

FINAL ENVIRONMENTAL IMPACT STATEMENT

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WAIOLA ESTATES SUBDIVISION

WAIPIO, EWA, OAHU, HAWAII

SEPTEMBER 1986



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

**650 SOUTH KING STREET
HONOLULU, HAWAII 96813**

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Department of General Planning
Department of Parks and Recreation
Board of Water Supply
Police Department
Department of Public Works
Department of Transportation Services
Department of Housing and Community Development
Department of Land Utilization
Office of Human Resources

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DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

FINAL ENVIRONMENT IMPACT STATEMENT FOR
WAIOLA ESTATES SUBDIVISION

Waipio, Ewa, Oahu, Hawaii
Tax. Map Key: 9-4-07:1

This document is prepared pursuant to Chapter 343, HRS.

PROPOSING AGENCY: Department of Housing and Community Development

RESPONSIBLE OFFICIAL:



Mike Moon, Director

9/22/86
Date

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CONFIDENTIAL - SECURITY INFORMATION

- SUMMARY

I. SUMMARY

CHAPTER 343, HRS
ENVIRONMENTAL IMPACT STATEMENT (EIS)

Action:	Agency
Project Name:	Waiola Estates Subdivision
Project Description:	The proposed project consists of a single family residential subdivision containing approximately 1,500 units with appurtenant infrastructure and facilities. Park, school and reservoir sites will also be included within the development plan.
Area:	269.454 Acres
Project Location:	Waipio, Central Oahu, Oahu, Makai-ewa of the intersection of Kipapa Gulch and Kamehameha Highway.
Tax Map Key:	9-4-07:1
Present Use:	Agriculture
State Land Use:	Agriculture
Development Plan:	Agriculture Facilities Map Designation, Golf Course and Park
Zoning:	AG-1, Restricted Agriculture

Land Owner: Castle and Cooke, Inc./United States of America

Proposing Agency: City and County of Honolulu
Department of Housing and Community
Development

Summary: The proposed 1,500 unit single-family residential subdivision planned by the City and County of Honolulu is intended primarily for gap group income families. The project will include park, school and reservoir sites on the 269 acre parcel. The project will be beneficial in its addition to the State's affordable housing inventory.

Adverse impacts will include additional vehicular traffic and the loss of agricultural lands. These impacts will be mitigated through traffic management planning and the replacement of equivalent agriculture lands located in the State inventory.

Alternatives considered include a no project alternative, an active agricultural use alternative, and a multi-family use alternative. The no project alternative was rejected since no benefits would be gained to the landowner or the general public. The active agricultural use alternative was dismissed since the permanent removal of the project lands would not have any significant impact on the State agricultural lands inventory. Finally, the multi-family residential use alternative was not considered desirable since implementation of such use would demand more infrastructure facilities than are currently available.

State Land Use Boundary changes and site acquisition are considered unresolved issues, however, resolution of these two matters are primarily a function of the planning and the land use approval process.

The project is generally in compliance with applicable plans and policies under State jurisdiction. A conflict with the State Agriculture Plan is noted, however, the proposed mitigation measures are expected to minimize any impacts on the Plan. City approvals are exempted by Chapter 359G, HRS.

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

= PURPOSE

II. PURPOSE

This Environmental Impact Statement is prepared pursuant to Chapter 343 Hawaii Revised Statutes for the State Land Use Commission. The initial action required for this project involves the redesignation of Agricultural lands to Urban useages. Additionally, this document is prepared as required by the Honolulu City Council and for the use of the Department of Housing and Community Development.

The Department of Housing and Community Development has obtained the approval of certain exemptions from land use policy procedures through Section 359G-4.1 Hawaii Revised Statutes. This is to permit an expeditious process to develop the subject lands. Reference is made to Appendix A, City Council Resolution 86-202 which describes in detail the exemptions authorized under these respective Sections.

