.

Discussion followed:

1. **Ellis amended the motion that a strong letter from the Board be sent in** opposition **to the project; and that the CARE Mililani handout be attached. Suwa accepted the amendment and said that he would accept any other testimony that could be provided.**

2. Tamashiro commented that there is a need for affordable senior housing; but agreed with the testimonies.

3. Suwa supports the community and is personally against the project, personally against the project, for clarification the Board represents the Mauka residents and try the best they can. He has heard no support from the audience. The main point is the need. Chair said that he understands where the community is coming from, however it is hard **not** supporting a senior project. He shares the community's frustrations, and the inability of attracting commercial businesses to the area. However, the Board must represent all of

   Mauka residents; the decision is difficult for the Board. Those types of facilities are needed in communities to care for seniors.

4. Suwa explained that a letter of support with condition be sent because if only a letter of opposition is sent it will be difficult to add conditions after the fact. The community was asked what is acceptable if no projects are wanted.

5. Comment to Board Members: Concern was focused on Board members reminding them that the community voted them to the board and could vote them off.

Suwa withdrew the motion. Ellis mentioned to table the motion, but the motion was already withdrawn.

9:49 p.m. recess; 9:55 p.m. the agenda order resumed.

Mayor Peter Carlisle's Representative – Collins Lam reported the following:

Appendix II

ion (copy and paste into browser):
lulu.gov/nco/nb35/10/35201007Min.PDF

...Kaunani Valley Neighborhood Board

DRAFT- MINUTES OF REGULAR MEETING
TUESDAY, JULY 6, 2010
MILILANI MAUKA ELEMENTARY SCHOOL CAFETERIA

CALL TO ORDER: Chair Dean Hazama called the meeting to order at 7:00 p.m., **with a quorum of eight 8 members; Note:** This nine (9) member Board requires five (5) votes to have a quorum and take official Board action.

Members Present: Dana Agader, Luella Costales, David Ellis, Dean Hazama, Stanton Oishi, Alan Suwa, Keith Tamashiro, Lance Yoshimura (arrived at 7:20 p.m.), and Pamela Young.

Members Absent: None.

Vacancies – None:

Guests: Mary Liles, Erwin Kawata (Board of Water Supply), Terry Brewer, Calvin Domingo, Russ Fitzgerald, Stan Fujimoto (Hawaii Housing and Finance Development Corporation), Rene Mansho (Oahu Arts Center), C. Kido (PRP), Geoff and Agnes Mayfield, Pearl Peiler, Keanu Young (Office of Councilmember Donovan Dela Cruz), Laurie Lucking, Jackie Standiford, Dave Keim, Jonathan Wung, Pete O`Hara, Randy and Doreen Johnson, Will Kane (Mililani Town Association), Susan Marciel, Garret Matsunami, Richard Mirikitani, and Bruce Barrett (Castle & Cooke); Robert Smith, Laureen Lever, Edwin Nakasato, Sally Kam, Susan M. Iwaoka, Louise M. Abe, Captain James Oshiro (Honolulu Fire Department, Mililani Mauka), Himi Gerald, W. and Elizabeth Rhee, Harold Harrison, M. Kokubun, Scott and Tina Moore, Brian and Liz Christensen, Elynne Chung (Mililani Middle School Principal), Jeff McCague, Marla Ferrer, Jicky Ferrer, Lynette Ing, Lori Yamada, Albert Hirano, Erlinda Traven, Stacy and Gerald Ellamar, Jenny and Chris Baysa, Laura Lee, Michael and Lisa Lee, Shelly Nakasone, Michelle Aczon, Edmund Aczon (Office of U.S. Senator Daniel K. Inouye), Arne Kawamata, Diane Yoshimura, Kathy Maginot, Jill Kirihara, Arlene Fujikane, Deanna Peyatt, Kevin Peyatt, Randall Okazaki, Lynne Okazaki, Kari DeBusch, Jennifer Barkava, Jin Lee, Arlene Springer, Teri Felix, Alex Feliz, Representative Marilyn Lee, Jeff Ku, Melanie Sakanoi, Michelle Ichimura, Tracy Kubota (Office of Representative Marcus Oshiro), Leilani Fitzgerald, Joy Marshall (Mililani/Waipio/Melemanu Neighborhood Board No. 25), Roy Standiford, Senator Michelle Kidani, Tinkle Malama (Videographer), Nola J. Frank (Neighborhood Commission Office staff), and many others who did not sign the guest list.

CITY MONTHLY REPORTS:

Honolulu Fire Department (HFD) – Captain James Oshiro reported the following;

- June 2010 Statistics – Included 5 fires, 3 wildland, 28 medical, 14 search/rescue, 6 miscellaneous; totaling 53 response calls.

- Fire Safety Tip – Cigarettes and other smoking materials are the leading cause of fire deaths in the United States. The latest fire-related fatality on Oahu was a result of an unattended cigarette.

1. Safety Precaution Tips: a) Smoke outside; b) Use deep, wide ashtrays placed on a sturdy table; c) Prior to discarding cigarette butts and/or ashes, ensure they are completely extinguished by dousing them with water or sand.
2. Firewise Safety Tips: a) Keep matches and lighters in a secured area out of children's sight and reach. b) Educate children that lighters and matches are tools, not toys. c) Only use lighters designed with child-resistant features. Remember, child-resistant does not mean childproof. d) Teach children to tell an adult if they see matches or lighters.

Honolulu Police Department (HPD) – A representative was not present; no reports provided; a report was not available.

Mayor Mufi Hannemann's Representative – Collins Lam reported the following:

- Mililani Community Park Fence – The project went out to bid in May 2010; the notice to proceed June 12, 2010. The 120 day contract should be completed this year.

- Ainamakua Drive/Meheula Parkway Traffic Safety – The Director of the Department of Transportation Services (DTS) is deciding either to make the project an interim with striping followed by the 2011 project, or look at completing the area by this fall.

Board of Water Supply (BWS) – Erwin Kawata circulated the Neighborhood Board information sheet and highlighted the following:

- Water Main Breaks – No water main breaks reported in June 2010.

- 2010 Halawa Xeriscape Garden Open House and Unthirsty Plant Sale – BWS will be hosting its 22nd Annual Halawa Xeriscape Garden Open House and Unthirsty Plant Sale on Saturday, August 7, 2010 from 9:00 a.m. to 3:00 p.m. The open house will include a free day of family-friendly activities such as xeriscape workshops, keiki games, keiki garden and free mulch giveaway. A dozen local nurseries will offer a variety of unthirsty plants at moderate purchase prices, with proceeds supporting educational programs and classes at the BWS Xeriscape Garden.

- BWS Furlough Information – The BWS offices will be closed in accordance with the City and County of Honolulu's furlough plan. Effective July 1 of this year, most City and County of Honolulu offices will observe furlough days on two Friday a month.

1. The City and county furlough Fridays for July are on July 2nd and July 23rd. While the BWS business offices will be closed on furlough Fridays, some sections will work staggered schedules in order to maintain operations for public health and safety. For

more information visit www.boardofwatersupply.com.

Councilmember Donovan Dela Cruz – Keanu Young circulated the written report and highlighted the following:

- House Bill 1640: The Important Agricultural Lands (IAL) bill was passed by the 2005 Legislature and was signed into law as Act 183 by Governor Lingle. This was landmark legislation because it begins the process of protecting Hawaii's important agricultural lands. Under the Act, each county is responsible for identifying and mapping potential important agriculture lands within its jurisdiction except lands that have been designated for urban use by the State or county. The Land Use Commission (LUC) was authorized to disburse $75,000 for fiscal year 2005 – 2006, for grants-in-aid to the counties for the identification and mapping of IAL but the funding was not adequate enough for the City through its Department of Planning and Permitting (DPP) to begin identifying IAL's. Along the same lines as other districts, IAL districts are more restrictive than traditional agricultural districts in that they must fit certain criteria.

- Bill 34, Relating to the Regulation of Fireworks – Makes it unlawful for any person to possess, import, store, sell, keep or offer for sale, expose for sale, use, explode or cause to explode any fireworks within the city, except for the import, storage, sale and use by a person having obtained a license or permit for display fireworks. Under the bill violators shall upon conviction be punished by a fine not exceeding $2,000 or imprisonment not exceeding one year. The bill was referred out of the Public Safety and Services Committee for passage on second reading at next Wednesday's meeting of the full Council.

- Council Related Items:

  1. The new Boards and Commissions Committee is chaired by Councilmember Cachola.
  2. Councilmember Dela Cruz is now chair of the Executive Matters and Legal Affairs Committee, which was last chaired by Charles Djou.
  3. Former Police Chief Lee Donohue is the new chair of the Public Safety and Services Committee, last chaired by Councilmember Dela Cruz.
  4. Councilmember Dela Cruz supports Bill 34 as written because it allows the public display of fireworks.

- Report for Investigation Services Report (RISRs) – Per HPD, a message board (with a radar feature) was placed on Meheula Parkway, between Lehiwa and Kapanoe Streets to monitor vehicles. Councilmember Dela Cruz's office was notified that watch commanders were made aware of speeding concerns in that location and will have officers monitor the area for speed limit compliance.

- 201 H Application Process – 1) 201H process provides a process whereby an affordable housing project may be granted exemptions from any stature, ordinance, and rules relating to planning, zoning, and construction standards provided these exemptions do not negatively affect the health and safety of the public. 2) The developer must submit an application to the City Department of Planning and Permitting (DPP) and satisfy processing requirements before the application is processed. 3) Once approved by DPP, the DPP will submit the 201H application (preliminary plans and specifications for the project) to the City Council in the form of a resolution. By law the Council has 45 days from the date DPP submits the application to act on the matter. If Council does not act within 45 days, the exemptions are automatically approved.

Questions, comments and concerns followed: Land for the Oahu Arts Center (OAC) – Regarding if the City has done enough assisting OAC to purchase land, a resolution, the same as the one passed by the House was introduced. Ultimately the issue must be resolved between both parties.

Military – Capt. Thomas Elison (130th EN BDE, Schofield) reported the following:

- Kolekole Pass Closure – Kolekole Pass will be closed July 22-23 and 29-30 for military training. Normal Hours of Operation – 1) Monday through Friday, 7-11:45 a.m. (Waianae to Schofield bound). 2) 12 p.m. – 5:30 p.m. (Schofield to Waianae bound). 3) Closed on weekends and holidays. The pass is only open to military ID holders, unless otherwise noted. For pass hours and accessibility, call Naval Magazine-Lualualei at 668-3007. Weather conditions – In the event of extreme weather, the pass may be closed or have restrictions, to ensure motorists' safety.

- Lost Heroes Quilt Display – The lost heroes quilt will be displayed at the Hale Koa Hotel from July 20 – 29, 2010.

- 2nd Stryker Brigade Combat Team Deployment – The 2nd Brigade Combat Team, 25th Infantry Division, is deploying to Iraq, for a year long deployment. The 25th Infantry Division, Combat Aviation Brigade is currently deployed to Iraq and expected to return later this month.

- Vehicle Decal Policy change (Army Installations) – The Army is urging drivers who live on, work on, or frequently use Army installations to register their vehicles at an Army Vehicle Registration Office and to display an official military decal on the vehicles, as part of an initiative to enhance installation safety and security.

- Joint Venture Education Forum (JVEF) School Partnership Program – The Army is partnered with 51 Hawaii public schools through the School Partnership Program. The FY10 funding, totaling $175,000, has been released and allocated to schools. The funding will be completely spent prior to the closure of FY10. To date there are 2,879 volunteer hours recorded for this school year. The JVEF annual meeting is scheduled for August 26, 2010 at the Hawaii Okinawan Center in Waipio. For more information contact the School Liaison Office at 655-3818.

- Air Show/BayFest – Pete O`hara announced that the Blue Angels and Bayfest is scheduled for September 25 – 26, 2010 at Marine Corps Base Hawaii (MCBH). There will be daylong activities and a fireworks display with a 2,000 foot wall of fire. Car pooling is recommended. Shuttles to the festivity will run from Ford Island to MCBH. This event is free and open to the general public. For more information call 254-7563 or Camp Smith at 477-5143; log on to www.KaneoheBayAirshow.com.

RESIDENTS'/COMMUNITY CONCERNS: None.

ELECTED OFFICIALS:

Governor's Representative – Francis Keeno reported the following:

- Japan and China Trip – The Governor returned from Japan and China where economic development was promoted.

- Pending Bills – The Governor is working on pending bills, of which 30 have been vetoed; a list of the bills was provided to the Board.

Senator Robert Bunda – A representative was not present; no report available.

Senator Michelle Kidani – Senator Michelle Kidani stood on her written report and was available for questions.

Representative Marilyn Lee – Rep. Marilyn Lee stood on her written report and highlighted the following:

- The Oahu Arts Center resolution passed out of Council Committee; however, resolutions do not have the power of law. There is one more hearing on this issue.

- Cudos to everyone who attended the Board of Education meeting resulting in the Mililani High School athletic field repairs is now number 18 on the matrix list.

Representative Marcus Oshiro – A representative was not present.

Without objection the agenda was taken out of order to 8.a. Castle & Cooke.

REPORTS:

Castle & Cooke's WiFi Recreation Center IV Update – Bruce Barrett reported the following:

- Verizon WiFi Proposed Antenna Update – Verizon consultant, Mark Ballard contacted him noting the alternate site at the top of Mililani Mauka was deemed not good for the readings and will still pursue Recreation Center IV.
- Lot B (Ainamakua and Meheula Parkway) – The contract with Longs Drugs Store was consummated for this area. Anticipated open date is the first half of 2012.
- Mauka C Site – The City and County of Honolulu entered into a sales purchase agreement at the end of April to an affordable developer.

The agenda order resumed.

Representative Marcus Oshiro – A representative was not present.

BOARD BUSINESS:

Election of Board Officers for the Term July 2010 to June 2011: **Costales moved nominating the current slate of Board officers.** Discussion – Ellis stated that the proper way is to elect officers by positions. There were no objections.

- Election of Chair - **Young nominated Hazama as Chair. There were no other nominations. By acclamation Dean Hazama was elected Chair; 9-0-0 (Aye:** Agader, Costales, Ellis, Hazama, Oishi, Suwa, Tamashiro, Yoshimura, and Young).
- Vice Chair – **Tamashiro nominated Yoshimura as vice chair. There were no other nominations. By acclamation Lance Yoshimura was elected Vice Chair, 9-0-0 (Aye:** Agader, Costales, Ellis, Hazama, Oishi, Suwa, Tamashiro, Yoshimura, and Young).
- Secretary – **Yoshimura nominated Oishi as secretary; there were no other nominations. By acclamation Stanton Oishi was elected Secretary, 9-0-0 (Aye:** Agader, Costales, Ellis, Hazama, Oishi, Suwa, Tamashiro, Yoshimura, and Young).

- Treasurer – **Suwa nominated himself as treasurer; there were no other nominations. By acclamation Alan Suwa was elected Treasurer, 9-0-0 (Aye:** Agader, Costales, Ellis, Hazama, Oishi, Suwa, Tamashiro, Yoshimura, and Young).

Proposed Affordable Housing Project on Commercial C Land – Rick Prader reported the following:

- The Hawaii Housing Finance Development Corporation (HHFDC) – HHFDC is a subsidiary of the State Department of Business, Economic Development and Tourism; and facilitates development and preservation of affordable housing (for sale or rent). In 2009, the medium family income was $79,000 annually. The program provides cost 40% to 60% of median income.

- Dwelling Use Revolving Fund (DURF) – This fund assists developers purchase land with interim funding for a building loan and is used to purchase the property. The public will be allowed to give input on the project.

- Planning and Zoning Consultant Keith Kurahashi:

  ◊ GSF, Inc. will be applying to government agencies for tax credits, rental housing trust funds, Community Development Block Grant (CDBG), Home and DURF funds to provide these affordable rental units for a period of just over 60 years.
  ◊ The project will be located southeast of Meheula Parkway between Kuaoa Street and Lehiwa Drive on 7.5 acres of B – 2 Community Business District lot. The remaining portion of the lot is 1.5 acres and contains a self storage facility. The project site is located next to a park and adjacent to the park is Mililani Middle School. Mililani Elementary School is located nearby (further east on Meheula Parkway).
  ◊ The development is in the early planning stage and is subject to change. When more details are available another presentation will be presented to the Neighborhood Board. An Environmental Assessment (EA) and 201 – H application are being prepared and copies will be provided to the neighborhood board. The applicant will be contracting with sub – consultants to provide a traffic study and engineering studies for the proposed development.
  ◊ At this time the applicant plans about 12 buildings, six 3 – story and six 2 – story and contain about 226 units with the required number of parking stalls.
  ◊ The rentals will be available to families earning less than 60% of median income; are expected to be two and three bedroom units with one unit reserved for a resident manager.
  ◊ Zoning for the property is commercial use with a 60 – foot height limit. The floor area ration (FAR) for the property is 2.5 and the proposed development is not expected to exceed this FAR. The proposed development is expected to meet all other land use ordinance development standards as well, including minimum lot area, minimum lot width and depth, requires yards, and height setbacks. The one exemption will be requires in an exemption to allow multi – family residences on the B –2 Community Business zoned lot.

Questions, comments and concerns followed:

1. Board members Comments:

   a. Oahu Arts Center (OAC) – The land was never donated and a conditional offer made to OAC supported by the community and the City and County of Honolulu. However, OAC was unable to meet the commitments and the conditional offer expired a year ago due to no evidence of financial stability to operate the facility. There is a possibility that property is available at the Patsy T. Mink Central Oahu Regional Park for the arts center.

b. Schools – Schools are already overcrowded.
c. Traffic – Increased traffic impacts.
d. Affordable – Will the proposed project consist of 50% affordable housing?
e. Castle & Cooke – Castle & Cooke fulfilled its partnership offer and initially offered the City to lease a property for OAC; the City declined.

Chair Hazama reiterated the meeting rules and reminded those wishing to speak that they must be recognized by the chair.

2. Community Concerns and Comments: Residents in the audience were in opposition for the following reasons:

a. Oahu Arts Center – a) OAC was asked by the developer for a business plan, fundraising, architectural plan, and how much money was in the bank. The project plan was paved down to $29,000. b) OAC met all the milestones with the City. Architectural studies were not $86,000. It is disheartening that OAC cannot be built on this property.
b. Home Sales – One of the selling points to new homebuyers was the OAC.
c. Commercial Use – Effort should be made to have other commercial use of the property.
d. Dwelling Unit Revolving Fund (DURF) – According to the state office the DURF loan to the developer was approved without community input. The HHFDC representative noted that this proposed site is good for affordable housing. There are no limitations to a DURF loan when applying for the DURF loan.
e. Alternate Use of Proposed Site – A proposal to build a motel was denied by the Land Use Commission (LUC).
f. The Board was encouraged to vote in opposition to the zoning exemption.
g. Traffic Impacts – Increased traffic impacts especially in the proposed area where the road narrows, cars parked on both sides of the street and a safety issue for area children.
h. Proposed Property – If the developer proceeds without input from the community would the property convert back to commercial use?
i. Coalition – Formation of a community coalition and circulating petitions were suggested in trying to stop this project.
j. Schools – The schools are already overcrowded with five elementary schools feeding into one middle and high school.
k. Vandalism – There is an increase in area vandalism and graffiti.
l. Renters – Renters do not have the same compassion as homeowners for their property. Concern was raised that in the past some of the renters ran drug houses.
m. Facebook – No opportunity to communicate relating to the project was provided. To communicate with each other log on to face book – Mililani mauka sensible growth.

3. Castle & Cooke:

a. Castle & Cooke fulfilled its partnership offer and initially offered the City and County to lease the OAC property but declined.
b. Castle & Cooke continues to aggressively market home sales, but not always successful. It has been difficult to get major retailers to rent space.
c. Determination as where the housing credits will be transferred is not part of the negotiations.
d. Kualaka was previously developed as affordable, but during a downturn in sales were sold at market value in the affordable range $200,000 to $450,000), with restrictions.

4. Chair Hazama's Comments – Chair Hazama explained that tonight's Board meeting was moved to an earlier day to allow the community to give input before the HHFDC meeting this Thursday. If the project proceeds the project must go before the City Council and there is 45 days to decide if the permits would be allowed. The Board will forward the concerns to the proper agencies. A concern regarded residential housing proposed on commercially zoned land.

5. Process – Young from Councilmember Dela Cruz's office explained that the application goes to the City Department of Planning and Permitting (DPP) review process, and then sent to the City Council in resolution form. The project is still a ways off before going through a zoning hearing and passing the full Council. Agendas are put out six days before a committee hearing.

Young moved that the Mililani Mauka/Launani Valley Neighborhood Board No. 35 recommends: (1) Hawaii Housing Finance and Development Corporation not seek exemptions from the City's zoning, subdivision, and zoning standards, (2) the City Department of Planning and Permitting not approve the 201(h) application. (3) The City Council not approve any resolution requesting affordable housing exemptions due to traffic congestion and overcrowded schools in Mililani Mauka.

Discussion followed: 1) Yoshimura was not sure of the DURF loan by the state and note ready to vote on the issue tonight. 2) Suwa had concerns about voting on the advisory to the City on a State matter so early. It is normally difficult to vote against affordable housing. 3) The current B – 2 zoning does not allow residential zoning. 4) Water and sewer concerns were expressed. 4) Traffic issues must be mitigated. 5) The big issue to overcome is the school overcrowding. 6) Costales thanked the residents for attending the meeting and noted that she understood their concerns. 7) **Chair Hazama amended the motion adding "that any resolution requesting affordable housing exemptions due to traffic congestion and overcrowded schools in Mililani Mauka".** He noted that the first affordable housing was sold at market value, and it is unfair to come back with the need for affordable housing. **Young accepted the amendment.**

The resolution that the Mililani Mauka/Launani Valley Neighborhood Board No. 35 recommends: (1) Hawaii Housing Finance and Development Corporation not seek exemptions from the City's zoning, subdivision, and zoning standards, (2) the City Department of Planning and Permitting not approve the 201(h) application. (3) the City Council not approve any resolution requesting affordable housing exemptions due to traffic congestion and overcrowded schools in Mililani Mauka, was *ADOPTED 8-0-1* (AYE: Agader, Costales, Ellis, Hazama, Oishi, Tamashiro, Young; **ABSTAIN:** Yoshimura).

Recess called at 9:26 p.m.; the meeting resumed at 9:30 p.m.

APPROVAL OF THE JUNE 15, 2010 REGULAR MEETING MINUTES – **The June 15, 2010 regular meeting minutes were *ADOPTED by UNANIMOUS CONSENT, 9-0-0* (AYE:** Agader, Costales, Ellis, Hazama, Oishi, Suwa, Tamashiro, Yoshimura, Young) as circulated.

REPORTS:

- Patsy T. Mink Central Oahu Regional Park (CORP) – The next meeting is scheduled for Monday, July 12, 2010.
- Treasurer's Report – Treasurer Alan Suwa reported expenditures in the Operating Account were $163. 75 leaving a balance of $897.98; Publicity Account expenses were $208.00 leaving a balance of $402.00. The report was filed.

COMMITTEES:

- Transportation – Minutes for the last Oahu Metropolitan Citizens Advisory Committee meeting were not distributed. Elections will be held at the July 21, 2010 meeting. Comments are wanted on the Oahu Regional Transportation Plan 2035. Open House meeting formats with presentation will take please at Kapolei High School (91-5007 Kapolei Parkway) on Saturday August 14, 2010, from 10:00 a.m. to noon; Central Union Church parish Hall (1660 S. Beretania Street) on Tuesday, august 17, 2010 from 4:30 p.m. to 6:30 p.m.; and Mililani Mauka Elementary School (95-1111 Makaikai Street) on Thursday, August 19, 2010 from 6:30 p.m. to

8:30 p.m.

- Oahu Arts Center (OAC) – Lance Yoshimura reported that no monthly reports have been received from Edmund Aczon. Alan Suwa requested a status report; Chair Hazama will follow up.

ANNOUNCEMENTS:

- Recess – The Mililani Mauka/Launani Valley Neighborhood Board No. 35 will be in ***RECESS in AUGUST 2010.***
- Next Meeting – The next meeting will be held on ***Tuesday, September 21, 2010 at 7:00 p.m.*** at the Mililani Mauka Elementary School Cafeteria, 95-1111 Makaikai Street.
- Broadcast – Board meetings are scheduled to be shown on `Olelo Channel 54, Mondays at 3:00 p.m.

ADJOURNMENT – The meeting adjourned at 9:36 p.m.

Submitted by:
Nola J. Frank, Neighborhood Assistant

Reviewed by:
Dean Hazama, Chair

Thursday, September 16, 2010

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
MANOA MARKET PLACE
2752 WOODLAWN DRIVE, SUITE 5-202
HONOLULU, HAWAII 96822

BUS. (808) 988-2231
FAX. (808) 988-1140
E-Mail: kkurahashi@hawaii.rr.com

January 3, 2011

Dear Neighboring Property Owner:

Subject: Proposed Meheula Vista Senior Affordable Rental Development Located at 95-1080 Lehiwa Drive in Mililani Mauka Draft and Final Environmental Assessment (EA) and 201H Application Tax Map Key: 9-5-2-32

On behalf of the applicant Catholic Charities Housing Development Corporation and its partner GSF LLC and in accordance with the requirements of the State's Hawaii Housing Finance & Development Corporation (HHFDC), we are providing you as an adjoining property owner, notification of our upcoming presentation to the Mililani Mauka/Launani Valley Neighborhood Board. On the evening of January 18, 2011, we will be presenting the proposed Meheula Vista Senior Affordable Rental Development request to HHFDC for a Draft and Final EA and a 201H Application and will explain the process and answer your questions and/or concerns.

Date:	January 18, 2011
Time:	7:00 p.m.
Place:	Mililani Mauka Elementary School Cafeteria 95-1111 Makaikai Street, Mililani Mauka

We have enclosed a summary of the proposed Meheula Vista Senior Affordable Rental Development, a location map and schematic plans for your review. Should you have questions, please do not hesitate to call our office at 988-2231.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

encls.

cc: Hawaii Housing Finance & Development Corporation
Catholic Charities Housing Development
GSF LLC

MEHEULA VISTA AFFORDABLE SENIOR RENTAL DEVELOPMENT IN MILILANI MAUKA DRAFT ENVIRONMENTAL ASSESSMENT AND 201H APPLICATION

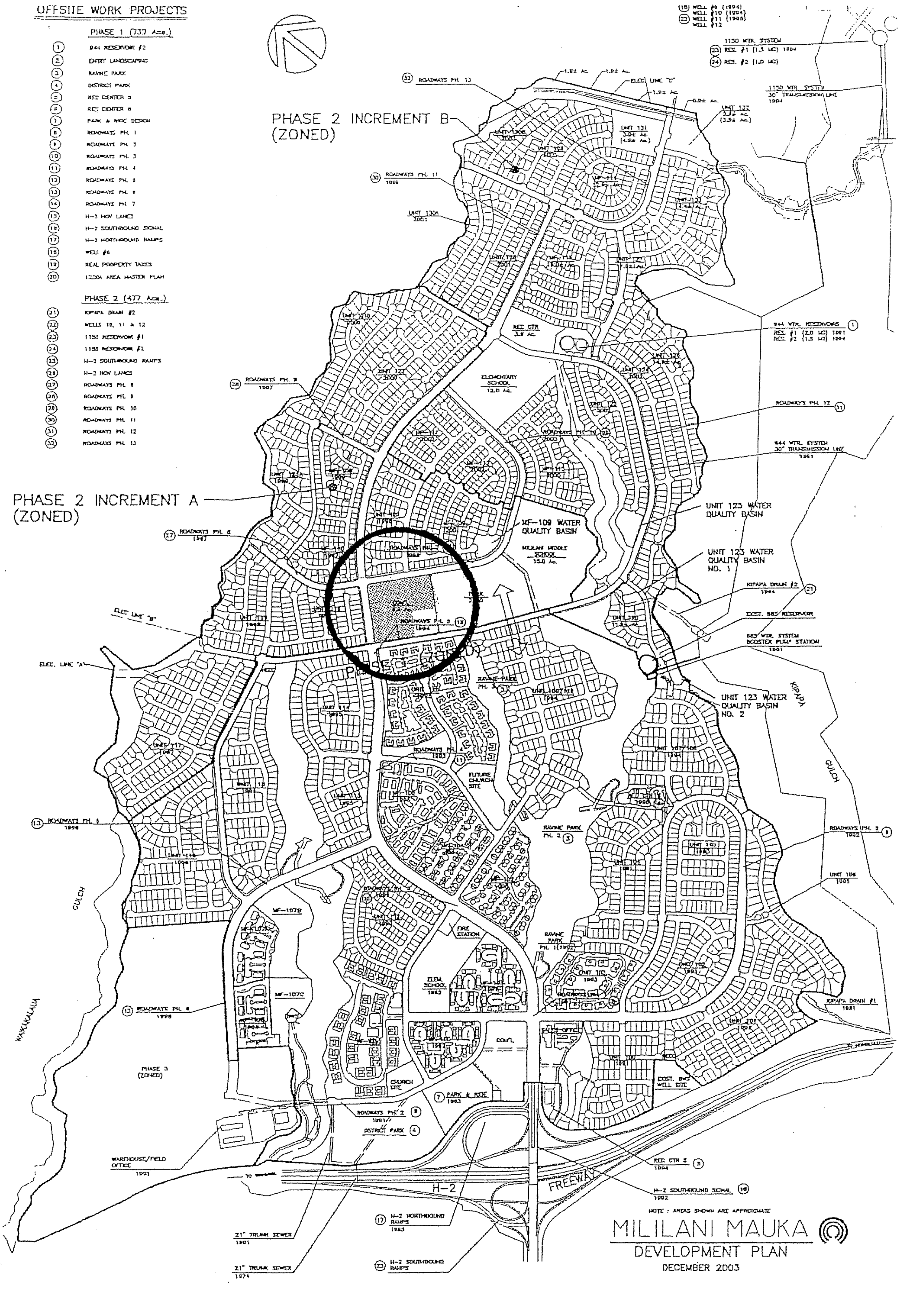
The applicant, Catholic Charities Housing Development Corporation (CCHDC) and its partner GSF LLC will be submitting a Draft Environmental Assessment (in a couple of weeks) and a 201-H application (in January) for an affordable senior rental development in Mililani Mauka to the Hawaii Housing Finance Development Corporation. The applicant will be applying to government agencies for credits, rental housing trust funds, CDBG, Home and DURF funds to provide these affordable rental units for a period of just over 60 years.

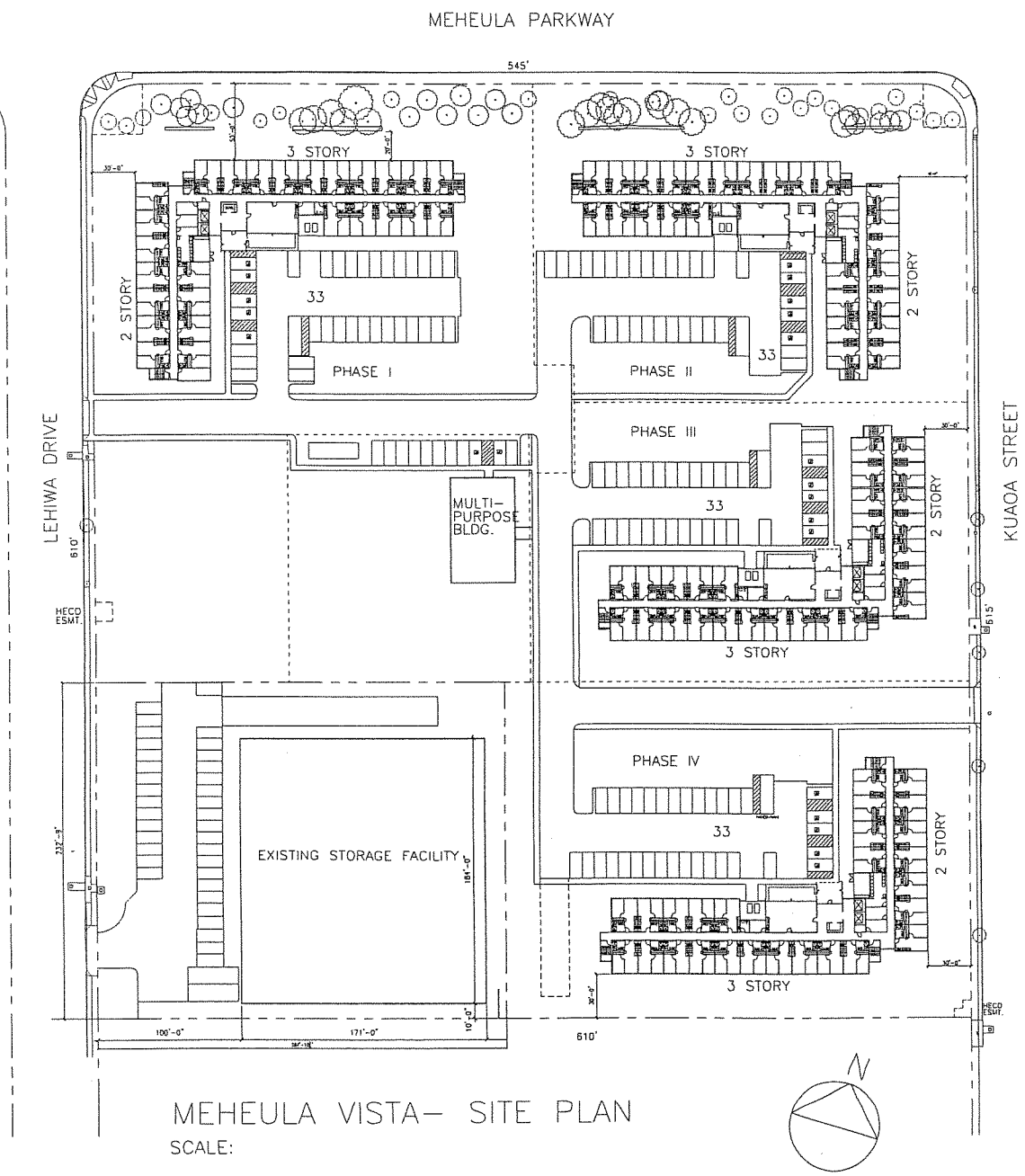
This Meheula Vista 201-H development will be located southeast of Meheula Parkway between Kuaoa Street and Lehiwa Drive on 7.5 acres of a B-2 Community Business District lot. The remaining portion of the lot, about 1.5 acres, contains a self storage facility. The project site is located next to a park site and adjacent to the park is Mililani Middle School. Mililani Elementary School is located nearby, further east on Meheula Parkway.

The applicant plans a senior affordable rental development with four buildings each with a two-story and three-story wing, to be constructed in four phases. Each building will contain 75 one-bedroom affordable senior rental apartment units, with 33 parking stalls. Phase I will also include a two-bedroom resident manager's unit. There will be a total of 301 apartment units and 132 parking stalls for these units. In addition, there will be a Multi-Purpose Building to support activities of the seniors and an additional 11 parking stalls. There will be a total of 143 parking stalls on the property.

The rentals will be available to seniors earning less than 60% of the median income.

The property is zoned B-2 Community Business District for commercial use with a 60-foot height limit. The proposed development will require exemptions, including an exemption from the Land Use Ordinance use table to allow multi-family dwellings on this B-2 Community Business zoned lot; an exemption from parking requirements, based on the lower rate of vehicle ownership for seniors and a rental declaration restricting tenants owning vehicles to just the number that can be accommodated by the tenant parking provided on-site; and an exemption to allow construction of a hollow tile wall that will be about 8 to 10 feet tall, about 2 to 4 feet over the allowable 6-foot height limit at new property lines to be created through a subdivision to create separate parcels for Meheula Vista and the existing self storage facility. The applicant will also be requesting exemption from certain application and infrastructure fees and deferral of water and sewer connection fees.


OFFSITE WORK PROJECTS
PHASE 1 (737 Acs.)
1 844 RESERVOIR #2
2 ENTRY LANDSCAPING
3 RAVINE PARK
4 DISTRICT PARK
7 PARK & RIDE DESIGN
8 ROADWAYS PH. 1
10 ROADWAYS PH. 3
11 ROADWAYS PH. 4
14 ROADWAYS PH. 7
16 H-2 SOUTHBOUND SIGNAL
17 H-2 NORTHBOUND RAMPS
19 REAL PROPERTY TAXES
PHASE 2 (477 Acs.)
21 KIPAPA DRAIN #2
22 WELLS 10, 11 & 12
23 1150 RESERVOIR #1
24 1150 RESERVOIR #2
25 H-2 SOUTHBOUND RAMPS
26 H-2 HOV LANES
29 ROADWAYS PH. 10
30 ROADWAYS PH. 11
31 ROADWAYS PH. 12
32 ROADWAYS PH. 13
PHASE 2 INCREMENT B (ZONED)
PHASE 2 INCREMENT A (ZONED)
ELEMENTARY SCHOOL 12.0 Ac.
MILILANI MIDDLE SCHOOL 15.0 Ac.
MF-109 WATER QUALITY BASIN
UNIT 123 WATER QUALITY BASIN
UNIT 123 WATER QUALITY BASIN NO. 1
UNIT 123 WATER QUALITY BASIN NO. 2
844 WTR. RESERVOIRS
844 WTR. SYSTEM 30" TRANSMISSION LINE
1150 WTR. SYSTEM
ELEC. LINE "A"
ELEC. LINE "B"
KIPAPA GULCH
GULCH
FUTURE CHURCH SITE
FIRE STATION
ELEM. SCHOOL
CHURCH SITE
PARK & RIDE
DISTRICT PARK
WAREHOUSE/FIELD OFFICE
PHASE 3 (ZONED)
H-2 FREEWAY
21" TRUNK SEWER
H-2 NORTHBOUND RAMPS
H-2 SOUTHBOUND RAMPS
H-2 SOUTHBOUND SIGNAL
REC CTR 5
KIPAPA DRAIN #1
NOTE : AREAS SHOWN ARE APPROXIMATE
MILILANI MAUKA
DEVELOPMENT PLAN
DECEMBER 2003



MEHEULA VISTA– SITE PLAN

SCALE:

UNIT COUNT & PARKING COUNT

SENIOR RENTAL

PHASE I
- 75–1BR UNITS
- 33 PARKING
- MULTI–PURPOSE BUILDING

PHASE II
- 75–1BR UNITS
- 33 PARKING

PHASE III
- 75–1BR UNITS
- 33 PARKING

PHASE IV
- 75–1BR UNITS
- 33 PARKING

TOTAL
- 300–1BR UNITS
- 132 PARKING STALLS

PROJECT DATA:

- TMK:1–9–5–02:32
- LOT AREA= 7.5 ACRES
- ZONE=B–2
- F.A.R.=2.5
- ALLOWABLE F.A.=18.75 ACRES
- OCCUPANCY GROUP= R–2
- TYPE OF CONSTRUCTION=VB

PROPOSED:

- FLOOR AREA(UNITS)=4x41,727.6 =166,910.4SF
- MULTI–PURPOSE BUILDING=3277SF
- TOTAL FLOOR AREA=170,187SF

- NO. OF UNITS= 301
  - 300 1BR UNITS
  - 1 2BR UNIT
- 15 ACCESSIBLE UNITS REQUIRED.
- 16 ACCESSIBLE UNITS PROVIDED.

PARKING CALCULATION:

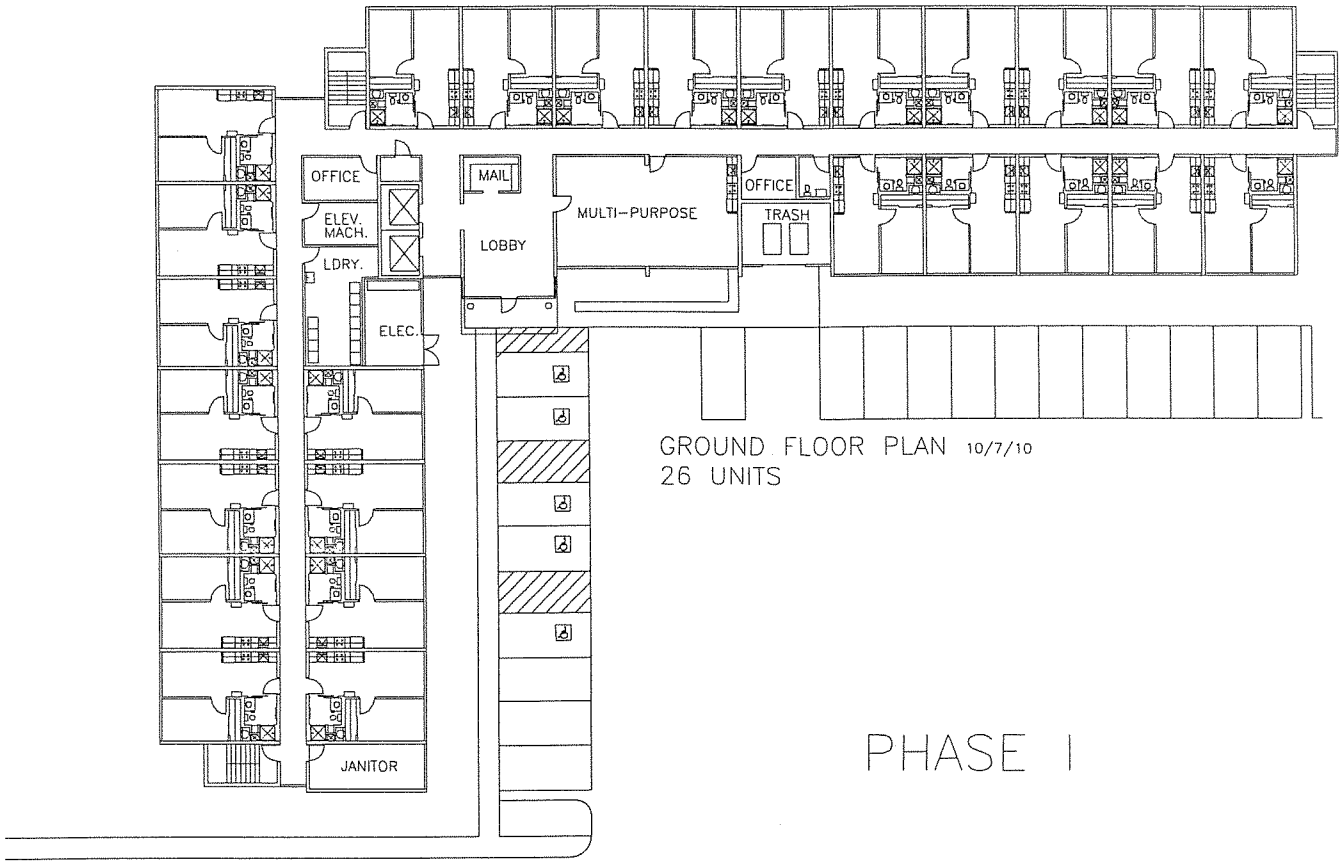
- REQUIRED=300X1=300
  - 1X1.5=1.5
- GUEST=301X.1=30
- TOTAL REQ'D=332
- PROVIDED=132

MULTI–PURPOSE BUILDING
- REQUIRED=3277/400=8
- PROVIDED=11

LOADING:
- REQUIRED=2 (1@12'X35'& 1@19'X8.5')
- PROVIDED=4@19'X8.5'

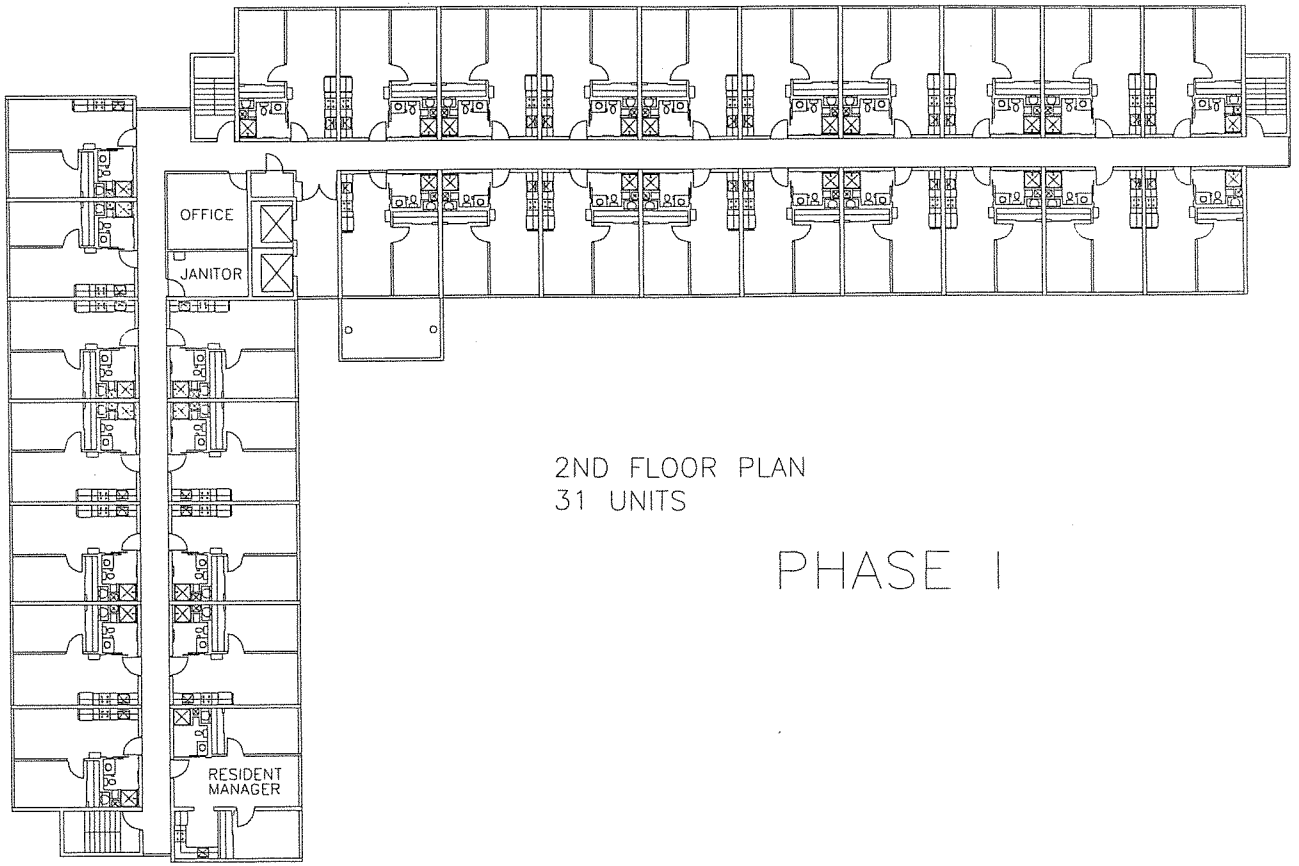
SCHEME–H

11/15/10



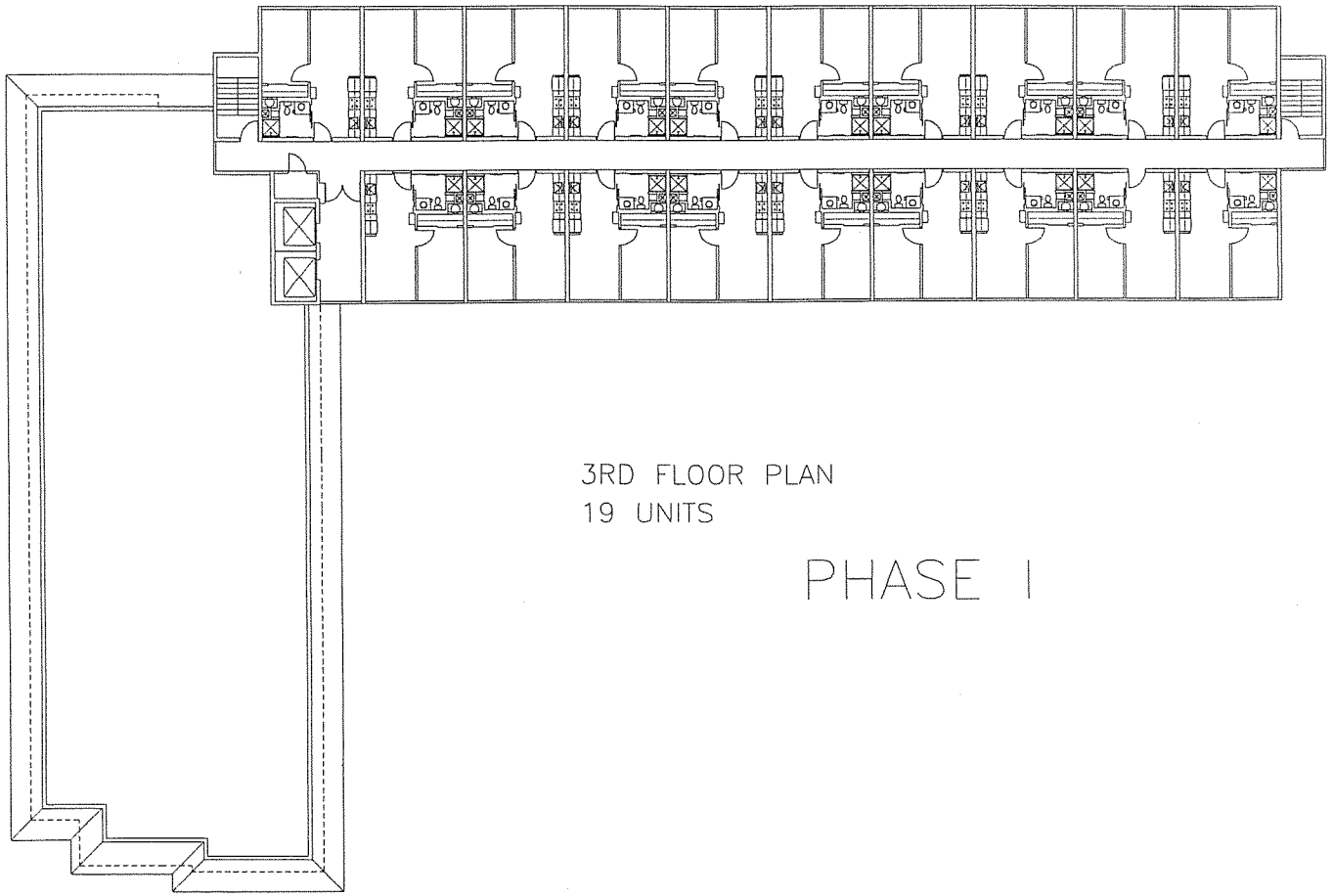
GROUND FLOOR PLAN 10/7/10
26 UNITS

PHASE I



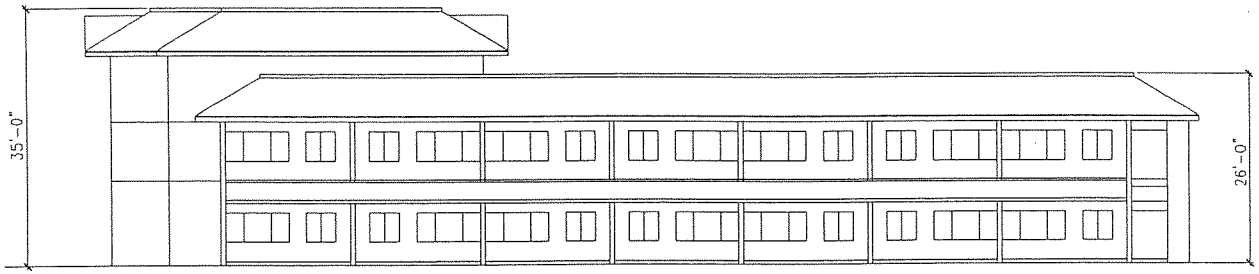
2ND FLOOR PLAN
31 UNITS

PHASE I



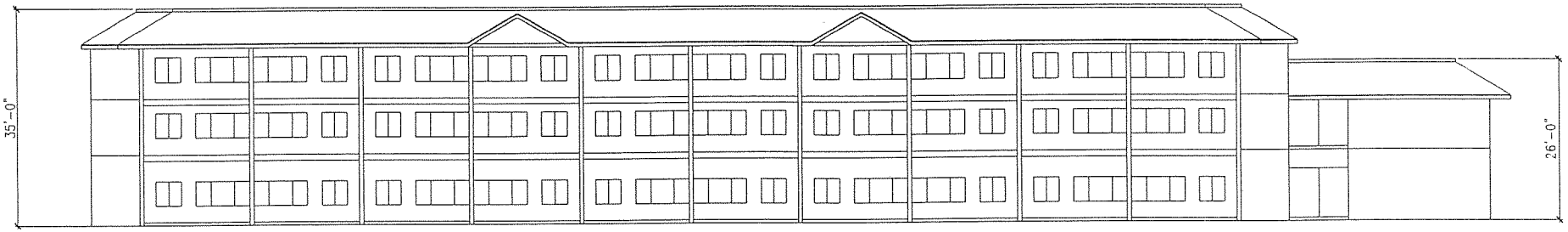
3RD FLOOR PLAN
19 UNITS

PHASE I



WEST ELEVATION

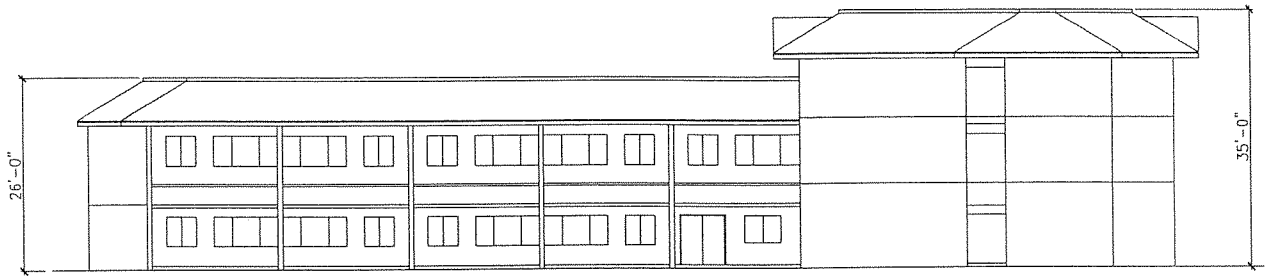
10/4/10



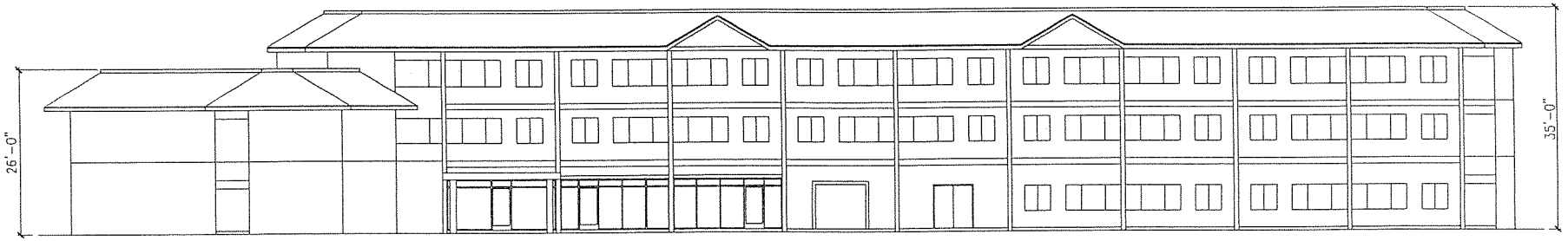
NORTH ELEVATION

10/4/10

PHASE I



EAST ELEVATION
10/4/10

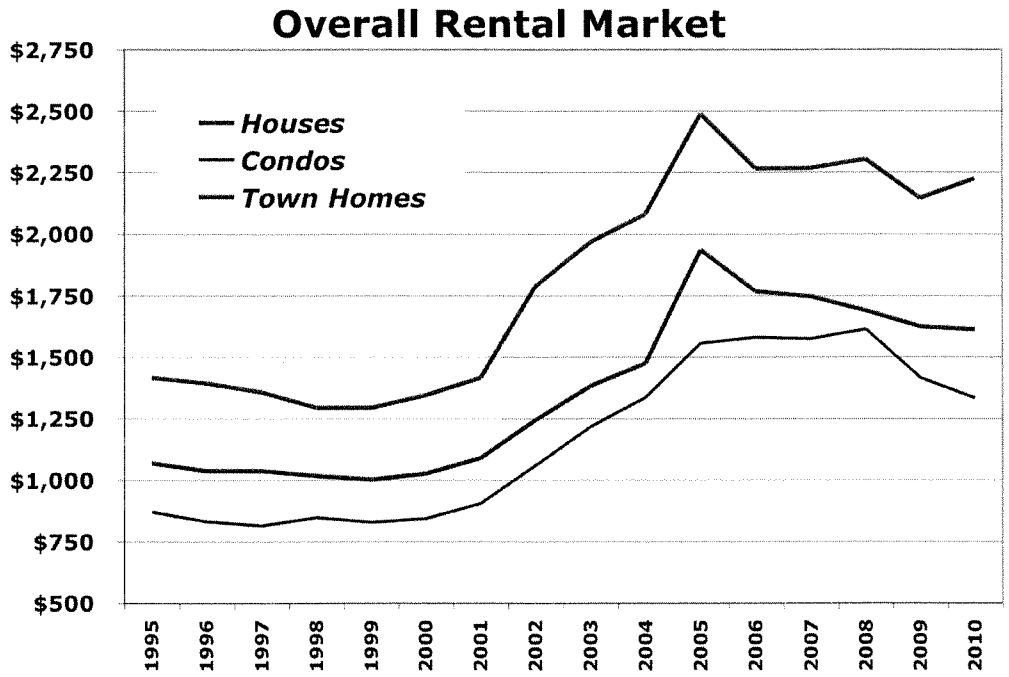


SOUTH ELEVATION
10/4/10

PHASE I

APPENDIX III
MARKET STUDY

THE AFFORDABLE ELDERLY RENTAL MARKET STUDY FOR MEHEULA VISTA



By Ricky Cassiday

Data@Work

A RESIDENTIAL MARKET RESEARCH CONSULTANCY
1029 Iiwi Street., Honolulu, Hawaii
(808) 291-4407
• rcassiday@me.com •

TABLE OF CONTENTS

I. INTRODUCTION OF RESEARCHER

The Data@Work, a market research firm that specializes in analyzing residential real estate markets for developers, has been asked to analyze the market for affordable housing rentals by seniors on the island of Oahu. This study focuses on the historical, current, and projected rental market conditions and trends to help forecast the absorption for the proposed project called Meheula Vista, located in Mililani Mauka, Central Oahu.

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. Rental information was collected from rental agencies, condominium resident managers, and the classified ads in the Sunday *Honolulu Advertiser*. Income and demographic information was obtained from the State of Hawaii, City and County of Honolulu, Bureau of the Census, Applied Geographic Systems and National Decision Systems.

The data and statements herein are based on independent research by Data@Work and are in no way contingent upon outside findings or recommendations. Data@Work focuses exclusively on residential market research in the state of Hawaii, servicing the developer, lending and landowning community with regular reports on the housing markets. Additionally, it conducts numerous feasibility studies, including the for-sale and for-rent affordable housing projects – to date, 24 on Oahu, 3 on the Big Island, 4 on Maui and 34 on Kauai.

II. PROJECT DESCRIPTION, LOCATION AND MARKET DEFINITION AND DESCRIPTION

OVERVIEW: The developer is proposing to build out the first of four increments of a 300 unit (1-bedroom/1-bath per unit) project. The first increment will be 75 units. The target population will be senior citizens, age 55+, who have incomes at or below 60% of the Area Median Income.

LOCATION: The site address is 95-1080 Lehiwa Drive in Mililani Mauka in the Mililani Mauka area, located off of the major road artery, Meheula Parkway (intersetion with Lehiwa Drive). At the far end of the of the

It is a vacant 7.5 acre property (Tax Map Key: 9-5-2: 32), sitting at about a 900 feet above sea level (in a very temperate climate, with panoramic views of the mountain ranges that created the island). On one side of the property is the Mililani Middle School, one of the newest and more advanced middle schools in the island.

