

BENJAMIN J. CAYETANO  
GOVERNOR  
STATE OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF HAWAIIAN HOME LANDS  
P. O. BOX 1879  
HONOLULU, HAWAII 96805

*Waimanalo Kupuna Housing  
Project*

KALI WATSON  
CHAIRMAN  
HAWAIIAN HOMES COMMISSION

JOBIE M. K. M. YAMAGUCHI  
DEPUTY TO THE CHAIRMAN

March 3, 1998

Mr. Gary Gill, Director  
235 South Beretania Street, Suite 702  
Honolulu, Hawaii 96813

OFFICE OF THE  
QUALITY MANAGER  
98 MAR 11 P 3:09  
RECEIVED

Dear Mr. Gill:

SUBJECT: Waimanalo Kupuna Housing Project

The Department of Hawaiian Home Lands has reviewed the comments received during the 30-day public comment period which began on January 8, 1998. The agency has determined that this project will not have a significant environmental effect and has issued a negative declaration. Please publish this notice in the March 23, 1998 Environmental Notice.

We have enclosed a completed OEQC Bulletin Publication Form and four copies of the final EA. Please contact Mr. Ben Wong at 586-3823 if you have any questions.

Aloha,

Handwritten signature of KALI WATSON in cursive.

KALI WATSON, Chairman  
Hawaiian Homes Commission

Enclosures

c: Ms. Yukie Ohashi, PBR Hawaii  
Mr. Dwight Kauahikaua, Kauahikaua & Chun

1998-03-23-0A-*FEA*-Waimanalo  
Kupuna Housing Project

FILE COPY

# WAIMANĀLO KŪPUNA HOUSING

## FINAL ENVIRONMENTAL ASSESSMENT

Office of Hawaiian Affairs  
Department of Hawaiian Home Lands

March 1998

# WAIMANĀLO KŪPUNA HOUSING

FINAL ENVIRONMENTAL ASSESSMENT



Office of Hawaiian Affairs  
Department of Hawaiian Home Lands

March 1998

**WAIMANĀLO KUPUNA HOUSING**  
**FINAL ENVIRONMENTAL ASSESSMENT**

Office of Hawaiian Affairs  
Department of Hawaiian Home Lands

Prepared by:



March 1998

WAIMĀNALO KŪPUNA HOUSING PROJECT  
Final Environmental Assessment

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- A *Waimānalo Kūpuna Housing Project Civil Engineering Preliminary Report*, R.M. Towill Corporation, December 1997
- B State Historic Preservation Division Letter, May 13, 1997
- C *Botanical Resources Study, Waimānalo Kūpuna Housing Project, Ko'olau Poko District, Island of O'ahu*, Winona P. Char, June 1997
- D Traffic Assessment for the Waimānalo Kūpuna Housing Project, Randall S. Okaneku, January 15, 1998



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INTRODUCTORY INFORMATION

PROJECT TEAM

Applicant: Office of Hawaiian Affairs  
711 Kapiolani Blvd., Fifth Floor  
Honolulu, Hawai'i 96813

Department of Hawaiian Home Lands  
State of Hawai'i  
P.O. Box 1879  
Honolulu, Hawai'i 96805

Applicant's Representative: Kauahikaua & Chun/Architects  
Kawaiahao Plaza/Hale Mauka  
567 South King Street, Suite 108  
Honolulu, Hawai'i 96813

Civil Engineer: R. M. Towill Corporation  
420 Waiakamilo Road, Suite 411  
Honolulu, Hawai'i 96817

Environmental Assessment Preparer: PBR Hawai'i  
Pacific Tower, Suite 650  
1001 Bishop Street  
Honolulu, Hawai'i 96813

PURPOSE OF THIS DOCUMENT

This Final Environmental Assessment ("EA") has been prepared for the Waimānalo Kūpuna Housing Project to allow the development of a facility which is intended to provide housing opportunities for elderly Hawaiians as required by the Hawaiian Homes Commission Act.

Compliance with Chapter 343 is required because the project lands are owned by the State of Hawai'i Department of Hawaiian Home Lands and will utilize funds provided in part by the State of Hawai'i.

This EA has been prepared in compliance with the provisions of *Hawai'i Revised Statutes* Chapter 343 and Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules. A Draft EA was filed with the Office of Environmental Quality Control and published on January 8, 1998 in "The Environmental Notice". Public comments received during the comment period and our responses are enclosed herein.

1.0  
INTRODUCTION

WAIMĀNALO KŪPUNA HOUSING PROJECT  
Final Environmental Assessment

## 1.0 INTRODUCTION

Section 1 provides an introduction, project summary and background of the proposed development, including location, land ownership, property description and land uses of the surrounding properties. Also included is a description of the background of the planning for the project.

### 1.1 PROJECT SUMMARY

<b>Project Name:</b>	Waimānalo Kūpuna Housing Project
<b>Applicant:</b>	Office of Hawaiian Affairs Department of Hawaiian Home Lands
<b>Landowner:</b>	State of Hawai'i, Department of Hawaiian Home Lands
<b>Tax Map Key:</b>	4-1-19:32 (First Division)
<b>Project Area:</b>	Approximately 7.29 acres
<b>Existing Use:</b>	Generally vacant; horse stables; community center building
<b>Proposed Uses:</b>	Elderly affordable rental housing apartments; new community center; commercial center
<b>Land Use Designations:</b>	·State Land Use: Urban ·Development Plan: Agriculture Residential ·Zoning: AG-2 (General Agricultural) R-10 (Residential)
<b>SMA:</b>	The project is not in the SMA
<b>Action Requested:</b>	Compliance with Chapter 343, <i>Hawai'i Revised Statutes</i> and Hawai'i Administrative Rules, Title 11, DOH, Chapter 200
<b>Accepting Authority</b>	Department of Hawaiian Home Lands

**WAIMĀNALO KŪPUNA HOUSING PROJECT**  
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**1.2 LOCATION**

The site of the project is in a centralized location at Waimānalo, O'ahu, within the City and County of Honolulu (Figure 1). The project is adjacent to Kalaniana'ole Highway, and is bounded by Nakini Street, 'Iauhole Street, Kula'iwi Street, and adjacent residential properties along 'Olu'olu Street. The site was formerly a part of the now abandoned Grace Pacific Quarry.

The project site is identified as TMK parcel: 4-1-19: 32 (First Division) and contains approximately 7.29 acres (Figure 2).

**1.3 BACKGROUND**

Waimānalo is a rural community of approximately 9,100 residents located on the south eastern windward O'ahu coast. In 1993, it was estimated that the population of native Hawaiians age 55 and older numbered over 400 native Hawaiians or about 40 percent of the total elderly population in the Waimānalo area. Native Hawaiians are defined by blood quantum greater than 50 percent. There are also many part-Hawaiian (less than 50 percent Hawaiian blood) elderly living in Waimānalo. The Hawaiian word "kupuna" means grandparent, ancestor, relative of the grandparent's generation, grandaunt, granduncle" (Pukui, 1986)) and is used interchangeably with the word "elders".

According to surveys of the community, many Hawaiian elderly would welcome the opportunity to live in an active retirement community where they can make use of community services, interact with other kŭpuna, and practice and teach their culture, arts and special knowledge. The Waimānalo Kŭpuna Housing Project is designed to meet these needs.

The Department of Hawaiian Home Lands (DHHL) General Management Plan for Waimānalo designates elderly housing and commercial development at the location of the proposed project (Figure 3). DHHL, the land owner, proposes to lease to the Office of Hawaiian Affairs (OHA), the property for the development of this mixed-use project, which includes the kŭpuna housing and a proposed commercial marketplace.

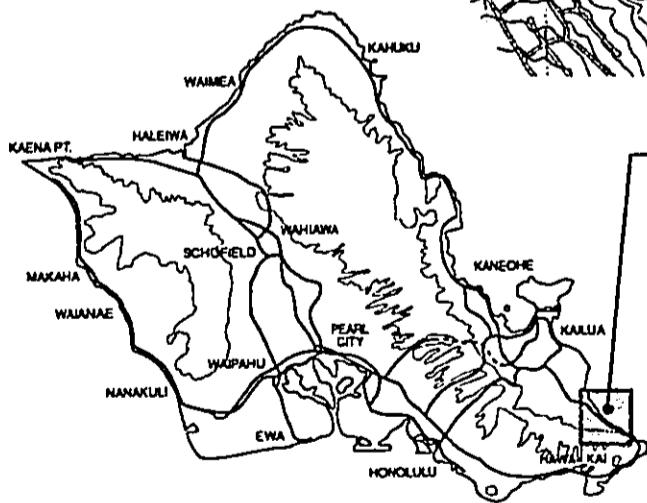
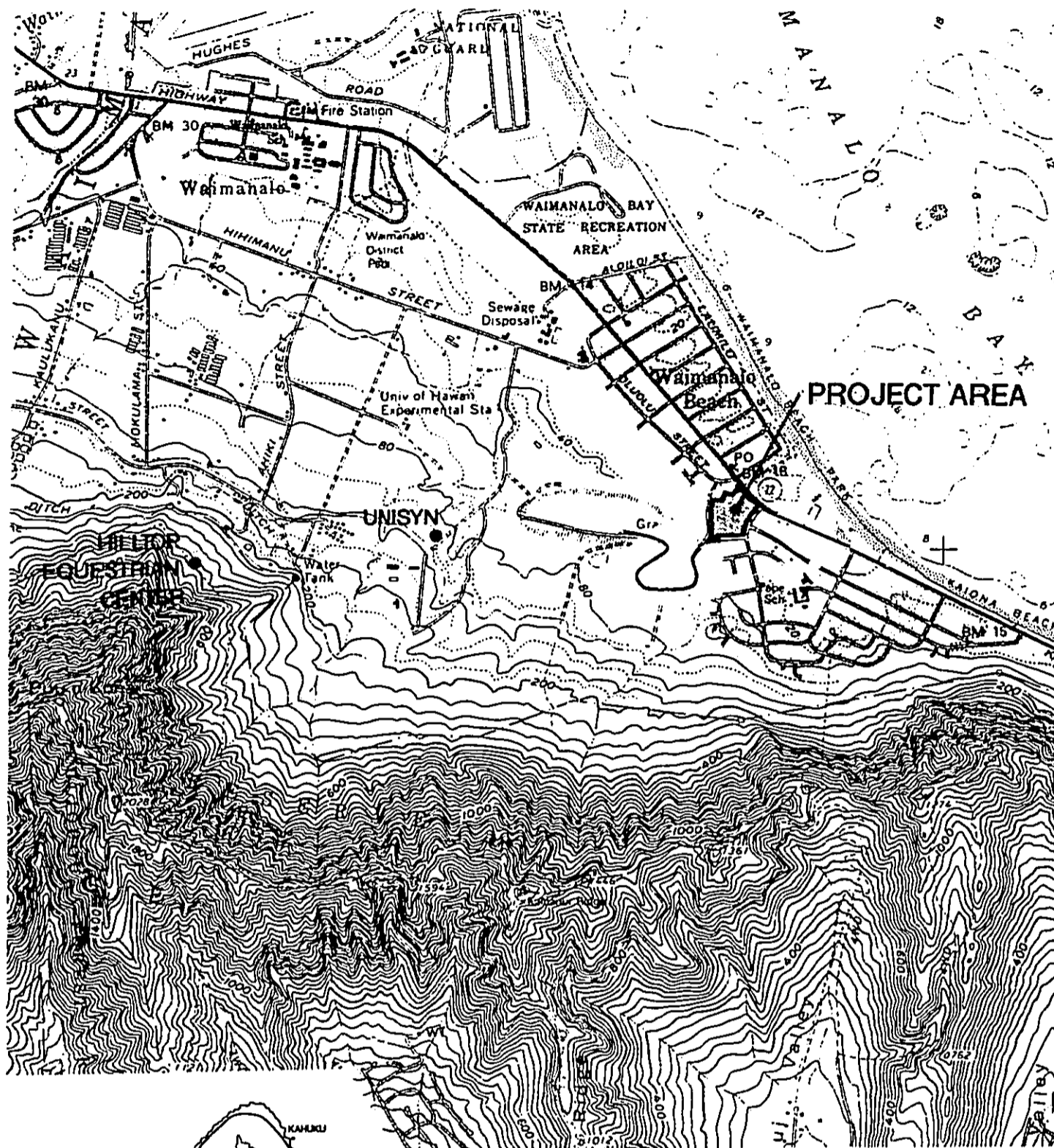
Waimānalo is a rural area consisting of residential subdivisions, small businesses, including family farms, and agricultural and conservation lands. Waimānalo Beach Park stretches approximately 5,700 feet along the shore adjacent to Kalaniana'ole Highway and has a total area of approximately 34 acres.

A report entitled *Site Assessment and Feasibility Reports* (Group 70, 1993) was prepared to assess the subject site's potential for commercial, residential and elderly housing and a preliminary market and feasibility report for a commercial retail development. The reports' conclusions determined the suitability of the site for kŭpuna housing and commercial development.

The concept for the proposed Waimānalo Kŭpuna Housing Project at the subject project site is consistent with the DHHL Waimānalo Development Plan.

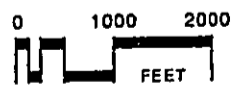
**1.4 LAND OWNERSHIP**

The landowner is the State of Hawai'i, Department of Hawaiian Home Lands. The land will be leased to the Office of Hawaiian Affairs who is the developer of the project.



AREA OF MAP

FIGURE 1  
Regional Location Map  
WAIMANALO KŪPUNA HOUSING PROJECT



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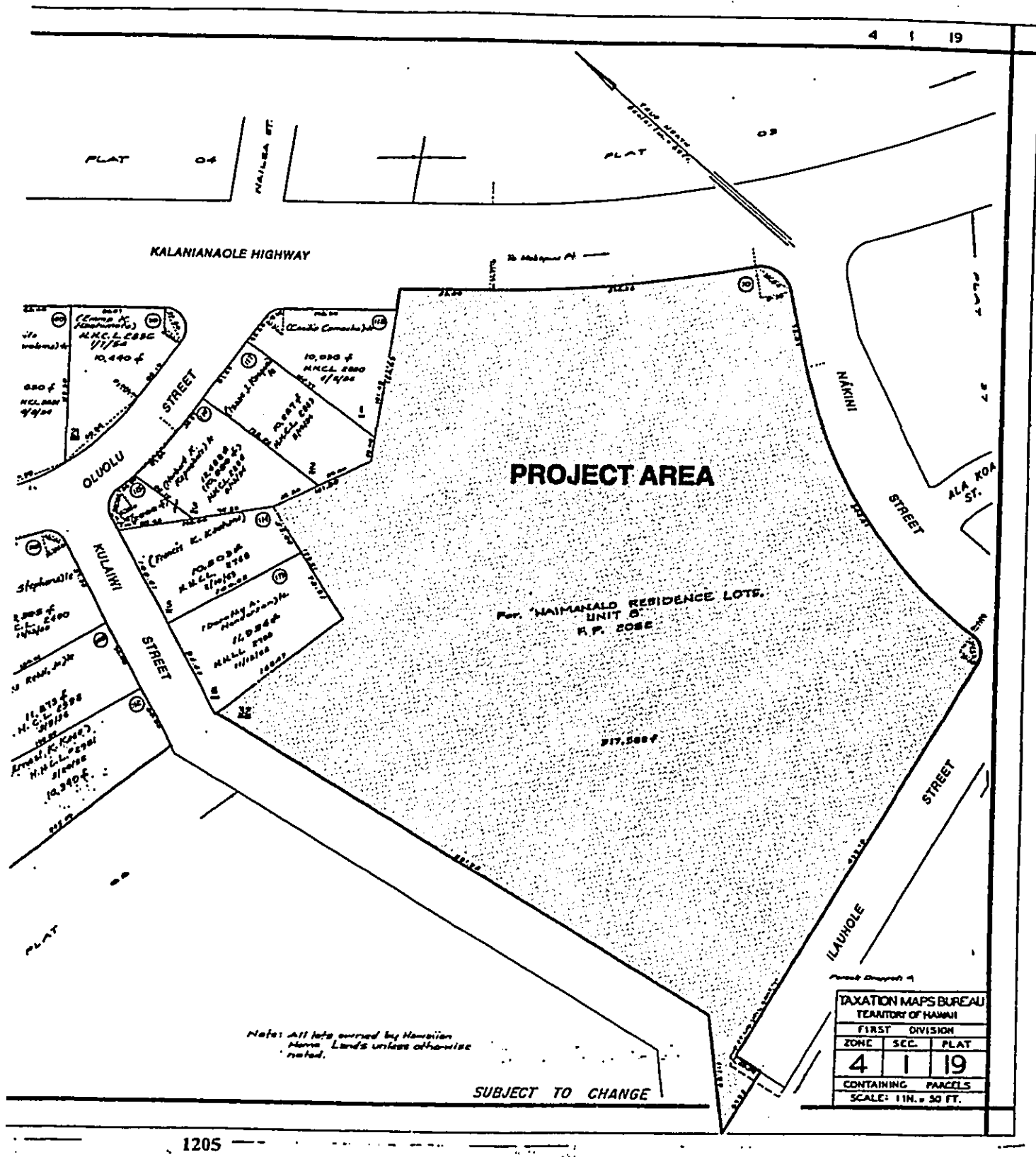
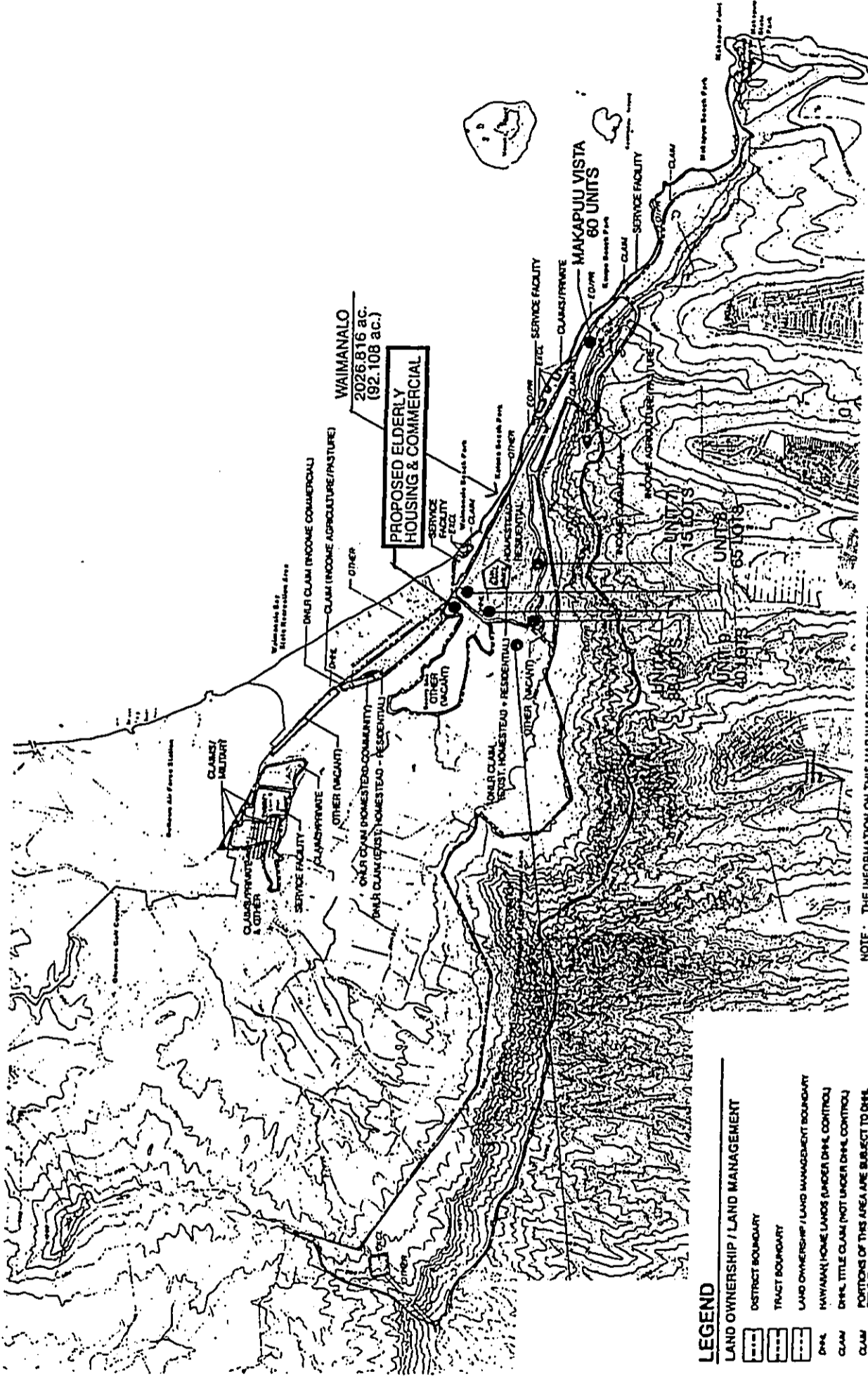


FIGURE 2  
Tax Map Key / Land Ownership Map  
WAIMANALO KŪPUNA HOUSING PROJECT

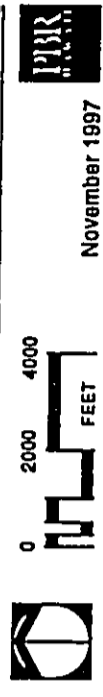
Source: City & County of Honolulu - Planning Department



December 1997



**FIGURE 3**  
**DHHL Waimānalo Development Plan**  
**WAIMĀNALO KŪPUNA HOUSING PROJECT**



NOTE: THE INFORMATION ON THIS MAP WAS DELINEATED FROM INFORMATION PROVIDED BY VARIOUS SOURCES. THE INTENT OF THIS MAP IS FOR GENERAL PLANNING PURPOSES ONLY. ACCURATE PROPERTY DESCRIPTIONS SHOULD BE VERIFIED THROUGH CERTIFIED SURVEY MAPS.

Source: HAWAIIAN HOMELANDS: LAND ASSESSMENT STUDIES  
 PHASE 5 - PLANNING ASSESSMENT: TOTAL LAND INVENTORY  
 August 1993

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**1.5 COLLABORATION BETWEEN THE OFFICE OF HAWAIIAN AFFAIRS AND THE DEPARTMENT OF HAWAIIAN HOME LANDS**

This project involves an innovative working relationship between OHA and the DHHL. The two agencies are collaborating in the development of this housing project. DHHL, the landowner, will generally lease land to OHA at a nominal price and OHA will use internal and other resources to develop the project. The Waimānalo Kūpuna Housing Project is the first elderly housing rental project to be developed on Hawaiian Home Lands and implements the DHHL Master Plan for Waimānalo. This project is also unique in that OHA is working with the Waimānalo Community Development Corporation, a non-profit community based development organization, in planning and designing the project. Other Hawaiian organizations are contributing in planning the programming aspects and may be providing services at the on-site community center.

**1.5.1 Office of Hawaiian Affairs**

The Office of Hawaiian Affairs is a unique, semi-autonomous agency of the State of Hawai'i which was established in 1980 to better the conditions for native Hawaiians. OHA is a non-profit entity well-recognized in Hawai'i for its advocacy efforts on behalf of Hawaiians. OHA has established working relationships with both public and private sector organizations and many Hawaiian organizations. OHA has a Housing Division whose staff is well-qualified in all aspects of housing finance and development. Since 1990, OHA has co-sponsored self-help housing projects for Hawaiians. In 1993, OHA established a revolving home loan program for Hawaiian homesteaders.

**1.5.2 Department of Hawaiian Home Lands**

The legal basis for the existence of Department of Hawaiian Home Lands is the Hawaiian Homes Commission Act, 1920 (HHCA), as amended. The Act was passed by the U.S. Congress and signed into law by President Warren Harding on July 9, 1921. DHHL is one of 18 agencies of the Executive Branch of the State of Hawai'i. It differs from other executive departments in a number of respects:

1. DHHL serves a special clientele. Its mission is to manage the Hawaiian Homes Lands trust effectively, and to develop and deliver land to Native Hawaiians. Native Hawaiians are defined by DHHL as individuals of at least 50 percent Hawaiian blood.
2. The Department manages a land trust consisting of 186,995 acres of land on Hawai'i, Maui, Moloka'i, O'ahu, and Kaua'i.

DHHL provides direct benefits to native Hawaiians in the form of 99-year homestead leases at an annual rental of \$1 for residential, agricultural or pastoral purposes. The intent of the homesteading program is to encourage and support economic self-sufficiency of native Hawaiians through the provision of land. Other benefits provided by the HHCA include financial assistance through direct loans or loan guarantees for home construction, home replacement or repair, and for the development of farms and ranches; technical assistance to farmers and ranchers, and the operation of water systems. In addition to administering the homesteading program, DHHL is also authorized to lease land and issue revocable permits, licenses and rights-of-entry for lands not in homestead use. Revenues from lands in commercial, industrial, and other income-producing uses support homestead development activities.



**WAIMĀNALO KŪPUNA HOUSING PROJECT**  
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**1.6 DESCRIPTION OF THE PROPERTY**

The project site consists of the land parcel (TMK: 4-1-19: 32) which has an area of approximately 7.85 acres located adjacent to and mauka of Kalaniana'ole Highway. The site is located from Kalaniana'ole Highway up to the lower slopes of the Ko'olau Mountain and ranges from 13.5 to 25 feet in elevation. Much of the site was previously utilized as a sand quarry by Grace Pacific.

Four acres of the site on the western portion of the property are currently being used for horse stables. The stables have been leased on a temporary basis from the DHHL since 1978. A row of trees separates the stables from the rest of the property. The Waimānalo Hawaiian Homes Association utilizes an existing masonry building as a community center which is located at the corner of Kalaniana'ole Highway and Nakini Street. The community center area is landscaped with a lawn, 'ulu (breadfruit), kukui, mango, niu (coconut), plumeria and kamani trees.

**1.7 SURROUNDING LAND USES**

The property is situated along Kalaniana'ole Highway, the main roadway corridor through Waimānalo, on which bus service runs in both directions. The project site is bounded by Kalaniana'ole Highway, Nakini and 'Ilauihole Streets to the east and northeast, and Kula'iwi Street and private residences to the west. The existing residential neighborhoods to the south of the property are Department of Hawaiian Home Lands single family Residence Lots (Units 8 and 9). Additional area of the abandoned Grace Pacific Quarry is located to the west of the site and is planned to be developed for homestead residential lots in the future. Across Kalaniana'ole Highway and within close walking distance is the U.S. Post Office, a convenience store, retail shops and restaurants, and Waimānalo Beach Park.

Other land uses in the surrounding area include other residential subdivisions, family farms, elementary school, the Waimānalo Wastewater Treatment Plant (WWTP), and the Unisyn Biowaste Technology facility.

**1.8 AGENCIES CONSULTED IN THE PREPARATION OF THE EA**

The following agencies and organizations have been consulted during the planning process and for the preparation of the Environmental Assessment:

**City and County of Honolulu**

Board of Water Supply  
Department of Housing and Community Development  
Department of Land Utilization  
Department of Parks and Recreation  
Department of Public Works  
Department of Transportation Services  
Department of Wastewater Management  
Fire Department  
Planning Department  
Police Department

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**State of Hawai'i**

Department of Accounting and General Services  
Department of Business, Economic Development, and Tourism  
Department of Business, Economic Development, and Tourism - Energy Office  
Department of Business, Economic Development, and Tourism - Office of Planning  
Department of Defense  
Department of Hawaiian Home Lands  
Department of Land and Natural Resources - Historic Preservation Division  
Department of Land and Natural Resources Land Division  
Department of Health  
Department of Transportation  
Housing Finance Development Corporation  
Office of Environmental Quality Control  
University of Hawai'i Environmental Center  
University of Hawai'i Water Resource Research Center

**Federal Government**

US Army Corps of Engineers  
US Geological Survey

**Utilities**

Hawaiian Electric Company, Inc.

**Organizations**

The Lunalilo Home  
Waimānalo Community Development Corporation  
Waimānalo Hawaiian Homes Association  
Waimānalo Health Center  
Waimānalo Neighborhood Board No. 32  
Waimānalo Public and School Library

**Community**

Hilltop Equestrian Centre

2.0  
PROJECT DESCRIPTION

WAIMĀNALO KŪPUNA HOUSING PROJECT  
Final Environmental Assessment

## 2.0 PROJECT DESCRIPTION

The proposed project, construction activities, and a preliminary development timetable and approximate development costs are described in this section.

### 2.1 PROJECT DEVELOPMENT GOALS

According to the U.S. Census Bureau, the growth of the elderly population has increased dramatically in the 20th century and will continue to grow exponentially through the years 2010 to 2030 as the baby boom generation reaches retirement age. This conclusion is applicable to Hawai'i and to the Hawaiian population. In Waimānalo today, the population of native Hawaiian residents over the age of 55 represents nearly 40 percent of the total elderly population.

The Waimānalo Kūpuna Housing Project is designed to accommodate the growing needs of the aging Hawaiian population -- to provide a residential environment for independent living with staff and services available on-site. The Master Plan (Figure 4A) for the project include 83 kupauna apartment units, and a new Kūpuna Center building which will include a Manager's residence, administrative offices, kitchen, and library. In addition, the Master Plan envisions a 10,000 square feet Commercial Center. The Commercial Center is in a central location in the Waimānalo community along Kalaniana'ole Highway and is expected to generate income through lease rents to subsidize the operations of the kupauna housing.

The affordable rental housing will be made available to eligible Hawaiian kupauna who are currently on the DHHL list or residing in the homestead area but wish to relocate to be in a complex designed for elderly living. Secondly, OHA will also provide rental opportunity to part-Hawaiians to fill any vacant apartments.

### 2.2 MASTER PLAN DEVELOPMENT AND SEWER INFRASTRUCTURE ADEQUACY

The dwelling unit count envisioned by the Master Plan is 83 kupauna apartments and one Manager's unit. The feasibility of the project depends on the development of the maximum number of apartment units (84) and the development of the Commercial Center whose lease rents are intended to subsidize the operations of the kupauna project.

The municipal wastewater treatment capability of the Waimānalo Wastewater Treatment Plant (WWTP) is at capacity. Consequently, the City Department of Wastewater Management has allowed hook-up of only 51 units (e.g., 50 kupauna, one Manager's). Figure 4B depicts the area of the project which would be served by the Waimānalo WWTP.

OHA and DHHL are presently discussing with the State Department of Health the development of an on-site temporary sewer system consisting of a septic tank and leaching field for the remainder of the project (including the additional 30 units and commercial development) in order to build out the Master Plan. The septic system is intended to be temporary until the Waimānalo WWTP is upgraded in the future.

This environmental assessment addresses the full impact of the desired Master Plan and also recognizes the limitations placed on the project by the sewer infrastructure inadequacies of the area.

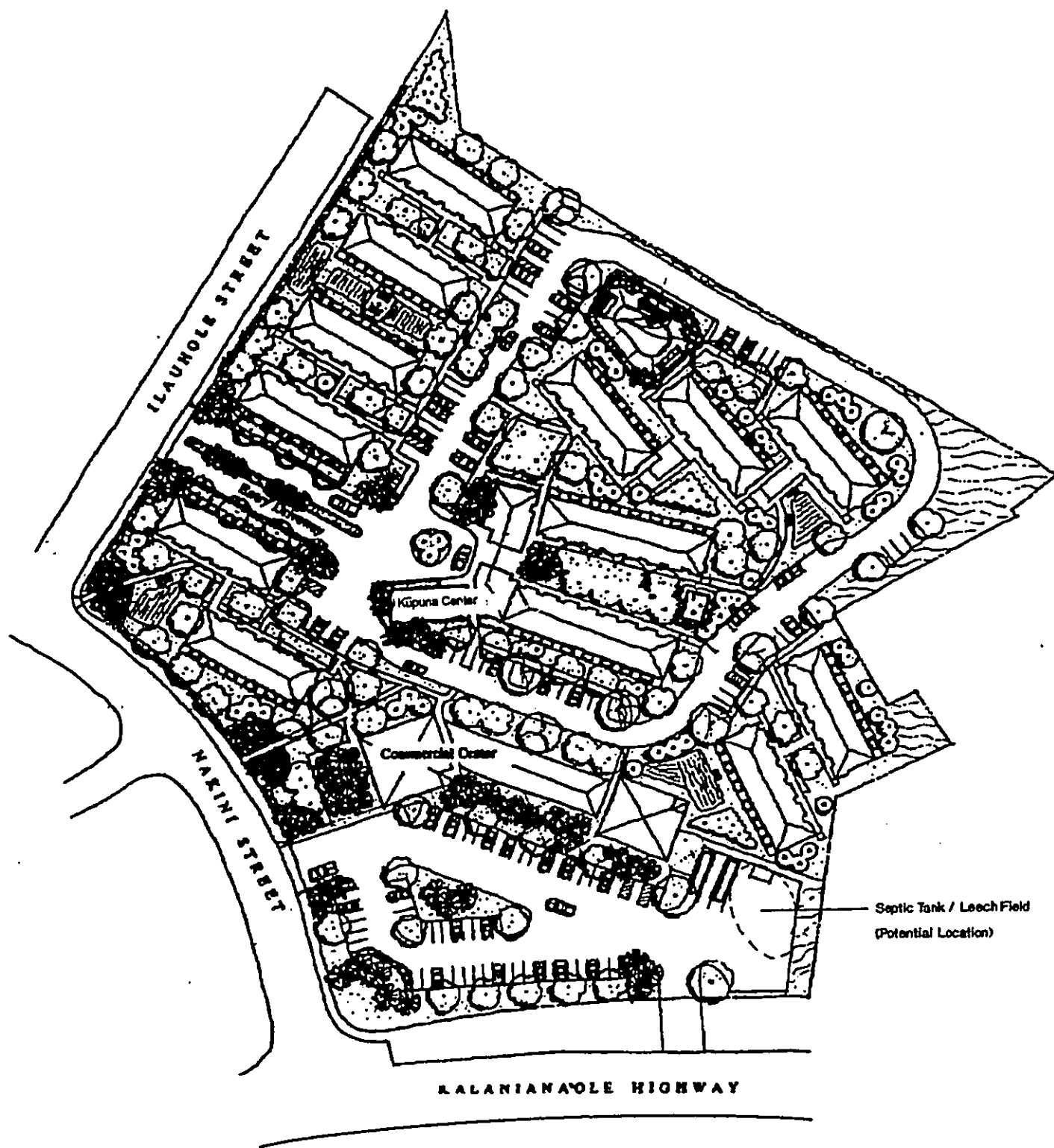


FIGURE 4 A  
 Master Plan  
 WAIMĀNALO KŪPUNA HOUSING PROJECT



December 1997 

Source: Kauahikaua & Chun / Architects  
 PBR Hawaii



**FIGURE 4 B**  
**Plan Area to be Served by Municipal Sewer System**  
**WAIMĀNALO KŪPUNA HOUSING PROJECT**

Source: Kauahikaua & Chun / Architects



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**2.3 DESIGN CONCEPT**

The Waimānalo Kūpuna Housing Project is planned as a mixed use project which will primarily provide residential housing for Hawaiian elderly and create a small commercial retail center. The two components are linked by its proximity to each other on the same property and the potential of the commercial lease rents to subsidize the operations of the kūpuna apartments.

**2.3.1 Kūpuna Housing**

The goal of the housing project is to provide independent living accommodations for Hawaiian elderly who are active (i.e., ambulatory) and able to thrive in an independent living environment.

The Kūpuna Housing will occupy approximately 5.14 acres (of the 7.85 acre site) and will be accessed from Ilauhole Street through Nakini Street from Kalaniana'ole Highway. The project consists of 13 buildings with six to eight apartment units per building and a Kūpuna Center. Accessibility for the elderly is maximized in the design of the project. Gently sloping walks will connect clusters of apartments which will form small groupings and serve as communal and discrete components of the whole. Car wash areas will be posted with hose bibs and appropriate signage. The centrally located Kūpuna Center building will house an activities room, library, mail area, lobbies and covered lanais, toilets, offices and Manager's unit. The design encourages social interaction and provides a sense of belonging to a community. The Kūpuna Center will also be designed to flexibly adapt to residents' future needs and activities. Circulation on-site is promoted by the access design and passive walking areas with adequate lighting. The adjacent commercial retail center is within walking distance from the kūpuna housing and will be directly accessible from the housing component.

The residential buildings are designed to utilize as much of the existing environmental attributes of the area. Buildings are oriented to catch prevailing winds and to promote views of the Ko'olaus. Perimeter landscape plantings will create a visual buffer from the surrounding densely developed neighborhood. The grounds will be landscaped with trees and hedges with space available for group gardening. The site design also allows some of the existing brush to remain along the northern boundary of the property, serving as a visual and acoustic barrier to neighboring residents. Site grading will maintain the topography at these adjacent areas. The scale of the buildings and their design will be compatible to the scale and rural character of the neighborhood. All buildings will be single-story construction. The design maximizes the surrounding outdoors by creating covered walkways, patios, and covered open-walled social and laundry areas.

**2.3.2 Commercial Center**

The Commercial Center is designed as a "convenience center" which would serve the nearby residences, the general Waimānalo community, and visitors transiting through Kalaniana'ole Highway. The Commercial Center site is approximately 2.15 acres. The buildings are setback from the highway with parking areas located adjacent to the road. Buildings and courtyards will occupy approximately 20,000 square feet and the remaining area will consist of parking. As described in Section 2.4.3 below, a "Hawaiian Marketplace" theme has been suggested in dialog with the community. The design of the retail component will incorporate these ideas.

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**2.4 PROJECT COMPONENTS**

**2.4.1 Kūpuna Residential Apartments**

**Building Clusters.** The apartment buildings are generally comprised of six to eight individual kupuna units (Figure 5A). The overall length of each building is approximately 101 to 140 feet. The overall width is approximately 40 feet. To form a sense of community, the buildings will face each other and flank a common garden area of about 600 square feet. A free-standing laundry building of approximately 200 square feet will be located in a common area of the project.

**Individual Kupuna Living Units.** Each unit will have a front porch deep enough (six feet) for a small table and chairs (Figure 5B). Common walkways are located to the front of the porch and create areas for social interaction.