**PROJECT DESCRIPTION
STATEMENT OF OBJECTIVES**

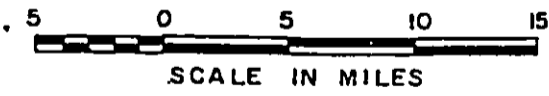
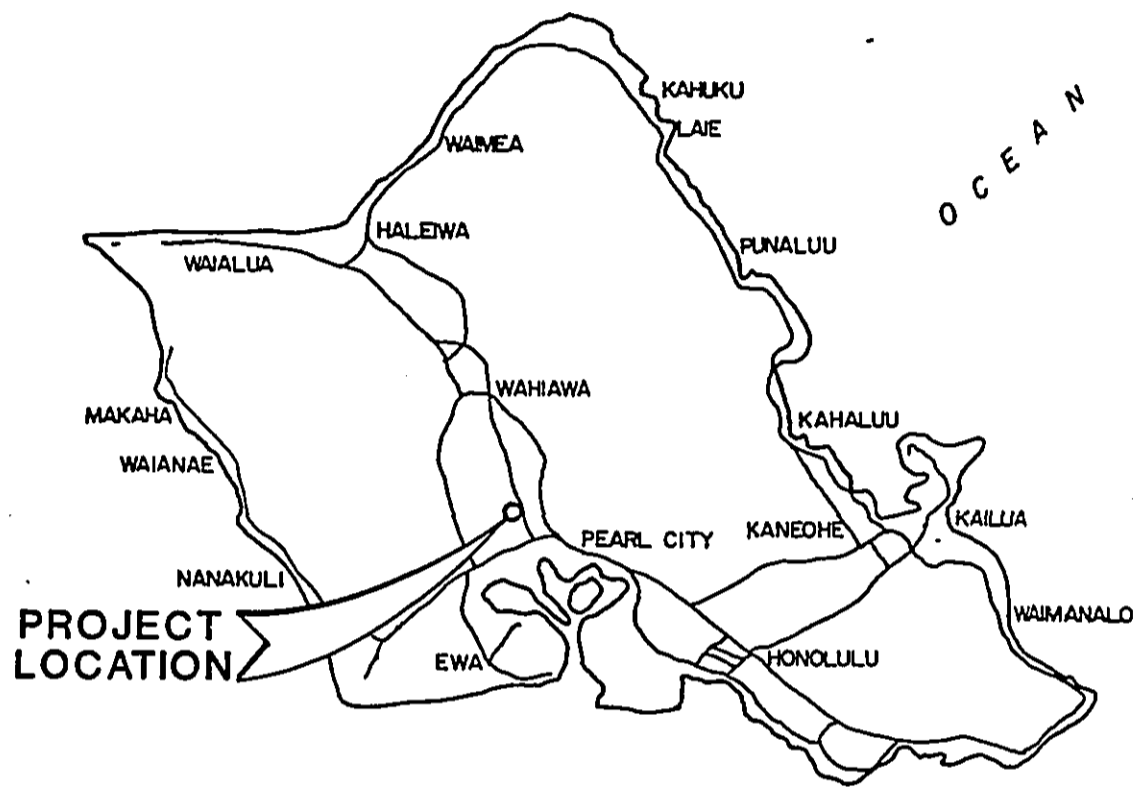
III. PROJECT DESCRIPTION AND STATEMENT OF OBJECTIVES

A. Project Location

The City and County of Honolulu proposes to develop the triangular-shaped 269±-acre parcel into a residential community in Central Oahu. The parcel consists of gently sloping lands on the southern portion of the Schofield plateau which lies between the Koolau and the Waianae mountain ranges (Figures 1 and 2). It is bounded by Kamehameha Highway (adjoining Gentry-Waipio at this location) to the east, Kipapa Gulch and the Kipapa military reservation to the west, and Amfac's proposed Waikele community to the south. The project site is presently used for pineapple cultivation. A triangular parcel of approximately 6 acres is owned by the United States of America and is wedged between the Waiola project area and Kipapa Gulch. The United States government also has an easement which affects 5.879 acres along Kipapa Gulch. The United States government also has an easement for maintenance and security purposes which affects 5,829 acres along Kipapa Gulch related to now discontinued munitions storage in tunnels located within the Gulch. The federal government has been formally asked to relinquish its easement and this request is currently being processed by the U.S. Army.