The subject property is located on the Island of Oahu, in the state of Hawaii, within the Honolulu, HI MSA. Oahu is the third largest of the Hawaiian Islands and the most populous island in the state. Oahu has a total land area of 896.7 square miles. The City and County of Honolulu are consolidated and it is the only incorporated city in the state of Hawaii.

The subject property is part of the Mililani community in central Oahu, residing on the slopes of the Koolau mountain range. The community is a master planned development built by Castle and Cooke Homes on former sugar and pineapple lands over the past 40 years. It has been recognized both locally and nationally as a particularly well designed and livable community. It is one of the last undeveloped pieces of land in that community

PROJECT: The current plan for Meheula Vista is to provide 3-story and 2-story buildings, with a total of 300 one bedroom affordable apartments and 130 parking stalls, broken out into four phases of 75 units each.

Rents will be restricted to senior tenants age 55 and over earning 60 percent of the AMI or below. The project's units will be approximately 432 sq ft, and amenities will include carpeting, blinds, refrigerator, stove, garbage disposal, individually controlled heating and cooling, and a balcony/patio. The project will offer a multipurpose building in the center of the parcel, plus each apartment building will have a common community multi-purpose room. There will be on-site management, a fitness center and laundry facilities.

The project's proposed unit mix is detailed in the following table.

MEHEULA VISTA PROJECT UNIT BREAKDOWN

Phase 1 Units	Total Units	Bedroom Count	Square Footage
75	300	1	432

As seen, any resident applying for a unit can have incomes up to 60% AMI. In addition, rents for studios and one bedroom (some units) have been set lower than the 60% AMI maximum rent.

DEFINITION OF MARKET: For the purpose of this study, it is necessary to define the market area, or the area from which potential tenants for the project are likely to be drawn.

In some areas, residents are very much "neighborhood oriented" and are generally very reluctant to move from the area where they have grown up. In other areas, residents are much more mobile and will relocate to a completely new area, especially if there is an attraction such as affordable housing at below market rents.

We define the market area geographically as being island-wide. We are comfortable with this definition as being neither overly liberal nor overly conservative.

On the liberal side, some may say that the target market for condominium rental units should be located in a closer proximity to the actual site. This may be so, but only for very few households.

The facts that support this definition of market area are:

- That the entire island's population is within a 20-mile radius (and over 90% is within a 10 mile one).
- That the clear and present rental (as well as owner-occupied) housing shortage on the island, translating to a growing need for rental housing at an affordable level (something the open market is not providing).

Thus, we posit that the need for an attractive and updated unit at an advantageous rental price is so great as to overwhelm the objections of moving 10 miles (maximum) for 99% of the qualifying households.

On the conservative side, we ignore those households outside the island or the state who could readily move to Oahu in order to rent such a unit. Indeed, there are significant housing shortages on Maui and Kauai, and a low-income household there could well decide to move to Oahu, where the cost of living is 10%-20% lower and the medical (and other) facilities are more extensive and available.

DESCRIPTION OF MARKET: The study guidelines call for an analysis of household sizes and types in the market.

As seen below, most of Oahu's condominium housing stock is quite old:

- 17% of the total condo housing stock was built before 1970
- 46% of it was built between 1970-1979,
- 18% was built between 1980-1989, and,
- 15% was built between 1990-1999.

Furthermore, most of Oahu's condominium housing stock is quite small:

- 13% of all condominium units on Oahu are between 1,250 and 1,500 sq. ft.,
- 7% of all units are between 1,500 and 1,750 sq. ft.,
- 3% of all units are between 1,750 and 2,000 sq. ft., and
- 1% of all units are over 2,000 sq. ft.

The rest of the condo stock averages less than 1,250 sq. ft. in size.

What this says is that the project is entering a market characterized by older units, units that are small in size, and units that are not very highly valued.

III. ECONOMIC OVERVIEW

SUMMARY: The unemployment rate has increased in Honolulu County and the state of Hawaii since 2007, a direct result of the national recession. The largest employment sectors in the area can be attributed to Hawaii's large tourism industry and the large public sector, which can be attributed to Hickam Air Force Base and Peal Harbor Naval Station. visitor spending is contingent on the health of those economies in areas where visitors reside, mainly the West Coast, the rest of the US and Japan.

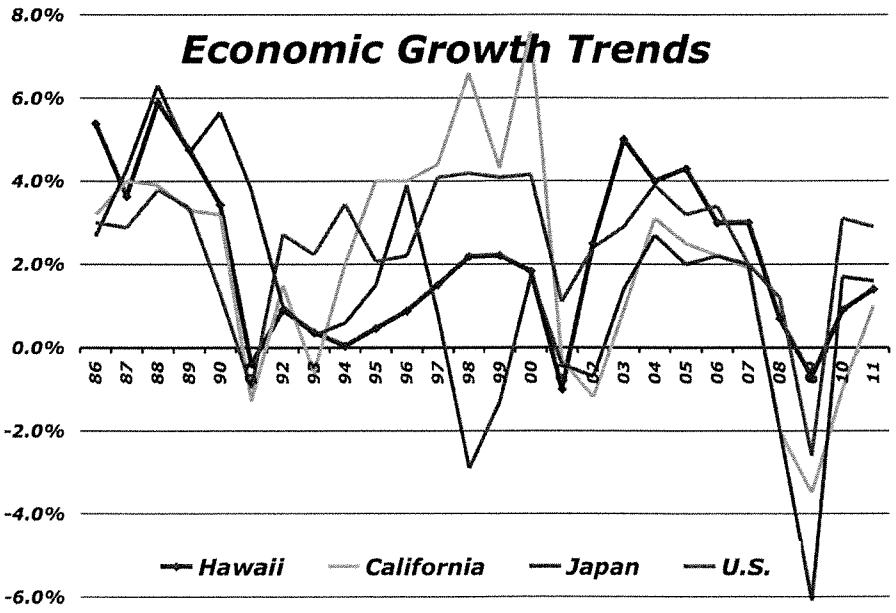
Of late, these forecasters have become more conservative for next year.

***The Economist* poll of forecasters, October averages** (previous month's, if changed)

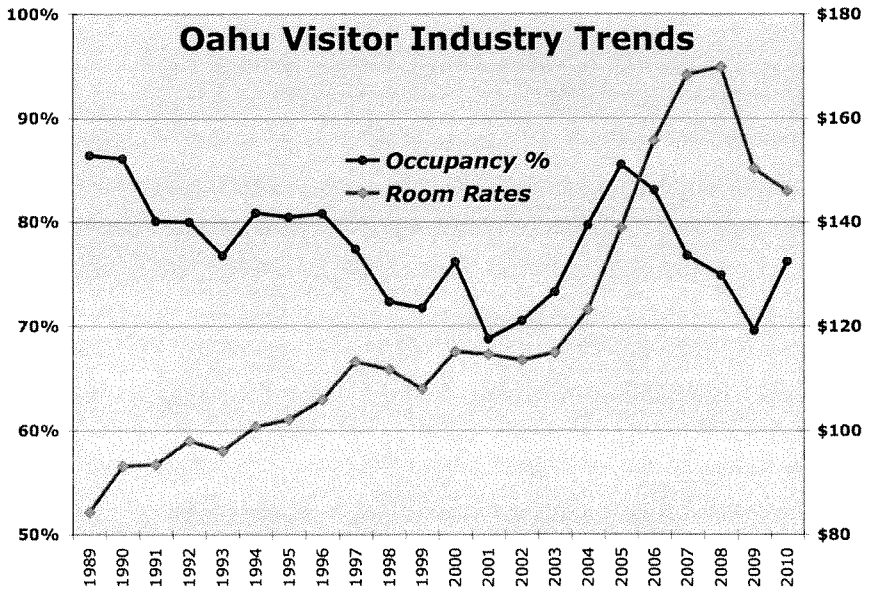
	Real GDP, % change Low/high range		Real GDP, % change average		Consumer prices % change		Current account % of GDP	
	2010	2011	2010	2011	2010	2011	2010	2011
Australia	2.2/3.5	2.6/4.1	3.1	3.3	2.8 (2.9)	3.0	-2.6 (-3.9)	-2.7 (-3.7)
Belgium	1.1/2.1	1.0/2.0	1.7 (1.4)	1.5 (1.4)	2.0 (1.9)	1.9 (1.8)	0.3 (0.1)	0.5 (0.7)
Britain	0.3/1.7	0.6/2.5	1.5	1.8 (1.9)	3.0	2.7 (2.6)	-1.7 (-1.6)	-1.1 (-0.8)
Canada	2.6/3.3	2.1/3.2	3.0 (3.2)	2.6 (2.7)	1.7 (1.8)	1.9 (2.0)	-2.5 (-2.2)	-1.9 (-2.2)
France	1.4/1.7	1.1/1.9	1.6 (1.5)	1.4	1.7	1.5	-2.0	-1.8 (-1.9)
Germany	2.9/3.4	1.1/2.4	3.3 (3.0)	1.9	1.1 (1.0)	1.3	5.2	5.5
Italy	0.9/1.2	0.5/1.6	1.0	1.0	1.6 (1.5)	1.7 (1.6)	-3.0 (-2.8)	-2.7 (-2.6)
Japan	2.6/3.2	0.1/2.5	2.9 (2.8)	1.2 (1.4)	-0.9 (-0.8)	-0.3 (-0.2)	3.3 (3.4)	3.3 (3.5)
Netherlands	1.0/2.4	1.0/1.9	1.8 (1.7)	1.5	1.2	1.4	6.1 (5.8)	6.0 (5.7)
Spain	-0.5/0.1	-0.3/1.0	-0.3	0.4	1.6	1.4	-4.6 (-4.2)	-3.4 (-3.0)
Sweden	3.0/4.6	2.2/3.4	4.0 (3.5)	2.8 (2.7)	1.2 (1.3)	1.9 (2.0)	6.6 (6.8)	6.9 (6.7)
Switzerland	2.0/3.0	1.4/2.2	2.7 (2.3)	1.9	0.8 (0.9)	0.9 (1.0)	10.7 (8.9)	10.5 (8.9)
United States	2.2/2.8	1.5/3.1	2.6 (2.7)	2.4	1.6	1.5	-3.3 (-3.2)	-3.2 (-3.4)
Euro area	0.6/1.7	0.8/1.9	1.5	1.3	1.5	1.5 (1.6)	-0.5 (-0.3)	-0.1 (0.0)

Sources: BNP Paribas, Citigroup, Commerzbank, Decision Economics, Deutsche Bank, Economist Intelligence Unit, Goldman Sachs, HSBC Securities, ING, JPMorgan Chase, KBC Bank, Morgan Stanley, RBC, RBS, Schroders, Scotiabank, Société Générale, UBS

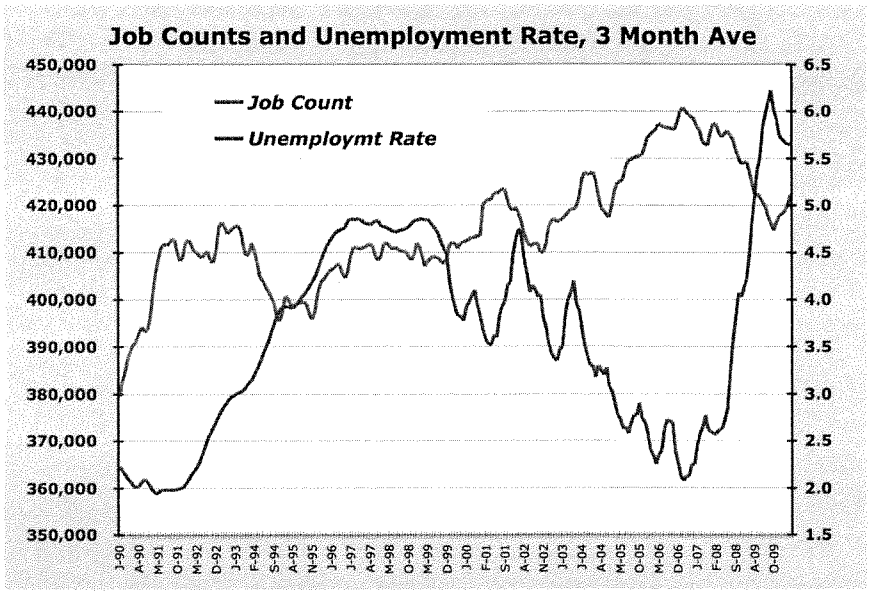
As reflected in the latest poll of economic forecasters, we are seeing a return to economic stability and growth in those particular economies that send Hawaii visitors (Japan, Australia, Canada, US), as well as a forecast for continued improvement.



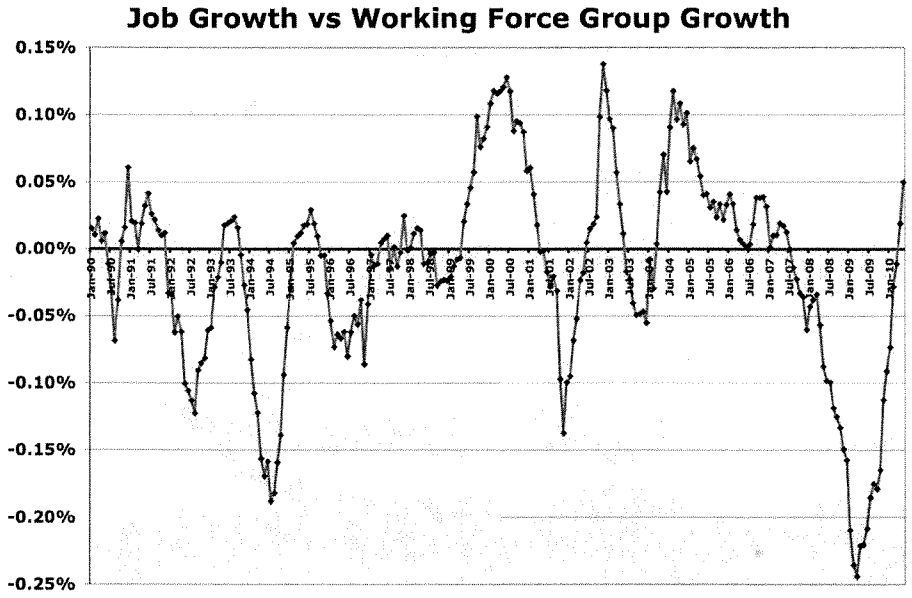
Statewide, hotel occupancy averaged 75%, a 6.3% increase over last year. Better, the daily room rate rose by 1.8% for August. The summer ended on a strong note, and as occupancy rises, so will the impetus for hiring return. Budget hotels achieved the highest occupancies for the season, thanks to US West Coast and Canadian visitors.



Indeed, these trends are already driving a small growth in job counts and the fall in the unemployment rates.



Another sign of job stabilization is the latest employment figures, showing that Honolulu has the 13th strongest job market in the country (as measured by the lowest unemployment rate).

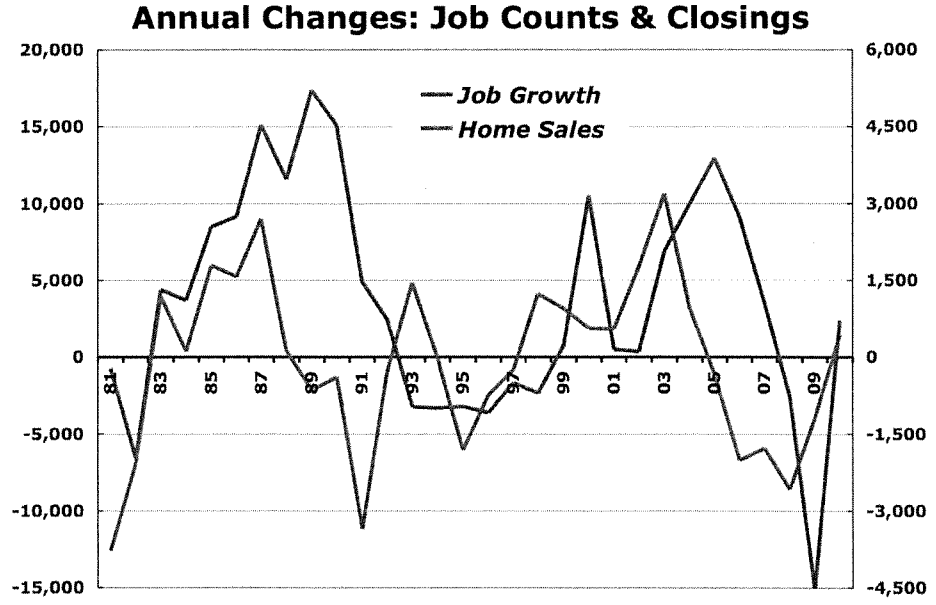


Lastly, the balance between job growth and working force (new entrants into the job market, i.e., those needing jobs) has rebounded strongly on Oahu, thanks to a strong service sector and federal (defense) spending.

In addition to activity in the job market, we take a look at, residential sales, as it is a leading indicator for job growth. As seen in the chart below, it's showing the job losses are over.

Sources: DBEDT, Honolulu Board of Realtors (HBR)

The chart on the next page shows the annual changes much more clearly.



In sum, there is a long way to go before strong economic health. As the downturn was dramatic, we expect the recovery will be gradual. Economic growth in the form of corporate earnings and consumer spending (albeit weak) is resuming, but constrained State and local fiscal conditions and muted U.S. job growth will keep the brakes on economic activity.

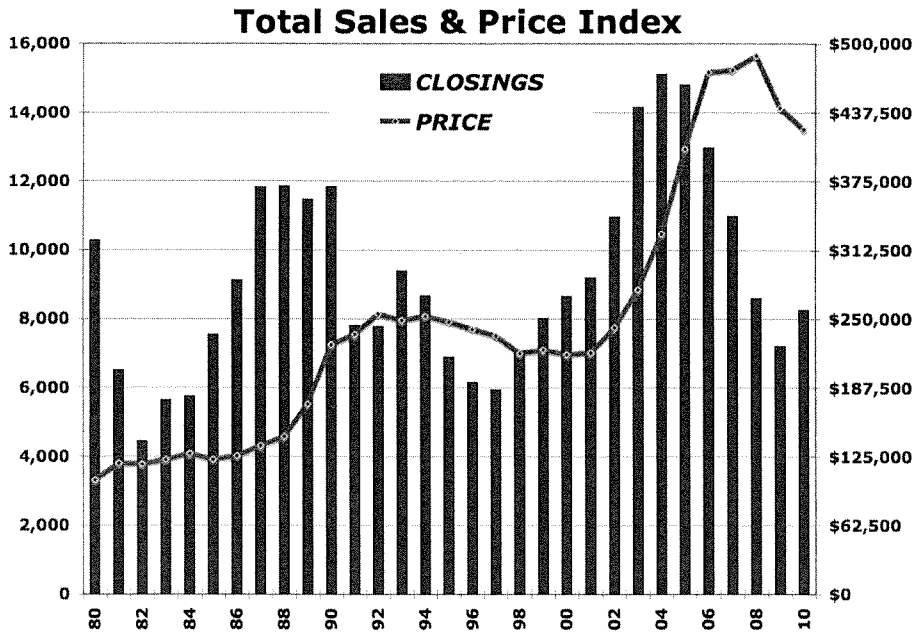
As with the economy, particularly job and income growth, so goes the residential real estate market. Thus, we foresee a slow real estate market, especially primary housing, in the near future. With mortgage financing troubled, thus few households qualifying for home ownership, we are thinking there might be a shift OUT of home ownership and into the rental housing market (a cascading process: as job losses lead to foreclosures, which in turn push lower the prices of houses, which in turn hurt housing values in the area). The effect of this can be seen in the following chapter on for-sale housing.

IV. HOUSING DEMAND AND SUPPLY OVERVIEW

OVERALL HOUSING MARKET: Within the context of the US residential housing market, that of the city and county of Honolulu can be characterized as one of the more volatile markets (akin to San Francisco). This is due to a very constrained supply of land and large amounts of internal and external demand. The defining characteristic (and comparative advantage) of this economy is quality of life, with the outgrowth of that being the sizable and efficient tourism industry, as well as a healthy housing and rental market.

Currently, as seen in the chart below, the residential market (total sales, which combines resales and developer sales of attached and detached housing) is well into the down phase of the cycle. Until the first four months of 2010, sales volume dramatically down, 109% (by contrast, the last cycle, peak to trough, fell 99.7%). That said, activity, YTD 2010 is up around 14%.

Similarly, prices are off YTD 4.4% and 15% from the peak in 2008. Note: this long lag period was due to a number high-end high-rises closing that year (they had commenced in 2006). The last cycle's fall-off, peak to trough, was 17%.



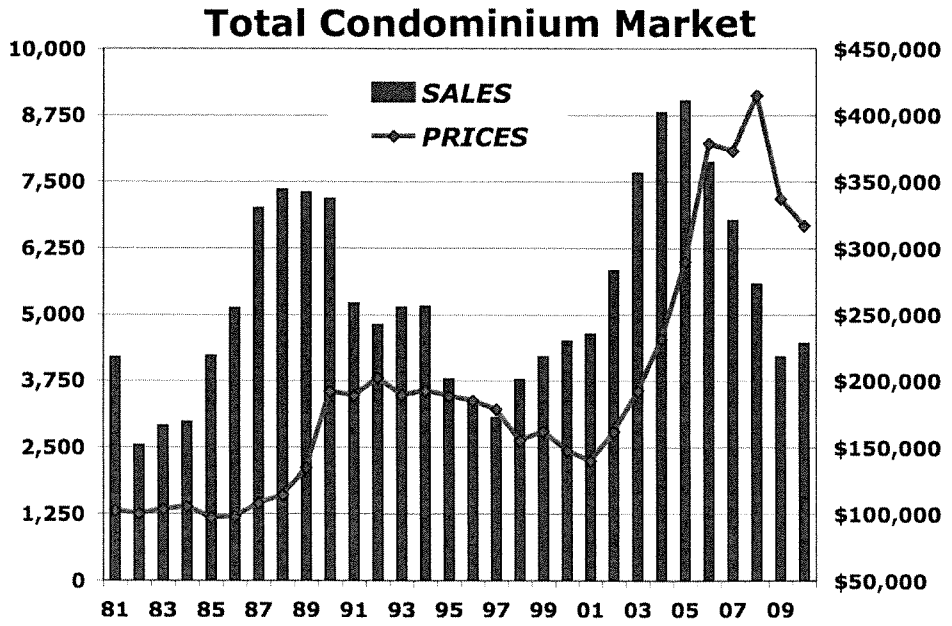
Looking ahead, it looks like total sales activity will continue to rebound, albeit slightly. At the same time, prices will begin to feel some support building underneath them, as job growth sets in, followed in the coming 10-16 months by wage increases. But they should stay flat. Some of the flat price trend is due to little or no sales activity coming from new homes closings, followed by the closings of just affordable units (no market projects).

Balancing this off will be the arrival of moderate inflation (in our opinion).

CONDOMINIUM MARKET: Turning to the condominium market (as these are the units directly comparable to the subject property), this market is also at the bottom of the cycle for sales activity and near the bottom for price levels. The total market, comprising both resales and developer sales, looks to close about 4,400 units this year, up over 4% from last year but down 109% the 2005 peak of 8,820 units. The last cycle saw a peak to trough fall of over 140%.

Prices, on the other hand, have fallen back more drastically, down 31% since the high two years ago (note: they fell 45% over the last cycle). Looking just at the resale market (which is a lot more stable, uninfluenced by the new condo sales, which has a large high-end component), prices since the peak two years ago have fallen a total of 7%.

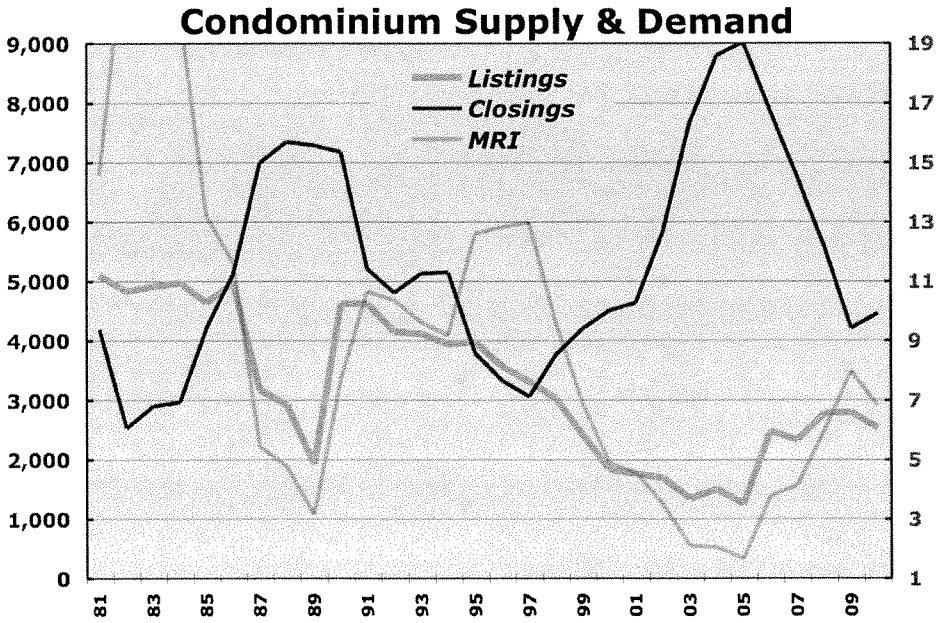
Relative to the last market cycle, 1992-2000, when prices fell by over 54%, it looks like this market could see more price declines ahead. But, mentioned earlier, we think there will be an overall effort by the US Federal Reserve to reflate the economy, and the rising interest rate will push up housing prices - all of which will balance this off.



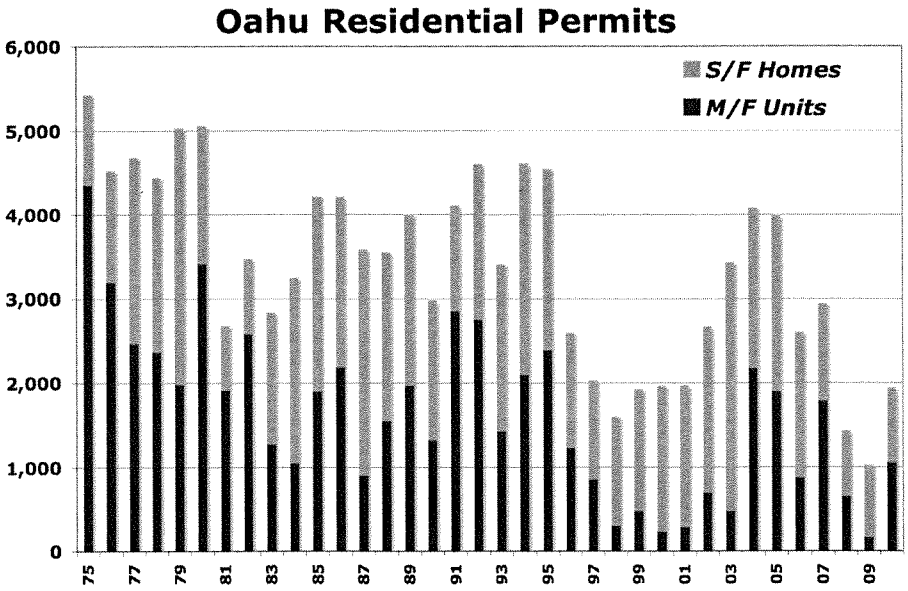
Looking ahead, we expect that sales will stay at or around this level for the next 1 to 3 years before starting to climb. We expect prices to do the same, albeit after a lag period of an additional 1 to 2 years.

In terms of looking ahead, we are watching the imbalance between supply (listings) and demand (closings). As seen in the chart below, there were fewer closings at the peak and more listings at the trough in the last market cycle than this one. We can see this in the red line for months of remaining inventory (MRI, which is the sales divided by listings, or supply relative to demand).

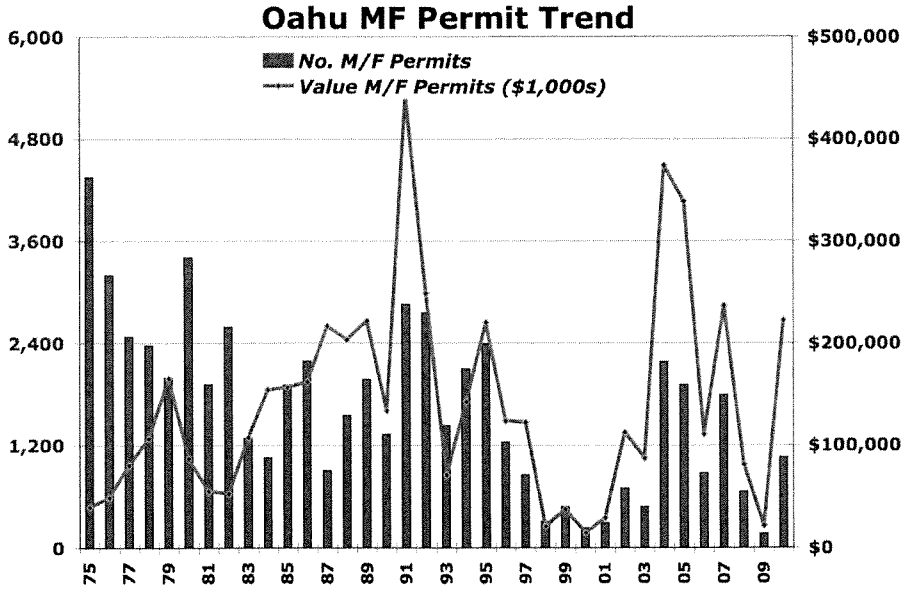
Currently, the trend lines appear to be at their inflection point. If so, then the condominium market will begin to make a transition from a buyer's to a seller's market. If so, then housing supply in terms of resale listings will tighten and housing prices will once again begin to rise.



In terms of housing supply from developers, the current situation of lower sales and falling prices, does little to stimulate the production of new homes. As seen from the chart below, residential permitting activity is at an all-time low this year (data is through 1Q 2010) and last.



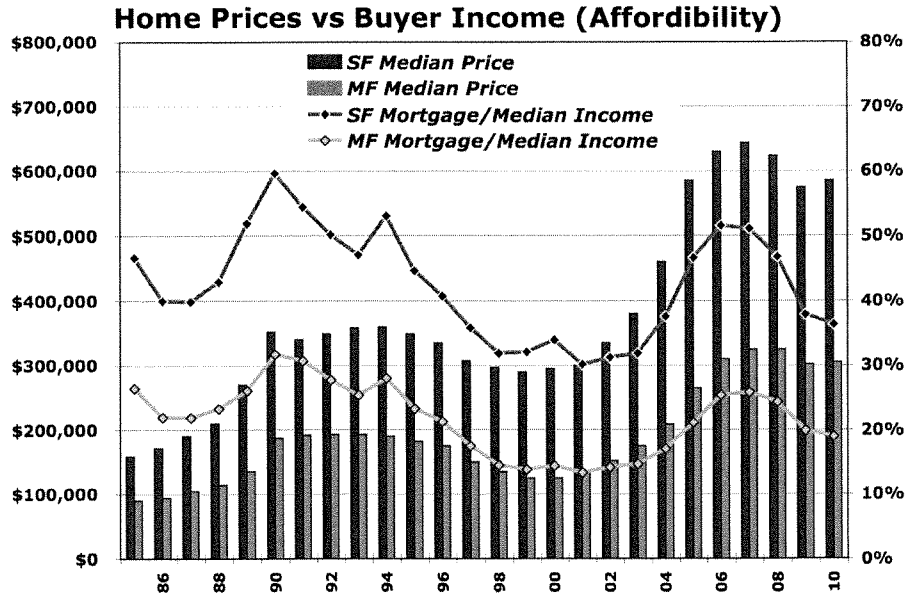
Looking into the multifamily permit data more closely, we include the price of the permit, which gives us the projected price per permit.



As seen in the chart, the prices per unit are way down from their highs in 2003. Obviously, most of those permits went to housing for the mid and upper income levels. Indeed, most housing over the last 35 years was targeted on that market.

In sum, with fewer homes being built, the potential for another significant shortage of housing is getting worse, particularly at the lower-income segments. The wave of foreclosures and other home sales brought on by economic hardship has helped moderate the current shortage, but it is not a long-term solution.

However, it is supporting the rental market, to a certain, small extent. As foreclosures, etc. move



families out of one type of housing, they have to migrate into another, usually a lesser, quality of home (including home rental, room rental, temporary shelter, homelessness, etc.).

In conjunction with fewer homes being built, the affordability of those remaining homes is beginning to lessen. A combination of rising prices and rising mortgage rates will make it harder and harder to afford a median priced home or condo with only a median income (as seen in the chart on Affordability).

In sum, with fewer homes being built, the potential for another significant shortage of housing is getting worse, particularly at the lower-income segments. The wave of foreclosures and other home sales brought on by economic hardship has helped moderate the current shortage, but it is not a long-term solution.

However, it is supporting the rental market, to a certain, small extent. As foreclosures, etc. move families out of one type of housing, they have to migrate into another, usually a lesser, quality of home (including home rental, room rental, temporary shelter, homelessness, etc.).

V. OVERVIEW OF RENTAL MARKET

The market this project is targeting would be individuals and families living on Oahu who are making at or less than 60% of median income. The trends in the local market easily mirror those nationally.

From a recent HUD study on Rental Housing released this January (called: HUD PD&R WORKING PAPER 10-01, called U.S. Rental Housing Characteristics: Supply, Vacancy, and Affordability by Rob Collinson and Ben Winter) this market was characterized as being tight and tightening. We quote liberally from their summary:

Vacancy Rates

- *Though vacancy rates are rising nationally, the additional supply has mainly been higher-priced units. From the second quarter of 2008 to 2009, the percentage of vacant rental units with rents of $1,500 or more have climbed from 7.6 percent to 9.3 percent. The share of vacant units with rents below $400 fell from 10.8 percent to 9.3 percent over the same span.*

- *Conditions in the nation's assisted housing stock have been considerably tighter than the overall rental market in recent years. Vacancy rates in project-based Section 8 developments have not exceeded 5 percent. Public housing vacancies fell 2 percentage points from 2006 to 2008.*

- *Proprietary data from the portfolios of six private and two nonprofit investors indicate that properties receiving the Low Income Housing Tax Credit (LIHTC) have considerably lower vacancy rates than the nation's overall rental market from 2005 to 2009.*

Rental Supply

- *From 1995-2005, two rental units were permanently removed from supply for every three produced. Over this same time period, the nation permanently lost 1.5 million low-cost rental units.*

- *From 2001 to 2007 the nation's affordable unassisted rental housing stock decreased by 6.3%, while the high-rent rental housing stock increased 94.3%. This translates into a loss of more than 1.2 million affordable unassisted rental units from 2001 to 2007.*

Rental Affordability

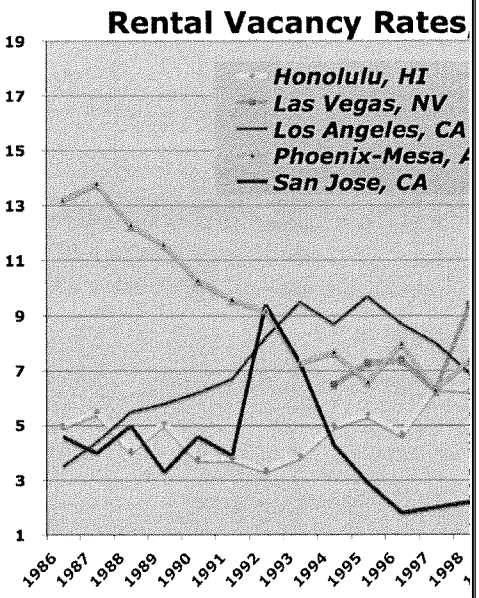
- *Based on estimates from the 2008 American Community Survey, 8.7 million renter households paid 50% or more of their income on housing, up from 8.3 million renter households in 2007 and 6.2 million in 2000.*

- *For many metropolitan areas, the proportion of rent burdened households remains high. This fraction has increased or changed little from 2005 to 2008 across a wide cross-section of metropolitan areas, including Phoenix, Tampa, Los Angeles, San Francisco, and Seattle.*

- *The continued rise in foreclosures and worsening economic circumstances may have caused some household consolidation or "doubling up." Data show a 25.3 percent increase from 2005 to 2009 in the percentage of movers joining an existing household, with 12.6 and 2.6 percent the year-over-year changes from 2007 to 2008 and from 2008 to 2009, respectively.*

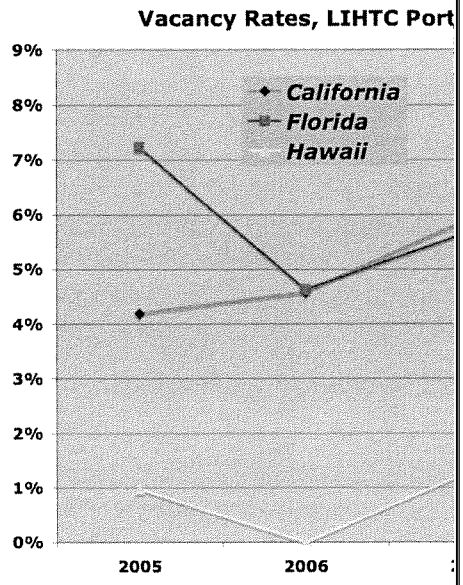
The following chart on median rental rates nationally is drawn from the author's data.

As seen, the West region leads the country (ar
leader in the west region) in terms of rental rates.



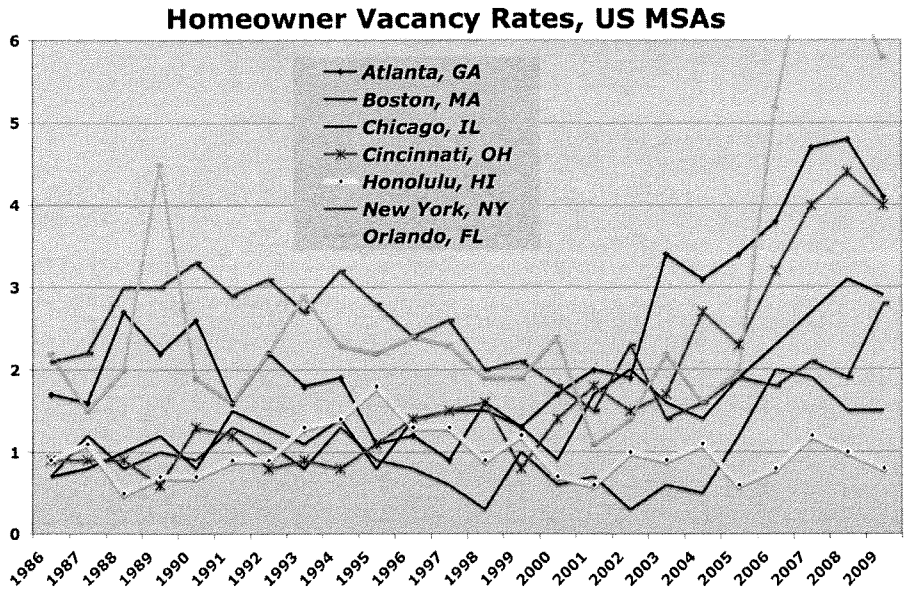
The next chart is also drawn from their data (and r
compares recent trends in vacancy rates by states
represent large markets.

Finally, the following puts the Hawaii rental marke
of the tightest in the country (as seen in the follow



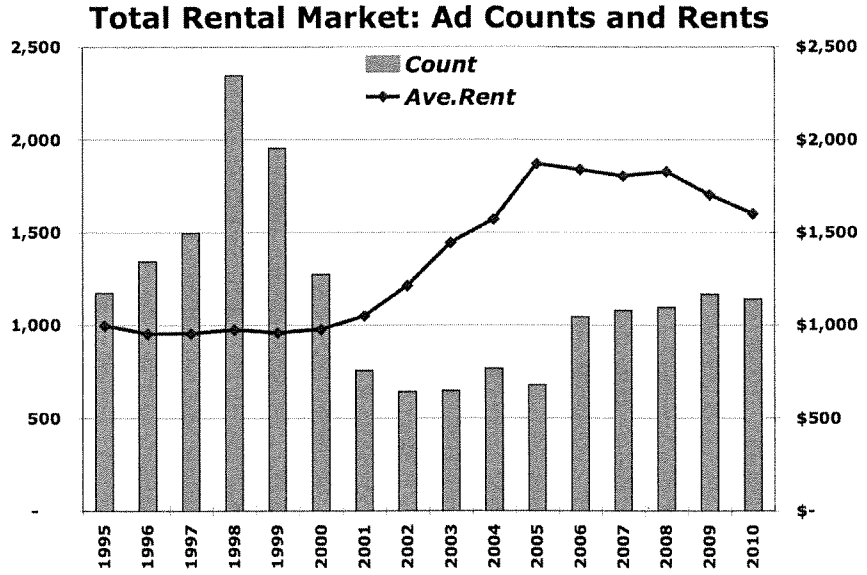
Rental Market - ABC News Report (Feb 22, 2010): Las Vegas edged Detroit for the title of America's most abandoned city. The rankings, a combination of rental and homeowner vacancy rates for the 75 largest metropolitan statistical areas in the country, are based on fourth-quarter data released Feb. 3 by the Census Bureau. Each was ranked on rental vacancies and housing vacancies; the final ranking is an average of the two.

Cities like Detroit and Dayton are casualties of America's lengthy industrial decline. Others, like Las Vegas and Orlando, are victims of the recent housing bust. Boston and New York are among the lone bright spots, while Honolulu is the nation's best with a vacancy rate of 5.8 percent for homes and a scant 0.5 percent for rentals.

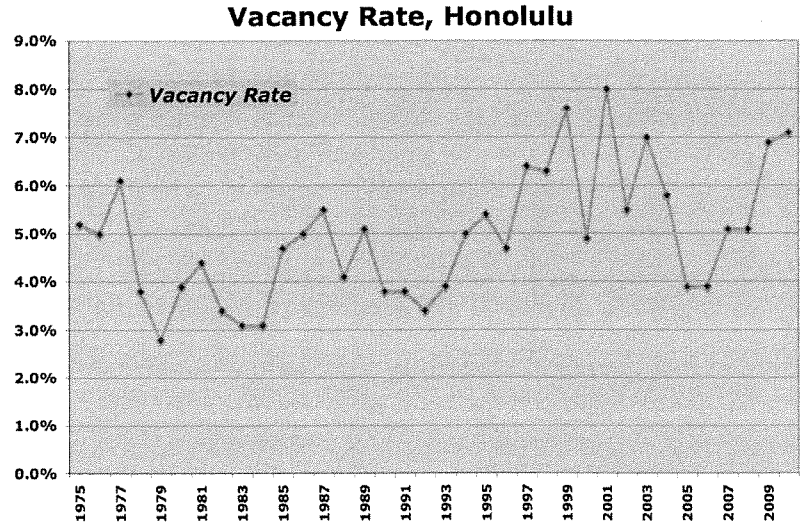


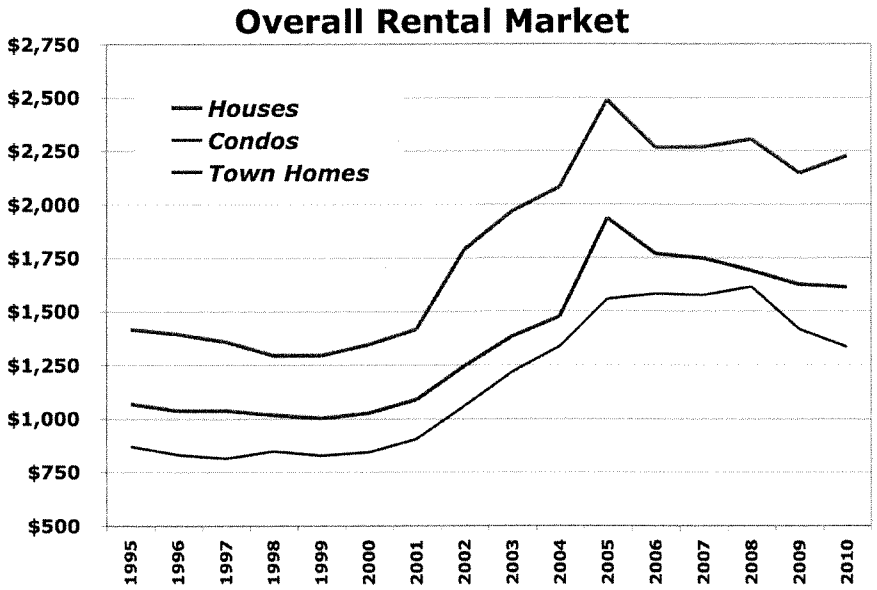
VI. TARGET RENTAL MARKET

OVERALL: Turning from the national rental housing market, this section looks at the local rental housing market. We begin by looking at the overall market's rental rates for all rental units on Oahu. The data for this is drawn from the classified advertisements of the largest daily newspaper, the Honolulu Advertiser. All listings have been downloaded into a database, and then used to create the following chart.



As seen, the current economic downturn has resulted in falling rental rates and higher rental listings. This coincides with a rising trend in the rate of vacancy for Honolulu.

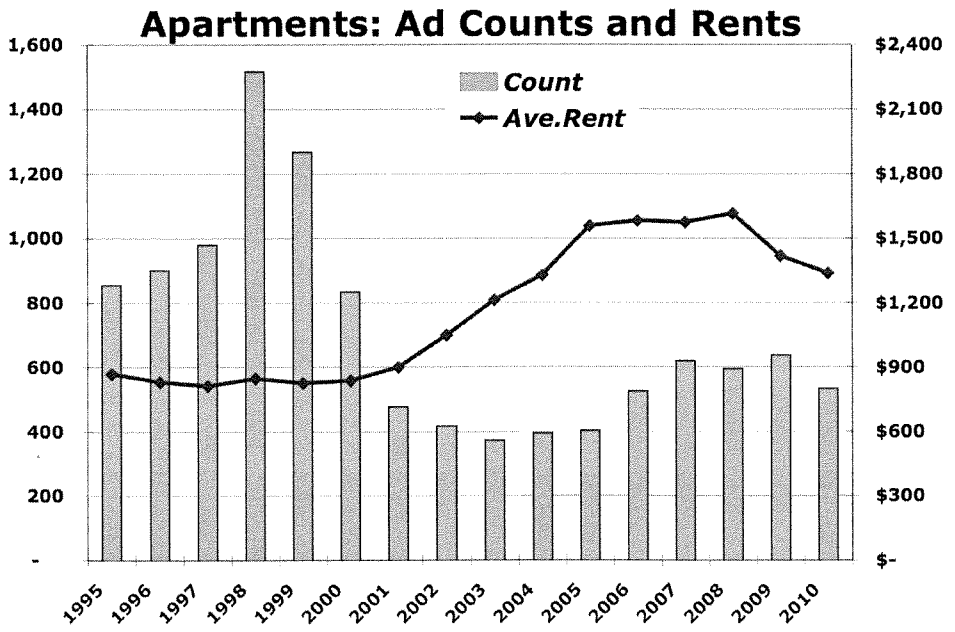




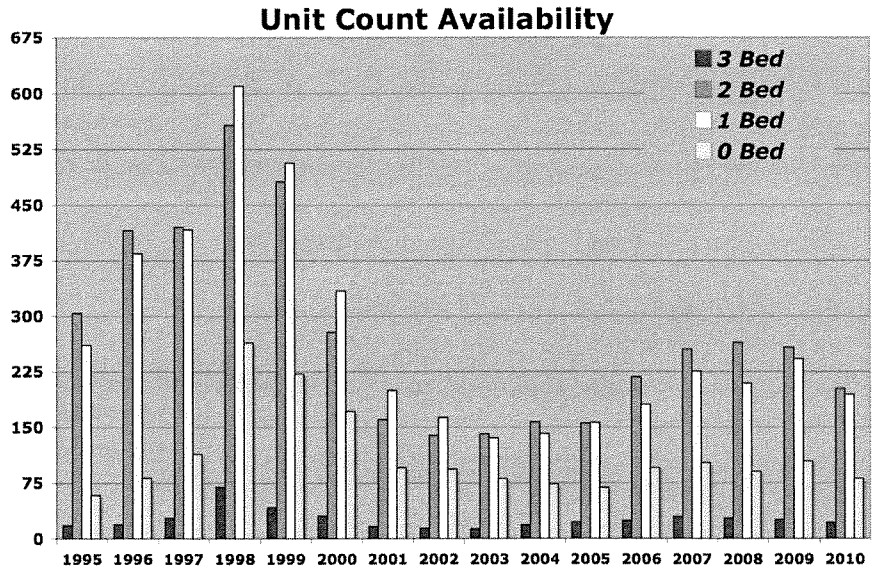
Given higher vacancies, the trend in rents is down. Per the chart above showing the average rental rates by housing types, the condo market looks to be the least volatile, and lowest cost, of all. This is most likely due to the fact that, as families cut their housing budget (or lose their home in foreclosure), they move into condos.

CONDO MARKET:

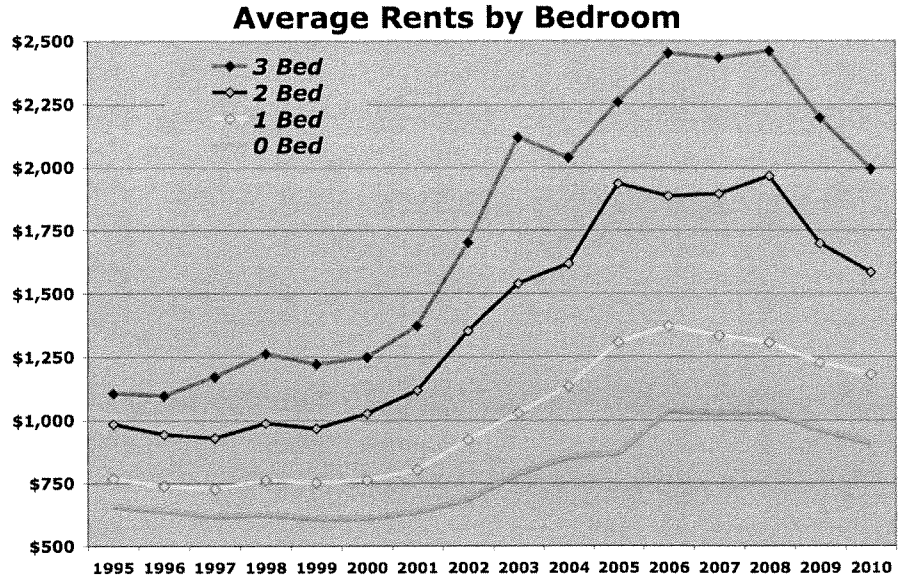
Turning now to the condo market, we see a rising trend in rental ads (except for 2010, up to March) and a falling one in rental rates.



Looking into the market for the individual bedrooms, the following charts shows that the three bedroom units and studios have about the same number of available units, while the two and one bedroom units have fewer availables (connoting tightness in the market).



Next, we look at the trend in the monthly rental rates. They peaked in 2008 and have been falling ever since. In these last two years, the 2 and the 3 bedroom units have given up the most, falling by around 20%, while the studio and 1 bedroom units are steady (note: some of this fall is due to an influx of supply into the market, with the completion of condo projects whose owners put the units onto the market for cash flow).



VII. DEMOGRAPHIC ANALYSIS OF TARGET MARKET

NATIONALLY: The market for senior housing is looking ahead to a time in which current strong supply and weak demand will switch roles. This is per a study called Housing America's Seniors, published by the Joint Center for Housing Studies (JCHS) of Harvard University in 2000. Currently, one in eight Americans is a senior citizen – this can be compared with only one in 25 110 years ago. By 2030, when most baby boomers will have retired, this ratio will have increased to one in five. Another JCHS brings attention to the fact that the ratio of working Americans to retired Americans will also be changing, from %:1 currently to 2:1 in forty years.

The overwhelming preference for seniors is to "age in place" as documented in the AARP Aging Indicators Study, 2005. The survey of people 50 and older found that 89 percent prefer to remain in their current home as long as possible. Older seniors are more likely than younger seniors to want to remain in place. Reasons for this vary, including a desire to be independent (25 percent); convenient location (24 percent); affordable home (23 percent); and familiarity and comfort of home (18 percent). Senior homeowners tend to live in older homes than senior renters. The median year built for owner-occupied homes for seniors is 1967 compared to 1973 for renters.

LOCALLY: The market area we define as the Island of Oahu, otherwise known as the City & County of Honolulu. We do this because, in general, people living under budget constraints on a small island select goods and services that are affordable and proximate. In the case of selecting affordable housing, it is our assumption that the whole of the island is proximate to those living on it, save for the more distant areas serviced by only one road in and out (Mokulea, Makaha). This is not the case in the subject community, which is more centrally located geographically than 90% of the island. This is cannot be said of the location in terms of employment or commercial activity, an attribute more suitable to downtown Honolulu or Kapolei. But inasmuch as the target market is seniors at or past retirement age, there is no particular need for this community to live at or near the hub of the economy (Waikiki, Pearl Harbor, Mapunapuna).

According to the latest US Census projection, the population of the City and County of Honolulu hit 910,464 people last year, and will continue growing at 0.6% per annum through 2013. Further, households stood at about 305,501 in 2008 and were growing by about 1,400 households a year.

HONOLULU POPULATION GROWTH

	Population	Change	% Change
2000	875,054		
2001	877,024	1,970	0.2%
2002	882,278	5,254	0.6%
2003	887,576	5,298	0.6%
2004	893,879	6,303	0.7%
2005	899,673	5,794	0.6%
2006	904,134	4,461	0.5%
2007	900,525	-3,609	-0.4%
2008	905,034	4,509	0.5%
2009	910,464	5,430	0.6%
2000-09		35,410	

The table below summarizes the data:

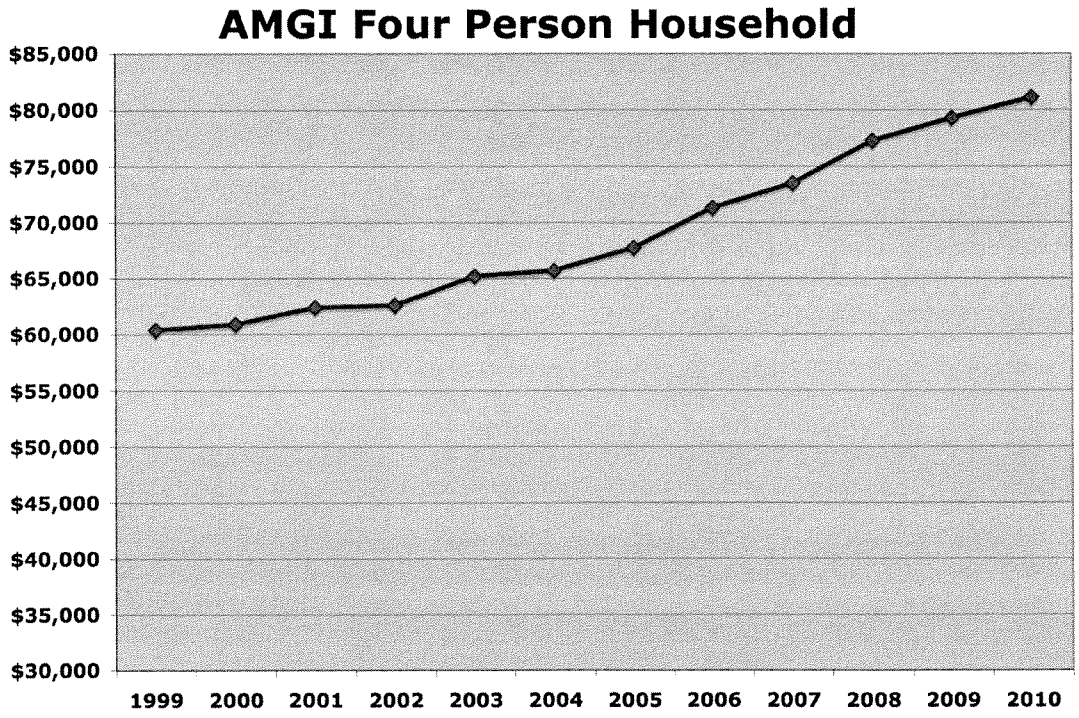
	Growth
2000-09, Population Growth	35,410
2000-09, New Household Growth	12,646
2000-09, Annual Increase of Households	1,405
2009, Annual Increase of Housing Stock Statewide	1,416
2009, Annual Increase of Housing Stock Oahu	955
2009, Household Demand vs. Housing Supply	-450

Looking ahead, household growth 2008-2013, is projected to go from 305,501 to 316,743. Using the average number of people per household of 2.8, this increase of 35,410 people works out to an increase of 12,646 households over the last nine years. This then translates to demand for 1,405 new homes a year on Oahu.

Given that there were only 1,416 new homes were built STATEWIDE, with Oahu getting 955 of those, this indicates that there is a housing shortage afoot (this year, it would be a deficit in housing supply of about 450 dwelling units).
This condition of under-supplying housing for population growth will only get worse, if household growth continues as projected. As such, pressure on housing prices (as well as rental rates) will grow, so long as there is this undersupply condition.

In addition to lower housing supply, the Honolulu Area Median Gross Income levels at the county level are low and projected to grow slowly over the next few years.

Note: as mentioned earlier, most of these new housing units (housing permit's average value) were produced for a target market significantly above 100% of median incomes.



As shown in the above chart, the AMGI from 1999 to 2010 in Honolulu County grew consistently.

By contrast, many MSAs across the country experienced falling or flat AMI between 2006 and 2007, the result of a change by HUD in the underlying data sources used for establishing income limits - using data from the American Community Survey (ACS), in place of census reports.

As a result, more than 60% of the MSAs nationally saw their AMI levels fall or stagnate. Honolulu did not, and this is indicative of a rental market where low-income households in need of shelter are being priced out of the market by more affluent households. It also supports the idea that properties like the subject one should be financially viable as rents increase in the years ahead.

To better see the demand for housing among the lower income segments of our population, we obtained data showing the number of Oahu households broken out into income and age group (from CLARITAS, a demographic analysis firm of national stature). We will use it to compare with the project's offerings. This table is shown below:

CLARITAS AGE/INCOME TABLES, HONOLULU CITY & COUNTY

	25 - 34	35 - 44	45 - 54	55 - 59	60 - 64	65 - 69	70 - 74	75 - 79	Totals
Under $10	2,273	2,626	2,600	1,252	1,239	1,172	1,058	1,038	13,258
$10 - $15K	1,232	1,317	1,382	627	678	576	609	638	7,059
$15 - $20K	1,417	1,280	1,296	615	666	671	667	842	7,454
$20 - $25K	1,820	1,536	1,299	667	635	702	715	774	8,148
$25 - $29K	2,586	2,010	1,869	799	840	756	733	813	10,406
$30 - $34K	2,585	2,292	1,976	871	868	826	756	708	10,882
$35 - $39K	2,669	2,498	1,991	991	873	829	750	710	11,311
$40 - $44K	2,819	2,325	2,107	1,068	979	752	662	765	11,477
$45 - $49K	2,705	2,611	2,100	847	781	761	674	617	11,096
$50 - $59K	4,675	5,462	4,325	1,881	1,798	1,538	1,335	1,198	22,212
$60 - $74K	5,713	6,899	6,663	2,893	2,470	1,970	1,640	1,531	29,779
$75 - $99K	6,033	9,376	10,263	4,678	3,688	2,904	2,090	1,744	40,776
$100-125K	3,234	6,883	8,759	3,943	2,912	2,007	1,311	1,308	30,357
Totals	39,761	47,115	46,630	21,132	18,427	15,464	13,000	12,686	214,215

This, we suggest, is the total demand available potentially to absorb all available rental units, including this project. Note that we will eliminate several age groups in the table from our analysis: the age groups of households whose head is under 55 years old.