Each unit will be approximately 544 square feet in area and includes a living room, kitchen, bedroom and bathroom. The apartments are designed with amenities for elders. The kitchen and living room space flow into each other. The full kitchen include refrigerator, electric range and sink. Counters and cabinets will be mounted to facilitate elder accessibility.

The bathroom has a walk-in/wheel-in shower and toilet equipped with grab bars; the lavatory is handicap accessible. The ceramic tile finish bathroom floors and walls creates a "wet" room with floor drains on the shower floor and between the toilet and the lavatory.

The bedroom door is a "double-acting" to open in either direction. The space accommodates one double or two twin beds, night stands and dresser, and a large built-in closet. A rear door opens to the back patio which is a small covered area (6 feet x 7 feet) which opens to the outdoors and functions as a private space. It is separated from the adjacent units by a wing wall, and provides access to the rear yards. Also in this rear area will be a water heater closet.

Residents will have access to garden areas for flower and vegetable gardening. The rest of the grounds will be maintained for passive recreation and will be landscaped with fruit trees and useful indigenous plants which can be used by the residents in their cultural activities.

**2.4.2 Kūpuna Center**

At the center of the project is a 3,000 square feet Kūpuna Center for the use of the resident community. While speakers may come in from time to time, the Kūpuna Center is not intended to be a public use facility. The Kūpuna Center will house recreation and managerial functions for the development and will include Administrative offices, mailboxes, community room, kitchen, furnishings storage, a library and restrooms. A Manager's unit is attached to the Kūpuna Center. The Manager will provide maintenance services and 24-hour security to the residents. Two apartment wings will also be attached to the Kūpuna Center. A separate laundry building is planned within the same area.

**2.4.3 Commercial Center**

A 10,000 square foot Commercial Center fronting Kalaniana'ole Highway is proposed, and is an integral financial component of the kūpuna residential project. The planned development of the



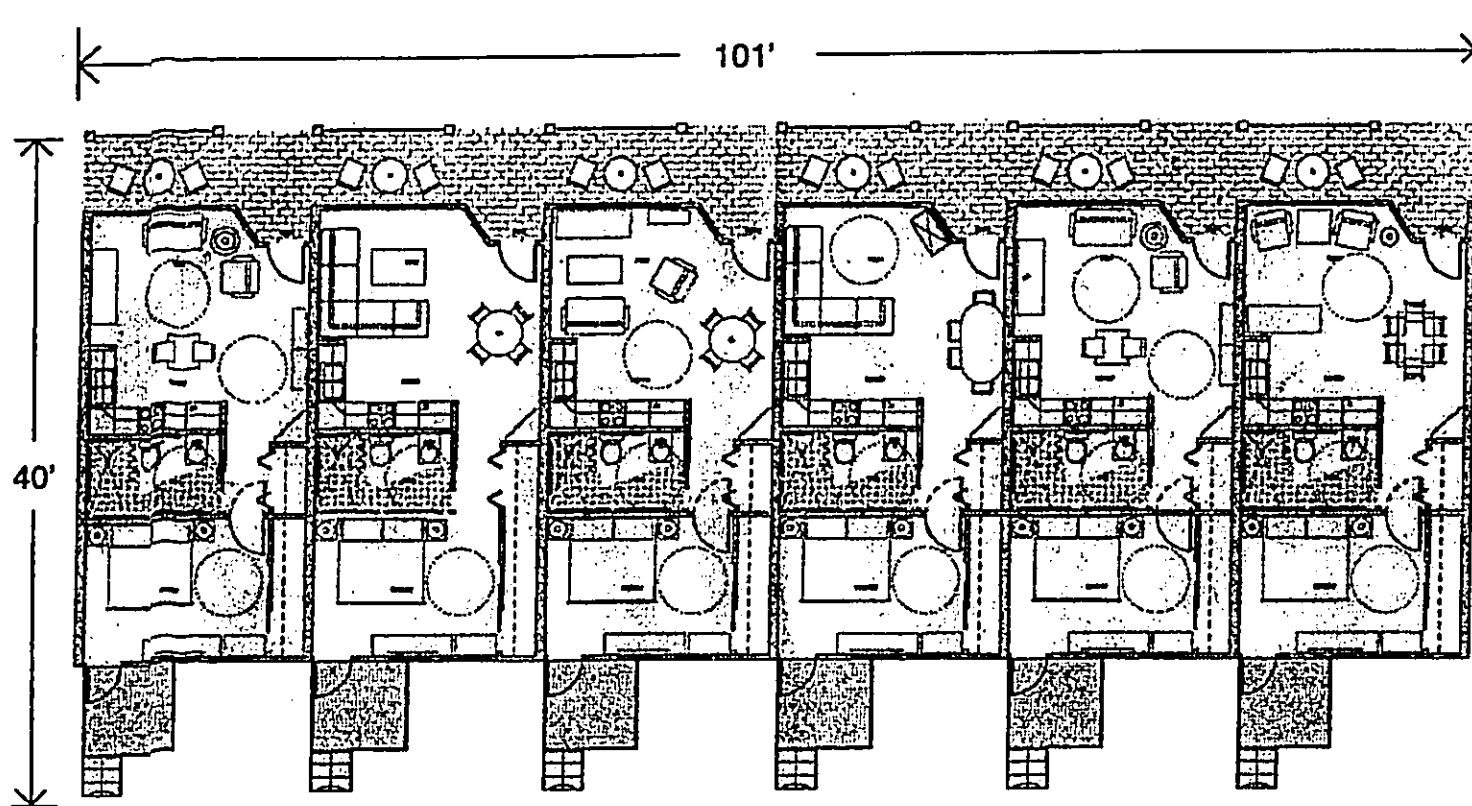


FIGURE 5 A  
 Residential Apartment - Layout Plan  
 WAIMĀNALO KŪPUNA HOUSING PROJECT

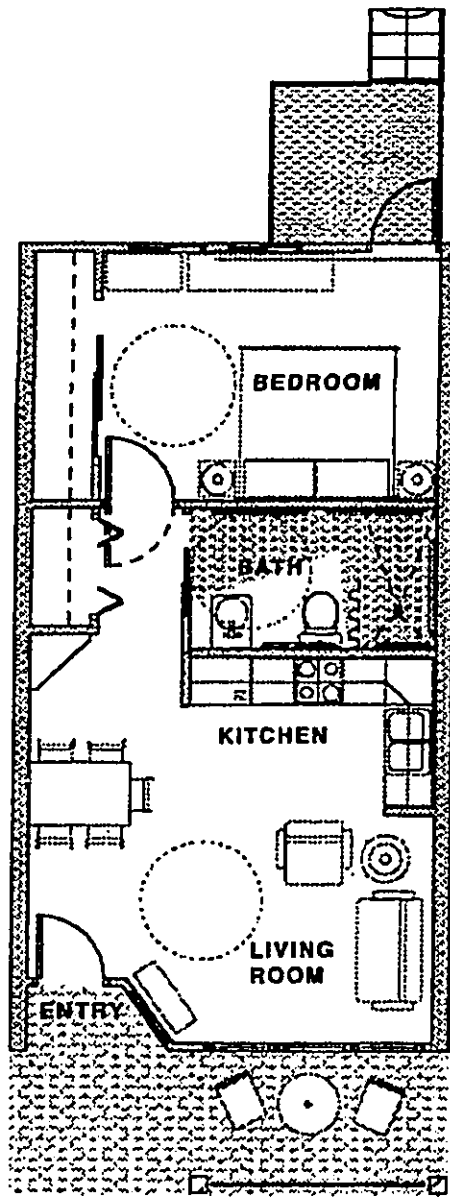


FIGURE 5 B  
Individual Kupuna Living Unit Floor Plan  
WAIMĀNALO KŪPUNA HOUSING PROJECT

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**Final Environmental Assessment**

Commercial Center is meant to complement and subsidize the operations and rents of the kūpuna housing.

The Preliminary Market and Financial Feasibility Report (Graham Murata Russell 1997) established the feasibility of the proposed commercial center of 10,000 square feet of new retail space in Waimānalo. The study analyzed the demographics of the community and the existing vacancy rate of the existing retail space available in Waimānalo. As a "convenience center" this establishment would serve the surrounding residential developments (including the kūpuna project), the greater Waimānalo community, as well as visitors traveling through the windward side. In discussions with community members, strong interest was shown in a "Hawaiian Marketplace" theme. Given the mission shared between the DHHL and OHA, it is appropriate to show strong preference to successful native Hawaiian entrepreneurs experienced in retailing, and having high sensitivity to the issues of the community being served. As such, in addition to retail and service oriented businesses such as banking, health care, and other services commonly found in convenience centers, there has been community interest in establishing a community-based cooperative retail outlet. Various food products and locally produced arts and crafts could offer tourists and residents authentic Hawaiian-made products directly from the producer.

In addition, the Commercial Center may provide opportunities for employment or business to kupuna residents.

#### **2.4.4 Landscaped Grounds**

The landscape design includes a generous use of native and introduced trees, grassed lawns, ample areas for gardening for residents, and the use of hedging and shrubbery for visual screening and securing of the property boundary. Plantings are meant to create a pleasing and stimulating environment for residents and to foster a sense of wellness, and to reinforce the rural qualities of Waimānalo. An exercise pool, therapeutic hot tub, and gazebo are amenities which are under consideration at the housing project.

#### **2.5 NEED FOR THE PROJECT**

Studies have found that the vast majority of older adults will attempt to remain wherever it is they call home for as long as possible. However, the vast majority of people who do move into seniors' housing do so because of some event, whether it is the death of a spouse or some other type of situation, particularly health related, that compels them to move into facilities which specialize in their special needs. This project will help to fulfill the special needs of a growing number of elderly Hawaiians in an affordable manner.

The target population for this elderly rental housing project are native Hawaiian elderly, particularly those who have at least 50 percent Hawaiian blood. First preference would be given to native Hawaiian elders who are now on the list for Hawaiian Home Lands. Second preference will be given to native Hawaiian elders who are already on Hawaiian home lands but desire to transfer their lot to another family member on the list and move into kūpuna housing. The Office of Hawaiian Affairs will work cooperatively with the Department of Hawaiian Home Lands to recruit elders from the wait list and who are on existing homesteads. Rental opportunity will also be extended to part-Hawaiians (less than 50 percent Hawaiian blood quantum).

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Advertising will also be done through local daily newspapers, through the Office of Hawaiian Affairs' newspaper, "Ka Wai Ola O OHA", and the Department of Hawaiian Home Lands Newsletter, "Ka Nūhou." Public informational workshops will be held in the Waimānalo area and other Hawaiian Home Land areas.

According to the 1990 Census, approximately 700 residents of the total 9,000 population in Waimānalo are elderly. There is no existing elderly project in the area although there is a substantial elderly population. Preliminary surveys indicate that many of these elderly would welcome the opportunity to live in an active retirement community.

**2.6 DEVELOPMENT TIMETABLE AND APPROXIMATE COSTS**

Detailed design will commence in Spring 1998. Construction is scheduled to begin in Fall 1998 and completion is anticipated during Summer 1999.

In the event that the issues pertaining to wastewater treatment are not completely addressed prior to construction, the project will proceed with the components (e.g., 50 kūpuna units, Kūpuna Center, Manager's unit) which will hook-up to the Waimānalo Wastewater Treatment Plant (WWTP). The remaining components (e.g., 33 kūpuna units and Commercial Center) will be constructed and be served by a temporary on-site septic sewer system.

The estimated development cost for the Waimānalo Kūpuna project is \$6.2 million. The cost of the on-site septic tank leaching field system is anticipated to be about \$75,000.

OHA and DHHL are working out a long-term (65-year) general lease. The housing project will be retained as affordable kūpuna housing for the entire term of the lease. This condition would be included as a provision in the lease agreement.

3.0  
LAND USE CONFORMANCE

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### 3.0 LAND USE CONFORMANCE

#### 3.1 ZONING

The entire site for the Waimānalo Kūpuna Housing Project is currently designated by the State Land Use Commission as "Urban" (Figure 6). The City Ko'olau Poko Development Plan Land Use Map designation for the property is Agriculture and Residential (Figure 7). The zoning of the project site is R-10 (Residential) and AG-2 (General Agriculture) (Figure 8). None of the project is located within the Special Management Area (Figure 9). The Ko'olau Poko Development Plan Public Facilities Map shows symbols within the vicinity of the project site which represents sewer improvements, and widening and realignment of Kalaniana'ole Highway (Figure 10).

If the Office of Hawaiian Affairs and the Department of Hawaiian Home Lands were to pursue County land use approvals, the 84-unit housing project would require rezoning to an Apartment District or Business Mixed Use District. Similarly, the proposed Commercial Center is not consistent with the R-10 Residential District zoning and would also require that portion of the project to be rezoned to the B-2 Community Business District. The Department of Hawaiian Home Lands is electing to exercise its exemption power pursuant to the Legal Memorandum dated October 23, 1987 by the State Attorney General.

#### 3.2 CHAPTER 343, HAWAI 'I REVISED STATUTES

The use of State-owned lands and state funds require compliance with Chapter 343, *Hawai'i Revised Statutes* and Hawai'i Administrative Rules, Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules.

The accepting agency for the Environmental Assessment is the State Department of Hawaiian Home Lands.

#### 3.3 OTHER APPROVALS AND PERMITS

During the implementation stages of the project, the applicant will be working with the City and County of Honolulu review agencies for examination and approval of project plans and specifications.

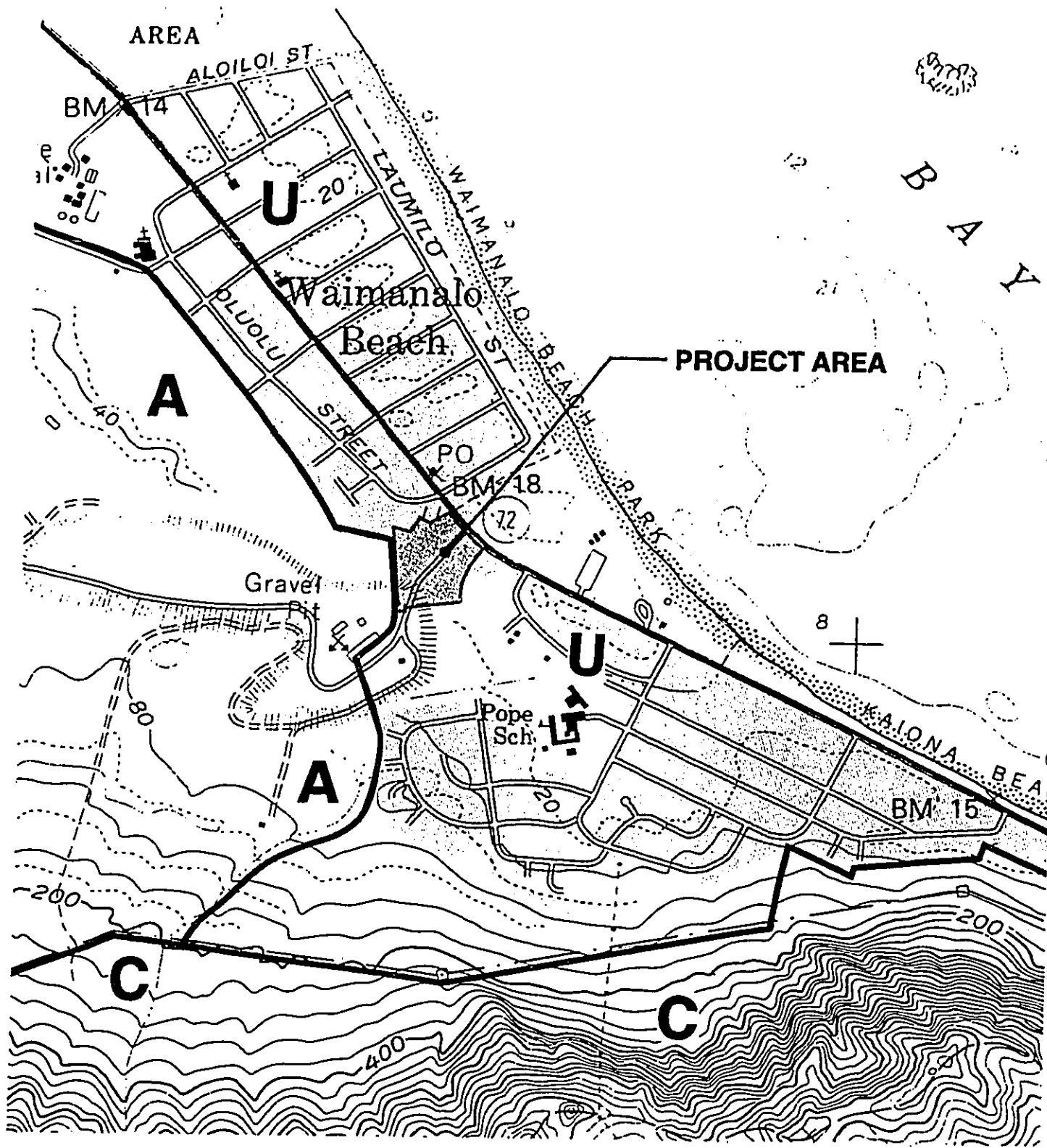
##### Approvals

NPDES Permit  
Drainage/ Roads  
Highway Access  
Roadways  
Sewer

Water  
Handicap Accessibility

##### Responsible Agency

Department of Health  
Department of Public Works  
State Department of Transportation - Highway Division  
Department of Transportation Services  
Department of Wastewater Management  
Department of Health - Wastewater Branch  
Board of Water Supply  
Commission on Persons with Disabilities



LEGEND

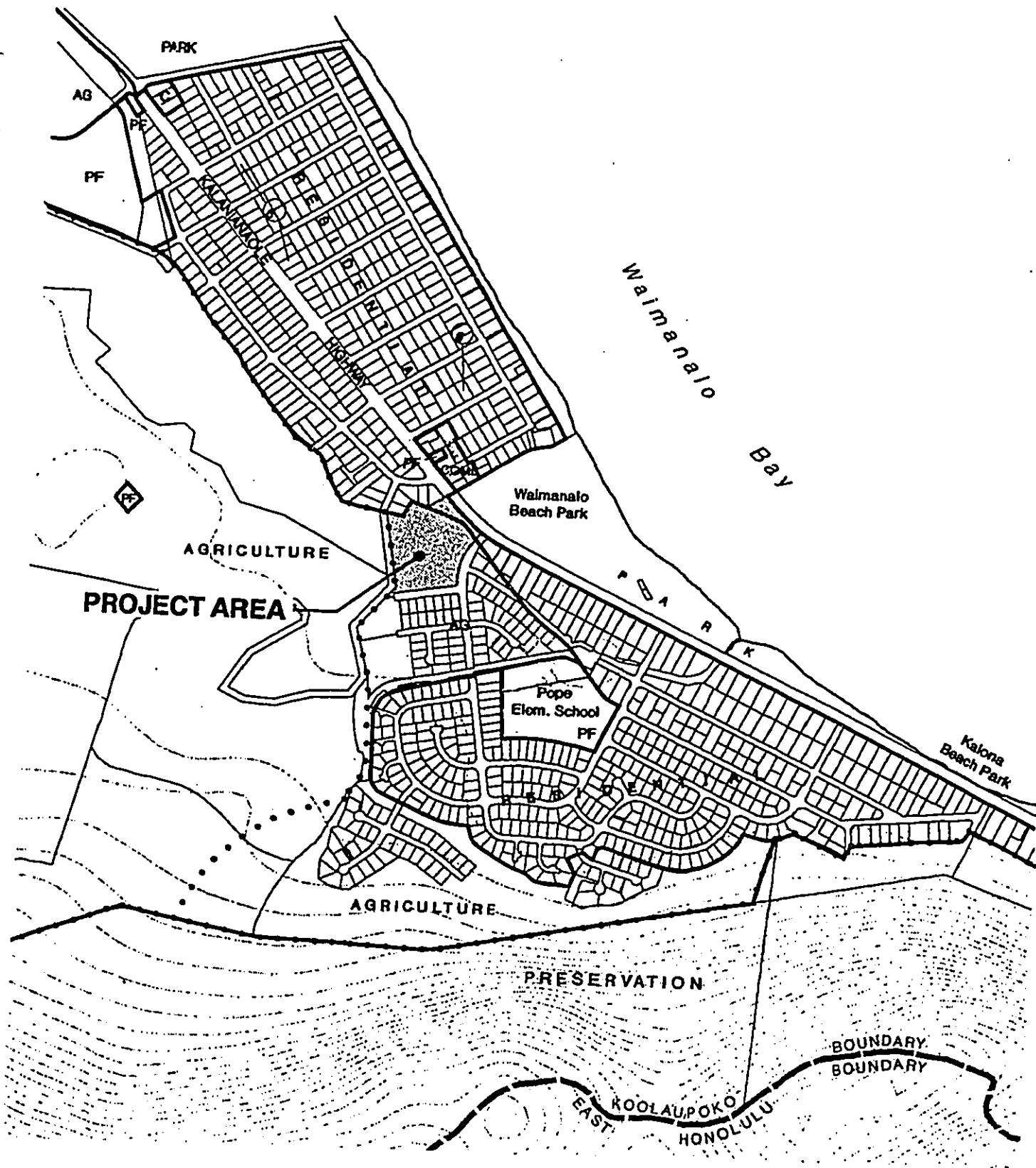
- U** Urban
- A** Agriculture
- C** Conservation

Source: State Land Use Commission - Department of Planning & Economic Development




FIGURE 6  
 State Land Use Boundary Map  
 WAIMĀNALO KŪPUNA HOUSING PROJECT



December 1997 **PBR**

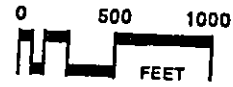


**LEGEND**

-  DP Lines
-  State Land Use Boundary Line
-  DP Boundary Line

Source: City & County of Honolulu - Department of Planning, January, 1996

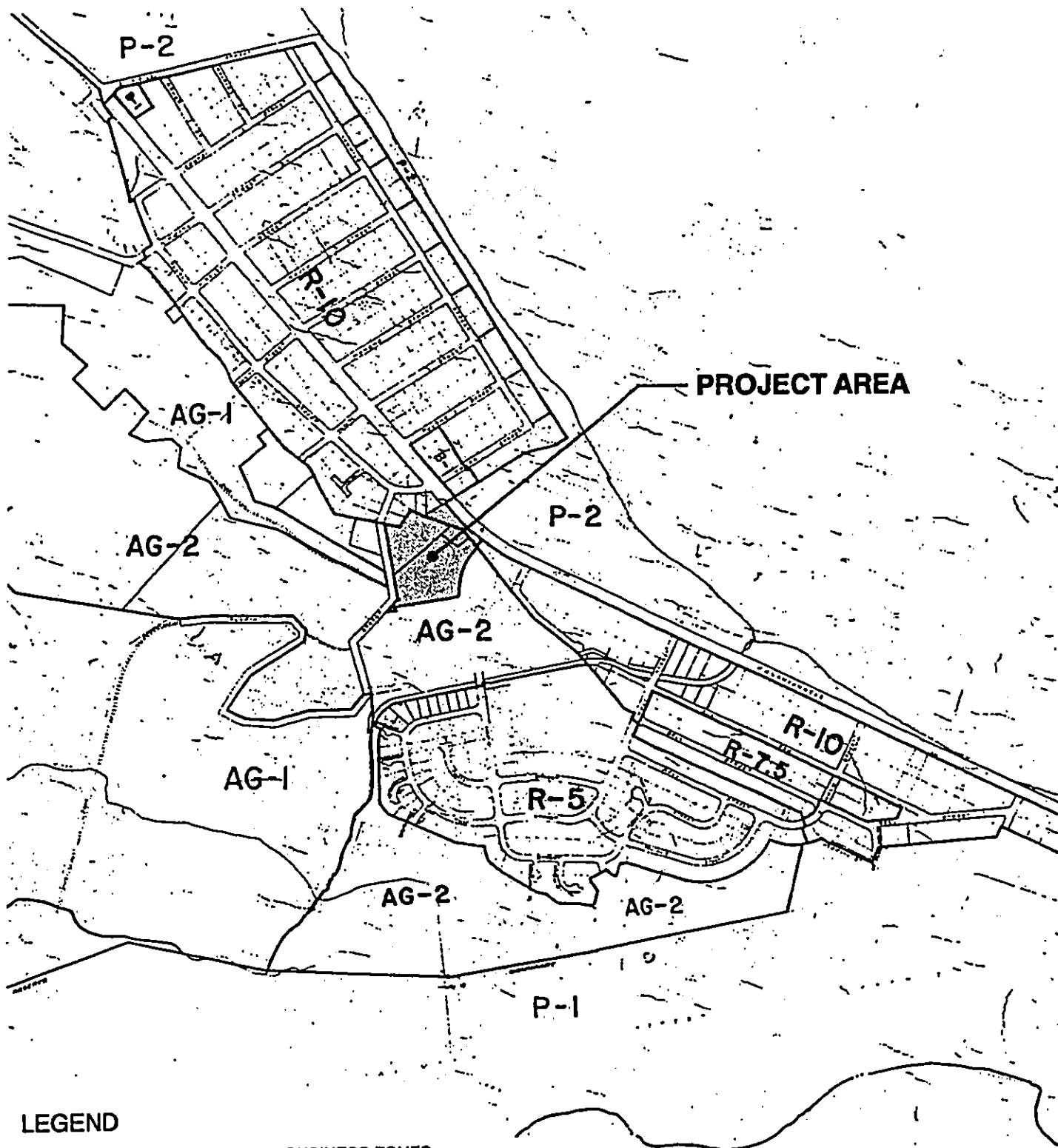
**FIGURE 7**  
**Koolau Pōkō Development Plan /**  
**Land Use Map**  
**WAIMĀNALO KŪPUNA HOUSING PROJECT**



March 1998







**LEGEND**

**PRESERVATION ZONES**

- P-1 Restricted
- P-2 General

**RESIDENTIAL ZONES**

- R-10 Residential
- R-7.5 Residential
- R-5 Residential

**BUSINESS ZONES**

- B-1 Neighborhood Business

**AGRICULTURAL ZONES**

- AG-1 Restricted
- AG-2 General

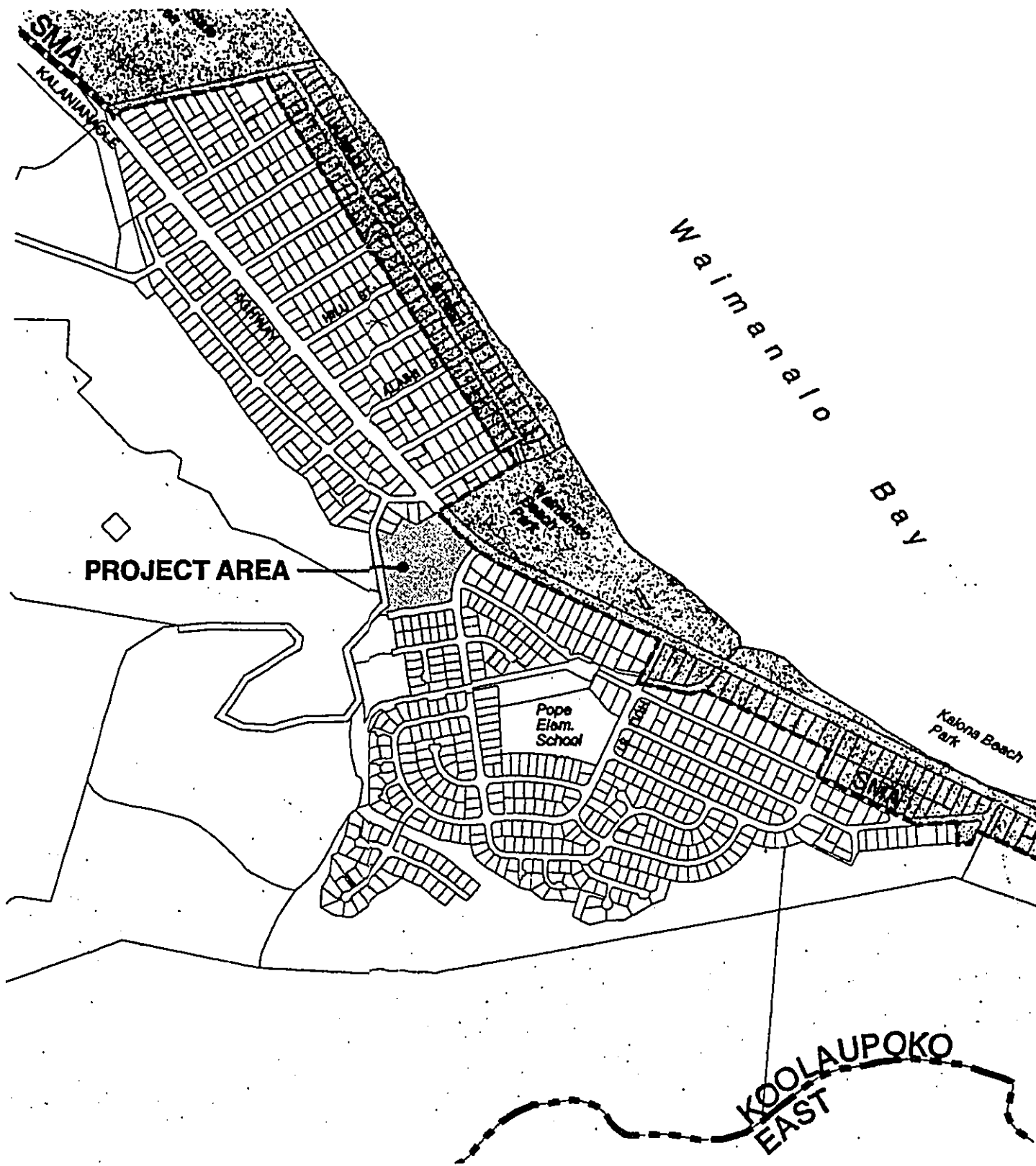
**FIGURE 8**  
**Zoning Map**  
**WAIMĀNALO KŪPUNA HOUSING PROJECT**

Source: Department of Land Utilization - City & County of Honolulu  
 October 1986






December 1997



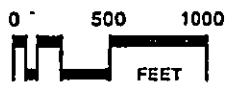


**LEGEND**

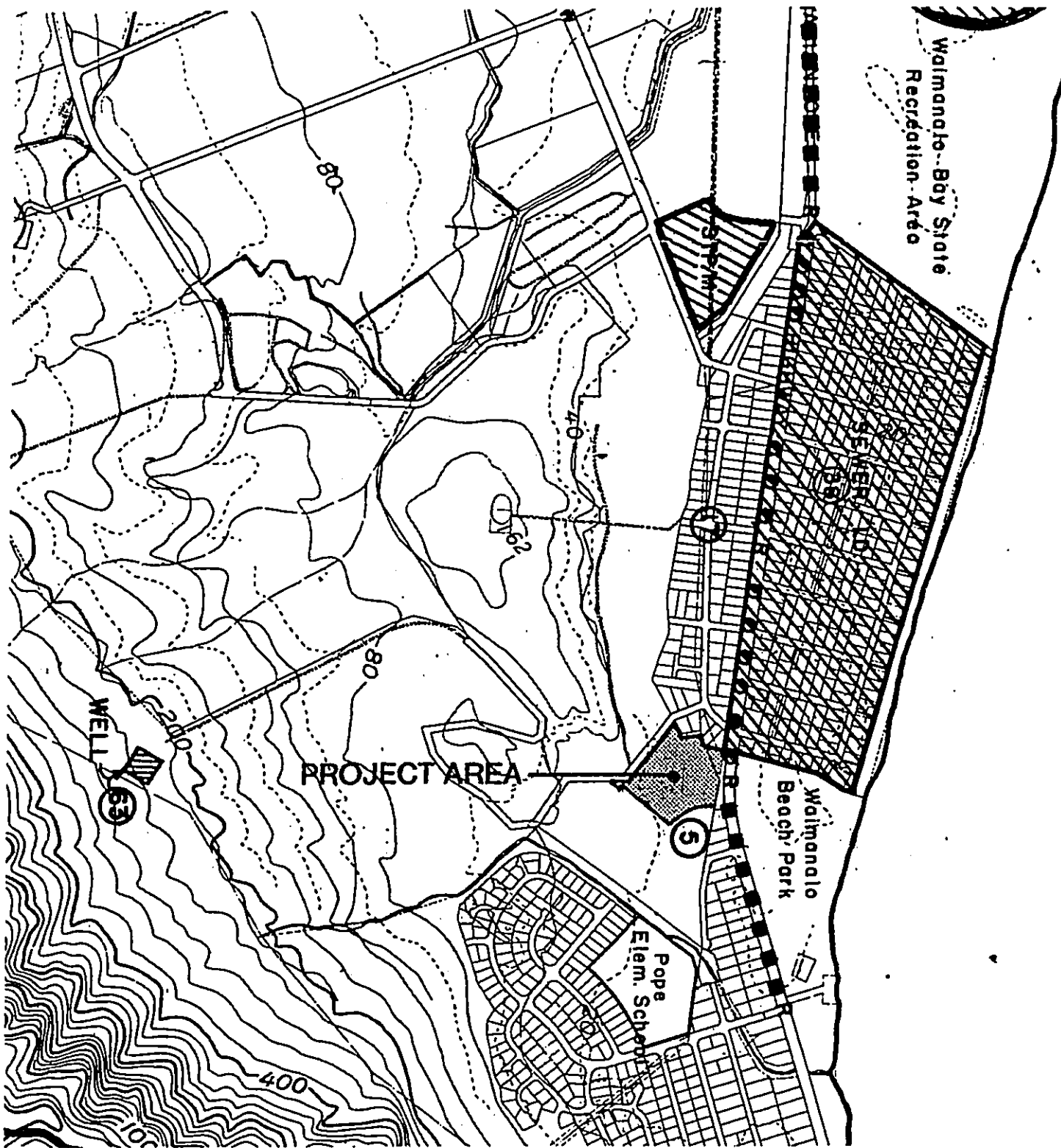
-  Special Management Area
-  SMA Boundary Line
-  DP Boundary Line

Source: Department of Land Utilization - City & County of Honolulu





**FIGURE 9**  
**Special Management Area Map**  
**WAIMĀNALO KŪPUNA HOUSING PROJECT**



December 1997 



**LEGEND**

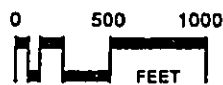
-  Additional Right of Way
-  Modify Existing STP
-  Sewer I.D.
-  Add Well Within 6 Years

Source: Department of General Planning, City and County of Honolulu, May 10, 1983.

**FIGURE 10**

**Ko'olau Poko Development Plan /  
Public Facilities Map**

**WAIMĀNALO KŪPUNA HOUSING PROJECT**



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4.0

DESCRIPTION OF THE AFFECTED ENVIRONMENT,  
POTENTIAL IMPACTS OF THE PROPOSED ACTION,  
AND MITIGATIVE MEASURES

WAIMĀNALO KŪPUNA HOUSING PROJECT  
Final Environmental Assessment

4.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT,  
POTENTIAL IMPACTS OF THE PROPOSED ACTION,  
AND MITIGATIVE MEASURES

The environment surrounding the proposed project includes the physical or natural environment and the human or social environment. This section describes the existing conditions, potential impacts to the environment, and mitigative measures.

4.1 PHYSICAL CHARACTERISTICS

Waimānalo is located on the windward side of the island of O'ahu and extends from the ocean to the base of the Ko'olau Mountain Range. Kalaniana'ole Highway is the major arterial roadway traversing the area.

4.1.1 Topography

The project site is generally flat with elevations ranging from about 13.5 feet to 25 feet mean sea level (MSL). The soil generally consists of surficial fills of about 1 to 2 feet thick overlying moderately stiff to very stiff, dark gray silty clay to depths ranging from about 2.5 feet to 7.5 feet below the existing ground surface. The silty clay layer is underlain by hard coral formation material. The northeast end of the site consists of a sandy soil layer of about 2 to 3 feet in thickness above the coral rock layer. The existing contours of the project area are shown of Figure 1.

Portions of the site are maintained for horse stable and community uses. The remaining area is generally covered with koa haole and other introduced scrub vegetation.

Flood Insurance maps indicate that the site falls within the 10 year, 100 year Zone X flood limits. The preliminary assessment of the project civil engineer is that the base flood elevation is at about 16.5 feet.

*Anticipated Impacts*

The implementation of the project will require the removal of the existing scrub vegetation, earthwork, and grading of the site. Since Flood Insurance maps indicate that the site falls within the 10 year, 100 year Zone X flood limits and the preliminary assessment is that the base flood elevation is at about 16.5 feet, filling is required to raise the ground elevation above 16.5 feet.

*Mitigative Measures*

All grading operations will be conducted in full compliance with dust and erosion control and other requirements of the City and County of Honolulu Grading Ordinance and the provisions of Chapter 11-60.1, Hawai'i Administrative Rules, Section 11-60.1-33 on fugitive dust. The grading area of the residential component is approximately five acres and the Commercial Center area is two acres. Best management practices (BMPs) to mitigate pollutants will be included in the construction plans.

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#### 4.1.2 Climate

The average temperatures in Waimānalo range from 65 to 83 degrees Fahrenheit with an average annual rainfall of approximately 40 inches, which ranges seasonally from 20 to 80 inches. Trades winds are generally from the northeast. Strong winds do occur at times in connection with storm systems moving through the area.

##### *Anticipated Impacts and Mitigative Measures*

Design of the residential kūpuna apartments utilizes the climatic attributes of the site and will be typical for a tropical climate. The proposed project will have no effect on climatic conditions and no mitigative measures are necessary. Project landscaping will help mitigate any localized temperature increases from parking areas, roadways, and buildings.