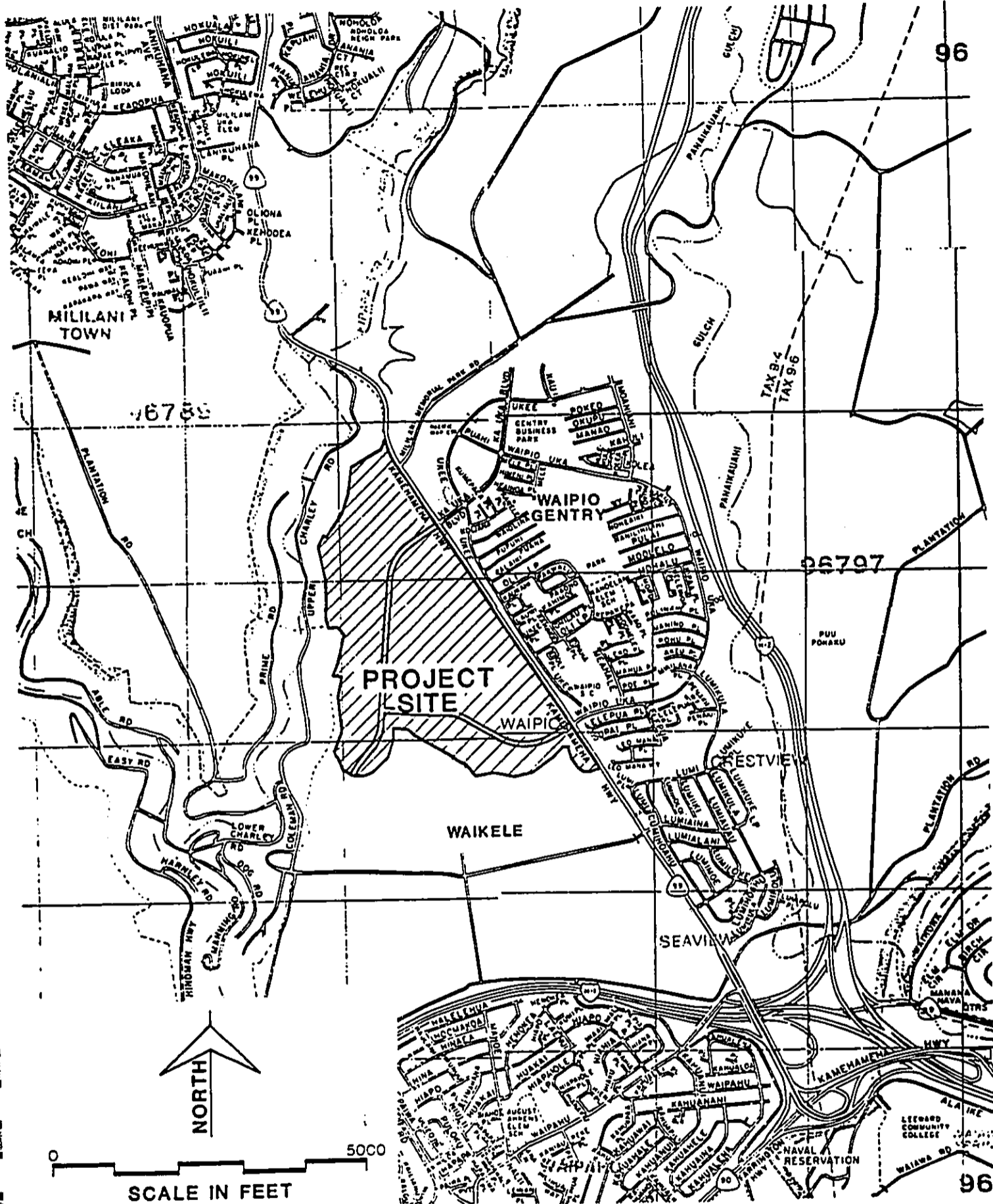
The U.S. Navy maintains an active Naval Station within the Kipapa Gulch bordering the southern half of the project site. An existing blast zone is located entirely within the gulch at a level substantially below that of the project site.

The remainder of the site is owned by Castle and Cooke, Inc. The property is approximately one mile south of Mililani Town.