VIII. MARKET ANALYSIS OF TARGET MARKET

PROJECT SUPPLY: First, we look at the particulars of the proposed project:

MEHEULA VISTA PROJECT UNIT BREAKDOWN & PRICING

Phase 1 Units	Total Units	Bedroom Count	Square Footage	Tenant Share
75	300	1	432	$1,007*

As seen, any resident applying for a unit can have incomes up to 60% AMI. In addition, the maximum rental contribution that can be levied at an affordable project on Oahu targeting households earning 60% of AMI has been set at $1,118. However, since the effective rate will be reduced by the utility allowance, the effective rate is about $1,007*. (Note: it is seldom that affordable rental projects in Honolulu charge their tenant at this maximum rate.)

That said, we start by analyzing the market for the 60% of AMI units.

To quantify the demand relative to these affordable rental units, we need to derive the number of potential renter households by income restriction. To establish the number of income-eligible potential tenants for the Subject, the calculations are as follows:

First, we estimate the Subject's minimum and maximum income levels for the proposed LIHTC project. HUD determines maximum income guidelines for tax credit properties based on the Area Median Income. Secondly, we illustrate the senior household population segregated by income band to determine those who are income-qualified to reside in the Subject property. Third, we combine the allowable income range with the income distribution analysis to determine the number of potential senior income-qualified households.

To do this, we turn to the HUD limits on income, and identify the limits on the income per rental unit. In the HUD Table below, the number of people per household is along the top, and the income is underneath, given a percentage of median income:

HUD AFFORDABLE GUIDELINES, 2010 HONOLULU

	1 Person	2 Person	3 Person	4 Person	5 Person	6 Person	7 Person	8 Person
30%	$20,880	$23,850	$26,820	$29,790	$32,190	$34,560	$36,960	$39,330
50%	$34,800	$39,750	$44,700	$49,650	$53,650	$57,600	$61,600	$65,550
60%	**$41,760**	**$47,700**	$53,640	$59,580	$64,380	$69,120	$73,920	$78,660
80%	$55,650	$63,600	$71,500	$79,440	$85,840	$92,160	$98,560	$104,880

Next, we identify how many people are allowed to live in a unit, given the number of bedrooms (in this case, the one bedrooms).

ONE BEDROOMS: For these units, the limit of AMI is shown below (for the 60% of AMI units, the lower limit would be under $41,760) (given a maximum of two people living in a studio apartment, the upper limit is bounded by that maximum income level, or $47,750).

QUALIFYING FAMILY SIZE, BY AMI/INCOME

One Bedroom Limits	60% of AMI
1 Person	$41,760
2 Person	$47,700

Given that, we can use the CLARITAS table to quantify the number of households in the market area that are making 60% of AMI and under.

CLARITAS AGE/INCOME TABLES

	55 - 59	60 - 64	65 - 69	70 - 74	75 - 79	Totals
Under $10	1,252	1,239	1,172	1,058	1,038	5,759
$10 - $15K	627	678	576	609	638	3,128
$15 - $20K	615	666	671	667	842	3,461
$20 - $25K	667	635	702	715	774	3,493
$25 - $29K	799	840	756	733	813	3,941
$30 - $34K	871	868	826	756	708	4,029
$35 - $39K	991	873	829	750	710	4,153
$40 - $44K	1,068	979	752	662	765	4,226
$45 - $47.7K	457	422	411	364	333	1,987
Totals	7,347	7,200	6,695	6,314	6,621	34,177

Per the table above, this market is shown as being a bit over 34,000 potential renters, as shown in the table above. Or, if taken just between the 1 and the 2 person limit of $41,760 and $47,700,, this market is shown as being a bit over 6,200 potential renters (a more realistic estimate of total demand within the income brackets).

Given that Phase One this project will end up with a total of 75 units supplied into the market, we believe the realistic potential demand of 6,200 senior households is so great that there will be little problem absorbing all of these units (75 units is 1.2% of the 6,200 senior household potential demand). This is particularly so, in light of the fact that they are better located than most projects in Central Oahu, and (or will be) newly built.

This same analysis holds for the 225 remaining units of the 300 total units of the project: the current total potential demand described above will not only exist for those units when they are built out, but will very likely be greater. This is due to the trend noted earlier that the county, as well as the country, is aging fast, as the baby boomer generation gets older.

IX. DESCRIPTION OF COMPARABLE UNITS IN THE MARKET AREA

AFFORDABLE INVENTORY: In the universe of one bedroom affordable housing units on Oahu being rented to seniors making 60% of AMI, there are approximately 8 rental projects, containing about 586 rental units. The following table summarizes this sub-market.

AVAILABLE AFFORDABLE RENTAL INVENTORY, OAHU

Target AMI	Units	# Projects	Ave Sq Feet	Min Months Wait	Max Months Wait
60%	586	8	511	22	38

In terms of units in the vicinity, as defined as Central Oahu, the following table describes the same market:

AVAILABLE AFFORDABLE RENTAL INVENTORY, CENTRAL OAHU

Target AMI	Units	# Projects	Ave Sq Fig	Min Months Wait	Max Months Wait
60%	41	1	488	24	60

First, the long waiting list times, both minimum and maximum, indicates the market is very tight for these units. Second, the absolute number of units in the area is tiny, relative to both the intended supply of the subject project, as well as to the potential demand, which is the whole island in this case.

In sum, there simply are not many units in the area, or on the island that are comparable the subject property. In addition, the waiting time for a unit is quite long.

X. ANALYSIS OF RENTS, VACANCY RATES, OPERATING EXPENSES AND TURNOVER RATES OF COMPARABLE PROPERTIES IN THE AREA.

The following tables give a description of the comparable properties in the Central Oahu area that responded to our inquiries as to their rents, vacancies and turnover rates.

For One Bedrooms, targeting on 60% AMI:

Projects	Units	Wait Min	Wait Max	Ave Rent	Vacant	Vac Rates
Whitmore Circle	41	24	60	$867	1	2.4%

As seen, there are low vacancies and vacancy rates. This bodes well for the project.

Note: the operating expenses for most of these projects were unavailable for publication.

XI. ANALYSIS OF RENTS, VACANCY RATES, OPERATING EXPENSES AND TURNOVER RATES OF MARKET RATE PROPERTIES IN THE MARKET AREA.

By way of overview, the Oahu marketplace within which 'market rate properties' compete is comprised of very few large unit rental properties and a great many small unit properties. Relative to other US urban center, this is a unique characteristic and has much to do with the development of the visitor industry and the nature of the urbanization (or the lack thereof) on Oahu.

As short a while ago as 40 years, Oahu was primarily an agrarian economy, at least in terms of the dispersion of population near the plantation areas. As such, there was no real urban core around which people lived. Thus, there is no real core area with lots of large condominiums. The main area for that was in Waikiki, and that targeted short-term visitors. The rest of condominium development was small-scale, due to this dispersion, due to the rugged topography of the valleys and ridges on Oahu, due to the lack of capital for building large projects, and due to the lack of land for development (leasehold system).

As such, the rental marketplace for market rate properties was dispersed as well as highly fragmented, and the result of that is that Oahu's rental market contains a great many 10-20 unit two-story 'walk-ups' (no elevator necessary, due to the limitation to two stories).

The import of this, relative to this study, is that there are no easily found comparable projects to examine against the subject property (itself an anomaly, borne of a federal housing policy that assumed what was good for an urban community like NY or DC would be good for Honolulu).

As a practical matter for this study, there are no large operators to call and survey for their rents, vacancy rates, operating expenses and turnover rates. Indeed, all those who were surveyed would not divulge anything more than the asking rent (most were agents, and a few were owners fearful I was a competitor).

As such, much of the analysis of this market segment is based on information culled from the classified section of the newspaper. Fortunately, we have a very deep database on this, extending backwards for a number of years.

This section describes the historical trend for open market units in the whole island and in the narrow target market area, Central Oahu (the Comp Area encompasses those communities in the Mililani area, including Waipio).

To compare the open market rental offerings better, the following table gives the pricing for the units.

UNIT BREAKDOWN & PRICING

Counts	Bedrooms	Maximum Tenant Contribution
75	1	$1,007

The project's potential maximum for the rental contribution of $1,007** for a one-bedroom units is slightly under where the area market YTD 2010 is, and about $170/month under where the island-wide market is (note: this spread or difference between market and affordable rents will increase, once the economy recovers and housing scarcity becomes widespread).

ONE BEDROOM, OPEN MARKET

	Ad Count, Island	Ave Rent, Island	Ad Count, Comp Area	Ave Rent, Comp Area
2000	334	$762	4	$622
2001	200	$804	2	$654
2002	163	$923	3	$724
2003	135	$1,029	1	$773
2004	141	$1,135	2	$816
2005	156	$1,307	1	$900
2006	180	$1,372	2	$1,098
2007	226	$1,335	2	$1,084
2008	209	$1,308	3	$1,075
2009	242	$1,228	2	$1,068
2010	194	$1,181	3	$1,009

We note that the relatively comparable rents being charged in the open market in the Mililani area help to support the thesis that this project is marketable. In addition to that, we note there also are very few rental offerings being made, especially in the one bedroom senior market. Lastly, the project benefits meaningfully from the fact that it will be newly built, in a safe and upper income neighborhood and will have a homogeneous tenant society and culture.

In light of current conditions, we expect the listings in the table above describing the open market will not interfere with this project in terms of being attractive to prospective renters.

(**Note: as mentioned earlier, it is seldom that affordable rental projects in Honolulu charge their tenant at this maximum rate. That said, we performed our analysis using the maximum allowable on Oahu for households earning 60% of AMI. Indeed, as the market indicates there is good demand for units at the current HUD max, any units at rents lower than the HUD maximum will serve a larger group.)

XII. PROPOSED PROJECTS IN THE MARKET AREAS

PROJECTED NEW INVENTORY:

We contacted the Planning Department at the City and County of Honolulu and were told that there is one senior affordable development currently under construction within the area: the Senior Residences at Kapolei. This is a 60-unit affordable development that began construction in May 2009. The development will be age-restricted and tenants will pay 30 percent of their income towards rent. The project is developed through the Hawaii Housing Finance and Development Corporation (HHFDC). As this development will be subsidized with tenants paying 30 percent of their income towards rent, it will not be in direct competition with the Subject.

In addition, according to the Hawaii Housing Finance and Development Corporation's summary of LIHTC projects awarded for the most recent allocation cycles, one development has received an allocation within the area. Ewa Villages I and II received a LIHTC allocation in 2006 and 2007. Phase I of Ewa Village will have six one-bedroom units, 32 two-bedroom units, and 26 three-bedroom units for a total of 64 units. Phase II will have 76 one, two, and three-bedroom units. This development will target families and construction has not yet begun. As this development will target families and not seniors, we do not believe it will be in competition with the Subject.

As seen, there are almost no new projects in the area of Honolulu that are being built that compete directly with this project.

SUMMARY: In sum, we do not foresee much competitive interference from another similar or comparable rental project.

XIII. CONCLUSIONS AND FORECAST

Location
The proposed development's neighborhood, relative to other senior projects, is excellent. It will be in a largely residential neighborhood in very good condition with a basically middle to upper-middle class demographic. necessary locational amenities, including retail, and medical services are located within 5 miles of the Subject site. The Subject will also have good access to the primary arterial roads in the region.

In particular, the potential renter will feel significantly 'safer' in this location, relative to other areas in the county. This is because crime rate in this area is very favorable relative to other areas where there are senior affordable rentals.

We measure this using the Honolulu Police Departments statistics, the latest of which was published for 2009. Therein, they report 'index crimes' – defined by the FBI and drawn from their uniform crime reporting program. These crimes consist of four violent crimes (murder, forcible rape, aggravated assault and robbery) and three property crimes (motor vehicle, larceny-theft and burglary). The table below identifies the beat, the neighborhood and the number of reported 'index crimes.'

CRIME INCIDENCE, BY NEIGHBORHOOD OF SENIOR RENTAL PROJECT

Beat	Neighborhoods	Totals
154	Chinatown	330
250	Mililani/Launani	227
252	Mililani Makai	389
254	Wahiawa	252
255	Mililani Mauka	168
351	Waipahu	411
353	Waipahu	374
360	Waipahu	475
362	Waipahu	573
363	Waipahu	471
370	Waipahu	442
751	Palolo	319
754	Moilili	341
755	Moilili	282
756	Moilili	226

Furthermore, observations of the Subject's neighborhood, and interviews with local denizens do not elicit a perception of significant local crime problems.

Demographics
The total population and households in the island and the area have demonstrated that they are experiencing growth, and particularly so in the senior demographic.

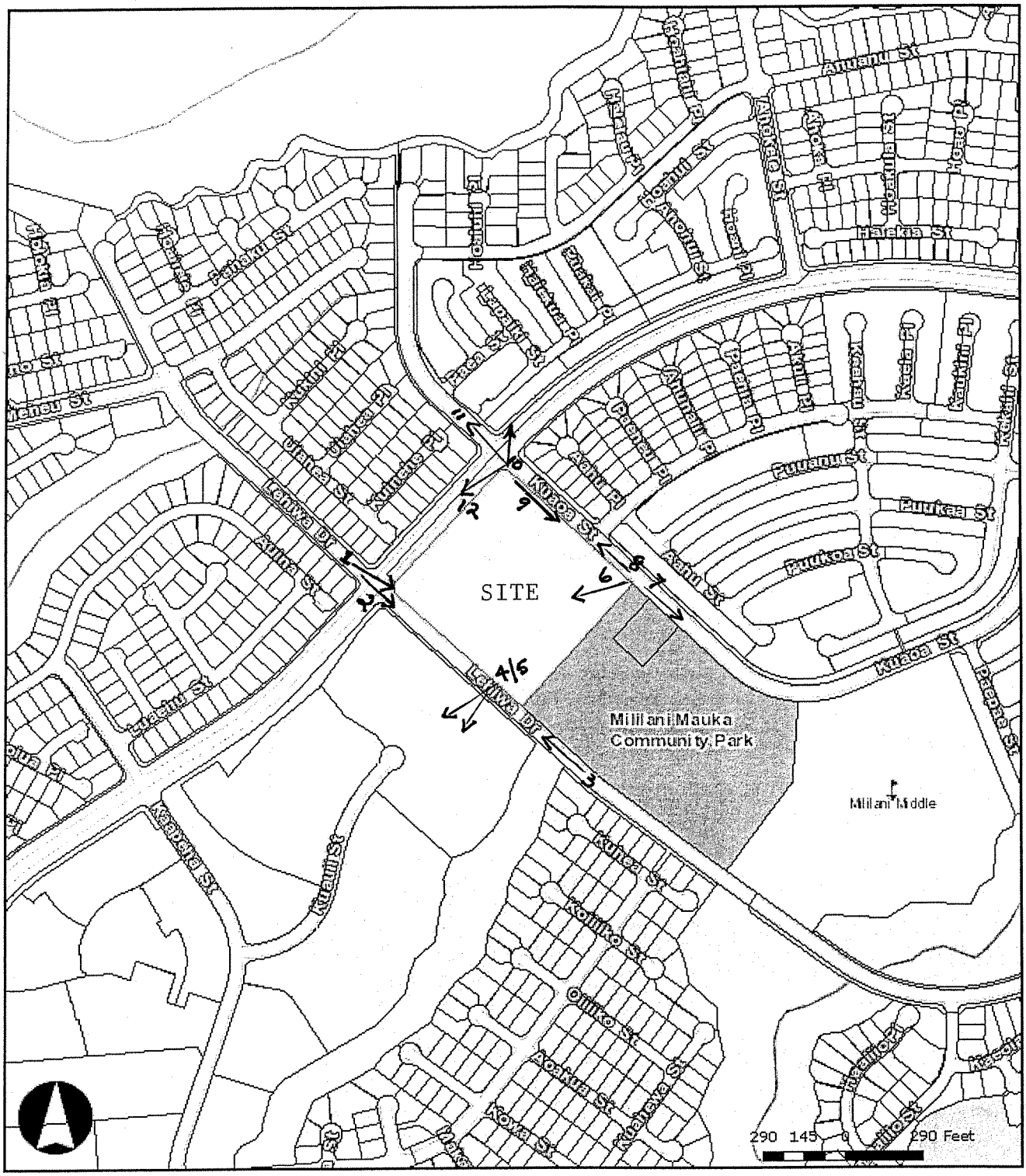
Supply & Demand
On the supply side, all of the comparables, they suffer from an inferior location and are aged. There is nothing in the Central Oahu area that is being built, so there will not be any immediate competition.

On the demand side, in the short term, there is no evidence of insufficient demand, such as widespread vacancies or short waiting lists. In the long term, there is a large demographic group of households that are 45-55 years old who will very soon be entering the senior age definition. These and those in the older demographic groups will be the beneficiaries of projects like this, which serve this most needy group with below-market rents (as well as, most likely, below the maximum allowed by HUD).

Product
Based on the unit sizes of comparable properties, the Subject's one-bedroom unit sizes are competitive. The proposed in-unit and common area amenities are generally comparable to slightly superior to the competition. As a new construction development in excellent condition with competitive amenities, we anticipate that the Subject will be well-accepted.

Forecast
Given that this project is well-located and newly built, this project will receive a sufficient number of rental applications to be able to achieve 100% occupancy within the first six to twelve months of availability.

APPENDIX IV
PHOTOGRAPHS OF SITE



MEHEULA VISTA Author: Kusao & Kurahashi, Inc. Date: 11/22/2010	Notes: PHOTO LEGEND
	Powered by ArcGIS Server 9.3.1 © City & County of Honolulu, All Rights Reserved, 2008 Note: Data represented on this map is not intended to replace site survey.

PHOTO #1

PHOTO #2

PHOTO #3

PHOTO #4

PHOTO #5

PHOTO #6

PHOTO #7

PHOTO #8

PHOTO #9

PHOTO #10

PHOTO #11

PHOTO #12

APPENDIX V

PARKING AGREEMENT FOR PROSPECTIVE TENANTS

ADDENDUM TO RENTAL AGREEMENT
VEHICLE OWNERSHIP CERTIFICATION

Due to the high density in the immediate area of the _____, parking is very limited. The City and County of Honolulu will, through information provided by the Managing Agent, monitor vehicle registration (ownership) of all residents.

OCCUPANCY RESTRICTION: There are __ tenant parking stalls in the project. Once all parking stalls have been assigned, occupancy shall be restricted to tenants who do not own a vehicle.

All residents must execute this certification, which is incorporated into and made a part of the Rental Agreement. Any fraudulent information shall be deemed to be in breach of the Rental Agreement and subject to termination.

TENANT CERTIFICATION:

☐ **1. I/we certify that I/we own the vehicle described below. I/we have been assigned a parking stall in the _____ project. In the event we transfer the ownership of said vehicle, we agree to surrender the parking stall.**

Vehicle make and model:	
Color:	
Year:	
License Number:	
Assigned parking stall number:	

OR

☐ **2. I/we certify that I/we do NOT own a vehicle and that I/we have no intention of acquiring a vehicle during our tenancy in the project. In the unlikely event I/we acquire a vehicle, we acknowledge and agree to vacate the property within thirty (30) days.**

CERTIFICATION: I/we certify that the information provided above is true and correct as of the date set forth opposite my/our signature(s) and acknowledge my/our understanding that any intentional or negligent misrepresentation(s) of the information contained in this application may result in breach and termination of Rental Agreement. I/we hereby give my/our permission for you to verify the above information.

ACKNOWLEDGED AND AGREED:
Tenant name:

_____ _____
SIGNATURE DATE

Tenant name:

_____ _____
SIGNATURE DATE

APPENDIX VI

AGENCY COMMENTS PRIOR TO DRAFT EA

(including sample of request for comments letter)

MEHEULA VISTA
PRE-CONSULTATION MAILING LIST FOR EA
AUGUST 31, 2010

CITY AND COUNTY LIST

Mr. Wayne Yoshioka, Director
Department of Transportation Services
630 South Beretania Street, 3rd Floor
Honolulu, Hawaii 96813

Mr. Louis Kealoha, Chief of Police
Honolulu Police Department
801 South Beretania Street
Honolulu, Hawaii 96813

Mr. Timothy Steinberger, Director
Department of Environmental Services
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Mr. David Tanoue, Director
Department of Planning and Permitting
650 S. King Street, 7th Floor
Honolulu, Hawaii 96813

Ms. Carol Petersen, Principal
Mililani Mauka Elementary School
95-1111 Makaikai Street
Mililani, Hawaii 96789

Mr. Wayne Hashiro, Chief Engineer
Board of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96813

Mr. Kenneth Silva, Fire Chief
Honolulu Fire Department
636 South Street
Honolulu, Hawaii 968913

Ms. Deborah Morikawa, Director
Department of Community Planning
City & County of Honolulu
715 S. King Street, #311
Honolulu, Hawaii 96813

Mr. Steve Nakasato, Principal
Mililani Ike ElementarySchool
95-1330 Lehiwa Drive
Mililani, Hawaii 96789

STATE LIST

Ms. Kathryn Matayoshi
Superintendent
Department of Education
1390 Miller Street
Honolulu, Hawaii 96813

Mr. Mike Formby, Acting Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

October 20, 2010

Mr. Keith Kurahashi
Kusao & Kurahashi, Inc.
Manoa Market Place
2752 Woodlawn Drive, Suite 5-202
Honolulu, Hawaii 96822

Dear Mr. Kurahashi:

Subject: Your Letter Dated September 24, 2010 Requesting Comments on the Draft Environmental Assessment for the Proposed Meheula Vista Senior Affordable Rental Development in Mililani Mauka, TMK: 9-5-2:32

Thank you for the opportunity to comment on the proposed Senior Affordable Housing Project.

The existing water system is presently adequate to accommodate the proposed development. However, please be advised that this information is based upon current data and, therefore, the Board of Water Supply reserves the right to change any position or information stated herein up until the final approval of your building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

The applicant will be required to obtain a water allocation from Castle and Cooke Homes Hawaii.

The proposed development is subject to Board of Water Supply cross-connection control and backflow prevention requirements prior to issuance of the Building Permit Application.

If you have any questions, please contact Robert Chun at 748-5443.

Very truly yours,

PAUL S. KIKUCHI
Chief Financial Officer
Customer Care Division

ALCON & ASSOCIATES, INC.
716 Umi Street, Suite 250 Honolulu, Hawaii 96819
Ph: 808.842.0300 Fax: 808.847.0444 mail@alconhawaii.com

October 12, 2010

Mr. Wayne Hashiro
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

ATTN: Robert Chun, Project Review Section

Dear Mr. Hashiro:

Re: Request for Information
Proposed Meheula Vista Senior Affordable Rental Development
in Mililani Mauka
Tax Map Key: 9-5-002: 032

We are requesting information on the availability of water to support this project, as well as the fire flow data for the adjacent fire hydrants. The fire hydrant closest to our projected point of connection is FH #C-3152 along Kuaoa Street.

The developer proposes to provide 300 1-bedroom units for seniors in eight 2 and 3 story buildings over 7.5 acres. A conceptual site plan is attached. Fire protection is expected to be provided by a private, onsite fire hydrant network supplementing the BWS fire hydrants along the perimeter of the site. The inclusion of fire sprinklers for individual buildings is likely. The estimated required fire flow for the site is 2,000-gpm (1,500-gpm for hydrant plus 500-gpm for fire sprinkler).

We are currently in the planning stages of our design. Any information that you can provide regarding the state of the area's water system, as well as offsite improvements that may be required to support this project will be greatly appreciated as it will help us further develop the scope of work for this project.

Please call Wes Toyota of my office at 842-0300 if you have any questions regarding the proposed development.

Sincerely,

Dean Alcon, P.E., P.L.S.
Principal

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 3RD FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8305 • Fax: (808) 768-4730 • Internet: www.honolulu.gov

PETER B. CARLISLE
MAYOR

WAYNE Y. YOSHIOKA
ACTING DIRECTOR

SHARON ANN THOM
DEPUTY DIRECTOR

KENNETH TORU HAMAYASU, P.E.
SECOND DEPUTY DIRECTOR

TP9/10-385675R

October 22, 2010

Mr. Keith Kurahashi
Kusao & Kurahashi, Inc.
Manoa Market Place
2752 Woodlawn Drive, Suite 5-202
Honolulu, Hawaii 96822

Dear Mr. Kurahashi:

Subject: Pre-Consultation on a Draft Environmental Assessment (DEA) for the Proposed Meheula Vista Affordable Rental Development in Mililani Mauka – Tax Map Key (TMK): 9-5-2: 32

This responds to your letter of September 24, 2010, requesting our comments concerning this proposed project.

Our Traffic Engineering Division (TED) has the following comments:

- Access driveways to the project should be identified.
- The project boundary should be shown.
- The Draft EA should discuss transportation impacts, including short-term impacts during construction and proposed mitigation measures.
- The area Neighborhood Board, as well as the area residents, businesses, etc. should be kept apprised of the details for the proposed project and the impacts the project may have on the adjoining local street network area.

Our Public Transit Division (PTD) has the following comments:

- The Draft EA should include a description of Public Transit and the impact of your project on Public Transit during construction and as a result of population. Basic information is available on our websites: www.thebus.org

and www.honolulu.gov/dts. For more details you may contact the PTD staff at 768-8370.

- Construction notes should include the following note concerning transit:

  "This project will affect bus routes, bus stops, and paratransit operations, therefore, the Contractor shall notify the Department of Transportation Services, Public Transit Division at 768-8396 and Oahu Transit Services, Inc. (bus operations: 848-4578 or 852-6016 and paratransit operations: 454-5041 or 454-5020) of the scope of work, location, proposed closure of any street, traffic lane, sidewalk, or bus stop and duration of project at least two weeks prior to construction."

Thank you for the opportunity to review this matter. Should you have any further questions, please contact Michael Murphy of my staff at 768-8359.

Very truly yours,

WAYNE Y. YOSHIOKA
Acting Director

HONOLULU FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

636 South Street
Honolulu, Hawaii 96813-5007
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

KIRK W. CALDWELL
ACTING MAYOR

KENNETH G. SILVA
FIRE CHIEF

ROLLAND J. HARVEST
DEPUTY FIRE CHIEF

October 11, 2010

Mr. Keith Kurahashi
Kusao & Kurahashi, Inc.
Manoa Market Place
2752 Woodlawn Drive, Suite 5-202
Honolulu, Hawaii 96822

Dear Mr. Kurahashi:

Subject: Preconsultation on a Draft Environmental Assessment
Proposed Meheula Vista Affordable Rental Development in Mililani Mauka
Tax Map Key: 9-5-002: 032

In response to your letter of September 24, 2010, regarding the above-mentioned subject, the Honolulu Fire Department (HFD) reviewed the material provided and requires that the following be complied with:

1. Provide a fire apparatus access road for every facility, building, or portion of a building hereafter constructed or moved into or within the jurisdiction when any portion of the facility or any portion of an exterior wall of the first story of the building is located more than 150 feet (45 720 mm) from a fire apparatus access road as measured by an approved route around the exterior of the building or facility. (1997 Uniform Fire Code, Section 902.2.1.)

2. Provide a water supply, approved by the county, capable of supplying the required fire flow for fire protection to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed or moved into or within the county.

   On-site fire hydrants and mains capable of supplying the required fire flow shall be provided when any portion of the facility or building is in excess of 150 feet (45 720 mm) from a water supply on a fire apparatus access road, as measured by an approved route around the

exterior of the facility or building. (1997 Uniform Fire Code, Section 903.2, as amended.)

3. Submit civil drawings to the HFD for review and approval.

Should you have any questions, please call Battalion Chief Socrates Bratakos of our Fire Prevention Bureau at 723-7151.

Sincerely,

KENNETH G. SILVA
Fire Chief

KGS/SY:bh

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulupd.org

LOUIS M. KEALOHA
CHIEF

DELBERT T. TATSUYAMA
RANDAL K. MACADANGDANG
DEPUTY CHIEFS

OUR REFERENCE DMK-DK

October 6, 2010

Mr. Keith Kurahashi
Kusao & Kurahashi, Inc.
3752 Woodlawn Drive, Suite 5-202
Honolulu, Hawaii 96822

Dear Mr. Kurahashi:

This is in response to your letter of September 24, 2010, requesting comments on a Pre-Consultation, Draft Environmental Assessment, for the Proposed Meheula Vista Affordable Rental Development project in Mililani Mauka.

This project should have no significant impact on the facilities or operations of the Honolulu Police Department.

If there are any questions, please call Major Kenneth Simmons of District 2 (Wahiawa) at 621-3725.

Sincerely,

LOUIS M. KEALOHA
Chief of Police

By
DAVE M. KAJIHIRO
Assistant Chief of Police
Support Services Bureau

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

PETER B. CARLISLE
MAYOR

DAVID K. TANOUE
ACTING DIRECTOR

ROBERT M. SUMITOMO
DEPUTY DIRECTOR

2010/ELOG-2057(ec)

October 13, 2010

Mr. Keith Kurahashi
Kusao & Kurahashi, Inc.
2752 Woodlawn Drive, Suite 5-202
Honolulu, Hawaii 96822

Dear Mr. Kurahashi:

Subject: Pre-Consultation on Draft Environmental Assessment
201H Affordable Housing Project
Meheula Vista Affordable Rental Development
95-1080 Lehiwa Drive - Mililani Mauka
Tax Map Key 9-5-2: 32

This is in response to your letter of September 24, 2010, requesting our pre-consultation comments on the Draft Environment Assessment (EA), which will be prepared for a proposed 300-unit affordable rental housing project on the above site. The developer has not decided on the target age group; i.e., whether the housing project would be occupied by households comprised of persons aged 55 or aged 62 years and older, earning up to 60 percent of the Oahu median income. The developer, Catholic Charities Housing Development Corporation, will be seeking exemptions from planning, zoning or construction standards pursuant to Chapter 201H, Hawaii Revised Statutes (HRS), for the proposed affordable housing project.

The Department of Planning and Permitting (DPP) has the following comments at this time:

1. We understand that the State Hawaii Housing Finance and Development Corporation (HHFDC) will be committing funds for the land purchase, and the developer will be applying for Rental Housing Trust funds and tax credits. If so, we concur that an EA will be required pursuant to Chapter 343, HRS, and that the HHFDC should be the accepting authority.

2. Exemptions from the Sustainable Communities Plan and the Land Use Ordinance (LUO) would be required for the project. The project consists of 300 one-bedroom units in four buildings constructed in four phases, a multi-purpose building, and 132 parking spaces for residents and guests. The 7.5-acre project site is zoned B-2 Community Business District, which does not permit multi-family dwellings.

3. The proposed project is in an area which does not have frequent bus service and there are no medical and recreational facilities and shopping opportunities within easy walking distance; yet, the developer is proposing a very significant reduction in the number of required parking spaces (132 parking spaces in lieu of 300 spaces) for a multi-family dwelling project of similar size. The EA should address the appropriateness of the site for residential development and its environmental, social, and economic impacts, and the adequacy of the infrastructure to support the development.

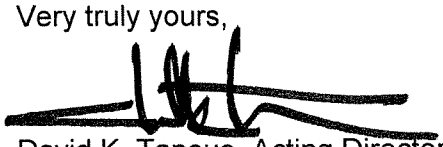
4. There is a limited supply of commercially zoned land in the Mililani Mauka areas. The removal of 7.5 acres from commercial uses permitted by the LUO would preclude the future development of retail, eating establishments, and personal and business services for residents in the surrounding area and increase traffic to already developed commercial areas. The EA should address the environmental, social, and economic impacts of this loss of commercially zoned land.

5. Based on the target income group which would be served, the proposed project meets the eligibility requirements for processing by the DPP. However, please note that generally, the DPP would not accept a 201H application for processing nor forward it to the City Council for its consideration unless the applicant can document that a minimum of 50 percent of the required financing has been secured.

Thank you for the opportunity to provide comments during the Draft EA pre-consultation process. We would appreciate receiving copies of the Draft EA for our review when it is available.

If you have any questions, please contact Elizabeth Chinn of our staff at 768-8021.

Very truly yours,



David K. Tanoue, Acting Director
Department of Planning and Permitting

DKT:cs

DEPARTMENT OF COMMUNITY SERVICES

CITY AND COUNTY OF HONOLULU

715 SOUTH KING STREET, SUITE 311 ● HONOLULU, HAWAII 96813 ● AREA CODE 808 ● PHONE: 768-7762 ● FAX: 768-7792

PETER B. CARLISLE
MAYOR

ERNEST Y. MARTIN
ACTING DIRECTOR

October 19, 2010

Mr. Keith Kurahashi, President
Kusao and Kurahashi, Inc.
Manoa Marketplace
2752 Woodlawn Drive
Honolulu, Hawaii 96822

Dear Mr. Kurahashi:

Subject: Meheula Vista Senior Affordable Development
Environmental Assessment Pre-Consultation

Thank you for the opportunity to review and comment on the Environmental Assessment (EA) Pre-Consultation materials for the subject project. Based on our review of the materials, we have determined that the proposed project will have no impact on any existing programs and services offered by the Department of Community Services (DCS).

By way of further comment and recommendation, we strongly encourage you to involve the Mililani Mauka community in the environmental review process. The EA should clearly articulate the concerns and issues of the community as it relates to the proposed project, and describe the actions to taken by the project developer to address these concerns. We suggest that identifying and addressing community concerns early in the planning process will result in a project that better reflects the vision and values of the community.

DCS recognizes that senior citizens represent the fastest growing segment of our population. We further recognize that many seniors live on fixed incomes and are particularly vulnerable to escalating rental rates. Projects like Meheula Vista have the potential to create the long term affordable housing opportunities that will allow our kupuna to live actively and indepenently in the community for as long as possible.

Thank you again for the opportunity to provide these comments. Questions regarding this matter may be directed to Keith Ishida at 768-7750.

Sincerely,

Ernest Y. Martin
Acting Director

DEPARTMENT OF COMMUNITY SERVICES
CITY AND COUNTY OF HONOLULU
715 SOUTH KING STREET, SUITE 311 • HONOLULU, HAWAII 96813 • AREA CODE 808 • PHONE: 768-7762 • FAX: 768-7792

PETER B. CARLISLE
MAYOR

SAMUEL E. H. MOKU
ACTING DIRECTOR

BRIDGET HOLTHUS
DEPUTY DIRECTOR

January 20, 2011

Mr. Edward Ontai
Executive Director
Catholic Charities Housing
Development Corporation
1822 Keeaumoku Street
Honolulu, Hawaii 96822

Dear Mr. Ontai:

Subject: Letter of Support
Meheula Vista
Catholic Charities Housing Development Corporation

The Department of Community Services (DCS) is pleased to provide this letter in support of the application by the Catholic Charities Housing Development Corporation (CCHDC) to the Hawaii Housing Finance and Development Corporation (HHFDC) for funding assistance, through the federal and state Low Income Housing Tax Credit programs and other state-sponsored housing finance programs for the development of Meheula Vista.

Meheula Vista is proposed as an affordable senior rental housing complex in Mililani Mauka, Oahu. The proposed project will provide 300 affordable rental housing units for senior residents over 62 years of age who earn 60 percent or less of Honolulu's median income. The complex will have four buildings with 300 one-bedroom units and one two-bedroom resident manager unit. Meheula Vista will also have a multi-purpose center to primarily serve the social, recreational, and educational needs of the project's tenants and their families. Catholic Charities Hawaii will coordinate and administer the on-site classes, activities, and social services. The proposed project will be conveniently located within close proximity to public transportation and commercial opportunities.

Meheula Vista will provide much needed affordable rental housing opportunities to low income senior citizens in Central Oahu. With our community's growing senior population, there is an ever-increasing need for affordable rental units that our senior residents, particularly those on fixed incomes, can afford. Meheula Vista will provide

an opportunity for senior residents to live independently, while being close to family members who reside in Mililani or other nearby Central Oahu communities. In pursuing this project we encourage Catholic Charities to continue to engage the Mililani Mauka community to address any outstanding concerns and issues.

We acknowledge that the CCHDC has requested $7.1 million in HOME Investment Partnerships Act funds for the purpose of providing a source of permanent financing for the acquisition of the proposed project site. The CCHDC has also applied for $7.1 million in Community Development Block Grant funds for the same purpose. These funding requests will be considered by a selection committee appointed by the Mayor and City Council in late January.

The DCS wishes you success in your application to the HHFDC for the financial resources necessary to develop this much needed project. Questions regarding this matter may be directed to Ms. Dina Wong, of the Community Based Development Division, at 768-7783.

Sincerely,

Samuel E.H. Moku
Acting Director

SEHM:dw

LINDA LINGLE
GOVERNOR

PATRICIA HAMAMOTO
SUPERINTENDENT

STATE OF HAWAII
DEPARTMENT OF EDUCATION
MILILANI MAUKA ELEMENTARY SCHOOL
95-1111 MAKAIKAI STREET
MILILANI, HAWAII 96789

October 14, 2010

Mr. Keith Kurahashi
Kusao & Kurahashi, Inc.
Manoa Market Place
2752 Woodlawn Dr. Suite 5-202
Honolulu, HI 96822

Dear Mr. Kurahashi,

Thank you for your letter of September 24, 2010 requesting input on the environmental assessment for the proposed Meheula Vista Senior Affordable Rental Development in Mililani Mauka.

As the Mililani Mauka Elementary principal, I was relieved to see that the project changed to a seniors only development. I hope it will be specified in the lease that only seniors may occupy the units.

As a homeowner in the Mililani Mauka community, I am still concerned with the possible increase in traffic in the mornings. If the "seniors" are still working, and occupy a unit with a parking stall, it could add 100+ cars to the morning traffic.

If you have any questions, please feel free to contact me at 626-3380.

Sincerely,

Carol Petersen

Carol Petersen
Principal

LINDA LINGLE
GOVERNOR

KATHRYN S. MATAYOSHI
SUPERINTENDENT

STATE OF HAWAI`I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI`I 96804

OFFICE OF THE SUPERINTENDENT

October 5, 2010

Mr. Keith Kurahashi, President
Kusao & Kurahashi, Inc.
2752 Woodlawn Drive, Suite 5-202
Honolulu, Hawai`i 96822

Dear Mr. Kurahashi:

Subject: Pre-Consultation for Draft Environmental Assessment for the Proposed Meheula Vista Senior Affordable Rental Development in Mililani Mauka, TMK 9-5-2:32

The Department of Education (DOE) has received your pre-consultation request for the proposed Meheula Vista Senior Affordable Rental Development. The DOE offers the following comments:

1. Construction Noise and Dust Mitigation. The project is in close proximity to Mililani Middle School. The DOE requests noise and dust mitigation during construction.

2. Consultation and Coordination of Construction Schedule. The DOE requests that the developer consult and coordinate with the principal of Mililani Middle School regarding the project's construction schedule.

3. Traffic. The DOE requests information on the impact the project will have on Mililani Middle School's traffic patterns during and after construction.

4. Construction Safety. Due to the proximity of this project to Mililani Middle School, the DOE requests that appropriate safety and site security measures are put in place during construction to reduce the risk of accidental injury to Mililani Middle students.

5. Students living in project. While this project is designed for seniors, would school-aged children be permitted to live in any of the units? If so, the DOE will need to address the impact this project will have on its facilities.

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

Very truly yours,

Kathryn S. Matayoshi
Superintendent

KSM:jmb
c: Randolph Moore, Assistant Superintendent, OSFSS
Patricia Ann Park, CAS, Leilehua/Mililani/Waialua Complex Areas
Principal, Mililani Middle School

PRE CONSULTATION LETTER SAMPLE

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
MANOA MARKET PLACE
2752 WOODLAWN DRIVE, SUITE 5-202
HONOLULU, HAWAII 96822

BUS. (808) 988-2231
FAX. (808) 988-1140
E-Mail: kkurahashi@hawaii.rr.com

September 24, 2010

Mr. Wayne Hashiro
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

Subject: **Pre-Consultation on a (Draft) Environmental Assessment for the Proposed Meheula Vista Senior Affordable Rental Development in Mililani Mauka - Tax Map Key: 9-5-2: 32**

Dear Mr. Hashiro:

We are requesting your pre-consultation comments on the Draft Environmental Assessment (EA) for a proposed senior affordable rental development located at 95-1080 Lehiwa Drive in Mililani Mauka, as indicated in the attached Location and Zoning Map.

The applicant, Catholic Charities Housing Development Corporation (CCHDC) proposes to develop the vacant 7.5 acre portion of this property to provide 300 1-bedroom units for seniors, phased in four separate buildings that will include a multi-purpose building and a resident manager's unit. As currently envisioned, rental units will be made available to our seniors earning up to 60% of Oahu's median income. The remaining 1.5 acres of this property contains a self storage facility and is not part of the development.

We are preparing the Draft EA for this development and are requesting your pre-consultation comments at this time. The EA will describe the project, the anticipated environmental impacts and proposed mitigation measures.

In addition to an EA for the proposed development, the applicant will be submitting a 201-H application requesting certain exemptions from development standards for the development of affordable housing, in accordance with State Statutes and upon satisfaction of environmental assessment requirements.

We would appreciate your comments by October 8, 2010 to allow this affordable housing development to proceed toward development in a timely manner.

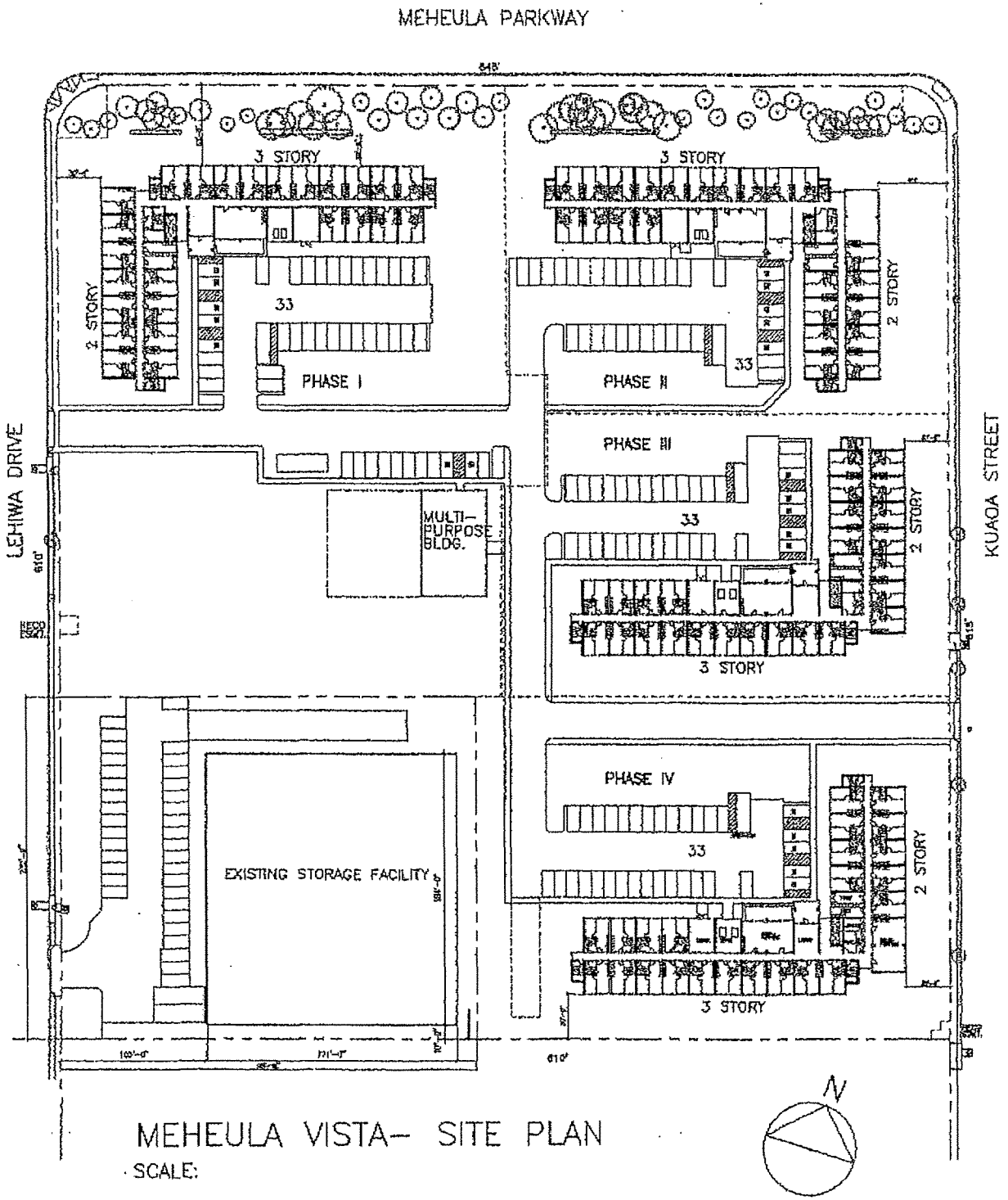
Please call our office at 988-2231 if you have questions regarding the EA and the proposed development.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: CCHDC



UNIT COUNT & PARKING COUNT

SENIOR RENTAL

PHASE I
75-1BR UNITS
33 PARKING
MULTI-PURPOSE BUILDING

PHASE II
75-1BR UNITS
33 PARKING

PHASE III
75-1BR UNITS
33 PARKING

PHASE IV
75-1BR UNITS
33 PARKING

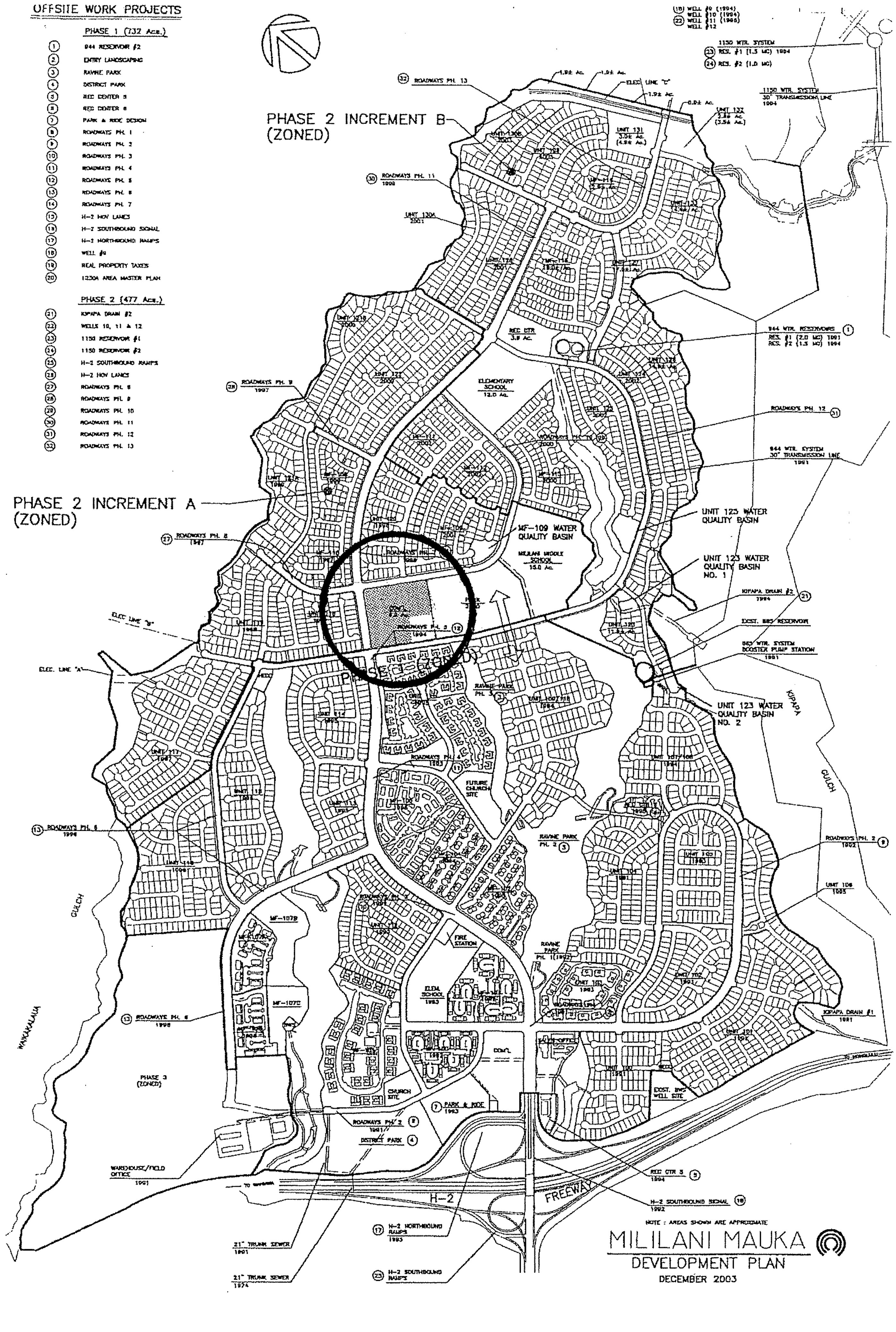
TOTAL
300-1BR UNITS
132 PARKING STALLS

MEHEULA VISTA- SITE PLAN

SCALE:

SCHEME-H

9/20/10



OFFSITE WORK PROJECTS
PHASE 1 (732 Acs.)
1 944 RESERVOIR #2
2 ENTRY LANDSCAPING
3 RAVINE PARK
4 DISTRICT PARK
5 REC CENTER 5
6 REC CENTER 6
7 PARK & RIDE DESIGN
8 ROADWAYS PH. 1
9 ROADWAYS PH. 2
10 ROADWAYS PH. 3
11 ROADWAYS PH. 4
12 ROADWAYS PH. 5
13 ROADWAYS PH. 6
14 ROADWAYS PH. 7
15 H-2 HOV LANES
16 H-2 SOUTHBOUND SIGNAL
17 H-2 NORTHBOUND RAMPS
18 WELL #9
19 REAL PROPERTY TAXES
20 1230A AREA MASTER PLAN
PHASE 2 (477 Acs.)
21 KIPAPA DRAIN #2
22 WELLS 10, 11 & 12
23 1150 RESERVOIR #1
24 1150 RESERVOIR #2
25 H-2 SOUTHBOUND RAMPS
26 H-2 HOV LANES
27 ROADWAYS PH. 8
28 ROADWAYS PH. 9
29 ROADWAYS PH. 10
30 ROADWAYS PH. 11
31 ROADWAYS PH. 12
32 ROADWAYS PH. 13
PHASE 2 INCREMENT B (ZONED)
PHASE 2 INCREMENT A (ZONED)
ELEMENTARY SCHOOL 12.0 Ac.
MILILANI MIDDLE SCHOOL 15.0 Ac.
MF-109 WATER QUALITY BASIN
UNIT 125 WATER QUALITY BASIN
UNIT 123 WATER QUALITY BASIN NO. 1
UNIT 123 WATER QUALITY BASIN NO. 2
KIPAPA DRAIN #2 1994
EXIST. 885 RESERVOIR
885 WTR. SYSTEM BOOSTER PUMP STATION 1991
944 WTR. RESERVOIRS
944 WTR. SYSTEM 30" TRANSMISSION LINE 1991
1150 WTR. SYSTEM
1150 WTR. SYSTEM 30" TRANSMISSION LINE 1994
ELEC. LINE "A"
ELEC LINE "B"
ELEC LINE "C"
FUTURE CHURCH SITE
FIRE STATION
ELEM. SCHOOL 1993
CHURCH SITE
PARK & RIDE 1993
DISTRICT PARK
WAREHOUSE/FIELD OFFICE 1991
PHASE 3 (ZONED)
KIPAPA GULCH
WAIKAKALAUA GULCH
REC CTR 5 1994
H-2 SOUTHBOUND SIGNAL 1992
H-2 NORTHBOUND RAMPS 1993
H-2 SOUTHBOUND RAMPS
21" TRUNK SEWER 1991
21" TRUNK SEWER 1974
EXIST. BWS WELL SITE
KIPAPA DRAIN #1 1991
H-2 FREEWAY
NOTE: AREAS SHOWN ARE APPROXIMATE
MILILANI MAUKA
DEVELOPMENT PLAN
DECEMBER 2003

APPENDIX VII
SEWER CONNECTION APPROVAL

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET * HONOLULU, HAWAII 96813
Phone: (808) 768-8209 * Fax: (808) 768-4210

SEWER CONNECTION APPLICATION

APPLICATION NO.: **2011/SCA-0098** STATUS: **Approved**

DATE RECEIVED: **11/24/2010** IWDP APP. NO.:

PROJECT NAME: **2011/SCA-0098 Meheula Vista Senior Affordable Rental Developement**

$1,167,488.70
Estimated Wastewater System Facility Charge*

LOCATION:

Zone	Section	Plat	Parcel
9	5	002	032

95-1080 LEHIWA DR **393,085** Sq. Ft.

SPECIFIC LOCATION: **95-1080 Lehiwa Drive**

APPLICANT: **Alcon & Associates, Inc., Dean Alcon**
716 Umi Street Suite 250
Honolulu, Hawaii 96819

DEVELOPMENT TYPE: **Dwelling, Multi-family** SEWER CONNECTION WORK DESIRED: **Existing**

OTHER USES:

NON-RESIDENTIAL AREA: s.f. APPROXIMATE DATE OF CONNECTION: **06/14/2011**

PROPOSED UNITS		EXISTING UNITS		UNITS TO BE DEMOLISHED	
No. of New Units:	**301**	No. of Existing Units:	**0**	No. of Units to be Demolished:	**0**
Studios:		Studios:		Studios:	
1-Bedroom:	300	1-Bedroom:		1-Bedroom:	
2-Bedroom:	1	2-Bedroom:		2-Bedroom:	
3-Bedroom:		3-Bedroom:		3-Bedroom:	
4-Bedroom:		4-Bedroom:		4-Bedroom:	
5-Bedroom:		5-Bedroom:		5-Bedroom:	
6-Bedroom:		6-Bedroom:		6-Bedroom:	

REMARKS

APPROVAL DATE: **02/15/2011**

EXPIRATION DATE:**02/14/2013**

Valid 2-years after approval date. Construction plans shall be completed and approved within this 2-year period. Construction shall commence within 1-year after approval of plans.
** Applicable WSFC shall be collected at the prevailing rate in accordance with ROH 1990, Chapter 14, Sections 14-10.3, 14-10.4, 14-10.5 and Appendix 14-D.*

REVIEWED BY: ***Tessa Ching***

Tessa Ching
Site Development Division, Wastewater Branch

ExternalID: **042042660-001** JobId: **42042660**

Initial Print Date: Tuesday February 15, 2011 11:32 a

APPENDIX VIII
MAJOR EXEMPTIONS BEING REQUESTED THROUGH THE 201H APPLICATION

MEHEULA VISTA - ANTICIPATED EXEMPTIONS REQUEST

Land Use Ordinance of the City and County of Honolulu

The applicant will seek an exemption and/or deferral from the following requirements::

1. Exemption from Land Use Ordinance (LUO) Section 21-3.70-1(a) and Table 21-3, relating to permitted uses and structures, to allow a senior multi-family dwelling in the B-2 Community Business District.

2. Exemption from Chapter 21-6.20 and Table 21-6.1, relating to off-street parking, to allow a total of 176 parking stalls for the 300 senior dwelling units and 1 Managers unit, instead of the required 332 parking stalls.

3. Exemption from Section 18-6.2 ROH, to allow exemption from the fees for building permits.

4. Exemption from Section 18.6.1, ROH, to allow exemption from the fees for plan review.

5. Exemption from Section 22-1.1, ROH, to allow exemption from fees for subdivision applications (for the proposed sewer easement).

6. Exemption from Section 14-12.12 (f), ROH, to allow exemption from private storm drainage connection license fee.

7. Exemption from Section 14-14.4, ROH - to allow exemption from the grading and grubbing permit fees.

8. Exemption from Section 21-4.40 - to allow an existing hollow tile retaining wall of approximately 8 feet 10 inches along new property line (after subdivision of TMK: 9-5-022: 032 into two lots) to exceed the 6-foot height limit.

9. Exemption from Chapter 22, Article 7, ROH, to allow exemption from Park Dedication permit fees.

10. Exemption from Chapter 22, Article 7, ROH - to allow an exemption from Park Dedication application requirements.

11. Deferral of payment of wastewater system facilities charges until funding of a construction loan is available.

12. Deferral of payment of Board of Water Supply water system facilities charges until funding of a construction loan is available.

****

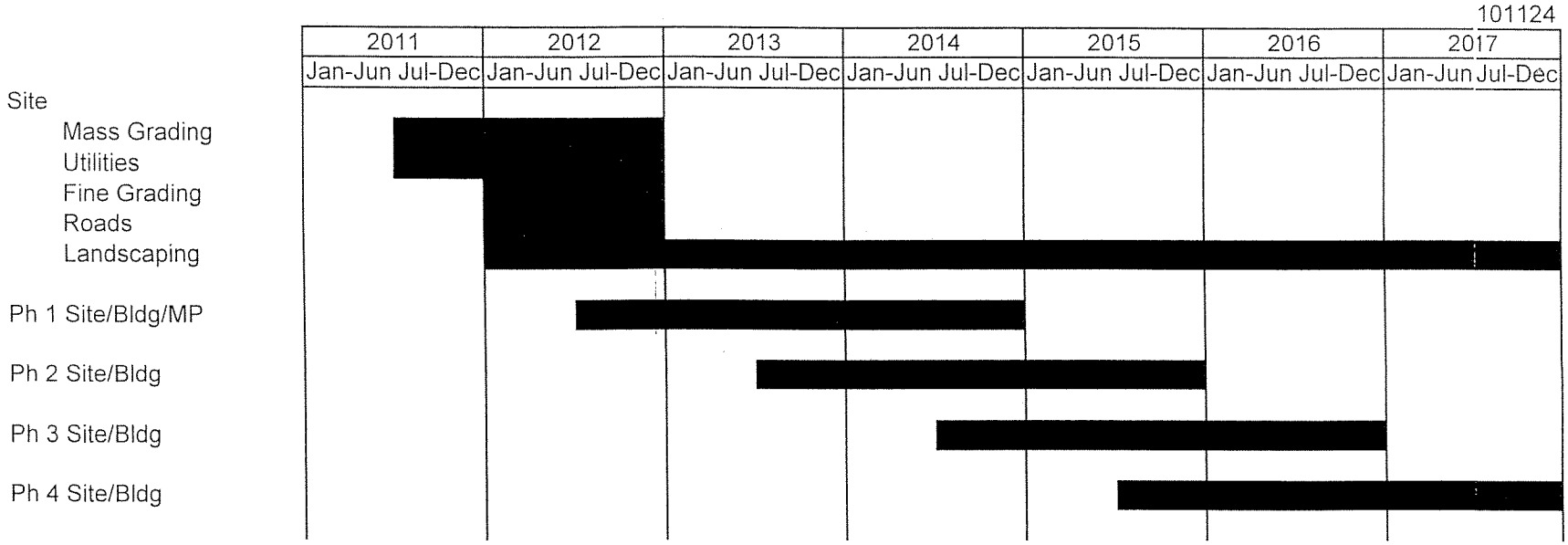
APPENDIX IX

CONSTRUCTION TIME FRAME

Meheula Vista

Pro Forma Construction Schedule (Multi-purpose Building shown in Phase 1)

101124



Please note: The pro forma schedule assumes continuous financing for each phase, as well as including the multi-purpose building in the 1st phase.

APPENDIX X
TRAFFIC STUDY

Traffic Impact Report

Meheula Vista

Prepared for:
Castle & Cooke Homes Hawaii

Prepared by:
Wilson Okamoto Corporation

October 2010

TRAFFIC IMPACT REPORT

FOR

MEHEULA VISTA

Prepared for:

Castle & Cooke Homes Hawaii
100 Kahelu Avenue, 2nd Floor
Mililani, HI 96789

Prepared by:

Wilson Okamoto Corporation
1907 S. Beretania Street, Suite 400
Honolulu, Hawaii 96826
WOC Ref: 8149-01

October 2010

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICIES

I. INTRODUCTION

A. Purpose of Study

The purpose of this study is to identify and assess the traffic impacts resulting from the proposed Meheula Vista located in Mililani Mauka, on the island of Oahu. The proposed project is a senior residential development, which will include on-site facilities and other amenities to support residential use.