#### 4.1.3 Soils

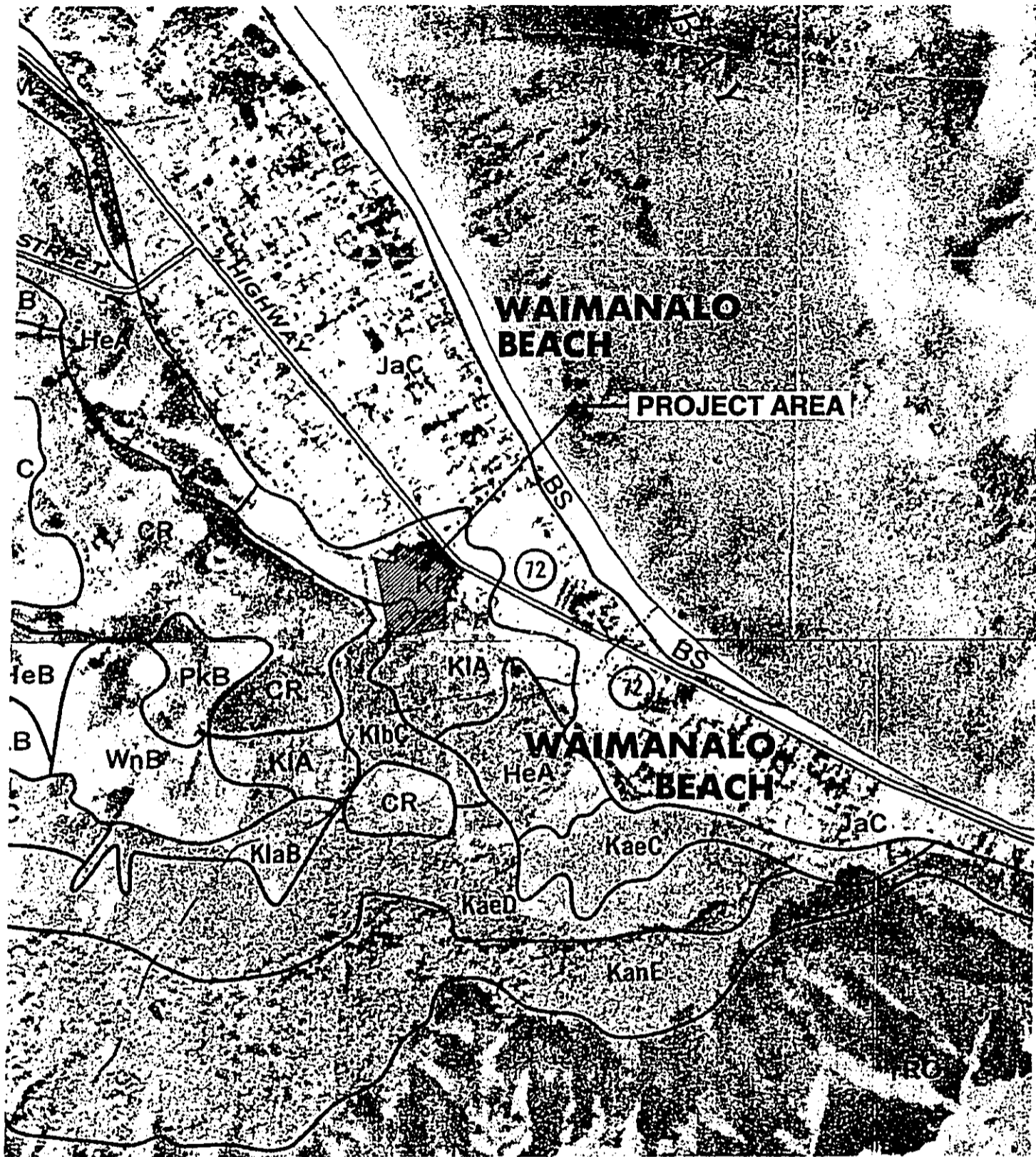
There have been three soil suitability studies prepared for Hawai'i whose principal focus have been to describe the physical attributes of land and the relative productivity of different land types for agricultural production. These are 1) Land Study Bureau Detailed Land Classification; 2) the Agricultural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

**Soil Conservation Survey.** As described in the *U.S.D.A. Soil Survey, Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lāna'i, State of Hawai'i*, the project site is comprised with the soil type K1A Kawaihāpai clay loam and K1bC Kawaihāpai Very Stony Clay Loam (Figure 11). This series consists of well-drained soils in drainageways and on alluvial fans on the coastal plains of O'ahu. These soils formed in alluvium derived from basic igneous rock in humid uplands. They are nearly level to moderately sloping. Elevations range from nearly sea level to 300 feet.

The soil characteristics for K1A Kawaihāpai clay loam, 0 to 2 percent slopes, include moderate permeability, slow runoff, with a no more than slight erosion hazard, and in some places is subject to flooding. K1bC Kawaihāpai very stony clay loam, 0 to 15 percent slopes, is mapped in a small area of the property which was formerly quarried.

**Detailed Land Classification.** a five-class productivity rating is applied using the letters A, B, C, D, and E with A representing the class of highest productivity and E the lowest. The physical characteristics of the soils of the property are generally unsuited for most soil-based forms of agriculture. The University of Hawai'i's Land Study Bureau *Detailed Land Classification of O'ahu*, has classified a portion of the project area according to overall productivity as Soils with "D30". The remainder of the property has not been classified (Figure 12).

**Agricultural Lands of Importance To The State of Hawai'i.** The State Department of Agriculture *Agricultural Lands of Importance to the State of Hawai'i (ALISH)* system of defining agricultural suitability has not classified the property according to its rating system (Figure 13). Most of the property is delineated within the existing urban development boundary, therefore, there are no soils classified as "prime agricultural land" or "other important agricultural land".



**LEGEND**

- K1A Kawaihapai Clay Loam
- K1bC Kawaihapai Very Stony Clay Loam

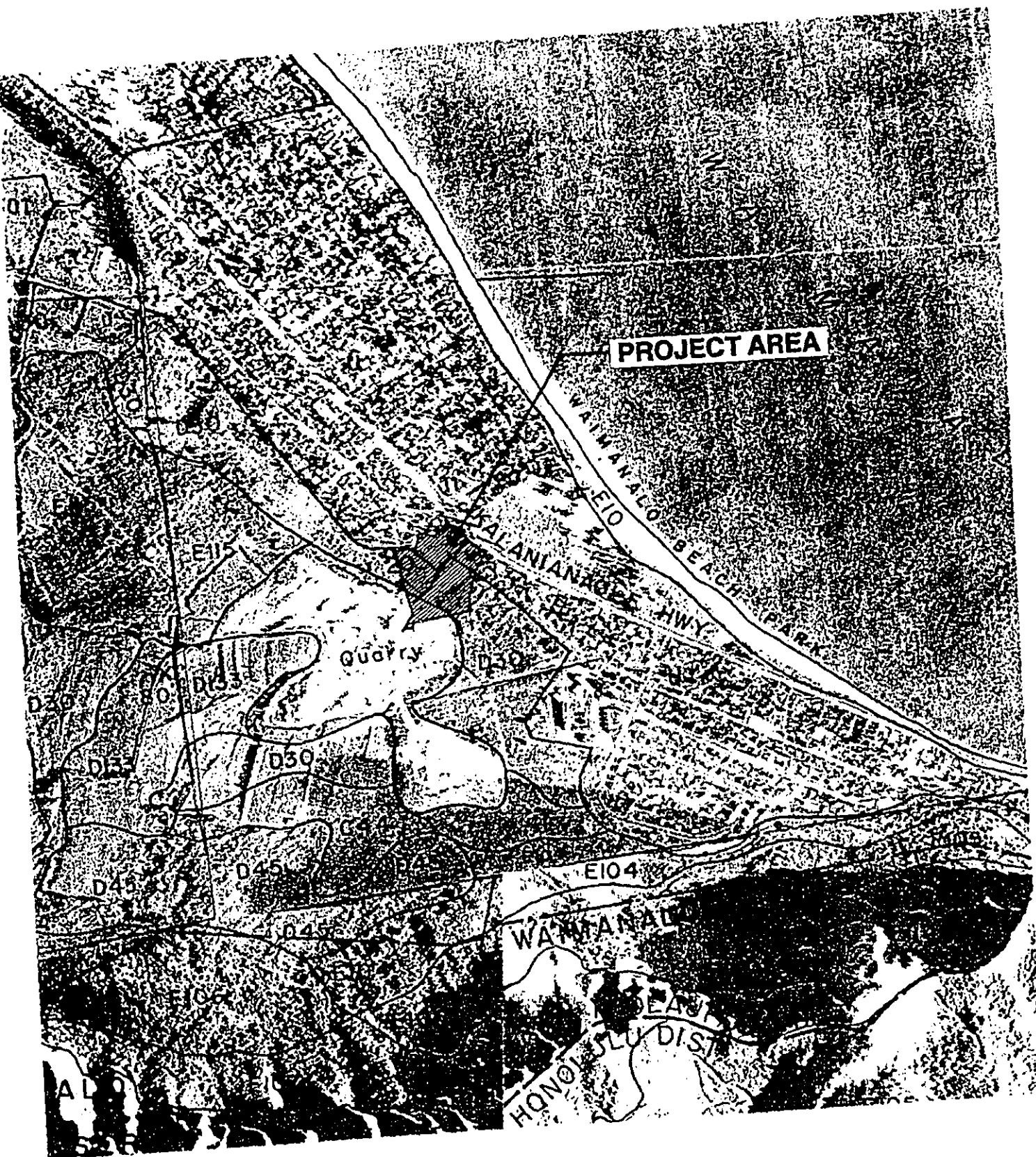
Source: U.S. Department of Agriculture, Soil Conservation Service & University of Hawai'i, August 1992

**FIGURE 11**  
**SCS Soil Survey**  
**WAIMANALO KŪPUNA HOUSING PROJECT**




March 1998



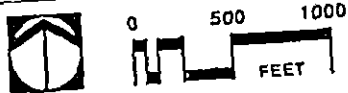


**LEGEND**

 Project Site

Source: Land Study Bureau, University of Hawai'i  
State of Hawai'i, May 1972

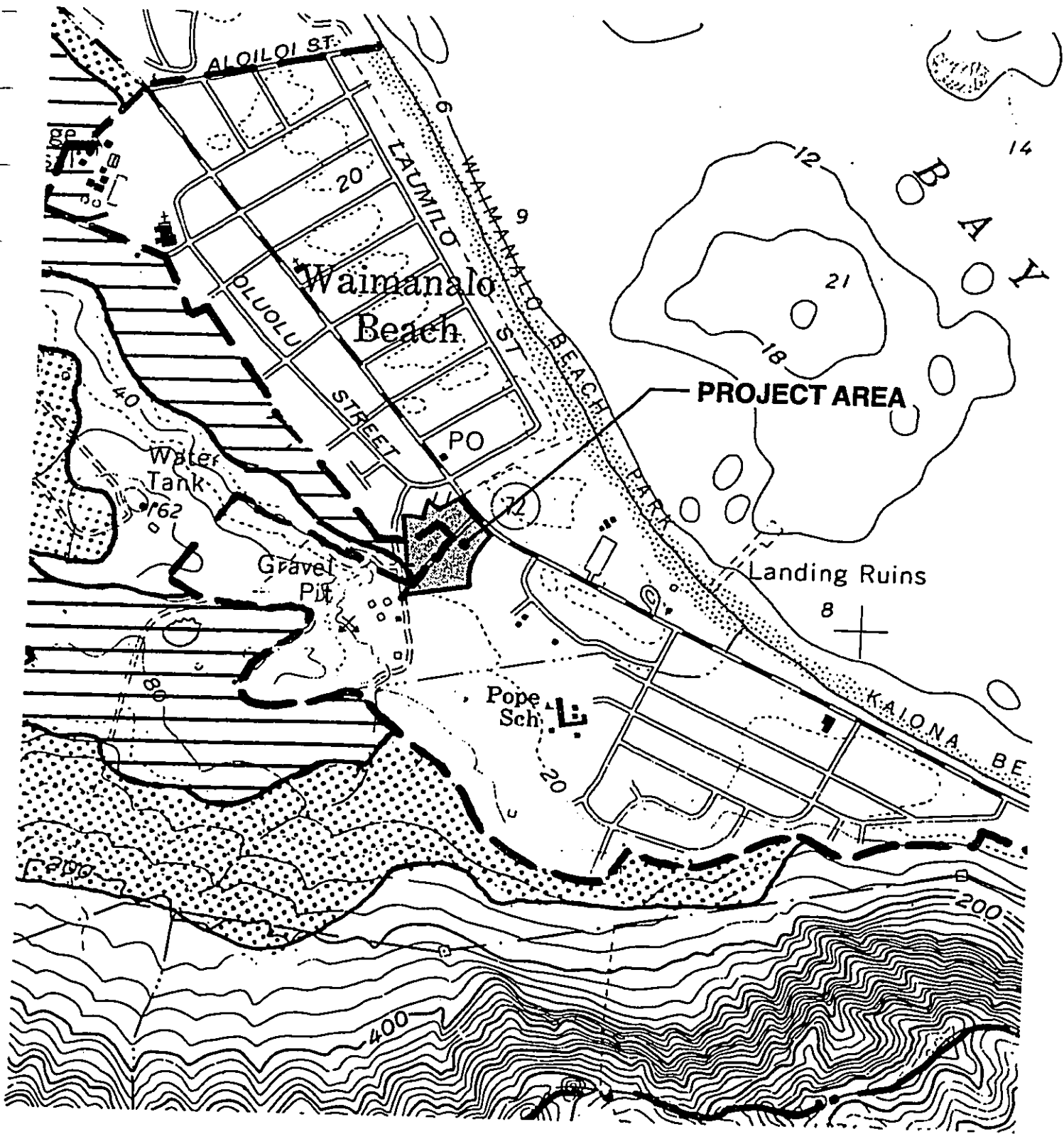
**FIGURE 12**  
Detailed Land Classification  
**WAIMĀNALO KŪPUNA HOUSING PROJECT**






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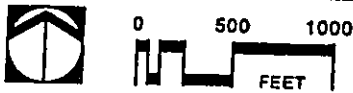


**LEGEND**

-  Prime Agricultural Land
-  Other Important Agricultural Land
-  Existing Urban Development

Source: Department of Agriculture-State of Hawai'i, January 1977

**FIGURE 13**  
**Agricultural Lands of Importance to the State of Hawai'i (ALISH)**  
**WAIMĀNALO KŪPUNA HOUSING PROJECT**



March 1998



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*Potential Impacts and Mitigative Measures*

The environmental factors of the site limiting its agricultural potential are primarily the soils. Rainfall in the project area is sufficient for soil based agricultural crops. However, as with the soils of the project site, other areas within Waimānalo and in the state exist where soil conditions are better suited for commercial agriculture.

**4.1.4 Drainage**

A Preliminary Civil Engineering Report has been prepared (R.M. Towill Corporation 1997) and is attached as Appendix A. The report includes a description of the existing drainage conditions and the proposed improvements.

The Flood Insurance Rate Map (Community-Panel Number 150001 0095B) indicates that most of the project site falls within Zone X areas which have been determined to be outside of the 500-year flood plain. Small portions of the site are in Zone X (areas of 500-year flood; areas of 100-year flood with average depths of less than one foot or with drainage areas less than one square mile). The map indicates that the project site falls within the fringe of the 10 year and 100 year Zone X flood limits (Figure 14). Based on a preliminary flood study by the project engineer the base flood elevation has been determined to be at 16.5 feet. The site will therefore require grading to raise the proposed dwellings above the base flood elevation.

The existing runoff at the site generally flows towards the northwest (toward Kailua) parallel to Kalaniana'ole Highway.

*Potential Impacts and Mitigative Measures*

The project site is partially located within the 100 year flood limit. However, since the site is located within a backwater area or within the area of low velocity, filling the area with a minimum layer of 2-feet of non-expansive material would be required to achieve a raised elevation of 16.5 feet.

The project site is governed by the rules and regulations of the City and County of Honolulu Ordinance 96-34 which requires that additional drainage runoff created by the development be retained onsite by way of detention ponds, retention ponds, infiltration wells or ditches, holding tanks, diversion ditches or swales, drain pipes, check dams, or debris basins.

The proposed Kūpuna Housing and Kūpuna Center development will increase runoff to surrounding areas because impermeable surfaces will be increased by the development. Therefore, underground retention beds will be designed to percolate additional developed drainage runoff. If percolation tests show poor results, runoff will be piped to the existing drainage systems along Nakini and 'Iluhole Street. The onsite drainage system will consist of inlet boxes, drain manholes, 18-inch reinforced concrete drain pipes, and percolation beds.

At the Commercial Center, onsite detention type drainage system will be designed to accommodate the increase in drainage runoff from the development.



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The proposed alterations to the existing environment will be limited to cut and fill including grading and vegetation removal. Drainage patterns will not be altered. Flows which currently sheet flow will be directed to a new on-site drain system which will drain to the existing system in the surrounding roadways.

The proposed improvements are based on methods outlined in Title MC-15, Department of Public Works and Waste Management, Subtitle 01, Chapter 4. The increase in runoff of approximately 10 percent is not expected to have any adverse effects on the neighboring areas. Additionally, the proposed improvements will improve the quality of the runoff leaving the site.

The amount of impervious area added by the project is small in relation to the larger basin that changes to the runoff coefficient are negligible. Therefore, it is concluded that the proposed project will not increase the peak discharge to the existing drain system. In addition to standard drainage improvements, the proposed drainage improvements will be constructed in conformance with all applicable County Department of Public Works design criteria. Storm runoff from paved areas will be directed to planted areas for low flows, or water quality inlets will be provided.

Long-term operational activities are not expected to create significant effects, primarily due to the nature of the project.

Detailed site specific measures for erosion and sediment control will be specified in the grading plans. Silt laden runoff from the site is anticipated during construction. The contractor will use silt fences around the perimeter of the construction area and siltation basins to prevent the silt laden runoff from leaving the site.

#### **4.1.5 Natural Hazards**

As described above, flood hazards are primarily identified by the Flood Insurance Rate Maps ("FIRM") prepared by the Federal Emergency Management Agency (FEMA), National Flood Insurance Program. The flood zone of the subject property falls within two areas; Zone X and beyond Zone X (a lower flood risk). Zone X pertains to areas of the 500 year flood (areas of 100 year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile), and areas protected by levees from 100 year flood.

The Hawaiian islands are associated with volcanic eruption or tectonic movement. All structures will be constructed for protection from earthquakes in accordance with the Uniform Building Codes adopted by the City and County of Honolulu.

The State of Hawai'i has been affected twice in the past 15 years by devastating hurricanes, 'Iwa in 1982 and 'Iniki in 1992. While it is difficult to predict these natural occurrences it is reasonable to assume that future events could be likely given the recent record. The project area, as the rest of the island or state, is no more or less vulnerable to the destructive winds and torrential rains associated with hurricanes and cyclones. The Pope Elementary School located less than a quarter mile away between Nakini Street and Huli Street is the designated Emergency Evacuation Center for this area of O'ahu.

WAIMĀNALO KŪPUNA HOUSING PROJECT  
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*Impacts and Mitigation Measures*

The project will not exacerbate any hazard conditions. Planning and design for the project will implement the following measures to mitigate any potential damages.

(1) **Protection of Buildings.** The potential impact of destructive winds and torrential rainfall of tropical hurricane and cyclones on structures within the project will be mitigated by compliance with the Uniform Building Code adopted by the City and County. All structures will be constructed for protection from earthquakes and tropical hurricanes and cyclones in accordance with the requirements of the City and County.

(2) **Drainage Improvements.** Drainage improvement will include any provisions to prevent any localized flooding problems. Raising the ground elevation of the site from about 12 feet to approximately 16.5 feet will mitigate flooding events.

**4.1.6 Underground Injection Control**

The project is located mauka of the underground injection control (UIC) line which is located at the Kalaniana'ole Highway.

*Potential Impacts and Mitigative Measures*

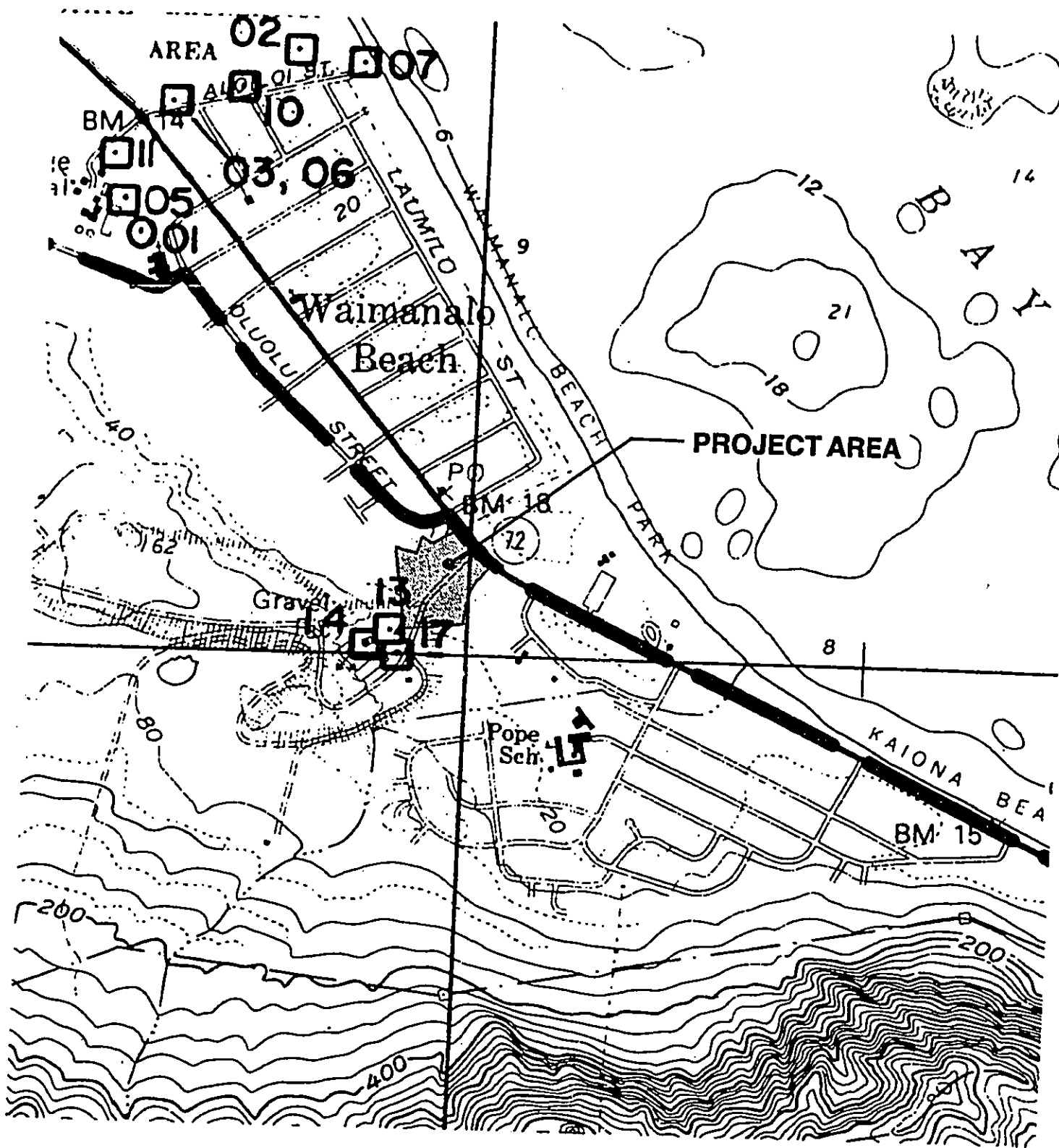
The project's location above the UIC line requires that the subsurface disposal of fluids (i.e., leech field effluent from the temporary wastewater system) be subject to the Department of Health's UIC regulations, Title 11, Chapter 23, Hawaii Administrative Rules (Figure 15). The project will comply with all DOH rules.

**4.1.7 Flora and Fauna**

**Botanical Resources.** A field study to assess the botanical resources at the project site has been undertaken by Char & Associates. The primary objectives of the survey were to describe the major vegetation types, inventory the flora, search for threatened and endangered plants, and identify areas of potential environmental concern. The botanical survey report is attached as Appendix B.

The property has been disturbed in the past by quarrying activities and vegetation on the unmaintained portions consist almost exclusively of introduced or alien species including koa haole, Guinea grass, swollen fingergrass, ivy gourd, etc. There are a few native plants on the site; these are 'ilima, 'uhaloa, and koali'awa (*Ipomoea indica*). These species are indigenous, that is, they are native to the islands and also elsewhere. The present community center and horse stables contain a number of plants originally introduced by the Polynesians. These "Hawaiian heritage plants" include kamani, 'ulu, niu, kukui, and ti.

No threatened or endangered species of concern (U.S. Fish and Wildlife Service 1997) were found during the survey. No sensitive native plant-dominated communities (Hawai'i Natural Heritage Program 1994) exist on the site. All of the plants observed on the subject parcel can be found in similar environments throughout the Hawaiian Islands. The botanist states that this is not surprising as the property has been extensively disturbed and is surrounded by residential development.

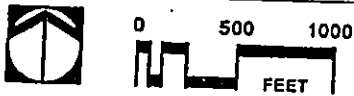


**LEGEND**

- Underground Injection Control (UIC) Line
- Injection Well
- ◻ Drinking Source
- ◻ Other Well

Source: Underground Injection Control Program Map  
 Department of Health, State of Hawai'i, July 1984

**FIGURE 15**  
**Underground Injection Control**  
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**Wildlife Resources.** No particularly unique or special habitat features essential to native wildlife were discovered on the site. The disturbed site supports an array of introduced birds commonly found in Waimānalo: Red vented bulbul, white eye, zebra dove, spotted dove, red crested northern cardinal, English sparrow, House finch, Common mynah, chestnut mannikin, nutmeg mannikin, egret, barn owl, and shama thrush. Native species which may occur in the area may include the aku'u or Black crowned night heron.

*Potential Impacts*

The proposed use of the parcel for the kūpuna housing and Commercial Center should not have a significant negative impact on the botanical or wildlife resources. The vegetation at the site is dominated by introduced species. Introduced or alien species are all those plants brought to the islands by humans, intentionally or accidentally, after western contact, that is, Cook's arrival in 1778.

Some of the existing Hawaiian heritage plants found at the community center lot and the horse stables will be removed, as necessary, and transplanted and incorporated into the landscape plan.

While the short-term construction activities would likely disrupt the introduced birds that utilize the property, the surrounding rural landscape would more than adequately absorb the displaced birds until the end of construction.

*Mitigative Measures*

(1) **Landscaping with Native Plantings.** The project will be extensively landscaped with native and introduced plantings including large and medium canopy trees such as wiliwili, kukui, narra, kou and milo; fruit trees such as breadfruit, noni, mango and avocado; and accent trees such as hala, citrus, 'awa, and 'ohai ali'i. In addition plantings will include coconut and loulu palms, taro, hibiscus, and ti, laua'e fern, 'ilima and 'ākia.

(2) **Maintenance or Use of Existing Landscape Plantings.** To the extent practicable the "Hawaiian heritage plants" which presently grow on the property will be utilized in the landscaping of the project.

## **4.2 HUMAN ENVIRONMENT**

### **4.2.1 Archaeological and Historic Resources**

The site has been extensively disturbed in former quarrying activities.

*Potential Impacts and Mitigative Measures*

The DLNR State Historic Preservation Division has stated, "Activities associated with the abandoned quarry would have destroyed any historic sites that might have been present. Because there are no historic sites at the location, this project will have "no effect" on historic sites." The State Historic Preservation Division letter is attached as Appendix C.

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**4.2.2 Roadways and Traffic**

A traffic assessment for the project was performed by The Traffic Consultant and is attached as Appendix D; findings are summarized below.

**Roadway System.** Kalaniana'ole Highway is a two-lane, two-way arterial highway between Hawai'i Kai and Olowalu. A two-way/exclusive median left turn lane is located along Kalaniana'ole Highway fronting Waimānalo Beach Park and the subject project site. Kalaniana'ole is unsignalized at the intersection with Nakini Street.

Nakini Street is a two-lane, two-way collector street, which extends in the southern direction through the existing Hawaiian Home Lands residential subdivision. Nakini Street is stop-controlled at its Tee-intersection with Kalaniana'ole Highway.

Ilauhole Street is a two-lane, two-way cul-de-sac street. Ilauhole Street intersects Nakini Street at a stop-controlled Tee-intersection. Ilauhole Street is being extended through an expansion of the residential subdivision.

**Traffic Conditions.** According to State Department of Transportation (DOT) data collected in 1997, Kalaniana'ole Highway, fronting the project site carries 15,760 vehicles per day in both directions. The AM peak hour of traffic on Kalaniana'ole Highway occurs between 7:15 AM and 8:15 AM, with a total of 1,230 vehicles per hour (vph) total in both directions. The PM peak hour of traffic occurs between 4:15 PM and 5:15 PM, when Kalaniana'ole carries a total of 1,299 vph.

*Potential Impacts and Mitigative Measures*

**Trip Generation.** During the AM peak hour of traffic, the mixed-use project is expected to generate a total of 198 vehicles per hour (vph) -- 99 vph entering the site and 99 vph exiting the site. During the PM peak traffic, the project is expected to generate a total of 196 vph -- 86 vph entering the site and 83 vph exiting the site. As expected, the Commercial Center is the major trip generator, accounting for about 90 percent of the total traffic generated by the project.

**Findings.** Traffic generated by the Commercial "convenience" Center includes "pass-by" trips, (i.e., trips attracted from traffic already "passing by" the site on adjacent streets). Pass-by trips could account for about 60 percent of the total traffic generated by the site, thereby reducing the "new" trips on the roadways to less than one half of the total site-generated traffic.

The traffic generated by the Commercial Center would turn directly off Kalaniana'ole Highway or turn onto Nakini Street to the secondary access driveway. The left turn traffic demand at the commercial access driveway on Kalaniana'ole Highway is expected to meet the American Association of State Highway and Transportation Officials volume warrants for an exclusive left turn lane. An exclusive left turn lane at the project access driveway could be accommodated by State DOT plans for the future improvement of Kalaniana'ole Highway.



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**4.2.3 Noise**

Because the project site is surrounded by residential and vacant lands, the existing background ambient noise levels result from the natural sounds of wind, foliage and birds, as well as intermittent aircraft and vehicular traffic.

*Potential Impacts and Mitigative Measures*

It is not anticipated that on-going noise generated from the project's residential and commercial land uses will exceed acceptable levels. During the construction phase, there will be noise impacts generated from short-term construction activity. Construction noise is typical of development projects and do not warrant additional mitigation measures. Noise associated with the operation of the project will be mitigated through landscaping, building siting and design in accordance with the City and County of Honolulu and Department of Health requirements.

**4.2.4 Air Quality**

Both Federal and State standards have been established to control ambient air quality. At present, six parameters are regulated including: 1) particulate matter; 2) sulphur dioxide; 3) nitrogen dioxide; 4) carbon monoxide; 5) ozone; and 6) lead. Hawai'i's standards are more stringent than comparable national limits except for sulphur dioxide. Regional and local climate, together with the type and amount of human activity, generally dictate the air quality at a given location. Within the surrounding area agricultural activities and industrial uses are known to create odor nuisances from time to time. Nevertheless, present air quality is estimated to be good; this is primarily due to the predominant northeast trade winds.

*Potential Impacts and Mitigative Measures*

Construction of the proposed project will not significantly impact air quality. Vehicular emissions will increase from construction equipment during the short-term construction period and over the long-term from highway passenger vehicles. However, State and Federal air quality standards will not be exceeded and no significant adverse impacts are anticipated.

Mitigation measures available to minimize air quality impacts include dust control measures such as frequent watering during construction and rapid establishment of plant materials once grading is completed. However, should dirt be tracked onto the highway, washdown will be undertaken to prevent fugitive dust formation. Increased vehicular traffic will not violate state or federal air quality standards based on the moderate level of existing traffic volumes in the project region.

Odor nuisances from off-site agricultural and industrial land uses in the Waimānalo community may affect kūpuna during periods of kona weather, similar to the rest of the community. The prevailing winds at Waimānalo are northeasterly.

According to Pope Elementary School Health Room staff (personal communication, March 10, 1998), odors from nearby cows and pigs are present at the school, however, odors originating from the biowaste technology plant are not present on the school campus. There have been no known incidences of illness related to the operation of the biowaste technology plant at Pope Elementary School. Consequently, depending on wind patterns, odors (agricultural and industrial) may from

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time to time be present at the kūpuna housing project site. However, the location of the kūpuna project near the beach is approximately one half mile from the upwind biowaste technology plant. Therefore, through distance and location, kūpuna will be buffered from odors and emissions. The operators of the kūpuna housing project will monitor the status of odors and emissions and their impact on the residents.

#### **4.2.5 Visual Resources**

The project site is visible from the adjacent Kalaniana'ole Highway, Nakini Street, 'Ilauihole Street, Kula'iwi Street, and adjacent existing residential uses. Panoramic views from the site extend to Waimānalo Beach Park and includes the spectacular Ko'olau Mountain Range. Photographs of the project site are shown in Figures 16A, 16B, and 16C.

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

Attributes of the site allows external views to extend the perception of space beyond the confines of the dwelling unit. Views are particularly important for Hawaiian elders to maintain the traditional relationship with the land, or aina, and this special location grants both mauka and makai views of the ahupua'a. The low-rise nature of the building design will encourage maintenance of this relationship and emphasize the rural qualities of Waimānalo. Views at the project of the Ko'olau range are optimal, in addition makai views of the ocean are available from portions of the property.

The proposed project will impact the immediately adjacent single unit residential areas. Visually, the single story apartment buildings will be integrated into the surrounding area by establishment of appropriate landscape plantings.

#### **4.2.6 Social and Employment Characteristics**

A 1995 study indicated that except for agricultural related activities, employment opportunities in Waimānalo are generally limited to retail, farming and outdoor recreation. Most of the working residents of Waimānalo are employed outside of the community.

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

Socio-economic. The provision of affordable kūpuna housing units will increase the housing choices for the elderly Hawaiian and native-Hawaiian population. The Waimānalo Kūpuna Housing Project has been planned through extensive interaction with the community. Consequently, the design includes elements which will enhance the lives of the future residents. The location is advantageous for the large number of Hawaiian elders presently residing in Waimānalo. The future development of commercial uses on the property will enhance and benefit the residents. Shopping opportunities as well as employment opportunities within walking distance of the project will expand the commercial base in Waimānalo. Positive social impacts from construction related employment and operation of the commercial uses will result from the proposed project.

Population. The proposal will house approximately one to two persons per residential unit. As an elderly housing residential complex, the number of persons per unit is lower than what can be



A.



B.

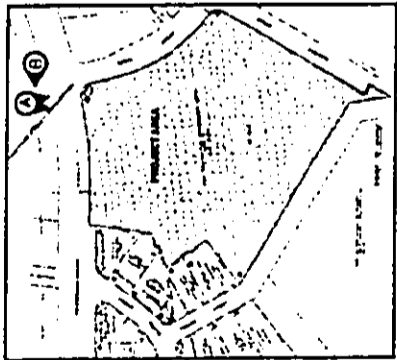
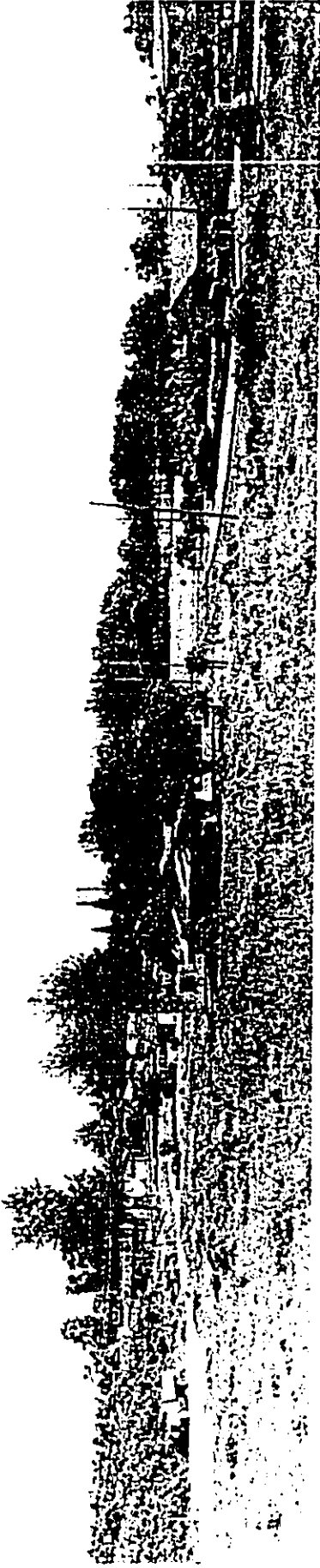
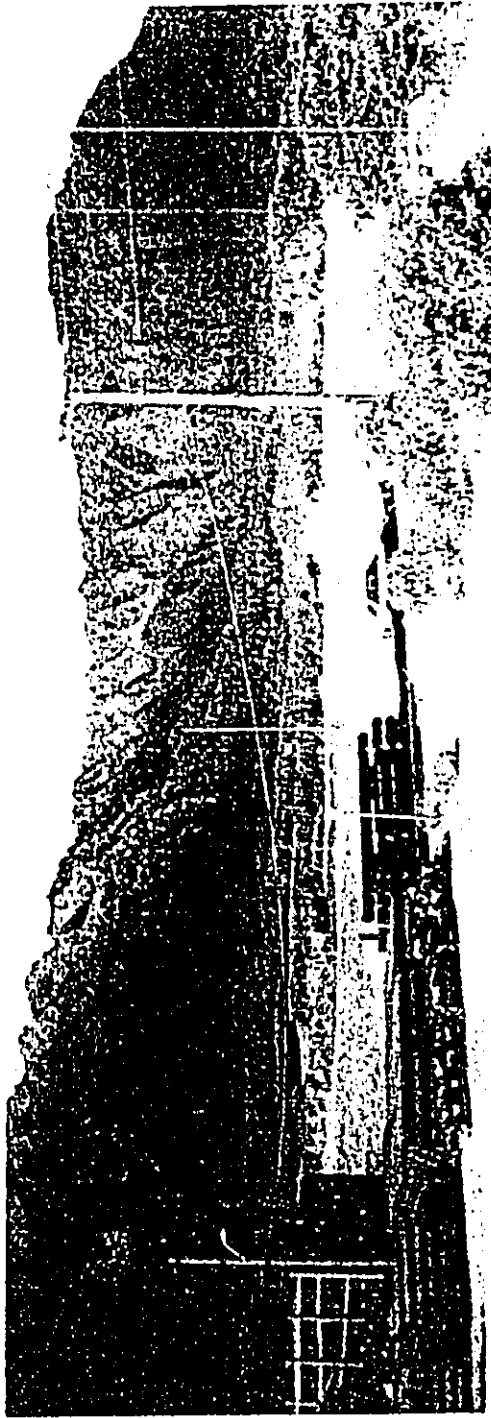


FIGURE 16 A  
 Site Photographs  
 WAIMĀNALO KŪPLINA HOUSING PROJECT



C.