B. Scope of Study

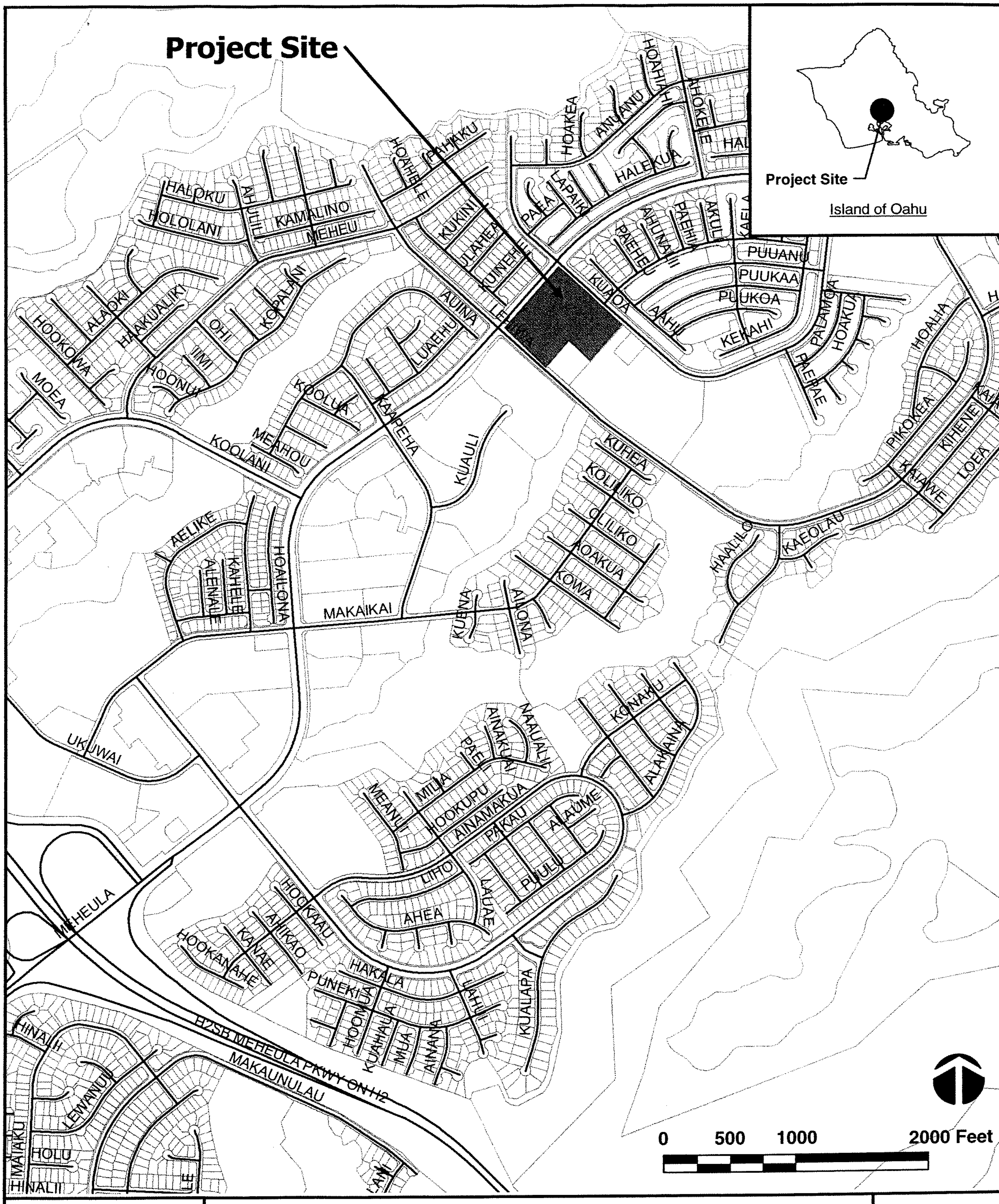
This report presents the findings and conclusions of the traffic study, the scope of which includes:

1. Description of the proposed project.
2. Evaluation of existing roadway and traffic operations in the vicinity.
3. Analysis of future roadway and traffic conditions without the proposed project.
4. Analysis and development of trip generation characteristics for the proposed project.
5. Superimposing site-generated traffic over future traffic conditions.
6. The identification and analysis of traffic impacts resulting from the proposed project.
7. Recommendations of improvements, if appropriate, that would mitigate the traffic impacts resulting from the proposed project.

II. PROJECT DESCRIPTION

A. Location

The project site is located in Mililani Mauka on the island of Oahu. The project site is currently vacant and is bounded by an existing storage facility and park to the south, Lehiwa Drive to the west, Kuaoa Street to the east, and Meheula Parkway to the north. The proposed project includes the development of approximately 300 one-bedroom senior rental units with approximately 133 parking stalls and various other amenities on the project site. Primary access to and from the proposed project is via both Lehiwa Drive and Kuaoa Street. Figure 1 illustrates the project location and vicinity maps.



WILSON OKAMOTO CORPORATION ENGINEERS - PLANNERS	**MEHEULA VISTA** LOCATION AND VICINITY MAP	FIGURE 1

B. Project Characteristics

The proposed Meheula Vista senior residential rental project will be located on an estimated 7.5-acre site in Mililani Mauka. The project will be constructed in four phases based on a development plan to include the following:

- Phase I - 75 one-bedroom units, 33 parking stalls, multi-purpose building
- Phase II – 75 one-bedroom units, 33 parking stalls
- Phase III – 75 one-bedroom units, 33 parking stalls
- Phase IV – 75 one-bedroom units, 33 parking stalls

The overall proposed development shall include a total of 300 one-bedroom units supplemented with a multi-purpose building and 132 surface parking stalls. The project is anticipated to be completed and occupied by Year 2016. Figure 2 shows the proposed project site plan.

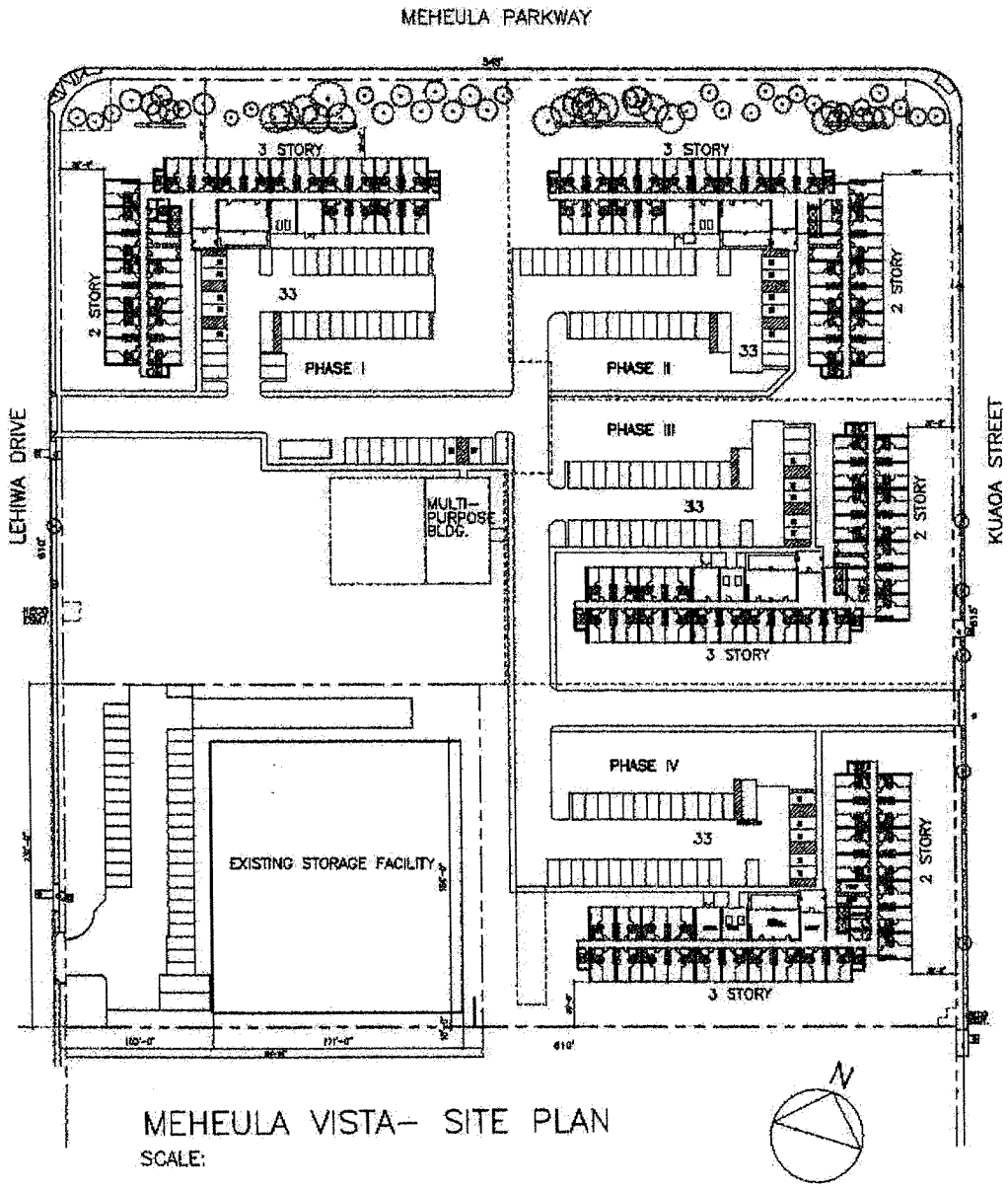
III. EXISTING TRAFFIC CONDITIONS

A. General

The project site is located along Meheula Parkway between Lehiwa Drive and Kuaoa Street. On the south side, the project site is adjacent to an existing storage facility and community park, and further south is the Mililani Middle School. The west side of the project site includes existing multi-family residential dwelling units, with the east and north sides of the project site containing single-family residential homes. Access to the project site will be off both the west and east sides of the project site along Lehiwa Drive and Kuaoa Street.

B. Area Roadway System

The main collector roadway in the vicinity is Meheula Parkway, predominantly a two-way, four-to five-lane roadway generally oriented in the east-west direction between Lanikuhana Avenue further west of the project site, continuing through Mililani Town, and terminating at Kapanoe Street, east of the project site in Mililani Mauka. In the vicinity of the project site, Meheula Parkway intersects with Ainamakua Drive, Makaikai Street, Koolani Drive, Kaapeha Street, Lehiwa Drive, and Kuaoa Street.



UNIT COUNT & PARKING COUNT

SENIOR RENTAL

PHASE I
75-1BR UNITS
33 PARKING
MULTI-PURPOSE BUILDING

PHASE II
75-1BR UNITS
33 PARKING

PHASE III
75-1BR UNITS
33 PARKING

PHASE IV
75-1BR UNITS
33 PARKING

TOTAL
300-1BR UNITS
132 PARKING STALLS

MEHEULA VISTA- SITE PLAN

SCALE:

SCHEME-H

9/22/10

WILSON OKAMOTO CORPORATION
ENGINEERS - PLANNERS

MEHEULA VISTA

PROJECT SITE PLAN

FIGURE 2

Ainamakua Drive is generally a two-way, four-lane roadway oriented in the north-south direction. Traffic volumes along this roadway have remained fairly stable over the past few years with minimal development occurring in the vicinity. At the signalized intersection of Meheula Parkway and Ainamakua Drive, the eastbound approach of Meheula Parkway has five lanes, in which one lane serves left and U-turn traffic movements, one lane serves exclusive left-turn movements, two lanes each serve through traffic movements, and one lane serves exclusive right-turn movements. The westbound approach along Meheula Parkway has four lanes, in which one lane serves exclusive left-turn traffic movements, two lanes each serve through traffic movements, and one lane serves a through and right-turn traffic movements. The northbound approach of Ainamakua Drive has three lanes, two of which serves left-turn traffic movements and one lane that serves through and right-turn movements. The southbound approach of Ainamakua Drive also has three lanes, in which one lane serves left-turn movements, one lane serves through traffic movements, and one lane serves through and right-turn traffic movements. The traffic signal system at the intersection control traffic movements utilizing a four-phase operation.

Approximately 1,500 feet east of the intersection of Meheula Parkway and Ainamakua Drive, Meheula Parkway intersect Makaikai Street. At this signalized intersection, the eastbound approach of Meheula Parkway has one lane serving left-turn movements, one lane serving through movements, and one lane serving through and right-turn movements. On the westbound approach of the intersection, Meheula Parkway has one lane serving left-turn movements, two lanes serving through movements, and one lane serving through and right-turn movements. Both approaches of Makaikai Street have one lane serving all traffic movements. The traffic signal system at the intersection control traffic movements utilizing a two-phase operation.

Further east at approximately 1,100 feet, Meheula Parkway intersect Koolani Drive to form a signalized T-intersection. The westbound approach of Meheula Parkway has one lane serving through movements and one lane serving through and

right-turn movements. On the eastbound approach of the intersection, Meheula Parkway has one lane serving left-turn movements and two lanes serving through traffic movements. The traffic signal system at the intersection control traffic movements utilizing a three-phase operation.

Approximately 850 feet further east along Meheula Parkway, the roadway intersects Kaapeha Street. The intersection is controlled by a traffic signal system with the eastbound and westbound approaches of Meheula Parking both containing exclusive left-turn lanes, a through movement lane, and one lane serving through and right-turn movements. The northbound and southbound approaches of Kaapeha Street include one lane serving all traffic movements. The traffic signal system at the intersection control traffic movements utilizing a three-phase operation.

Further east at approximately 1,100 feet, Meheula Parkway intersects Lehiwa Drive near the project site. At this signalized intersection, the eastbound and westbound approaches of Meheula Parkway have one exclusive left-turn lane, one through movement lane, and a shared through and right-turn movement lane. The Lehiwa Drive northbound and southbound approaches include one lane serving all traffic movements at the intersection The traffic signal system at the intersection control traffic movements utilizing a three-phase operation.

Continuing further east by approximately 660 feet from the intersection with Lehiwa Drive, Meheula Parkway intersects Kuaoa Street to form an unsignalized intersection. The eastbound and westbound approaches of Meheula Parkway have an exclusive left-turn lane, a through movement lane, and a shared through and right-turn movement lane. The northbound and southbound approaches of Kuaoa Street are stop-controlled with free-flow through traffic movements permitted on the Meheula Parkway intersection approaches.

C. Traffic Volumes and Conditions

1. General

a. Field Investigations

The field investigations were conducted in October 2008 and October 2010, and consisted of manual intersection turning movement

count surveys and field observations of traffic conditions during the morning peak period between the hours of 5:30 AM and 8:30 AM, and the afternoon peak period between 3:00 PM and 6:00 PM at the following intersections:

- Meheula Parkway at Ainamakua Drive
- Meheula Parkway at Makaikai Street
- Meheula Parkway at Koolani Drive
- Meheula Parkway at Kaapeha Street
- Meheula Parkway at Lehiwa Drive
- Meheula Parkway at Kuaoa Street

Appendix A includes the existing traffic count data, field sketches of the study intersection, and applicable field observation notes.

b. Capacity Analysis Methodology

The highway capacity analysis performed in this study is based upon procedures presented in the "Highway Capacity Manual", Transportation Research Board, 2000, and utilizes the "Synchro" software, developed by Trafficware. The analysis is based on the concept of Level of Service (LOS).

LOS is a quantitative and qualitative assessment of traffic operations. Levels of Service are defined by LOS "A" through "F"; LOS "A" representing ideal or free-flow traffic operating conditions and LOS "F" unacceptable or potentially congested traffic operating conditions.

"Volume-to-Capacity" (v/c) ratio is another measure indicating the relative traffic demand to the road carrying capacity. A v/c ratio of one (1.00) indicates that the roadway is operating at or near capacity. A v/c ratio of greater than 1.00 indicates that the traffic demand exceeds the road's carrying capacity. The specific LOS definitions are included in Appendix B for the various types of facility.

2. Existing Peak Hour Traffic

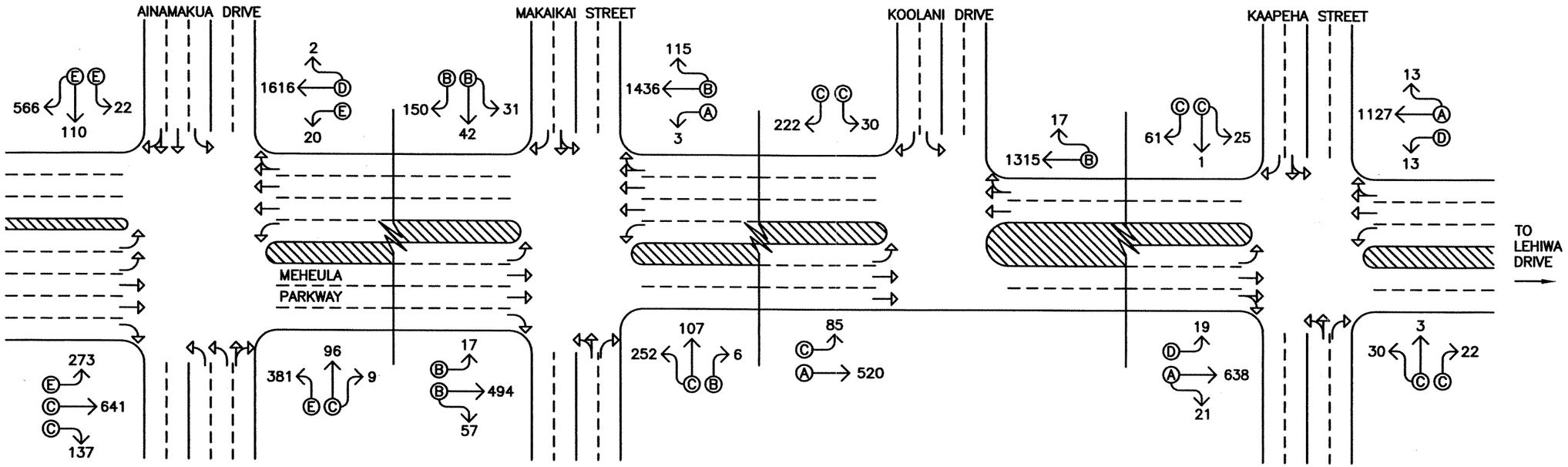
a. General

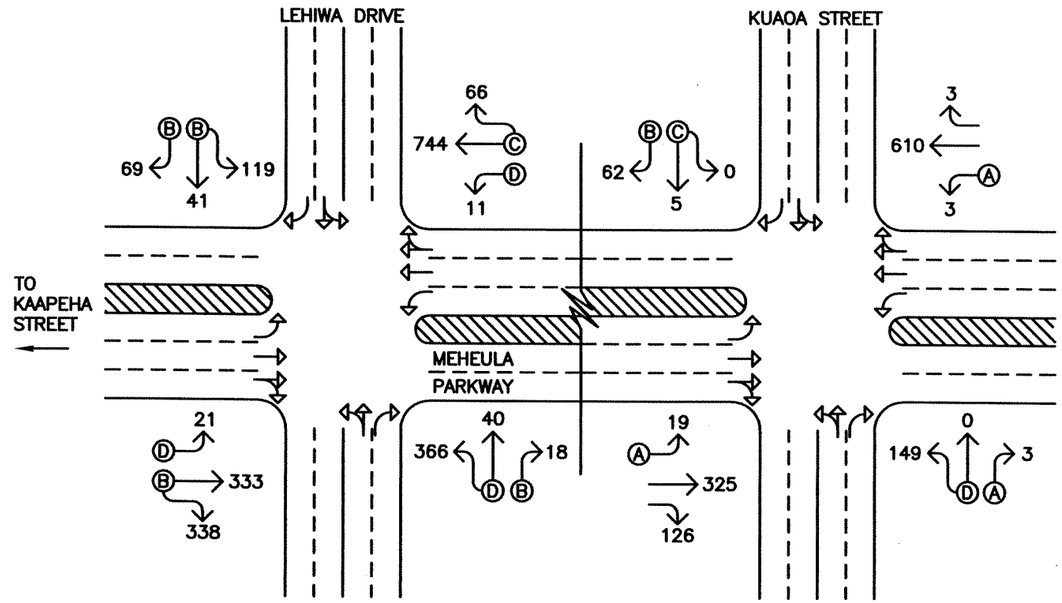
Figures 3 and 4 show the existing AM and PM peak hour traffic volumes and operating traffic conditions at the intersections in the project vicinity along Meheula Parkway between Ainamakua Drive and Kuaoa Street. The morning peak hour of traffic generally occurs between 7:15 AM and 8:15 AM at the study intersections. In the afternoon, the peak hour of traffic generally occurs between the hours of 4:30 PM and 5:30 PM. To identify the traffic impacts associated with the proposed project, the traffic analyses are based on the peak hour time periods for each of the study intersections. The LOS calculations for each of the study intersections for each peak hour time period are included in Appendix C.

b. Ainamakua Drive and Meheula Parkway

At the intersection with Ainamakua Drive and Meheula Parkway, Ainamakua carries 486 vehicles northbound and 698 vehicles southbound during the AM peak hour of traffic. During the PM peak hour, the overall traffic is lower with 367 vehicles traveling northbound and 421 vehicles traveling southbound. The Meheula Parkway approaches of the intersection carries 1,051 vehicles eastbound and 1,638 vehicles westbound during the AM peak hour of traffic. During the PM peak hour, the overall combined traffic volume total is slightly higher with 2,223 vehicles traveling eastbound and 751 vehicles traveling westbound.

The left-turn movements of all approaches operate at LOS "E" or LOS "D" during the AM and PM peak periods. The southbound through and right-turn movements operate at LOS "E" and LOS "D" during the AM and PM peak periods, respectively. The northbound through and right-turn movements operate at LOS "C" and LOS "D" during the AM and PM peak periods, respectively. During both





LEGEND

90 TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

Ⓐ LANE GROUP LEVEL OF SERVICE

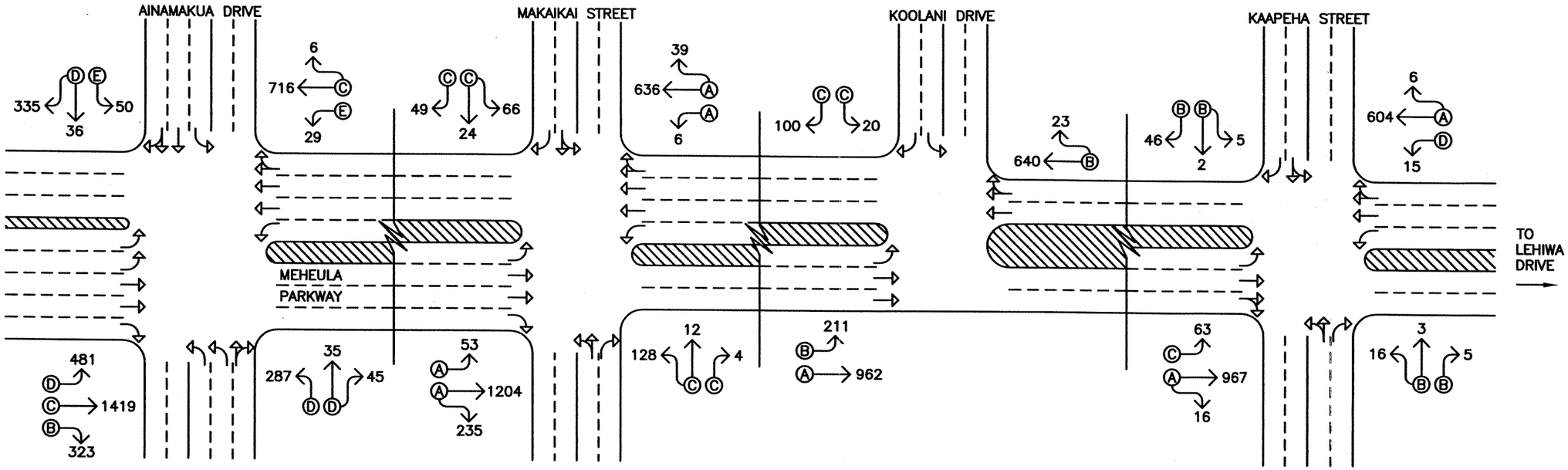
DATES OF COUNT: 2008/2010

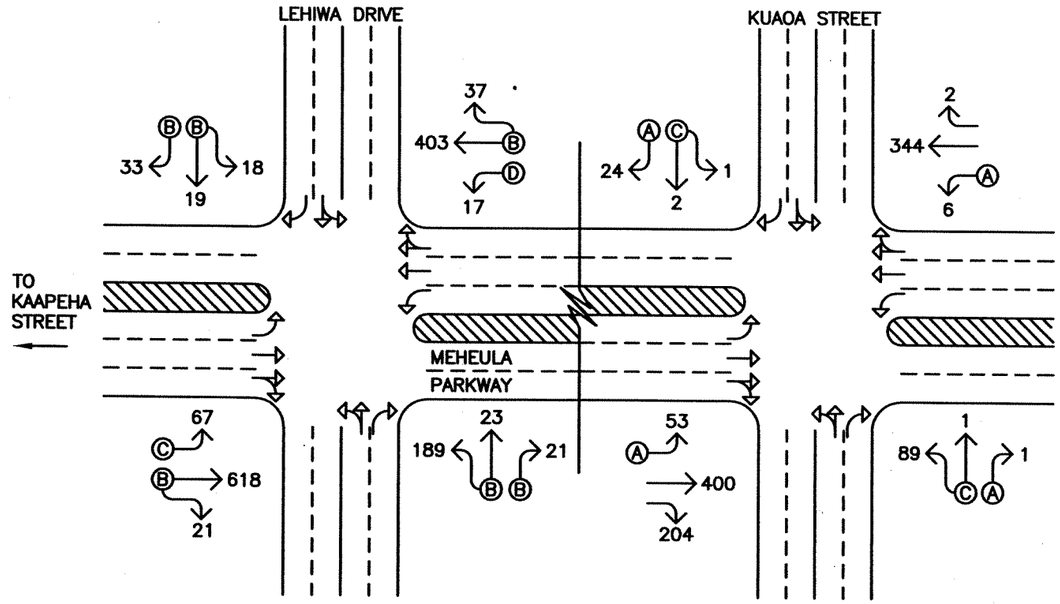
WILSON OKAMOTO CORPORATION
ENGINEERS · PLANNERS

MEHEULA VISTA

EXISTING AM PEAK HOUR OF TRAFFIC

FIGURE 3





LEGEND

90 TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

(A) LANE GROUP LEVEL OF SERVICE

DATES OF COUNT: 2008/2010

WILSON OKAMOTO CORPORATION
ENGINEERS · PLANNERS

MEHEULA VISTA

EXISTING PM PEAK HOUR OF TRAFFIC

FIGURE 4

peak hours, the eastbound through movement operates at LOS "C" while the eastbound right-turn movement operates at LOS "C" or LOS "B". The westbound through and right-turn movement operates at LOS "D" and LOS "C" during the AM and PM peak hours, respectively.

Vehicular queuing was observed on Meheula Parkway during the morning peak period in the westbound direction, extending from Ainamakua Drive to Makaikai Street on occasions, near the 8:00 AM time period. After 8:00 AM, vehicular queuing rapidly decreased resulting in minimal motorist delays at the intersection of Meheula Parkway and Ainamakua Drive. Vehicular queuing also occurred on the southbound approach of Ainamakua Drive, occasionally extending northward beyond Ukuwai Street. As with the queuing of other movements at the intersection, this queue dissipated quickly after 8:00 AM. During the PM peak period, some vehicular queuing would occur on the eastbound approach of Meheula Parkway as a result of heavy left-turn demands. On occasions, these left-turn queues would extend beyond the left-turn lane capacity, affecting through traffic flow in the through movement lanes.

c. Meheula Parkway and Makaikai Street

At the intersection with Meheula Parkway, the Makaikai Street approaches carry 365 vehicles northbound and 223 vehicles southbound during the AM peak hour of traffic. During the PM peak hour, the overall traffic volume is similar with 144 vehicles traveling northbound and 139 vehicles traveling southbound. Meheula Parkway carries 568 vehicles eastbound during the AM peak hour and 1,492 vehicles during the PM peak hour. On the westbound approach of the intersection, Meheula Parkway carries 1,554 vehicles westbound during the AM peak hour and 681 vehicles during the PM peak hour.

The left-turn movements of the eastbound and westbound

approaches operate at LOS "B" and LOS "A" during the AM and PM peak periods, respectively, while the through and right-turn movements on both approaches operate at LOS "B" conditions. The northbound approach operates at LOS "C", while the southbound approach operates at LOS "B" during the AM peak hour of traffic. During the PM peak hour of traffic the northbound and southbound approaches both operate at LOS "C" conditions.

During the AM peak hour, vehicular queuing on Meheula Parkway from Ainamakua Drive would occasionally extend to Makaikai Street, affecting northbound left-turn and southbound right-turn movements from Makaikai Street. This condition occurs at time periods near the start of schools in the vicinity. After 8:00 AM in the morning, traffic queues dissipate quickly allowing the efficient operation and flow of traffic movements controlled by the traffic signal system at the intersection.

d. Meheula Parkway and Koolani Drive

At the intersection with Meheula Parkway, the Koolani Drive approach carries 252 vehicles southbound during the AM peak hour of traffic. During the PM peak hour, the approach carries 120 vehicles traveling southbound. Meheula Parkway carries 605 vehicles eastbound during the AM peak hour and 1,173 vehicles during the PM peak hour. On the westbound approach of the intersection, Meheula Parkway carries 1,332 vehicles westbound during the AM peak hour and 663 vehicles during the PM peak hour.

The left-turn movements of the eastbound approach of Meheula Parkway operate at LOS "C" and LOS "B" during the AM and PM peak periods, respectively, while the eastbound through movement and westbound through and right-turn movements operate at LOS "C" or better conditions. The left-turn movement on the southbound approach of Koolani Drive operates at LOS "C" for both peak periods,

while the right-turn movement also operates at LOS "C" conditions for both peak periods.

Vehicular queuing would occasionally occur on the approaches of the intersection. On the southbound approach of Koolani Drive, maximum queue lengths of six vehicles were observed during the AM peak hour, with minimal queuing of the other movements at the intersection. During the PM peak hour of traffic, a maximum of approximately seven vehicles would queue within the eastbound left-turn lane on Meheula Parkway, with minimal queuing of the other movements. All of the vehicular queues would dissipate after each traffic signal cycle.

e. Meheula Parkway and Kaapeha Street

At the intersection with Meheula Parkway, the Kaapeha Street approaches carry 55 vehicles northbound and 26 vehicles southbound during the AM peak hour of traffic. During the PM peak hour, the overall traffic volume is similar with 24 vehicles traveling northbound and 53 vehicles traveling southbound. Meheula Parkway carries 678 vehicles eastbound during the AM peak hour and 1,046 vehicles during the PM peak hour. On the westbound approach of the intersection, Meheula Parkway carries 1,153 vehicles westbound during the AM peak hour and 625 vehicles during the PM peak hour.

The left-turn movements of the eastbound and westbound approaches of Meheula Parkway operate at LOS "D" during both peak periods with the exception of the eastbound left-turn movement operating at LOS "C" conditions during the PM peak period of traffic. The through and right-turn movements on both approaches operate at LOS "A" conditions during both peak periods of traffic. The northbound and southbound approaches of Kaapeha Street both operate at LOS "C" during the AM peak period; and at LOS "B" during the PM peak period of traffic.

Vehicular queuing would occasionally occur on the approaches of the intersection. In particular, on the northbound and southbound approaches of Kaapeha Street, maximum queue lengths of five vehicles were observed during the AM peak hour, with minimal queuing of the other movements at the intersection. During the PM peak hour of traffic, a maximum of four vehicles would queue within the eastbound left-turn lane on Meheula Parkway, with minimal queuing of the other movements. All of the vehicular queues would dissipate after each traffic signal cycle.

f. Meheula Parkway and Lehiwa Drive

At the intersection with Meheula Parkway, the Lehiwa Drive approaches carry 424 vehicles northbound and 229 vehicles southbound during the AM peak hour of traffic. During the PM peak hour, the overall traffic significantly less with 233 vehicles traveling northbound and 70 vehicles traveling southbound. The Meheula Parkway approach at Lehiwa Drive carries 692 vehicles eastbound during the AM peak hour and 706 vehicles during the PM peak hour. On the westbound approach of the intersection, Meheula Parkway carries 821 vehicles westbound during the AM peak hour and 457 vehicles during the PM peak hour.

The left-turn movements of the eastbound and westbound approaches of Meheula Parkway operate at LOS "D" during both peak periods with the exception of the eastbound left-turn movement operating at LOS "C" during the PM peak period of traffic. The through and right-turn movements on both approaches operate at LOS "C" or better conditions during both peak periods of traffic. The northbound and southbound approaches of Lehiwa Drive operate at LOS "D" and LOS "B" during the AM peak hour of traffic, respectively, and both operate at LOS "B" during the PM peak hour of traffic.

Vehicular queuing would occasionally occur on the approaches of the intersection. In particular, on the northbound approach of Lehiwa Drive, maximum queue lengths of approximately 15 vehicles were observed during the AM peak hour. On the southbound approach of Lehiwa Drive, maximum queues of approximately four vehicles were observed at the intersection. Minimal queuing occurred during the AM peak hour of the other movements at the intersection. During the PM peak hour of traffic, a maximum of four vehicles would queue within the eastbound left-turn lane on Meheula Parkway, with minimal queuing of the other movements.

g. Meheula Parkway and Kuaoa Street

At the intersection with Meheula Parkway, the Kuaoa Street approaches carry 152 vehicles northbound and 67 vehicles southbound during the AM peak hour of traffic. During the PM peak hour, the overall traffic volume is less with 91 vehicles traveling northbound and 27 vehicles traveling southbound. Meheula Parkway at Kuaoa Street carries 470 vehicles eastbound during the AM peak hour and 657 vehicles during the PM peak hour. On the westbound approach of the intersection, Meheula Parkway carries 616 vehicles westbound during the AM peak hour and 352 vehicles during the PM peak hour.

At this unsignalized intersection, the left-turn movements of the eastbound and westbound approaches of Meheula Parkway operate at LOS "A" during both the AM and PM peak periods of traffic. The northbound and southbound approaches of Kuaoa Street operate at LOS "D" and LOS "C" during AM and PM peak hours, respectively.

During the PM peak hour, the northbound and southbound approaches operate at LOS "C" conditions.

Vehicular queuing would occasionally occur on the approaches of Kuaoa Street. The northbound approach of Kuaoa Street have maximum queue lengths of seven vehicles observed during the AM

peak hour, generally comprised of school buses. On the southbound approach of Kuaoa Street, maximum queues of approximately three vehicles were observed at the intersection. Minimal queuing occurred during the AM peak hour of the other movements at the intersection. During the PM peak hour of traffic, a maximum of three vehicles would queue in the northbound direction of Kuaoa Street and maximum queue lengths of two vehicles were observed on the southbound approach. Vehicle queues were able to clear the intersection when gaps were present in the traffic stream along Meheula Parkway.

IV. PROJECTED TRAFFIC CONDITIONS

A. Site-Generated Traffic

1. Trip Generation Methodology

The trip generation methodology used in this study is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation, 8th Edition," 2008. The ITE trip generation rates are developed empirically by correlating the vehicle trip generation data with various land use characteristics such as the number of vehicle trips generated per unit. The ITE land use category utilized for this report is "Senior Adult Housing – Attached". The independent variable for the land use to derive the trip generation values is 300 occupied units. Therefore, for traffic projection purposes, the analysis contained herein conservatively assumes that the development will be 100% occupied. As such, the traffic impacts determined in this study is based on full occupancy of the development. Table 1 summarizes the project site trip generation characteristics applied to the AM and PM peak hours of traffic to measure the impact resulting from the proposed Meheula Vista development.

Table 1: Peak Hour Trip Generation

MEHEULA VISTA		
SENIOR ADULT HOUSING - ATTACHED		
INDEPENDENT VARIABLE:		Occupied Units = 300
		PROJECTED TRIP ENDS
AM PEAK	ENTER	14
	EXIT	25
	TOTAL	39
PM PEAK	ENTER	29
	EXIT	19
	TOTAL	48

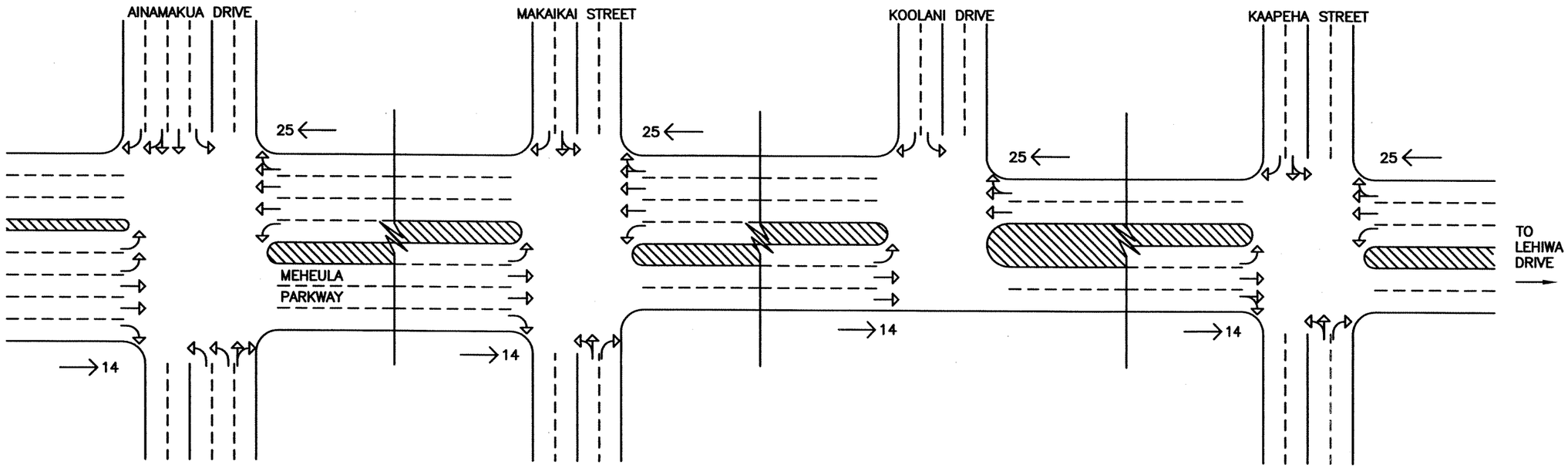
2. Trip Distribution

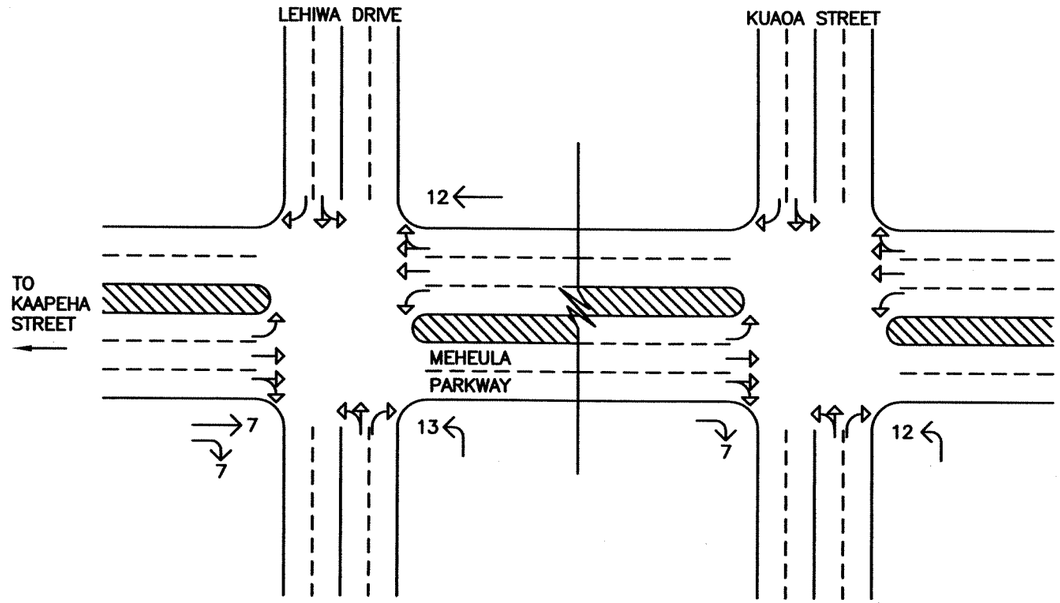
Figures 5 and 6 illustrate the distribution of site-generated vehicular trips at the study intersections during the AM and PM peak hours. Access to the proposed development is expected to be off Lehiwa Drive and Kuaoa Street. Based on the location of units relative to site access points, there is an even distribution of units on the project site. Therefore, at project buildout, it is assumed that the project's trip generation would be equally distributed to each of the two driveways.

To evaluate the potential impact to traffic conditions as a result of the project, the potential trips generated by the project were conservatively assumed to traverse Meheula Parkway, to and from areas west, through the Meheula Parkway and Ainamakua Drive intersection. As such, during the AM and PM peak periods of traffic, all of the traffic generated by the proposed project would travel to and from the project site using Meheula Parkway.

B. Through Traffic Forecasting Methodology

The State Department of Transportation has a traffic count station near Meheula Parkway, and the available data is insufficient to obtain a statistical traffic growth trend along Meheula Parkway. In addition, no further development is planned within the Mililani Mauka area. However, for the purposes of this report, a





LEGEND

90 TRAFFIC MOVEMENT VOLUME (VPH)

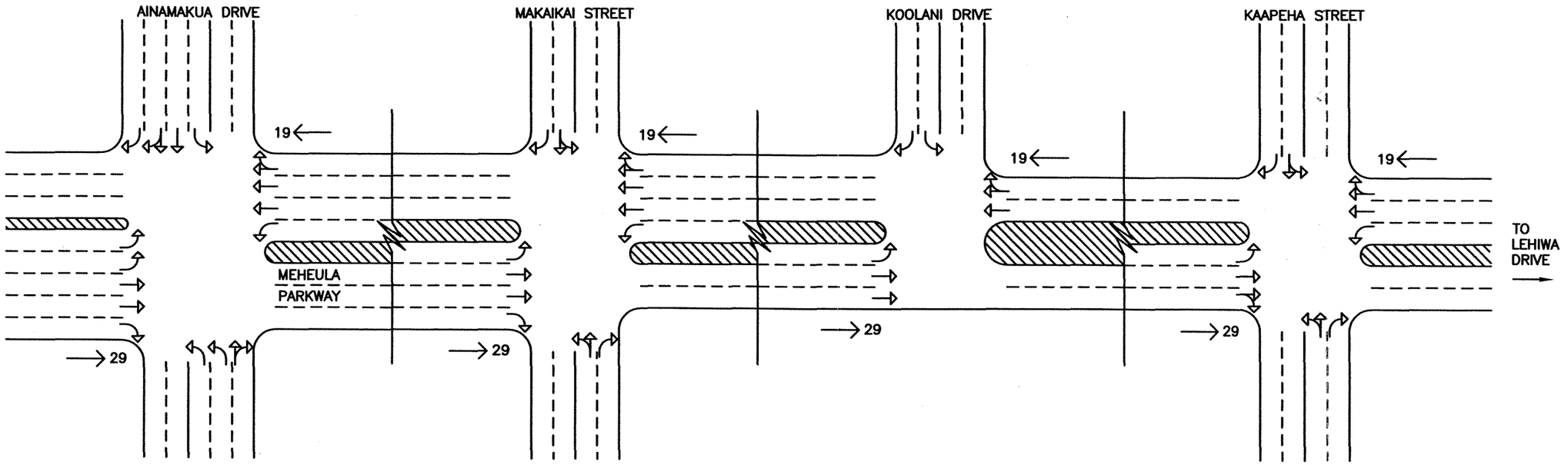
LANE USAGE

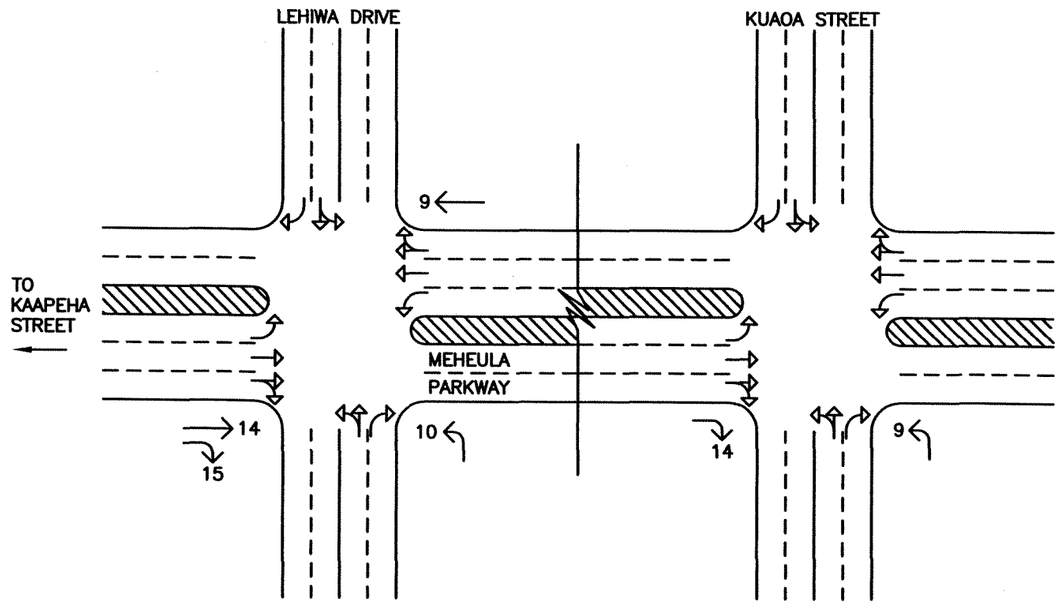
WILSON OKAMOTO CORPORATION
ENGINEERS · PLANNERS

MEHEULA VISTA

DISTRIBUTION OF SITE-GENERATED VEHICLES - AM PEAK HOUR OF TRAFFIC

FIGURE 5





LEGEND

90 TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

WILSON OKAMOTO CORPORATION
ENGINEERS • PLANNERS

MEHEULA VISTA

DISTRIBUTION OF SITE-GENERATED VEHICLES - PM PEAK HOUR OF TRAFFIC

FIGURE 6

conservative ambient growth of 1.0% over the course of the development of the proposed project was assumed along Meheula Parkway. Although significant traffic growth is not expected for Mililani Mauka, if at all, application of a growth factor would conservatively account for daily traffic fluctuations in traffic demands and potential changes in traffic demands along the corridor of Meheula Parkway. As such, using 2010 as the Base Year, a growth rate factor of 1.01 was applied to the existing traffic demands along Meheula Parkway to achieve the projected Year 2016 traffic demands.

C. Other Considerations

Future plans to development on the southwest and northwest corners of the intersection of Meheula Parkway and Ainamakua Drive, herein referred to as Mililani Mauka Commercial Sites A and B, respectively, may include the development of commercial uses to include the following:

- Approximately 33,000 square feet Gross Leasable Area of Specialty Retail
- Approximately 22,000 square feet Gross Leasable Area of General Commercial

The proposed development is anticipated to be completed as early as Year 2012 and is expected to include several roadway mitigating measures that include an additional southbound lane on Ainamakua Drive between Meheula Parkway and Ukuwai Street to facilitate right-turn movements at the approach to Meheula Parkway, as well as other improvements to Ukuwai Street located further north. For the purposes of this traffic analysis, the trips associated with these potential commercial developments are incorporated in the traffic projections including all mitigating measures identified in the traffic assessment report prepared for the projects entitled, *Traffic Impact Report for the Proposed Mililani Mauka Commercial Sites A & B,* dated August 2008.

D. Traffic Signal Warrant

Due to the existing and anticipated traffic increases along Kuaoa Street as a result of the assumed ambient growth, other projects in the region, and the proposed Meheula Vista development, the intersection of Meheula Parkway and Kuaoa Street was evaluated for potential traffic signalization. The installation of a traffic signal at

an intersection may be justified by one or more of the eight warrants outlined in the "Manual on Uniform Traffic Control Devices for Streets and Highways," 2009 (MUTCD). These warrants take into account factors such as eight-hour vehicular volumes (Warrant 1), four-hour vehicular volumes (Warrant 2), peak hour volumes (Warrant 3), pedestrian volumes (Warrant 4), the presence of a school crossing or coordinated signal system (Warrants 5 and 6), crash experience (Warrant 7), and other characteristics of the roadway network (Warrant 8). Based on available data, Warrants 1, 2, and 3 were applied to determine whether a traffic signal system may be justified.

Warrant 1, the "Eight-Hour Volume Warrant", consists of two conditions that may justify the installation of a traffic signal at an intersection where vehicles experience high traffic delay due to large volumes of intersecting traffic during any eight hours of an average day. The first condition is the "Minimum Vehicular Volume Condition" and the second is the Interruption of Continuous Traffic Condition". Warrant 1 would be satisfied by either meeting the thresholds shown in the 100% columns of either condition of Table 4C-1 of the MUTCD or by meeting thresholds shown in the 80% columns for both conditions of Table 4C-1 of the MUTCD. Under existing conditions, the traffic volumes entering the intersection of Meheula Parkway and Kuaoa Street do meet the thresholds during any eight hours of the day, and as such, does satisfy Warrant 1.

Warrant 2, the "Four-Hour Volume Warrant", consists of several conditions that may justify the installation of a traffic signal system at an intersection where vehicles experience high traffic delay due to large volumes of intersecting traffic during any four hours of an average day. One of the conditions is based upon the relationship between the traffic volumes along the major and minor streets. If the traffic volumes along the minor street exceed the thresholds shown in Figure 4C-1 of the MUTCD, a traffic signal system may be warranted at an intersection. Under existing conditions, the traffic volumes entering the intersection of Meheula Parkway and Kuaoa Street do meet the thresholds during any four hours of the day, and as such, does satisfy Warrant 2.

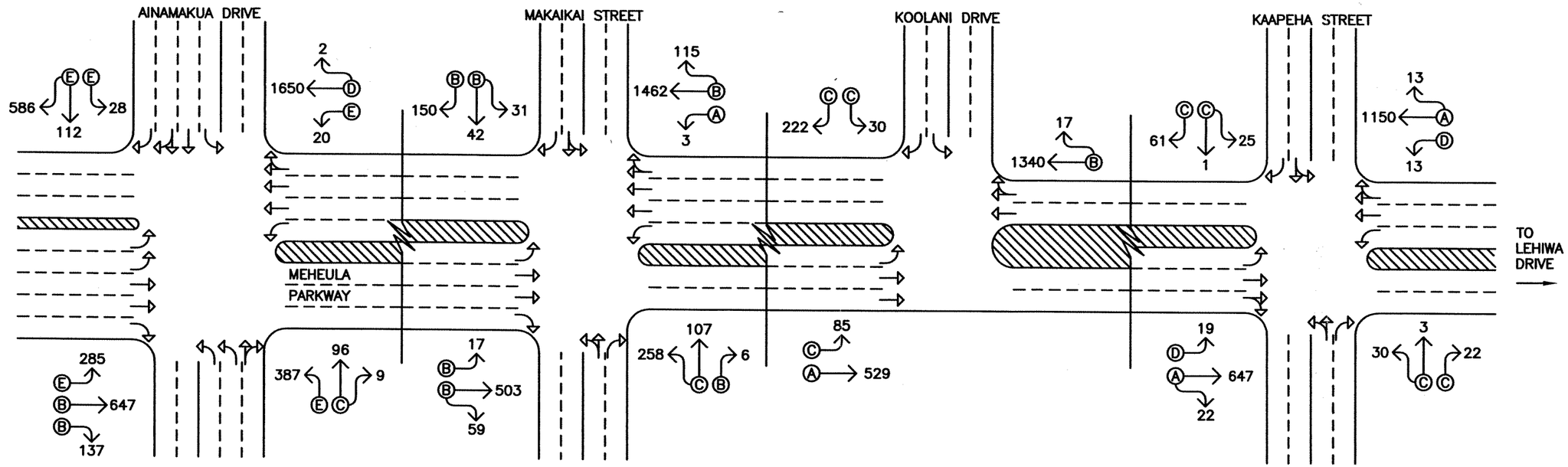
Warrant 3, the "Peak Hour Warrant," consists of several conditions that may justify the installation of a traffic signal at an intersection where motorists experience high traffic delay due to large volumes of intersecting traffic during the peak hour periods. One of the conditions is based upon the relationship between the traffic volumes along the major and minor street. If the traffic volumes along the minor street exceed the thresholds shown in Figure 4C-3 of the MUTCD, a traffic signal system may be warranted. At the intersection of Meheula Parkway and Kuaoa Street, the critical volumes are less than the thresholds identified in the MUTCD for signalization during the AM and PM peak periods of traffic. As such, the intersection does satisfy Warrant 3.

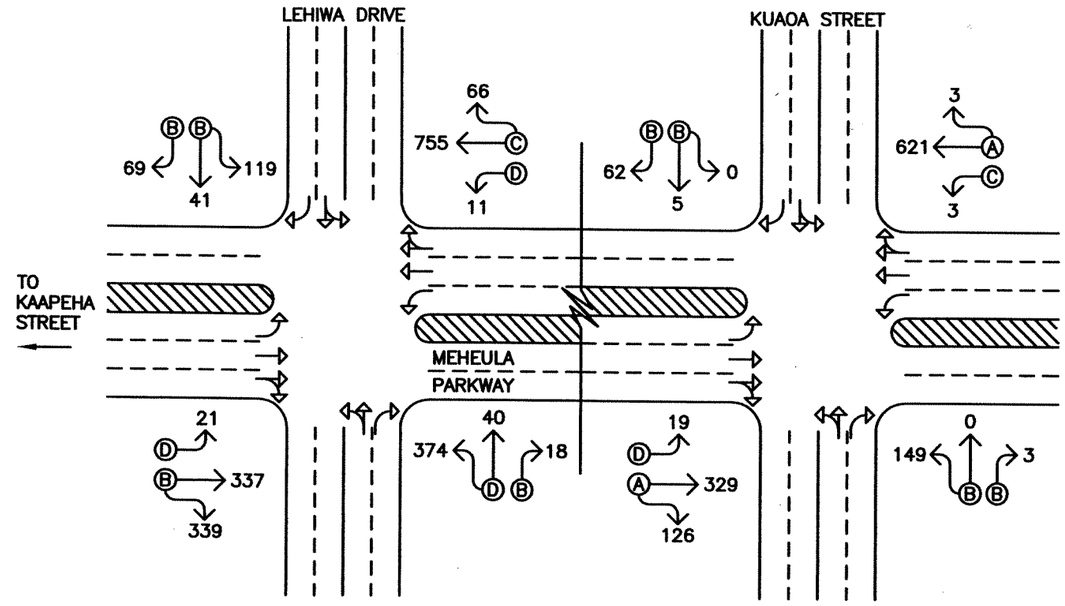
Based on the traffic signal warrant analysis, a traffic signal system is recommended at the intersection of Meheula Parkway and Kuaoa Street. The intersection is herein assumed to be controlled by a traffic signal system to facilitate traffic flow through the intersection to service projected traffic conditions (see Appendix D for Warrant Analysis).

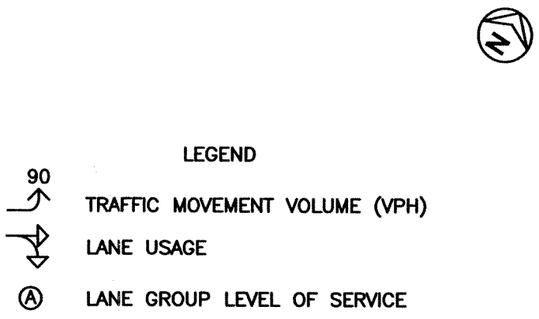
E. Total Traffic Volumes Without Project

The projected Year 2016 AM and PM peak hour traffic volumes and operating conditions in the project vicinity without the proposed Meheula Vista development are shown on Figures 7 and 8 and summarized in Table 2. The existing levels of service for the critical traffic movements at the study intersections are provided for comparison purposes. The LOS calculations are included in Appendix E.

Under Year 2016 without project conditions, traffic operations in the project vicinity are expected to remain similar to the existing conditions during both peak hours of traffic. At the intersection of Ainamakua Drive with Meheula Parkway, all traffic movements are expected to operate similarly to existing conditions with improvements to specific movements as a result of planned roadway improvements in the vicinity. The left-turn traffic movements on all approaches are expected to continue to operate at LOS "D" or LOS "E" during both the projected AM and PM peak period without the proposed project.





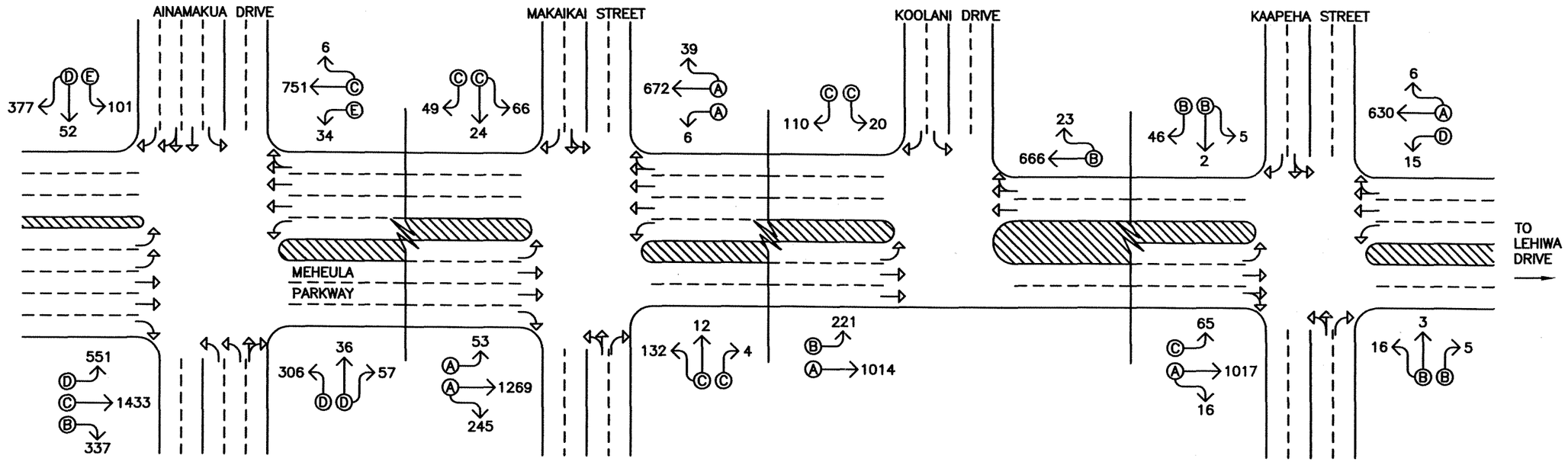


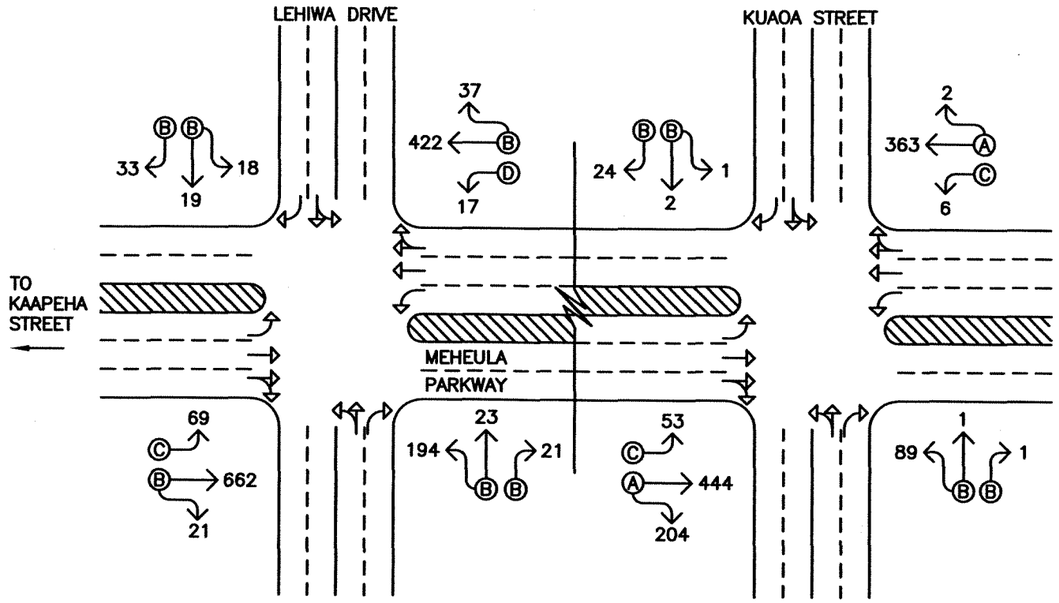
WILSON OKAMOTO CORPORATION
ENGINEERS · PLANNERS

MEHEULA VISTA

YEAR 2016 AM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 7





LEGEND

90 TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

Ⓐ LANE GROUP LEVEL OF SERVICE

WILSON OKAMOTO CORPORATION
ENGINEERS · PLANNERS

MEHEULA VISTA

YEAR 2016 PM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 8

Table 2: Existing and Projected (Without Project) LOS Traffic Operating Conditions

Intersection	Critical Traffic Movement		AM		PM	
			Exist	Year 2016 w/out Proj	Exist	Year 2016 w/out Proj
Meheula Pkwy/ Ainamakua Dr *	Southbound	LT	E	E	E	E
		TH-RT	E	E	D	D
	Eastbound	LT	E	E	D	D
		TH	C	B	C	C
		RT	C	B	B	B
	Northbound	LT	E	E	D	D
		TH-RT	C	C	D	D
	Westbound	LT	E	E	E	E
		TH-RT	D	D	C	C
Meheula Pkwy/ Makaikai St	Southbound	LT-TH	B	B	C	C
		RT	B	B	C	C
	Eastbound	LT	B	B	A	A
		TH-RT	B	B	A	A
	Northbound	LT-TH	C	C	C	C
		RT	B	B	C	C
	Westbound	LT	A	A	A	A
		TH-RT	B	B	A	A
Meheula Pkwy/ Koolani Dr	Southbound	LT	C	C	C	C
		RT	C	C	C	C
	Eastbound	LT	C	C	B	B
		TH	A	A	A	A
	Westbound	TH-RT	B	B	B	B

* Assumes implementation of improvements along Ainamakua Drive.
** Assumes signalization by Year 2016.