D.

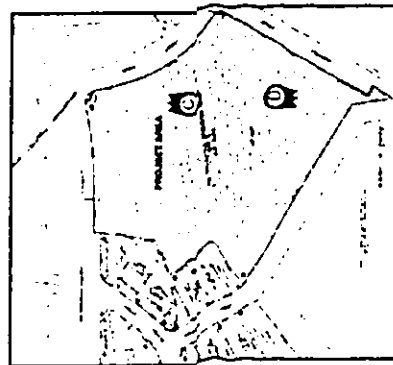


FIGURE 16 B  
 Site Photographs  
 WAIMĀNALO KŪPUNA HOUSING PROJECT



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E.

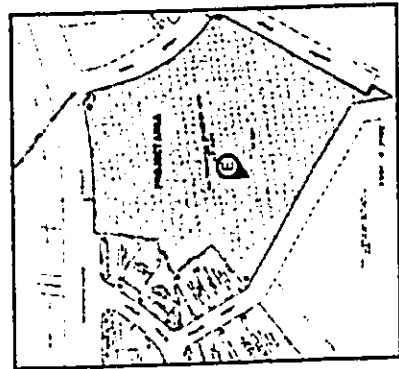


FIGURE 16 C  
Site Photographs  
WAIMĀNALO KŪPUNA HOUSING PROJECT



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expected from a single family or standard multiple unit dwelling. Because 40% of the current elderly population of Waimānalo are native Hawaiian, it is anticipated that some of those residents and other part-Hawaiian elders may relocate to the project; therefore the increase in new residents into Waimānalo is not expected to be significant.

Employment. According to the State Department of Labor and Industrial Relations, the estimated average unemployment rate in September 1997 for Waimānalo was 8.3 percent. This is compared to 5.1 percent unemployment within the City and County of Honolulu and 6.1 percent in the State of Hawai'i during the same time period. The construction of the project will provide short-term employment opportunities and the operation of the Commercial Center will provide long-term employment opportunities to the area.

Affordable Housing. The central theme for the project is housing units which are affordable to elders. Considering the limited resources of the future residents and income they need to maintain an independent lifestyle, affordability is paramount to legitimize the project. Although this document generally describes the project as an affordable rental project, a definitive resolution has not yet been made if units will be rented, leased or sold outright. At last consideration, cost per unit when amortized through financing brought possible rents to a cost of about \$500/month. Past discussion with DHHL had speculated rents should be at the \$200/month unit cost. Also unclear is the impact the Commercial Center lease rent income will have on the costs to be borne by the residents.

The project will increase the supply of new affordable elderly housing in Waimānalo. The project proposes 84 new units (83 for elderly kūpuna and one Manager's unit) within the five-acre site.

This project will serve the existing very low, low, and moderate income residents of the community primarily by providing affordable living units for the elderly population of Waimānalo. One hundred percent of the proposed units will be occupied by low to moderate income households. Of these, 70 percent are expected to be within the very-low income bracket. The project will service this target group for the life of the project, which is anticipated to be 55+ years.

There is a severe overcrowding and "hidden homeless" problem in Waimānalo and in other areas across the state. Many Waimānalo families have two or three generations and up to 18 people living in a three bedroom home. Priority would be given to elderly Hawaiian Home Lands applicants who are wait-listed and current elderly homesteaders who would be willing to give up their homesteads to a qualifying younger family member, or the next person on the wait list. Agencies that would provide referrals are DHHL, ALU LIKE, and the Waimānalo Health Center.

#### **4.2.7 Economic Factors/Government Revenues**

Public Costs or Revenues. The Office of Hawaiian Affairs, as the developer of the project, would expend internal and other funds to construct the project. The Department of Hawaiian Home Lands, as the landowner, will commit 7.29 acres toward the project. Public infrastructure costs include wastewater and water connections to the public utilities. A market study has indicated that Waimānalo can support an additional 10,000 square feet of retail space whose lease rents would offset the cost of the operations of the housing project. Indirect public revenues will be generated by income taxes paid by construction workers.

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**4.2.8 Character of the Community**

This project will be located in the heart of the Waimānalo Hawaiian Home Lands area and will contribute towards promoting community stability by providing new residential opportunities for Hawaiian elderly, and thus ease overcrowding in some of the households in the area. The development of the Kūpuna Center will provide project residents with needed space for community and cultural activities that can serve to inform, educate and unite them. The planned commercial "Hawaiian Marketplace" will help bring economic stimulus and stability by providing Waimānalo residents with economic and employment opportunities.

Support services will be available to the elderly tenants through the Kūpuna Center. Hawaiian cultural activities, educational classes, social services, and health services will be provided.

Community involvement has been and will continue to be an integral part of this project. OHA has met with the Waimānalo Hawaiian Home Association and received their support for the development of the project. OHA will continue to consult with the Association throughout the planning and development process because the project will be located in the heart of the homestead area.

OHA has also discussed with the Waimānalo Health Center, the possibility of operating a small clinic for the residents or for the homestead community at large. Gregg Meyer, Administrator of the Lunalilo Home, a native Hawaiian elderly care organization, has served as an advisor to the project.

The proposed project may increase the population of the neighborhood slightly. The provision of commercial uses will enhance the commercial base in Waimānalo and generate income for the operation of the kūpuna housing. Indirectly, the economic base of the region will be expanded, employment opportunities will be enhanced, and government revenues will be increased from income taxes paid by construction workers. It is anticipated that there will be only a slight increase on the demand for public services and infrastructure.

**4.2.9 Infrastructure**

Roads, water, sewer, drainage, electrical, and communications improvements necessary for the project will be provided using existing easements. A Preliminary Civil Engineering Report is included as Appendix A. No significant off-site infrastructure improvements will be required for the project.

**4.2.9.1 Roadways**

There are no improved roadways on the subject property. One unimproved dirt road formerly used by the quarry operator connects to Kalaniana'ole Highway adjacent to the existing Community Center building near Nakini Street. The project site is bordered by the following roadways:

- Kalaniana'ole Highway, 60 feet right-of-way (State of Hawai'i owned) to the north
- Nakini Street, 56 feet right-of-way (State-owned and City and County of Honolulu maintained) to the east
- 'Iluhole Street, 56 feet right-of-way (State owned and City maintained) to the south
- Unpaved Kula'iwi Street (State-owned and City and County maintained) to the west

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*Potential Impacts and Mitigative Measures*

Onsite roadways for the kūpuna housing, Kūpuna Center, and commercial center will be designed to accommodate refuse and fire vehicles and will be in accordance with the City's Subdivision Rules and Regulations. Roadways will be designed according to the Americans with Disabilities Act accessibility guidelines.

New driveways which would connect to the the existing County and State roadways include the following:

- Waimānalo Kūpuna Housing Project entrance at Ilauhole Street
- Commercial Center entrance at Nakini Street
- Commercial Center entrance at Kalaniana'ole Highway

Kūpuna Housing. The proposed Kūpuna Housing and Kūpuna Center will be accessed by a two lane 50-foot wide concrete drop driveway from 'Ilauhole Street. Approximately 88 parking stalls will be provided onsite including three handicap accessible parking stalls (one van accessible).

Commercial Center. The Commercial Center will be accessed from two locations at Kalaniana'ole Highway and Nakini Street. A 20-foot project setback is provided at Kalaniana'ole Highway to accommodate a future widening of the highway by the State DOT. The findings of the traffic assessment indicate that unrestricted left turns at the highway entrance to the Commercial Center can be accommodated by an exclusive left turn lane which could be accommodated by the DOT's future improvements to the highway at this location. About 50 stalls will be located on-site including two handicap accessible parking stalls (one van accessible).

Traffic impacts have been described in Section 4.2.2.

4.2.9.2 Water System

The existing water system about the project site consists of 12-inch lines within Kalaniana'ole Highway, Nakini Street, and 'Ilauhole Street. The source of the water system in the project vicinity is the Board of Water Supply 230' system. An existing 12-inch waterline exists along the 'Ilauhole Street Extension. A new lateral and water meter will have to be installed to serve the parcel. The Department of Hawaiian Home Lands has sufficient water allocation to be assigned for this parcel.

*Potential Impacts and Mitigative Measures*

The estimated average daily demand for water for the kūpuna residential project is approximately 20,000 gallons per day. The proposed water system will consist of an 8"x2" FM water meter, submeter (for the Kūpuna Center), 8-inch water transmission lines, fire hydrants, and water laterals. Based on discussions with the Board of Water Supply, the water system is generally adequate. However, once a firm layout is complete, a water system study will be prepared to show that the existing water system is adequate to support the project's water requirements.

The estimated water demand for the Commercial Center is 2,500 gallons per day. The planned water system for the Commercial Center consists of a 2-inch commercial meter, an 8-inch water line, a 6-inch detector check meter, a 6-inch fire line, and a fire hydrant. Preliminary discussions with the



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Board of Water Supply indicate that the water system is adequate to accommodate the commercial center.

**4.2.9.3 Wastewater Treatment and Disposal**

The existing sewer system around the project site consists of an 8-inch sewer line in Ilauhole Street, a 10-inch sewer line along Nakini Street, and an 8-inch sewer line along Kalaniana'ole Highway. The existing Waimānalo Wastewater Treatment Plant is at capacity. Proposed improvements to the facility are described by the City Department of Wastewater Management in a Preparation Notice for a Supplemental EIS (Hawai'i Pacific Engineers, Inc. 1998). The improvements include increasing the average treatment design capacity from the 1984 design capacity of 0.7 mgd to the projected 1.1 mgd to accommodate the year 2020 wastewater flows. Additional injection wells are also proposed for effluent disposal. The Waimānalo Kūpuna Housing Project is included in the 2020 projections.

*Potential Impacts and Mitigative Measures*

The Waimānalo Wastewater Treatment Plant (WWTP) is at maximum capacity and sewer connections are being allowed only under special circumstances where it can be shown that no additional new flows will be generated. Consequently, the City Department of Wastewater Management has indicated that only 51 of the proposed 84 project dwelling units may be permitted to hook-up to the Waimānalo WWTP. The proposed number of kūpuna residential apartments at buildout is 84 units (which include one Manager's residence).

**Wastewater options.** The options for wastewater treatment for the project are therefore, twofold: 1) Connection of 51 units to the municipal Waimānalo WWTP; and 2) Development of a temporary on-site gravity sewer system which would discharge to a septic tank and leaching field system to accommodate the remaining 33 dwelling units and the Commercial Center.

When the Waimānalo WWTP has been upgraded - projected by the City in the EIS NOP to be within five years subject to funding availability - the dwelling units and Commercial Center will be connected to the municipal system and the use of the temporary septic system would be discontinued. OHA and DHHL are participating in on-going discussions with the Department of Health, the Department of Land and Natural Resources, and City Department of Wastewater Management to gain approval for the septic system.

Impacts to groundwater

The leaching field will be located beneath the parking area of the Commercial Center (see Figure 4A). A temporary septic tank leaching field sewage disposal system is considered for the 33 units located below the "no-pass" zone. Typically, the Department of Health allows use of this type of system if no sewer treatment system is available in the immediate vicinity of the project. DOH currently allows residences in the Waimānalo area with cesspool systems to continue their use even though cesspools discharge more waste into the surrounding groundwater than a septic tank leaching field system.

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The base flood elevation in the area of the proposed site for the on-site septic system is 16.5 feet MSL. Consequently, the ground level will be elevated to 16.5 feet. The bottom elevation of the leeching field is expected to be about 10 feet MSL. Groundwater is therefore not anticipated since high tide water elevation is generally about 2.5 feet MSL.

By contrast, recent groundwater investigations related to coastal cesspools by the University of Hawai'i, Water Resources Center allowed the researchers to reach some tentative conclusions regarding the probability of nutrient and pathogen delivery to coastal waters. The study indicated that pathogens from the existing non-conforming cesspools in the Waimanalo beachlot area located to the north of the subject property may potentially be removed by the sandy soils. The discharge of nitrogen to the coastal waters in the form of soluble nitrates, however, was detected and it is believed that the bulk of groundwater nitrogen from cesspools probably does reach coastal waters.

Our analysis indicates that nearshore water quality will not be compromised by the proposed septic system: hence, the DOH routinely allows their use in non-sewered areas.

#### 4.2.9.4 Drainage Facilities

As described in Section 4.1.4, the base flood elevation has been determined to be at 16.5 feet. The lower portions of the site will therefore need to be raised from 13.5 feet to 16.5 feet to maintain the proposed dwellings above the base flood elevation.

#### *Potential Impacts and Mitigative Measures*

The project site is governed by the rules and regulations of the City and County of Honolulu Ordinance 96-34 which requires that additional drainage runoff created by the development be retained onsite by way of detention ponds, retention ponds, infiltration wells or ditches, holding tanks, diversion ditches or swales, drain pipes, check dams, or debris basins.

The proposed Kūpuna Housing and Kūpuna Center development will increase runoff to surrounding areas because impermeable surfaces will be increased by the development. Therefore, underground retention beds will be designed to percolate additional developed drainage runoff. If percolation tests show poor results, runoff will be piped to the existing drainage systems along Nakini and 'Ilauhole Street. The onsite drainage system will consist of inlet boxes, drain manholes, 18-inch reinforced concrete drain pipes, and percolation beds.

#### 4.2.9.5 Utilities

Waimānalo is served by the Hawaiian Electric Light Company (HECO). Electrical, telephone and cable television services for the project are available from the overhead utility lines on 'Ilauhole Street. Hook-ups for water and gas are available at stub-out connectors at 'Ilauhole Street.

#### *Potential Impacts and Mitigative Measures*

Schematic design plans include energy conservation measures such as thermal insulation to reduce heat from the sun and daylighting to reduce dependency on electrical lighting.

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**4.2.10 Public Facilities**

**4.2.10.1 Hazardous Waste**

There is no record of hazardous waste activity on the proposal site, nor is it on the Federal CERCLIS (Comprehensive Environmental Response, Compensation, and Liability Information System) list.

**4.2.10.2 Solid Waste Disposal**

Vegetation removed from property during the construction of the project will be chipped and disposed at a City and County approved landfill. Other construction material debris will be recycled or disposed in a similar manner. Solid waste generated during the operation of the project will be collected and disposed of by the City and County, Department of Public Works, Refuse Division.

**4.2.11 Public Services**

**4.2.11.1 Fire Protection**

The Waimānalo Fire Station is located at 41-1301 Kalaniana'ole Highway, approximately one mile from the project site.

*Potential Impacts and Mitigative Measures*

There will be an occasional and unavoidable demand for fire protection services associated with the project. The applicant will advise the fire department of project implementation and phasing to permit adequate planning and advance notice of project completion. Existing levels of fire protection services and facilities are considered adequate to service the proposed project.

As part of the proposed project, the water transmission system and lines with adequate fire flow capacity and fire hydrants will be installed within the property, improving the fire fighting capabilities in the area. The roadways within the project are anticipated to fall within the Board of Water Supply jurisdiction and all related fire infrastructure will be designed to meet City standards. The design standards shall include the location of fire hydrants and minimum fire flow standards.

Access for emergency vehicles into the project site will be established in the circulation plan for the overall project. Roadways will be all-weather surfaces and will be designed to meet Department of Transportation Services standards.

**4.2.11.2 Police Protection**

The nearest Police Substation is located at 219 Ku'ulei Road in the neighboring community of Kailua.

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*Potential Impacts and Mitigative Measures*

Any population increase or new development has impacts on Police services, however, it is anticipated that the existing Police service will not be adversely affected by the proposed development.

4.2.11.3 Health Care Services

The Waimānalo Health Center provides primary patient care to adults, women, and children. The clinic is staffed with three physicians. Also within Waimānalo town is the 'Ohana Physicians Group consisting of three private medical offices. All facilities currently provide only out-patient care. The nearest hospital is Castle Medical Center in Kailua, located in Kailua and is 7 to 10 minutes from the project location by ambulance service. Ambulance service is available from the Waimānalo Fire Station.

*Potential Impacts and Mitigative Measures*

As populations age we undoubtedly require more health care. Although this project is not directed towards assisted living, it provides a transition for our kūpuna who can thrive in an independent living environment. Waimānalo is well served by programs which are federally funded through Alu Like, Inc. to address the needs of the elderly residents. The kūpuna housing project would likely increase the demand for health services. The proposed Commercial Center would be an appropriate location for health care offices.

4.2.11.4 Schools

Schools which serve the project area include Blanche Pope Elementary, Waimānalo Intermediate, Kailua High School, and Kaiser High School in Hawai'i Kai.

*Potential Impacts and Mitigative Measures*

This kūpuna housing project will not impact on the public school system.

4.2.11.5 Recreational Facilities

The project site is within walking distance to the Waimānalo Beach Park.

*Potential Impacts and Mitigative Measures*

The proposed project provides recreational opportunities which may include the following: exercise pool, subsistence and recreational gardening, a library and other amenities at the Kūpuna Center.

4.2.11.6 Public Transit

The Kalaniana'ole Highway accommodates the City and County Bus System. A covered bus stop is located near the project site.

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4.2.11.7 Proximity of Commercial and Other Services

There are a few existing commercial uses within walking distance to the project site. There is a Post Office located at 41-859 Kalaniana'ole Highway. The project will provide additional commercial services in the immediate area adjacent to the residential housing.

5.0  
ALTERNATIVES TO THE PROPOSED ACTION

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## 5.0 ALTERNATIVES TO THE PROPOSED ACTION

In compliance with the provisions of Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules, Section 11-200-17(f), the *"known feasible" alternatives to the proposed project are limited to those that would allow the objectives of the project to be met, while minimizing potential adverse environmental impacts.* As such, several alternatives have been evaluated.

### 5.1 NO ACTION ALTERNATIVE

The No Action alternative will not accomplish the desired goal of providing affordable elderly housing for Hawaiians and native Hawaiians in Waimānalo. Without the project, kūpuna who are currently on the Department of Hawaiian Home Lands list will continue to wait for available homesteads. For many kūpuna, residing in a community setting with on-site services to assist in daily living among other kūpuna is desirable compared to establishing a homestead at this point in their lives. For kūpuna who are presently residing on homesteads with extended family, the opportunity to reside in their own homes among other kūpuna provides the opportunity to pass down their homesteads to their children who may be on the DHHL list. The children of kūpuna who elect to reside at the project would have the opportunity to assume the larger homesteads held by their elderly parents or grandparents. Without the project, fewer qualifying Hawaiian would be recipient of homesteads.

### 5.2 ALTERNATIVE SITES

In 1993 DHHL performed site assessment and feasibility studies (Group 70 1993) for affordable residential development for elderly Hawaiians and native Hawaiians. Sites which were considered included the subject site at Waimānalo and sites at Kalāwahine and Moreira Dairy Farm in Papakōlea, Honolulu. The conclusions of the study to select the Waimānalo location were supported by the criteria required for an optimal housing project for elderly citizens.

The establishment of support services for the Hawaiian population in Waimānalo makes the subject location well suited for the development of kūpuna housing as proposed in this document.

In addition, the DHHL Land Assessment Studies Phase 5 - Planning Assessment: Total Land Inventory (August 1993) designated the site for elderly residential housing and commercial uses.

6.0  
DETERMINATION, FINDINGS AND REASONS FOR  
SUPPORTING DETERMINATION



WAIMĀNALO KŪPUNA HOUSING PROJECT  
Final Environmental Assessment

## 6.0 DETERMINATION, FINDINGS AND REASONS FOR SUPPORTING DETERMINATION

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

### 6.1 SIGNIFICANCE CRITERIA

According to the Department of Health Rules (11-200-12), an applicant or agency must determine whether an action may have a significant impact on the environment, including all phases of the project, its expected consequences both primary and secondary, its cumulative impact with other projects, and its short and long-term effects. In making the determination, the Rules establish "Significance Criteria" to be used as a basis for identifying whether significant environmental impact will occur. According to the Rules, an action shall be determined to have a significant impact on the environment if it meets any one of the following criteria:

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

The proposed Waimānalo Kūpuna Housing Project is designed as one-story buildings and will not impact scenic views of the ocean or any ridge lines in the area. The visual character of the area will change from the current vacant land to a developed residential development of apartment clusters. The design will be compatible with the surrounding DHHL homes adjacent to the proposed Kūpuna Housing. The plant and wildlife which occur on the property are generally exotic species; no natural resources requiring protection occur on the site. In addition, the subject property is located outside of the County's Special Management Area (SMA).

The property has been significantly altered in past quarrying activities. As such, it has been determined by the State Historic Preservation Division that the project should have "no effect" on historic resources. Should any archaeologically significant artifacts, bones, or other indicators of previous on-site activity be uncovered during the construction phases of development, their treatment will be conducted in strict compliance with the requirements of the Department of Land and Natural Resources.

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

The project site is a 7.29-acre property. The construction of this permanent facility will foreclose other uses, however, the proposed use of the project outweighs other uses. The provision of kūpuna housing at this location could be determined to be the highest and best use of the property since 83 elderly households would benefit from the new facilities.

**WAIMĀNALO KŪPUNA HOUSING PROJECT**  
Final Environmental Assessment

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

The proposed development is consistent with the Environmental Policies established in Chapter 344, HRS, and the National Environmental Policy Act.

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

The new housing opportunities designed specifically for elderly residents and the programs and services that will be provided as part of the project will positively affect the economic and social welfare of the community. The proposed Commercial Center will include opportunities for employment (retail and service) and business ownership which will contribute to the general welfare of the Waimānalo community and ultimately to the people of Hawai'i.

- (5) Substantially affects public health;**

Impacts to public health may be affected by air, noise, and water quality impacts, however, these will be insignificant or not detectable, especially when weighed against the positive economic, social, and quality of life implications associated with the project.

The kūpuna facility is specifically designed for elderly residents; units will include exterior and interior amenities which will ease daily living. In addition 24-hour maintenance service and security to be provided by an on-site Manager will positively enhance the public well-being of the kūpuna. Overall, the new facilities and integrated programs of various community organizations will substantially benefit public health of the project's residents.

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

According to Census Bureau statistics, the growth of the elderly population has increased dramatically in the 20th century and will continue to grow exponentially through the years 2010 to 2030. In Waimānalo today, the population of native Hawaiian residents over the age of 55 represents nearly 40 percent of the total elderly population. The project will have a small impact on the local population; however, it is anticipated that many of the elderly who will reside at the project are already in Waimānalo and living with extended family. The remaining kūpuna will come to the project from other areas of O'ahu and the state.

Family units will consist of residents who are single or husband and wife with no children. Therefore, although there may be a slight increase in the local population, the demand on schools and infrastructure will be more limited than for younger families. The infrastructure demands (roads, water, drainage) are minimal and can be accommodated by the existing systems. Wastewater treatment for 51 units (50 kūpuna units and 1 Manager's Residence) would be accommodated by the existing public system; however, the additional proposed 33 units and the Commercial Center would be temporarily served by an on-site septic system until upgrades to the present Waimānalo Wastewater Treatment Plant are made sometime in the future.

**WAIMĀNALO KŪPUNA HOUSING PROJECT**  
**Final Environmental Assessment**

In addition, new employment opportunities will generate new sources of direct and indirect revenue for individuals, the City and County of Honolulu, and the State of Hawai'i by providing both temporary and long-term employment opportunities during the construction period and the operation of the project. Indirect employment in a wide range of service related industries will also be created from construction during project development.

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

The proposed development will utilize existing vacant land and is not expected to degrade environmental quality on-site or in the surrounding neighborhood. The property was previously extensively modified by sand quarrying activities and today lacks any significant natural resources. With development of the proposed project, plant communities are expected to improve through a program of landscaping which will utilize native plantings in greater abundance to the site. Appropriate best management practices will provide safeguards for protection of water quality during the short-term construction period.

The visual impact will be similar to other areas along the highway and overall design will complement background vistas. Makai views from the subject property are available, however, they are not significant nor generally available to the public in the property's present restricted condition.

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

The environmental resources on the project site are generally limited to introduced plant and animal species. Once completed, the landscape plantings will bring to the site native species of plants which may attract native birds to the property. While the development of the project can be seen as a more intense use of the land in recent times, the overall project will bring a new balance and introduce cultural and natural resources to the site.

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

Biological surveys undertaken at the property indicate that no rare, threatened or endangered species occur on the property.

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

Any possible impact to near-shore ecosystems resulting from surface runoff, will be mitigated by the establishment of on-site retention during the construction phases of development. After development, retention areas will serve the same function to encourage recharge of the groundwater. Minimal impacts on air quality and noise are anticipated during construction, but will be limited by normal construction practices (i.e., mufflers, water wagons, construction during daylight hours only, etc.). Over the long-term, traffic noise during peak periods (due to the overall increase in islandwide traffic) may be a factor, however, landscape plantings and building design will mitigate any increase in noise levels. BMPs will be implemented for water quality protection to the extent practicable.

**WAIMĀNALO KŪPUNA HOUSING PROJECT**  
Final Environmental Assessment

- (11) Affects or is likely to suffer damage by being located in an environmentally sensitive area, such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters.**

Development of the property is compatible with the above criteria since there are not environmentally sensitive areas associated with the project and the physical character of the site has been previously disturbed by past quarrying activities. As such, the property no longer reflects a "natural environment". Shoreline, valleys, or ridges will not be impacted by the development.

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

Public views of the Ko'olau Mountains are available from Kalaniana'ole Highway through the property. The low-rise single story design of the residential apartments nor the commercial buildings are expected to impede these views.

- (13) Requires substantial energy consumption.**

Construction of the proposed project will not require substantial energy consumption relative to other similar projects. Design of the project will investigate energy saving design measures. Once completed the residential and commercial components are expected to consume energy (i.e., electricity and gas) similar to other developments.

## **6.2 DETERMINATION**

On the basis of the above criteria, and the discussion of impacts and mitigative measures contained in this document, it is anticipated that the proposed project will not have a significant effect on the environment.

7.0  
COMMENTS AND RESPONSES

WAIMĀNALO KŪPUNA HOUSING PROJECT  
Final Environmental Assessment

## 7.0 COMMENTS AND RESPONSES

The public comment period as required by Chapter 343, *Hawaii Revised Statutes*, on the Draft EA resulted in the following responses from governmental agencies, community organizations and individuals. The comments and our responses are included in this section.

### 7.1 COMMENTS RECEIVED ON THE DRAFT EA

#### State of Hawai'i

Department of Accounting and General Services  
Department of Business, Economic Development & Tourism - Office of Planning  
Department of Hawaiian Home Lands  
Department of Health  
Department of Land and Natural Resources Land Division  
DLNR State Historic Preservation Division  
Department of Transportation  
Housing Finance Development Corporation  
Office of Environmental Quality Control

#### City and County of Honolulu

Board of Water Supply  
Department of Housing and Community Development  
Department of Land Utilization  
Department of Public Works  
Fire Department  
Planning Department  
Police Department

#### Federal Government

U.S. Geological Survey

#### Utilities

Hawaiian Electric Company, Inc.

#### Community

Hilltop Equestrian Centre

### 7.2 DRAFT EA COMMENT LETTERS AND THE APPLICANT'S RESPONSES

The following section includes letters responding to the Draft EA and the Applicant's responses.

FEB 13 1998	
Project	(2) 1072.8
Project No.	

FEB 11 1998

TO: The Honorable Kali Watson, Director  
Department of Hawaiian Home Lands

ATTN: Mr. Ben Wong

SUBJECT: Draft Environmental Assessment for  
The Waimanalo Kupuna Housing Project  
Koolaupoko, Oahu  
TMK 4-1-19:32

Thank you for the opportunity to review the subject document. We have no comments to offer.

If there are any questions, please have your staff contact Mr. Ronald Ching of the Public Works Division at 586-0490.

*Sam Callejo*  
SAM CALLEJO  
State Comptroller

RC:jy  
c: Ms. Yukie Ohashi, PBR Hawaii



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. Sam A. Callejo, State Comptroller  
Department of Accounting and General Services  
Public Works Division  
1151 Punchbowl Street  
Honolulu, Hawai'i 96813

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Callejo:

We have reviewed your memorandum of February 11, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project. We note that your agency has reviewed the subject Draft EA and has no comments to offer.

Thank you for participating in the environmental review process.

Sincerely yours,

PBR HAWAII

Yukie Y. Ohashi  
Project Manager

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

HONOLULU OFFICE

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

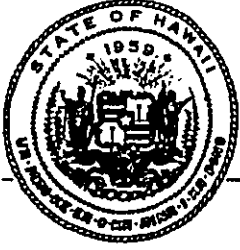
WAILUKU OFFICE

2125 KAOHU STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 242-2878 FAX: (808) 242-2902

HILO OFFICE

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989





**DEPARTMENT OF BUSINESS,  
ECONOMIC DEVELOPMENT & TOURISM**

BENJAMIN J. CAYETANO  
GOVERNOR  
SEIJI F. NAYA  
DIRECTOR  
BRADLEY J. MOSSMAN  
DEPUTY DIRECTOR  
RICK EGGED  
DIRECTOR, OFFICE OF PLANNING

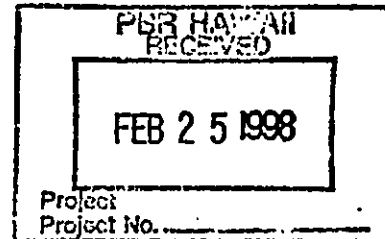
**OFFICE OF PLANNING**

235 South Beretania Street, 6th Flr., Honolulu, Hawaii 96813  
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Tel.: (808) 587-2846  
Fax: (808) 587-2824

Ref. No. P-7187

February 3, 1998



**MEMORANDUM**

**TO:** Kali Watson, Chairman  
Department of Hawaiian Home Lands

**FROM:** Rick Egged *R. Egged*  
Director, Office of Planning

**SUBJECT:** Waimanalo Kupuna Housing Project

We have reviewed the draft environmental assessment for the proposed project and have the following comments. Our main concern is the on-site sewer system and possible pollution of the coastal waters since the project site is in a potential flood area and fairly close to the coastline. We note that the project connects only 51 of the 84 apartment units to the municipal Waimanalo Sewer Treatment Plant (STP) since the STP is at capacity. As a result, the 33 remaining apartment units and commercial development will connect to a temporary on-site sewer system consisting of a septic tank and leaching field.

Figure 4A of the master plan does not show the placement of the on-site sewer system. This information is important and should be included in the environmental assessment. In addition, the assessment should also address the length of time the temporary on-site sewer system will be in use and when the County expects the increase in the STP capacity to be in effect.

If you have any questions, please contact Christina Meller of our CZM Program at 587-2845.



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. Rick Egged, Director  
Office of Planning  
Department of Business, Economic Development & Tourism  
235 South Beretania Street, 6th Floor  
Honolulu, Hawai'i 96813

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Egged:

We have reviewed your memorandum of February 9, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and offer the following responses to your comments.

1. **Direct and indirect effects on the environment of a septic tank leeching field system.**  
A temporary septic tank leeching field sewage disposal system is considered for the 33 units located below the "no-pass" zone. Typically, the Department of Health allows use of this type of system if no sewer treatment system is available in the immediate vicinity of the project. DOH currently allows residences in the Waimānalo area with cesspool systems to continue their use even though cesspools discharge more waste into the surrounding groundwater than a septic leeching field system.

The base flood elevation in the area of the proposed site for the on-site septic system is 16.5 feet MSL. Consequently, the ground level will be elevated to 16.5 feet. The bottom elevation of the leeching field is expected to be about 10 feet MSL. Groundwater is therefore not anticipated since high tide water elevation is generally about 2.5 feet MSL.

By contrast, recent groundwater investigations related to coastal cesspools by the University of Hawaii, Water Resources Center allowed the researchers to reach some tentative conclusions regarding the probability of nutrient and pathogen delivery to coastal waters. The study indicated that pathogens from the existing non-conforming cesspools in the Waimanalo beachlot area located to the north of the subject property may potentially be removed by the sandy soils. The discharge of nitrogen to the coastal waters

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96815-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 525-1402 E-MAIL: pbrhi@aloha.net

**WAILUKU OFFICE**

2125 KAOUH STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 242-2878 FAX: (808) 242-2902

**HILO OFFICE**

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989

Mr. Rick Egged, Director  
SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT  
March 10, 1998  
Page 2

in the form of soluble nitrates, however, was detected and it is believed that the bulk of groundwater nitrogen from cesspools probably does reach coastal waters.

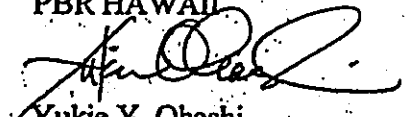
We are assured that nearshore water quality will not be compromised by the proposed septic system since the DOH routinely allows their use in non-sewered areas.

2. **Location of the on-site septic tank leeching field system.** The leeching field will be located beneath the parking area of the Commercial Center and is shown on Figure 4A.

We appreciate your review and comments on the Draft EA; your concerns are addressed in the Final EA. All other comments received in the public review process are also addressed and included in the Final EA.

Sincerely yours,

PBR HAWAII



Yukie Y. Ohashi  
Project Manager

PLANNING OFFICE  
DEPARTMENT OF HAWAIIAN HOME LANDS

February 12, 1998

To: Ben Wong, Acting LMD Administrator  
Through: Darrell Yagodich, Administrator *DY*  
From: Daniel Ornellas, Planner *DO*  
Subject: Waimanalo Kupuna Housing Project. Draft Environmental  
Assessment. TMK 4-1-9:32. Koolaupoko, Oahu.  
Dated December, 1997.

Upon review of the Draft EA, I have made the following observations for your information:

Ventilation. The individual kupuna living unit floor plan appears to have ventilation problems. If bedroom door is closed, then circulation will be cut off. (see attachment) Mitigation measures could include:

- Stager individual living units to allow cross currents. Staggering units may contribute to sense of privacy. Group 70 Site Evaluation Criteria on Elderly Housing for Native Hawaiians states that "Elder's most often desire a sense of independence and control, to make choices and to have privacy." (pg. 14)

- Install a conduit and ventilation fan into unit through roof.

Parking. The Site Assessment and Feasibility Report prepared by Group 70 recommends that:

"Resident parking should include a minimum of 1 stall per unit plus a stall for resident manager. Visitor parking would require a minimum of 1 stall per 10 units. If used for community activities, more parking for the multi-purpose center may be required to accommodate visitor traffic."

84 units are planned to be constructed. The development would require a minimum of 93 stalls. This does not include additional parking that may be needed for the proposed community center. The draft EA indicates that "approximately 88 parking stalls will be provided on site." The EA does not address potential impacts parking may cause to traffic flow if on-street parking occurs in neighboring areas.

Waste water. The existing Waimanalo sewage treatment plant is said to be at capacity. The draft EA calls for a temporary sewage system for 33 of the 84 units until improvements are made to the treatment plant in Waimanalo.

The EA does not comment on the additional costs of the temporary sewage system to construct and maintain? What is the time-frame for system improvements? Are there other alternatives? Can we build the units in increments pursuant to the completion of plant improvements? Does the demand in Waimanalo for elderly housing justify the need to build out the entire project at once?

What factors have been used to conclude that the Waste water treatment plant is at capacity? Is it a calculation of average flows over time? Average flows can be distorted by seasonal rain storms. Is there a problem with processing sewage or is sewage levels increased due to poor sewage system management such as sewer line leaks?

Commercial center. More information needed. Is a pharmacy and/or health clinic feasible in a portion of this area? Group 70's Site Evaluation Criteria on Elderly Housing for Native Hawaiians indicates that "the high level of health related problems found in the Hawaiian elderly population suggests the need to provide housing that is readily accessible to medical and social services." (pg. 6)

Infrastructure. The EA does not address some of the significant infrastructure improvements that are recommended in the Group 70 report and the SMS beneficiary needs study relating to Kupuna housing.