Table 2: Existing and Projected (Without Project) LOS (Con't.)
Traffic Operating Conditions

Intersection	Critical Traffic Movement		AM		PM	
			Exist	Year 2016 w/out Proj	Exist	Year 2016 w/out Proj
Meheula Pkwy/ Kaapeha St	Southbound	LT- TH	C	C	B	B
		RT	C	C	B	B
	Eastbound	LT	D	D	C	C
		TH-RT	A	A	A	A
	Northbound	LT- TH	C	C	B	B
		RT	C	C	B	B
	Westbound	LT	D	D	D	D
		TH-RT	A	A	A	A
Meheula Pkwy/ Lehiwa Sr	Southbound	LT-TH	B	B	B	B
		RT	B	B	B	B
	Eastbound	LT	D	D	C	C
		TH-RT	B	B	B	B
	Northbound	LT-TH	D	D	B	B
		RT	B	B	B	B
	Westbound	LT	D	D	D	D
		TH-RT	C	C	B	B
Meheula Pkwy/ Kuaoa St **	Southbound	LT-TH	C	B	C	B
		RT	B	B	A	B
	Eastbound	LT	A	D	A	C
		TH-RT	-	A	-	A
	Northbound	LT-TH	D	B	C	B
		RT	A	B	A	B
	Westbound	LT	A	C	A	C
		TH-RT	-	A	-	A

* Assumes implementation of improvements along Ainamakua Drive.
** Assumes signalization by Year 2016.

At the intersection of Meheula Parkway and Makaikai Street, the left-turn movements on the eastbound and westbound approaches would continue operate at LOS "B" or better during the AM and PM peak periods. The through and right-turn movements on both of the eastbound and westbound approaches would also operate at LOS "B" conditions. The northbound and southbound approaches both would continue to operate at LOS "C" or better for both peak periods, when no changes in operational levels of service from existing conditions.

The left-turn movements on the eastbound approach of Meheula Parkway at Koolani Drive would continue to operate at LOS "C" and LOS "B" during the AM and PM peak periods, respectively, while the eastbound through movement and westbound through and right-turn movements operate at LOS "B" or better conditions. The left-turn and right-turn movements on the southbound approach of Koolani Drive would continue to operate at LOS "C" for both peak periods, with no changes to the operating levels of service from existing.

At Kaapeha Street, the left-turn movements of the eastbound and westbound approaches of Meheula Parkway would operate at LOS "D" during the projected Year 2016 AM and PM peak periods, with the exception of the eastbound left-turn lane anticipated to operate at LOS "C" conditions during the projected PM peak hour of traffic. The through and right-turn movements on both approaches of Meheula Parkway would operate well at LOS "A" conditions. The northbound and southbound approaches of Kaapeha Street both would operate at LOS "C" or better during both projected peak periods.

At Lehiwa Drive, the left-turn movements of the eastbound and westbound approaches of Meheula Parkway would operate at LOS "D" during both projected peak periods, with the exception of eastbound left-turn movement anticipated to operate at LOS "C" during the projected PM peak period of traffic. The through and right-turn movements on both approaches of Meheula Parkway would operate at LOS "C" or better conditions. The northbound approach of Lehiwa Drive would continue to operate at LOS "D" during the projected AM peak hour of traffic, and LOS "B" during the projected PM peak hour of traffic. On the southbound approach of Lehiwa

Drive, all movements would continue to operate at LOS "B" conditions.

At Kuaoa Street, the left-turn movements of the eastbound and westbound approaches of Meheula Parkway would operate at LOS "C" during the projected Year 2016 AM and PM peak periods, with the exception of eastbound left-turn movement during the projected AM peak hour operating at LOS "D" conditions. The through and right-turn movements on Meheula Parkway would operate at LOS "A" during both projected peak hours of traffic. The northbound and southbound approaches of Kuaoa Street would both operate at LOS "B" during both projected peak periods.

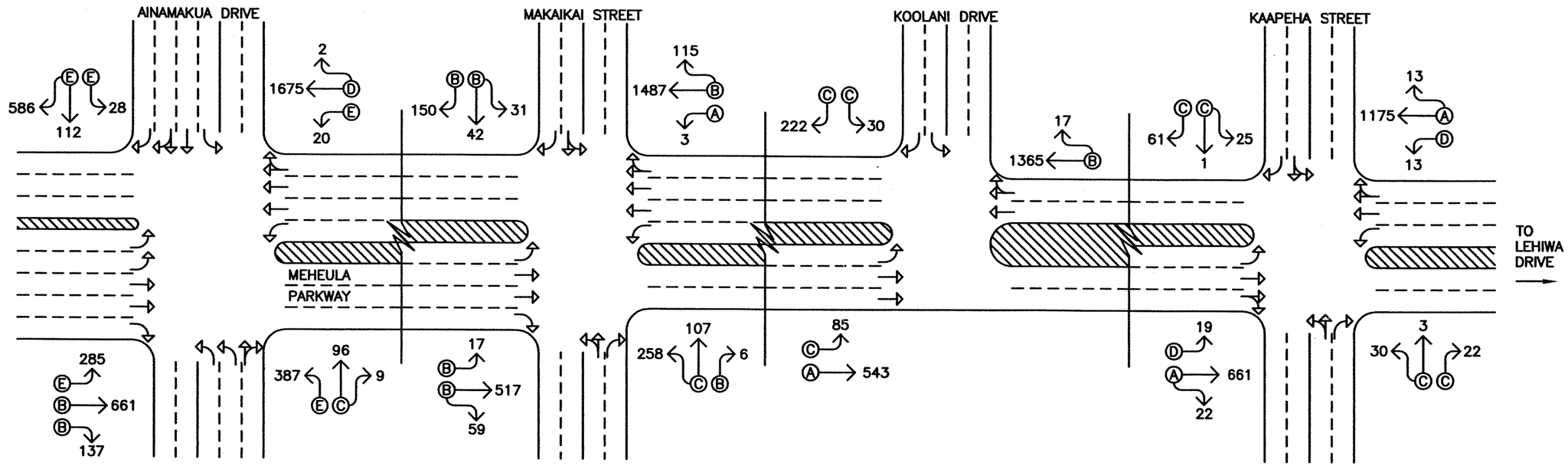
F. Total Traffic Volumes With Project

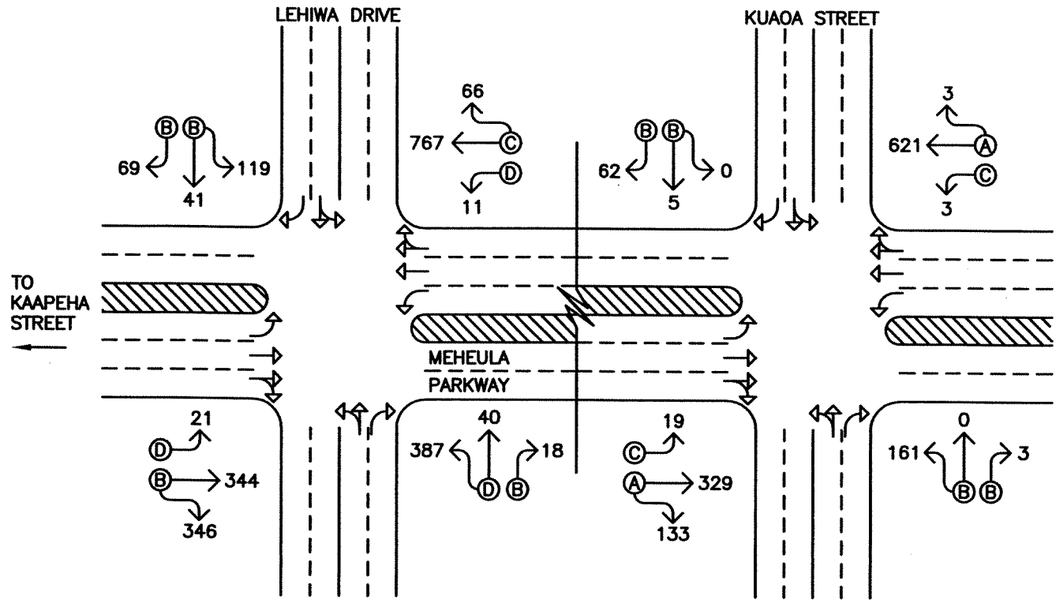
Figures 9 and 10 show the projected Year 2016 cumulative AM and PM peak hour traffic conditions resulting from the projected external traffic and the proposed Meheula Vista development. The cumulative volumes consist of site-generated traffic superimposed over Year 2016 projected traffic demands. The traffic impacts resulting from the proposed project are addressed in the following section.

V. TRAFFIC IMPACT ANALYSIS

The projected Year 2016 cumulative AM and PM peak hour traffic conditions with the proposed Meheula Vista development are summarized in Table 3. The existing and projected Year 2016 (Without Project) operating conditions are provided for comparison purposes. The LOS calculations are included in Appendix F.

In general, traffic operations in the project vicinity are expected to remain similar to the existing and Year 2016 without project conditions despite the addition of site-generated vehicles to the surrounding roadway network. During the AM peak period, the northbound approaches at the intersections of Meheula Parkway with Lehiwa Drive and Kuaoa Street, which are the access routes to the proposed project site, are expected to operate at similar levels of service to projected conditions without the proposed project since the proposed senior residential development is expected to generate minimal traffic on the surrounding roadways during the peak periods of traffic.





LEGEND

90 TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

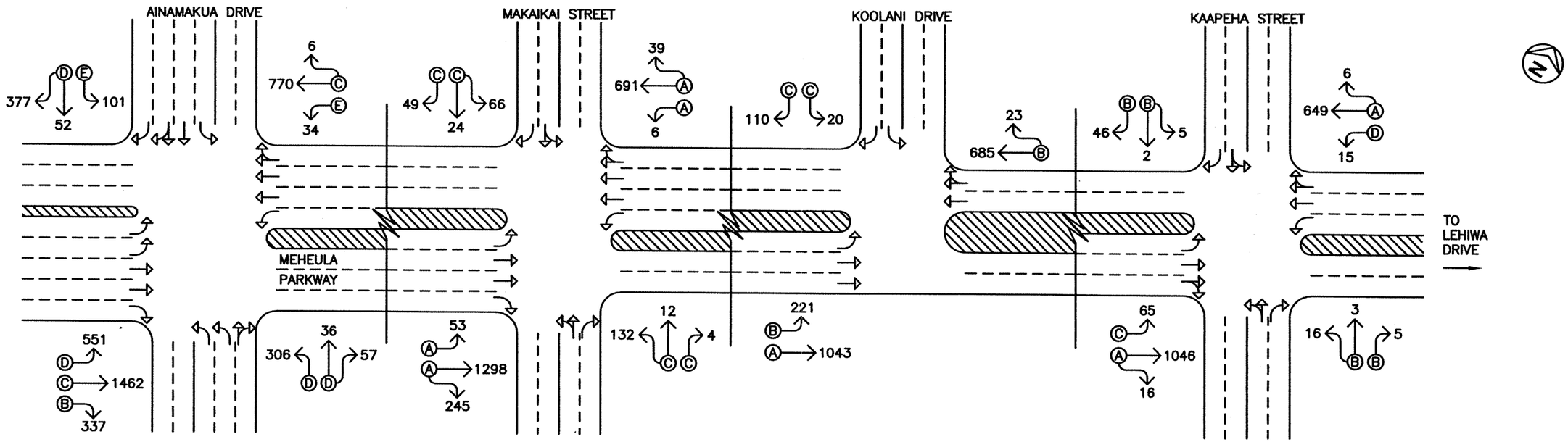
Ⓐ LANE GROUP LEVEL OF SERVICE

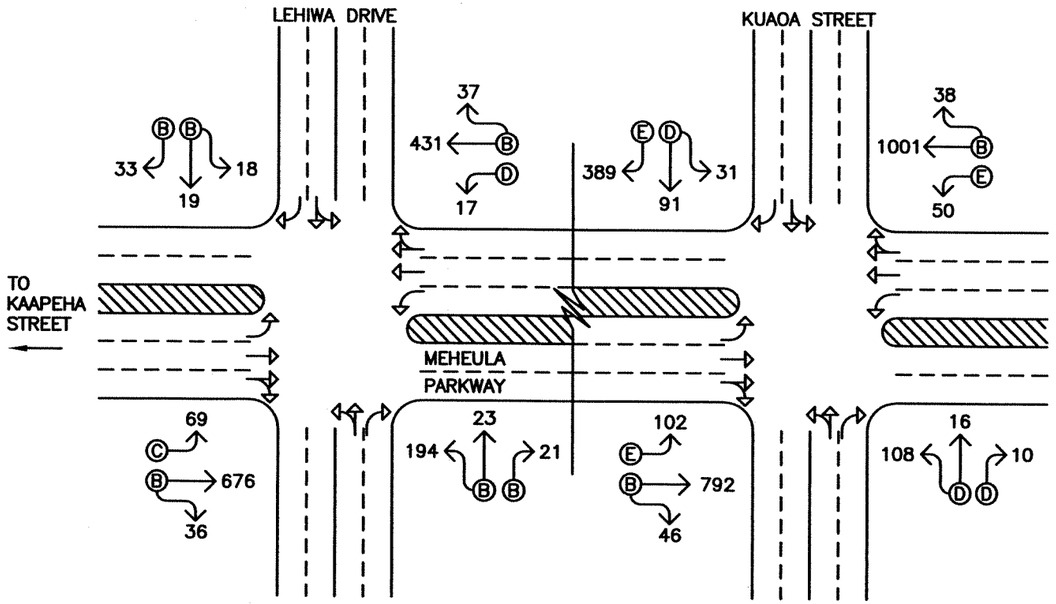
WILSON OKAMOTO CORPORATION
ENGINEERS • PLANNERS

MEHEULA VISTA

YEAR 2016 AM PEAK HOUR OF TRAFFIC WITH PROJECT

FIGURE 9





LEGEND

90 TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

Ⓐ LANE GROUP LEVEL OF SERVICE

WILSON OKAMOTO CORPORATION
ENGINEERS • PLANNERS

MEHEULA VISTA

YEAR 2016 PM PEAK HOUR OF TRAFFIC WITH PROJECT

FIGURE 10

Table 3: Existing and Projected (Without and With Project) LOS Traffic Operating Conditions

Intersection	Critical Traffic Movement		AM			PM		
			Exist	Year 2016		Exist	Year 2016	
				w/out Proj	w/ Proj		w/out Proj	w/ Proj
Meheula Pkwy/ Ainamakua Dr*	Southbound	LT	E	E	E	E	E	E
		TH-RT	E	E	E	D	D	D
	Eastbound	LT	E	E	E	D	D	D
		TH	C	B	B	C	C	C
		RT	C	B	B	B	B	B
	Northbound	LT	E	E	E	D	D	D
		TH-RT	C	C	C	D	D	D
	Westbound	LT	E	E	E	E	E	E
		TH-RT	D	D	D	C	C	C
Meheula Pkwy/ Makaikai St	Southbound	LT-TH	B	B	B	C	C	C
		RT	B	B	B	C	C	C
	Eastbound	LT	B	B	B	A	A	A
		TH-RT	B	B	B	A	A	A
	Northbound	LT-TH	C	C	C	C	C	C
		RT	B	B	B	C	C	C
	Westbound	LT	A	A	A	A	A	A
		TH-RT	B	B	B	A	A	A
Meheula Pkwy/ Koolani Dr	Southbound	LT	C	C	C	C	C	C
		RT	C	C	C	C	C	C
	Eastbound	LT	C	C	C	B	B	B
		TH	A	A	A	A	A	A
	Westbound	TH-RT	B	B	B	B	B	B

* Assumes implementation of improvements along Ainamakua Drive.

** Assumes signalization by Year 2016.

Table 3: Existing and Projected (Without and With Project) LOS (Con't.)
Traffic Operating Conditions

Intersection	Critical Traffic Movement		AM			PM		
			Exist	Year 2016		Exist	Year 2016	
				w/out Proj	w/ Proj		w/out Proj	w/ Proj
Meheula Pkwy/ Kaapeha St	Southbound	LT-TH	C	C	C	B	B	B
		RT	C	C	C	B	B	B
	Eastbound	LT	D	D	D	C	C	C
		TH-RT	A	A	A	A	A	A
	Northbound	LT-TH	C	C	C	B	B	B
		RT	C	C	C	B	B	B
	Westbound	LT	D	D	D	D	D	D
		TH-RT	A	A	A	A	A	A
Meheula Pkwy/ Lehiwa Dr	Southbound	LT-TH	B	B	B	B	B	B
		RT	B	B	B	B	B	B
	Eastbound	LT	D	D	D	C	C	C
		TH-RT	B	B	B	B	B	B
	Northbound	LT-TH	D	D	D	B	B	B
		RT	B	B	B	B	B	B
	Westbound	LT	D	D	D	D	D	D
		TH-RT	C	C	C	B	B	B
Meheula Pkwy/ Kuaoa St **	Southbound	LT-TH	C	B	B	C	B	B
		RT	B	B	B	A	B	B
	Eastbound	LT	A	D	D	A	C	C
		TH-RT	-	A	A	-	A	A
	Northbound	LT-TH	D	B	B	C	B	B
		RT	A	B	B	A	B	B
	Westbound	LT	A	C	C	A	C	C
		TH-RT	-	A	A	-	A	A

* Assumes implementation of improvements along Ainamakua Drive.
** Assumes signalization by Year 2016.

VI. RECOMMENDATIONS

Based on the analysis of the traffic data, the following are the recommendations of this study:

1. As identified in the traffic study for the development of commercial uses in the vicinity of the Meheula Parkway and Ainamakua Drive intersection, verify the installation of an additional southbound lane on Ainamakua Drive between Meheula Parkway and Ukuwai Street, as well as other identified mitigating measures. This improvement should facilitate movements at the intersection.

2. Install traffic signal system at the intersection of Meheula Parkway and Kuaoa Street.

3. Coordinate all traffic signals in Mililani Mauka along the Meheula Parkway corridor.

4. Maintain sufficient sight distance for motorists to safely enter and exit all project driveways. Locate project driveways on Lehiwa Drive and Kuaoa Street away from Meheula Parkway as practical to minimize disruptions to traffic operations on both roadways and adjacent intersections.

5. Provide adequate on-site loading and off-loading service areas and prohibit off-site loading operations.

6. Provide adequate turn-around area for service, delivery, and refuse collection vehicles to maneuver on the project site to avoid vehicle-reversing maneuvers onto public roadways.

7. Provide sufficient turning radii at all project driveways/roadways to avoid or minimize vehicle encroachments to oncoming traffic lanes.

VII. CONCLUSION

With the recommendations identified above, the proposed Meheula Vista development is not expected to have a significant impact on traffic operations in the project vicinity. The total traffic volumes traveling along the Meheula Parkway corridor are expected to increase slightly during the AM and PM peak periods with the proposed project. However, traffic generated by the proposed Meheula Vista would represent approximately less than 1% of the total traffic demands at the intersection of Meheula Parkway and Ainamakua Drive during both the AM and PM peak hours of traffic. These values are well within the daily fluctuation of traffic demands traveling along Meheula Parkway in the project vicinity during the peak periods of traffic. The installation of a traffic signal system at

the intersection of Meheula Parkway and Kuaoa Street, coordination of signal timings along Meheula Parkway in Mililani Mauka, and the installation of other improvements planned along Ainamakua Drive should not only accommodate traffic generated by Meheula Vista, but also improve the overall traffic conditions of the Meheula Parkway corridor in the project vicinity.

APPENDIX A

EXISTING TRAFFIC COUNT DATA

Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

Counter:D4-5677, D4-5674
Counted:RY, JY
Weather:Clear

File Name : MehAin AM
Site Code : 00000005
Start Date : 5/5/2008
Page No : 1

Groups Printed- Unshifted

	Meheula Parkway Southbound					Ainamakua Drive Westbound					Meheula Parkway Northbound					Ainamakua Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30 AM	1	293	3	2	299	55	5	4	0	64	38	51	15	1	105	2	3	133	0	138	606
06:45 AM	2	365	3	2	372	72	9	5	3	89	28	62	23	5	118	5	4	125	6	140	719
Total	3	658	6	4	671	127	14	9	3	153	66	113	38	6	223	7	7	258	6	278	1325
07:00 AM	1	413	0	8	422	101	22	9	4	136	35	81	23	0	139	6	2	135	3	146	843
07:15 AM	5	380	5	11	401	92	27	9	1	129	82	136	18	6	242	5	23	151	5	184	956
07:30 AM	1	412	7	2	422	96	51	8	3	158	72	172	29	2	275	3	27	140	2	172	1027
07:45 AM	7	426	6	13	452	107	18	11	0	136	79	168	46	0	293	10	42	146	3	201	1082
Total	14	1631	18	34	1697	396	118	37	8	559	268	557	116	8	949	24	94	572	13	703	3908
08:00 AM	7	398	2	2	409	86	0	9	0	95	40	165	44	1	250	4	18	129	1	152	906
08:15 AM	9	340	4	3	356	59	8	6	0	73	47	92	22	1	162	4	4	127	1	136	727
Grand Total	33	3027	30	43	3133	668	140	61	11	880	421	927	220	16	1584	39	123	1086	21	1269	6866
Apprch %	1.1	96.6	1	1.4		75.9	15.9	6.9	1.2		26.6	58.5	13.9	1		3.1	9.7	85.6	1.7		
Total %	0.5	44.1	0.4	0.6	45.6	9.7	2	0.9	0.2	12.8	6.1	13.5	3.2	0.2	23.1	0.6	1.8	15.8	0.3	18.5	

	Meheula Parkway Southbound					Ainamakua Drive Westbound					Meheula Parkway Northbound					Ainamakua Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	5	380	5	11	401	92	27	9	1	129	**82**	136	18	**6**	242	5	23	**151**	**5**	184	956
07:30 AM	1	412	**7**	2	422	96	**51**	8	**3**	**158**	72	**172**	29	2	275	3	27	140	2	172	1027
07:45 AM	**7**	**426**	6	**13**	**452**	**107**	18	**11**	0	136	79	168	**46**	0	**293**	**10**	**42**	146	3	**201**	**1082**
08:00 AM	7	398	2	2	409	86	0	9	0	95	40	165	44	1	250	4	18	129	1	152	906
Total Volume	20	1616	20	28	1684	381	96	37	4	518	273	641	137	9	1060	22	110	566	11	709	3971
% App. Total	1.2	96	1.2	1.7		73.6	18.5	7.1	0.8		25.8	60.5	12.9	0.8		3.1	15.5	79.8	1.6		
PHF	.714	.948	.714	.538	.931	.890	.471	.841	.333	.820	.832	.932	.745	.375	.904	.550	.655	.937	.550	.882	.918

Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

Counter:D4-5677, D4-5674
Counted:RY, JY
Weather:Clear

File Name : MehAin - U-Turns AM
Site Code : 00000005
Start Date : 5/5/2008
Page No : 1

Groups Printed- Unshifted

	Southbound	Westbound	Meheula Parkway Northbound				Left Turn Column Indicates U-Turns	Eastbound	
Start Time	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	App. Total	Int. Total
06:30 AM	0	0	6	0	0	0	6	0	6
06:45 AM	0	0	26	0	0	0	26	0	26
Total	0	0	32	0	0	0	32	0	32
07:00 AM	0	0	16	0	0	0	16	0	16
07:15 AM	0	0	13	0	0	0	13	0	13
07:30 AM	0	0	18	0	0	0	18	0	18
07:45 AM	0	0	21	0	0	0	21	0	21
Total	0	0	68	0	0	0	68	0	68
08:00 AM	0	0	22	0	0	0	22	0	22
08:15 AM	0	0	10	0	0	0	10	0	10
Grand Total	0	0	132	0	0	0	132	0	132
Apprch %			100	0	0	0			
Total %	0	0	100	0	0	0	100	0	

	Southbound	Westbound	Meheula Parkway Northbound				Left Turn Column Indicates U-Turns	Eastbound	
Start Time	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1									
Peak Hour for Entire Intersection Begins at 07:15 AM									
07:15 AM	0	0	13	0	0	0	13	0	13
07:30 AM	0	0	18	0	0	0	18	0	18
07:45 AM	0	0	21	0	0	0	21	0	21
08:00 AM	0	0	**22**	0	0	0	**22**	0	**22**
Total Volume	0	0	74	0	0	0	74	0	74
% App. Total			100	0	0	0			
PHF	.000	.000	.841	.000	.000	.000	.841	.000	.841

Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

Counter:D4-5677, D4-5674
Counted:RY, JY
Weather:Clear

File Name : MehAin PM
Site Code : 00000005
Start Date : 5/5/2008
Page No : 1

Groups Printed- Unshifted

	Meheula Parkway Southbound					Ainamakua Drive Westbound					Meheula Parkway Northbound					Ainamakua Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	219	2	6	227	39	7	7	4	57	99	304	57	5	465	8	6	65	3	82	831
04:15 PM	7	224	4	0	235	65	6	10	0	81	109	294	47	2	452	12	8	100	1	121	889
04:30 PM	8	178	5	4	195	49	14	4	0	67	154	330	70	0	554	14	11	96	0	121	937
04:45 PM	9	184	3	0	196	65	11	13	1	90	96	354	79	1	530	11	6	83	2	102	918
Total	24	805	14	10	853	218	38	34	5	295	458	1282	253	8	2001	45	31	344	6	426	3575
05:00 PM	7	146	2	9	164	52	7	18	0	77	105	373	87	3	568	10	13	90	0	113	922
05:15 PM	5	208	6	6	225	51	3	10	0	64	126	362	87	0	575	15	6	66	1	88	952
05:30 PM	4	176	1	7	188	38	5	5	1	49	106	354	92	1	553	8	11	78	0	97	887
05:45 PM	13	174	2	3	192	40	7	5	1	53	88	326	84	6	504	6	7	68	2	83	832
Total	29	704	11	25	769	181	22	38	2	243	425	1415	350	10	2200	39	37	302	3	381	3593
Grand Total	53	1509	25	35	1622	399	60	72	7	538	883	2697	603	18	4201	84	68	646	9	807	7168
Apprch %	3.3	93	1.5	2.2		74.2	11.2	13.4	1.3		21	64.2	14.4	0.4		10.4	8.4	80	1.1		
Total %	0.7	21.1	0.3	0.5	22.6	5.6	0.8	1	0.1	7.5	12.3	37.6	8.4	0.3	58.6	1.2	0.9	9	0.1	11.3	

	Meheula Parkway Southbound					Ainamakua Drive Westbound					Meheula Parkway Northbound					Ainamakua Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	8	178	5	4	195	49	**14**	4	0	67	**154**	330	70	0	554	14	11	**96**	0	**121**	937
04:45 PM	**9**	184	3	0	196	**65**	11	13	**1**	**90**	96	354	79	1	530	11	6	83	**2**	102	918
05:00 PM	7	146	2	**9**	164	52	7	**18**	0	77	105	**373**	**87**	**3**	568	10	**13**	90	0	113	922
05:15 PM	5	**208**	**6**	6	**225**	51	3	10	0	64	126	362	87	0	**575**	**15**	6	66	1	88	**952**
Total Volume	29	716	16	19	780	217	35	45	1	298	481	1419	323	4	2227	50	36	335	3	424	3729
% App. Total	3.7	91.8	2.1	2.4		72.8	11.7	15.1	0.3		21.6	63.7	14.5	0.2		11.8	8.5	79	0.7		
PHF	.806	.861	.667	.528	.867	.835	.625	.625	.250	.828	.781	.951	.928	.333	.968	.833	.692	.872	.375	.876	.979

Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

Counter:D4-5677, D4-5674
Counted:RY, JY
Weather:Clear

File Name : MehAin - U-Turns PM
Site Code : 00000005
Start Date : 5/5/2008
Page No : 1

Groups Printed- Unshifted

	Southbound	Westbound	Meheula Parkway				Second Number In LT Column Indicates U-Turn Northbound	Eastbound	
Start Time	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	App. Total	Int. Total
04:00 PM	0	0	21	0	0	0	21	0	21
04:15 PM	0	0	16	0	0	0	16	0	16
04:30 PM	0	0	17	0	0	0	17	0	17
04:45 PM	0	0	14	0	0	0	14	0	14
Total	0	0	68	0	0	0	68	0	68
05:00 PM	0	0	18	0	0	0	18	0	18
05:15 PM	0	0	14	0	0	0	14	0	14
05:30 PM	0	0	12	0	0	0	12	0	12
05:45 PM	0	0	13	0	0	0	13	0	13
Total	0	0	57	0	0	0	57	0	57
Grand Total	0	0	125	0	0	0	125	0	125
Apprch %			100	0	0	0			
Total %	0	0	100	0	0	0	100	0	

	Southbound	Westbound	Meheula Parkway				Second Number In LT Column Indicates U-Turn Northbound	Eastbound	
Start Time	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1									
Peak Hour for Entire Intersection Begins at 04:00 PM									
04:00 PM	0	0	**21**	0	0	0	**21**	0	**21**
04:15 PM	0	0	16	0	0	0	16	0	16
04:30 PM	0	0	17	0	0	0	17	0	17
04:45 PM	0	0	14	0	0	0	14	0	14
Total Volume	0	0	68	0	0	0	68	0	68
% App. Total			100	0	0	0			
PHF	.000	.000	.810	.000	.000	.000	.810	.000	.810

WILSON OKAMOTO CORPORATION

1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

Counter:D4-3890
Counted:TO
Weather:Clear

File Name : MehMak AM
Site Code : 00000004
Start Date : 5/1/2008
Page No : 1

Groups Printed- Unshifted

	Meheula Parkway Southbound					Makaikai Street Westbound					Meheula Parkway Northbound					Makaikai Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30 AM	0	257	11	1	269	60	6	0	1	67	0	47	6	0	53	4	4	10	0	18	407
06:45 AM	0	277	6	4	287	63	7	2	4	76	1	47	10	6	64	1	3	18	5	27	454
Total	0	534	17	5	556	123	13	2	5	143	1	94	16	6	117	5	7	28	5	45	861
07:00 AM	0	360	26	3	389	64	19	3	0	86	3	58	8	12	81	10	4	21	2	37	593
07:15 AM	0	389	36	4	429	72	29	0	6	107	3	117	16	25	161	12	7	39	9	67	764
07:30 AM	1	358	34	7	400	52	50	0	0	102	4	144	14	31	193	34	18	40	19	111	806
07:45 AM	2	329	19	8	358	64	9	3	5	81	7	175	19	29	230	31	13	50	2	96	765
Total	3	1436	115	22	1576	252	107	6	11	376	17	494	57	97	665	87	42	150	32	311	2928
08:00 AM	0	258	16	0	274	38	6	0	3	47	3	189	20	4	216	11	5	8	0	24	561
08:15 AM	1	189	5	2	197	40	2	2	5	49	0	89	20	4	113	3	1	11	4	19	378
Grand Total	4	2417	153	29	2603	453	128	10	24	615	21	866	113	111	1111	106	55	197	41	399	4728
Apprch %	0.2	92.9	5.9	1.1		73.7	20.8	1.6	3.9		1.9	77.9	10.2	10		26.6	13.8	49.4	10.3		
Total %	0.1	51.1	3.2	0.6	55.1	9.6	2.7	0.2	0.5	13	0.4	18.3	2.4	2.3	23.5	2.2	1.2	4.2	0.9	8.4	

	Meheula Parkway Southbound					Makaikai Street Westbound					Meheula Parkway Northbound					Makaikai Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	360	26	3	389	64	19	**3**	0	86	3	58	8	12	81	10	4	21	2	37	593
07:15 AM	0	**389**	**36**	4	**429**	**72**	29	0	**6**	**107**	3	117	16	25	161	12	7	39	9	67	764
07:30 AM	1	358	34	7	400	52	**50**	0	0	102	4	144	14	**31**	193	**34**	**18**	40	**19**	**111**	**806**
07:45 AM	**2**	329	19	**8**	358	64	9	3	5	81	**7**	**175**	**19**	29	**230**	31	13	**50**	2	96	765
Total Volume	3	1436	115	22	1576	252	107	6	11	376	17	494	57	97	665	87	42	150	32	311	2928
% App. Total	0.2	91.1	7.3	1.4		67	28.5	1.6	2.9		2.6	74.3	8.6	14.6		28	13.5	48.2	10.3		
PHF	.375	.923	.799	.688	.918	.875	.535	.500	.458	.879	.607	.706	.750	.782	.723	.640	.583	.750	.421	.700	.908

WILSON OKAMOTO CORPORATION

1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

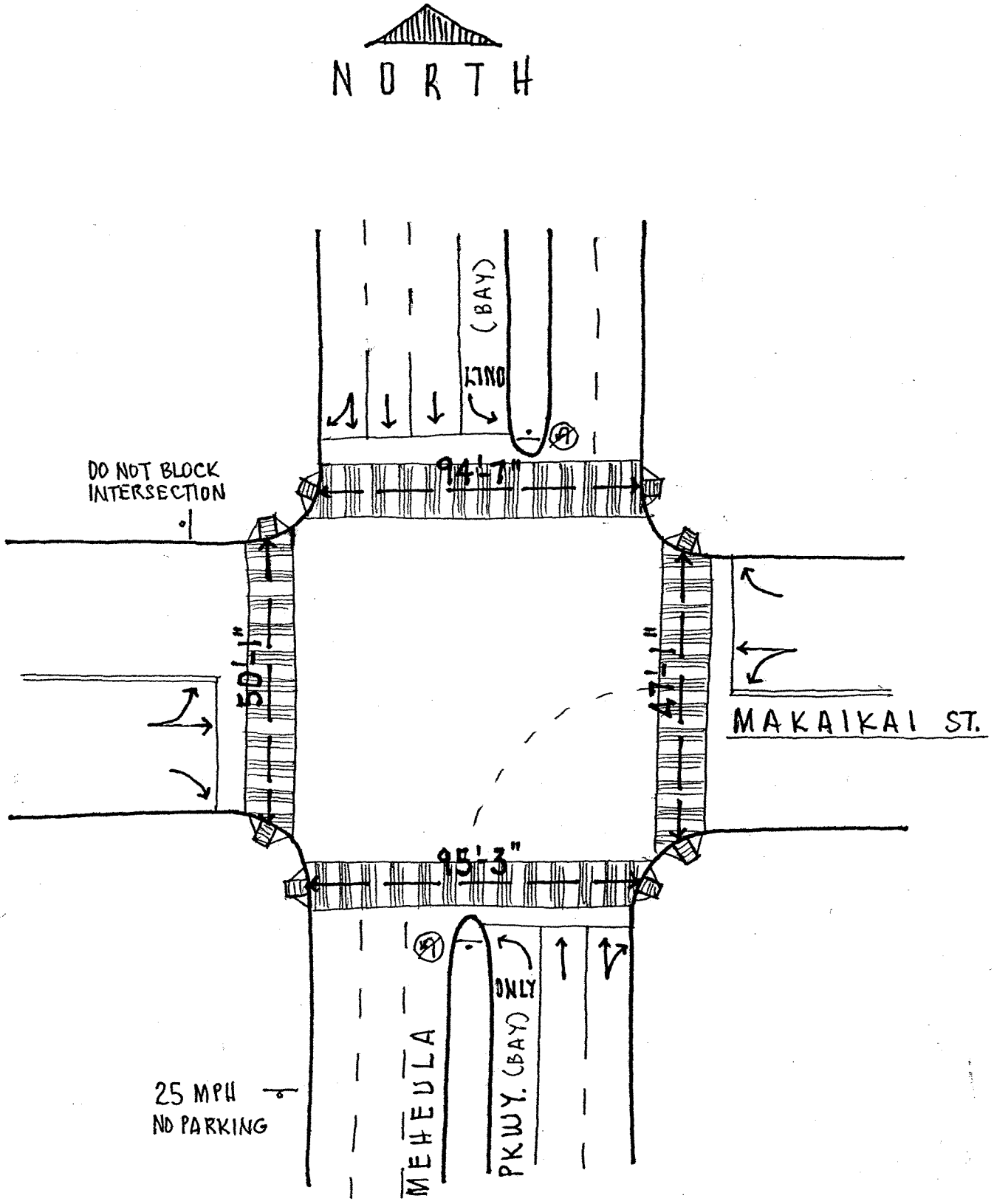
Counter:D4-5675, D4-3890
Counted:EK, SW
Weather:Clear

File Name : MehMak PM
Site Code : 00000004
Start Date : 5/1/2008
Page No : 1

Groups Printed- Unshifted

	Meheula Parkway Southbound					Makaikai Street Westbound					Meheula Parkway Northbound					Makaikai Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	1	174	7	0	182	31	6	3	2	42	15	262	54	1	332	8	9	9	0	26	582
04:15 PM	1	175	11	0	187	33	4	1	2	40	20	296	65	2	383	30	7	18	0	55	665
04:30 PM	1	181	12	1	195	43	4	3	0	50	15	267	66	0	348	17	7	8	2	34	627
04:45 PM	3	162	6	1	172	25	2	0	1	28	9	302	50	0	361	10	6	14	1	31	592
Total	6	692	36	2	736	132	16	7	5	160	59	1127	235	3	1424	65	29	49	3	146	2466
05:00 PM	1	118	10	4	133	27	2	0	0	29	9	339	54	0	402	9	4	9	5	27	591
05:15 PM	0	134	4	3	141	27	2	2	1	32	15	277	56	0	348	16	6	12	1	35	556
05:30 PM	2	135	1	0	138	37	1	0	1	39	11	315	61	5	392	4	3	7	0	14	583
05:45 PM	0	141	3	4	148	26	1	0	6	33	8	272	62	1	343	12	5	10	5	32	556
Total	3	528	18	11	560	117	6	2	8	133	43	1203	233	6	1485	41	18	38	11	108	2286
Grand Total	9	1220	54	13	1296	249	22	9	13	293	102	2330	468	9	2909	106	47	87	14	254	4752
Apprch %	0.7	94.1	4.2	1		85	7.5	3.1	4.4		3.5	80.1	16.1	0.3		41.7	18.5	34.3	5.5		
Total %	0.2	25.7	1.1	0.3	27.3	5.2	0.5	0.2	0.3	6.2	2.1	49	9.8	0.2	61.2	2.2	1	1.8	0.3	5.3	

	Meheula Parkway Southbound					Makaikai Street Westbound					Meheula Parkway Northbound					Makaikai Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	1	175	11	0	187	33	**4**	1	**2**	40	**20**	296	65	**2**	383	**30**	**7**	**18**	0	**55**	**665**
04:30 PM	1	**181**	**12**	1	**195**	**43**	4	**3**	0	**50**	15	267	**66**	0	348	17	7	8	2	34	627
04:45 PM	**3**	162	6	1	172	25	2	0	1	28	9	302	50	0	361	10	6	14	1	31	592
05:00 PM	1	118	10	**4**	133	27	2	0	0	29	9	**339**	54	0	**402**	9	4	9	**5**	27	591
Total Volume	6	636	39	6	687	128	12	4	3	147	53	1204	235	2	1494	66	24	49	8	147	2475
% App. Total	0.9	92.6	5.7	0.9		87.1	8.2	2.7	2		3.5	80.6	15.7	0.1		44.9	16.3	33.3	5.4		
PHF	.500	.878	.813	.375	.881	.744	.750	.333	.375	.735	.663	.888	.890	.250	.929	.550	.857	.681	.400	.668	.930


NORTH
(BAY)
ONLY
94'-7"
DO NOT BLOCK
INTERSECTION
50'-1"
47'-1"
MAKAIKAI ST.
95'-3"
MEHEULA
PKWY. (BAY)
ONLY
25 MPH
NO PARKING

WILSON OKAMOTO CORPORATION

1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

Counter:D4-5672, D4-5674
Counted:JY, RY
Weather:Clear

File Name : MehKoo AM
Site Code : 00000003
Start Date : 5/1/2008
Page No : 1

Groups Printed- Unshifted

	Meheula parkway Southbound					Westbound	Meheula Parkway Northbound					Koolani Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30 AM	0	209	1	0	210	0	9	34	0	0	43	0	0	58	2	60	313
06:45 AM	0	227	2	0	229	0	8	39	0	0	47	3	0	51	4	58	334
Total	0	436	3	0	439	0	17	73	0	0	90	3	0	109	6	118	647
07:00 AM	0	329	2	3	334	0	10	63	0	0	73	7	0	77	1	85	492
07:15 AM	0	350	3	3	356	0	14	121	0	0	135	10	0	62	4	76	567
07:30 AM	0	347	2	2	351	0	30	151	0	0	181	6	0	55	0	61	593
07:45 AM	0	289	10	0	299	0	31	185	0	0	216	7	0	28	3	38	553
Total	0	1315	17	8	1340	0	85	520	0	0	605	30	0	222	8	260	2205
08:00 AM	0	244	1	2	247	0	29	168	0	0	197	5	0	26	2	33	477
08:15 AM	0	164	0	1	165	0	17	81	0	0	98	0	0	26	2	28	291
Grand Total	0	2159	21	11	2191	0	148	842	0	0	990	38	0	383	18	439	3620
Apprch %	0	98.5	1	0.5			14.9	85.1	0	0		8.7	0	87.2	4.1		
Total %	0	59.6	0.6	0.3	60.5	0	4.1	23.3	0	0	27.3	1	0	10.6	0.5	12.1	

	Meheula parkway Southbound					Westbound	Meheula Parkway Northbound					Koolani Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	329	2	**3**	334	0	10	63	0	0	73	7	0	**77**	1	**85**	492
07:15 AM	0	**350**	3	3	**356**	0	14	121	0	0	135	**10**	0	62	**4**	76	567
07:30 AM	0	347	2	2	351	0	30	151	0	0	181	6	0	55	0	61	**593**
07:45 AM	0	289	**10**	0	299	0	**31**	**185**	0	0	**216**	7	0	28	3	38	553
Total Volume	0	1315	17	8	1340	0	85	520	0	0	605	30	0	222	8	260	2205
% App. Total	0	98.1	1.3	0.6			14	86	0	0		11.5	0	85.4	3.1		
PHF	.000	.939	.425	.667	.941	.000	.685	.703	.000	.000	.700	.750	.000	.721	.500	.765	.930

WILSON OKAMOTO CORPORATION
1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

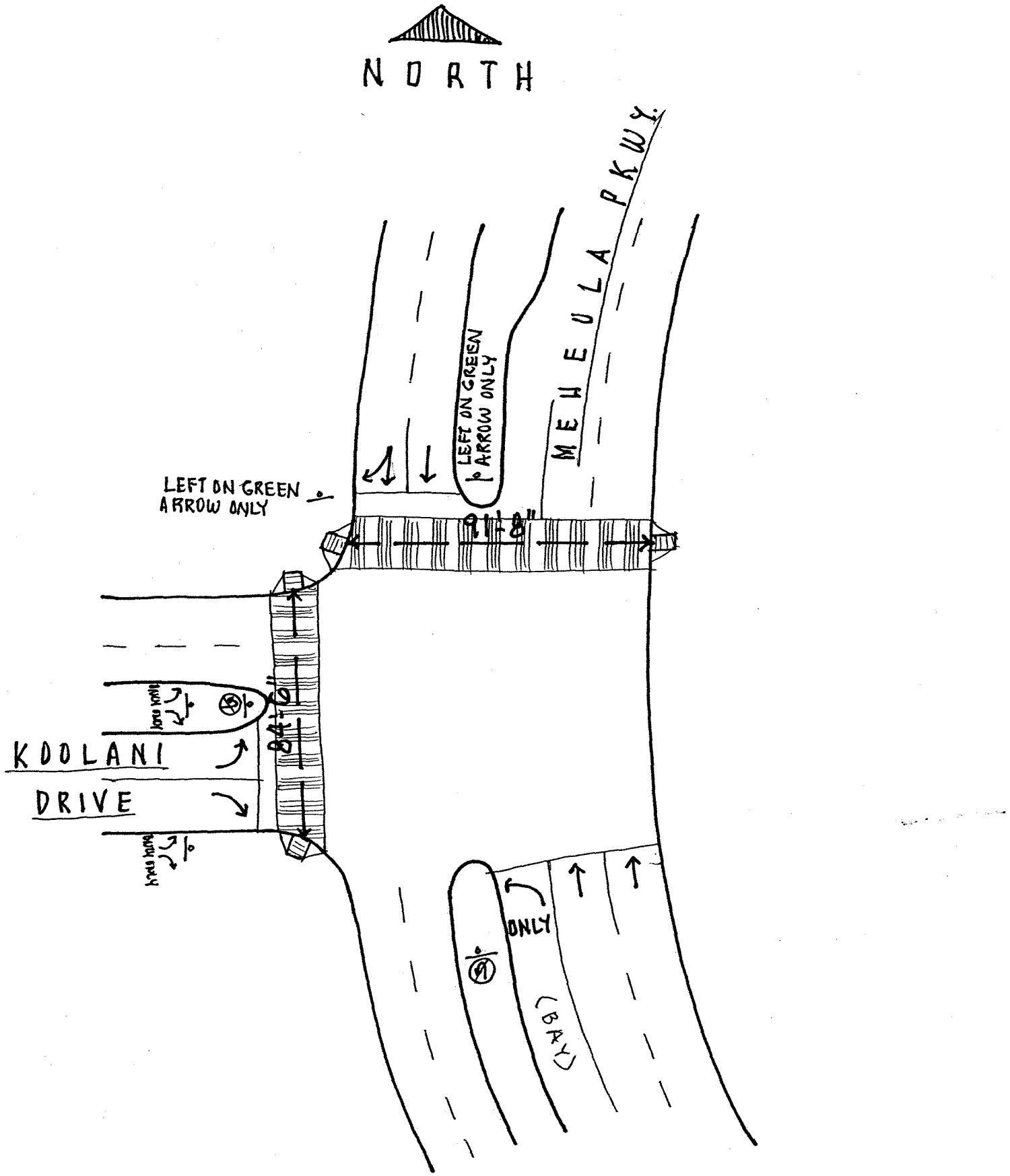
Counter:D4-5672, D4-3889
Counted:RY, JY
Weather:Clear

File Name : MehKoo PM
Site Code : 00000003
Start Date : 5/1/2008
Page No : 1

Groups Printed- Unshifted

	Meheula Parkway Southbound					Westbound	Meheula Parkway Northbound					Koolani Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	165	7	2	174	0	52	221	0	0	273	3	0	19	0	22	469
04:15 PM	0	150	7	0	157	0	54	264	0	0	318	1	0	31	1	33	508
04:30 PM	0	175	5	1	181	0	52	236	0	0	288	12	0	22	1	35	504
04:45 PM	0	150	4	0	154	0	53	241	0	0	294	4	0	28	2	34	482
Total	0	640	23	3	666	0	211	962	0	0	1173	20	0	100	4	124	1963
05:00 PM	0	113	1	0	114	0	40	241	0	0	281	4	0	21	0	25	420
05:15 PM	0	132	6	0	138	0	57	249	0	0	306	6	0	26	4	36	480
05:30 PM	0	119	2	1	122	0	52	259	0	0	311	2	0	29	1	32	465
05:45 PM	0	112	5	3	120	0	55	169	0	0	224	1	0	22	3	26	370
Total	0	476	14	4	494	0	204	918	0	0	1122	13	0	98	8	119	1735
Grand Total	0	1116	37	7	1160	0	415	1880	0	0	2295	33	0	198	12	243	3698
Apprch %	0	96.2	3.2	0.6			18.1	81.9	0	0		13.6	0	81.5	4.9		
Total %	0	30.2	1	0.2	31.4	0	11.2	50.8	0	0	62.1	0.9	0	5.4	0.3	6.6	

	Meheula Parkway Southbound					Westbound	Meheula Parkway Northbound					Koolani Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	165	**7**	**2**	174	0	52	221	0	0	273	3	0	19	0	22	469
04:15 PM	0	150	7	0	157	0	**54**	**264**	0	0	**318**	1	0	**31**	1	33	**508**
04:30 PM	0	**175**	5	1	**181**	0	52	236	0	0	288	**12**	0	22	1	**35**	504
04:45 PM	0	150	4	0	154	0	53	241	0	0	294	4	0	28	**2**	34	482
Total Volume	0	640	23	3	666	0	211	962	0	0	1173	20	0	100	4	124	1963
% App. Total	0	96.1	3.5	0.5			18	82	0	0		16.1	0	80.6	3.2		
PHF	.000	.914	.821	.375	.920	.000	.977	.911	.000	.000	.922	.417	.000	.806	.500	.886	.966


NORTH
MEHEULA PKWY.
LEFT ON GREEN ARROW ONLY
LEFT ON GREEN ARROW ONLY
91'-8"
KOOLANI DRIVE
ONLY
(BAY)

WILSON OKAMOTO CORPORATION
1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

Counter:D4-3888, D4-5674
Counted:ME, JM
Weather:Clear

File Name : MehKaa AM
Site Code : 00000002
Start Date : 5/1/2008
Page No : 1

Groups Printed- Unshifted

	Meheula Parkway Southbound					Kaapeha Street Westbound					Meheula Parkway Northbound					Kaapeha Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30 AM	1	191	1	3	196	7	1	1	0	9	4	41	0	0	45	0	0	5	1	6	256
06:45 AM	1	216	0	1	218	9	2	3	2	16	0	42	0	0	42	1	0	13	1	15	291
Total	2	407	1	4	414	16	3	4	2	25	4	83	0	0	87	1	0	18	2	21	547
07:00 AM	4	305	0	1	310	5	1	4	0	10	1	67	3	0	71	6	0	26	1	33	424
07:15 AM	1	333	1	5	340	9	3	6	3	21	5	122	1	0	128	4	0	24	0	28	517
07:30 AM	3	309	5	1	318	10	0	6	2	18	6	161	2	0	169	13	1	18	2	34	539
07:45 AM	3	258	5	0	266	7	0	5	3	15	5	194	6	0	205	3	0	12	1	16	502
Total	11	1205	11	7	1234	31	4	21	8	64	17	544	12	0	573	26	1	80	4	111	1982
08:00 AM	6	227	2	0	235	4	0	5	3	12	3	161	12	0	176	5	0	7	1	13	436
08:15 AM	0	143	0	1	144	1	0	1	3	5	6	80	3	2	91	1	0	7	1	9	249
Grand Total	19	1982	14	12	2027	52	7	31	16	106	30	868	27	2	927	33	1	112	8	154	3214
Apprch %	0.9	97.8	0.7	0.6		49.1	6.6	29.2	15.1		3.2	93.6	2.9	0.2		21.4	0.6	72.7	5.2		
Total %	0.6	61.7	0.4	0.4	63.1	1.6	0.2	1	0.5	3.3	0.9	27	0.8	0.1	28.8	1	0	3.5	0.2	4.8	

	Meheula Parkway Southbound					Kaapeha Street Westbound					Meheula Parkway Northbound					Kaapeha Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	**333**	1	**5**	**340**	9	**3**	**6**	**3**	**21**	5	122	1	0	128	4	0	**24**	0	28	517
07:30 AM	3	309	**5**	1	318	**10**	0	6	2	18	**6**	161	2	0	169	**13**	**1**	18	**2**	**34**	**539**
07:45 AM	3	258	5	0	266	7	0	5	3	15	5	**194**	6	0	**205**	3	0	12	1	16	502
08:00 AM	**6**	227	2	0	235	4	0	5	3	12	3	161	**12**	0	176	5	0	7	1	13	436
Total Volume	13	1127	13	6	1159	30	3	22	11	66	19	638	21	0	678	25	1	61	4	91	1994
% App. Total	1.1	97.2	1.1	0.5		45.5	4.5	33.3	16.7		2.8	94.1	3.1	0		27.5	1.1	67	4.4		
PHF	.542	.846	.650	.300	.852	.750	.250	.917	.917	.786	.792	.822	.438	.000	.827	.481	.250	.635	.500	.669	.925

WILSON OKAMOTO CORPORATION

1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

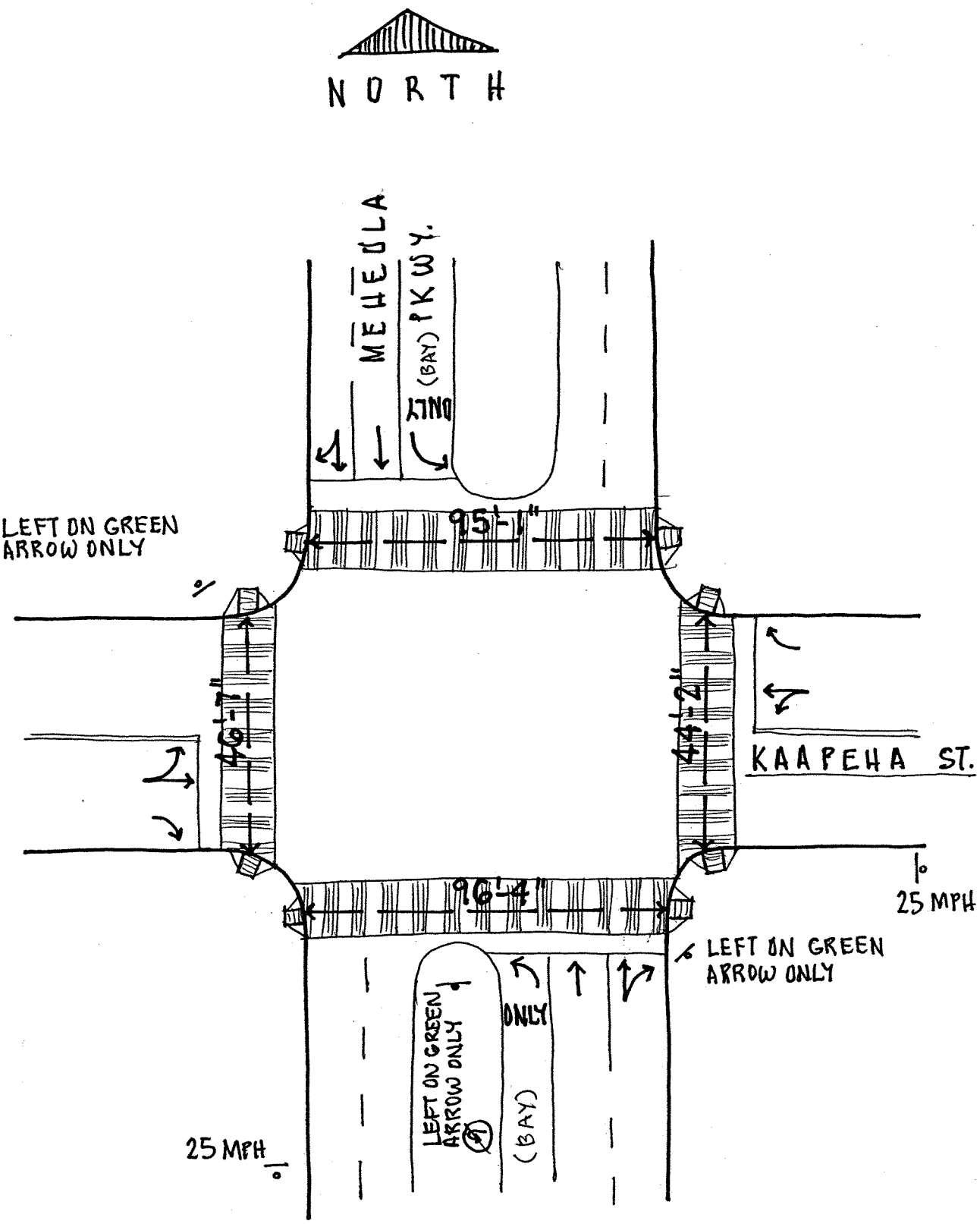
Counter:D4-3888, D4-5674
Counted:ME, JM
Weather:Clear

File Name : MehKaa PM
Site Code : 00000002
Start Date : 5/1/2008
Page No : 1

Groups Printed- Unshifted

	Meheula Parkway Southbound					Kaapeha Street Westbound					Meheula Parkway Northbound					Kaapeha Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	2	158	1	2	163	5	0	0	2	7	15	230	3	0	248	1	1	14	0	16	434
04:15 PM	4	158	1	2	165	2	1	1	1	5	13	276	5	0	294	1	0	6	1	8	472
04:30 PM	2	172	3	1	178	4	2	2	3	11	21	214	4	0	239	2	1	12	0	15	443
04:45 PM	7	116	1	1	125	5	0	2	1	8	14	247	4	0	265	1	0	14	1	16	414
Total	15	604	6	6	631	16	3	5	7	31	63	967	16	0	1046	5	2	46	2	55	1763
05:00 PM	3	100	3	0	106	0	1	3	0	4	17	264	6	0	287	1	0	13	0	14	411
05:15 PM	4	127	0	8	139	4	1	5	1	11	19	220	2	0	241	0	0	5	1	6	397
05:30 PM	1	110	1	1	113	8	3	6	2	19	16	229	6	0	251	1	0	3	2	6	389
05:45 PM	2	114	0	0	116	5	0	4	3	12	15	203	2	0	220	2	0	4	1	7	355
Total	10	451	4	9	474	17	5	18	6	46	67	916	16	0	999	4	0	25	4	33	1552
Grand Total	25	1055	10	15	1105	33	8	23	13	77	130	1883	32	0	2045	9	2	71	6	88	3315
Apprch %	2.3	95.5	0.9	1.4		42.9	10.4	29.9	16.9		6.4	92.1	1.6	0		10.2	2.3	80.7	6.8		
Total %	0.8	31.8	0.3	0.5	33.3	1	0.2	0.7	0.4	2.3	3.9	56.8	1	0	61.7	0.3	0.1	2.1	0.2	2.7	