- Large visible signage
- Ease of access into and around buildings and to public transportation
- Rest areas and shelters along pedestrian walkways
- Lighting along walkways and parking areas
- Emergency phones

Enc. (2)

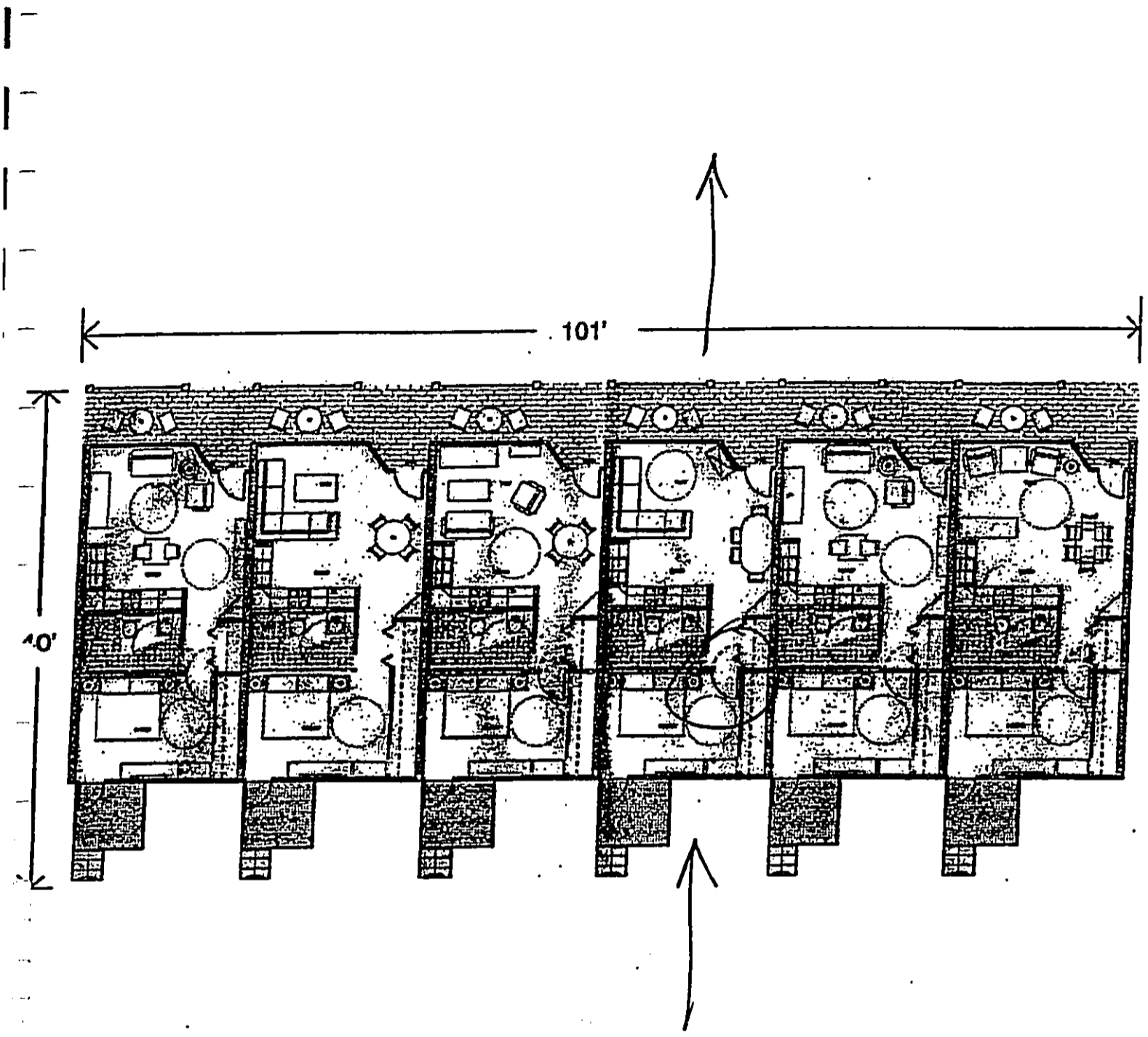


FIGURE 5 A  
 Residential Apartment - Layout Plan  
 WAIMĀNALO KŪPUNA HOUSING PROJECT

Source: Kauahikaua & Chun / Architects

December 1997



**SITE EVALUATION CHECK-LIST**

This check-list is to be used in conjunction with the site considerations in the previous section. And, to aid in the process of evaluating a site.

**COMMUNITY CRITERIA****Location**

- Is the location in an environment familiar to the Elderly users?
- Can a relationship between family and friends be maintained?
- What services and amenities are available and accessible:
  - a) within walking distance of one to two blocks?
  - b) within convenient routes of private or public transportation?
- Is the location within adequate serviceable range of off-site services?
- Is the population concentration of Native Hawaiian Elders above the recommended levels? If not, is the need in the area justifiable?

**Context and Support**

- *What is the general progress of the neighborhood? And, is it conducive for elderly housing?*
- Is the make-up of available services and amenities one that the elderly Hawaiian is, or can become, accustomed to, to gain a level of trust?
- Are the services experienced with working and caring for native Hawaiians?

**SITE CRITERIA**

- The site size should be large enough to accommodate 12 to 14 units per acre in rural areas and densities similar to surrounding lots in urban areas. The minimum number of units shall not be lower than 60 per project site, and no more than 250.
- Located 1 - 2 blocks away from shopping areas, bus stops, parks, etc.
- Is access to amenities safe and convenient?
- Is access by car safe for an elderly driver?
- Is infrastructure available?
- Are mauka/makai views available?
- Is landscaping with native plants feasible?



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. Darrell Yagodich, Administrator  
Department of Hawaiian Home Lands  
Planning Branch  
PO Box 1879  
Honolulu, Hawai'i 96805

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Yagodich:

We have reviewed your memorandum of February 12, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and offer the following responses to your comments:

1. **Ventilation.** Your comments regarding ventilation of kupuna units will be considered by the Architect during the design development phase of the project.
2. **Parking.** We would like to clarify that the Kūpuna Center within the project is intended to be used by kūpuna residents and not by the general public. Therefore, we do not anticipate a need for more than the 88 stalls which are planned. However, the project site can accommodate an additional 5 stalls; this will be taken into consideration by the Architect in the design phase. Since the Kūpuna Center is not a public use building all parking requirements are expected to be met by the on site stalls and on street parking is not anticipated.
3. **Wastewater Treatment.**

Waimānalo Wastewater Treatment Plant. The City Department of Wastewater Management has determined that the Waimānalo Wastewater Treatment Plant (WWTP) is at capacity and is planning to upgrade the facility. As such, the City has issued a Notice of Preparation for a Supplemental Environmental Impact Statement (January 28, 1998) for updating the Waimānalo Wastewater Facilities Plan. We would like to refer you to the Notice of Preparation to answer the technical questions you are asking. The document is available at the Office of Environmental Quality Control.

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

**WAILUKU OFFICE**

2123 KĀOHŪ STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 242-2878 FAX: (808) 242-2902

**HILO OFFICE**

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989



Mr. Darrell Yagodich, Administrator  
SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT  
March 10, 1998  
Page 2

Costs for the on-site system. The cost of the septic tank leaching field is expected to be about \$75,000. However, the cost may change based on the percolation results. If the percolation test shows good percolation results, a smaller leaching field will be required and visa versa.

Duration of the temporary system. The temporary septic tank leaching field system is expected to remain in operation until the municipal system is upgraded to accommodate the flows from the project. According to the City's EIS NOP, the upgrading of the Waimānalo WWTP is dependent on the availability of funding for the improvements. A series of improvements will occur within one to five years.

Alternatives to the on-site system. An alternative to the proposed septic system is an onsite sewer treatment plant which is not feasible for a project of this size.

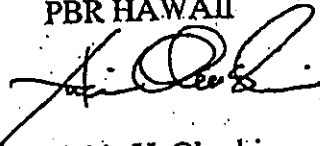
Can the project be built in increments? The project is designed for a total of 83 kūpuna units and 1 manager's unit. Of the total 84 units, 51 will connect to the municipal WWTP. The remaining 33 units and the Commercial Center will be served either by the onsite septic system or to the municipal system when the Waimānalo WWTP is upgraded. As such, the project is planned as an incremental development.

4. **Commercial Center.** The Commercial Center would be an excellent location for health care offices and possibly a pharmacy to better serve the resident kūpuna and other families in the community. The actual establishment of any business at the Commercial Center would depend on a number of factors, including entrepreneurs and professionals willing to open practices and offices at this location. The Preliminary Market and Financial Feasibility Study (Graham Murata Russell 1997) has established that the addition of 10,000 square feet of commercial/retail space can be supported in Waimānalo.
5. **Infrastructure.** The Architect will take into consideration ease of access, rest areas and shelters along pedestrian walkways, on-site lighting, visible signage, and emergency telephones during the design phase of the project.

We appreciate your review and comments on the Draft EA; your concerns are addressed in the Final EA.

Sincerely yours,

PBR HAWAII



Yukie Y. Ohashi  
Project Manager

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



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

PBR

MAR 10 1998
Project No. _____

LAWRENCE MIKE  
DIRECTOR OF HEALTH

to apply, please refer to:

March 5, 1998

98-004/epo

Mr. Ben Wong  
Department of Hawaiian  
Home Lands  
State of Hawaii  
P. O. Box 1879  
Honolulu, Hawaii 96805

Dear Mr. Wong:

Subject: Draft Environmental Assessment (DEA)  
Waimanalo Kupuna Housing Project  
Waimanalo, Oahu  
TMK: 4-1-19: 32

Thank you for allowing us to review and comment on the subject document. We have the following comments to offer:

Wastewater

The proposed project is designed to provide a residential environment for independent living with staff and services available on-site. The Master Plan includes 83 Kupuna apartment units, a new Community Center building which will include a Manager's residence, administrative offices, kitchen, library, and a 10,000 square foot commercial center.

As the area is serviced by the Waimanalo Sewage Treatment Plant (WSTP), we concur with the project as long as wastewater treatment and disposal is by connection to the WSTP. Since the WSTP is at capacity, we will concur with the use of a temporary on-site wastewater system if a reasonable timetable and a financial commitment to construct the necessary improvements to the wastewater system is provided.

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems," and we reserve the right to review the detailed wastewater plans.

Should you have any questions on this matter, please contact the Planning/Design Section of the Wastewater Branch at telephone (808) 586-4294.

Mr. Ben Wong  
March 5, 1998  
Page 2

98-004

Noise

1. Noise generated by stationary equipment such as pool pumps must be attenuated to meet the requirements of Chapter 11-46, Hawaii Administrative Rules, "Community Noise Control."
2. Construction activities must comply with the provisions of Chapter 11-46, Hawaii Administrative Rules, "Community Noise Control."
3. Heavy vehicles traveling to and from the project site should be minimized within residential areas and must comply with Chapter 11-42, Hawaii Administrative Rules, "Vehicular Noise Control for Oahu."

If there are any questions on this matter, please contact Jerry Haruno, Environmental Health Program Manager, Noise, Radiation and Indoor Air quality Branch at 586-4701.

Sincerely,



BRUCE S. ANDERSON, Ph.D.  
Deputy Director for  
Environmental Health

c: WWB  
NR&IAQB  
OHA  
PBR Hawaii ✓



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Bruce S. Anderson, Ph.D.  
Deputy Director for Environmental Health  
State of Hawai'i  
Department of Health  
P.O. Box 3378  
Honolulu, Hawai'i 96801

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Dr. Anderson:

We have reviewed your letter of March 5, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and offer the following responses to your comments.

- I. **Wastewater.** The City Department of Wastewater Management has determined that the Waimānalo Wastewater Treatment Plant (WWTP) is at capacity and is planning to upgrade the facility. As such, the City has issued a Notice of Preparation for a Supplemental Environmental Impact Statement (January 28, 1998) for updating the Waimānalo Wastewater Facilities Plan.

The project's proposed temporary septic tank leeching field system is expected to remain in operation until the municipal system is upgraded to accommodate the flows from the project. According to the City's EIS NOP, the upgrading of the Waimānalo WWTP is dependent on the availability of funding for the improvements. The EIS NOP states that a series of improvements will occur within one to five years.

The Office of Hawaiian Affairs and the Department of Hawaiian Home Lands are continuing on-going discussions with the State Department of Land and Natural Resources and the City Department of Wastewater Management to determine the timeframe of the improvements. OHA and DHHL will also continue to coordinate with your Wastewater Branch, as necessary. All future wastewater plans will conform to applicable provisions of the DOH's Administrative Rules, Chapter 11-62, "Wastewater Systems" and will be submitted to you for your review.

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhii@aloha.net

**WAILUKU OFFICE**

2123 KAOHUA STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 242-2878 FAX: (808) 242-2902

**HILO OFFICE**

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989

Bruce S. Anderson, Ph.D.  
SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT  
March 10, 1998  
Page 2

2. Noise.

1. Noise generated by stationary equipment such as pool pumps will be attenuated to meet the requirements of Chapter 11-46, Hawai'i Administrative Rules, "Community Noise Control."
2. Construction activities will comply with the provisions of Chapter 11-46, Hawai'i Administrative Rules, "Community Noise Control."
3. Heavy vehicles traveling to and from the project site will be minimized within residential areas, to the extent practicable, and will comply with Chapter 11-42, Hawai'i Administrative Rules, "Vehicular Noise Control for O'ahu."

Thank you for participating in the environmental review process; your concerns are addressed in the Final EA.

Sincerely yours,

PBR HAWAII



Yukie Y. Ohashi  
Project Manager



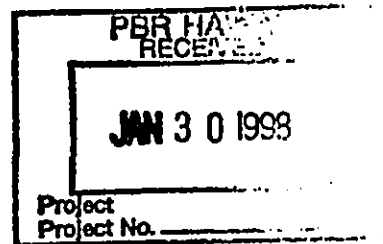
STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION  
P.O. BOX 621  
HONOLULU, HAWAII 96809

January 22, 1998

AQUACULTURE DEVELOPMENT  
PROGRAM  
AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
CONSERVATION AND  
RESOURCES ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
LAND DIVISION  
STATE PARKS  
WATER RESOURCE MANAGEMENT

LD-NAV  
REF.: DHHLOHA.RCM

Ms. Yukie Ohashi  
PBR HAWAII  
Pacific Tower, Suite 650  
1001 Bishop Street  
Honolulu, Hawaii 96813



Dear Ms. Ohashi:

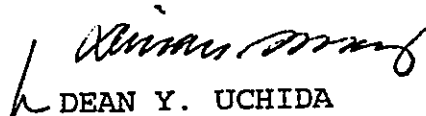
SUBJECT: Review : Draft Environmental Assessment  
Project : Waimanalo Kupuna Housing  
Applicant: Office of Hawaiian Home Lands  
Location : Waimanalo, Island of Oahu, Hawaii

Thank you for allowing us the opportunity to review the Draft Environmental Assessment for the proposed Waimanalo Kupuna Housing Project.

The Department of Land and Natural Resources has no comments to offer on the subject matter at this time.

Should you have any questions, please feel free to contact Nicholas Vaccaro at 587-0433.

Very truly yours,

  
DEAN Y. UCHIDA  
Administrator

c: At Large Land Board Member  
Oahu District Land Office  
Kauai District Land Office  
OHA/Mr. Ben Wong



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. Dean Uchida, Administrator  
Department of Land and Natural Resources  
Land Division  
P.O. Box 621  
Honolulu, Hawai'i 96809

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Uchida:

We have reviewed your letter of January 22, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project. We note that your agency has reviewed the subject Draft EA and has no comments to offer.

Thank you for participating in the environmental review process.

Sincerely yours,

PBR HAWAII

Yukie Y. Ohashi  
Project Manager

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

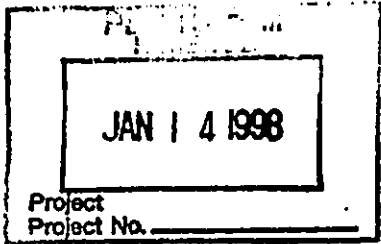
**WAILUKU OFFICE**

2123 KAOHU STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 949-9878 FAX: (808) 949-9009

**HILO OFFICE**

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989

BENJAMIN J. CAYetano  
GOVERNOR OF HAWAII



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION  
33 SOUTH KING STREET, 6TH FLOOR  
HONOLULU, HAWAII 96813

MICHAEL D. WILSON, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

GILBERT COLOMA-AGARAN

AQUACULTURE DEVELOPMENT  
PROGRAM

AQUATIC RESOURCES  
CONSERVATION AND

RESOURCES ENFORCEMENT  
CONVEYANCES

FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION

DIVISION

LAND DIVISION

STATE PARKS

WATER AND LAND DEVELOPMENT

January 9, 1998

Gary Gill  
Office of Environmental Quality Control  
220 South King Street, 4th Floor  
Honolulu, Hawaii 96813

LOG NO: 20816 ✓  
DOC NO: 9801EJ07

Dear Mr. Gill:

**SUBJECT: Chapter 6E-8 Historic Preservation Review -- Draft Environmental Assessment (DEA): Waimanalo Kupuna Housing Project  
Waimanalo, Ko'olaupoko, O'ahu  
TMK: 4-1-19:32**

Thank you for the opportunity to review the DEA for the Waimanalo Kupuna Housing project. The DEA correctly incorporates in Appendix C our comments that this project will have "no effect" on historic sites. The historic preservation review process is concluded.

Should you have any questions, please feel free to call Elaine Jourdane at 587-0014.

Aloha,

Don Hibbard, Administrator  
Historic Preservation Division

EJ:jk

c: Ben Wong, Department of Hawaiian Home Lands  
Stephen Morse, Office of Hawaiian Affairs  
✓ Yukie Ohashi, PBR Hawaii





LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. Don Hibbard, Administrator  
Department of Land and Natural Resources  
State Historic Preservation Division  
33 South King Street, 6th Floor  
Honolulu, Hawai'i 96813

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Hibbard:

We have reviewed your letter of January 9, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project. We note that your agency has determined that the historic preservation review process for this project is concluded.

Thank you for participating in the environmental review process; we appreciate your review and comments on the Draft EA.

Sincerely yours,

PBR HAWAII

Yukie Y. Ohashi  
Project Manager

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

**WAILUKU OFFICE**

2125 KAOHU STREET, WAILUKU, HAWAII 96793-2204

**HILO OFFICE**

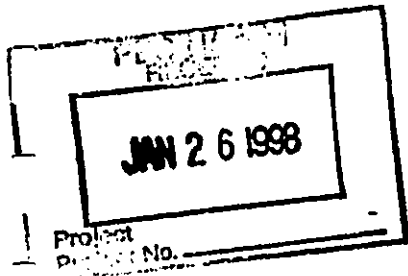
101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276

BENJAMIN J. CAYETANO  
GOVERNOR



KAZU HAYASHIDA  
DIRECTOR

DEPUTY DIRECTORS  
BRIAN K. MINAJI  
GLENN M. OKIMOTO



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

IN REPLY REFER TO:  
STP 8.8354

January 22, 1998

TO: MR. KALI K. WATSON, CHAIRMAN  
DEPARTMENT OF HAWAIIAN HOME LANDS

FROM: KAZU HAYASHIDA  
DIRECTOR OF TRANSPORTATION *K.H.*

SUBJECT: WAIMANALO KUPUNA HOUSING PROJECT  
DRAFT ENVIRONMENTAL ASSESSMENT

Thank you for your transmittal requesting our review of the subject document. We also received the traffic assessment which was completed after the distribution of the Draft Environmental Assessment (DEA)

We have the following comments to offer:

1. The developer will need to further consult with our Highways Division. The proposed project borders Kalaniana'ole Highway in the vicinity currently being studied for widening from two to four lanes, as identified in the Oahu Regional Transportation Plan.
2. The developer should coordinate access location and configuration requirements with our Highways Division before proceeding with the plans. The developer will be responsible for required improvements.

Additionally, the DEA proposes right-turn only lanes for the proposed driveway access off Kalaniana'ole Highway. The traffic assessment proposes unrestricted left turns to the commercial component of the subject project. It should be clarified which proposal will be pursued.

3. Plans for construction work within the highway right-of-way must be submitted to the State DOT, Highways Division for review and approval.

Thank you for the opportunity to comment.

c: Mr. Gary Gill, OEQC  
Mr. Stephen Morse, Office of Hawaiian Affairs  
Mr. Kali K. Watson, DEED



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. Kazu Hayashida, Director  
Department of Transportation  
859 Punchbowl Street  
Honolulu, Hawai'i 96813-5097

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Hayashida:

We have reviewed your memorandum of January 22, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and offer the following responses to your comments.

1. We will work with the State Department of Transportation - Highways Planning to coordinate our project with the Oahu Regional Transportation Study.
2. We have coordinated our work with Mr. Sterling Morikawa of your department and will continue to work with your department through the design phase.

We will follow the traffic assessment proposal for unrestricted left turn movement to the commercial portion of our project.

3. Prior to work in the highway right-of-way, plans will be submitted to the State DOT, Highways Division for review and approval.

Thank you for your review and comments on the Draft EA; your concerns are addressed in the Final EA.

Sincerely yours,

PBR HAWAII

Yukie Y. Ohashi  
Project Manager

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-5129  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

**WAILUKU OFFICE**

2123 KAOHU STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 935-8888 FAX: (808) 935-8888

**HILO OFFICE**

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-4999 FAX: (808) 961-4999

BENJAMIN J. CAYETANO  
GOVERNOR



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

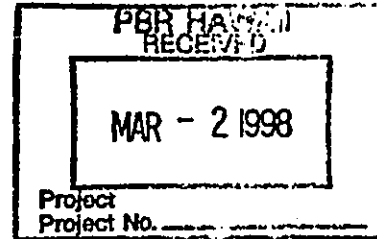
February 25, 1998

KAZU HAYASHIDA  
DIRECTOR

DEPUTY DIRECTORS  
BRIAN K. MINAAI  
GLENN M. OKIMOTO

IN REPLY REFER TO:

STP 8.8429



TO: THE HONORABLE KALI K. WATSON, CHAIRMAN  
DEPARTMENT OF HAWAIIAN HOME LANDS

FROM: KAZU HAYASHIDA  
DIRECTOR OF TRANSPORTATION

SUBJECT: WAIMANALO KUPUNA HOUSING PROJECT  
DRAFT ENVIRONMENTAL ASSESSMENT

We have the following additional comments to supplement our previous transmittal dated January 22, 1998 (STP 8.8354).

1. The EA should note that as a condition for allowing highway access for Nakini Street, the Highways Division has required that the Department of Hawaiian Home Lands (DHHL) install traffic signals when warranted at this intersection.
2. The EA should indicate that the 2020 Oahu Regional Transportation Plan proposed widening of Kalaniana'ole Highway to four lanes along the project frontage between 2006 and 2020. Our preliminary assessment is that we will need a 20-foot wide strip along the Waimanalo Kupuna Housing highway frontage to widen our existing 80-foot right-of-way. We are prohibited from using park land makai of the existing highway for a federal-aid project.
3. We will allow all turning movements between the highway and the proposed new driveway provided that the DHHL agrees to:
  - a. Provide a left-turn storage lane and right-turn deceleration lane on Kalaniana'ole Highway for driveway access;
  - b. Set back their development to accommodate an additional 20-foot highway right-of-way;
  - c. Grant a license without cost for the Highways Division to construct improvements within the 20-foot setback area;

Mr. Kali K. Watson  
Page 2  
February 25, 1998

STP 8.8429

- d. Modify project plans as necessary to allow Waimanalo residents internal access to the commercial component of the proposed development (i.e., without using Kalaniana'ole Highway); and
  - e. Obtain our approval of plans for the parking lot served by the proposed new driveway to Kalaniana'ole Highway.
4. All plans for improvements within the highway right-of-way must be submitted to our Highways Division for review and approval.
  5. All improvements authorized by the Highways Division within the highway right-of-way must be constructed by the developer at the developer's expense.

Thank you for the opportunity to comment.

c: Mr. Gary Gill, OEQC  
Mr. Stephen Morse, Office of Hawaiian Affairs  
[REDACTED]



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. Patrick T. Onishi, Chief Planning Officer  
Planning Department  
City and County of Honolulu  
650 South King Street, 6th Floor  
Honolulu, Hawai'i 96813

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Onishi:

We have reviewed your letter of February 5, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and offer the following responses to your comments.

1. Your confirmation of Ko'olaupoko Development Plan Land Use Map designation of the project site is noted.
2. Figure 10, depicting the symbols of the Ko'olaupoko Development Plan Public Facilities Map is included in the Final EA.
3. We note that you have no objections to the proposed project if facilities and utilities are adequate.

We appreciate your review and comments on the Draft EA; your concerns are addressed in the Final EA.

Sincerely yours,

PBR HAWAII

Yukie Y. Ohashi  
Project Manager

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

HONOLULU OFFICE

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 525-1402 E-MAIL: pbrhii@aloha.net

WAILUKU OFFICE

2123 KAOHU STREET, WAILUKU, HAWAII 96793-2204

HILO OFFICE

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-9333 FAX: (808) 961-4089

Honorable Kali Watson, Director  
Department of Hawaiian Home Lands  
February 5, 1998  
Page 2

Should you have any questions, please contact Matthew Higashida at 527-6056 of our staff.

Yours very truly,



PATRICK T. ONISHI  
Chief Planning Officer

PTO:js

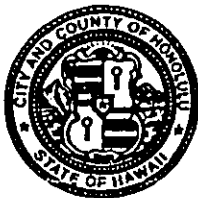
c: Office of Hawaiian Affairs  
Office of Environmental Quality Control  
PBR Hawaii

PLANNING DEPARTMENT  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET, 8TH FLOOR • HONOLULU, HAWAII 96813-3017  
PHONE: (808) 523-4711 • FAX: (808) 523-4950

<b>FEB 9 1998</b>
Project _____
Project No. _____

JEREMY HARRIS  
MAYOR



PATRICK T. ONISHI  
CHIEF PLANNING OFFICER

DONA L. HANAIKE  
DEPUTY CHIEF PLANNING OFFICER

MH 1/98-0038

February 5, 1998

Honorable Kali Watson, Director  
Department of Hawaiian Home Lands  
State of Hawaii  
P.O. Box 1879  
Honolulu, Hawaii 96805

Attention: Mr. Ben Wong

Dear Mr. Watson:

**Waimanalo Kupuna Housing Project**  
**Tax Map Key: 4-1-19: 32, Waimanalo, Oahu, Hawaii**

We have reviewed the DEA for the subject project and have the following comments to offer:

1. We confirm that the subject site is designated for Agriculture and Residential uses on the Koolaupoko Development Plan Land Use Map.
2. The Final Environmental Assessment should indicate that the Koolaupoko Development Plan Public Facilities Map shows symbols within the general vicinity of the subject site which represents the following:
  - a. publicly funded sewer improvements (Waimanalo Sewers, Section 2, Improvement District) within six years;
  - b. publicly funded improvements to Kalaniana'ole Highway Widening/Realignment (Aloiloi/Oluolu) beyond six years; and
  - c. publicly funded improvements to Kalaniana'ole Highway Widening/Realignment (Oluolu/Huli) beyond six years.
3. We have no objections to the proposed Waimanalo Kupuna Housing Project provided that facilities and utilities are adequate.





LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. Anthony J. Lopez, Jr., Fire Chief  
Fire Department  
City and County of Honolulu  
3375 Koapaka Street, Suite H425  
Honolulu, Hawai'i 96819-1869

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Lopez:

We have reviewed your letter of January 9, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and offer the following responses to your comments.

1. The roadways within the project are anticipated to fall within the Board of Water Supply jurisdiction and all related fire infrastructure will be designed to meet City standards. The design standards shall include the location of fire hydrants and minimum fire flow standards. Upon completion of the project, a water flow test will be conducted and documentation will be sent to you to certify compliance with the Fire Department's requirements.
2. Roadways will be all-weather surfaces and will be designed to meet Department of Transportation Services standards.

We appreciate your review and comments on the Draft EA; your concerns are addressed in the Final EA.

Sincerely yours,

PBR HAWAII

Yukie Y. Ohashi  
Project Manager

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

**WAILUKU OFFICE**

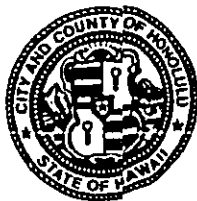
2125 KAOHU STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 942-9878 FAX: (808) 942-9802

**HILO OFFICE**

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989

FIRE DEPARTMENT  
**CITY AND COUNTY OF HONOLULU**

3375 KOAPAKA STREET, SUITE H425  
HONOLULU, HAWAII 96819-1859

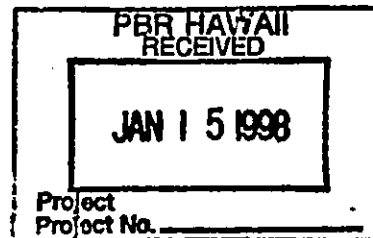


JEREMY HARRIS  
MAYOR

ANTHONY J. LOPEZ, JR.  
FIRE CHIEF

ATTILIO K. LEONARDI  
FIRE DEPUTY CHIEF

January 9, 1998



Ms. Yukie Ohashi  
PBR Hawaii  
1001 Bishop Street  
Pacific Tower, Suite 650  
Honolulu, Hawaii 96813

Dear Ms. Ohashi:

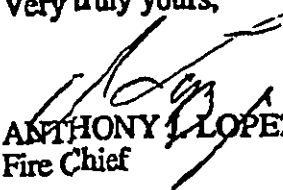
Subject: Waimanalo Kupuna Housing Project  
HFD OL 98-004

We have reviewed the Draft Environmental Assessment of the subject development and have no objections with the project if all of the following conditions are met:

1. If the roadways do not fall within the Board of Water Supply jurisdiction, then fire hydrants shall be installed within 175 feet mid-center of all parcels in the development. The water flow shall be a minimum of 1,000 gpm at 20 psi residual. Once the project has been completed, a water flow test shall be conducted and documentation shall be sent to us certifying that the hydrants have been installed per the above specifications and operational.
2. Roadways shall be all-weather terrain and shall meet Department of Transportation Services standards.

If you need additional information, please contact Battalion Chief Charles Wassman of our Fire Prevention Bureau at 831-7778.

Very truly yours,

  
ANTHONY J. LOPEZ, JR.  
Fire Chief

AJL/CW:bb



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Dr. Jonathan K. Shimada, Director  
Department of Public Works  
City and County of Honolulu  
650 South King Street, 11th Floor  
Honolulu, Hawai'i 96813

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Shimada:

We have reviewed your letter of January 15, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and offer the following responses to your comments.

1. As noted in Section 4.1.4 of the EA, the design of the storm drainage system for the project will depend on the percolation tests. The proposed underground retention beds will be designed to allow storm runoff from paved areas to be directed to planted areas. If it is necessary to connect to the City's storm drain system, water quality inlets will be provided.
2. A storm drain connection permit will be requested from the Department of Public Works to connect drain lines to City streets.
3. A car wash area with a hose bib and sign listing best management practices will be provided for the project as noted in Section 2.3.1 in the Final EA.

Thank you for your review and comments on the Draft EA; your concerns are addressed in the Final EA.

Sincerely yours,

PBR HAWAII

  
Yukie Y. Ohashi  
Project Manager

Wm. Frank Brandt • Thomas S. Witten • P. Stan Duncan • Russell Y. J. Chung

HONOLULU OFFICE

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5651 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

WAILUKU OFFICE

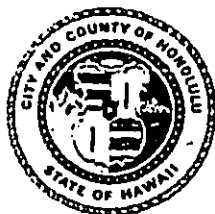
2123 KAOUH STREET, WAILUKU, HAWAII 96793-2204

HILO OFFICE

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276

DEPARTMENT OF PUBLIC WORKS  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET, 11TH FLOOR - HONOLULU, HAWAII 96813  
PHONE: (808) 523-4341 • FAX: (808) 527-5857



JEREMY HARRIS  
MAYOR

JONATHAN K. SHIMADA, PhD  
DIRECTOR AND CHIEF ENGINEER  
ROLAND D. LIBBY, JR.

DEPUTY DIRECTOR

ENV 98-012

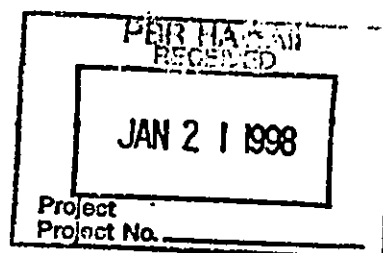
January 15, 1998

Mr. Kali Watson, Director  
Department of Hawaiian Home Lands  
State of Hawaii  
P.O. Box 1879  
Honolulu, Hawaii 96805

Attention: Ben Wong

Dear Mr. Watson:

Subject: Draft Environmental Assessment (DEA)  
Waimanalo Kupuna Housing Project  
TMK: 4-1-19: 32



We have reviewed the subject DEA and have the following comments:

1. Direct storm runoff from paved areas to planted areas for low flows or provide water quality inlets.
2. If drain lines connect to City streets or storm drain system, a storm drain connection permit is required and approved by the Department of Public Works, City and County of Honolulu.
3. The Final Environmental Assessment should indicate that a designated car wash area with a hose bib and sign listing best management practices will be provided for the project.

Should you have any questions, please contact Alex Ho,  
Environmental Engineer, at 523-4150.

Very truly yours,

A handwritten signature in black ink, appearing to read "J. Shimada".

JONATHAN K. SHIMADA, PhD  
Director and Chief Engineer

cc: Office of Hawaiian Affairs (Stephen Morse)  
PBR Hawaii (Yukie Ohashi)

Ms. Jan Naoe Sullivan, Director  
SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT  
March 10, 1998  
Page 2

Business Mixed Use District and the Commercial Center to the B-2 Community Business District.

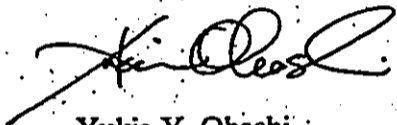
3. **Underground Injection Control.**

Revisions have been made to Section 4.1.6 regarding the Underground Injection Control (UIC) line.

We appreciate your review and comments on the Draft EA; your concerns are addressed in the Final EA.

Sincerely yours,

PBR HAWAII



Yukie Y. Ohashi  
Project Manager



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Ms. Jan Naoe Sullivan, Director  
Department of Land Utilization  
City and County of Honolulu  
650 South King Street, 7th Floor  
Honolulu, Hawai'i 96813

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Ms. Sullivan:

We have reviewed your letter of February 13, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and offer the following responses to your comments.

**1. Master Plan Development and Sewer Adequacy.**

The City Department of Wastewater Management has issued a Notice of Preparation for a Supplemental Environmental Impact Statement (January 28, 1998) for updating the Waimānalo Wastewater Facilities Plan. According to the EIS NOP, the upgrading of the Waimānalo WWTP is dependent on the availability of funding for the improvements. A series of improvements is planned to occur within one to five years.

The project is designed for a total of 83 kūpuna units and 1 manager's unit. Of the total 84 units, 51 will connect to the municipal WWTP. The remaining 33 units and the Commercial Center will be served either by the on-site septic system or by the municipal system when the Waimānalo WWTP is upgraded. The design of the wastewater infrastructure collection system will be adapted to on-site treatment initially and later, to hook-up to the upgraded municipal system.

**2. Zoning.**

The Department of Hawaiian Home Lands intends to exercise its exemption option from zoning requirements. The Final EA has been revised to state that if the Office of Hawaiian Affairs and the Department of Hawaiian Home Lands were to pursue County land use approvals, the 84-unit housing project would require rezoning to an Apartment District or

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-5429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

**WAILUKU OFFICE**

2125 KAOHU STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 242-2878 FAX: (808) 242-2902

**HILO OFFICE**

101 AUPŪNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989

Mr. Kali Watson, Director  
Page 2  
February 13, 1998

3. Section 4.1.6 Underground Injection Control, incorrectly implies that because the project is located above (mauka) the Underground Injection Control (UIC) line, it is "therefore not expected to create any negative impacts". The project's location above the UIC line more accurately means that the subsurface disposal of fluids (i.e., leach field effluent from the temporary wastewater system) is subject to the Department of Health's UIC regulations, Title 11, Chapter 23, Hawaii Administrative Rules.

We have no further comments to offer at this time.

We appreciate the opportunity to comment on this matter. Should you have any questions, please contact Steve Tagawa of our staff at 523-4817.

Very truly yours,



JAN NADE SULLIVAN  
Director of Land Utilization

JNS:am

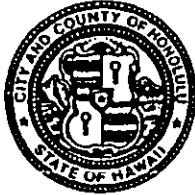
cc: Yukie Ohashi, PBR Hawaii  
Stephen Morse, Office of Hawaiian Affairs  
Gary Gill, Office of Environmental  
Quality Control

g:ppd\DEAkpu2.sht

DEPARTMENT OF LAND UTILIZATION  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813  
PHONE: (808) 523-4414 • FAX: (808) 527-6743

PBR HAWAII RECEIVED
FEB 17 1998
Project _____
Project No. _____



JEREMY HARRIS  
MAYOR

JAN NADE SULLIVAN  
DIRECTOR

LORETTA K.C. CHEE  
DEPUTY DIRECTOR

98-00241(ST)

'98 EA Comments Zone 4

February 13, 1998

Mr. Kali Watson, Director  
Department of Hawaiian Home Lands  
State of Hawaii  
P. O. Box 1879  
Honolulu, Hawaii 96805

Dear Mr. Watson:

Draft Environmental Assessment (EA)  
Waimanalo Kupuna Housing Project  
Waimanalo, Oahu  
Tax Map Key: 4-1-19: 32

We have reviewed the Draft EA for the above-referenced project received on January 6, 1998, and provide the following comments:

1. Section 2.2 MASTER PLAN DEVELOPMENT AND SEWER INFRASTRUCTURE ADEQUACY, should clarify whether there are plans to expand the capacity at the Waimanalo Wastewater Treatment Plant and if so, what is the time frame for such expansion. This section should also discuss the design implications of this time frame relative to the "temporary" septic system proposed for the development of the Commercial Center and remaining (30) Kupuna units.
2. Section 3.1 ZONING, incorrectly states that the housing project is consistent with the area's AG-2 General Agricultural District zoning. The Final EA should be revised to correctly indicate that if the Office of Hawaiian Affairs and the Department of Hawaiian Home Lands were to pursue County land use approvals, the 84-unit housing project would require rezoning to an Apartment District or Business Mixed Use District. Similarly, the proposed Commercial Center is not consistent with the R-10 Residential District zoning and would also require that portion of the project be rezoned to the B-2 Community Business District.





LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. Robert Agres, Jr, Director  
Department of Housing and Community Development  
City and County of Honolulu  
650 South King Street, 5th Floor  
Honolulu, Hawaii 96813

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

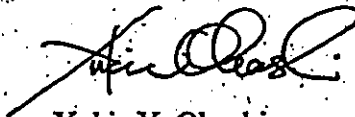
Dear Mr. Agres:

We have reviewed your letter of January 22, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and note that your agency supports the development of the project.

We appreciate your review and comments on the Draft EA. Thank you for participating in the environmental review process.

Sincerely yours,

PBR HAWAII

  
Yukie Y. Ohashi  
Project Manager

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96815-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

**WAILUKU OFFICE**

2125 KAOUH STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 242-2878 FAX: (808) 242-2902

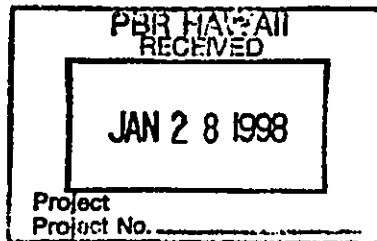
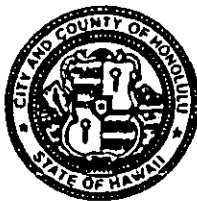
**HILO OFFICE**

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET, 5TH FLOOR • HONOLULU, HAWAII 96813  
PHONE: (808) 523-4427 • FAX: (808) 527-5498

JEREMY HARRIS  
MAYOR



ROBERT AGRES JR.  
DIRECTOR  
DARWIN J. HAMAMOTO  
DEPUTY DIRECTOR

January 22, 1998

Mr. Stephen Morse  
Office of Hawaiian Affairs  
711 Kapiolani Boulevard, Suite 500  
Honolulu, Hawaii 96813-5249

Dear Mr. Morse:

Subject: Environmental Assessment  
Waimanalo Kupuna Housing Project  
OHA Project on DHHL Lands  
Tax Map Key: 4-1-19: 32

The Department of Housing and Community Development has reviewed the above cited request. We support the development of a 7.29-acre site in Waimanalo for the construction of an 84-unit elderly affordable housing facility, commercial center and community center.