	Meheula Parkway Southbound					Kaapeha Street Westbound					Meheula Parkway Northbound					Kaapeha Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	2	158	1	**2**	163	**5**	0	0	2	7	15	230	3	0	248	1	**1**	**14**	0	**16**	434
04:15 PM	4	158	1	2	165	2	1	1	1	5	13	**276**	**5**	0	**294**	1	0	6	**1**	8	**472**
04:30 PM	2	**172**	**3**	1	**178**	4	**2**	**2**	**3**	**11**	**21**	214	4	0	239	**2**	1	12	0	15	443
04:45 PM	**7**	116	1	1	125	5	0	2	1	8	14	247	4	0	265	1	0	14	1	16	414
Total Volume	15	604	6	6	631	16	3	5	7	31	63	967	16	0	1046	5	2	46	2	55	1763
% App. Total	2.4	95.7	1	1		51.6	9.7	16.1	22.6		6	92.4	1.5	0		9.1	3.6	83.6	3.6		
PHF	.536	.878	.500	.750	.886	.800	.375	.625	.583	.705	.750	.876	.800	.000	.889	.625	.500	.821	.500	.859	.934


NORTH
MEHEULA PKWY.
(BAY)
ONLY
LEFT ON GREEN ARROW ONLY
95'-1"
46'-7"
44'-2"
KAAPEHA ST.
25 MPH
96'-4"
LEFT ON GREEN ARROW ONLY
ONLY
(BAY)
LEFT ON GREEN ARROW ONLY
25 MPH

WILSON OKAMOTO CORPORATION

1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

Counter:D4-5673
Counted:SD
Weather:Clear

File Name : MehLeh AM
Site Code : 00000001
Start Date : 5/1/2008
Page No : 1

Groups Printed- Unshifted

	Meheula Parkway Southbound					Lehiwa Drive Westbound					Meheula Parkway Northbound					Lehiwa Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30 AM	0	172	2	0	174	18	0	0	3	21	0	31	6	1	38	7	0	13	3	23	256
06:45 AM	0	159	5	1	165	33	0	0	0	33	2	27	13	1	43	14	0	17	3	34	275
Total	0	331	7	1	339	51	0	0	3	54	2	58	19	2	81	21	0	30	6	57	531
07:00 AM	2	209	8	0	219	80	0	1	1	82	2	37	32	1	72	23	6	24	2	55	428
07:15 AM	3	216	8	7	234	92	4	5	0	101	5	69	54	1	129	30	11	22	0	63	527
07:30 AM	2	227	17	3	249	81	12	6	2	101	3	90	91	4	188	56	16	27	3	102	640
07:45 AM	4	179	34	6	223	93	14	4	3	114	4	92	104	2	202	27	4	10	0	41	580
Total	11	831	67	16	925	346	30	16	6	398	14	288	281	8	591	136	37	83	5	261	2175
08:00 AM	2	122	7	6	137	100	10	3	3	116	9	82	89	9	189	6	10	10	2	28	470
08:15 AM	0	96	3	1	100	38	4	0	0	42	3	49	27	0	79	2	1	12	0	15	236
Grand Total	13	1380	84	24	1501	535	44	19	12	610	28	477	416	19	940	165	48	135	13	361	3412
Apprch %	0.9	91.9	5.6	1.6		87.7	7.2	3.1	2		3	50.7	44.3	2		45.7	13.3	37.4	3.6		
Total %	0.4	40.4	2.5	0.7	44	15.7	1.3	0.6	0.4	17.9	0.8	14	12.2	0.6	27.5	4.8	1.4	4	0.4	10.6	

	Meheula Parkway Southbound					Lehiwa Drive Westbound					Meheula Parkway Northbound					Lehiwa Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	3	216	8	**7**	234	92	4	5	0	101	5	69	54	1	129	30	11	22	0	63	527
07:30 AM	2	**227**	17	3	**249**	81	12	**6**	2	101	3	90	91	4	188	**56**	**16**	**27**	**3**	**102**	**640**
07:45 AM	**4**	179	**34**	6	223	93	**14**	4	**3**	114	4	**92**	**104**	2	**202**	27	4	10	0	41	580
08:00 AM	2	122	7	6	137	**100**	10	3	3	**116**	**9**	82	89	**9**	189	6	10	10	2	28	470
Total Volume	11	744	66	22	843	366	40	18	8	432	21	333	338	16	708	119	41	69	5	234	2217
% App. Total	1.3	88.3	7.8	2.6		84.7	9.3	4.2	1.9		3	47	47.7	2.3		50.9	17.5	29.5	2.1		
PHF	.688	.819	.485	.786	.846	.915	.714	.750	.667	.931	.583	.905	.813	.444	.876	.531	.641	.639	.417	.574	.866

WILSON OKAMOTO CORPORATION

1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

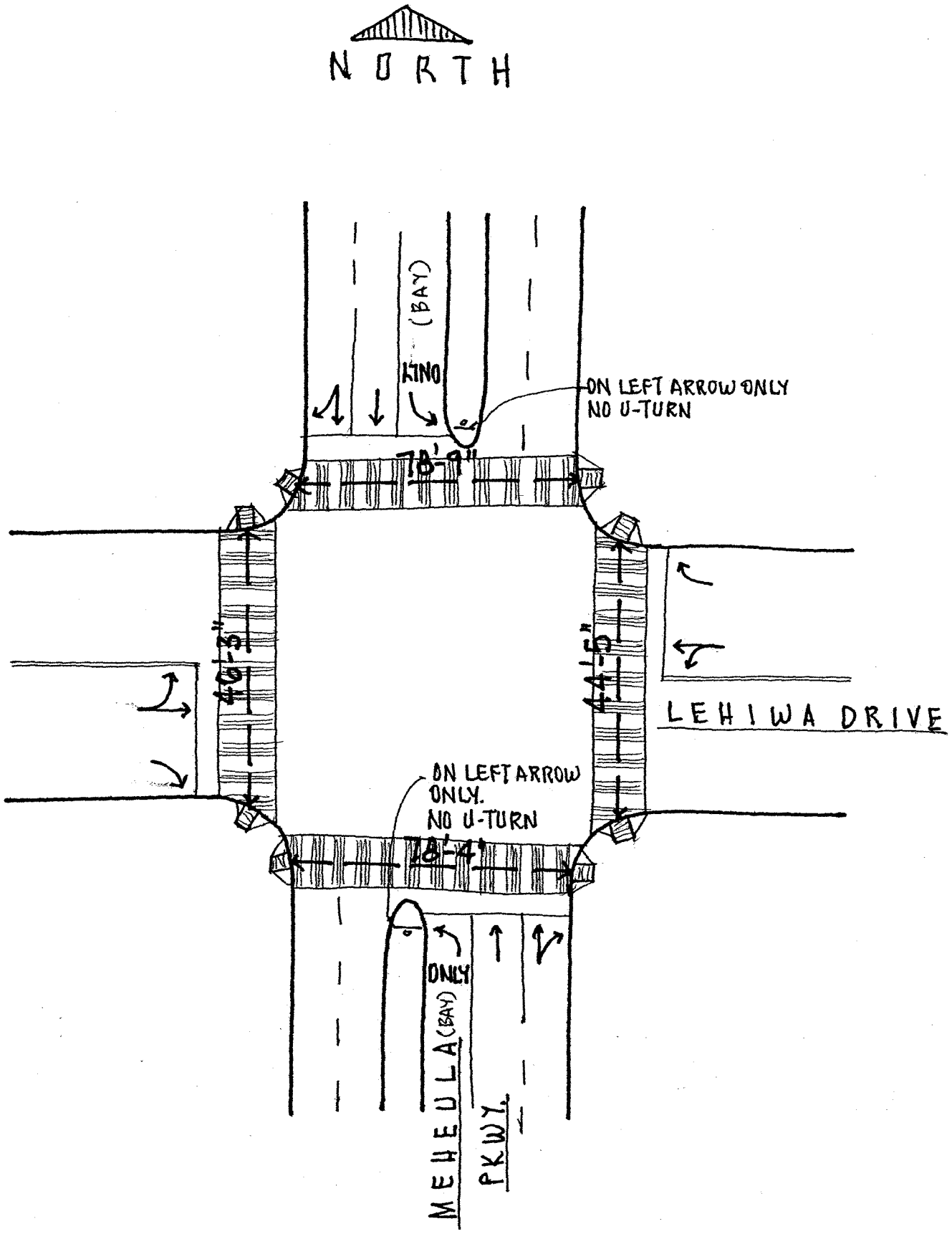
Counter:D4-5673, D4-5677
Counted:TO, KF
Weather:Clear

File Name : MehLeh PM
Site Code : 00000001
Start Date : 5/1/2008
Page No : 1

Groups Printed- Unshifted

	Meheula Parkway Southbound					Lehiwa Drive Westbound					Meheula Parkway Northbound					Lehiwa Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	6	99	11	0	116	57	9	3	0	69	16	140	54	0	210	3	6	9	2	20	415
04:15 PM	4	99	8	0	111	53	3	3	1	60	19	151	63	3	236	4	4	9	2	19	426
04:30 PM	4	111	10	1	126	53	4	10	0	67	19	160	50	4	233	6	8	8	0	22	448
04:45 PM	3	94	8	2	107	26	7	5	0	38	13	167	45	3	228	5	1	7	3	16	389
Total	17	403	37	3	460	189	23	21	1	234	67	618	212	10	907	18	19	33	7	77	1678
05:00 PM	4	75	5	2	86	26	1	3	0	30	17	171	35	0	223	7	3	12	1	23	362
05:15 PM	1	83	13	2	99	36	10	2	0	48	19	163	42	5	229	7	4	4	2	17	393
05:30 PM	3	79	8	7	97	26	2	3	1	32	20	165	52	3	240	3	3	6	7	19	388
05:45 PM	0	84	1	3	88	26	5	1	0	32	16	122	34	4	176	2	5	9	1	17	313
Total	8	321	27	14	370	114	18	9	1	142	72	621	163	12	868	19	15	31	11	76	1456
Grand Total	25	724	64	17	830	303	41	30	2	376	139	1239	375	22	1775	37	34	64	18	153	3134
Apprch %	3	87.2	7.7	2		80.6	10.9	8	0.5		7.8	69.8	21.1	1.2		24.2	22.2	41.8	11.8		
Total %	0.8	23.1	2	0.5	26.5	9.7	1.3	1	0.1	12	4.4	39.5	12	0.7	56.6	1.2	1.1	2	0.6	4.9	

	Meheula Parkway Southbound					Lehiwa Drive Westbound					Meheula Parkway Northbound					Lehiwa Drive Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	**6**	99	**11**	0	116	**57**	**9**	3	0	**69**	16	140	54	0	210	3	6	**9**	2	20	415
04:15 PM	4	99	8	0	111	53	3	3	1	60	**19**	151	**63**	3	**236**	4	4	9	2	19	426
04:30 PM	4	**111**	10	1	**126**	53	4	**10**	0	67	19	160	50	**4**	233	**6**	**8**	8	0	**22**	**448**
04:45 PM	3	94	8	**2**	107	26	7	5	0	38	13	**167**	45	3	228	5	1	7	**3**	16	389
Total Volume	17	403	37	3	460	189	23	21	1	234	67	618	212	10	907	18	19	33	7	77	1678
% App. Total	3.7	87.6	8	0.7		80.8	9.8	9	0.4		7.4	68.1	23.4	1.1		23.4	24.7	42.9	9.1		
PHF	.708	.908	.841	.375	.913	.829	.639	.525	.250	.848	.882	.925	.841	.625	.961	.750	.594	.917	.583	.875	.936


NORTH
(BAY)
ONLY
ON LEFT ARROW ONLY
NO U-TURN
78'-9"
40'-3"
44'-6"
LEHIWA DRIVE
ON LEFT ARROW
ONLY.
NO U-TURN
78'-4"
ONLY
MEHEULA (BAY)
PKWY.

Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

Counter:D4-5673, T-1839
Counted By:GC, DM
Weather:Clear

File Name : MehKua AM
Site Code : 00000008
Start Date : 10/7/2010
Page No : 1

Groups Printed- Unshifted

	Meheula Parkway Southbound					Kuaoa Street Westbound					Meheula Parkway Northbound					Kuaoa Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
05:30 AM	0	0	0	0	0	31	0	0	0	31	1	0	2	0	3	0	0	8	2	10	44
05:45 AM	0	0	0	0	0	40	0	0	0	40	2	0	2	0	4	0	0	12	0	12	56
Total	0	0	0	0	0	71	0	0	0	71	3	0	4	0	7	0	0	20	2	22	100
06:00 AM	1	0	0	0	1	31	0	0	2	33	0	0	3	0	3	0	0	18	0	18	55
06:15 AM	1	0	0	0	1	31	0	0	1	32	4	0	7	0	11	0	0	18	0	18	62
06:30 AM	0	0	0	0	0	29	0	1	2	32	0	0	5	1	6	0	0	21	0	21	59
06:45 AM	0	0	0	0	0	18	0	0	1	19	0	0	8	0	8	1	0	8	1	10	37
Total	2	0	0	0	2	109	0	1	6	116	4	0	23	1	28	1	0	65	1	67	213
07:00 AM	1	0	0	1	2	30	0	0	2	32	7	0	6	0	13	0	0	18	0	18	65
07:15 AM	0	0	1	2	3	31	0	0	4	35	4	0	18	0	22	0	0	17	1	18	78
07:30 AM	0	0	1	0	1	41	0	0	2	43	2	0	27	1	30	0	1	9	0	10	84
07:45 AM	3	0	0	1	4	34	0	1	6	41	5	0	41	0	46	0	1	13	0	14	105
Total	4	0	2	4	10	136	0	1	14	151	18	0	92	1	111	0	2	57	1	60	332
08:00 AM	0	0	1	0	1	43	0	2	6	51	8	0	40	0	48	0	3	23	0	26	126
08:15 AM	1	0	0	0	1	35	1	0	3	39	4	0	13	0	17	0	0	7	0	7	64
Grand Total	7	0	3	4	14	394	1	4	29	428	37	0	172	2	211	1	5	172	4	182	835
Apprch %	50	0	21.4	28.6		92.1	0.2	0.9	6.8		17.5	0	81.5	0.9		0.5	2.7	94.5	2.2		
Total %	0.8	0	0.4	0.5	1.7	47.2	0.1	0.5	3.5	51.3	4.4	0	20.6	0.2	25.3	0.1	0.6	20.6	0.5	21.8	

	Meheula Parkway Southbound				Kuaoa Street Westbound				Meheula Parkway Northbound				Kuaoa Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	**1**	1	31	0	0	31	4	0	18	22	0	0	17	17	71
07:30 AM	0	0	1	1	41	0	0	41	2	0	27	29	0	1	9	10	81
07:45 AM	**3**	0	0	**3**	34	0	1	35	5	0	**41**	46	0	1	13	14	98
08:00 AM	0	0	1	1	**43**	0	**2**	**45**	**8**	0	40	**48**	0	**3**	**23**	**26**	**120**
Total Volume	3	0	3	6	149	0	3	152	19	0	126	145	0	5	62	67	370
% App. Total	50	0	50		98	0	2		13.1	0	86.9		0	7.5	92.5		
PHF	.250	.000	.750	.500	.866	.000	.375	.844	.594	.000	.768	.755	.000	.417	.674	.644	.771

Wilson Okamoto Corporation

1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

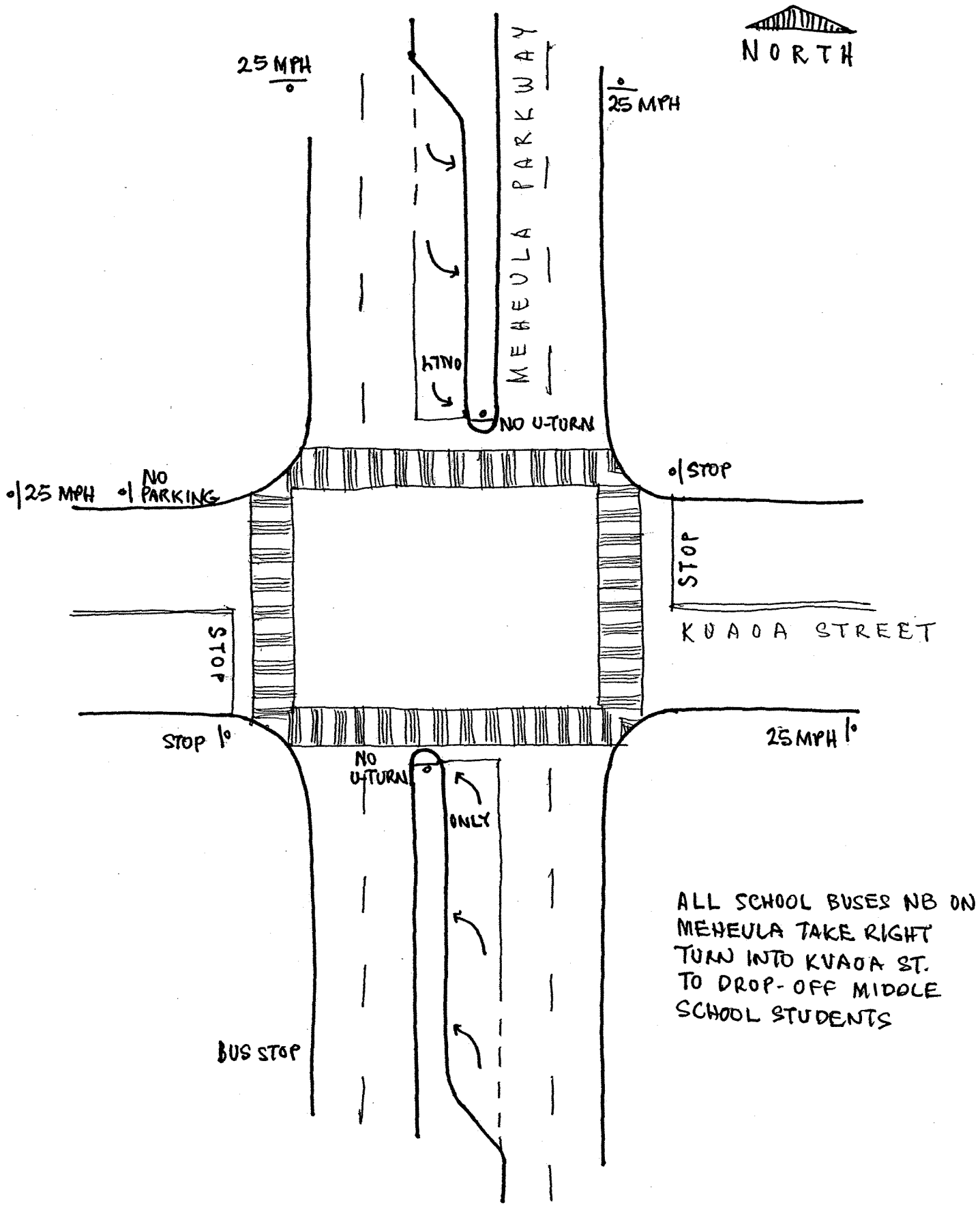
Counter:D4-5673, T-1839
Counted By:GC, DM
Weather:Clear

File Name : MehKua PM
Site Code : 00000008
Start Date : 10/7/2010
Page No : 1

Groups Printed- Unshifted

	Meheula Parkway Southbound					Kuaoa Street Westbound					Meheula Parkway Northbound					Kuaoa Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	0	0	3	3	58	3	6	3	70	15	0	38	0	53	0	2	9	0	11	137
03:15 PM	0	0	0	0	0	28	0	2	0	30	10	0	37	2	49	0	0	5	0	5	84
03:30 PM	1	0	1	0	2	31	0	0	1	32	11	0	36	1	48	0	0	11	0	11	93
03:45 PM	0	0	1	1	2	21	0	0	0	21	12	0	22	0	34	0	0	5	0	5	62
Total	1	0	2	4	7	138	3	8	4	153	48	0	133	3	184	0	2	30	0	32	376
04:00 PM	0	0	0	1	1	17	0	0	0	17	14	0	47	1	62	0	0	5	0	5	85
04:15 PM	2	0	1	0	3	20	1	0	0	21	16	0	44	0	60	0	0	3	7	10	94
04:30 PM	0	0	0	0	0	23	0	0	0	23	9	0	43	0	52	0	0	11	1	12	87
04:45 PM	4	0	1	0	5	26	0	0	4	30	12	0	62	0	74	1	1	6	2	10	119
Total	6	0	2	1	9	86	1	0	4	91	51	0	196	1	248	1	1	25	10	37	385
05:00 PM	0	0	0	0	0	20	0	1	4	25	16	0	55	0	71	0	1	4	1	6	102
05:15 PM	0	0	0	0	0	16	0	3	8	27	16	0	40	1	57	0	0	4	2	6	90
05:30 PM	3	0	0	0	3	9	0	0	6	15	8	0	41	3	52	0	0	11	5	16	86
05:45 PM	0	0	0	0	0	25	0	1	0	26	16	0	31	0	47	0	0	0	0	0	73
Total	3	0	0	0	3	70	0	5	18	93	56	0	167	4	227	0	1	19	8	28	351
Grand Total	10	0	4	5	19	294	4	13	26	337	155	0	496	8	659	1	4	74	18	97	1112
Apprch %	52.6	0	21.1	26.3		87.2	1.2	3.9	7.7		23.5	0	75.3	1.2		1	4.1	76.3	18.6		
Total %	0.9	0	0.4	0.4	1.7	26.4	0.4	1.2	2.3	30.3	13.9	0	44.6	0.7	59.3	0.1	0.4	6.7	1.6	8.7	

	Meheula Parkway Southbound				Kuaoa Street Westbound				Meheula Parkway Northbound				Kuaoa Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	2	0	**1**	3	20	**1**	0	21	**16**	0	44	60	0	0	3	3	87
04:30 PM	0	0	0	0	23	0	0	23	9	0	43	52	0	0	**11**	**11**	86
04:45 PM	**4**	0	1	**5**	**26**	0	0	**26**	12	0	**62**	**74**	**1**	**1**	6	8	**113**
05:00 PM	0	0	0	0	20	0	**1**	21	16	0	55	71	0	1	4	5	97
Total Volume	6	0	2	8	89	1	1	91	53	0	204	257	1	2	24	27	383
% App. Total	75	0	25		97.8	1.1	1.1		20.6	0	79.4		3.7	7.4	88.9		
PHF	.375	.000	.500	.400	.856	.250	.250	.875	.828	.000	.823	.868	.250	.500	.545	.614	.847


NORTH
25 MPH
25 MPH
MEHEULA PARKWAY
ONLY
NO U-TURN
25 MPH
NO PARKING
STOP
STOP
KUAOA STREET
STOP
STOP
25 MPH
NO U-TURN
ONLY
BUS STOP
ALL SCHOOL BUSES NB ON MEHEULA TAKE RIGHT TURN INTO KUAOA ST. TO DROP-OFF MIDDLE SCHOOL STUDENTS

Wilson Okamoto Corporation

1907 S. Beretania Street #400
Honolulu, HI 96826

: Mililani Mauka Volumn Study
: Meheula Pkwy/Kuaoa Street
: Kuaoa East Leg

Site: 1
Date: 10/30/08

rval	EB			WB			Combined			Day: Thursday
gin	AM	PM		AM	PM		AM	PM		
12:00	*	12	57	*	7	34	*	19	91	
12:15	*	16		*	6		*	22		
12:30	*	14		*	10		*	24		
12:45	*	15		*	11		*	26		
01:00	*	24	93	*	15	72	*	39	165	
01:15	*	23		*	16		*	39		
01:30	*	29		*	24		*	53		
01:45	*	17		*	17		*	34		
02:00	*	15	72	*	16	63	*	31	135	
02:15	*	13		*	13		*	26		
02:30	*	14		*	16		*	30		
02:45	*	30		*	18		*	48		
03:00	*	28	154	*	8	109	*	36	263	
03:15	*	36		*	14		*	50		
03:30	*	48		*	64		*	112		
03:45	*	42		*	23		*	65		
04:00	*	41	151	*	22	107	*	63	258	
04:15	*	37		*	26		*	63		
04:30	*	43		*	31		*	74		
04:45	*	30		*	28		*	58		
05:00	*	50	196	*	30	108	*	80	304	
05:15	*	44		*	36		*	80		
05:30	*	47		*	24		*	71		
05:45	*	55		*	18		*	73		
06:00	*	55	211	*	30	102	*	85	313	
06:15	*	46		*	18		*	64		
06:30	*	52		*	24		*	76		
06:45	*	58		*	30		*	88		
07:00	*	46	153	*	24	67	*	70	220	
07:15	*	40		*	16		*	56		
07:30	*	36		*	14		*	50		
07:45	*	31		*	13		*	44		
08:00	*	22	108	*	10	47	*	32	155	
08:15	*	35		*	12		*	47		
08:30	*	33		*	11		*	44		
08:45	*	18		*	14		*	32		
09:00	*	22	95	*	10	38	*	32	133	
09:15	*	28		*	12		*	40		
09:30	*	28		*	10		*	38		
09:45	*	17		*	6		*	23		
10:00	*	16	48	*	6	31	*	22	79	
10:15	*	11		*	14		*	25		
10:30	*	12		*	2		*	14		
10:45	*	9		*	9		*	18		
11:00	*	9	31	*	6	15	*	15	46	
11:15	*	9		*	2		*	11		
11:30	4	7		10	5		14	12		
11:45	14	6		11	2		25	8		
otals	18	1,369		21	793		39	2,162		
Split%	46.2	63.3		53.8	36.7					
ıy Totals		1,387			814			2,201		
Day Splits		63.0			37.0					
ak Hour	*	06:00		*	03:30		*	06:00		
olume	*	211		*	135		*	313		
Factor	*	0.91		*	0.53		*	0.89		

Wilson Okamoto Corporation

1907 S. Beretania Street #400
Honolulu, HI 96826

: Mililani Mauka Volumn Study
: Meheula Pkwy/Kuaoa Street
: Kuaoa East Leg

Site: 1
Date: 10/31/08

Interval	EB				WB				Combined				Day: Friday
Begin	AM		PM		AM		PM		AM		PM		
12:00	5	27	12	67	1	6	24	164	6	33	36	231	
12:15	8		19		1		52		9		71		
12:30	8		20		2		41		10		61		
12:45	6		16		2		47		8		63		
01:00	8	16	22	106	4	8	32	175	12	24	54	281	
01:15	4		26		1		48		5		74		
01:30	0		24		2		51		2		75		
01:45	4		34		1		44		5		78		
02:00	0	4	34	163	1	4	57	255	1	8	91	418	
02:15	0		30		0		40		0		70		
02:30	1		39		3		46		4		85		
02:45	3		60		0		112		3		172		
03:00	1	2	41	172	1	3	73	325	2	5	114	497	
03:15	0		38		1		54		1		92		
03:30	0		56		1		128		1		184		
03:45	1		37		0		70		1		107		
04:00	1	4	34	201	5	14	46	159	6	18	80	360	
04:15	1		56		4		42		5		98		
04:30	2		44		1		34		3		78		
04:45	0		67		4		37		4		104		
05:00	1	13	52	220	11	58	70	223	12	71	122	443	
05:15	2		56		10		90		12		146		
05:30	4		64		18		44		22		108		
05:45	6		48		19		19		25		67		
06:00	3	27	70	249	43	154	73	359	46	181	143	608	
06:15	9		69		46		106		55		175		
06:30	10		54		37		94		47		148		
06:45	5		56		28		86		33		142		
07:00	8	57	50	190	30	144	30	88	38	201	80	278	
07:15	8		66		36		18		44		84		
07:30	15		37		48		24		63		61		
07:45	26		37		30		16		56		53		
08:00	66	171	38	106	57	189	20	86	123	360	58	192	
08:15	48		22		48		18		96		40		
08:30	42		24		54		22		96		46		
08:45	15		22		30		26		45		48		
09:00	14	45	25	125	32	89	22	137	46	134	47	262	
09:15	9		29		13		34		22		63		
09:30	14		38		22		36		36		74		
09:45	8		33		22		45		30		78		
10:00	11	50	26	94	25	76	32	101	36	126	58	195	
10:15	20		25		20		23		40		48		
10:30	9		24		15		28		24		52		
10:45	10		19		16		18		26		37		
11:00	15	59	14	77	22	141	34	98	37	200	48	175	
11:15	11		30		38		30		49		60		
11:30	16		21		42		20		58		41		
11:45	17		12		39		14		56		26		
Totals	475		1,770		886		2,170		1,361		3,940		
Split%	34.9		44.9		65.1		55.1						
Day Totals		2,245				3,056				5,301			
Day Splits		42.4				57.6							
Peak Hour	07:45		05:30		07:45		02:45		07:45		06:00		
Volume	182		251		189		367		371		608		
Factor	0.69		0.90		0.83		0.72		0.75		0.87		

Wilson Okamoto Corporation

1907 S. Beretania Street #400
Honolulu, HI 96826

: Mililani Mauka Volumn Study
: Meheula Pkwy/Kuaoa Street
: Kuaoa East Leg

Site: 1
Date: 11/01/08

terval	EB				WB				Combined				Day: Saturday
gin	AM		PM		AM		PM		AM		PM		
12:00	16	52	38	175	16	46	52	384	32	98	90	559	
12:15	12		54		9		134		21		188		
12:30	9		41		12		94		21		135		
12:45	15		42		9		104		24		146		
01:00	4	19	48	179	10	34	66	373	14	53	114	552	
01:15	4		54		8		101		12		155		
01:30	6		47		11		116		17		163		
01:45	5		30		5		90		10		120		
02:00	3	10	33	134	3	11	67	369	6	21	100	503	
02:15	4		36		3		126		7		162		
02:30	2		28		1		84		3		112		
02:45	1		37		4		92		5		129		
03:00	1	6	29	112	6	10	70	304	7	16	99	416	
03:15	3		20		0		96		3		116		
03:30	1		31		3		76		4		107		
03:45	1		32		1		62		2		94		
04:00	1	7	29	99	2	9	61	282	3	16	90	381	
04:15	3		24		3		90		6		114		
04:30	3		20		4		70		7		90		
04:45	0		26		0		61		0		87		
05:00	2	6	31	103	1	14	92	248	3	20	123	351	
05:15	1		24		3		66		4		90		
05:30	2		24		5		50		7		74		
05:45	1		24		5		40		6		64		
06:00	1	11	18	101	9	32	24	148	10	43	42	249	
06:15	4		35		7		43		11		78		
06:30	2		23		8		67		10		90		
06:45	4		25		8		14		12		39		
07:00	4	27	27	98	12	73	18	56	16	100	45	154	
07:15	2		22		15		11		17		33		
07:30	9		28		21		16		30		44		
07:45	12		21		25		11		37		32		
08:00	9	65	17	67	22	179	14	52	31	244	31	119	
08:15	16		18		28		12		44		30		
08:30	14		16		45		13		59		29		
08:45	26		16		84		13		110		29		
09:00	38	159	17	63	98	415	9	26	136	574	26	89	
09:15	49		12		99		3		148		15		
09:30	38		16		96		6		134		22		
09:45	34		18		122		8		156		26		
10:00	36	164	16	71	85	310	7	27	121	474	23	98	
10:15	43		27		134		8		177		35		
10:30	36		15		54		5		90		20		
10:45	49		13		37		7		86		20		
11:00	52	178	9	51	60	274	4	21	112	452	13	72	
11:15	42		6		88		6		130		12		
11:30	50		16		60		6		110		22		
11:45	34		20		66		5		100		25		
otals	704		1,253		1,407		2,290		2,111		3,543		
Split%	33.3		35.4		66.7		64.6						
ay Totals		1,957				3,697				5,654			
Day Splits		34.6				65.4							
ak Hour	10:45		12:45		09:30		01:30		09:30		12:15		
olume	193		191		437		399		588		583		
Factor	0.93		0.88		0.82		0.79		0.83		0.78		

Wilson Okamoto Corporation

1907 S. Beretania Street #400
Honolulu, HI 96826

: Mililani Mauka Volumn Study
: Meheula Pkwy/Kuaoa Street
: Kuaoa East Leg

Site: 1
Date: 11/02/08

Interval	EB				WB				Combined				Day: Sunday
Begin	AM		PM		AM		PM		AM		PM		
12:00	6	26	18	90	2	13	15	67	8	39	33	157	
12:15	8		20		3		14		11		34		
12:30	8		24		6		16		14		40		
12:45	4		28		2		22		6		50		
01:00	4	16	24	101	4	5	26	74	8	21	50	175	
01:15	5		21		1		24		6		45		
01:30	4		24		0		12		4		36		
01:45	3		32		0		12		3		44		
02:00	4	18	28	112	0	8	22	74	4	26	50	186	
02:15	4		34		3		22		7		56		
02:30	6		22		2		8		8		30		
02:45	4		28		3		22		7		50		
03:00	2	8	37	111	0	6	12	58	2	14	49	169	
03:15	3		30		2		16		5		46		
03:30	2		22		0		14		2		36		
03:45	1		22		4		16		5		38		
04:00	3	12	34	112	2	11	10	72	5	23	44	184	
04:15	4		29		1		23		5		52		
04:30	1		27		4		15		5		42		
04:45	4		22		4		24		8		46		
05:00	1	11	26	108	5	20	26	91	6	31	52	199	
05:15	1		27		4		20		5		47		
05:30	3		28		7		24		10		52		
05:45	6		27		4		21		10		48		
06:00	2	12	32	111	11	36	16	56	13	48	48	167	
06:15	2		31		3		18		5		49		
06:30	3		24		11		6		14		30		
06:45	5		24		11		16		16		40		
07:00	2	14	30	103	6	33	20	50	8	47	50	153	
07:15	2		23		9		9		11		32		
07:30	1		25		6		9		7		34		
07:45	9		25		12		12		21		37		
08:00	9	33	21	77	18	64	11	43	27	97	32	120	
08:15	8		18		18		12		26		30		
08:30	4		16		12		10		16		26		
08:45	12		22		16		10		28		32		
09:00	12	43	14	60	34	100	10	34	46	143	24	94	
09:15	6		14		24		5		30		19		
09:30	15		13		20		12		35		25		
09:45	10		19		22		7		32		26		
10:00	12	67	6	28	19	96	5	15	31	163	11	43	
10:15	17		11		32		6		49		17		
10:30	18		4		27		2		45		6		
10:45	20		7		18		2		38		9		
11:00	15	69	8	26	27	90	2	8	42	159	10	34	
11:15	18		11		17		3		35		14		
11:30	16		6		24		3		40		9		
11:45	20		1		22		0		42		1		
Totals	329		1,039		482		642		811		1,681		
Split%	40.6		61.8		59.4		38.2						
Day Totals		1,368				1,124				2,492			
Day Splits		54.9				45.1							
Peak Hour	10:30		02:15		10:15		04:45		10:15		05:00		
Volume	71		121		104		94		174		199		
Factor	0.89		0.82		0.81		0.90		0.89		0.96		

Wilson Okamoto Corporation

1907 S. Beretania Street #400
Honolulu, HI 96826

: Mililani Mauka Volumn Study
: Meheula Pkwy/Kuaoa Street
: Kuaoa East Leg

Site: 1
Date: 11/03/08

Interval	EB			WB			Combined			Day: Monday
Begin	AM		PM	AM		PM	AM		PM	
12:00	1	12	*	2	3	*	3	15	*	
12:15	5		*	1		*	6		*	
12:30	5		*	0		*	5		*	
12:45	1		*	0		*	1		*	
01:00	0	9	*	0	2	*	0	11	*	
01:15	5		*	0		*	5		*	
01:30	2		*	1		*	3		*	
01:45	2		*	1		*	3		*	
02:00	0	11	*	1	9	*	1	20	*	
02:15	2		*	1		*	3		*	
02:30	8		*	5		*	13		*	
02:45	1		*	2		*	3		*	
03:00	2	2	*	3	6	*	5	8	*	
03:15	0		*	1		*	1		*	
03:30	0		*	1		*	1		*	
03:45	0		*	1		*	1		*	
04:00	2	4	*	2	8	*	4	12	*	
04:15	1		*	3		*	4		*	
04:30	0		*	3		*	3		*	
04:45	1		*	0		*	1		*	
05:00	0	13	*	11	73	*	11	86	*	
05:15	1		*	15		*	16		*	
05:30	6		*	18		*	24		*	
05:45	6		*	29		*	35		*	
06:00	4	25	*	44	158	*	48	183	*	
06:15	4		*	35		*	39		*	
06:30	15		*	46		*	61		*	
06:45	2		*	33		*	35		*	
07:00	8	65	*	22	155	*	30	220	*	
07:15	8		*	45		*	53		*	
07:30	14		*	44		*	58		*	
07:45	35		*	44		*	79		*	
08:00	58	182	*	49	164	*	107	346	*	
08:15	58		*	54		*	112		*	
08:30	52		*	33		*	85		*	
08:45	14		*	28		*	42		*	
09:00	8	46	*	28	83	*	36	129	*	
09:15	14		*	11		*	25		*	
09:30	10		*	24		*	34		*	
09:45	14		*	20		*	34		*	
10:00	11	31	*	23	50	*	34	81	*	
10:15	10		*	13		*	23		*	
10:30	10		*	14		*	24		*	
10:45	0		*	0		*	0		*	
11:00	*		*	*		*	*		*	
11:15	*		*	*		*	*		*	
11:30	*		*	*		*	*		*	
11:45	*		*	*		*	*		*	
Totals	400		0	711		0	1,111		0	
Split%	36.0		*	64.0		*				
Day Totals		400			711			1,111		
Day Splits		36.0			64.0					
Peak Hour	07:45		*	07:30		*	07:45		*	
Volume	203		*	191		*	383		*	
Factor	0.88		*	0.88		*	0.85		*	

Wilson Okamoto Corporation

1907 S. Beretania Street #400
Honolulu, HI 96826

: Mililani Uka Volumn Study
: North of Meheula - Kuaoa
:

Site:
Date: 09/19/08

Interval	SB			SB			Combined			Day: Friday
Begin	AM	PM		AM	PM		AM	PM		
12:00	*	*		*	*		*	*		
12:15	*	*		*	*		*	*		
12:30	*	*		*	*		*	*		
12:45	*	*		*	*		*	*		
01:00	*	*		*	*		*	*		
01:15	*	*		*	*		*	*		
01:30	*	2		*	2		*	4		
01:45	*	25		*	13		*	38		
02:00	*	25	151	*	20	98	*	45	249	
02:15	*	27		*	19		*	46		
02:30	*	25		*	13		*	38		
02:45	*	74		*	46		*	120		
03:00	*	50	177	*	30	104	*	80	281	
03:15	*	47		*	33		*	80		
03:30	*	34		*	15		*	49		
03:45	*	46		*	26		*	72		
04:00	*	44	172	*	30	96	*	74	268	
04:15	*	29		*	25		*	54		
04:30	*	53		*	21		*	74		
04:45	*	46		*	20		*	66		
05:00	*	46	174	*	20	103	*	66	277	
05:15	*	46		*	24		*	70		
05:30	*	46		*	34		*	80		
05:45	*	36		*	25		*	61		
06:00	*	34	135	*	22	94	*	56	229	
06:15	*	36		*	28		*	64		
06:30	*	29		*	21		*	50		
06:45	*	36		*	23		*	59		
07:00	*	44	126	*	20	70	*	64	196	
07:15	*	34		*	23		*	57		
07:30	*	27		*	16		*	43		
07:45	*	21		*	11		*	32		
08:00	*	22	66	*	18	49	*	40	115	
08:15	*	12		*	6		*	18		
08:30	*	15		*	8		*	23		
08:45	*	17		*	17		*	34		
09:00	*	20	61	*	10	35	*	30	96	
09:15	*	20		*	8		*	28		
09:30	*	12		*	9		*	21		
09:45	*	9		*	8		*	17		
10:00	*	11	44	*	8	42	*	19	86	
10:15	*	10		*	18		*	28		
10:30	*	10		*	8		*	18		
10:45	*	13		*	8		*	21		
11:00	*	6	30	*	6	23	*	12	53	
11:15	*	5		*	4		*	9		
11:30	*	11		*	5		*	16		
11:45	*	8		*	8		*	16		
Totals	0	1,163		0	729		0	1,892		
Split%	*	61.5		*	38.5					

Day Totals		1,163			729			1,892
Day Splits		61.5			38.5			
Peak Hour	*	02:45		*	02:45		*	02:45
Volume	*	205		*	124		*	329
Factor	*	0.69		*	0.67		*	0.69

Wilson Okamoto Corporation

1907 S. Beretania Street #400
Honolulu, HI 96826

: Mililani Uka Volumn Study
: North of Meheula - Kuaoa
:

Site:
Date: 09/20/08

Interval	SB				SB				Combined				Day:	Saturday
Begin	AM		PM		AM		PM		AM		PM			
12:00	7	24	48	138	3	9	22	101	10	33	70	239		
12:15	7		35		4		28		11		63			
12:30	7		27		1		27		8		54			
12:45	3		28		1		24		4		52			
01:00	1	7	40	129	2	10	32	115	3	17	72	244		
01:15	2		26		4		32		6		58			
01:30	3		40		3		29		6		69			
01:45	1		23		1		22		2		45			
02:00	4	11	34	122	2	9	19	74	6	20	53	196		
02:15	0		30		2		22		2		52			
02:30	5		27		2		12		7		39			
02:45	2		31		3		21		5		52			
03:00	2	5	39	128	2	3	21	83	4	8	60	211		
03:15	1		28		1		20		2		48			
03:30	0		33		0		20		0		53			
03:45	2		28		0		22		2		50			
04:00	6	14	37	150	2	9	24	87	8	23	61	237		
04:15	3		42		3		22		6		64			
04:30	3		33		1		23		4		56			
04:45	2		38		3		18		5		56			
05:00	5	45	44	167	1	14	22	100	6	59	66	267		
05:15	10		43		4		24		14		67			
05:30	12		40		6		34		18		74			
05:45	18		40		3		20		21		60			
06:00	9	72	43	157	1	26	22	94	10	98	65	251		
06:15	17		38		6		24		23		62			
06:30	23		38		10		24		33		62			
06:45	23		38		9		24		32		62			
07:00	28	116	28	98	13	61	26	78	41	177	54	176		
07:15	20		26		9		16		29		42			
07:30	32		24		19		20		51		44			
07:45	36		20		20		16		56		36			
08:00	44	195	24	82	22	112	14	68	66	307	38	150		
08:15	50		18		32		20		82		38			
08:30	43		22		21		22		64		44			
08:45	58		18		37		12		95		30			
09:00	56	222	16	88	30	172	10	60	86	394	26	148		
09:15	74		22		48		18		122		40			
09:30	53		24		50		14		103		38			
09:45	39		26		44		18		83		44			
10:00	56	210	16	69	40	144	15	53	96	354	31	122		
10:15	49		14		41		8		90		22			
10:30	55		22		30		16		85		38			
10:45	50		17		33		14		83		31			
11:00	39	175	15	48	32	127	8	29	71	302	23	77		
11:15	56		16		21		5		77		21			
11:30	36		9		32		12		68		21			
11:45	44		8		42		4		86		12			
Totals	1,096		1,376		696		942		1,792		2,318			
Split%	61.2		59.4		38.8		40.6							
Day Totals		2,472				1,638				4,110				
Day Splits		60.1				39.9								
Peak Hour	08:45		05:00		09:15		12:45		08:45		05:00			
Volume	241		167		182		117		406		267			
Factor	0.81		0.95		0.91		0.91		0.83		0.90			

Wilson Okamoto Corporation

1907 S. Beretania Street #400
Honolulu, HI 96826

: Mililani Uka Volumn Study
: North of Meheula - Kuaoa
:

Site:
Date: 09/21/08

Interval	SB				SB				Combined				Day: Sunday
Begin	AM		PM		AM		PM		AM		PM		
12:00	8	29	40	176	8	27	36	137	16	56	76	313	
12:15	14		55		6		47		20		102		
12:30	5		52		3		22		8		74		
12:45	2		29		10		32		12		61		
01:00	4	12	36	122	2	14	34	88	6	26	70	210	
01:15	3		32		5		18		8		50		
01:30	3		30		3		16		6		46		
01:45	2		24		4		20		6		44		
02:00	7	13	37	133	6	11	34	98	13	24	71	231	
02:15	3		33		2		22		5		55		
02:30	2		30		1		20		3		50		
02:45	1		33		2		22		3		55		
03:00	1	6	31	106	2	5	27	84	3	11	58	190	
03:15	2		26		0		26		2		52		
03:30	0		23		3		24		3		47		
03:45	3		26		0		7		3		33		
04:00	1	11	31	113	3	5	16	91	4	16	47	204	
04:15	3		22		1		18		4		40		
04:30	3		30		1		29		4		59		
04:45	4		30		0		28		4		58		
05:00	5	31	27	144	2	19	20	99	7	50	47	243	
05:15	9		24		3		24		12		48		
05:30	8		55		4		27		12		82		
05:45	9		38		10		28		19		66		
06:00	10	51	39	125	4	28	24	97	14	79	63	222	
06:15	9		26		10		33		19		59		
06:30	20		35		8		28		28		63		
06:45	12		25		6		12		18		37		
07:00	23	83	24	92	8	42	18	76	31	125	42	168	
07:15	16		22		8		18		24		40		
07:30	20		21		10		26		30		47		
07:45	24		25		16		14		40		39		
08:00	20	119	19	67	10	66	11	47	30	185	30	114	
08:15	31		14		20		14		51		28		
08:30	30		12		16		14		46		26		
08:45	38		22		20		8		58		30		
09:00	49	185	11	42	18	106	10	35	67	291	21	77	
09:15	42		11		34		6		76		17		
09:30	48		11		32		11		80		22		
09:45	46		9		22		8		68		17		
10:00	60	214	12	31	34	112	8	26	94	326	20	57	
10:15	47		8		26		6		73		14		
10:30	58		4		24		6		82		10		
10:45	49		7		28		6		77		13		
11:00	48	169	3	11	28	97	4	9	76	266	7	20	
11:15	45		3		20		0		65		3		
11:30	40		3		21		2		61		5		
11:45	36		2		28		3		64		5		
Totals	923		1,162		532		887		1,455		2,049		
Split%	63.4		56.7		36.6		43.3						
Day Totals		2,085				1,419				3,504			
Day Splits		59.5				40.5							
Peak Hour	10:00		12:00		09:15		12:00		10:00		12:00		
Volume	214		176		122		137		326		313		
Factor	0.89		0.80		0.90		0.73		0.87		0.77		

Wilson Okamoto Corporation

1907 S. Beretania Street #400
Honolulu, HI 96826

: Mililani Uka Volumn Study
: North of Meheula - Kuaoa
:

Site:
Date: 09/22/08

Interval	SB				SB				Combined				Day: Monday
Begin	AM		PM		AM		PM		AM		PM		
12:00	0	6	18	83	1	4	19	62	1	10	37	145	
12:15	2		26		1		18		3		44		
12:30	3		18		1		13		4		31		
12:45	1		21		1		12		2		33		
01:00	2	5	20		0	2	23		2	7	43		
01:15	1		0		1		0		2		0		
01:30	1		*		1		*		2		*		
01:45	1		*		0		*		1		*		
02:00	2	5	*		0	1	*		2	6	*		
02:15	2		*		1		*		3		*		
02:30	1		*		0		*		1		*		
02:45	0		*		0		*		0		*		
03:00	2	5	*		2	3	*		4	8	*		
03:15	0		*		0		*		0		*		
03:30	0		*		1		*		1		*		
03:45	3		*		0		*		3		*		
04:00	4	25	*		1	10	*		5	35	*		
04:15	4		*		2		*		6		*		
04:30	6		*		1		*		7		*		
04:45	11		*		6		*		17		*		
05:00	12	126	*		6	44	*		18	170	*		
05:15	23		*		10		*		33		*		
05:30	49		*		20		*		69		*		
05:45	42		*		8		*		50		*		
06:00	58	260	*		33	148	*		91	408	*		
06:15	72		*		32		*		104		*		
06:30	54		*		42		*		96		*		
06:45	76		*		41		*		117		*		
07:00	72	378	*		38	235	*		110	613	*		
07:15	93		*		57		*		150		*		
07:30	106		*		60		*		166		*		
07:45	107		*		80		*		187		*		
08:00	96	301	*		68	194	*		164	495	*		
08:15	118		*		76		*		194		*		
08:30	52		*		36		*		88		*		
08:45	35		*		14		*		49		*		
09:00	41	112	*		16	76	*		57	188	*		
09:15	25		*		24		*		49		*		
09:30	25		*		18		*		43		*		
09:45	21		*		18		*		39		*		
10:00	20	80	*		14	78	*		34	158	*		
10:15	30		*		26		*		56		*		
10:30	12		*		15		*		27		*		
10:45	18		*		23		*		41		*		
11:00	16	82	*		16	54	*		32	136	*		
11:15	16		*		10		*		26		*		
11:30	26		*		16		*		42		*		
11:45	24		*		12		*		36		*		
Totals	1,385		103		849		85		2,234		188		
Split%	62.0		54.8		38.0		45.2						
Day Totals		1,488				934				2,422			
Day Splits		61.4				38.6							
Peak Hour	07:30		12:15		07:30		12:15		07:30		12:15		
Volume	427		85		284		66		711		151		
Factor	0.90		0.82		0.89		0.72		0.92		0.86		

Wilson Okamoto Corporation

1907 S. Beretania Street #400
Honolulu, HI 96826

: Mililani Uka Volumn Study
: Between Lehiwa St. & Kuaoa St.
:

Site: 100000000000
Date: 09/19/08

Interval	AM					PM				
Begin	NB	NB	SB	SB	Total	NB	NB	SB	SB	Total
12:00	*	*	*	*	*	*	*	*	*	*
12:15	*	*	*	*	*	*	*	*	*	*
12:30	*	*	*	*	*	*	*	*	*	*
12:45	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*
01:15	*	*	*	*	*	*	*	*	*	*
01:30	*	*	*	*	*	38	40	18	20	116
01:45	*	*	*	*	*	43	52	25	45	165
02:00	*	*	*	*	*	68	71	16	37	192
02:15	*	*	*	*	*	45	57	48	87	237
02:30	*	*	*	*	*	67	77	66	75	285
02:45	*	*	*	*	*	60	63	55	67	245
03:00	*	*	*	*	*	71	74	30	56	231
03:15	*	*	*	*	*	59	56	36	67	218
03:30	*	*	*	*	*	62	75	44	57	238
03:45	*	*	*	*	*	67	62	42	41	212
04:00	*	*	*	*	*	86	68	38	63	255
04:15	*	*	*	*	*	78	78	40	65	261
04:30	*	*	*	*	*	82	80	31	56	249
04:45	*	*	*	*	*	108	69	43	56	276
05:00	*	*	*	*	*	75	78	50	49	252
05:15	*	*	*	*	*	82	51	34	46	213
05:30	*	*	*	*	*	98	82	40	54	274
05:45	*	*	*	*	*	65	58	32	47	202
06:00	*	*	*	*	*	73	76	44	56	249
06:15	*	*	*	*	*	72	75	46	56	249
06:30	*	*	*	*	*	76	68	45	64	253
06:45	*	*	*	*	*	74	78	41	47	240
07:00	*	*	*	*	*	68	52	36	38	194
07:15	*	*	*	*	*	68	60	22	38	188
07:30	*	*	*	*	*	52	43	25	34	154
07:45	*	*	*	*	*	39	38	16	22	115
08:00	*	*	*	*	*	37	36	15	24	112
08:15	*	*	*	*	*	54	44	17	25	140
08:30	*	*	*	*	*	48	38	16	23	125
08:45	*	*	*	*	*	35	43	14	30	122
09:00	*	*	*	*	*	27	40	17	20	104
09:15	*	*	*	*	*	41	40	14	16	111
09:30	*	*	*	*	*	37	36	11	20	104
09:45	*	*	*	*	*	38	34	23	22	117
10:00	*	*	*	*	*	26	32	14	10	82
10:15	*	*	*	*	*	27	22	12	22	83
10:30	*	*	*	*	*	17	20	12	13	62
10:45	*	*	*	*	*	25	24	9	7	65
11:00	*	*	*	*	*	23	20	6	16	65
11:15	*	*	*	*	*	22	24	12	14	72
11:30	*	*	*	*	*	10	12	7	8	37
11:45	*	*	*	*	*	15	18	7	8	48
12Hr Total	0	0	0	0	0	2,258	2,164	1,169	1,621	7,212
Peak Hour	*	*	*	*	*	04:45	04:15	02:15	02:15	04:00
Volume	*	*	*	*	*	363	305	199	285	1,041
Factor	*	*	*	*	*	0.84	0.95	0.75	0.82	0.94
Day Total	2,258	2,164	1,169	1,621	Grand Total:	7,212				

Wilson Okamoto Corporation

1907 S. Beretania Street #400
Honolulu, HI 96826

: Mililani Uka Volumn Study
: Between Lehiwa St. & Kuaoa St.
:

Site: 100000000000
Date: 09/20/08

Interval	AM					PM				
Begin	NB	NB	SB	SB	Total	NB	NB	SB	SB	Total
12:00	7	20	3	10	40	40	48	40	48	176
12:15	11	11	2	5	29	60	62	34	44	200
12:30	10	13	5	5	33	70	62	38	50	220
12:45	13	11	5	3	32	59	50	54	43	206
01:00	3	12	7	6	28	58	56	51	54	219
01:15	9	6	4	1	20	48	39	31	42	160
01:30	5	4	2	5	16	72	57	43	54	226
01:45	4	7	2	1	14	54	48	42	48	192
02:00	5	10	3	6	24	63	52	29	51	195
02:15	6	3	4	4	17	64	47	35	46	192
02:30	3	2	2	4	11	57	47	31	66	201
02:45	3	5	1	4	13	58	38	32	56	184
03:00	3	2	0	2	7	62	60	28	50	200
03:15	7	1	1	2	11	55	47	31	50	183
03:30	4	2	3	7	16	54	59	33	44	190
03:45	1	1	3	8	13	58	54	36	56	204
04:00	3	2	3	5	13	70	48	36	53	207
04:15	4	3	3	7	17	46	44	35	60	185
04:30	5	5	1	5	16	48	41	34	60	183
04:45	3	9	8	19	39	60	56	46	62	224
05:00	4	8	13	22	47	70	58	39	64	231
05:15	2	6	7	27	42	52	56	43	49	200
05:30	6	7	4	22	39	56	42	43	63	204
05:45	2	5	11	27	45	70	62	44	49	225
06:00	3	5	15	34	57	59	51	37	56	203
06:15	8	7	13	30	58	61	56	32	54	203
06:30	5	5	19	42	71	51	42	31	42	166
06:45	7	10	15	27	59	61	62	35	43	201
07:00	10	10	31	46	97	54	60	27	41	182
07:15	10	15	30	51	106	61	44	24	30	159
07:30	16	25	38	62	141	40	32	24	33	129
07:45	26	30	48	62	166	47	49	28	26	150
08:00	24	38	37	64	163	32	45	30	28	135
08:15	25	38	46	81	190	34	33	21	25	113
08:30	37	44	68	92	241	35	36	16	26	113
08:45	28	44	58	84	214	31	34	23	25	113
09:00	35	42	66	76	219	42	25	20	33	120
09:15	33	36	60	58	187	36	38	23	36	133
09:30	35	44	64	62	205	39	30	22	27	118
09:45	30	46	70	74	220	33	36	15	18	102
10:00	38	38	52	84	212	28	25	27	28	108
10:15	40	44	60	66	210	32	34	17	23	106
10:30	42	40	52	62	196	28	22	10	21	81
10:45	53	46	51	72	222	25	22	5	20	72
11:00	60	49	48	56	213	15	18	14	13	60
11:15	54	58	56	66	234	17	24	6	12	59
11:30	47	43	44	66	200	14	24	12	11	61
11:45	43	51	55	65	214	15	16	12	16	59
12Hr Total	832	963	1,193	1,689	4,677	2,294	2,091	1,419	1,949	7,753
Peak Hour	10:45	11:00	09:00	08:15	10:45	01:30	12:15	12:45	04:15	05:00
Volume	214	201	260	333	869	253	230	179	246	860
Factor	0.89	0.87	0.93	0.9	0.93	0.88	0.93	0.83	0.96	0.93
Day Total	3,126	3,054	2,612	3,638		Grand Total:	12,430			

Wilson Okamoto Corporation

1907 S. Beretania Street #400
Honolulu, HI 96826

: Mililani Uka Volumn Study
: Between Lehiwa St. & Kuaoa St.
:

Site: 100000000000
Date: 09/21/08

Interval	AM					PM				
Begin	NB	NB	SB	SB	Total	NB	NB	SB	SB	Total
12:00	14	17	7	6	44	56	38	39	64	197
12:15	12	9	15	5	41	54	42	40	54	190
12:30	9	10	4	8	31	54	42	34	45	175
12:45	11	10	8	2	31	45	55	27	56	183
01:00	3	12	3	7	25	55	43	24	34	156
01:15	8	6	2	1	17	46	46	26	36	154
01:30	7	9	8	13	37	59	39	33	52	183
01:45	6	5	5	2	18	49	44	33	54	180
02:00	4	4	2	3	13	32	44	29	42	147
02:15	5	7	2	2	16	53	43	28	48	172
02:30	4	4	2	1	11	49	63	31	38	181
02:45	5	3	1	3	12	58	38	36	39	171
03:00	1	3	3	2	9	50	42	29	41	162
03:15	5	5	1	6	17	68	50	25	45	188
03:30	4	2	3	2	11	39	42	22	43	146
03:45	1	2	2	5	10	66	44	21	38	169
04:00	3	2	0	4	9	43	37	33	48	161
04:15	0	4	0	4	8	52	44	28	44	168
04:30	2	4	1	10	17	57	54	28	42	181
04:45	3	4	1	13	21	52	54	30	44	180
05:00	3	18	9	11	41	48	42	34	77	201
05:15	0	16	13	21	50	46	40	44	55	185
05:30	0	8	13	20	41	49	32	37	49	167
05:45	6	7	12	20	45	41	48	40	30	159
06:00	2	7	10	25	44	41	40	34	42	157
06:15	6	4	5	21	36	55	38	28	44	165
06:30	8	10	16	31	65	53	50	24	37	164
06:45	5	14	11	27	57	48	46	28	41	163
07:00	6	15	11	30	62	48	36	31	28	143
07:15	13	21	16	34	84	60	36	21	34	151
07:30	14	20	20	37	91	36	36	25	30	127
07:45	11	23	22	42	98	43	34	20	25	122
08:00	23	36	23	45	127	40	30	18	19	107
08:15	23	24	31	47	125	33	34	14	28	109
08:30	20	30	42	58	150	37	30	20	21	108
08:45	20	18	46	58	142	20	24	12	24	80
09:00	15	14	42	68	139	36	22	18	10	86
09:15	13	16	30	72	131	17	21	14	17	69
09:30	26	39	50	68	183	17	9	10	15	51
09:45	35	53	41	62	191	18	13	8	12	51
10:00	42	56	40	75	213	18	14	7	7	46
10:15	38	46	40	76	200	11	9	8	11	39
10:30	37	38	46	74	195	15	15	7	5	42
10:45	46	32	33	62	173	9	14	1	6	30
11:00	38	25	34	53	150	8	6	4	5	23
11:15	34	28	36	51	149	5	11	3	2	21
11:30	40	31	54	60	185	10	4	1	0	15
11:45	58	42	58	74	232	4	6	2	2	14
12Hr Total	689	813	874	1,421	3,797	1,903	1,644	1,109	1,583	6,239
Peak Hour	11:00	09:30	11:00	09:45	09:45	02:30	01:45	05:00	04:45	04:30
Volume	170	194	182	287	799	225	194	155	225	747
Factor	0.73	0.87	0.78	0.94	0.94	0.83	0.77	0.88	0.73	0.93
Day Total	2,592	2,457	1,983	3,004	Grand Total:	10,036				

Wilson Okamoto Corporation

1907 S. Beretania Street #400
Honolulu, HI 96826

: Mililani Uka Volumn Study
: Between Lehiwa St. & Kuaoa St.
:

Site: 100000000000
Date: 09/22/08

Interval	AM					PM				
Begin	NB	NB	SB	SB	Total	NB	NB	SB	SB	Total
12:00	5	7	1	3	16	28	30	16	34	108
12:15	7	2	2	3	14	25	29	16	32	102
12:30	8	2	0	2	12	0	0	0	0	0
12:45	3	2	1	1	7	*	*	*	*	*
01:00	1	3	1	1	6	*	*	*	*	*
01:15	3	1	0	3	7	*	*	*	*	*
01:30	1	1	0	3	5	*	*	*	*	*
01:45	2	3	1	2	8	*	*	*	*	*
02:00	1	3	0	1	5	*	*	*	*	*
02:15	1	1	1	1	4	*	*	*	*	*
02:30	3	0	2	2	7	*	*	*	*	*
02:45	0	1	0	2	3	*	*	*	*	*
03:00	0	1	1	3	5	*	*	*	*	*
03:15	0	1	0	4	5	*	*	*	*	*
03:30	0	3	3	8	14	*	*	*	*	*
03:45	1	0	2	4	7	*	*	*	*	*
04:00	0	1	1	13	15	*	*	*	*	*
04:15	0	2	6	17	25	*	*	*	*	*
04:30	2	3	8	23	36	*	*	*	*	*
04:45	2	4	7	37	50	*	*	*	*	*
05:00	5	7	30	61	103	*	*	*	*	*
05:15	5	6	22	75	108	*	*	*	*	*
05:30	4	10	46	72	132	*	*	*	*	*
05:45	12	10	56	104	182	*	*	*	*	*
06:00	28	15	59	94	196	*	*	*	*	*
06:15	8	20	51	94	173	*	*	*	*	*
06:30	17	24	66	96	203	*	*	*	*	*
06:45	19	36	76	108	239	*	*	*	*	*
07:00	26	46	90	139	301	*	*	*	*	*
07:15	23	66	106	140	335	*	*	*	*	*
07:30	49	108	100	134	391	*	*	*	*	*
07:45	44	63	92	133	332	*	*	*	*	*
08:00	40	47	54	88	229	*	*	*	*	*
08:15	30	22	37	61	150	*	*	*	*	*
08:30	20	27	26	48	121	*	*	*	*	*
08:45	17	24	33	42	116	*	*	*	*	*
09:00	12	18	31	54	115	*	*	*	*	*
09:15	18	14	24	42	98	*	*	*	*	*
09:30	19	17	22	30	88	*	*	*	*	*
09:45	12	16	34	48	110	*	*	*	*	*
10:00	16	18	18	30	82	*	*	*	*	*
10:15	20	22	20	26	88	*	*	*	*	*
10:30	21	20	17	28	86	*	*	*	*	*
10:45	18	27	15	28	88	*	*	*	*	*
11:00	20	26	25	34	105	*	*	*	*	*
11:15	20	14	24	37	95	*	*	*	*	*
11:30	26	34	18	31	109	*	*	*	*	*
11:45	40	26	22	36	124	*	*	*	*	*
12Hr Total	629	824	1,251	2,046	4,750	53	59	32	66	210
Peak Hour	07:30	07:15	07:00	07:00	07:00	12:00	12:00	12:00	12:00	12:00
Volume	163	284	388	546	1,359	53	59	32	66	210
Factor	0.83	0.66	0.92	0.98	0.87	0.47	0.49	0.5	0.49	0.49
Day Total	682	883	1,283	2,112	Grand Total:	4,960				

APPENDIX B

LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average control delay per vehicle, typically a 15-min analysis period. The criteria are given in the following table.

Table 1: Level-of-Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (sec/veh)
A	≤10.0
B	>10.0 and ≤20.0
C	>20.0 and ≤35.0
D	>35.0 and ≤55.0
E	>55.0 and ≤80.0
F	>80.0

Delay is a complex measure and depends on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group.

Level of Service A describes operations with low control delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.

Level of Service B describes operations with control delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.

Level of Service C describes operations with control delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

Level of Service D describes operations with control delay greater than 35 and up to 55 sec per vehicle. At level of service D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

"Highway Capacity Manual," Transportation Research Board, 2000.

Level of Service E describes operation with control delay greater than 55 and up to 80 sec per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.

Level of Service F describes operations with control delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

"Highway Capacity Manual," Transportation Research Board, 2000.

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Level of Service (LOS) criteria are given in Table 1. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in the queue.

The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. If the degree of saturation is greater than about 0.9, average control delay is significantly affected by the length of the analysis period.

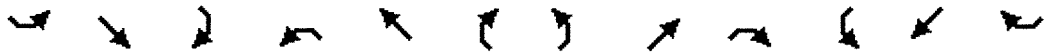
Table 1: Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (Sec/Veh)
A	≤10.0
B	>10.0 and ≤15.0
C	>15.0 and ≤25.0
D	>25.0 and ≤35.0
E	>35.0 and ≤50.0
F	>50.0

"Highway Capacity Manual," Transportation Research Board, 2000.

APPENDIX C

CAPACITY ANALYSIS CALCULATIONS
EXISTING PEAK HOUR TRAFFIC ANALYSIS



Lane Configurations												
Volume (vph)	22	110	566	381	96	9	273	641	137	20	1616	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95		0.97	1.00		0.97	0.95	1.00	1.00	0.91	
Frt	1.00	0.87		1.00	0.99		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3095		3433	1838		3433	3539	1583	1770	5084	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3095		3433	1838		3433	3539	1583	1770	5084	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	120	615	414	104	10	297	697	149	22	1757	2
RTOR Reduction (vph)	0	123	0	0	2	0	0	0	80	0	0	0
Lane Group Flow (vph)	24	612	0	414	112	0	297	697	69	22	1759	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases									4			
Actuated Green, G (s)	4.0	34.8		20.6	51.4		15.9	68.8	68.8	4.0	56.9	
Effective Green, g (s)	4.0	34.8		20.6	51.4		15.9	68.8	68.8	4.0	56.9	
Actuated g/C Ratio	0.03	0.23		0.14	0.35		0.11	0.46	0.46	0.03	0.38	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	48	727		477	637		368	1643	735	48	1952	
v/s Ratio Prot	0.01	c0.20		c0.12	0.06		c0.09	0.20		0.01	c0.35	
v/s Ratio Perm									0.04			
v/c Ratio	0.50	1.27dr		0.87	0.18		0.81	0.42	0.09	0.46	0.90	
Uniform Delay, d1	71.1	54.1		62.5	33.7		64.7	26.5	22.2	71.0	43.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.0	8.7		15.3	0.1		12.2	0.2	0.1	6.8	6.2	
Delay (s)	79.1	62.8		77.8	33.8		76.9	26.7	22.3	77.8	49.2	
Level of Service	E	E		E	C		E	C	C	E	D	
Approach Delay (s)		63.3			68.3			39.1			49.6	
Approach LOS		E			E			D			D	

HCM Average Control Delay	51.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	148.2	Sum of lost time (s)	20.0
Intersection Capacity Utilization	88.0%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

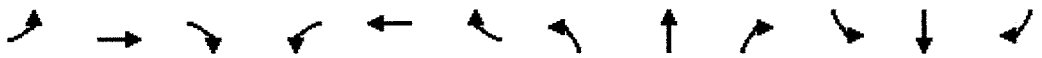
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	50	36	335	287	35	45	481	1419	323	29	716	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.95		0.97	1.00		0.97	0.95	1.00	1.00	0.91	
Frt	1.00	0.86		1.00	0.92		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3060		3433	1705		3433	3539	1583	1770	5078	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3060		3433	1705		3433	3539	1583	1770	5078	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	39	364	312	38	49	523	1542	351	32	778	7
RTOR Reduction (vph)	0	322	0	0	32	0	0	0	110	0	1	0
Lane Group Flow (vph)	54	81	0	312	55	0	523	1542	241	32	784	0
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases									4			
Actuated Green, G (s)	6.9	10.4		16.4	19.9		24.1	65.2	65.2	3.5	44.6	
Effective Green, g (s)	6.9	10.4		16.4	19.9		24.1	65.2	65.2	3.5	44.6	
Actuated g/C Ratio	0.06	0.09		0.14	0.17		0.21	0.56	0.56	0.03	0.39	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	106	276		487	294		716	1998	894	54	1961	
v/s Ratio Prot	0.03	c0.03		c0.09	0.03		c0.15	c0.44		0.02	0.15	
v/s Ratio Perm									0.15			
v/c Ratio	0.51	0.29		0.64	0.19		0.73	0.77	0.27	0.59	0.40	
Uniform Delay, d1	52.7	49.1		46.8	40.9		42.7	19.4	12.9	55.3	25.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.8	0.6		2.9	0.3		3.8	1.9	0.2	16.2	0.1	
Delay (s)	56.5	49.7		49.6	41.2		46.5	21.3	13.1	71.5	25.9	
Level of Service	E	D		D	D		D	C	B	E	C	
Approach Delay (s)		50.5			47.8			25.6			27.7	
Approach LOS		D			D			C			C	

HCM Average Control Delay	30.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	115.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Makaikai & Meheula

10/6/2010

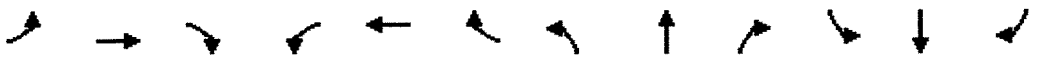


Lane Configurations												
Volume (vph)	31	42	150	252	107	6	17	494	57	3	1436	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.91	
Frt		1.00	0.85		1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.98	1.00		0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1824	1583		1800	1583	1770	3484		1770	5029	
Flt Permitted		0.79	1.00		0.74	1.00	0.11	1.00		0.39	1.00	
Satd. Flow (perm)		1469	1583		1380	1583	211	3484		733	5029	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	46	163	274	116	7	18	537	62	3	1561	125
RTOR Reduction (vph)	0	0	5	0	0	4	0	9	0	0	9	0
Lane Group Flow (vph)	0	80	158	0	390	3	18	590	0	3	1677	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		26.1	26.1		26.1	26.1	35.3	35.3		35.3	35.3	
Effective Green, g (s)		26.1	26.1		26.1	26.1	35.3	35.3		35.3	35.3	
Actuated g/C Ratio		0.37	0.37		0.37	0.37	0.49	0.49		0.49	0.49	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		537	579		504	579	104	1722		362	2486	
v/s Ratio Prot								0.17			c0.33	
v/s Ratio Perm		0.05	0.10		c0.28	0.00	0.09			0.00		
v/c Ratio		0.15	0.27		0.77	0.00	0.17	0.34		0.01	0.67	
Uniform Delay, d1		15.2	16.0		20.0	14.4	10.0	11.0		9.2	13.7	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.3		7.3	0.0	0.8	0.1		0.0	0.7	
Delay (s)		15.3	16.2		27.3	14.4	10.8	11.1		9.2	14.4	
Level of Service		B	B		C	B	B	B		A	B	
Approach Delay (s)		15.9			27.1			11.1			14.4	
Approach LOS		B			C			B			B	

HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	71.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

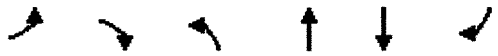
HCM Signalized Intersection Capacity Analysis
6: Makaikai & Meheula

10/6/2010



Lane Configurations												
Volume (vph)	66	24	49	128	12	4	53	1204	235	6	636	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.91	
Frt		1.00	0.85		1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1797	1583		1781	1583	1770	3453		1770	5042	
Flt Permitted		0.69	1.00		0.67	1.00	0.36	1.00		0.11	1.00	
Satd. Flow (perm)		1283	1583		1257	1583	673	3453		212	5042	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	26	53	139	13	4	58	1309	255	7	691	42
RTOR Reduction (vph)	0	0	44	0	0	3	0	16	0	0	7	0
Lane Group Flow (vph)	0	98	9	0	152	1	58	1548	0	7	726	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		11.3	11.3		11.3	11.3	43.4	43.4		43.4	43.4	
Effective Green, g (s)		11.3	11.3		11.3	11.3	43.4	43.4		43.4	43.4	
Actuated g/C Ratio		0.17	0.17		0.17	0.17	0.67	0.67		0.67	0.67	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		224	276		220	276	451	2316		142	3382	
v/s Ratio Prot								c0.45			0.14	
v/s Ratio Perm		0.08	0.01		c0.12	0.00	0.09			0.03		
v/c Ratio		0.44	0.03		0.69	0.00	0.13	0.67		0.05	0.21	
Uniform Delay, d1		23.9	22.2		25.1	22.0	3.8	6.4		3.6	4.1	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.4	0.0		9.0	0.0	0.1	0.7		0.1	0.0	
Delay (s)		25.2	22.2		34.1	22.1	4.0	7.1		3.8	4.1	
Level of Service		C	C		C	C	A	A		A	A	
Approach Delay (s)		24.2			33.8			7.0			4.1	
Approach LOS		C			C			A			A	

HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Configurations						
Volume (vph)	30	222	85	520	1315	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3533	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	3539	3533	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	241	92	565	1429	18
RTOR Reduction (vph)	0	185	0	0	1	0
Lane Group Flow (vph)	33	56	92	565	1446	0
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	8.8	8.8	6.7	49.7	38.0	
Effective Green, g (s)	8.8	8.8	6.7	49.7	38.0	
Actuated g/C Ratio	0.13	0.13	0.10	0.73	0.55	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	227	203	173	2568	1960	
v/s Ratio Prot	0.02		c0.05	0.16	c0.41	
v/s Ratio Perm		c0.04				
v/c Ratio	0.15	0.28	0.53	0.22	0.74	
Uniform Delay, d1	26.5	27.0	29.4	3.1	11.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.7	3.1	0.0	1.5	
Delay (s)	26.8	27.7	32.5	3.1	13.0	
Level of Service	C	C	C	A	B	
Approach Delay (s)	27.6			7.2	13.0	
Approach LOS	C			A	B	

HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	20	100	211	962	640	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3521	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	3539	3521	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	109	229	1046	696	25
RTOR Reduction (vph)	0	98	0	0	3	0
Lane Group Flow (vph)	22	11	229	1046	718	0
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	5.1	5.1	12.9	36.5	18.6	
Effective Green, g (s)	5.1	5.1	12.9	36.5	18.6	
Actuated g/C Ratio	0.10	0.10	0.25	0.71	0.36	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	175	156	443	2503	1269	
v/s Ratio Prot	c0.01		c0.13	0.30	c0.20	
v/s Ratio Perm		0.01				
v/c Ratio	0.13	0.07	0.52	0.42	0.57	
Uniform Delay, d1	21.2	21.1	16.7	3.1	13.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.2	1.0	0.1	0.6	
Delay (s)	21.5	21.3	17.7	3.3	13.8	
Level of Service	C	C	B	A	B	
Approach Delay (s)	21.3			5.8	13.8	
Approach LOS	C			A	B	

HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	51.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
10: Meheula & Kaapeha

10/6/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	638	21	13	1127	13	30	3	22	25	1	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.95	1.00
Satd. Flow (prot)	1770	3522		1770	3533			1781	1583		1777	1583
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00		1.00	1.00
Satd. Flow (perm)	1770	3522		1770	3533			1863	1583		1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	693	23	14	1225	14	33	3	24	27	1	66
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	22	0	0	61
Lane Group Flow (vph)	21	714	0	14	1238	0	0	36	2	0	28	5
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		6
Actuated Green, G (s)	0.9	28.0		0.7	27.8			3.8	3.8		3.8	3.8
Effective Green, g (s)	0.9	28.0		0.7	27.8			3.8	3.8		3.8	3.8
Actuated g/C Ratio	0.02	0.59		0.01	0.59			0.08	0.08		0.08	0.08
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	34	2076		26	2068			149	127		149	127
v/s Ratio Prot	c0.01	0.20		0.01	c0.35							
v/s Ratio Perm								c0.02	0.00		0.02	0.00
v/c Ratio	0.62	0.34		0.54	0.60			0.24	0.02		0.19	0.04
Uniform Delay, d1	23.1	5.0		23.2	6.3			20.5	20.1		20.4	20.2
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	29.0	0.1		19.8	0.5			0.8	0.0		0.6	0.1
Delay (s)	52.1	5.1		43.0	6.8			21.3	20.2		21.0	20.3
Level of Service	D	A		D	A			C	C		C	C
Approach Delay (s)		6.5			7.2			20.9			20.5	
Approach LOS		A			A			C			C	

HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	47.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	967	16	15	604	6	16	3	5	5	2	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (prot)	1770	3531		1770	3534			1787	1583		1799	1583
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00		1.00	1.00
Satd. Flow (perm)	1770	3531		1770	3534			1863	1583		1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	1051	17	16	657	7	17	3	5	5	2	50
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	5	0	0	46
Lane Group Flow (vph)	68	1067	0	16	663	0	0	20	0	0	7	4
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		6
Actuated Green, G (s)	3.8	23.8		0.7	20.7			3.0	3.0		3.0	3.0
Effective Green, g (s)	3.8	23.8		0.7	20.7			3.0	3.0		3.0	3.0
Actuated g/C Ratio	0.09	0.56		0.02	0.49			0.07	0.07		0.07	0.07
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	158	1977		29	1721			132	112		132	112
v/s Ratio Prot	c0.04	c0.30		0.01	0.19							
v/s Ratio Perm								c0.01	0.00		0.00	0.00
v/c Ratio	0.43	0.54		0.55	0.39			0.15	0.00		0.05	0.03
Uniform Delay, d1	18.3	5.9		20.7	6.9			18.6	18.4		18.4	18.4
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.9	0.3		20.8	0.1			0.5	0.0		0.2	0.1
Delay (s)	20.2	6.2		41.5	7.0			19.1	18.4		18.6	18.5
Level of Service	C	A		D	A			B	B		B	B
Approach Delay (s)		7.0			7.8			18.9			18.5	
Approach LOS		A			A			B			B	

HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	42.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
13: Lehiwa & Meheula

10/7/2010

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations															
Volume (vph)	119	41	69	366	40	18	21	333	338	11	744	66			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0				
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95				
Frt		1.00	0.85		1.00	0.85	1.00	0.92		1.00	0.99				
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (prot)		1796	1583		1782	1583	1770	3272		1770	3496				
Flt Permitted		0.44	1.00		0.63	1.00	0.95	1.00		0.95	1.00				
Satd. Flow (perm)		816	1583		1172	1583	1770	3272		1770	3496				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Adj. Flow (vph)	129	45	75	398	43	20	23	362	367	12	809	72			
RTOR Reduction (vph)	0	0	43	0	0	11	0	179	0	0	7	0			
Lane Group Flow (vph)	0	174	32	0	441	9	23	550	0	12	874	0			
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot					
Protected Phases		6			2		7	4		3	8				
Permitted Phases	6		6	2		2									
Actuated Green, G (s)		30.7	30.7		30.7	30.7	1.8	25.0		1.1	24.3				
Effective Green, g (s)		30.7	30.7		30.7	30.7	1.8	25.0		1.1	24.3				
Actuated g/C Ratio		0.43	0.43		0.43	0.43	0.03	0.35		0.02	0.34				
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0				
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)		349	677		501	677	44	1139		27	1183				
v/s Ratio Prot							c0.01	0.17		0.01	c0.25				
v/s Ratio Perm		0.21	0.02		c0.38	0.01									
v/c Ratio		0.50	0.05		0.88	0.01	0.52	0.48		0.44	0.74				
Uniform Delay, d1		15.0	12.0		18.9	11.8	34.6	18.3		35.0	21.0				
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00				
Incremental Delay, d2		1.1	0.0		16.4	0.0	10.8	0.3		11.2	2.5				
Delay (s)		16.1	12.0		35.2	11.8	45.3	18.7		46.3	23.4				
Level of Service		B	B		D	B	D	B		D	C				
Approach Delay (s)		14.9			34.2			19.5			23.7				
Approach LOS		B			C			B			C				

Intersection Summary			
HCM Average Control Delay	23.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	71.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	18	19	33	189	23	21	67	618	21	17	403	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1818	1583		1783	1583	1770	3522		1770	3495	
Flt Permitted		0.83	1.00		0.72	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1538	1583		1341	1583	1770	3522		1770	3495	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	21	36	205	25	23	73	672	23	18	438	40
RTOR Reduction (vph)	0	0	25	0	0	16	0	2	0	0	7	0
Lane Group Flow (vph)	0	41	11	0	230	7	73	693	0	18	471	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6		6	2		2						
Actuated Green, G (s)		15.4	15.4		15.4	15.4	4.5	20.5		0.9	16.9	
Effective Green, g (s)		15.4	15.4		15.4	15.4	4.5	20.5		0.9	16.9	
Actuated g/C Ratio		0.30	0.30		0.30	0.30	0.09	0.40		0.02	0.33	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		457	471		399	471	154	1394		31	1140	
v/s Ratio Prot							c0.04	c0.20		0.01	0.13	
v/s Ratio Perm		0.03	0.01		c0.17	0.00						
v/c Ratio		0.09	0.02		0.58	0.01	0.47	0.50		0.58	0.41	
Uniform Delay, d1		13.1	12.9		15.4	12.8	22.5	11.8		25.3	13.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.0		2.0	0.0	2.3	0.3		24.7	0.2	
Delay (s)		13.2	12.9		17.5	12.9	24.8	12.1		50.0	13.8	
Level of Service		B	B		B	B	C	B		D	B	
Approach Delay (s)		13.1			17.0			13.3			15.1	
Approach LOS		B			B			B			B	

HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
16: Kuaoa & Meheula

10/8/2010

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	5	62	149	0	3	19	325	126	3	610	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	5	67	162	0	3	21	353	137	3	663	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								672				
pX, platoon unblocked												
vC, conflicting volume	892	1203	333	871	1136	245	666			490		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	892	1203	333	871	1136	245	666			490		
tC, single (s)	7.5	*5.5	*5.9	*6.5	6.5	*5.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	*3.5	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	98	91	41	100	100	98			100		
cM capacity (veh/h)	231	271	730	276	196	811	919			1069		

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	5	67	162	3	21	236	255	3	442	224
Volume Left	0	0	162	0	21	0	0	3	0	0
Volume Right	0	67	0	3	0	0	137	0	0	3
cSH	271	730	276	811	919	1700	1700	1069	1700	1700
Volume to Capacity	0.02	0.09	0.59	0.00	0.02	0.14	0.15	0.00	0.26	0.13
Queue Length 95th (ft)	2	8	86	0	2	0	0	0	0	0
Control Delay (s)	18.6	10.4	35.0	9.5	9.0	0.0	0.0	8.4	0.0	0.0
Lane LOS	C	B	D	A	A			A		
Approach Delay (s)	11.0		34.5		0.4			0.0		
Approach LOS	B		D							

Intersection Summary				
Average Delay	4.7			
Intersection Capacity Utilization	39.1%	ICU Level of Service	A	
Analysis Period (min)	15			

* User Entered Value

HCM Unsignalized Intersection Capacity Analysis
16: Kuaoa & Meheula

10/8/2010

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	1	2	24	89	1	1	53	400	204	6	344	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	2	26	97	1	1	58	435	222	7	374	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								672				
pX, platoon unblocked	0.94	0.94		0.94	0.94	0.94				0.94		
vC, conflicting volume	722	1160	188	888	1050	328	376			657		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	571	1037	188	748	920	150	376			501		
tC, single (s)	*6.5	*5.5	*5.9	*6.5	*5.5	*5.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	*3.5	3.3	3.5	*3.5	3.3	2.2			2.2		
p0 queue free %	100	99	97	70	100	100	95			99		
cM capacity (veh/h)	426	297	868	324	338	851	1179			994		

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3		
Volume Total	3	26	98	1	58	290	367	7	249	127		
Volume Left	1	0	97	0	58	0	0	7	0	0		
Volume Right	0	26	0	1	0	0	222	0	0	2		
cSH	330	868	324	851	1179	1700	1700	994	1700	1700		
Volume to Capacity	0.01	0.03	0.30	0.00	0.05	0.17	0.22	0.01	0.15	0.07		
Queue Length 95th (ft)	1	2	31	0	4	0	0	0	0	0		
Control Delay (s)	16.0	9.3	20.8	9.2	8.2	0.0	0.0	8.6	0.0	0.0		
Lane LOS	C	A	C	A	A			A				
Approach Delay (s)	10.0		20.7		0.7			0.1				
Approach LOS	B		C									

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	42.6%	ICU Level of Service	A	
Analysis Period (min)	15			

* User Entered Value

APPENDIX D

TRAFFIC SIGNAL WARRANT ANALYSIS

Warrant 1
8-Hour Volumes (:00*)

Time	Meheula		Kuaoa		100%		80%	
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Condition A	Condition B	Condition A	Condition B
0:00	37	129	1	6	0	0	0	0
0:15	33	110	1	9				
0:30	31	98	2	9				
0:45	28	82	2	9				
1:00	18	67	4	8	0	0	0	0
1:15	21	70	1	5				
1:30	15	60	2	4				
1:45	13	57	1	5				
2:00	21	57	1	4	0	0	0	0
2:15	11	45	0	4				
2:30	12	44	3	5				
2:45	13	38	0	3				
3:00	9	29	1	3	0	0	0	0
3:15	10	33	1	7				
3:30	6	36	1	10				
3:45	4	44	0	10				
4:00	13	57	5	14	0	0	0	0
4:15	13	62	4	20				
4:30	14	71	1	26				
4:45	17	88	4	43				
5:00	18	99	11	58	0	0	0	0
5:15	22	99	10	90				
5:30	31	115	18	126				
5:45	28	127	19	145				
6:00	18	148	43	154	0	0	0	0
6:15	38	191	46	141				
6:30	43	207	37	131				
6:45	49	256	28	142				
7:00	61	319	30	144	0	0	0	0
7:15	54	386	36	171				
7:30	92	477	48	183				
7:45	112	530	30	189				
8:00	128	585	57	189	0	0	1	0
8:15	145	620	48	164				
8:30	145	666	54	129				

*One hour period starts on the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 1
8-Hour Volumes (:00*)

Time	Meheula		Kuaoa		100%		80%	
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Condition A	Condition B	Condition A	Condition B
8:45	167	703	30	97				
9:00	163	695	32	89	0	0	0	0
9:15	191	704	13	82				
9:30	182	687	22	89				
9:45	159	672	22	82				
10:00	172	695	25	76	0	0	0	0
10:15	174	703	20	73				
10:30	167	718	15	91				
10:45	182	709	16	118				
11:00	180	707	22	141	0	0	1	0
11:15	189	685	38	143				
11:30	158	681	42	157				
11:45	180	709	39	156				
12:00	158	690	24	164	1	0	1	0
12:15	185	718	52	172				
12:30	186	678	41	168				
12:45	161	690	47	178				
13:00	186	676	32	175	1	0	1	0
13:15	145	658	48	200				
13:30	198	676	51	192				
13:45	147	621	44	187				
14:00	168	622	57	255	1	0	1	0
14:15	163	636	40	271				
14:30	143	623	46	285				
14:45	148	646	112	367				
15:00	182	660	73	325	1	0	1	0
15:15	150	657	54	298				
15:30	166	661	128	286				
15:45	162	640	70	192				
16:00	179	650	46	159	1	0	1	0
16:15	154	665	42	183				
16:30	145	686	34	231				
16:45	172	713	37	241				
17:00	194	733	70	223	1	0	1	1
17:15	175	714	90	226				

*One hour period starts on the hour.
**"1" indicates that the condition is satisfied.
****"0" indicates that the condition is not satisfied.

Warrant 1
8-Hour Volumes (:00*)

Time	Meheula		Kuaoa		100%		80%	
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Condition A	Condition B	Condition A	Condition B
17:30	172	718	44	242				
17:45	192	701	19	292				
18:00	175	694	73	359	1	0	1	0
18:15	179	687	106	316				
18:30	155	655	94	228				
18:45	185	616	86	158				
19:00	168	563	30	88	0	0	0	0
19:15	147	510	18	78				
19:30	116	468	24	78				
19:45	132	467	16	76				
20:00	115	430	20	86	0	0	0	0
20:15	105	408	18	88				
20:30	115	417	22	104				
20:45	95	409	26	118				
21:00	93	427	22	137	0	0	0	0
21:15	114	418	34	147				
21:30	107	392	36	136				
21:45	113	373	45	128				
22:00	84	338	32	101	0	0	0	0
22:15	88	310	23	103				
22:30	88	284	28	110				
22:45	78	255	18	102				
23:00	56	220	34	98	0	0	0	0
23:15	62	164	30	64				
23:30	59	102	20	34				
23:45	43	43	14	14				
			# of Periods Warrant Satisfied		**7**	**0**	**9**	**1**

*One hour period starts on the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 1
8-Hour Volumes (:15*)

Time	Meheula		Kuaoa		100%		80%	
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Condition A	Condition B	Condition A	Condition B
0:00	37	129	1	6				
0:15	33	110	1	9	0	0	0	0
0:30	31	98	2	9				
0:45	28	82	2	9				
1:00	18	67	4	8				
1:15	21	70	1	5	0	0	0	0
1:30	15	60	2	4				
1:45	13	57	1	5				
2:00	21	57	1	4				
2:15	11	45	0	4	0	0	0	0
2:30	12	44	3	5				
2:45	13	38	0	3				
3:00	9	29	1	3				
3:15	10	33	1	7	0	0	0	0
3:30	6	36	1	10				
3:45	4	44	0	10				
4:00	13	57	5	14				
4:15	13	62	4	20	0	0	0	0
4:30	14	71	1	26				
4:45	17	88	4	43				
5:00	18	99	11	58				
5:15	22	99	10	90	0	0	0	0
5:30	31	115	18	126				
5:45	28	127	19	145				
6:00	18	148	43	154				
6:15	38	191	46	141	0	0	0	0
6:30	43	207	37	131				
6:45	49	256	28	142				
7:00	61	319	30	144				
7:15	54	386	36	171	0	0	0	0
7:30	92	477	48	183				
7:45	112	530	30	189				
8:00	128	585	57	189				
8:15	145	620	48	164	1	0	1	0
8:30	145	666	54	129				

*One hour period starts 15 minutes after the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 1
8-Hour Volumes (:15*)

Time	Meheula		Kuaoa		100%		80%	
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Condition A	Condition B	Condition A	Condition B
8:45	167	703	30	97				
9:00	163	695	32	89				
9:15	191	704	13	82	0	0	0	0
9:30	182	687	22	89				
9:45	159	672	22	82				
10:00	172	695	25	76				
10:15	174	703	20	73	0	0	0	0
10:30	167	718	15	91				
10:45	182	709	16	118				
11:00	180	707	22	141				
11:15	189	685	38	143	0	0	1	0
11:30	158	681	42	157				
11:45	180	709	39	156				
12:00	158	690	24	164				
12:15	185	718	52	172	1	0	1	0
12:30	186	678	41	168				
12:45	161	690	47	178				
13:00	186	676	32	175				
13:15	145	658	48	200	1	0	1	0
13:30	198	676	51	192				
13:45	147	621	44	187				
14:00	168	622	57	255				
14:15	163	636	40	271	1	0	1	0
14:30	143	623	46	285				
14:45	148	646	112	367				
15:00	182	660	73	325				
15:15	150	657	54	298	1	0	1	0
15:30	166	661	128	286				
15:45	162	640	70	192				
16:00	179	650	46	159				
16:15	154	665	42	183	1	0	1	0
16:30	145	686	34	231				
16:45	172	713	37	241				
17:00	194	733	70	223				
17:15	175	714	90	226	1	0	1	0

*One hour period starts 15 minutes after the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 1
8-Hour Volumes (:15*)

Time	Meheula		Kuaoa		100%		80%	
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Condition A	Condition B	Condition A	Condition B
17:30	172	718	44	242				
17:45	192	701	19	292				
18:00	175	694	73	359				
18:15	179	687	106	316	1	0	1	0
18:30	155	655	94	228				
18:45	185	616	86	158				
19:00	168	563	30	88				
19:15	147	510	18	78	0	0	0	0
19:30	116	468	24	78				
19:45	132	467	16	76				
20:00	115	430	20	86				
20:15	105	408	18	88	0	0	0	0
20:30	115	417	22	104				
20:45	95	409	26	118				
21:00	93	427	22	137				
21:15	114	418	34	147	0	0	0	0
21:30	107	392	36	136				
21:45	113	373	45	128				
22:00	84	338	32	101				
22:15	88	310	23	103	0	0	0	0
22:30	88	284	28	110				
22:45	78	255	18	102				
23:00	56	220	34	98				
23:15	62	164	30	64				
23:30	59	102	20	34				
23:45	43	43	14	14				
			# of Periods Warrant Satisfied		**8**	**0**	**9**	**0**

*One hour period starts 15 minutes after the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 1
8-Hour Volumes (:30*)

Time	Meheula		Kuaoa		100%		80%	
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Condition A	Condition B	Condition A	Condition B
0:00	37	129	1	6				
0:15	33	110	1	9				
0:30	31	98	2	9	0	0	0	0
0:45	28	82	2	9				
1:00	18	67	4	8				
1:15	21	70	1	5				
1:30	15	60	2	4	0	0	0	0
1:45	13	57	1	5				
2:00	21	57	1	4				
2:15	11	45	0	4				
2:30	12	44	3	5	0	0	0	0
2:45	13	38	0	3				
3:00	9	29	1	3				
3:15	10	33	1	7				
3:30	6	36	1	10	0	0	0	0
3:45	4	44	0	10				
4:00	13	57	5	14				
4:15	13	62	4	20				
4:30	14	71	1	26	0	0	0	0
4:45	17	88	4	43				
5:00	18	99	11	58				
5:15	22	99	10	90				
5:30	31	115	18	126	0	0	0	0
5:45	28	127	19	145				
6:00	18	148	43	154				
6:15	38	191	46	141				
6:30	43	207	37	131	0	0	0	0
6:45	49	256	28	142				
7:00	61	319	30	144				
7:15	54	386	36	171				
7:30	92	477	48	183	0	0	0	0
7:45	112	530	30	189				
8:00	128	585	57	189				
8:15	145	620	48	164				
8:30	145	666	54	129	0	0	1	0

*One hour period starts 30 minutes after the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 1
8-Hour Volumes (:30*)

Time	Meheula		Kuaoa		100%		80%	
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Condition A	Condition B	Condition A	Condition B
8:45	167	703	30	97				
9:00	163	695	32	89				
9:15	191	704	13	82				
9:30	182	687	22	89	0	0	0	0
9:45	159	672	22	82				
10:00	172	695	25	76				
10:15	174	703	20	73				
10:30	167	718	15	91	0	0	0	0
10:45	182	709	16	118				
11:00	180	707	22	141				
11:15	189	685	38	143				
11:30	158	681	42	157	1	0	1	0
11:45	180	709	39	156				
12:00	158	690	24	164				
12:15	185	718	52	172				
12:30	186	678	41	168	1	0	1	0
12:45	161	690	47	178				
13:00	186	676	32	175				
13:15	145	658	48	200				
13:30	198	676	51	192	1	0	1	0
13:45	147	621	44	187				
14:00	168	622	57	255				
14:15	163	636	40	271				
14:30	143	623	46	285	1	0	1	0
14:45	148	646	112	367				
15:00	182	660	73	325				
15:15	150	657	54	298				
15:30	166	661	128	286	1	0	1	0
15:45	162	640	70	192				
16:00	179	650	46	159				
16:15	154	665	42	183				
16:30	145	686	34	231	1	0	1	0
16:45	172	713	37	241				
17:00	194	733	70	223				
17:15	175	714	90	226				

*One hour period starts 30 minutes after the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 1
8-Hour Volumes (:30*)

Time	Meheula		Kuaoa		100%		80%	
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Condition A	Condition B	Condition A	Condition B
17:30	172	718	44	242	1	0	1	0
17:45	192	701	19	292				
18:00	175	694	73	359				
18:15	179	687	106	316				
18:30	155	655	94	228	1	0	1	0
18:45	185	616	86	158				
19:00	168	563	30	88				
19:15	147	510	18	78				
19:30	116	468	24	78	0	0	0	0
19:45	132	467	16	76				
20:00	115	430	20	86				
20:15	105	408	18	88				
20:30	115	417	22	104	0	0	0	0
20:45	95	409	26	118				
21:00	93	427	22	137				
21:15	114	418	34	147				
21:30	107	392	36	136	0	0	0	0
21:45	113	373	45	128				
22:00	84	338	32	101				
22:15	88	310	23	103				
22:30	88	284	28	110	0	0	0	0
22:45	78	255	18	102				
23:00	56	220	34	98				
23:15	62	164	30	64				
23:30	59	102	20	34				
23:45	43	43	14	14				
			# of Periods Warrant Satisfied		**8**	**0**	**9**	**0**

*One hour period starts 30 minutes after the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 1
8-Hour Volumes (:45*)

Time	Meheula		Kuaoa		100%		80%	
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Condition A	Condition B	Condition A	Condition B
0:00	37	129	1	6				
0:15	33	110	1	9				
0:30	31	98	2	9				
0:45	28	82	2	9	0	0	0	0
1:00	18	67	4	8				
1:15	21	70	1	5				
1:30	15	60	2	4				
1:45	13	57	1	5	0	0	0	0
2:00	21	57	1	4				
2:15	11	45	0	4				
2:30	12	44	3	5				
2:45	13	38	0	3	0	0	0	0
3:00	9	29	1	3				
3:15	10	33	1	7				
3:30	6	36	1	10				
3:45	4	44	0	10	0	0	0	0
4:00	13	57	5	14				
4:15	13	62	4	20				
4:30	14	71	1	26				
4:45	17	88	4	43	0	0	0	0
5:00	18	99	11	58				
5:15	22	99	10	90				
5:30	31	115	18	126				
5:45	28	127	19	145	0	0	0	0
6:00	18	148	43	154				
6:15	38	191	46	141				
6:30	43	207	37	131				
6:45	49	256	28	142	0	0	0	0
7:00	61	319	30	144				
7:15	54	386	36	171				
7:30	92	477	48	183				
7:45	112	530	30	189	0	0	1	0
8:00	128	585	57	189				
8:15	145	620	48	164				
8:30	145	666	54	129				

*One hour period starts 45 minutes after the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 1
8-Hour Volumes (:45*)

Time	Meheula		Kuaoa		100%		80%	
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Condition A	Condition B	Condition A	Condition B
8:45	167	703	30	97	0	0	0	0
9:00	163	695	32	89				
9:15	191	704	13	82				
9:30	182	687	22	89				
9:45	159	672	22	82	0	0	0	0
10:00	172	695	25	76				
10:15	174	703	20	73				
10:30	167	718	15	91				
10:45	182	709	16	118	0	0	0	0
11:00	180	707	22	141				
11:15	189	685	38	143				
11:30	158	681	42	157				
11:45	180	709	39	156	1	0	1	0
12:00	158	690	24	164				
12:15	185	718	52	172				
12:30	186	678	41	168				
12:45	161	690	47	178	1	0	1	0
13:00	186	676	32	175				
13:15	145	658	48	200				
13:30	198	676	51	192				
13:45	147	621	44	187	1	0	1	0
14:00	168	622	57	255				
14:15	163	636	40	271				
14:30	143	623	46	285				
14:45	148	646	112	367	1	0	1	0
15:00	182	660	73	325				
15:15	150	657	54	298				
15:30	166	661	128	286				
15:45	162	640	70	192	1	0	1	0
16:00	179	650	46	159				
16:15	154	665	42	183				
16:30	145	686	34	231				
16:45	172	713	37	241	1	0	1	0
17:00	194	733	70	223				
17:15	175	714	90	226				

*One hour period starts 45 minutes after the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 1
8-Hour Volumes (:45*)

Time	Meheula		Kuaoa		100%		80%	
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Condition A	Condition B	Condition A	Condition B
17:30	172	718	44	242				
17:45	192	701	19	292	1	0	1	0
18:00	175	694	73	359				
18:15	179	687	106	316				
18:30	155	655	94	228				
18:45	185	616	86	158	1	0	1	0
19:00	168	563	30	88				
19:15	147	510	18	78				
19:30	116	468	24	78				
19:45	132	467	16	76	0	0	0	0
20:00	115	430	20	86				
20:15	105	408	18	88				
20:30	115	417	22	104				
20:45	95	409	26	118	0	0	0	0
21:00	93	427	22	137				
21:15	114	418	34	147				
21:30	107	392	36	136				
21:45	113	373	45	128	0	0	0	0
22:00	84	338	32	101				
22:15	88	310	23	103				
22:30	88	284	28	110				
22:45	78	255	18	102	0	0	0	0
23:00	56	220	34	98				
23:15	62	164	30	64				
23:30	59	102	20	34				
23:45	43	43	14	14				
			# of Periods Warrant Satisfied		**8**	**0**	**9**	**0**

*One hour period starts 45 minutes after the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 2
4-Hour Volumes Overall

Time	Meheula		Kuaoa			Warrant Satisfied
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Above Min	
0:00	37	129	1	6	0	
0:15	33	110	1	9	0	
0:30	31	98	2	9	0	
0:45	28	82	2	9	0	
1:00	18	67	4	8	0	
1:15	21	70	1	5	0	
1:30	15	60	2	4	0	
1:45	13	57	1	5	0	
2:00	21	57	1	4	0	
2:15	11	45	0	4	0	
2:30	12	44	3	5	0	
2:45	13	38	0	3	0	
3:00	9	29	1	3	0	
3:15	10	33	1	7	0	
3:30	6	36	1	10	0	
3:45	4	44	0	10	0	
4:00	13	57	5	14	0	
4:15	13	62	4	20	0	
4:30	14	71	1	26	0	
4:45	17	88	4	43	0	
5:00	18	99	11	58	0	
5:15	22	99	10	90	1	
5:30	31	115	18	126	1	
5:45	28	127	19	145	1	
6:00	18	148	43	154	1	
6:15	38	191	46	141	1	
6:30	43	207	37	131	1	
6:45	49	256	28	142	1	
7:00	61	319	30	144	1	
7:15	54	386	36	171	1	
7:30	92	477	48	183	1	
7:45	112	530	30	189	1	
8:00	128	585	57	189	1	
8:15	145	620	48	164	1	
8:30	145	666	54	129	1	
8:45	167	703	30	97	1	
9:00	163	695	32	89	1	
9:15	191	704	13	82	1	
9:30	182	687	22	89	1	
9:45	159	672	22	82	1	
10:00	172	695	25	76	0	
10:15	174	703	20	73	0	
10:30	167	718	15	91	1	
10:45	182	709	16	118	1	
11:00	180	707	22	141	1	
11:15	189	685	38	143	1	
11:30	158	681	42	157	1	
11:45	180	709	39	156	1	
12:00	158	690	24	164	1	
12:15	185	718	52	172	1	

*"1" indicates that the condition is satisfied.
**"0" indicates that the condition is not satisfied.

Time	Meheula		Kuaoa			Warrant Satisfied
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Above Min	
12:30	186	678	41	168	1	
12:45	161	690	47	178	1	
13:00	186	676	32	175	1	
13:15	145	658	48	200	1	
13:30	198	676	51	192	1	
13:45	147	621	44	187	1	
14:00	168	622	57	255	1	
14:15	163	636	40	271	1	
14:30	143	623	46	285	1	1
14:45	148	646	112	367	1	
15:00	182	660	73	325	1	
15:15	150	657	54	298	1	
15:30	166	661	128	286	1	1
15:45	162	640	70	192	1	
16:00	179	650	46	159	1	
16:15	154	665	42	183	1	
16:30	145	686	34	231	1	
16:45	172	713	37	241	1	1
17:00	194	733	70	223	1	
17:15	175	714	90	226	1	
17:30	172	718	44	242	1	
17:45	192	701	19	292	1	1
18:00	175	694	73	359	1	
18:15	179	687	106	316	1	
18:30	155	655	94	228	1	
18:45	185	616	86	158	1	
19:00	168	563	30	88	1	
19:15	147	510	18	78	0	
19:30	116	468	24	78	0	
19:45	132	467	16	76	0	
20:00	115	430	20	86	1	
20:15	105	408	18	88	1	
20:30	115	417	22	104	1	
20:45	95	409	26	118	1	
21:00	93	427	22	137	1	
21:15	114	418	34	147	1	
21:30	107	392	36	136	1	
21:45	113	373	45	128	1	
22:00	84	338	32	101	1	
22:15	88	310	23	103	1	
22:30	88	284	28	110	1	
22:45	78	255	18	102	1	
23:00	56	220	34	98	1	
23:15	62	164	30	64	0	
23:30	59	102	20	34	0	
23:45	43	43	14	14	0	
				# of Periods Warrant Satisfied		**4**

*"1" indicates that the condition is satisfied.
**"0" indicates that the condition is not satisfied.

Warrant 2
4-Hour Volumes (:00*)

Time	Meheula		Kuaoa			Warrant Satisfied
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Above Min	
0:00	37	129	1	6	0	
0:15	33	110	1	9	0	
0:30	31	98	2	9	0	
0:45	28	82	2	9	0	
1:00	18	67	4	8	0	
1:15	21	70	1	5	0	
1:30	15	60	2	4	0	
1:45	13	57	1	5	0	
2:00	21	57	1	4	0	
2:15	11	45	0	4	0	
2:30	12	44	3	5	0	
2:45	13	38	0	3	0	
3:00	9	29	1	3	0	
3:15	10	33	1	7	0	
3:30	6	36	1	10	0	
3:45	4	44	0	10	0	
4:00	13	57	5	14	0	
4:15	13	62	4	20	0	
4:30	14	71	1	26	0	
4:45	17	88	4	43	0	
5:00	18	99	11	58	0	
5:15	22	99	10	90	1	
5:30	31	115	18	126	1	
5:45	28	127	19	145	1	
6:00	18	148	43	154	1	
6:15	38	191	46	141	1	
6:30	43	207	37	131	1	
6:45	49	256	28	142	1	
7:00	61	319	30	144	1	
7:15	54	386	36	171	1	
7:30	92	477	48	183	1	
7:45	112	530	30	189	1	
8:00	128	585	57	189	1	
8:15	145	620	48	164	1	
8:30	145	666	54	129	1	
8:45	167	703	30	97	1	
9:00	163	695	32	89	1	
9:15	191	704	13	82	1	
9:30	182	687	22	89	1	
9:45	159	672	22	82	1	
10:00	172	695	25	76	0	
10:15	174	703	20	73	0	
10:30	167	718	15	91	1	
10:45	182	709	16	118	1	
11:00	180	707	22	141	1	
11:15	189	685	38	143	1	
11:30	158	681	42	157	1	
11:45	180	709	39	156	1	
12:00	158	690	24	164	1	
12:15	185	718	52	172	1	

*One hour period starts on the hour.
***"1" indicates that the condition is satisfied.
****"0" indicates that the condition is not satisfied.

Warrant 2
4-Hour Volumes (:00*)

Time	Meheula		Kuaoa			Warrant Satisfied
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Above Min	
12:30	186	678	41	168	1	
12:45	161	690	47	178	1	
13:00	186	676	32	175	1	
13:15	145	658	48	200	1	
13:30	198	676	51	192	1	
13:45	147	621	44	187	1	
14:00	168	622	57	255	1	
14:15	163	636	40	271	1	
14:30	143	623	46	285	1	
14:45	148	646	112	367	1	
15:00	182	660	73	325	1	1
15:15	150	657	54	298	1	
15:30	166	661	128	286	1	
15:45	162	640	70	192	1	
16:00	179	650	46	159	1	
16:15	154	665	42	183	1	
16:30	145	686	34	231	1	
16:45	172	713	37	241	1	
17:00	194	733	70	223	1	
17:15	175	714	90	226	1	
17:30	172	718	44	242	1	
17:45	192	701	19	292	1	
18:00	175	694	73	359	1	1
18:15	179	687	106	316	1	
18:30	155	655	94	228	1	
18:45	185	616	86	158	1	
19:00	168	563	30	88	1	
19:15	147	510	18	78	0	
19:30	116	468	24	78	0	
19:45	132	467	16	76	0	
20:00	115	430	20	86	1	
20:15	105	408	18	88	1	
20:30	115	417	22	104	1	
20:45	95	409	26	118	1	
21:00	93	427	22	137	1	
21:15	114	418	34	147	1	
21:30	107	392	36	136	1	
21:45	113	373	45	128	1	
22:00	84	338	32	101	1	
22:15	88	310	23	103	1	
22:30	88	284	28	110	1	
22:45	78	255	18	102	1	
23:00	56	220	34	98	1	
23:15	62	164	30	64	0	
23:30	59	102	20	34	0	
23:45	43	43	14	14	0	
				# of Periods Warrant Satisfied		**2**

*One hour period starts on the hour.
***"1" indicates that the condition is satisfied.
****"0" indicates that the condition is not satisfied.

Warrant 2
4-Hour Volumes (:15*)

Time	Meheula		Kuaoa			Warrant Satisfied
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Above Min	
0:00	37	129	1	6	0	
0:15	33	110	1	9	0	
0:30	31	98	2	9	0	
0:45	28	82	2	9	0	
1:00	18	67	4	8	0	
1:15	21	70	1	5	0	
1:30	15	60	2	4	0	
1:45	13	57	1	5	0	
2:00	21	57	1	4	0	
2:15	11	45	0	4	0	
2:30	12	44	3	5	0	
2:45	13	38	0	3	0	
3:00	9	29	1	3	0	
3:15	10	33	1	7	0	
3:30	6	36	1	10	0	
3:45	4	44	0	10	0	
4:00	13	57	5	14	0	
4:15	13	62	4	20	0	
4:30	14	71	1	26	0	
4:45	17	88	4	43	0	
5:00	18	99	11	58	0	
5:15	22	99	10	90	1	
5:30	31	115	18	126	1	
5:45	28	127	19	145	1	
6:00	18	148	43	154	1	
6:15	38	191	46	141	1	
6:30	43	207	37	131	1	
6:45	49	256	28	142	1	
7:00	61	319	30	144	1	
7:15	54	386	36	171	1	
7:30	92	477	48	183	1	
7:45	112	530	30	189	1	
8:00	128	585	57	189	1	
8:15	145	620	48	164	1	
8:30	145	666	54	129	1	
8:45	167	703	30	97	1	
9:00	163	695	32	89	1	
9:15	191	704	13	82	1	
9:30	182	687	22	89	1	
9:45	159	672	22	82	1	
10:00	172	695	25	76	0	
10:15	174	703	20	73	0	
10:30	167	718	15	91	1	
10:45	182	709	16	118	1	
11:00	180	707	22	141	1	
11:15	189	685	38	143	1	
11:30	158	681	42	157	1	
11:45	180	709	39	156	1	
12:00	158	690	24	164	1	
12:15	185	718	52	172	1	

*One hour period starts 15 minutes after the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 2
4-Hour Volumes (:15*)

Time	Meheula		Kuaoa			Warrant Satisfied
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Above Min	
12:30	186	678	41	168	1	
12:45	161	690	47	178	1	
13:00	186	676	32	175	1	
13:15	145	658	48	200	1	
13:30	198	676	51	192	1	
13:45	147	621	44	187	1	
14:00	168	622	57	255	1	
14:15	163	636	40	271	1	
14:30	143	623	46	285	1	
14:45	148	646	112	367	1	
15:00	182	660	73	325	1	
15:15	150	657	54	298	1	1
15:30	166	661	128	286	1	
15:45	162	640	70	192	1	
16:00	179	650	46	159	1	
16:15	154	665	42	183	1	
16:30	145	686	34	231	1	
16:45	172	713	37	241	1	
17:00	194	733	70	223	1	
17:15	175	714	90	226	1	
17:30	172	718	44	242	1	
17:45	192	701	19	292	1	
18:00	175	694	73	359	1	
18:15	179	687	106	316	1	1
18:30	155	655	94	228	1	
18:45	185	616	86	158	1	
19:00	168	563	30	88	1	
19:15	147	510	18	78	0	
19:30	116	468	24	78	0	
19:45	132	467	16	76	0	
20:00	115	430	20	86	1	
20:15	105	408	18	88	1	
20:30	115	417	22	104	1	
20:45	95	409	26	118	1	
21:00	93	427	22	137	1	
21:15	114	418	34	147	1	
21:30	107	392	36	136	1	
21:45	113	373	45	128	1	
22:00	84	338	32	101	1	
22:15	88	310	23	103	1	
22:30	88	284	28	110	1	
22:45	78	255	18	102	1	
23:00	56	220	34	98	1	
23:15	62	164	30	64	0	
23:30	59	102	20	34	0	
23:45	43	43	14	14	0	
				# of Periods Warrant Satisfied		**2**

*One hour period starts 15 minutes after the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 2
4-Hour Volumes (:30*)

Time	Meheula		Kuaoa			Warrant Satisfied
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Above Min	
0:00	37	129	1	6	0	
0:15	33	110	1	9	0	
0:30	31	98	2	9	0	
0:45	28	82	2	9	0	
1:00	18	67	4	8	0	
1:15	21	70	1	5	0	
1:30	15	60	2	4	0	
1:45	13	57	1	5	0	
2:00	21	57	1	4	0	
2:15	11	45	0	4	0	
2:30	12	44	3	5	0	
2:45	13	38	0	3	0	
3:00	9	29	1	3	0	
3:15	10	33	1	7	0	
3:30	6	36	1	10	0	
3:45	4	44	0	10	0	
4:00	13	57	5	14	0	
4:15	13	62	4	20	0	
4:30	14	71	1	26	0	
4:45	17	88	4	43	0	
5:00	18	99	11	58	0	
5:15	22	99	10	90	1	
5:30	31	115	18	126	1	
5:45	28	127	19	145	1	
6:00	18	148	43	154	1	
6:15	38	191	46	141	1	
6:30	43	207	37	131	1	
6:45	49	256	28	142	1	
7:00	61	319	30	144	1	
7:15	54	386	36	171	1	
7:30	92	477	48	183	1	
7:45	112	530	30	189	1	
8:00	128	585	57	189	1	
8:15	145	620	48	164	1	
8:30	145	666	54	129	1	
8:45	167	703	30	97	1	
9:00	163	695	32	89	1	
9:15	191	704	13	82	1	
9:30	182	687	22	89	1	
9:45	159	672	22	82	1	
10:00	172	695	25	76	0	
10:15	174	703	20	73	0	
10:30	167	718	15	91	1	
10:45	182	709	16	118	1	
11:00	180	707	22	141	1	
11:15	189	685	38	143	1	
11:30	158	681	42	157	1	
11:45	180	709	39	156	1	
12:00	158	690	24	164	1	
12:15	185	718	52	172	1	

*One hour period starts 30 minutes after the hour.
***"1" indicates that the condition is satisfied.
****"0" indicates that the condition is not satisfied.

Warrant 2
4-Hour Volumes (:30*)

Time	Meheula		Kuaoa			Warrant Satisfied
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Above Min	
12:30	186	678	41	168	1	
12:45	161	690	47	178	1	
13:00	186	676	32	175	1	
13:15	145	658	48	200	1	
13:30	198	676	51	192	1	
13:45	147	621	44	187	1	
14:00	168	622	57	255	1	
14:15	163	636	40	271	1	
14:30	143	623	46	285	1	1
14:45	148	646	112	367	1	
15:00	182	660	73	325	1	
15:15	150	657	54	298	1	
15:30	166	661	128	286	1	1
15:45	162	640	70	192	1	
16:00	179	650	46	159	1	
16:15	154	665	42	183	1	
16:30	145	686	34	231	1	
16:45	172	713	37	241	1	
17:00	194	733	70	223	1	
17:15	175	714	90	226	1	
17:30	172	718	44	242	1	1
17:45	192	701	19	292	1	
18:00	175	694	73	359	1	
18:15	179	687	106	316	1	
18:30	155	655	94	228	1	
18:45	185	616	86	158	1	
19:00	168	563	30	88	1	
19:15	147	510	18	78	0	
19:30	116	468	24	78	0	
19:45	132	467	16	76	0	
20:00	115	430	20	86	1	
20:15	105	408	18	88	1	
20:30	115	417	22	104	1	
20:45	95	409	26	118	1	
21:00	93	427	22	137	1	
21:15	114	418	34	147	1	
21:30	107	392	36	136	1	
21:45	113	373	45	128	1	
22:00	84	338	32	101	1	
22:15	88	310	23	103	1	
22:30	88	284	28	110	1	
22:45	78	255	18	102	1	
23:00	56	220	34	98	1	
23:15	62	164	30	64	0	
23:30	59	102	20	34	0	
23:45	43	43	14	14	0	
				# of Periods Warrant Satisfied		**3**

*One hour period starts 30 minutes after the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 2
4-Hour Volumes (:45*)

Time	Meheula		Kuaoa			Warrant Satisfied
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Above Min	
0:00	37	129	1	6	0	
0:15	33	110	1	9	0	
0:30	31	98	2	9	0	
0:45	28	82	2	9	0	
1:00	18	67	4	8	0	
1:15	21	70	1	5	0	
1:30	15	60	2	4	0	
1:45	13	57	1	5	0	
2:00	21	57	1	4	0	
2:15	11	45	0	4	0	
2:30	12	44	3	5	0	
2:45	13	38	0	3	0	
3:00	9	29	1	3	0	
3:15	10	33	1	7	0	
3:30	6	36	1	10	0	
3:45	4	44	0	10	0	
4:00	13	57	5	14	0	
4:15	13	62	4	20	0	
4:30	14	71	1	26	0	
4:45	17	88	4	43	0	
5:00	18	99	11	58	0	
5:15	22	99	10	90	1	
5:30	31	115	18	126	1	
5:45	28	127	19	145	1	
6:00	18	148	43	154	1	
6:15	38	191	46	141	1	
6:30	43	207	37	131	1	
6:45	49	256	28	142	1	
7:00	61	319	30	144	1	
7:15	54	386	36	171	1	
7:30	92	477	48	183	1	
7:45	112	530	30	189	1	
8:00	128	585	57	189	1	
8:15	145	620	48	164	1	
8:30	145	666	54	129	1	
8:45	167	703	30	97	1	
9:00	163	695	32	89	1	
9:15	191	704	13	82	1	
9:30	182	687	22	89	1	
9:45	159	672	22	82	1	
10:00	172	695	25	76	0	
10:15	174	703	20	73	0	
10:30	167	718	15	91	1	
10:45	182	709	16	118	1	
11:00	180	707	22	141	1	
11:15	189	685	38	143	1	
11:30	158	681	42	157	1	
11:45	180	709	39	156	1	
12:00	158	690	24	164	1	
12:15	185	718	52	172	1	

*One hour period starts 45 minutes after the hour.
**"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

Warrant 2
4-Hour Volumes (:45*)

Time	Meheula		Kuaoa			Warrant Satisfied
	15 Min Count	Hourly Total	15 Min Count	Hourly Total	Above Min	
12:30	186	678	41	168	1	
12:45	161	690	47	178	1	
13:00	186	676	32	175	1	
13:15	145	658	48	200	1	
13:30	198	676	51	192	1	
13:45	147	621	44	187	1	
14:00	168	622	57	255	1	
14:15	163	636	40	271	1	
14:30	143	623	46	285	1	
14:45	148	646	112	367	1	1
15:00	182	660	73	325	1	
15:15	150	657	54	298	1	
15:30	166	661	128	286	1	
15:45	162	640	70	192	1	
16:00	179	650	46	159	1	
16:15	154	665	42	183	1	
16:30	145	686	34	231	1	
16:45	172	713	37	241	1	1
17:00	194	733	70	223	1	
17:15	175	714	90	226	1	
17:30	172	718	44	242	1	
17:45	192	701	19	292	1	1
18:00	175	694	73	359	1	
18:15	179	687	106	316	1	
18:30	155	655	94	228	1	
18:45	185	616	86	158	1	
19:00	168	563	30	88	1	
19:15	147	510	18	78	0	
19:30	116	468	24	78	0	
19:45	132	467	16	76	0	
20:00	115	430	20	86	1	
20:15	105	408	18	88	1	
20:30	115	417	22	104	1	
20:45	95	409	26	118	1	
21:00	93	427	22	137	1	
21:15	114	418	34	147	1	
21:30	107	392	36	136	1	
21:45	113	373	45	128	1	
22:00	84	338	32	101	1	
22:15	88	310	23	103	1	
22:30	88	284	28	110	1	
22:45	78	255	18	102	1	
23:00	56	220	34	98	1	
23:15	62	164	30	64	0	
23:30	59	102	20	34	0	
23:45	43	43	14	14	0	
				# of Periods Warrant Satisfied		**3**

*One hour period starts 45 minutes after the hour.
***"1" indicates that the condition is satisfied.
***"0" indicates that the condition is not satisfied.