Thank you for the opportunity to comment on this matter.

Sincerely,

A handwritten signature in cursive script, appearing to read "Robert Agres, Jr.".

ROBERT AGRES, JR.  
Director

cc: Department of Hawaiian Home Lands  
Office of Environmental Quality Control  
v PBR Hawaii

Mr. Raymond H. Sato

SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT

March 10, 1998

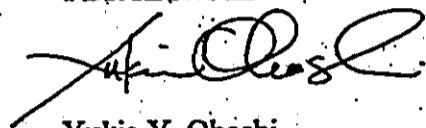
Page 2

7. A Board of Water Supply approved reduced pressure principle backflow water meter will be installed immediately upon installation of each water meter serving the site.

We appreciate your review and comments on the Draft EA; your concerns are addressed in the Final EA. Thank you for participating in the environmental review process.

Sincerely yours,

PBR HAWAII



Yukie Y. Ohashi  
Project Manager



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. Raymond H. Sato, Manager and Chief Engineer  
Board of Water Supply  
City and County of Honolulu  
630 South King Street  
Honolulu, Hawai'i 96843

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Sato:

We have reviewed your letter of February 25, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and offer the following responses to your comments.

1. We note your comment that the existing off-site water system is adequate to accommodate the proposed development.
2. A water allocation will be obtained by the Office of Hawaiian Affairs from the Department of Hawaiian Home Lands.
3. The developer will pay the required charges to the BWS for water system facilities for transmission and daily storage.
4. The average daily water demand will be verified by the project engineer in the design phase of the project. To be included in the verification will be a breakdown of the estimates, based on residential units, kūpuna center, and the commercial center.
5. The construction drawings for the project will show the meter requirements and will be submitted for your review and approval.
6. The on-site fire protection requirements will be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

**WAILUKU OFFICE**

2123 KAOHU STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 242-2878 FAX: (808) 242-2902

**HILO OFFICE**

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989



Mr. Kali Watson  
Page 2  
February 25, 1998

5. If a three-inch or larger water meter is required, the construction drawings showing the installation of the meter should be submitted for our review and approval.
6. The on-site fire protection requirements should be coordinated with Fire Prevention Bureau of the Honolulu Fire Department.
7. A Board of Water Supply approved reduced pressure principle backflow prevention assembly is required to be installed immediately after each water meter serving the site.

If you have any questions, please contact Barry Usagawa at 527-5235.

Very truly yours,

  
RAYMOND H. SATO  
Manager and Chief Engineer

cc: Stephen Morse, Office of Hawaiian Affairs  
Yukie Ohashi, PBR Hawaii  
Office of Environmental Quality Control

COPY

**BOARD OF WATER SUPPLY**

CITY AND COUNTY OF HONOLULU  
630 SOUTH BERETANIA STREET  
HONOLULU, HAWAII 96843  
PHONE (808) 527-6180  
FAX (808) 533-2714

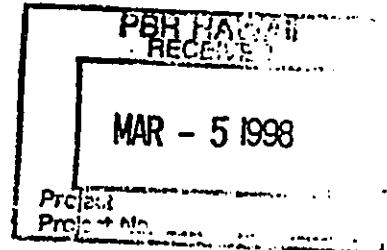


February 25, 1998

JEREMY HARRIS, Mayor

WALTER O. WATSON, JR., Chairman  
MAURICE H. YAMASATO, Vice Chairman  
KAZU HAYASHIDA  
MELISSA Y.J. LUM  
FORREST C. MURPHY  
JONATHAN K. SHIMADA, PhD  
BARBARA KIM STANTON

RAYMOND H. SATO  
Manager and Chief Engineer



Mr. Kali Watson, Chairman  
Hawaiian Homes Commission  
Department of Hawaiian Home Lands  
State of Hawaii  
P. B. Box 1879  
Honolulu, Hawaii 96805

Attention: Ben Wong

Dear Mr. Watson:

Subject: Your Transmittal of the Draft Environmental Assessment for the Waimanalo Kupuna Housing Project, Waimanaio, Oahu, TMK: 4-1-19: 32

Thank you for the opportunity to review the Draft Environmental Assessment (EA) for the elderly housing and commercial center project.

We have the following comments to offer:

1. The existing off-site water system is presently adequate to accommodate the proposed development.
2. The developer is required to obtain a water allocation from the Department of Hawaiian Home Lands.
3. The availability of water will be determined when the Building Permit Applications are submitted for our review and approval. If water is made available, the applicant will be required to pay our Water System Facilities Charges for transmission and daily storage.
4. The average daily water demand should be verified. According to the Draft EA, the total demand will be 22,500 gallons per day (gpd). Please provide a breakdown of the estimates, based on the residential units and the community and commercial center.

Mr. Gary Gill, Director  
SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT  
March 10, 1998  
Page 2

conclusions regarding the probability of nutrient and pathogen delivery to coastal waters. The study indicated that pathogens from the existing non-conforming cesspools in the Waimānalo beachlot area located to the north of the subject property may potentially be removed by the sandy soils. The discharge of nitrogen to the coastal waters in the form of soluble nitrates, however, was detected and it is believed that the bulk of groundwater nitrogen from cesspools probably does reach coastal waters.

We are assured that nearshore water quality will not be compromised by the proposed septic system since the DOH routinely allows their use in non-sewered areas.

2. **Proximity of the kūpuna housing project to the Unisyn facility.** As we have stated in a letter to Mr. Joseph Ryan of Hilltop Equestrian Centre, the proposed kūpuna housing project is located approximately half a mile to the east or upwind of the Unisyn facility. The prevailing winds at Waimānalo are northeasterly. Waimānalo is a rural community with a strong agricultural land use base. Consequently, depending on wind patterns, odors may from time to time be present at the kūpuna housing project site similar to other areas of Waimānalo. While the sporadic presence of odors during periods of kona winds may be a nuisance to some kūpuna residents, a study entitled "Unisyn Biowaste Technology, Waimānalo, Hawaii Facility, Odor & Emissions Control Report" by E & A Environmental Consultants, Inc. (1995) has indicated that "the analytical results of more than 100 volatile organic compounds and reduced sulfur compounds in air emissions generated by Unisyn is not a health risk to its workers and nearby residents". We would like to refer you to our letter dated March 10, 1998 addressed to Mr. Ryan.
3. **Significance criteria.** The significance criteria has been re-evaluated pursuant to the revised Administrative Rules and is included in the Final EA.

We appreciate your review and comments on the Draft EA; your concerns are addressed in the Final EA. All other comments received in the public review process are also addressed and included in the Final EA.

Sincerely yours,

PBR HAWAII

  
Yukie Y. Ohashi  
Project Manager



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. Gary Gill, Director  
Office of Environmental Quality Control  
235 South Beretania Street  
Honolulu, Hawai'i 96813

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Gill:

We have reviewed your memorandum of February 9, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and offer the following responses to your comments.

1. **Wastewater treatment alternatives.** Regarding the wastewater treatment alternatives for the proposed Kūpuna Project, the landowner and the project developer (Department of Hawaiian Home Lands and the Office of Hawaiian Affairs) and the affected agencies, which include the Department of Health, the Department of Land and Natural Resources, and the City Department of Wastewater Management, are continuing discussions of the possible development of a temporary septic tank leaching field system for 33 of the 84 units proposed.

**Direct and indirect effects on the environment of a septic tank leaching field system.** A temporary septic tank leaching field sewage disposal system is considered for the 33 units located below the "no-pass" zone. Typically, the Department of Health allows use of this type of system if no sewer treatment system is available in the immediate vicinity of the project. DOH currently allows residences in the Waimānalo area with cesspool systems to continue their use even though cesspools discharge more waste into the surrounding groundwater than a septic leaching field system.

The base flood elevation in the area of the proposed site for the on-site septic system is 16.5 feet MSL. Consequently, the ground level will be elevated to 16.5 feet. The bottom elevation of the leaching field is expected to be about 10 feet MSL. Groundwater is therefore not anticipated since high tide water elevation is generally about 2.5 feet MSL.

By contrast, recent groundwater investigations related to coastal cesspools by the University of Hawai'i, Water Resources Center allowed the researchers to reach some tentative

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

**WAILUKU OFFICE**

2123 KAŌHU STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 242-2878 FAX: (808) 242-2902

**HILO OFFICE**

101 AUPŪNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989



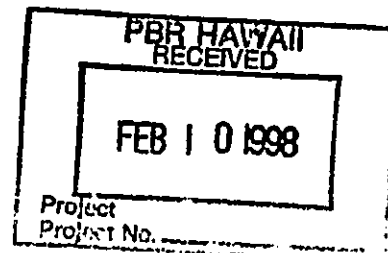
BENJAMIN J. CAYETANO  
GOVERNOR



GARY GILL  
DIRECTOR

STATE OF HAWAII  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET  
SUITE 702  
HONOLULU, HAWAII 96813  
TELEPHONE (808) 586-4185  
FACSIMILE (808) 586-4186



February 9, 1998

**TO:** The Honorable Kali Watson, Chairperson  
Department of Hawaiian Home Lands


**FROM:** Director of Environmental Quality Control

**SUBJECT:** Comments on the Draft Environmental Assessment (DEA) for the Waimanalo Kupuna Housing Project

Having reviewed the subject DEA, we submit the following comments for your response.

- 1) Page 9 notes that the municipal wastewater treatment capability of the Waimānalo Sewage Treatment Plant (STP) is at capacity and the City will allow a hookup of only 51 of the 83 apartment units. Both the Office of Hawaiian Affairs (OHA) and the Department of Hawaiian Home Lands (DHHL) are currently discussing the development of a temporary septic tank/leaching field for the remainder of the project (until the Waimānalo STP is upgraded). Please discuss the direct and indirect effects on the environment of using a temporary system (i.e., groundwater quality, nearshore water quality, etc.).
- 2) Please discuss the proximity of the proposed facility to the Unisyn facility and potential impacts on the residents from any odors known to exist in the area.
- 3) The significance criteria in Section 11-200-12, Hawai'i Administrative Rules, were revised effective August 31, 1996. Please re-evaluate the project's significance in light of these revised criteria. A model evaluation (that thoroughly discusses each criterion and does not simply negate it) is enclosed for your information.

Please include a copy of this memorandum, any other comment letters and your responses in the final environmental assessment and notice of determination for this project. If there are any questions, please call Leslie Segundo of my staff at 586-4185. Thank you for the opportunity to comment.

  
GARY GILL

c: Mr. Ben Wong, Department of Hawaiian Home Lands (w/enclosure)  
Mr. Stephen Morse, Office of Hawaiian Affairs (w/enclosure)  
Ms. Yukie Ohashi, PBR Hawaii (w/enclosure)



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. Roy Oshiro, Executive Director  
Department of Budget and Finance  
Housing Finance Development Corporation  
677 Queen Street, Suite 300  
Honolulu, Hawai'i 96813

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Oshiro:

We have reviewed your memorandum of February 9, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and offer the following responses to your comments.

1. At this time the Office of Hawaiian Affairs has not yet determined if the units will be rented, leased or sold outright, nor has any decisions been made regarding prices of units if they are leased or sold. Sources of funding under the lease and sales options will be determined if those options are selected for the project.
2. We have corrected a typographical error which stated that the Housing Finance Development Corporation would provide referrals for the proposed project.
3. According to the *Site Assessment and Feasibility Reports* (Group 70 1993, page 38) special currently, there are federally funded elderly programs in place which are provided by Alu Like, Inc. These programs are designed for the elderly native Hawaiian community.

We appreciate your review and comments on the Draft EA; your concerns are addressed in the Final EA.

Sincerely yours,

PBR HAWAII

Yukie Y. Ohashi  
Project Manager

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

HONOLULU OFFICE

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

WAILUKU OFFICE

2123 KAOHU STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 249-2978 FAX: (808) 249-2907

HILO OFFICE

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989

BENJAMIN J. CAYETANO  
GOVERNOR



ROY S. OSHIRO  
EXECUTIVE DIRECTOR

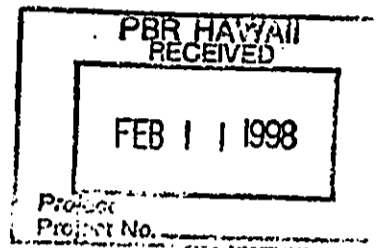
STATE OF HAWAII  
DEPARTMENT OF BUDGET AND FINANCE  
HOUSING FINANCE AND DEVELOPMENT CORPORATION

677 QUEEN STREET, SUITE 300  
HONOLULU, HAWAII 96813  
FAX (808) 587-0600

IN REPLY REFER TO

98:PPE/477

February 9, 1998



TO: Mr. Ben Wong  
Department of Hawaiian Home Lands

FROM: Roy S. Oshiro *[Signature]*  
Executive Director

SUBJECT: Draft Environmental Assessment for the Waimanalo  
Kupuna Housing Project

We have reviewed the subject draft assessment and offer the following comments:

1. No resolution has been made yet if units will be rented, leased or sold outright (page 39). If the units are leased or sold, at what prices will they be offered? Also, what is the source(s) of funding under the lease and sales options?
2. A statement is made on page 39 that agencies including the Housing Finance and Development Corporation would provide referrals for the proposed project. If this is the case, discussions should be initiated between OHA and HFDC.
3. Please expand on the statement that is made on page 45 that "the establishment of federally funded support services for the Hawaiian population in Waimanalo makes the subject location well suited for the development of kupuna housing." What are the sources of federal funding and what types of support services will be provided?

Thank you for the opportunity to comment.

c: Office of Hawaiian Affairs  
/ PBR Hawaii



Mr. Kazu Hayashida, Director  
SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT  
March 11, 1998  
Page 2

- c. DHHL will grant a license to DOT at the appropriate time in the future to construct the improvements within the 20-foot setback area.
  - d. The master plan allows access between the Kūpuna Housing Project and the Commercial Center through the property which would not require kūpuna to use Kalaniana'ole Highway to enter the Commercial Center. In addition, additional access to the Commercial Center is proposed from Nakini Street.
  - e. Plans for the parking lot will be submitted to DOT for your review.
4. All plans for improvements within the highway right-of-way will be submitted to the Highways Division for review and approval.
5. All improvements authorized by the Highways Division within the highway right-of-way will be constructed by the developer.

We appreciate your review and comments on the Draft EA; your concerns are addressed in the Final EA. Thank you for participating in the environmental review process.

Sincerely yours,

PBR HAWAII



Yukie Y. Ohashi  
Project Manager



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 11, 1998

Mr. Kazu Hayashida, Director  
State of Hawai'i  
Department of Transportation  
869 Punchbowl Street  
Honolulu, Hawai'i 96813-5097

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Hayashida:

We have reviewed your memorandum of February 25, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and offer the following responses to your comments.

1. A traffic signal is not required of this project. Signal warrant would depend on the future development of other Department of Hawaiian Home Lands (DHHL) lands. When warranted, DHHL will confer with the Highways Division regarding the installation of traffic signals at the intersection of Kalaniana'ole Highway and Nakini Street.
2. The Traffic Assessment (attached to the Final EA as Appendix D) for the project indicates that the State DOT is commencing a planning study to explore alternative improvements to Kalaniana'ole Highway which may involve widening of the highway from two lanes to four lanes. The project master plan is has designated a twenty (20) foot-wide road setback along the property frontage on Kalaniana'ole Highway for the future DOT improvements.
3. a. The Traffic Assessment for the project has not determined that the traffic demand at the Commercial Center access driveway would meet volume warrants for an exclusive left turn lane and right turn deceleration lane. Turning lanes could be accommodated by State DOT plans for the future improvement of Kalaniana'ole Highway. The developer will consult with the Highways Division during the design phase of the project on the requirements for a left-turn storage lane and right-turn deceleration lane at the Kalaniana'ole Highway entrance of the Commercial Center.  
  
b. A 20 foot-wide setback is designated on the project master plan.

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

HONOLULU OFFICE

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

WAILUKU OFFICE

2123 KAOHU STREET, WAILUKU, HAWAII 96795-2204  
TELEPHONE: (808) 242-2878 FAX: (808) 242-2902

HILO OFFICE

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989

POLICE DEPARTMENT  
**CITY AND COUNTY OF HONOLULU**  
801 SOUTH BERETANIA STREET  
HONOLULU, HAWAII 96813 - AREA CODE (808) 529-3111



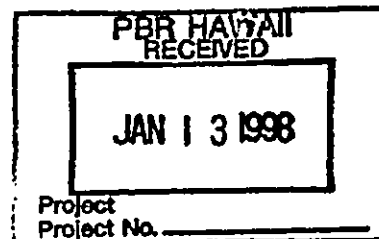
JEREMY HARRIS  
MAYOR

LEE D. DONOHUE  
ACTING CHIEF

WILLIAM B. CLARK  
DEPUTY CHIEF

OUR REFERENCE BS-DL

January 9, 1998



Ms. Yukie Ohashi  
PBR Hawaii  
Pacific Tower, Suite 650  
1001 Bishop Street  
Honolulu, Hawaii 96813

Dear Ms. Ohashi:

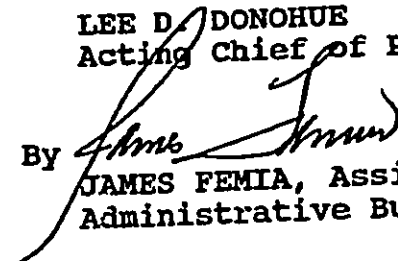
This is in response to the Final Environmental Impact Statement for the Waimanalo Kupuna Housing Project in Koolaupoko, Tax Map Key 4-1-19:32.

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

Thank you for the opportunity to review this document.

Sincerely,

LEE D. DONOHUE  
Acting Chief of Police

By   
JAMES FEMIA, Assistant Chief  
Administrative Bureau



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. James Femia, Assistant Chief  
Police Department  
City and County of Honolulu  
801 South Beretania Street  
Honolulu, Hawai'i 96813

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Femia:

We have reviewed your letter of January 9, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and note that the proposed project should not have a significant impact on the operations of the Honolulu Police Department.

We appreciate your review and comments on the Draft EA. Thank you for participating in the environmental review process.

Sincerely yours,

PBR-HAWAII

Yukie Y. Ohashi  
Project Manager

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

**WAILUKU OFFICE**

**HILO OFFICE**

101 AIRLINE STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276



United States Department of the Interior

U.S. GEOLOGICAL SURVEY  
WATER RESOURCES DIVISION  
677 Ala Moana Boulevard, Suite 415  
Honolulu, Hawaii 96813

JAN 9 1998

Project  
Project No. \_\_\_\_\_

January 7, 1998

Mr. Brian J.J. Choy  
Director  
State of Hawaii  
Office of Environmental Quality Control  
220 South King Street, Fourth Floor  
Honolulu, Hawaii 96813

Dear Mr. Choy:

Subject: Draft Environmental Assessment  
Waimanalo Kupuna Housing

The staff of the U.S. Geological Survey, Water Resources Division, Hawaii District, has reviewed the Draft Environmental Assessment, and we have no comments to offer at this time.

Thank you for allowing us to review the report. We are returning it for your future use.

Sincerely,

William Meyer  
District Chief

Enc.

cc: Ben Wong, Department of Hawaiian Home Lands  
Stephen Morse, Office of Hawaiian Affairs  
Yukie Ohashi, PBR Hawaii





LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. William Meyer, District Chief  
US Department of the Interior  
US Geological Survey  
Water Resources Division  
677 Ala Moana Boulevard, Suite 415  
Honolulu, Hawai'i 96813

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Meyer:

We have reviewed your letter of January 7, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and note that your agency has no comments to offer at this time.

Thank you for participating in the environmental review process.

Sincerely yours,

PBR HAWAII

Yukie Y. Ohashi  
Project Manager

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhj@aloha.net

**WAILUKU OFFICE**

2125 KAOHU STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 949-9070 FAX: (808) 949-9070

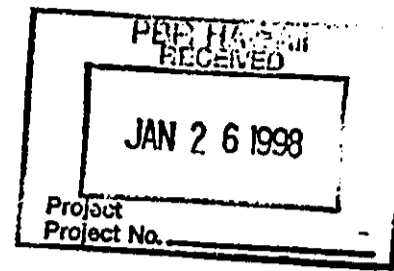
**HILO OFFICE**

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989

Hawaiian Electric Company, Inc. - PO Box 2750 - Honolulu, HI 96840-0001



Patricia Uyehara Wong, Esq.  
Manager  
Environmental Department



January 22, 1998

Department of Hawaiian Homes Lands  
State of Hawaii  
P.O. Box 1879  
Honolulu, HI 96805  
Attention: Mr. Ben Wong

Dear: Mr. Wong

Subject: Waimanalo Kupuna Housing Project

Thank you for the opportunity to comment on your December 1997 Draft EA for the Waimanalo Kupuna Housing Project, as proposed by the Department of Hawaiian Homes Lands. We have reviewed the subject document and have no comments at this time.

HECO shall reserve further comments pertaining to the protection of existing powerlines bordering the project area until construction plans are finalized. Again, thank you for the opportunity to comment on this draft environmental assessment.

Sincerely,

cc:  
PBR Hawaii  
Pacific Tower, Suite 650  
1001 Bishop Street  
Honolulu, HI 96813  
Atten: Yukie Ohashi

Office of Hawaiian Affairs  
711 Kapiolani Blvd., Suite 500  
Honolulu, HI 96813-5249  
Atten: Stephen Morse

WINNER OF THE EDISON AWARD  
FOR DISTINGUISHED INDUSTRY LEADERSHIP





LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Ms. Patricia Uyehara Wong, Esq., Manager  
Environmental Department  
Hawaiian Electric Company, Inc.  
P.O. Box 2750  
Honolulu, Hawai'i 96840-0001

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Ms. Wong:

We have reviewed your letter of January 22, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and note that you have no comments to offer at this time.

We also note that HECO shall reserve further comments pertaining to the protection of existing power lines bordering the project area until construction plans are finalized. Construction plans shall be submitted for your review when they are completed.

Thank you for participating in the environmental review process.

Sincerely yours,

PBR HAWAII

Yukie Y. Ohashi  
Project Manager

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 525-1402 E-MAIL: pbrhi@aloha.net

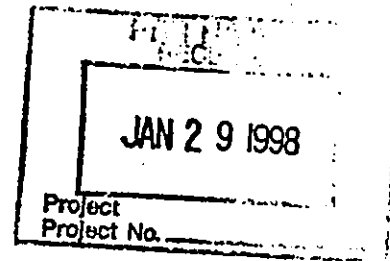
**WAILUKU OFFICE**

2125 KAOIHI STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 242-2878 FAX: (808) 242-2902

**HILO OFFICE**

101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989

HILLTOP EQUESTRIAN CENTRE  
P.O. Box 562  
WAIMANALO, HAWAII 96795  
(808) 259-8483  
(808) 259-8870



Joseph N. A. Ryan Jr.  
Owner  
Hilltop Equestrian Centre  
P.O. Box 562  
Waimanalo, Hawaii 96795

January 17, 1998

Office of Hawai'ian Affairs  
711 Kapiolani Blvd. Suite 1250  
Honolulu, Hawaii 96813

**RE: Waimanalo Kupuna Housing Project, Environmental Assessment Comments**

Dear Stephen Morse:

The Waimanalo Kupuna Housing Project, Site Assessment and Feasibility Report (Group 70 1993) relied on and referred to in Section 1.2, paragraph 5, appears to be outdated and missing data on current land use trends in Waimanalo. As a result the Draft EA published has failed to note the presence of a garbage processing plant known as Unisyn Biowaste Technology, d.b.a. Unisyn about one half mile southwest of the project.

Waimanalo is currently subject to the improper land use of a garbage processor. The waste processed at this facility includes meats, fish, chicken, and grease trap pumpings in the amount of 35 tons a day. The facility is expected, in the future, to increase to 70 to 150 tons a day. Garbage processing is known to produce bioaerosols, endotoxins, and other particulate and gaseous emissions that could prove fatal to persons of advanced age and suffering the frailties of age including both elderly and infants. The area occupied by the odor and emissions distributed by Unisyn is several square miles. The odor and emissions are strong and burn the eyes, noses and throats of Waimanalo Residents and have even made the DLNR Oahu District Land Agent nauseated. The Kupuna project is meant to protect and serve the elderly by providing them with a safe residence and available health care. Placing Kupuna in such close proximity to the garbage plant will cause them unnecessary discomfort and medical maladies.

The Draft EA states in Section 4.2.11.3, Health Care Services, the elders "require more health care" and the "Kupuna housing project will likely increase demand for health services." The elderly, exposed to the fallout of such bacteria and fungi as Clostridium Perfringens, Aspergillus Fumigatus and many others disease causing or exacerbating organisms, will undoubtedly suffer skin, lung and eye irritations to a greater degree than the current population. Federal and private publications state the products of composting and sludge composting result in elevated levels of

fungi downwind and that "Fungi are considered secondary pathogens or opportunistic pathogens, which invade and infect weakened or debilitated persons or immunocompromised individuals (persons on immunosuppressant drugs who have low resistance to infection). Secondary pathogenic substances, transported as bioaerosols, can cause allergic reactions, infections, irritations, or other pathological symptoms".<sup>1</sup>

The City and County recognizes the processing of restaurant and hotel garbage at similar facilities is a noxious use of land and is considering, via Bill 74(1997), of creating a buffer zone of 1,500 feet around this type of facility in land classifications other than AG-1. This distance is not sufficient during periods of kona wind when the facility emissions will be directed toward the Kupuna project.

I must therefore object to the Waimanalo Kupuna Housing Project under the following significance criteria:

Substantially affects the economic or social welfare of the community or state:

The elders infected by the putrid emissions of Unisyn will require additional care and that unnecessary and avoidable burden is a substantial affect on the economy, including Medicare.

Substantially affects public health:

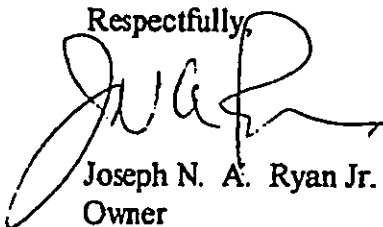
The bioaerosol and fungi laden environment will be detrimental to the kupuna.

Involves substantial secondary effects, such as population changes or infrastructure demands:

The kupuna will be too far from the source of medical care to receive consistent, timely and regular care for the infections and irritations of biowaste emissions they will breathe and which will enter the pores of their skin. It will result in strained ambulance services and health care services.

I would never subject over 160 elders to the torture of living so close to Ho'o Pilau (the place of rotting meat and putrid fish).

Respectfully,



Joseph N. A. Ryan Jr.  
Owner

---

<sup>1</sup> BIOSOLIDS COMPOSTING, Water Environment Federation, 1995.

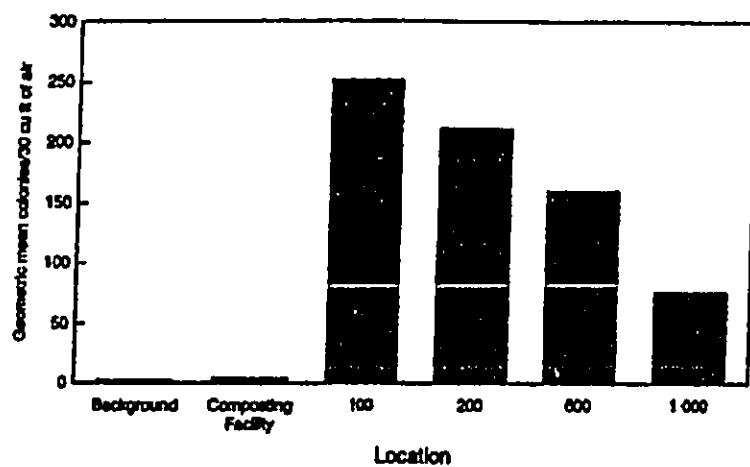


Figure 8.2 *Aspergillus fumigatus* levels at the Hampton Roads, Virginia, composting facility (cu ft  $\times [2.832 \times 10^{-2}] = m^3$ ; ft  $\times 0.3048 = m$ ) (location numbers refer to distances in ft downwind of facility).

This graph indicates the presence of contaminants downwind of a "composting facility." The graph and the accompanying information in the original publication does not detail the wind strength at the site. The remaining unanswered questions are: how far are the contaminants carried on Hawai'i's standard wind conditions (15 to 30 mph, gusting to 40 mph) and what contaminants can be carried from a "biosolids composting facility?"



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

March 10, 1998

Mr. Joseph N. A. Ryan, Jr., Owner  
Hilltop Equestrian Centre  
P.O. Box 562  
Waimānalo, Hawai'i 96795

**SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT**

Dear Mr. Ryan:

We have reviewed your letter of January 17, 1998 regarding the Draft Environmental Assessment for the Waimānalo Kūpuna Housing Project and offer the following responses to your comments.

1. **Unisyn Biowaste Technology.** We note your comment and have included the Unisyn facility as well as other agricultural land uses as surrounding land uses in Section 1.7 of the Final EA.
2. **Spatial relationship between Unisyn and the Kūpuna Housing Project.** The proposed Kūpuna Housing Project is located approximately half a mile to the east, or upwind, of the Unisyn facility. The prevailing winds at Waimānalo are northeasterly. Waimānalo is a rural community with a strong agricultural land use base. Consequently, depending on wind patterns, odors may from time to time be present during periods of kona winds at the kūpuna housing project site, similar to other areas of Waimānalo.
3. **Impact of Unisyn on the community.** At this time we have been made aware of odor nuisances present in Waimānalo, however we are not aware of any epidemiological studies that indicate that the health of kūpuna or other members of the community is directly impacted as a result of the operations of the Unisyn facility. We note that a study entitled "Unisyn Biowaste Technology, Waimānalo, Hawai'i Facility, Odor & Emissions Control Report" by E & A Environmental Consultants, Inc. (1995) has indicated that "the analytical results of more than 100 volatile organic compounds and reduced sulfur compounds in air emissions generated by Unisyn is not a health risk to its workers and nearby residents".

Wm. Frank Brandt • Thomas S. Witten • R. Stan Duncan • Russell Y. J. Chung

**HONOLULU OFFICE**

1001 BISHOP STREET, PACIFIC TOWER, SUITE 650, HONOLULU, HAWAII 96813-3429  
TELEPHONE: (808) 521-5631 FAX: (808) 523-1402 E-MAIL: pbrhi@aloha.net

**WAILUKU OFFICE**

2123 KAOHU STREET, WAILUKU, HAWAII 96793-2204  
TELEPHONE: (808) 242-2878 FAX: (808) 242-2902

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101 AUPUNI STREET, HILO LAGOON CENTER, SUITE 310, HILO, HAWAII 96720-4276  
TELEPHONE: (808) 961-3333 FAX: (808) 961-4989

Mr. Joseph N. A. Ryan, Jr.  
SUBJECT: WAIMĀNALO KŪPUNA HOUSING PROJECT  
March 10, 1998  
Page 2

4. **Significance criteria.** We acknowledge that there are odors and emissions present in the community which may be generated by the Unisyn facility, however, we believe that the Kūpuna Housing Project site is sufficiently buffered from it by its upwind location a half mile away. We further note that many kūpuna who are expected to reside at the new housing project are already residing in Waimānalo.

Substantially affects the economic or social welfare of the community or state:

Substantially affects public health:

According to the Waimānalo Health Center, epidemiological studies have not been done to assess if the health of kūpuna or others in the community is directly affected by the odors and emissions generated by the Unisyn facility.

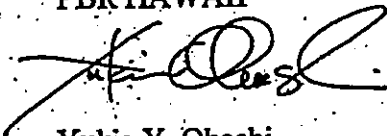
Involves substantial secondary effects, such as population changes or infrastructure demands:

As stated in the Section 4.2.11.3 of the Environmental Assessment, we acknowledge that as populations age, their health care needs increase. Although this project is not directed towards assisted living, it provides a transition for our kūpuna who can thrive in an independent living environment. While it is uncertain if infections and irritations due to biowaste emissions will result and require ambulance service, we note that Castle Medical Center, located in Kailua is 7 to 10 minutes from the project location by ambulance.

Thank you for participating in the environmental review process; your concerns are addressed in the Final EA.

Sincerely yours,

PBR HAWAII



Yukie Y. Ohashi  
Project Manager



8.0  
REFERENCES

WAIMĀNALO KŪPUNA HOUSING PROJECT  
Final Environmental Assessment

## 8.0 REFERENCES

- Akinaka & Associates, Ltd., *Environmental Assessment Notice of Determination of Negative Declaration, Waimānalo Residence Lots, Unit 8*. 1989.
- Akinaka & Associates, Ltd., *Environmental Assessment for Waimānalo Residence Lots, Unit 9*. 1995.
- Armstrong, R. W. ed. *Atlas of Hawai'i*. 2nd edition. Honolulu: University of Hawai'i Press, 1983.
- Baker, H.L. et al. *Detailed Land Classification, Island of Hawai'i*. L.S. Land Study Bureau, University of Hawai'i, 1965.
- El-Kadi, A.I., R. Fujioka, D.J. Hoover, T.M. Unutoa. *Assessment of Nitrogen and Microbial Contributions of Waimānalo "Beach Lot" Cesspool Systems to Groundwater*. 1997.
- Envirosearch International, *Phase One Environmental Assessment at Nakini Street and Kalaniana'ole Highway, Waimānalo, O'ahu, Hawai'i*. 1995.
- Graham Murata Russell, *Preliminary Market and Feasibility Report of Development for a Parcel Located in Waimanalo, Hawai'i Tax Map Key 4-1-19: 32*.
- Group 70 International, *Site Assessment and Feasibility Reports, Kalāwahine, Moreira Dairy Farm and Waimānalo, O'ahu, Hawai'i*. 1993.
- Hawai'i Pacific Engineers. *Supplemental Environmental Impact Statement Preparation Notice, Waimānalo Wastewater Facilities Plan, Koolaupoko, 'Oahu, Hawai'i, Honolulu, Hawai'i*. 1998.
- Hawai'i State Department of Agriculture. *Agricultural Lands of Importance to the State of Hawai'i*. Honolulu, Hawai'i. 1977.
- Okaneke, R. *Traffic Assessment, Waimānalo Kūpuna Housing Project*. Honolulu, Hawai'i. 1997.
- PBR Hawaii for Department of Hawaiian Home Lands. *Hawaiian Home Lands: Land Assessment Studies Phase 5 - Planning Assessment: Total Land Inventory*. 1995.
- R.M. Towill Corporation, *Waimānalo Kūpuna Housing Project, Civil Engineering Preliminary Report*. 1997.
- United States Department of Agriculture Soil Conservation Service. *Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lāna'i, State of Hawai'i*, 1972.
- United States Department of Commerce, Bureau of the Census. *1990 Census of Population and Housing, Hawai'i SSEHC. CHP-5-13*. Washington, D.C., 1992a.
- United States Department of Commerce, Bureau of the Census. *1990 Census of Population and Housing, Summary Tape File 3-A: Alaska, Hawai'i, Oregon. CD90-3A-02*. Washington, D.C., 1992b.

A  
CIVIL ENGINEERING PRELIMINARY REPORT

# CORRECTION

THE PRECEDING DOCUMENT(S) HAS  
BEEN REPHOTOGRAPHED TO ASSURE  
LEGIBILITY  
SEE FRAME(S)  
IMMEDIATELY FOLLOWING

WAIMĀNALO KŪPUNA HOUSING PROJECT  
Final Environmental Assessment

8.0 REFERENCES

Akinaka & Associates, Ltd., *Environmental Assessment Notice of Determination of Negative Declaration, Waimānalo Residence Lots, Unit 8*. 1989.

Akinaka & Associates, Ltd., *Environmental Assessment for Waimānalo Residence Lots, Unit 9*. 1995.

Armstrong, R. W. ed. *Atlas of Hawai'i*. 2nd edition. Honolulu: University of Hawai'i Press, 1983.

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

El-Kadi, A.I., R. Fujioka, D.J. Hoover, T.M. Unutoa. *Assessment of Nitrogen and Microbial Contributions of Waimānalo "Beach Lot" Cesspool Systems to Groundwater*. 1997.

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Graham Murata Russell, *Preliminary Market and Feasibility Report of Development for a Parcel Located in Waimanalo, Hawai'i Tax Map Key 4-1-19: 32*.

Group 70 International, *Site Assessment and Feasibility Reports, Kalāwahine, Moreira Dairy Farm and Waimānalo, O'ahu, Hawai'i*. 1993.

Hawai'i Pacific Engineers. *Supplemental Environmental Impact Statement Preparation Notice, Waimānalo Wastewater Facilities Plan, Koolaupoko, 'Oahu, Hawai'i, Honolulu, Hawai'i*. 1998.

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

Okaneku, R. *Traffic Assessment, Waimānalo Kūpuna Housing Project*. Honolulu, Hawai'i. 1997.

PBR Hawaii for Department of Hawaiian Home Lands. *Hawaiian Home Lands: Land Assessment Studies Phase 5 - Planning Assessment: Total Land Inventory*. 1995.

R.M. Towill Corporation, *Waimānalo Kūpuna Housing Project, Civil Engineering Preliminary Report*. 1997.

United States Department of Agriculture Soil Conservation Service. *Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lāna'i, State of Hawai'i*, 1972.

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United States Department of Commerce, Bureau of the Census. *1990 Census of Population and Housing, Summary Tape File 3-A: Alaska, Hawai'i, Oregon. CD90-3A-02*. Washington, D.C., 1992b.

WAIMĀNALO KŪPUNA HOUSING PROJECT  
Final Environmental Assessment

United States Department of Commerce, Bureau of the Census. *1990 Census of Population and Housing, Summary Tape File 1-A: Pacific Division, Vol. 1. CD90-1A-9-1.* Washington, DC, 1991.  
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Zaner, L. O. "Housing for Seniors, Managing Care" in *Urban Land*. June 1997, pp. 51-53.