APPENDIX E

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2016 PEAK HOUR TRAFFIC
ANALYSIS WITHOUT PROJECT

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	28	112	586	387	96	9	285	647	137	20	1650	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.91	0.91	0.97	1.00		0.97	0.95	1.00	1.00	0.91	
Frt	1.00	0.89	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3022	1441	3433	1838		3433	3539	1583	1770	5084	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3022	1441	3433	1838		3433	3539	1583	1770	5084	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	122	637	421	104	10	310	703	149	22	1793	2
RTOR Reduction (vph)	0	190	7	0	2	0	0	0	68	0	0	0
Lane Group Flow (vph)	30	251	311	421	112	0	310	703	81	22	1795	0
Turn Type	Prot		pm+ov	Prot			Prot		Perm	Prot		
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases			6						4			
Actuated Green, G (s)	4.4	18.2	36.3	20.8	34.6		18.1	74.7	74.7	3.3	59.9	
Effective Green, g (s)	4.4	18.2	36.3	20.8	34.6		18.1	74.7	74.7	3.3	59.9	
Actuated g/C Ratio	0.03	0.13	0.26	0.15	0.25		0.13	0.55	0.55	0.02	0.44	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	57	401	434	521	464		454	1930	863	43	2223	
v/s Ratio Prot	0.02	0.08	c0.09	c0.12	0.06		0.09	0.20		0.01	c0.35	
v/s Ratio Perm			0.12						0.05			
v/c Ratio	0.53	0.86dr	0.72	0.81	0.24		0.68	0.36	0.09	0.51	0.81	
Uniform Delay, d1	65.3	56.2	45.7	56.2	40.7		56.7	17.7	14.9	66.1	33.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.5	3.0	5.6	9.0	0.3		4.2	0.1	0.0	9.9	2.3	
Delay (s)	73.8	59.2	51.3	65.1	41.0		60.9	17.8	15.0	76.0	35.8	
Level of Service	E	E	D	E	D		E	B	B	E	D	
Approach Delay (s)		56.6			60.0			28.9			36.3	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM Average Control Delay	41.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	137.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

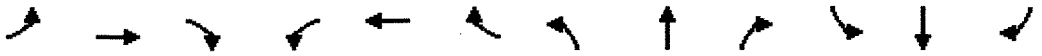
dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	101	52	377	306	36	57	551	1433	337	34	751	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.91	0.91	0.97	1.00		0.97	0.95	1.00	1.00	0.91	
Frt	1.00	0.88	0.85	1.00	0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	2992	1441	3433	1691		3433	3539	1583	1770	5079	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	2992	1441	3433	1691		3433	3539	1583	1770	5079	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	57	410	333	39	62	599	1558	366	37	816	7
RTOR Reduction (vph)	0	190	37	0	41	0	0	0	110	0	1	0
Lane Group Flow (vph)	110	72	168	333	60	0	599	1558	256	37	822	0
Turn Type	Prot		pm+ov	Prot			Prot		Perm	Prot		
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases			6						4			
Actuated Green, G (s)	12.6	8.7	36.2	17.4	13.5		27.5	68.4	68.4	4.1	45.0	
Effective Green, g (s)	12.6	8.7	36.2	17.4	13.5		27.5	68.4	68.4	4.1	45.0	
Actuated g/C Ratio	0.11	0.07	0.31	0.15	0.11		0.23	0.58	0.58	0.03	0.38	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	188	219	501	504	192		796	2041	913	61	1927	
v/s Ratio Prot	0.06	0.02	c0.08	c0.10	c0.04		c0.17	c0.44		0.02	0.16	
v/s Ratio Perm			0.04						0.16			
v/c Ratio	0.59	0.33	0.34	0.66	0.31		0.75	0.76	0.28	0.61	0.43	
Uniform Delay, d1	50.5	52.2	31.9	47.8	48.3		42.4	19.0	12.7	56.5	27.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.6	0.9	0.4	3.2	0.9		4.0	1.7	0.2	15.9	0.2	
Delay (s)	55.1	53.1	32.3	51.1	49.2		46.4	20.7	12.8	72.3	27.4	
Level of Service	E	D	C	D	D		D	C	B	E	C	
Approach Delay (s)		46.1			50.6			25.7			29.3	
Approach LOS		D			D			C			C	

HCM Average Control Delay	31.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	118.6	Sum of lost time (s)	25.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	*15*		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
6: Makaikai & Meheula

10/6/2010



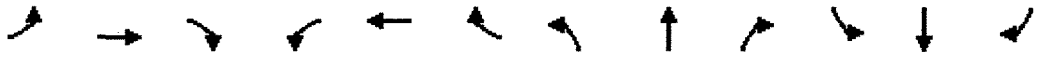
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	42	150	258	107	6	17	503	59	3	1462	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.91	
Frt		1.00	0.85		1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.98	1.00		0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1824	1583		1799	1583	1770	3484		1770	5030	
Flt Permitted		0.79	1.00		0.74	1.00	0.11	1.00		0.39	1.00	
Satd. Flow (perm)		1465	1583		1378	1583	204	3484		719	5030	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	46	163	280	116	7	18	547	64	3	1589	125
RTOR Reduction (vph)	0	0	5	0	0	4	0	9	0	0	9	0
Lane Group Flow (vph)	0	80	158	0	396	3	18	602	0	3	1705	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		26.7	26.7		26.7	26.7	36.5	36.5		36.5	36.5	
Effective Green, g (s)		26.7	26.7		26.7	26.7	36.5	36.5		36.5	36.5	
Actuated g/C Ratio		0.36	0.36		0.36	0.36	0.50	0.50		0.50	0.50	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		534	577		503	577	102	1737		359	2508	
v/s Ratio Prot								0.17			c0.34	
v/s Ratio Perm		0.05	0.10		c0.29	0.00	0.09			0.00		
v/c Ratio		0.15	0.27		0.79	0.00	0.18	0.35		0.01	0.68	
Uniform Delay, d1		15.6	16.4		20.7	14.8	10.1	11.1		9.2	13.9	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.3		8.0	0.0	0.8	0.1		0.0	0.7	
Delay (s)		15.8	16.7		28.7	14.8	10.9	11.2		9.2	14.7	
Level of Service		B	B		C	B	B	B		A	B	
Approach Delay (s)		16.4			28.4			11.2			14.7	
Approach LOS		B			C			B			B	

HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	73.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
6: Makaikai & Meheula

10/6/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	66	24	49	132	12	4	53	1269	245	6	672	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.91	
Frt		1.00	0.85		1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1797	1583		1781	1583	1770	3453		1770	5044	
Flt Permitted		0.67	1.00		0.67	1.00	0.35	1.00		0.09	1.00	
Satd. Flow (perm)		1254	1583		1256	1583	647	3453		172	5044	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	26	53	143	13	4	58	1379	266	7	730	42
RTOR Reduction (vph)	0	0	42	0	0	3	0	18	0	0	7	0
Lane Group Flow (vph)	0	98	11	0	156	1	58	1627	0	7	765	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		14.3	14.3		14.3	14.3	45.6	45.6		45.6	45.6	
Effective Green, g (s)		14.3	14.3		14.3	14.3	45.6	45.6		45.6	45.6	
Actuated g/C Ratio		0.20	0.20		0.20	0.20	0.65	0.65		0.65	0.65	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		257	324		257	324	422	2253		112	3291	
v/s Ratio Prot								c0.47			0.15	
v/s Ratio Perm		0.08	0.01		c0.12	0.00	0.09			0.04		
v/c Ratio		0.38	0.03		0.61	0.00	0.14	0.72		0.06	0.23	
Uniform Delay, d1		24.0	22.3		25.2	22.1	4.6	8.0		4.4	5.0	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.9	0.0		4.0	0.0	0.1	1.2		0.2	0.0	
Delay (s)		24.9	22.3		29.3	22.1	4.8	9.2		4.6	5.0	
Level of Service		C	C		C	C	A	A		A	A	
Approach Delay (s)		24.0			29.1			9.0			5.0	
Approach LOS		C			C			A			A	

HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	222	85	529	1340	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3533	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	3539	3533	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	241	92	575	1457	18
RTOR Reduction (vph)	0	183	0	0	1	0
Lane Group Flow (vph)	33	58	92	575	1474	0
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	8.8	8.8	6.6	50.2	38.6	
Effective Green, g (s)	8.8	8.8	6.6	50.2	38.6	
Actuated g/C Ratio	0.13	0.13	0.10	0.73	0.56	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	226	202	169	2575	1976	
v/s Ratio Prot	0.02		c0.05	0.16	c0.42	
v/s Ratio Perm		c0.04				
v/c Ratio	0.15	0.29	0.54	0.22	0.75	
Uniform Delay, d1	26.8	27.3	29.8	3.1	11.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.8	3.6	0.0	1.6	
Delay (s)	27.1	28.0	33.3	3.1	13.1	
Level of Service	C	C	C	A	B	
Approach Delay (s)	27.9			7.3	13.1	
Approach LOS	C			A	B	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	20	110	221	1014	666	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3521	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	3539	3521	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	120	240	1102	724	25
RTOR Reduction (vph)	0	108	0	0	3	0
Lane Group Flow (vph)	22	12	240	1102	746	0
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	5.1	5.1	13.5	38.0	19.5	
Effective Green, g (s)	5.1	5.1	13.5	38.0	19.5	
Actuated g/C Ratio	0.10	0.10	0.25	0.72	0.37	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	170	152	450	2533	1293	
v/s Ratio Prot	c0.01		c0.14	0.31	c0.21	
v/s Ratio Perm		0.01				
v/c Ratio	0.13	0.08	0.53	0.44	0.58	
Uniform Delay, d1	22.0	21.9	17.1	3.1	13.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.2	1.2	0.1	0.6	
Delay (s)	22.3	22.1	18.3	3.2	14.1	
Level of Service	C	C	B	A	B	
Approach Delay (s)	22.1			5.9	14.1	
Approach LOS	C			A	B	

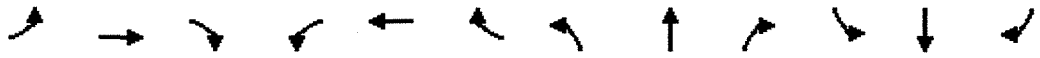
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	53.1	Sum of lost time (s)	15.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	647	22	13	1150	13	30	3	22	25	1	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.95	1.00
Satd. Flow (prot)	1770	3522		1770	3533			1781	1583		1777	1583
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00		1.00	1.00
Satd. Flow (perm)	1770	3522		1770	3533			1863	1583		1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	703	24	14	1250	14	33	3	24	27	1	66
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	22	0	0	61
Lane Group Flow (vph)	21	725	0	14	1264	0	0	36	2	0	28	5
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		6
Actuated Green, G (s)	0.9	27.9		0.7	27.7			3.7	3.7		3.7	3.7
Effective Green, g (s)	0.9	27.9		0.7	27.7			3.7	3.7		3.7	3.7
Actuated g/C Ratio	0.02	0.59		0.01	0.59			0.08	0.08		0.08	0.08
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	34	2077		26	2069			146	124		146	124
v/s Ratio Prot	c0.01	0.21		0.01	c0.36							
v/s Ratio Perm								c0.02	0.00		0.02	0.00
v/c Ratio	0.62	0.35		0.54	0.61			0.25	0.02		0.19	0.04
Uniform Delay, d1	23.0	5.0		23.1	6.3			20.5	20.1		20.4	20.2
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	29.0	0.1		19.8	0.5			0.9	0.0		0.6	0.1
Delay (s)	52.0	5.1		42.9	6.9			21.4	20.2		21.0	20.3
Level of Service	D	A		D	A			C	C		C	C
Approach Delay (s)		6.4			7.3			20.9			20.5	
Approach LOS		A			A			C			C	

HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	47.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1017	16	15	630	6	16	3	5	5	2	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (prot)	1770	3531		1770	3534			1787	1583		1799	1583
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00		1.00	1.00
Satd. Flow (perm)	1770	3531		1770	3534			1863	1583		1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	1105	17	16	685	7	17	3	5	5	2	50
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	5	0	0	46
Lane Group Flow (vph)	71	1121	0	16	691	0	0	20	0	0	7	4
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		6
Actuated Green, G (s)	3.9	25.1		0.7	21.9			3.1	3.1		3.1	3.1
Effective Green, g (s)	3.9	25.1		0.7	21.9			3.1	3.1		3.1	3.1
Actuated g/C Ratio	0.09	0.57		0.02	0.50			0.07	0.07		0.07	0.07
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	157	2019		28	1763			132	112		132	112
v/s Ratio Prot	c0.04	c0.32		0.01	0.20							
v/s Ratio Perm								c0.01	0.00		0.00	0.00
v/c Ratio	0.45	0.56		0.57	0.39			0.15	0.00		0.05	0.03
Uniform Delay, d1	19.0	5.9		21.5	6.9			19.2	19.0		19.0	19.0
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	2.1	0.3		25.2	0.1			0.5	0.0		0.2	0.1
Delay (s)	21.1	6.2		46.6	7.0			19.7	19.0		19.2	19.1
Level of Service	C	A		D	A			B	B		B	B
Approach Delay (s)		7.1			7.9			19.6			19.1	
Approach LOS		A			A			B			B	

HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	43.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
13: Lehiwa & Meheula

10/7/2010

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	41	69	374	40	18	21	337	339	11	755	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	0.92		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1796	1583		1782	1583	1770	3273		1770	3496	
Flt Permitted		0.43	1.00		0.63	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		804	1583		1171	1583	1770	3273		1770	3496	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	129	45	75	407	43	20	23	366	368	12	821	72
RTOR Reduction (vph)	0	0	43	0	0	11	0	177	0	0	7	0
Lane Group Flow (vph)	0	174	32	0	450	9	23	557	0	12	886	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6		6	2		2						
Actuated Green, G (s)		31.6	31.6		31.6	31.6	1.9	25.4		1.1	24.6	
Effective Green, g (s)		31.6	31.6		31.6	31.6	1.9	25.4		1.1	24.6	
Actuated g/C Ratio		0.43	0.43		0.43	0.43	0.03	0.35		0.02	0.34	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		348	684		506	684	46	1137		27	1176	
v/s Ratio Prot							c0.01	0.17		0.01	c0.25	
v/s Ratio Perm		0.22	0.02		c0.38	0.01						
v/c Ratio		0.50	0.05		0.89	0.01	0.50	0.49		0.44	0.75	
Uniform Delay, d1		15.0	12.0		19.1	11.8	35.1	18.8		35.7	21.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1	0.0		17.2	0.0	8.3	0.3		11.2	2.8	
Delay (s)		16.2	12.1		36.3	11.9	43.4	19.1		46.9	24.3	
Level of Service		B	B		D	B	D	B		D	C	
Approach Delay (s)		14.9			35.3			19.8			24.6	
Approach LOS		B			D			B			C	

HCM Average Control Delay	24.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	73.1	Sum of lost time (s)	15.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	NWL	NWT	NWR	NBL	NBT	NBR	SWL	SWT	SWR
Lane Configurations		↰	↱		↰	↱	↰	↑↑↱		↰	↑↑↱	
Volume (vph)	18	19	33	194	23	21	69	662	21	17	422	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1818	1583		1783	1583	1770	3523		1770	3497	
Flt Permitted		0.83	1.00		0.72	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1537	1583		1339	1583	1770	3523		1770	3497	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	21	36	211	25	23	75	720	23	18	459	40
RTOR Reduction (vph)	0	0	25	0	0	16	0	2	0	0	7	0
Lane Group Flow (vph)	0	41	11	0	236	7	75	741	0	18	492	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6		6	2		2						
Actuated Green, G (s)		15.9	15.9		15.9	15.9	4.5	21.7		1.0	18.2	
Effective Green, g (s)		15.9	15.9		15.9	15.9	4.5	21.7		1.0	18.2	
Actuated g/C Ratio		0.30	0.30		0.30	0.30	0.08	0.40		0.02	0.34	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		456	470		397	470	149	1426		33	1187	
v/s Ratio Prot							c0.04	c0.21		0.01	0.14	
v/s Ratio Perm		0.03	0.01		c0.18	0.00						
v/c Ratio		0.09	0.02		0.59	0.01	0.50	0.52		0.55	0.41	
Uniform Delay, d1		13.6	13.3		16.1	13.3	23.5	12.0		26.1	13.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.0		2.4	0.0	2.7	0.3		17.2	0.2	
Delay (s)		13.7	13.4		18.5	13.3	26.1	12.3		43.2	13.8	
Level of Service		B	B		B	B	C	B		D	B	
Approach Delay (s)		13.5			18.0			13.6			14.9	
Approach LOS		B			B			B			B	

HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
16: Kuaoa & Meheula

10/8/2010

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	5	62	149	0	3	19	329	126	3	621	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	0.96		1.00	1.00	
Flt Protected		1.00	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1863	1583		1770	1583	1770	3392		1770	3537	
Flt Permitted		1.00	1.00		0.75	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1863	1583		1405	1583	1770	3392		1770	3537	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	5	67	162	0	3	21	358	137	3	675	3
RTOR Reduction (vph)	0	0	53	0	0	2	0	45	0	0	1	0
Lane Group Flow (vph)	0	5	14	0	162	1	21	450	0	3	677	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6		6	2		2						
Actuated Green, G (s)		8.5	8.5		8.5	8.5	0.8	16.3		0.7	16.2	
Effective Green, g (s)		8.5	8.5		8.5	8.5	0.8	16.3		0.7	16.2	
Actuated g/C Ratio		0.21	0.21		0.21	0.21	0.02	0.40		0.02	0.40	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		391	332		295	332	35	1365		31	1415	
v/s Ratio Prot		0.00					c0.01	0.13		0.00	c0.19	
v/s Ratio Perm			0.01		c0.12	0.00						
v/c Ratio		0.01	0.04		0.55	0.00	0.60	0.33		0.10	0.48	
Uniform Delay, d1		12.7	12.8		14.3	12.6	19.7	8.3		19.6	9.0	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.1		2.1	0.0	25.7	0.1		1.4	0.3	
Delay (s)		12.7	12.8		16.4	12.6	45.3	8.5		21.0	9.3	
Level of Service		B	B		B	B	D	A		C	A	
Approach Delay (s)		12.8			16.3			10.0			9.3	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	40.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
16: Kuaoa & Meheula

10/8/2010

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	1	2	24	89	1	1	53	444	204	6	363	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	0.95		1.00	1.00	
Flt Protected		0.98	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1832	1583		1775	1583	1770	3372		1770	3537	
Flt Permitted		0.85	1.00		0.87	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1585	1583		1612	1583	1770	3372		1770	3537	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	2	26	97	1	1	58	483	222	7	395	2
RTOR Reduction (vph)	0	0	23	0	0	1	0	60	0	0	1	0
Lane Group Flow (vph)	0	3	3	0	98	0	58	645	0	7	396	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6		6	2		2						
Actuated Green, G (s)		4.6	4.6		4.6	4.6	2.2	16.8		0.7	15.3	
Effective Green, g (s)		4.6	4.6		4.6	4.6	2.2	16.8		0.7	15.3	
Actuated g/C Ratio		0.12	0.12		0.12	0.12	0.06	0.45		0.02	0.41	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		197	196		200	196	105	1527		33	1459	
v/s Ratio Prot							c0.03	c0.19		0.00	0.11	
v/s Ratio Perm		0.00	0.00		c0.06	0.00						
v/c Ratio		0.02	0.02		0.49	0.00	0.55	0.42		0.21	0.27	
Uniform Delay, d1		14.3	14.3		15.2	14.2	17.0	6.9		17.9	7.2	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0		1.9	0.0	6.2	0.2		3.2	0.1	
Delay (s)		14.3	14.3		17.0	14.2	23.1	7.1		21.1	7.3	
Level of Service		B	B		B	B	C	A		C	A	
Approach Delay (s)		14.3			17.0			8.3			7.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	37.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX F

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2016 PEAK HOUR TRAFFIC
ANALYSIS WITH PROJECT

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	28	112	586	387	96	9	285	661	137	20	1675	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.91	0.91	0.97	1.00		0.97	0.95	1.00	1.00	0.91	
Frt	1.00	0.89	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3022	1441	3433	1838		3433	3539	1583	1770	5084	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3022	1441	3433	1838		3433	3539	1583	1770	5084	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	122	637	421	104	10	310	718	149	22	1821	2
RTOR Reduction (vph)	0	172	7	0	2	0	0	0	69	0	0	0
Lane Group Flow (vph)	30	269	311	421	112	0	310	718	80	22	1823	0
Turn Type	Prot		pm+ov	Prot			Prot		Perm	Prot		
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases			6						4			
Actuated Green, G (s)	4.4	19.3	36.8	20.8	35.7		17.5	74.4	74.4	3.3	60.2	
Effective Green, g (s)	4.4	19.3	36.8	20.8	35.7		17.5	74.4	74.4	3.3	60.2	
Actuated g/C Ratio	0.03	0.14	0.27	0.15	0.26		0.13	0.54	0.54	0.02	0.44	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	57	423	437	518	476		436	1911	855	42	2221	
v/s Ratio Prot	0.02	0.09	c0.09	c0.12	0.06		0.09	0.20		0.01	c0.36	
v/s Ratio Perm			0.13						0.05			
v/c Ratio	0.53	0.87dr	0.71	0.81	0.23		0.71	0.38	0.09	0.52	0.82	
Uniform Delay, d1	65.7	55.9	45.7	56.6	40.3		57.7	18.3	15.4	66.5	34.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.5	3.1	5.4	9.4	0.3		5.4	0.1	0.0	11.3	2.6	
Delay (s)	74.2	59.1	51.1	66.1	40.5		63.1	18.4	15.4	77.8	36.6	
Level of Service	E	E	D	E	D		E	B	B	E	D	
Approach Delay (s)		56.4			60.6			29.8			37.1	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM Average Control Delay	41.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	137.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	101	52	377	306	36	57	551	1462	337	34	770	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	0.91	0.91	0.97	1.00		0.97	0.95	1.00	1.00	0.91	
Frt	1.00	0.88	0.85	1.00	0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	2992	1441	3433	1691		3433	3539	1583	1770	5079	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	2992	1441	3433	1691		3433	3539	1583	1770	5079	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	57	410	333	39	62	599	1589	366	37	837	7
RTOR Reduction (vph)	0	190	37	0	40	0	0	0	110	0	1	0
Lane Group Flow (vph)	110	72	168	333	61	0	599	1589	256	37	843	0
Turn Type	Prot		pm+ov	Prot			Prot		Perm	Prot		
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases			6						4			
Actuated Green, G (s)	13.1	8.7	36.3	17.5	13.1		27.6	70.1	70.1	5.6	48.1	
Effective Green, g (s)	13.1	8.7	36.3	17.5	13.1		27.6	70.1	70.1	5.6	48.1	
Actuated g/C Ratio	0.11	0.07	0.30	0.14	0.11		0.23	0.58	0.58	0.05	0.39	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	190	214	488	493	182		777	2035	910	81	2004	
v/s Ratio Prot	0.06	0.02	c0.08	c0.10	c0.04		c0.17	c0.45		0.02	0.17	
v/s Ratio Perm			0.04						0.16			
v/c Ratio	0.58	0.33	0.35	0.68	0.33		0.77	0.78	0.28	0.46	0.42	
Uniform Delay, d1	51.8	53.8	33.5	49.5	50.4		44.2	20.0	13.1	56.7	26.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.2	0.9	0.4	3.6	1.1		4.8	2.0	0.2	4.0	0.1	
Delay (s)	56.0	54.8	33.9	53.2	51.5		48.9	22.0	13.3	60.7	26.9	
Level of Service	E	D	C	D	D		D	C	B	E	C	
Approach Delay (s)		47.6			52.8			27.1			28.4	
Approach LOS		D			D			C			C	

HCM Average Control Delay	32.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	121.9	Sum of lost time (s)	25.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑	↱		↰↑	↱	↰	↑↑↱		↰	↑↑↱	
Volume (vph)	31	42	150	258	107	6	17	517	59	3	1487	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.91	
Frt		1.00	0.85		1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.98	1.00		0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1824	1583		1799	1583	1770	3485		1770	5031	
Flt Permitted		0.79	1.00		0.74	1.00	0.11	1.00		0.38	1.00	
Satd. Flow (perm)		1465	1583		1378	1583	204	3485		704	5031	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	46	163	280	116	7	18	562	64	3	1616	125
RTOR Reduction (vph)	0	0	4	0	0	4	0	9	0	0	9	0
Lane Group Flow (vph)	0	80	159	0	396	3	18	617	0	3	1732	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		26.7	26.7		26.7	26.7	36.6	36.6		36.6	36.6	
Effective Green, g (s)		26.7	26.7		26.7	26.7	36.6	36.6		36.6	36.6	
Actuated g/C Ratio		0.36	0.36		0.36	0.36	0.50	0.50		0.50	0.50	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		534	577		502	577	102	1740		352	2512	
v/s Ratio Prot								0.18			c0.34	
v/s Ratio Perm		0.05	0.10		c0.29	0.00	0.09			0.00		
v/c Ratio		0.15	0.27		0.79	0.00	0.18	0.35		0.01	0.69	
Uniform Delay, d1		15.7	16.5		20.8	14.8	10.1	11.2		9.2	14.0	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.3		8.1	0.0	0.8	0.1		0.0	0.8	
Delay (s)		15.8	16.7		28.8	14.8	10.9	11.3		9.2	14.8	
Level of Service		B	B		C	B	B	B		A	B	
Approach Delay (s)		16.4			28.6			11.3			14.8	
Approach LOS		B			C			B			B	

HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	73.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

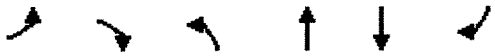
HCM Signalized Intersection Capacity Analysis
6: Makaikai & Meheula

10/6/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	66	24	49	132	12	4	53	1298	245	6	691	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.91	
Frt		1.00	0.85		1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1797	1583		1781	1583	1770	3455		1770	5045	
Flt Permitted		0.67	1.00		0.67	1.00	0.34	1.00		0.09	1.00	
Satd. Flow (perm)		1247	1583		1256	1583	633	3455		162	5045	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	26	53	143	13	4	58	1411	266	7	751	42
RTOR Reduction (vph)	0	0	42	0	0	3	0	17	0	0	7	0
Lane Group Flow (vph)	0	98	11	0	156	1	58	1660	0	7	786	0
Turn Type	Perm		Perm	Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		14.4	14.4		14.4	14.4	46.4	46.4		46.4	46.4	
Effective Green, g (s)		14.4	14.4		14.4	14.4	46.4	46.4		46.4	46.4	
Actuated g/C Ratio		0.20	0.20		0.20	0.20	0.66	0.66		0.66	0.66	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		254	322		255	322	415	2264		106	3306	
v/s Ratio Prot								c0.48			0.16	
v/s Ratio Perm		0.08	0.01		c0.12	0.00	0.09			0.04		
v/c Ratio		0.39	0.03		0.61	0.00	0.14	0.73		0.07	0.24	
Uniform Delay, d1		24.4	22.6		25.7	22.5	4.6	8.1		4.4	5.0	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.0	0.0		4.3	0.0	0.2	1.3		0.3	0.0	
Delay (s)		25.4	22.7		30.0	22.5	4.8	9.4		4.7	5.0	
Level of Service		C	C		C	C	A	A		A	A	
Approach Delay (s)		24.4			29.8			9.2			5.0	
Approach LOS		C			C			A			A	

HCM Average Control Delay	10.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	222	85	543	1365	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3533	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	3539	3533	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	241	92	590	1484	18
RTOR Reduction (vph)	0	182	0	0	1	0
Lane Group Flow (vph)	33	59	92	590	1501	0
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	8.9	8.9	6.7	51.1	39.4	
Effective Green, g (s)	8.9	8.9	6.7	51.1	39.4	
Actuated g/C Ratio	0.13	0.13	0.10	0.73	0.56	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	225	201	169	2583	1989	
v/s Ratio Prot	0.02		c0.05	0.17	c0.42	
v/s Ratio Perm		c0.04				
v/c Ratio	0.15	0.29	0.54	0.23	0.75	
Uniform Delay, d1	27.2	27.7	30.2	3.1	11.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.8	3.6	0.0	1.7	
Delay (s)	27.5	28.5	33.7	3.1	13.3	
Level of Service	C	C	C	A	B	
Approach Delay (s)	28.4			7.2	13.3	
Approach LOS	C			A	B	

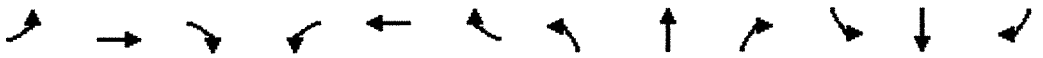
HCM Average Control Delay	13.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	20	110	221	1043	685	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3522	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	3539	3522	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	120	240	1134	745	25
RTOR Reduction (vph)	0	109	0	0	3	0
Lane Group Flow (vph)	22	11	240	1134	767	0
Turn Type		Perm	Prot			
Protected Phases	4		5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	5.1	5.1	13.5	38.5	20.0	
Effective Green, g (s)	5.1	5.1	13.5	38.5	20.0	
Actuated g/C Ratio	0.10	0.10	0.25	0.72	0.37	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	168	151	446	2542	1314	
v/s Ratio Prot	c0.01		c0.14	0.32	c0.22	
v/s Ratio Perm		0.01				
v/c Ratio	0.13	0.08	0.54	0.45	0.58	
Uniform Delay, d1	22.2	22.1	17.4	3.1	13.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.2	1.3	0.1	0.7	
Delay (s)	22.6	22.3	18.6	3.3	14.1	
Level of Service	C	C	B	A	B	
Approach Delay (s)	22.4			5.9	14.1	
Approach LOS	C			A	B	

HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	661	22	13	1175	13	30	3	22	25	1	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.95	1.00
Satd. Flow (prot)	1770	3522		1770	3533			1781	1583		1777	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.72	1.00		0.73	1.00
Satd. Flow (perm)	1770	3522		1770	3533			1348	1583		1355	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	718	24	14	1277	14	33	3	24	27	1	66
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	21	0	0	59
Lane Group Flow (vph)	21	739	0	14	1290	0	0	36	3	0	28	7
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		6
Actuated Green, G (s)	1.0	28.7		0.8	28.5			5.4	5.4		5.4	5.4
Effective Green, g (s)	1.0	28.7		0.8	28.5			5.4	5.4		5.4	5.4
Actuated g/C Ratio	0.02	0.58		0.02	0.57			0.11	0.11		0.11	0.11
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	35	2026		28	2018			146	171		147	171
v/s Ratio Prot	c0.01	0.21		0.01	c0.37							
v/s Ratio Perm								c0.03	0.00		0.02	0.00
v/c Ratio	0.60	0.36		0.50	0.64			0.25	0.02		0.19	0.04
Uniform Delay, d1	24.3	5.7		24.4	7.2			20.4	19.9		20.3	19.9
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	25.7	0.1		13.4	0.7			0.9	0.0		0.6	0.1
Delay (s)	49.9	5.8		37.7	7.9			21.3	19.9		20.9	20.0
Level of Service	D	A		D	A			C	B		C	C
Approach Delay (s)		7.0			8.2			20.7			20.3	
Approach LOS		A			A			C			C	

HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	49.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	1046	16	15	649	6	16	3	5	5	2	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96	1.00		0.97	1.00
Satd. Flow (prot)	1770	3531		1770	3534			1787	1583		1799	1583
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00		1.00	1.00
Satd. Flow (perm)	1770	3531		1770	3534			1863	1583		1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	1137	17	16	705	7	17	3	5	5	2	50
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	5	0	0	47
Lane Group Flow (vph)	71	1153	0	16	712	0	0	20	0	0	7	3
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		6
Actuated Green, G (s)	3.9	25.6		0.7	22.4			3.1	3.1		3.1	3.1
Effective Green, g (s)	3.9	25.6		0.7	22.4			3.1	3.1		3.1	3.1
Actuated g/C Ratio	0.09	0.58		0.02	0.50			0.07	0.07		0.07	0.07
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	155	2036		28	1783			130	111		130	111
v/s Ratio Prot	c0.04	c0.33		0.01	0.20							
v/s Ratio Perm								c0.01	0.00		0.00	0.00
v/c Ratio	0.46	0.57		0.57	0.40			0.15	0.00		0.05	0.03
Uniform Delay, d1	19.2	5.9		21.7	6.8			19.4	19.2		19.3	19.3
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	2.1	0.4		25.2	0.1			0.6	0.0		0.2	0.1
Delay (s)	21.4	6.3		46.9	7.0			20.0	19.2		19.5	19.4
Level of Service	C	A		D	A			B	B		B	B
Approach Delay (s)		7.1			7.8			19.8			19.4	
Approach LOS		A			A			B			B	

HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	44.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
13: Lehiwa & Meheula

10/7/2010

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	119	41	69	387	40	18	21	344	346	11	767	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	0.92		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1796	1583		1782	1583	1770	3273		1770	3497	
Flt Permitted		0.42	1.00		0.63	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		787	1583		1170	1583	1770	3273		1770	3497	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	129	45	75	421	43	20	23	374	376	12	834	72
RTOR Reduction (vph)	0	0	42	0	0	11	0	179	0	0	7	0
Lane Group Flow (vph)	0	174	33	0	464	9	23	571	0	12	899	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6		6	2		2						
Actuated Green, G (s)		32.6	32.6		32.6	32.6	1.9	25.6		1.1	24.8	
Effective Green, g (s)		32.6	32.6		32.6	32.6	1.9	25.6		1.1	24.8	
Actuated g/C Ratio		0.44	0.44		0.44	0.44	0.03	0.34		0.01	0.33	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		345	695		513	695	45	1128		26	1167	
v/s Ratio Prot							c0.01	0.17		0.01	c0.26	
v/s Ratio Perm		0.22	0.02		c0.40	0.01						
v/c Ratio		0.50	0.05		0.90	0.01	0.51	0.51		0.46	0.77	
Uniform Delay, d1		15.0	12.0		19.4	11.8	35.7	19.3		36.3	22.2	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2	0.0		19.3	0.0	9.5	0.4		12.4	3.2	
Delay (s)		16.2	12.0		38.7	11.8	45.2	19.7		48.7	25.4	
Level of Service		B	B		D	B	D	B		D	C	
Approach Delay (s)		14.9			37.6			20.5			25.7	
Approach LOS		B			D			C			C	

Intersection Summary			
HCM Average Control Delay	25.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	74.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

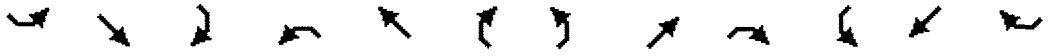
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	18	19	33	194	23	21	69	676	36	17	431	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1818	1583		1783	1583	1770	3512		1770	3497	
Flt Permitted		0.83	1.00		0.72	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1537	1583		1339	1583	1770	3512		1770	3497	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	21	36	211	25	23	75	735	39	18	468	40
RTOR Reduction (vph)	0	0	25	0	0	16	0	4	0	0	7	0
Lane Group Flow (vph)	0	41	11	0	236	7	75	770	0	18	501	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6		6	2		2						
Actuated Green, G (s)		16.0	16.0		16.0	16.0	4.6	22.3		1.0	18.7	
Effective Green, g (s)		16.0	16.0		16.0	16.0	4.6	22.3		1.0	18.7	
Actuated g/C Ratio		0.29	0.29		0.29	0.29	0.08	0.41		0.02	0.34	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		453	466		395	466	150	1442		33	1204	
v/s Ratio Prot							c0.04	c0.22		0.01	0.14	
v/s Ratio Perm		0.03	0.01		c0.18	0.00						
v/c Ratio		0.09	0.02		0.60	0.01	0.50	0.53		0.55	0.42	
Uniform Delay, d1		13.9	13.6		16.4	13.6	23.8	12.1		26.4	13.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.0		2.4	0.0	2.6	0.4		17.2	0.2	
Delay (s)		14.0	13.6		18.8	13.6	26.4	12.5		43.6	13.9	
Level of Service		B	B		B	B	C	B		D	B	
Approach Delay (s)		13.8			18.4			13.7			14.9	
Approach LOS		B			B			B			B	

HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	54.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
16: Kuaoa & Meheula

10/8/2010



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	5	62	161	0	3	19	329	133	3	621	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	0.96		1.00	1.00	
Flt Protected		1.00	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1863	1583		1770	1583	1770	3386		1770	3537	
Flt Permitted		1.00	1.00		0.75	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1863	1583		1405	1583	1770	3386		1770	3537	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	5	67	175	0	3	21	358	145	3	675	3
RTOR Reduction (vph)	0	0	52	0	0	2	0	49	0	0	1	0
Lane Group Flow (vph)	0	5	15	0	175	1	21	454	0	3	677	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6		6	2		2						
Actuated Green, G (s)		9.0	9.0		9.0	9.0	0.9	16.7		0.7	16.5	
Effective Green, g (s)		9.0	9.0		9.0	9.0	0.9	16.7		0.7	16.5	
Actuated g/C Ratio		0.22	0.22		0.22	0.22	0.02	0.40		0.02	0.40	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		405	344		305	344	38	1366		30	1410	
v/s Ratio Prot		0.00					c0.01	0.13		0.00	c0.19	
v/s Ratio Perm			0.01		c0.12	0.00						
v/c Ratio		0.01	0.04		0.57	0.00	0.55	0.33		0.10	0.48	
Uniform Delay, d1		12.7	12.8		14.5	12.7	20.1	8.5		20.0	9.3	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.1		2.6	0.0	16.2	0.1		1.5	0.3	
Delay (s)		12.7	12.8		17.1	12.7	36.3	8.7		21.5	9.5	
Level of Service		B	B		B	B	D	A		C	A	
Approach Delay (s)		12.8			17.0			9.8			9.6	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	41.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
16: Kuaoa & Meheula

10/8/2010

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	1	2	24	98	1	1	53	444	218	6	363	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	0.95		1.00	1.00	
Flt Protected		0.98	1.00		0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1832	1583		1775	1583	1770	3364		1770	3537	
Flt Permitted		0.88	1.00		0.73	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1648	1583		1354	1583	1770	3364		1770	3537	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	2	26	107	1	1	58	483	237	7	395	2
RTOR Reduction (vph)	0	0	21	0	0	1	0	70	0	0	1	0
Lane Group Flow (vph)	0	3	5	0	108	0	58	650	0	7	396	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		6			2		7	4		3	8	
Permitted Phases	6		6	2		2						
Actuated Green, G (s)		7.1	7.1		7.1	7.1	2.3	16.2		0.8	14.7	
Effective Green, g (s)		7.1	7.1		7.1	7.1	2.3	16.2		0.8	14.7	
Actuated g/C Ratio		0.18	0.18		0.18	0.18	0.06	0.41		0.02	0.38	
Clearance Time (s)		5.0	5.0		5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		299	287		246	287	104	1394		36	1330	
v/s Ratio Prot							c0.03	c0.19		0.00	0.11	
v/s Ratio Perm		0.00	0.00		c0.08	0.00						
v/c Ratio		0.01	0.02		0.44	0.00	0.56	0.47		0.19	0.30	
Uniform Delay, d1		13.1	13.1		14.2	13.1	17.9	8.3		18.8	8.6	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0	0.0		1.3	0.0	6.3	0.2		2.6	0.1	
Delay (s)		13.1	13.2		15.5	13.1	24.2	8.6		21.5	8.7	
Level of Service		B	B		B	B	C	A		C	A	
Approach Delay (s)		13.2			15.5			9.7			8.9	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	39.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX XI

BOTANICAL SURVEY - FLORA AND FAUNA

Botanical survey for the proposed Meheula Vista Affordable Rental Development, Lehiwa Drive, Mililani Mauka, O'ahu[1]

February 4, 2011 *AECOS* No. 1259

Eric Guinther
AECOS Inc.
45-939 Kamehameha Hwy., Suite 104
Kāne'ohe, Hawai'i 96744
Phone: (808) 234-7770 Fax: (808) 234-7775 Email: Guinther@aecos.com

Introduction

The Meheula Vista Affordable Rental Development is proposed for a 7.5-acre (3.04-ha) site in Mililani Mauka, located between Lehiwa Drive and Kuaoa Street, bounded on the west by Meheula Parkway and on the east by vacant land (proposed Mililani Mauka Community Park site) adjacent to Mililani Middle School (Fig. 1). The project property is presently a vacant lot that is regularly maintained by mowing. On the three sides bordered by streets, landscaping (trees and lawns) is present between the sidewalk and the street; along Meheula Parkway, landscaping extends in from the sidewalk and includes lawn, trees, shrubs, and planted flower beds extending up a low berm that surrounds the subject parcel, the lot being slightly elevated relative to the streets. The downslope edge of the property (in from Lehiwa Drive) includes a catchment ditch to collect runoff, directing any flow to a small retention basin at the southeast corner of the site.

This document presents the results of a biological survey of the subject property conducted by the author on January 20, 2011. Flowering plant names follow *Manual of the Flowering Plants of Hawai'i* (Wagner et al. and Wagner and Herbst, 1990, 1999). Ornamental plant names follow *A Tropical Garden Flora: Plants Cultivated in the Hawaiian Islands and Other Tropical Places* (Staples and

[1] Prepared for Kusao & Kurahashi, Inc. Honolulu for use in the Meheula Vista Senior Affordable Rental Development EA, to become part of the public record.

Herbst, 2005). Hawaiian and scientific names are italicized in the text. Bird names come from standard reference texts.

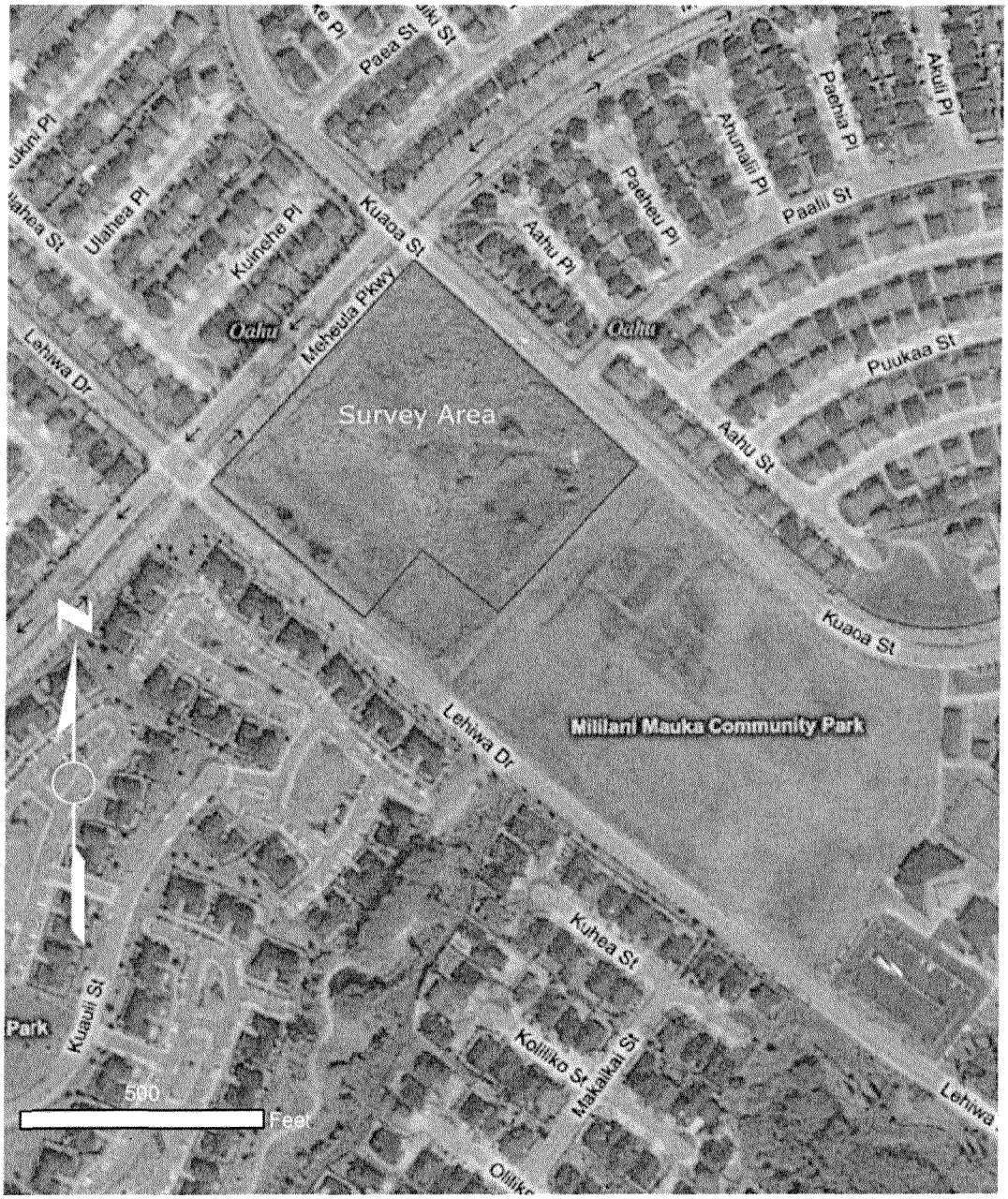


Figure 1. Satellite image of Mililani Mauka in the project area, with biological survey area outlined in red.

Vegetation

The vegetation on the subject parcel is dominated by various grasses, particularly Guinea grass (*Urochloa maxima*) and a number of other weedy herbs kept low by regular mowing (see Fig. 2). Trees are widely scattered over the lot, and most are certainly plantings. The Meheula Parkway (northwest) side is landscaped (plants are mostly ornamentals) some 20 ft (7 m) from the roadway curb in towards the site (Fig. 3).

Figure 2. Subject parcel with mowing of grasses ongoing in background. Large trees are albizia.

Flora

A plant checklist compiled from the field observations is presented as Table 1. Entries (plants observed) are arranged alphabetically under family names. Included in the listing are scientific name, common name, and status (whether

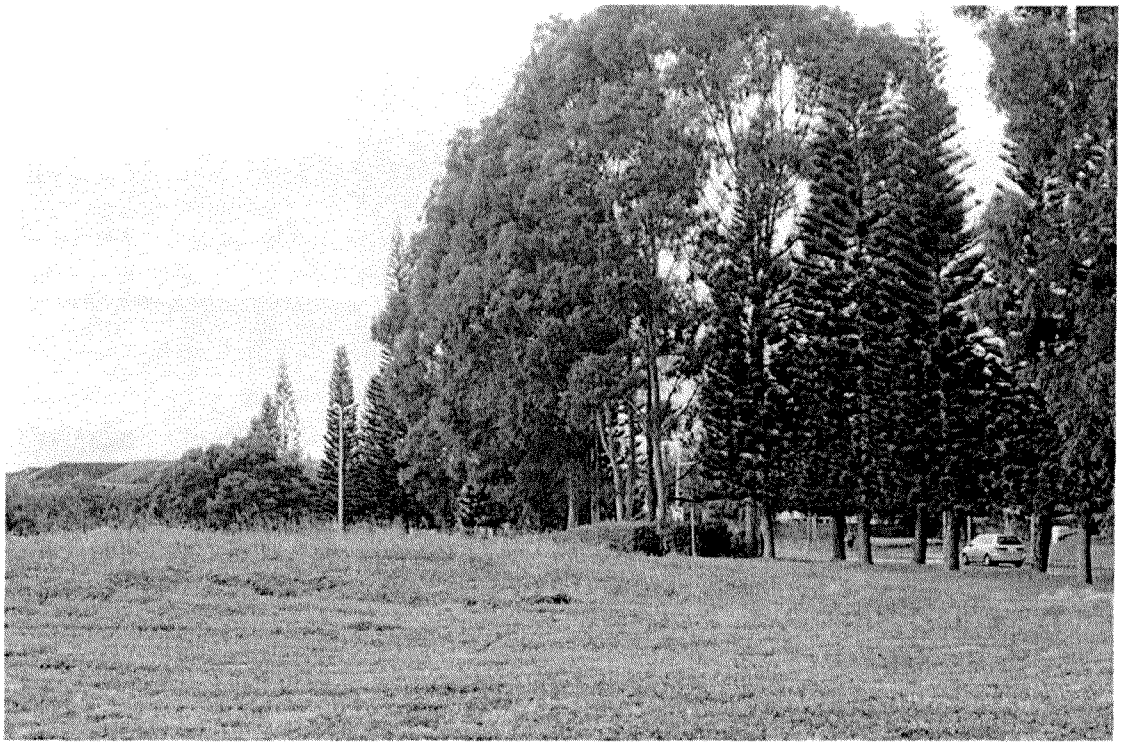


Figure 3. Landscape plantings of eucalyptus (gum), Cook-pine, and holly hedge along the Meheula Parkway side of the subject parcel. Just mowed (foreground) and soon to be mowed areas of wild grasses shown.

native or non-native) of each species. In addition to identifying the plants present within the study site, qualitative estimates of plant abundance were made. These estimates are coded in the table as explained in the legend and pertain only to plants occurring outside of the landscaped border areas.

In all, 58 species of ferns, conifers, and flowering plants were recorded from the site (Table 1). Of this number, only 2 species or 3% are plants native to Hawai'i. These are *'uhaloa* and *'ihi'ai* (yellow wood sorrel), both, very common plants on O'ahu in disturbed areas.

Of the total number of plant species recorded, some 15 species (26%) are regarded as either ornamentals or are naturalized species planted here as ornamentals. The distinction in status is that ornamentals persist but do not spread on their own; naturalized species may start as ornamental plantings

Table 1. Flora Listing for Meheula Vista Project parcel, Mililani Mauka, O'ahu.

Species listed by family	Common name	Status	Occurrence	Notes
Ferns				
POLYPODIACEAE				
Phymatosorus grossus (Langsd. & Fisch.) Brownlie	*laua'e*	Nat	R	
THELYPTERIDACEAE				
Christella parasitica (L.) H. Lév	wood fern	Nat	R	
Conifers				
AURICARIACEAE				
Araucaria columnaris (G. Forst.) J. D. Hook.	Cook-pine	Nat	--	<1,3>
CUPRESSACEAE				
Cupressus cf. *macrocarpa* Gordon	Monterey cypress	Orn	--	<1,3>
*Juniperus ??*sp.	unk. Cypress	Orn	--	<1,3>
PODOCARPACEAE				
Podocarpus sp.	Podocarpus	Orn	--	<1,3>
Flowering Plants				
DICOTYLEDONES				
ACANTHACEAE				
Asystasia gangetica (L.) T. Anderson	Chinese violet	Nat	R1	
ACANTHACEAE				
Barleria repens C. Nees	pink-ruellia	Orn	--	<1>
ANACARDIACEAE				
Schinus terebinthefolius Raddi	Christmas berry	Nat	R	
AQUIFOLIACEAE				
Ilex aquifolium cultivar(s)	English holly	Orn	--	<1>
ARALIACEAE				
Schefflera actinophylla (Endl.) Harms	octopus tree, juv.	Nat	R	
ASTERACEAE (COMPOSITAE)				
Bidens pilosa L.	*Ki*	Nat	A	
Conyza sp.	horseweed	Nat	R	<3>
Emilia fosbergii Nicolson	*Pualele*	Nat	U	
Pluchia carolinensis (Jacq.) G. Don	Sourbush	Nat	U	
Sonchus oleraceus L.	sow thistle	Nat	U2	
Sphagneticola trilobata (L.) Pruski	Wedelia	Nat	A	
Youngia japonica (L.) DC	oriental hawksbeard	Nat	R1	
BIGNONIACEAE				
Tabebuia heterophylla (A.P. Cand.) Britton	pink tecoma	Orn	--	<1>

Table 1 (continued).

Species listed by family	Common name	Status	Occurrence	Notes
CAPRIFOLIACEAE				
Abelia x grandiflora (André) Rehder	glossy abelia	Orn	--	<1>
CONVOLVULACEAE				
Ipomoea obscura (L.) Ker-Gawl.	---	Nat	U	
EUPHORBIACEAE				
Chamaesyce hirta (L.) Millsp.	garden spurge	Nat	U1	
Chamaesyce hypericifolia (L.) Millsp.	graceful spurge	Nat	C	
Chamaesyce prostrata (Aiton) Small	prostrate spurge	Nat	R	
Phyllanthus debilis Klein ex Willd.	niruri	Nat	A	
FABACEAE				
Acacia confusa Merr.	Formosan koa	Nat	U	
Alysicarpus vaginalis (L.) DC	alyce clover	Nat	R	<2>
Crotalaria pallida Aiton	smooth rattlepod	Nat	R	<3>
Desmodiunm triflorum (L.) DC	---	Nat	R	<2>
Falcataria moluccana (Miq.) Barneby & Grimes	albizia	Nat	U	
Indigofera hendecaphylla Jacq.	creeping indigo	Nat	R	
Leucaena leucocephala (Lam.) deWit	*koa haole*	Nat	R	
Mimosa pudica L.	sensitive plant	Nat	A	
Neonotonia wightii (Wight & Arnott) Lackey	glycine	Nat	U	
Indet. wild pea	---	---	R	
LYTHRACEAE				
Cuphea hyssopifolia Kunth	false heather	Nat	--	<1>
MELASTOMATACEAE				
Clidemia hirta (L.) D. Don	Koster's curse	Nat	R1	
MYRTACEAE				
Eucalyptus citriodora W. J. Hooker	lemon-scented gum	Nat	--	<1>
OXALIDACEAE				
Oxalis corniculata L.	yellow wood sorrel	**Ind**	R1	
PLANTAGINACEAE				
Plantago lanceolata L.	nrw-lvd. plantain	Nat	AA	
STERCULIACEAE				
Waltheria indica L.	*'uhaloa*	**Ind**	R	
VERBENACEAE				
Citharexylum spinosum L.	fiddlewood	Nat	U	
Clerodendrum buchananii var. *fallax* (Lindl.) Bakhuizen	pagoda flower	Orn	--	<1>

Table 1 (continued).

Species listed by family	Common name	Status	Occurrence	Notes
MONOCOTYLEDONES				
CYPERACEAE				
Cyperus rotundus L.	nut grass	Nat	U1	
LILIACEAE				
Asparagus densiflorus (Kunth) Jessop	asparagus "fern"	Nat	--	<1>
Ophiopogon intermedius cultivar	lilyturf	Orn	--	<1>
POACEAE				
Cynodon dactylon (L.) Pers.	Bermuda grass	Nat	R	
Digiteria ciliaris Link	Henry's crabgrass	Nat	R	
Eleusine indica (L.) Gaertn.	wiregrass	Nat	R	
Eragrostis pectinacea (Michx.) Nees	Carolina lovegrass	Nat	R	
Melinus repens (Willd.) Zizka	Natal redtop	Nat	U	
Paspalum fimbriatum Kunth	Panama grass	Nat	C	
Setaria gracilis Kunth	yellow foxtail	Nat	R	
Sporobolus sp.	dropseed	Nat	R	
Stenotaphrum secundatum (T. Walter) Kuntze	St. Augustine grass	Orn	O2	<1>
Urochloa maxima (Jacq.) Webster	Guinea grass	Nat	AA	
Urochloa mutica (Webster	para grass	Nat	R	
Zoysia matrella (L.) Merr.	zoysia grass	Orn	--	<1>

Legend to Table 1

STATUS = distributional status for the Hawaiian Islands:
- **ind.** = indigenous; native to Hawaii, but not unique to the Hawaiian Islands.
- nat. = naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of Cook Expedition in 1778, and well-established outside of cultivation.

OCCURRENCE = abundance ratings for plants in survey area:
- -- - With note <1> or <2> indicates a plant not seen in 2009 survey.
- R – Rare — seen in only one or perhaps two locations.
- U - Uncommon- — seen at most in several locations
- O - Occasional — seen with some regularity
- C - Common — observed numerous times during the survey
- A - Abundant — found in large numbers; may be locally dominant.
- AA - Very abundant — abundant and dominant; defining vegetation type.

Numbers following an occurrence rating indicate clusters within the survey area. The ratings above provide an estimate of the likelihood of encountering a species within the specified survey area; numbers modify this where abundance, where encountered, tends to be greater than the occurrence rating:
- 1 – several plants present
- 2 - many plants present
- 3 – locally abundant

NOTES:
- <1> – Planted; part of the street side landscaping. If abundance value given, then also escaping or found on the property beyond the landscape areas.
- <2> - A weed found mostly in the mowed verge areas.
- <3> – Plant(s) lacking fruit or flower. Identification uncertain.

somewhere, but then spread out on their own. Because the parcel is mowed with some regularity, the number of "weedy" species is actually higher than might be the case if Guinea grass were allowed to grow unhindered. Typically, this grass will grow to a large size and block off sunlight to lower growing herbs, which then disappear. The mowing at this location likely selects for certain low-growing herbs over others, but small pockets of unmowed ground (occupied by trees, shrubs, rock piles) provide areas that support the plant species diversity observed.

Fauna

The only animals observed during the brief, morning survey were birds. The surrounding street and house lot trees are attractive to a wide range of common urban birds. Observed were House Finch (*Carpodacus mexicanus*), Common Mynah (*Acridotheres tristis*), and Spotted Dove (*Streptopelia chinensis*); Northern Cardinal (*Cardinalis cardinalis*) was heard in the area.

The lot is attractive to Pacific Golden-Plover (*Pluvialis fulva*), two of which were seen. The latter is perhaps the only Hawai'i native vertebrate anticipated to utilize the parcel in its present state. Pacific Golden Plover are attracted to open, grassy areas and, as noted above regarding the dominance by Guinea grass, would not be regular visitor to the property except for the fact that regularly mowing is occurring.

Discussion

The results of a biological survey conducted in January 2011 indicate there are no special concerns or legal constraints to development arising from biological resources found on the subject property. Central O'ahu has long supported agricultural development and in more recent decades, expansive urban/suburban development. Native plant species are no longer a significant part of the flora found here. No environments of special concern, such as wetlands, occur on the property.

No plant or animal species listed as endangered, threatened, or currently proposed for listing under either federal or State of Hawai'i endangered species statutes are known from the project site (USFWS, 2005a, b, 2011), nor are any expected given the highly disturbed nature of the site and its urban location.

Literature Cited

Staples, G. W., and D. R. Herbst. 2005. *A Tropical Garden Flora: Plants Cultivated in the Hawaiian Islands and Other Tropical Places.* Bishop Museum Press.

Wagner, W. L., D. R Herbst, S. H. Sohmer 1990. *Manual of the Flowering Plants of Hawai'i.* University of Hawaii Press, Honolulu, Hawaii 1854 pp.

_____ and _____. 1999. *Supplement to the Manual of the flowering plants of Hawai'i*, pp. 1855-1918. *In:* Wagner, W.L., D.R. Herbst, and S.H. Sohmer, Manual of the flowering plants of Hawai'i. Revised edition. 2 vols. University of Hawaii Press and Bishop Museum Press, Honolulu.

U.S. Fish and Wildlife Service (USFWS). 2005a. Department of the Interior, Fish and Wildlife Service, 50 CFR 17. Endangered and Threatened Wildlife and Plants. Review of Species That Are Candidates or Proposed for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petition; Annual Description of Progress on Listing Actions. *Federal Register*, 70 (90; Wednesday, May 11, 2005): 24870-24934.

_____. 2005b. Endangered and Threatened Wildlife and Plants. 50CFR 17:11 and 17:12 (Tuesday, November 1, 2005).

_____. 2011. USFWS Threatened and Endangered Species System (TESS), online at URL: http://ecos.fws.gov/tess_public/StartTESS.do.