A  
CIVIL ENGINEERING PRELIMINARY REPORT

# R. M. TOWILL CORPORATION

420 Waiakamilo Rd. #411 Honolulu, HI 96817-4941 (808) 842-1133 Fax (808) 842-1937

December 4, 1997

## WAIMANALO KUPUNA HOUSING PROJECT CIVIL ENGINEERING PRELIMINARY REPORT

The proposed 7 acre project site is located in Waimanalo, Oahu, Hawaii. The parcels proposed to be developed include Tax Map Key 4-1-08:51 and 78 (Exhibit 1a). Bellows Air Force Base is located to the north of the site, Waimanalo Bay to the east, and single family homes to the west and south. Infrastructure for the project is available.

### 1. DESIGN REFERENCES

WATER SYSTEM STDS	Water System Standards, Board of Water Supply, City and County of Honolulu, 1985, Volume I.
WASTEWATER SYSTEM STDS	Design Standards of the Department of Wastewater Management, Volume I, July 1993.
STORM DRAINAGE STDS	Design Charts for Open-Channel Flow, U.S. Department of Commerce, Bureau of Public Roads, Washington 1961.
	Storm Drainage Standards, Department of Public Works, City and County of Honolulu May 1988.
EROSION CONTROL STDS	Soil Erosion Standards and Guidelines, November 1975
SOILS ENGINEERING	Preliminary Geotechnical Findings and Recommendations, Proposed Waimanalo Kupuna Housing Project, Dated June 9, 1997
ROADWAY STDS	Hawaii Statewide Uniform Design Manual For Streets and Highways, October 1980.
	A Policy on Geometric Design of Highways and Streets, AASHTO 1984.

-1-

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Engineers • Planners • Photogrammetrists • Surveyors  
Construction Managers • Environmental Services



## 2. SITE GRADING AND DRAINAGE (Exhibit 1)

### General

The proposed project sites are generally flat with elevations ranging from about 13.5 feet to 25 feet in elevation. The soil generally consists of surficial fills of about 1 to 2 feet thick overlying moderately stiff to very stiff, dark gray silty clay to depths ranging from about 2.5 feet to 7.5 feet below the existing ground surface. The silty clay layer was underlain by hard coral formation material. The northeast end of the site consisted of a sandy soil layer of about 2 to 3 feet in thickness above the coral rock layer.

Flood Insurance maps indicate that the project site falls within the 10 year, 100 year Zone X flood limits. Therefore, a detailed flood study will have to be done to determine base flood elevations. Based on our preliminary flood study the base flood elevation is about 16.5 feet. Therefore, filling of the site is required to raise the ground elevation above 16.5 feet.

The runoff at the proposed site generally flows towards the northwest (toward Kailua) parallel to Kalaniana'ole Highway. The proposed site is partially located within the 100 year flood limit. However, since the site is located within a backwater area or within an area of low velocity, filling of the area above the 16.5 elevation will be allowed by the City and County of Honolulu. This compliments the soils report which indicates that a minimum layer 2-foot non-expansive material is required throughout the site.

### Kupuna Housing & Kupuna Center

The proposed site is governed by City and County of Honolulu Ordinance 96-34 which requires additional drainage runoff created by the development of the project site to be retained onsite by way of detention ponds, retention ponds, infiltration wells or ditches, holding tanks, diversion ditches or swales, drain pipes, check dams, or debris basins. It is our judgement, based on conceptual plans, that the proposed development will increase runoff to surrounding areas because impermeable surfaces will be increased by the development. Therefore, underground retention beds will be designed to percolate additional developed drainage runoff. If percolation tests show poor results, runoff will be piped to the existing drainage systems along Nakini and Ilauhole Street.

Onsite drainage system will consists of inlet boxes, drain manholes, 18-inch reinforced concrete drain pipes, and percolation beds.

### Kupuna Center

The terrain at the project site varies in elevation from 13.5 feet to 15 feet. Onsite retention type drainage system will be designed to accommodate the increase in

drainage runoff from the development.

### 3. ROADS AND PARKING

#### General

The existing roadways which border the proposed project site consists of Kalaniana'ole Highway, 60 feet right-of-way, two lane highway, (State of Hawaii owned) to the north, Nakini Street, 56 feet right-of-way (State of Hawaii owned and City and County of Honolulu maintained) to the east, unpaved Kulaiwi Street (State of Hawaii owned and City and County of Honolulu maintained) to the west, and Ilauhole Street, 56 feet right-of-way (State of Hawaii owned and City and County of Honolulu maintained) to the south. Onsite roadways for the Kupuna Housing, Kupuna Center, and Commercial Center will be designed to accommodate refuse and fire vehicles. Templates for vehicle turning paths will be used to determine the pavement area required for the specified design vehicle. A traffic study is currently being prepared to assess the traffic impact from the proposed development.

#### Kupuna Housing/Kupuna Center

The proposed Kupuna Elderly Housing and Kupuna Center will be accessed by a two lane 24 feet wide concrete drop driveway at Ilauhole Street. Approximately 88 parking stalls will be provided onsite including 3 handicap accessible parking stalls (one van accessible).

#### Commercial Center

The State Department of Transportation, Highways Division has stated that a roadway setback of 20 feet will be required along Kalaniana'ole Highway. The capacity of Kalaniana'ole Highway fronting the proposed project site is two lanes (one in each direction). The restricted capacity will require the driveway traffic movement to be restricted to a right turn in, right turn out from a single driveway along Kalaniana'ole Highway. An attempt during design will be made to provide access to the proposed site from Nakini Street, however, because of the close proximity of the proposed driveway to the intersection of Nakini Street and Kalaniana'ole Highway (approx. 140 feet) the City will probably not look favorable upon our request. About 50 parking stalls will be located onsite including 2 handicap accessible parking stalls (one van accessible).

We have assumed a pavement structure of 2-inches asphaltic concrete and 6-inches aggregate base course for costing purposes until the final geotechnical report is completed.

#### 4. WATER SYSTEM (Exhibit 2)

##### General

The existing water system about the project site consists of 12-inch water lines within Kalaniana'ole Highway, Nakini Street, and Hauhole Street. The source of the water system in the project vicinity is the Board of Water Supply 230' system.

##### Kupuna Housing and Kupuna Center

The proposed water system will consist of an 8"x2" FM water meter, submeter (for the Kupuna Center), 8-inch water transmission lines, fire hydrants, and water laterals. Based on discussions with the BWS, the water system is generally adequate. However, once a firm layout is complete, a water system study will have to be done to show that the existing water system is adequate to support the proposed developments fire and domestic water requirements.

##### Commercial Center

The planned water system for the Commercial Center consists of a 2-inch commercial water meter, an 8-inch water line, and a fire hydrant. Preliminary discussions with the BWS indicate that the water system is adequate to accommodate the Commercial Center.

#### 5. SEWER SYSTEM (Exhibit 3)

##### General

The existing sewer system around the project site consists of an 8-inch sewer line in Hauhole Street, a 10-inch sewer line along Nakini Street, and a 18-inch trunk sewer along Kalaniana'ole Highway. The existing Waimanalo Sewage Treatment Plant (WSTP) is currently at capacity. Additional flows from the subject project will not be allowed until capacity upgrades to the treatment plant are complete. A temporary sewer system which consists of a gravity collector system, a septic tank and a leaching field is proposed until upgrades to the WSTP are complete. Upon WSTP upgrade, a permanent connection to the existing 18-inch sewer line along Kalaniana'ole Highway will be made.

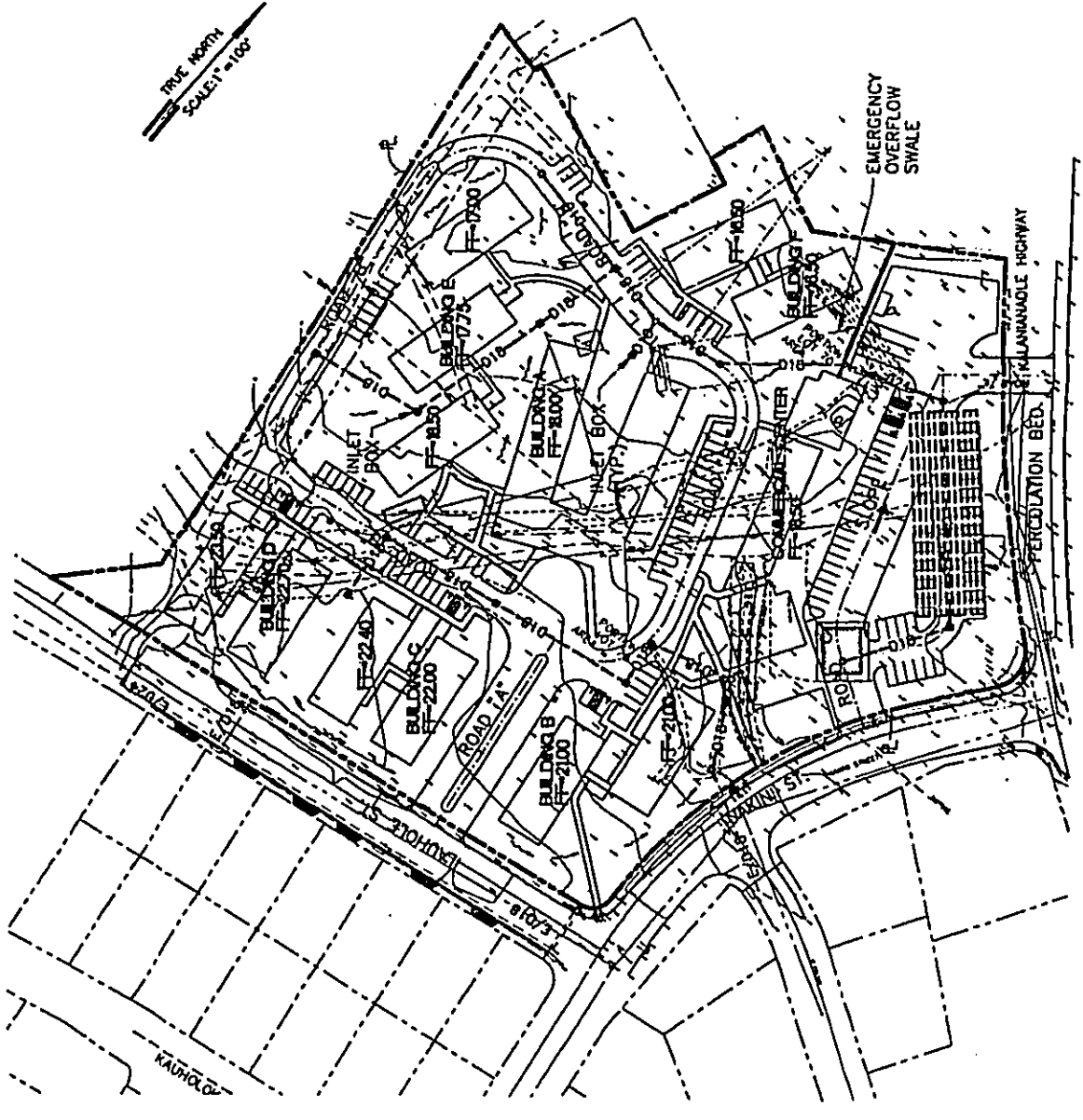
##### Kupuna Housing and Kupuna Center

The proposed gravity sewer system proposed is composed of 8-inch sewer lines, clean outs, and sewer manholes. The proposed onsite sewer system will discharge into the temporary septic tank and leaching field sewer system.

##### Commercial Center

The Commercial Center's sewage will be collected by an 8-inch gravity sewer system. The sewage will discharge into the temporary septic tank and leaching field sewer system.

TRUE NORTH  
SCALE 1" = 100'



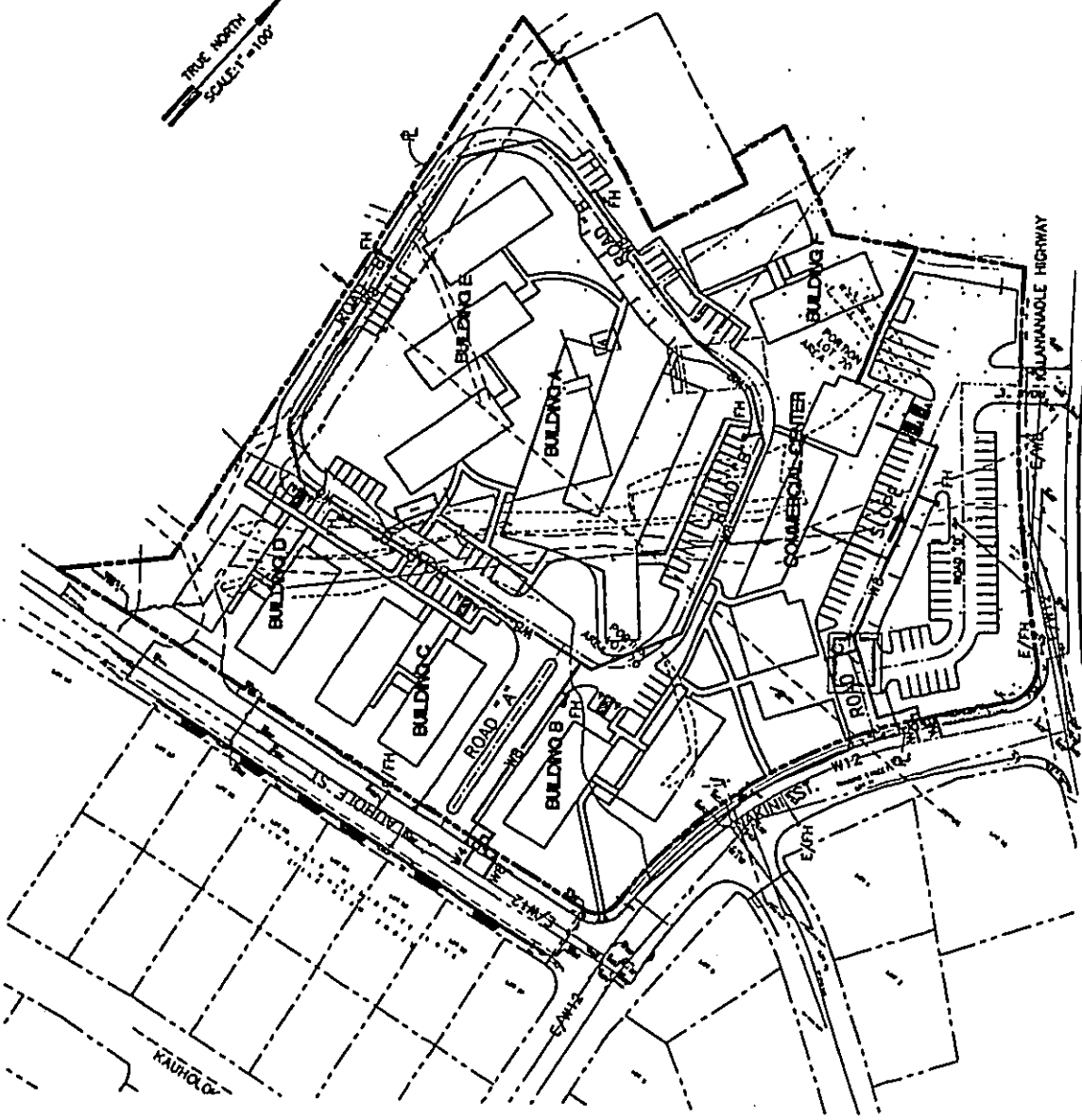
**DRAINAGE SYSTEM**  
SCALE 1" = 100'

**GRAPHIC SCALE**



**EXHIBIT 1**

TRUE NORTH  
SCALE 1" = 100'



WATER SYSTEM  
SCALE 1" = 100'

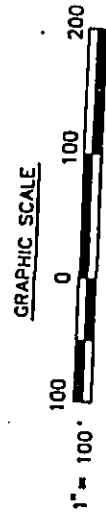
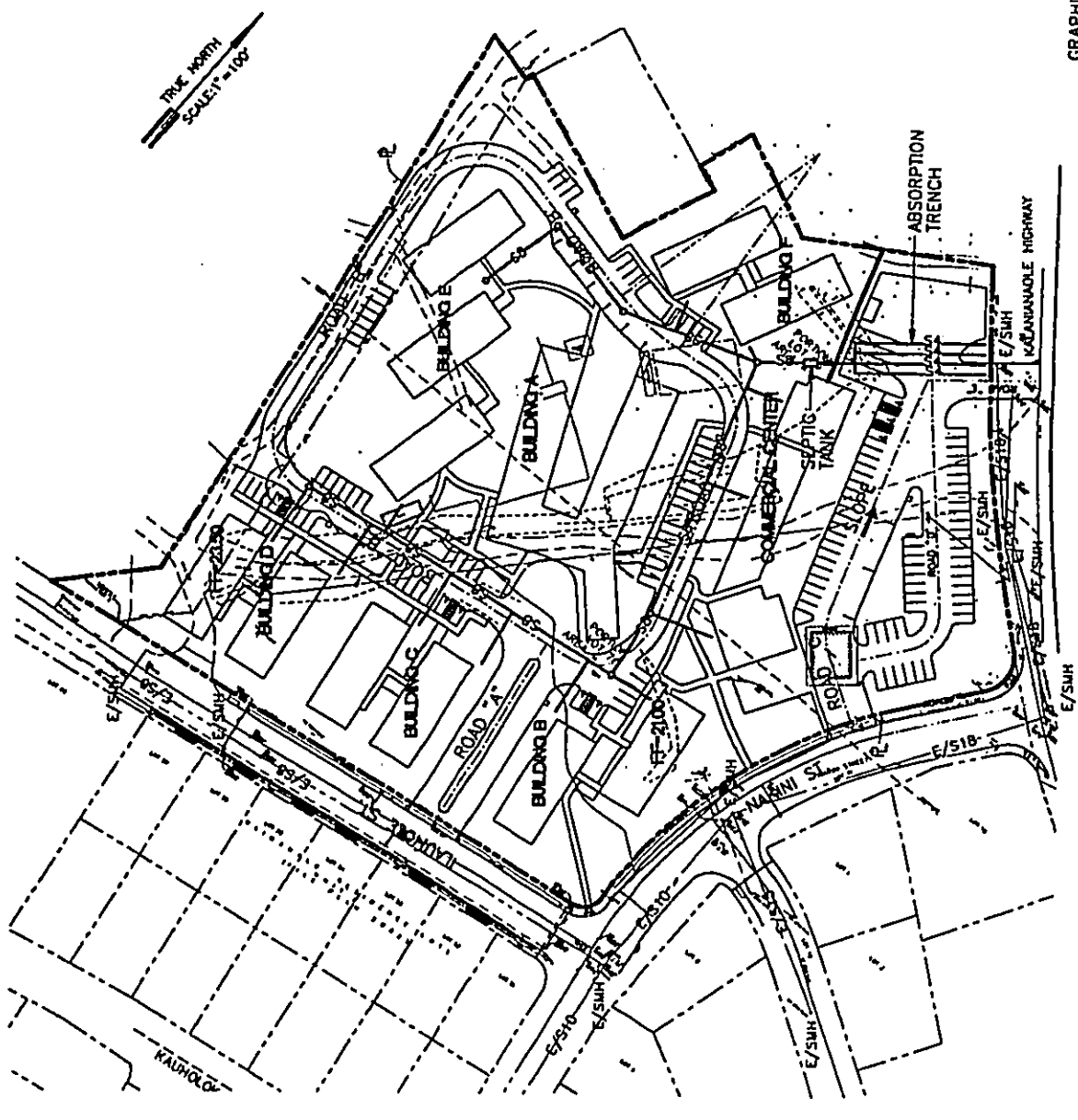


EXHIBIT 2



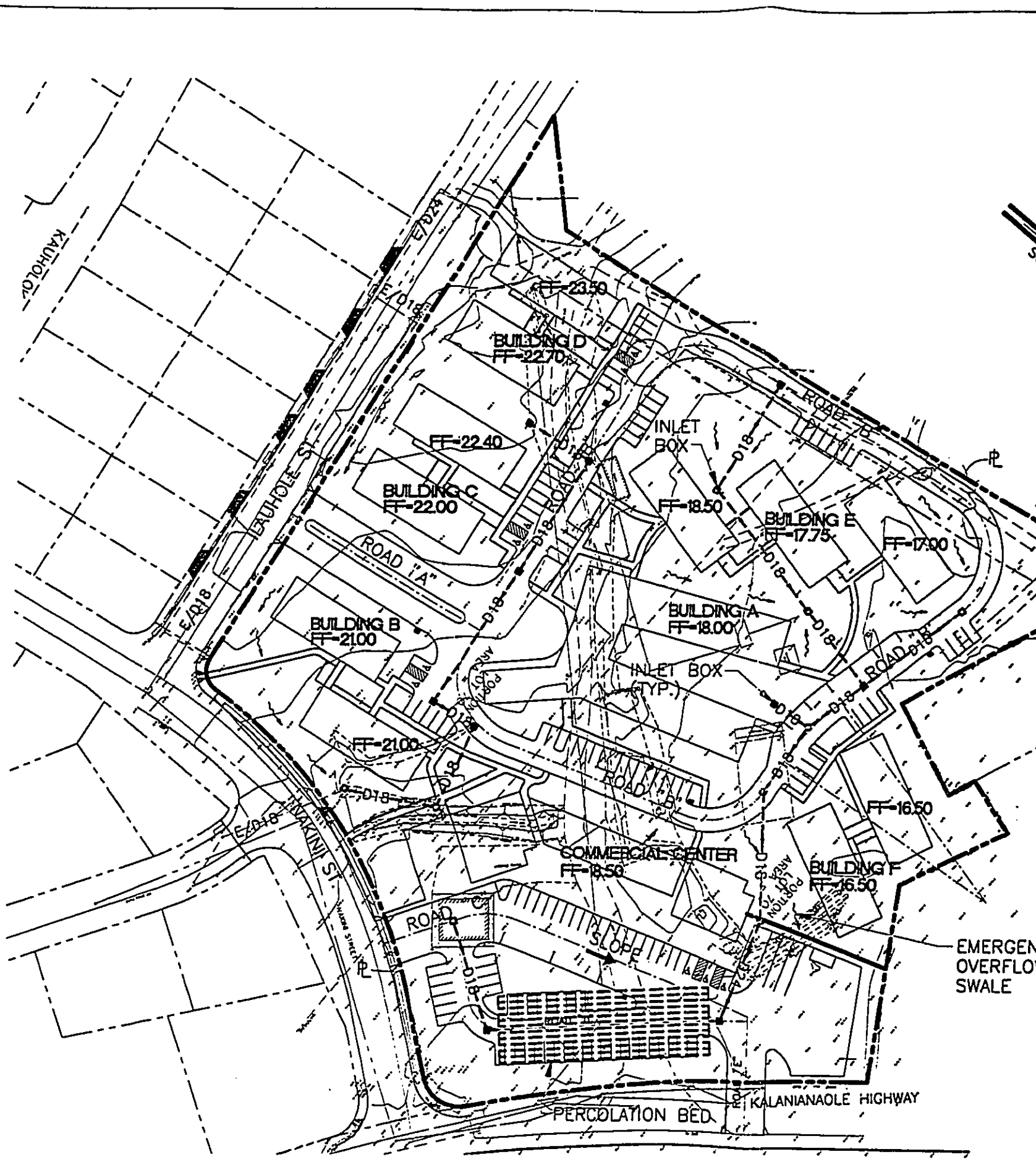
TRUE NORTH  
SCALE: 1" = 100'

GRAPHIC SCALE



SEWER SYSTEM  
SCALE: 1" = 100'

EXHIBIT 3

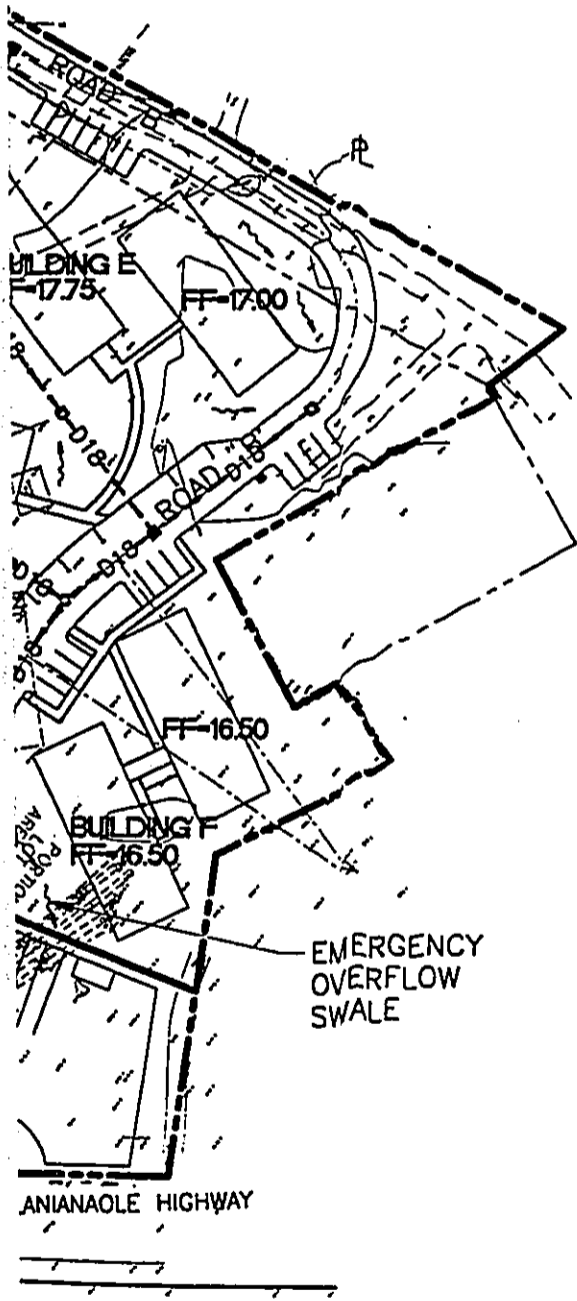


**DRAINAGE SYSTEM**

SCALE: 1" = 100'

100  
1" = 100'

TRUE NORTH  
SCALE: 1" = 100'



GRAPHIC SCALE

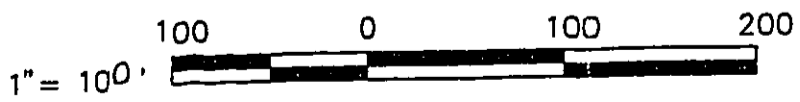
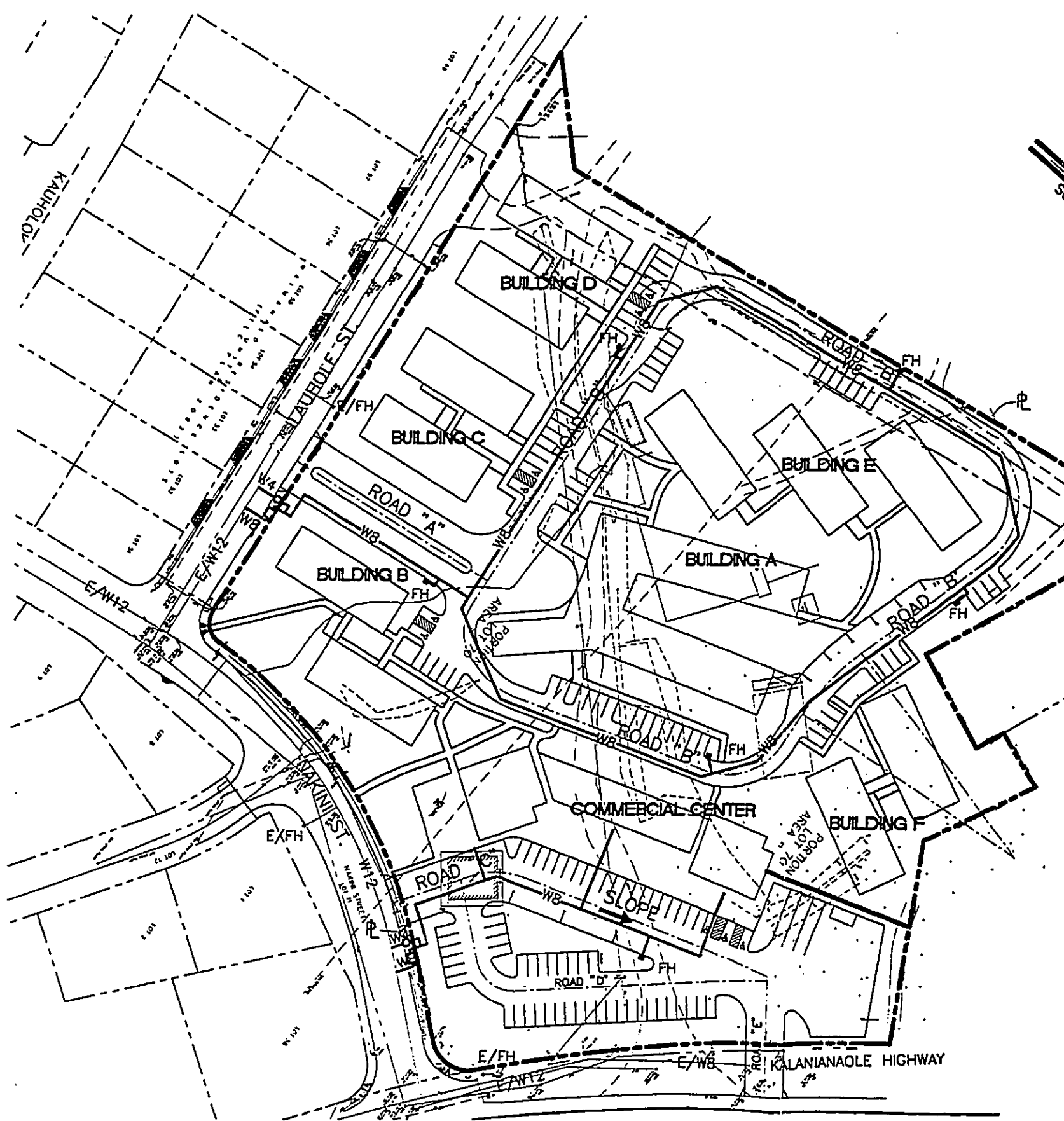


EXHIBIT 1





TR  
SCALE:

**WATER SYSTEM**

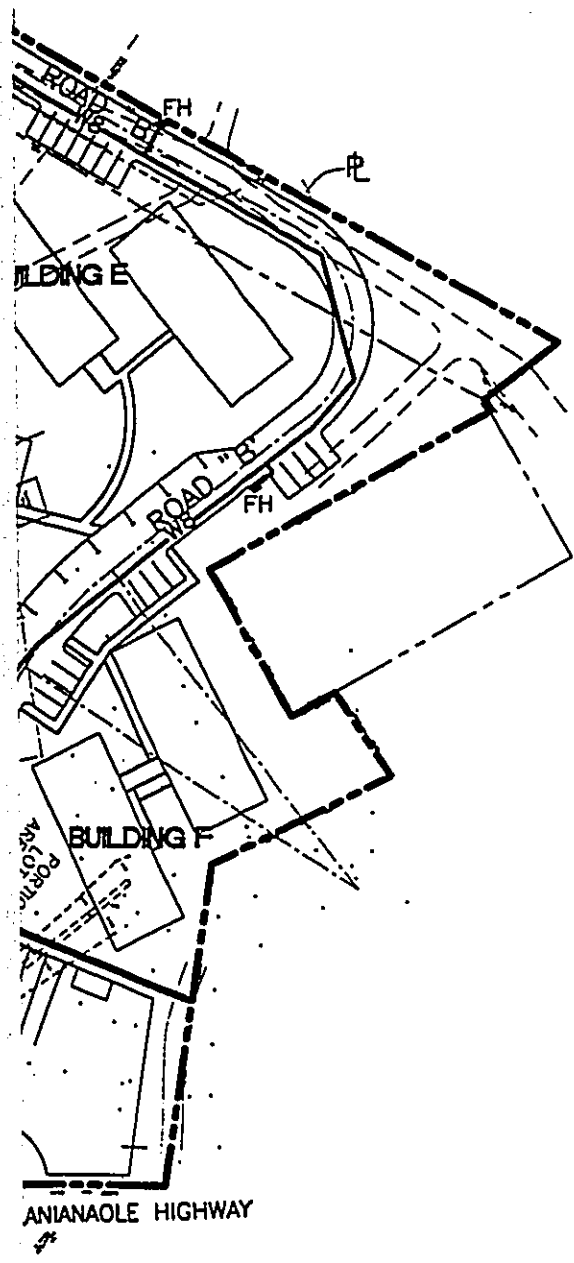
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100

1" = 100'



TRUE NORTH  
SCALE: 1" = 100'



GRAPHIC SCALE

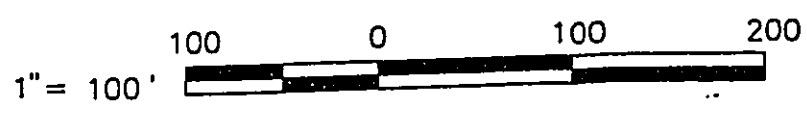
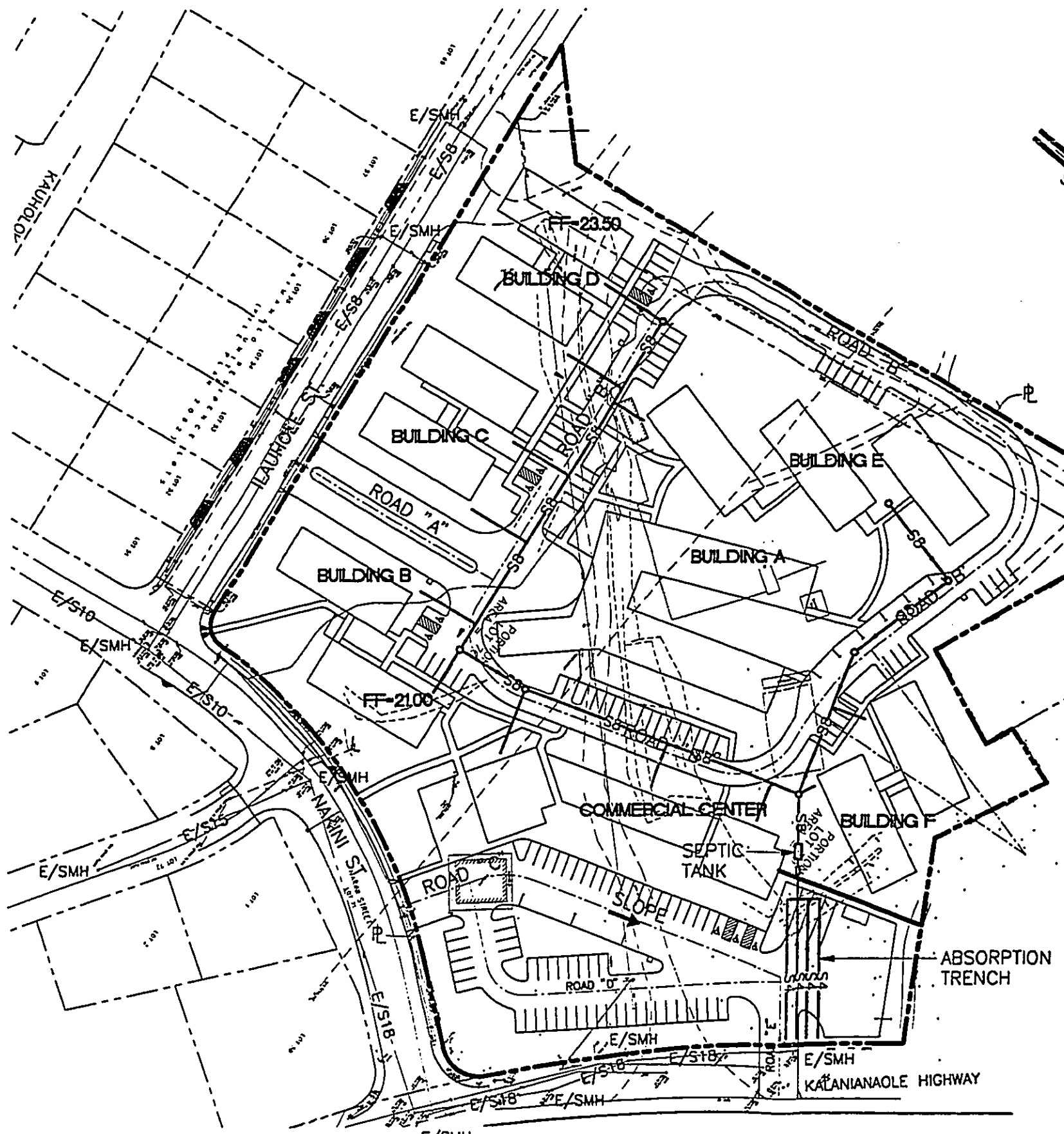


EXHIBIT 2



**SEWER SYSTEM**  
 SCALE: 1" = 100'

1" = 100' 

TRUE NORTH  
SCALE: 1" = 100'

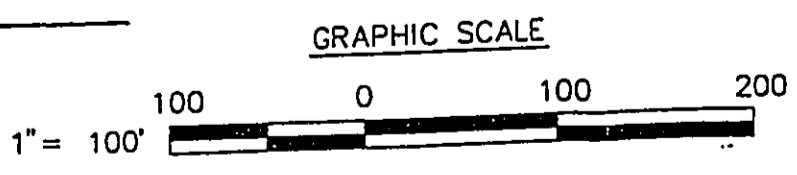
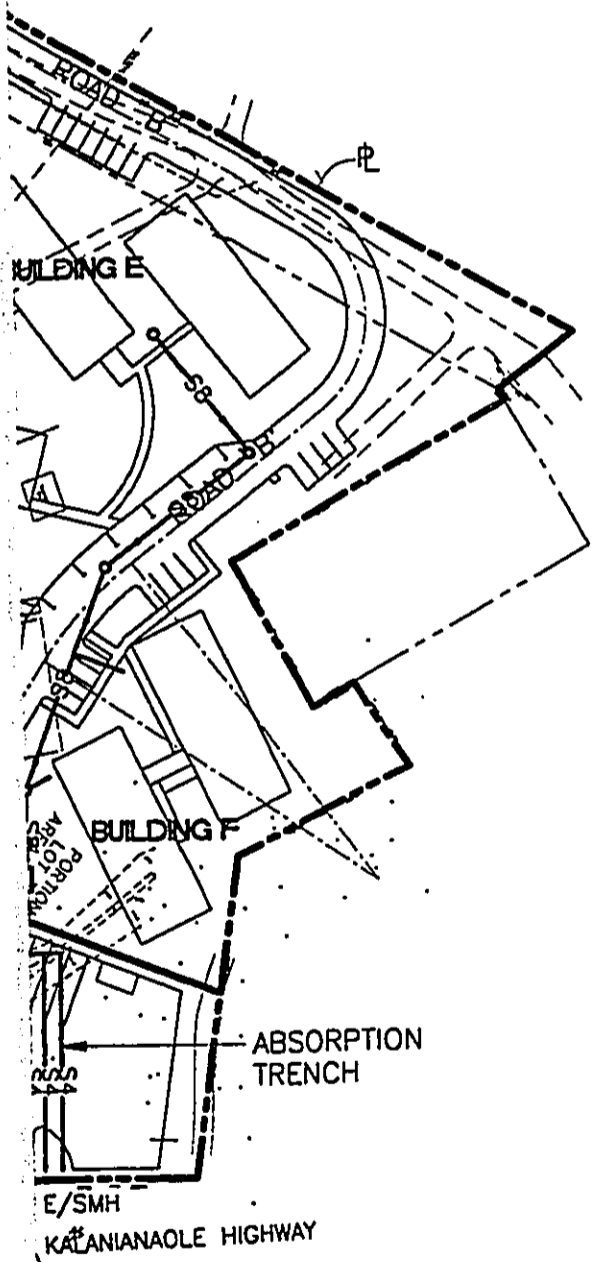


EXHIBIT 3

B  
BOTANICAL SURVEY

BOTANICAL RESOURCES STUDY  
WAIMANALO KUPUNA HOUSING PROJECT  
KO'OLAU POKO DISTRICT, ISLAND OF O'AHU

by

Winona P. Char  
CHAR & ASSOCIATES  
Botanical Consultants  
Honolulu, Hawai'i

Prepared for: KAUAHIKUA & CHUN/ARCHITECTS

June 1997

BOTANICAL RESOURCES STUDY  
WAIMANALO KUPUNA HOUSING PROJECT  
KO'OLAU POKO DISTRICT, ISLAND OF O'AHU

INTRODUCTION

The 7-acre project site is bounded by residential lots to the north, Kalaniana'ole Highway and Nakini Street to the east, Ilauhole Street to the south, and Kulaiwi Street to the west. The site was part of a former sand quarry operated by Pacific Concrete. The substrate throughout the property is sandy with a thin layer of gray-black soil toward the northern perimeter where the vegetation has not been disturbed. Soils on the property are mapped as Kawaihapai clay loam ("K1A") on the soil maps (Foote et al. 1972).

On the northern half of the property, there is a grassy area with stables for horses, a corral, and an equipment/tackle shed. The remainder of the north half of the property is overgrown by koa haole scrub. A portion of the south half of the property, along Ilauhole Street, is a weedy lot used to store heavy equipment and drainage pipes used for the adjacent Department of Hawaiian Home Lands (DHHL) residential development which is currently under construction. The corner facing Nakini Street and Kalaniana'ole Highway is landscaped, supporting a small park and picnic and meeting facility.

Field studies to assess the botanical resources found on the 7-acre project site were conducted on 09 May 1997. The primary objectives of the field studies were to:

- 1) provide a general description of the vegetation on the site;
- 2) search for threatened and endangered species as well as species of concern; and
- 3) identify areas of potential environmental problems or concerns and propose appropriate mitigation measures.

Prior to the field studies, topographic maps and soil maps were examined to determine vegetation cover patterns, terrain characteristics, access roads, boundaries, and reference points. In the field, a walk-through survey method was used. Notes were made on plant associations and distribution, substrate types, drainage, disturbances, etc. Plant identifications were made in the field; plants which could not be positively identified were collected for later determination in the herbarium (University of Hawai'i, Manoa -- HAW), and for comparison with the recent taxonomic literature.

#### DESCRIPTION OF THE VEGETATION

The plant names used in the discussion below follow the most recent treatment of the Hawaiian flora by Wagner et al. (1990).

On the north half of the parcel, a dense scrub of koa haole (Leucaena leucocephala), Christmas berry (Schinus terebinthifolius), and sourbush (Pluchea carolinensis) is found along the perimeter of the property. In places, ivy gourd (Coccinia grandis) vines form a dense tangle over the 10 to 18 foot tall shrubs. Guinea grass (Panicum maximum) and its more diminutive form, green panicgrass (P. maximum var. trichoglume), form more or less dense clumps between the shrubs, especially in the areas where the shrubs are more widely spaced. Scattered through the scrub vegetation are fiddlewood trees (Citharexylum caudatum), tree tobacco (Nicotiana glauca), and smaller shrubs and forbs which include



white-flowered bidens (Bidens alba var. radiata), Achyranthes aspera, spiny amaranth (Amaranthus spinosus), false mallow (Malvastrum coromandelianum), virgate mimosa (Desmanthus virgatus), and 'uhaloa (Waltheria indica). Next to the horse stables, rounded clumps of Glycine wightii, a pasture legume, are locally common.

The horse stable area is landscaped and maintained with a grassy lawn and several plantings of various ornamental species which include Bougainvillea cultivars, mango (Mangifera indica), kukui (Aleurites moluccana), banana (Musa X paradisiaca), coconut (Cocos nucifera), fiddlewood, and Chinese banyan (Ficus microcarpa). The corral area is sandy with scattered, small clumps of 'aheahea (Chenopodium murale) and buffel grass (Cenchrus ciliaris).

On the south half of the property, one corner is overgrown by a weedy assemblage of various grasses, forbs, and herbaceous species. Most of the site, however, is disturbed with open, barren, sandy areas used for storing heavy equipment and drainage pipes for the adjacent DHHL residential project. Along the edge of the property where there is less disturbance, the vegetation consists of clumps of Guinea grass and green panicgrass, 2 to 3 feet tall, with a mixture of weedy plants which include spiny amaranth, Flaveria trinervia, Cuba jute (Sida rhombifolia), swollen fingergrass or mau'u lei (Chloris barbata), narrow-leaved plantain (Plantago lanceolata), lion's ear (Leonotis nepetifolia), etc. Scattered through this part of the property are somewhat taller, 6 to 7 feet, shrubs of koa haole, Indian pluchea (Pluchea indica), and castor bean or koli (Ricinus communis).

A small park and picnic/meeting facility is found on the corner facing Nakini Street and Kalaniana'ole Highway. The lawn is primarily Bermuda grass or manienie (Cynodon dactylon). There are several plantings of trees which include 'ulu or breadfruit

(Artocarpus altilis), kukui, mango, coconut or niu, and kamani (Calophyllum inophyllum). Ti (Cordyline fruticosa) and plumeria (Plumeria hybrids) are found on a small berm mauka of the lawn area.

## DISCUSSION AND RECOMMENDATIONS

The property was once part of a sand quarry and all of the 7-acre project site has been disturbed at some time. The vegetation on the unmaintained portions consist almost exclusively of introduced or alien species. Introduced species are all those plants which were brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact (Cook's discovery of the islands in 1778); introduced plants abundant on the site include koa haole, Guinea grass, swollen fingergrass, ivy gourd, etc. There are a few native plants on the site; these are 'ilima (Sida fallax), 'uhaloa, and koali 'awa (Ipomoea indica). These species are indigenous, that is, they are native to the islands and also elsewhere.

The landscaped areas around the horse stables and the picnic/meeting facility contain a number of plants originally of Polynesian introduction. These "Hawaiian heritage plants" include kamani, 'ulu, niu, kukui, and ti.

No threatened or endangered species and species of concern (U.S. Fish and Wildlife Service 1997) were found during the survey. No sensitive native plant-dominated communities (Hawai'i Natural Heritage Program 1994) exist on the site. All of the plants observed on the subject parcel can be found in similar environmental conditions throughout the Hawaiian Islands. This is not surprising as the property has been extensively disturbed and is surrounded by residential development.

There is very little of botanical interest on the site, and the proposed development is not expected to have a significant negative impact on the botanical resources. There are no botanical reasons to impose any restrictions, conditions, or impediments to the proposed use of the site for elderly housing.

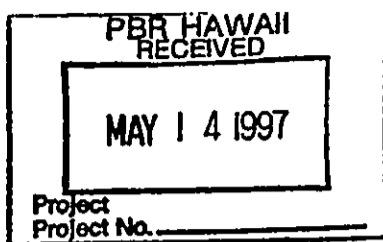
It is recommended that as many of the "Hawaiian heritage plants" be transplanted and reused for landscaping the housing site and, perhaps, a vegetable/fruit garden for the seniors.

#### LITERATURE CITED

- Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens. 1972. Soil survey of the islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. U.S. Department of Agriculture, Soil Conservation Service, Washington, D.C.
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- Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i. 2 vols. University of Hawai'i Press and B.P. Bishop Museum Press, Honolulu. B.P. Bishop Museum Special Publication 83.

C  
STATE HISTORIC PRESERVATION DIVISION LETTER

BENJAMIN J. CAYETANO  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
STATE HISTORIC PRESERVATION DIVISION  
33 SOUTH KING STREET, 8TH FLOOR  
HONOLULU, HAWAII 96813

MICHAEL D. WILSON, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES

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FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION

DIVISION

LAND DIVISION

STATE PARKS

WATER AND LAND DEVELOPMENT

May 13, 1997

Yukie Y. Ohashi, Project Manager  
PBR  
1001 Bishop Street  
Pacific Tower, Suite 650  
Honolulu, Hawaii 96813-3429

LOG NO: 19460 ✓  
DOC NO: 9705RC05

Dear Ms. Ohashi:

SUBJECT: Waimanalo Kupuna Housing Project -- OHA Project on DHHL Lands  
Waimanalo, Koolaupoko, O'ahu  
TMK: 4-1-19: 32

Thank you for your letter of May 5, 1997. As our 1992 memo indicates and as our discussions with the IARII archaeological consulting firm staff clarified again, survey of the project area found no historic sites, and the presence of any such sites is considered highly unlikely. That concluded the historic preservation review process. No further work is needed in our opinion.

Aloha,

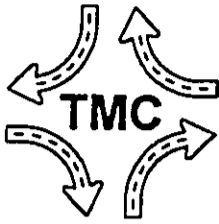
A handwritten signature in black ink, appearing to read "Don Hibbard".

Don Hibbard, Administrator  
State Historic Preservation Division

RC:jk

c: Planning Office, DHHL

D  
TRAFFIC ASSESSMENT



## THE TRAFFIC MANAGEMENT CONSULTANT

Randall S. Okaneku, P. E., Principal • 1188 Bishop Street • Suite 1907 • Honolulu, Hawaii 96813  
Telephone: (808) 536-0223 • Facsimile: (808) 537-2985

Job. No. 9725  
January 15, 1998

R. M Towill Corporation  
420 Waiakamilo Road, Suite 411  
Honolulu, Hawaii 96817

Attention: Mr. Craig Luke

Gentlemen and Ladies:

### Subject: Waimanalo Kupuna Housing Project

The Traffic Management Consultant is pleased to present this traffic assessment for the proposed Waimanalo Kupuna Housing Project. The purpose of this assessment is to determine the level of significance of any traffic impacts resulting from the proposed project. The scope of this study includes: a description of the proposed project; an assessment of existing roadways and traffic conditions based upon available traffic data; and the development of trip generation characteristics for the proposed project.

### Project Description

#### **Location**

The Waimanalo Kupuna Housing Project is proposed as a mixed-use project on the southwest corner of the intersection of Kalaniana'ole Highway and Nakini Street in Waimanalo, Oahu, Hawaii. The project site is bounded by Kalaniana'ole Highway to the north, Nakini Street to the east, Ilauhole Street to the south, and Kulaiwi Street to the west. The 7.29± acre project site is identified as Tax Map Key 4-1-9:32.

#### **Land Use Activities**

The proposed project would contain a total of eighty-three (83) elderly housing units and a community center with 3,000 square feet of floor area. The proposed residential project is designed for independent elderly persons (kupuna) of Hawaiian descent. The community center would contain a Manager's residence, administrative offices, meeting room, kitchen, and library. The community center would be used primarily by the project residents. The residential component of the project would be located on the mauka (south) side of the site. About eighty-eight (88) parking stalls would be provided for the kupuna housing and community center.

The mixed-use project would contain commercial-retail center with 10,000 square feet of floor area. The commercial-retail center would be located on the north side of the site on Kalaniana'ole Highway. The retail activities planned for the commercial center include a convenience store and a Hawaiian-themed marketplace. The Hawaiian marketplace would be a retail outlet for a variety of locally produced food, arts, and crafts. For the purpose of this traffic assessment, a convenience store with 2,000 square feet of floor area and a Hawaiian marketplace with 8,000 square feet of floor area are assumed. About fifty (50) parking stalls are planned for the commercial-retail center.

#### **Access**

Access to the residential development and community center is proposed on Ilauhole Street. Access to the commercial-retail center is proposed by driveways on Kalaniana'ole Highway, between Nakini Street and Oluolu Street/Wailea Street, and on Nakini Street. Access is not proposed on Kulaiwi Street.

### **Existing Conditions**

#### **Environs**

The project site is located within the Department of Hawaiian Home Lands residential development. Waimanalo Beach Park is located across Kalaniana'ole Highway. Commercial activities are located along Kalaniana'ole Highway, west of the project site.

#### **Roadway System**

Kalaniana'ole Highway is a two-lane, two-way arterial highway between Hawaii Kai and Olowalu. A two-way/exclusive median left turn lane is located along Kalaniana'ole Highway fronting Waimanalo Beach Park and the Department of Hawaiian Home Lands residential development. Kalaniana'ole Highway is unsignalized at its intersection with Nakini Street.

Nakini Street is a two-lane, two-way collector street, which extends in the southern direction through the Hawaiian Home Lands residential subdivision. Nakini Street is stop-controlled at its Tee-intersection with Kalaniana'ole Highway.

Ilauhole Street is a two-lane, two-way cul-de-sac street. Ilauhole Street intersects Nakini Street at a stop-controlled Tee-intersection. At this writing, Ilauhole Street is being extended through an expansion of the residential subdivision.



### Traffic Conditions

Existing traffic data were obtained from the State of Hawaii Department of Transportation (DOT) "Traffic Survey Data, Island of Oahu, 1997". Kalaniana'ole Highway, fronting the project site, carries 15,760 vehicles per day, total for both directions. The AM peak hour of traffic on Kalaniana'ole Highway occurs between 7:15 AM and 8:15 AM, with a total of 1,230 vehicles per hour (vph), total for both directions. The PM peak hour of traffic occurs between 4:15 PM and 5:15 PM, when Kalaniana'ole Highway carries a total of 1,299 vph.

### Trip Generation

The trip generation methodology, used in this study, is based upon the "Site-Oriented Trip Generation Rates for Oahu", State of Hawaii Department of Transportation, September 1988. The DOT trip rates is developed by correlating the vehicle trip generation data with various land use characteristics of retirement communities on Oahu.

The trip generation methodology, used for the commercial-retail component of the proposed project, is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation", 6th Edition, 1997. The ITE trip rates for a retail project is developed by correlating the vehicle trip generation data with various land use characteristics, such as vehicle trips per 1,000 square feet of gross leasable floor area. Table 1 summarizes the trip generation characteristics for the proposed project.

Land Use		Elderly Housing (vph)	Specialty Retail (vph)	Convenience Store (vph)	Totals
AM Peak Hour	Enter	9	25	65	99
	Exit	7	27	65	99
	Total	16	52	130	198
PM Peak Hour	Enter	10	22	54	86
	Exit	12	17	54	83
	Total	22	39	108	169

During the AM peak hour of traffic, the mixed-use project is expected to generate a total of 198 vph – 99 vph entering the site and 99 vph exiting the site. During the PM peak hour of traffic, the project is expected to generate a total of 169 vph – 86 vph entering the site and 83 vph exiting the site. As expected, the commercial-retail center is the major trip generator of the mixed-use project, accounting for about 90 percent of the total traffic generated by the project.

#### Future Improvements on Kalaniana'ole Highway

At this writing, State DOT is commencing with a planning study, which would explore alternative improvements to Kalaniana'ole Highway. Two alternatives, which are being discussed, are widening the existing highway from two lanes to four lanes between Waimanalo Beach Park and Olowalu or constructing a new two lane bypass road around Waimanalo Town.

Either alternative would involve a transition between the proposed roadway improvement and the existing Kalaniana'ole Highway in the vicinity of the project site. It is recommended that State DOT plans include the extension of the two-way/exclusive left turn median lane to the project access driveway on Kalaniana'ole Highway. A twenty (20) foot-wide road setback has been established along the property frontage on Kalaniana'ole Highway for the future DOT improvements.

#### Findings

The Institute of Transportation Engineers suggests that 100 vph in the peak direction of travel should be used as a minimum threshold to determine the need for a comprehensive traffic impact analysis report. During the AM and PM peak hours of traffic, the site-generated traffic is just under the ITE threshold level. However, traffic generated by the convenience store and the specialty retail center includes "pass-by" trips, i.e., trips attracted from traffic already "passing by" the site on adjacent streets. Pass-by trips could account for about 60 percent of the total traffic generated by the site, thereby reducing the "new" trips on the roadways to less than one half of the total site-generated traffic.


The traffic generated by the commercial-retail center would turn directly off Kalaniana'ole Highway or turn onto Nakini Street to the secondary access driveway. The left turn traffic demand at the commercial access driveway on Kalaniana'ole Highway is expected to meet the American Association of State Highway and Transportation Officials (AASHTO) volume warrants for an exclusive left turn lane. An exclusive left turn lane at the project access driveway could be accommodated by State DOT plans for the future improvement of Kalaniana'ole Highway.

**Conclusion**

Based upon this traffic assessment, the proposed Waimanalo Kupuna Housing Project does not meet the ITE threshold for determining a need for a comprehensive traffic impact analysis report.

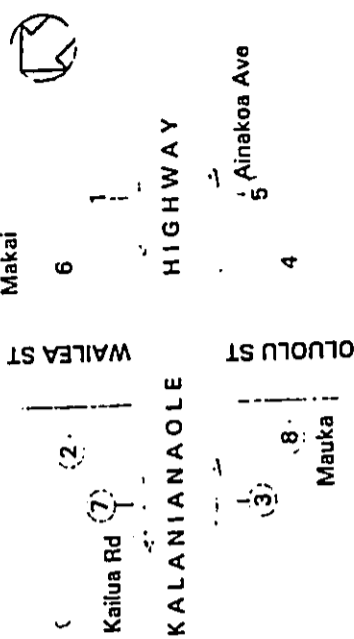
If you require clarification on any of the above material or have any questions, please do not hesitate to contact me.

Very Truly Yours,  
The Traffic Management Consultant

By   
Randall S. Okaneku, P. E.  
Principal

**24-HOUR TRAFFIC COUNT-STATION SUMMARY**

HAWAII STATE D.O.T. HIGHWAYS DIVISION

Station No: 42-C		Count Type: _____		Group: _____		ATR STA NO: _____								
Location: Kalaniana'ole Highway at Oluolu and Wailea Streets														
STATION CHARACTERISTICS Traffic Control Width of Approach (Ft) Number of Lanes at Approach Separate Turning Lane (Lt, Rt, Lt/Rt) Parking (AM, PM, All Day, None) Bus Stop (NS: Near Side/FS: Far Side)		INTERSECTION APPROACHES				KALANIANA'OLE HIGHWAY Kailua Rd (2) (3) (8) Mauka OLUOLU ST (4) (5) (6) (7) Makai WAILEA ST 								
		LEG 1	LEG 2	LEG 3	LEG 4									
DATE	MOV 01	MOV 02	MOV 03	MOV 04	MOV 05	MOV 06	MOV 07	MOV 08	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	Intersection
05/02-03/95	7870	513	7120	622	15368	300	7999	333	813	15519	955	16625	16401	
02/11-12/97	8212	536	7151	602	15760	319	8057	340	855	15208	842			

STATION NO : 42-C

Form INT 96

14-Mar-97

State of Hawaii, Department of Transportation, Highways Division

ISLAND: OAHU  
STATION NO: 42-C  
AUX NO:  
FUND SYSTEM:  
FILE: LEG 1

STATION DESCRIPTION: KALANIANAOLE HWY  
AT OLOULU & WAILEA STS  
OAHU

TC NO. 55  
ID NO. 22 29

COUNT GROUP ID:  
ROUTE NO  
HWY ST NAME KALANIANAOLE HWY  
MOV(1) }, DIR: TO WAILEA ST  
MOV(5) }, DIR: TO AINAKOA AVE

CORRIDOR ID:  
SURVEY DATE:

ASSIGNED DATE:

M.P.:  
D-02 BEG SURVEY DATE: 02/11/97  
D-01 BEG SURVEY DATE: 02/11/97

START TIME: 11:15  
START TIME: 11:15

TIME-AM	MOV 1	MOV 5	TOTAL	TIME-AM	MOV 1	MOV 5	TOTAL	TIME-PM	MOV 1	MOV 5	TOTAL
12:00-12:15	20	16	36	6:00-6:15	62	58	120	12:00-12:15	130	183	233
12:15-12:30	16	14	30	6:15-6:30	72	57	129	12:15-12:30	116	91	207
12:30-12:45	14	11	25	6:30-6:45	81	128	209	12:30-12:45	125	92	217
12:45-1:00	17	5	22	6:45-7:00	104	106	210	12:45-1:00	141	83	224
1:00-1:15	7	8	15	7:00-7:15	102	140	242	1:00-1:15	136	141	277
1:15-1:30	8	10	18	7:15-7:30	155	172	327	1:15-1:30	131	130	261
1:30-1:45	6	10	16	7:30-7:45	142	123	265	1:30-1:45	127	93	220
1:45-2:00	9	11	20	7:45-8:00	145	164	309	1:45-2:00	157	104	261
2:00-2:15	7	7	14	8:00-8:15	118	148	266	2:00-2:15	138	162	300
2:15-2:30	8	9	17	8:15-8:30	111	112	223	2:15-2:30	171	124	295
2:30-2:45	10	6	16	8:30-8:45	99	193	292	2:30-2:45	140	131	271
2:45-3:00	6	2	8	8:45-9:00	91	103	194	2:45-3:00	176	120	296
3:00-3:15	6	8	14	9:00-9:15	81	102	183	3:00-3:15	148	119	267
3:15-3:30	13	4	17	9:15-9:30	91	100	191	3:15-3:30	147	124	271
3:30-3:45	7	9	16	9:30-9:45	121	97	218	3:30-3:45	171	159	330
3:45-4:00	8	2	10	9:45-10:00	111	87	198	3:45-4:00	167	139	306
4:00-4:15	19	7	26	10:00-10:15	121	91	212	4:00-4:15	160	142	302
4:15-4:30	10	4	14	10:15-10:30	131	126	257	4:15-4:30	185	152	337
4:30-4:45	18	7	25	10:30-10:45	115	103	218	4:30-4:45	185	149	334
4:45-5:00	26	12	38	10:45-11:00	98	112	210	4:45-5:00	165	169	334
5:00-5:15	33	19	52	11:00-11:15	137	100	237	5:00-5:15	179	142	321
5:15-5:30	44	24	68	11:15-11:30	113	83	196	5:15-5:30	167	116	283
5:30-5:45	46	35	81	11:30-11:45	136	143	279	5:30-5:45	157	114	271
5:45-6:00	58	52	110	11:45-12:00	149	125	274	5:45-6:00	171	118	289

AM COUNTER PERIOD (05:00 - 09:00)	MOV 1	MOV 5	TOTAL	PM COUNTER PERIOD (05:00 - 09:00)	MOV 1	MOV 5	TOTAL
TWO-DIRECTIONAL PEAK:				TWO-DIRECTIONAL PEAK:			
AM-PEAK NR TIME	561	677	1,238	PM-PEAK NR TIME	607	607	1,214
AM-PEAK NR VOLUME	7,46	100.00	107.46	PM-PEAK NR VOLUME	53.66	46.31	100.00
AM-F FACTOR(%)				PM-F FACTOR(%)			
AM-D				PM-D			
DIRECTIONAL PEAK:				DIRECTIONAL PEAK:			
AM-PEAK NR TIME	7:15 AM- 8:15 AM	7:15 AM- 8:15 AM	677	PM-PEAK NR TIME	6:15 PM- 5:15 PM	6:15 PM- 5:15 PM	607
AM-PEAK NR VOLUME	51.60	51.60	103.20	PM-PEAK NR VOLUME	53.66	46.31	100.00
AM-F FACTOR(%)				PM-F FACTOR(%)			
AM-D				PM-D			
AM PERIOD (09:00-12:00)				PM PERIOD (12:00-24:00)			
TWO-DIRECTIONAL PEAK:				TWO-DIRECTIONAL PEAK:			
AM-PEAK NR TIME	561	677	1,238	PM-PEAK NR TIME	607	607	1,214
AM-PEAK NR VOLUME	7,46	100.00	107.46	PM-PEAK NR VOLUME	53.66	46.31	100.00
AM-F FACTOR(%)				PM-F FACTOR(%)			
AM-D				PM-D			
AM PERIOD (09:00-12:00)				PM PERIOD (12:00-24:00)			
TWO-DIRECTIONAL PEAK:				TWO-DIRECTIONAL PEAK:			
AM-PEAK NR TIME	675	537	1,212	PM-PEAK NR TIME	2,607	2,763	5,370
AM-PEAK NR VOLUME	625	537	1,162	PM-PEAK NR VOLUME	3,105	3,050	6,155
AM-F FACTOR(%)				PM-F FACTOR(%)	3,071	2,908	5,979
AM-D				PM-D	5,107	5,105	10,212
AM PERIOD (09:00-12:00)				PM PERIOD (12:00-24:00)	8,712	7,540	16,252
TWO-DIRECTIONAL PEAK:				TWO-DIRECTIONAL PEAK:	52.11	47.89	100.00
AM-PEAK NR TIME	2:00 PM- 3:00 PM	2:00 PM- 3:00 PM	537	PM-PEAK NR TIME	2,607	2,763	5,370
AM-PEAK NR VOLUME	625	537	1,162	PM-PEAK NR VOLUME	3,105	3,050	6,155
AM-F FACTOR(%)				PM-F FACTOR(%)	3,071	2,908	5,979
AM-D				PM-D	5,107	5,105	10,212
AM PERIOD (09:00-12:00)				PM PERIOD (12:00-24:00)	8,712	7,540	16,252

14-Mar-97

State of Hawaii, Department of Transportation, Highways Division

ISLAND: OAHU  
STATION NO: 42-C  
AUX NO:  
FUND SYSTEM:  
FILE: LEG 3

STATION DESCRIPTION: KALAHIANAOLE HWY  
AT OLUOLU & WAILEA STS  
OAHU

COUNT GROUP ID:  
ROUTE NO:  
HWY ST NAME: KALAHIANAOLE HWY  
MOV(3): . DIR: TO OLUOLU ST  
MOV(7): . DIR: TO KAILUA RD

M.P.:  
CORRIDOR ID:  
SURVEY DATE:

TC NO. 55  
ID NO. 3 8

ASSIGNED DATE:  
D-01  
BEG SURVEY DATE: 02/11/97  
D-02  
BEG SURVEY DATE: 02/11/97

START TIME: 11:00  
START TIME: 11:00

TIME-AM	MOV 3	MOV 7	TOTAL	TIME-AM	MOV 3	MOV 7	TOTAL	TIME-PM	MOV 3	MOV 7	TOTAL
12:00-12:15	16	24	40	6:00-6:15	55	46	111	12:00-12:15	95	129	224
12:15-12:30	12	16	28	6:15-6:30	103	64	167	12:15-12:30	91	130	221
12:30-12:45	8	17	25	6:30-6:45	118	74	192	12:30-12:45	81	116	197
12:45-1:00	2	11	13	6:45-7:00	106	97	203	12:45-1:00	88	151	239
1:00-1:15	9	17	26	7:00-7:15	127	101	228	1:00-1:15	138	110	248
1:15-1:30	11	16	27	7:15-7:30	161	141	302	1:15-1:30	120	144	264
1:30-1:45	11	16	27	7:30-7:45	178	156	334	1:30-1:45	125	146	271
1:45-2:00	11	16	27	7:45-8:00	163	137	300	1:45-2:00	181	136	317
2:00-2:15	4	10	14	8:00-8:15	127	130	257	2:00-2:15	137	150	287
2:15-2:30	7	17	24	8:15-8:30	110	110	220	2:15-2:30	123	169	292
2:30-2:45	5	9	14	8:30-8:45	92	87	179	2:30-2:45	122	138	260
2:45-3:00	3	5	8	8:45-9:00	93	87	180	2:45-3:00	111	163	274
3:00-3:15	6	12	18	9:00-9:15	84	95	179	3:00-3:15	113	124	237
3:15-3:30	3	7	10	9:15-9:30	96	94	190	3:15-3:30	122	161	283
3:30-3:45	9	17	26	9:30-9:45	91	94	185	3:30-3:45	156	159	315
3:45-4:00	3	7	10	9:45-10:00	81	124	205	3:45-4:00	132	162	294
4:00-4:15	7	11	18	10:00-10:15	87	108	195	4:00-4:15	126	144	270
4:15-4:30	3	12	15	10:15-10:30	117	136	253	4:15-4:30	148	173	321
4:30-4:45	11	18	29	10:30-10:45	95	134	229	4:30-4:45	143	175	318
4:45-5:00	12	31	43	10:45-11:00	104	98	202	4:45-5:00	146	173	319
5:00-5:15	17	27	44	11:00-11:15	107	98	205	5:00-5:15	137	156	293
5:15-5:30	18	41	59	11:15-11:30	107	129	236	5:15-5:30	112	171	283
5:30-5:45	36	45	81	11:30-11:45	124	132	256	5:30-5:45	110	139	249
5:45-6:00	46	42	88	11:45-12:00	118	145	263	5:45-6:00	111	167	278

AM COUNTER PERIOD (05:00 - 09:00)

TIME-AM	MOV 3	MOV 7	TOTAL
7:00 AM-8:00 AM	47.28	47.28	94.56
8:00 AM-9:00 AM	47.28	47.28	94.56

PM COUNTER PERIOD (15:00 - 19:00)

TIME-PM	MOV 3	MOV 7	TOTAL
4:15 PM-5:15 PM	54.47	54.47	108.94
5:15 PM-6:15 PM	54.47	54.47	108.94

AM PERIOD (00:00-24:00)

TIME-AM	MOV 3	MOV 7	TOTAL
7:15 AM-8:15 AM	564	564	1128
8:15 AM-9:15 AM	47.28	47.28	94.56

PM PERIOD (12:00-24:00)

TIME-PM	MOV 3	MOV 7	TOTAL
4:15 PM-5:15 PM	564	564	1128
5:15 PM-6:15 PM	54.47	54.47	108.94

NON-COUNTER PERIOD (09:00 - 15:00)

TIME-AM	MOV 3	MOV 7	TOTAL
2:00 PM-3:00 PM	670	670	1340
3:00 PM-4:00 PM	670	670	1340

NON-COUNTER PERIOD (05:00 - 12:00)

TIME-AM	MOV 3	MOV 7	TOTAL
2:00 PM-3:00 PM	670	670	1340
3:00 PM-4:00 PM	670	670	1340

Vertical scale markings on the right side of the page, including numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

14-Mar-97

State of Hawaii, Department of Transportation, Highways Division

ISLAND: OAHU  
STATION NO: 42-C  
AUX NO: 1  
FUND SYSTEM:  
FILE: LEG 2

STATION DESCRIPTION: KALANIANA'OLE HWY  
AT OLUOLU & WAILEA STS  
OAHU

COUNT GROUP ID: M.P.:  
ROUTE NO  
HWY ST NAME WAILEA ST  
MOV(2 ): DIR: TO KALANIANA'OLE HWY  
MOV(6 ): DIR: TO MAKAI

CORRIDOR ID:  
SURVEY DATE:  
D-01  
D-02

TC NO. 55  
ID NO. 4 6

ASSIGNED DATE:  
BEG SURVEY DATE: 02/11/97  
BEG SURVEY DATE: 02/11/97

START TIME: 11:15  
START TIME: 11:15

TIME-AM	MOV 2	MOV 6	TOTAL	TIME-AM	MOV 2	MOV 6	TOTAL	TIME-PM	MOV 2	MOV 6	TOTAL
12:00-12:15	0	1	1	6:00-6:15	12	10	22	12:00-12:15	12	13	25
12:15-12:30	1	3	4	6:15-6:30	8	3	11	12:15-12:30	16	8	24
12:30-12:45	1	3	4	6:30-6:45	8	4	12	12:30-12:45	8	1	9
12:45-1:00	1	0	1	6:45-7:00	5	8	13	12:45-1:00	14	2	16
1:00-1:15	0	0	0	7:00-7:15	0	0	0	1:00-1:15	11	7	18
1:15-1:30	0	2	2	7:15-7:30	7	0	7	1:15-1:30	9	6	15
1:30-1:45	0	0	0	7:30-7:45	8	3	11	1:30-1:45	5	4	9
1:45-2:00	0	1	1	7:45-8:00	4	1	5	1:45-2:00	7	9	16
2:00-2:15	1	0	1	8:00-8:15	8	3	11	2:00-2:15	11	3	14
2:15-2:30	0	0	0	8:15-8:30	8	2	10	2:15-2:30	6	7	13
2:30-2:45	0	0	0	8:30-8:45	10	6	16	2:30-2:45	5	4	9
2:45-3:00	0	0	0	8:45-9:00	4	4	8	2:45-3:00	5	6	11
3:00-3:15	0	0	0	9:00-9:15	12	2	14	3:00-3:15	5	4	9
3:15-3:30	0	0	0	9:15-9:30	6	0	6	3:15-3:30	7	7	14
3:30-3:45	0	0	0	9:30-9:45	5	3	8	3:30-3:45	9	8	17
3:45-4:00	0	0	0	9:45-10:00	10	4	14	3:45-4:00	12	3	15
4:00-4:15	3	0	3	10:00-10:15	11	3	14	4:00-4:15	6	4	10
4:15-4:30	0	0	0	10:15-10:30	9	8	17	4:15-4:30	7	4	11
4:30-4:45	1	1	2	10:30-10:45	9	9	18	4:30-4:45	10	6	16
4:45-5:00	1	0	1	10:45-11:00	13	7	20	4:45-5:00	14	8	22
5:00-5:15	0	2	2	11:00-11:15	17	12	29	5:00-5:15	8	3	11
5:15-5:30	1	1	2	11:15-11:30	14	7	21	5:15-5:30	7	3	10
5:30-5:45	6	1	7	11:30-11:45	13	6	19	5:30-5:45	7	5	12
5:45-6:00	16	3	19	11:45-12:00	16	7	23	5:45-6:00	5	0	5

AM-DIRECTIONAL PERIOD (05:00 - 09:00)	MOV 2	MOV 6	TOTAL	PM-DIRECTIONAL PERIOD (05:00 - 09:00)	MOV 2	MOV 6	TOTAL
AM-DIRECTIONAL PERIOD	41	20	61	PM-DIRECTIONAL PERIOD	41	22	63
AM-PEAK HR TIME	6:45	6:45	6:45	PM-PEAK HR TIME	6:45	6:45	6:45
AM-PEAK HR VOLUME	7.49	2.49	9.98	PM-PEAK HR VOLUME	11.25	3.75	15.00
AM-K FACTOR(S)	66.75	31.25	100.00	PM-K FACTOR(S)	66.75	35.00	100.00
DIRECTIONAL PERIOD	5:45 AM-6:45 AM	6:00 AM-7:00 AM	35	DIRECTIONAL PERIOD	3:00 PM-4:00 PM	5:00 PM-7:00 PM	36
AM-PEAK HR VOLUME	41	20	61	PM-PEAK HR VOLUME	40	24	64
AM PERIOD (09:00-12:00)				PM PERIOD (12:00-2:00)			
AM-DIRECTIONAL PERIOD	60	32	92	PM-DIRECTIONAL PERIOD	50	24	74
AM-PEAK HR TIME	11:00	11:00	11:00	PM-PEAK HR TIME	6:57	12:00	6:57
AM-PEAK HR VOLUME	10.16	10.16	20.32	PM-PEAK HR VOLUME	67.57	32.43	100.00
AM-K FACTOR(S)	65.22	30.70	100.00	PM-K FACTOR(S)	67.57	32.43	100.00
AM-D				PM-D			
PM-DIRECTIONAL PERIOD (09:00 - 13:00)				PM-DIRECTIONAL PERIOD			
PM-DIRECTIONAL PERIOD	32	32	64	PM-DIRECTIONAL PERIOD	219	112	331
PM-PEAK HR TIME	11:00	11:00	11:00	PM-PEAK HR TIME	241	116	357
PM-PEAK HR VOLUME	32	32	64	PM-PEAK HR VOLUME	213	115	328
PM-K FACTOR(S)	11:00 AM-12:00 AM	10:15 AM-11:15 AM	36	PM-K FACTOR(S)	285	131	416
PM-PEAK HR VOLUME	32	36	68	PM-PEAK HR VOLUME	319	139	458
PM PERIOD	11:00 AM-12:00 AM	10:15 AM-11:15 AM	36	PM PERIOD	62.69	37.31	100.00
PM-DIRECTIONAL PERIOD	60	36	96	PM-DIRECTIONAL PERIOD			
PM-PEAK HR TIME	11:00	11:00	11:00	PM-PEAK HR TIME			
PM-PEAK HR VOLUME	32	36	68	PM-PEAK HR VOLUME			
PM-K FACTOR(S)	11:00 AM-12:00 AM	10:15 AM-11:15 AM	36	PM-K FACTOR(S)			
PM-D				PM-D			