GENERAL LOCATION MAP

FIGURE 1



SITE MAP

FIGURE 2

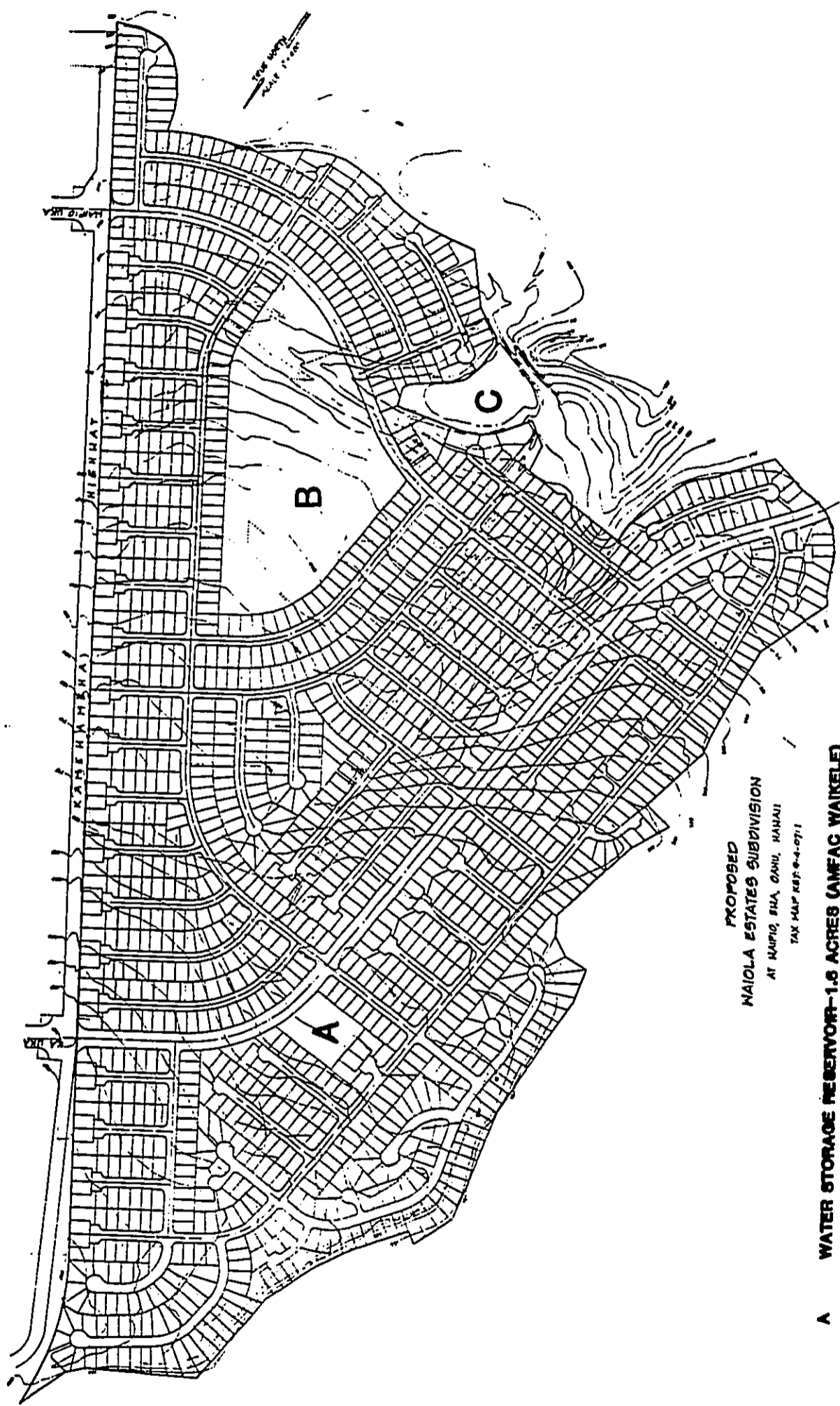
B. Project Description

- | | |
|-----------------------------------|---|
| 1. Type: | Single Family Residential |
| 2. Number of Units: | 1,500 (estimate) |
| 3. Lot Size: | 5,000 square feet average
(R-6 equivalent) |
| 4. Recreational Facilities: | 12.1 acre park |
| 5. Major Land Use
(estimated): | Residential: 195
Park: 12
School: 6
Circulation and Public
Facilities (20%): 54
Reservoir: <u>2</u>
Total 269 Acres |
| 6. Density: | Residential Only: 7.75 units/acre
Subdivision: 5.81 units/acre |

The 269-acre parcel when fully subdivided will provide a total of approximately 1,500 house lots of 5,000 square feet each (Figure 3). The average lot will have a frontage of at least 50 feet and an average length of 100 feet. The subdivision will fully conform with all R-6 zoning requirements including underground utilities, curbs and sidewalks, and a 12 acre park for the use of its residents.

A number of offsite improvements including widening of Kamehameha Highway to accommodate the increased traffic, development of additional water resources and storage, expanded sewer and drainage capacity are required to accommodate the subdivision within the context of existing and planned development in the area.

House Construction: The home building industry has provided proposals as to the types and quality of homes that could be constructed for a purchase price of less than \$70,000--the maximum amount possible to provide a house and lot package at \$105,000.



PROPOSED
 NAIOLA ESTATES SUBDIVISION
 AT NAIPILO, EHA, OAHU, HAWAII
 TAX MAP REF. 9-4-0711

- A WATER STORAGE RESERVOIR-1.6 ACRES (AMFAC WAIKELE)
- B SCHOOL SITE-6 ACRES PARK SITE-12 ACRES
- C DRAINAGE STORAGE RESERVOIR (AMFAC WAIKELE)

SUBDIVISION PLOT PLAN

FIGURE 3

These homes would have double-wall construction, hip and/or gabled roofs, shake or tile roofing materials and enclosed garages. Briefly stated, the subdivision would be fully compatible with the surrounding community. Appendix I provides representative housing types and floor plans.

Smaller homes, perhaps with fewer amenities, designed however, to maintain the quality standards of the subdivision, could also be constructed to sell at a purchase price of about \$70,000 to accommodate the needs of families with greater income limitations. Twenty percent or approximately 300 of these homes would be reserved for families with a household income of \$25,050 or less (for a family of four). Various methods of financing are under review to make these home units available to this target group.

A wide participation of home building contractors is planned. A Request for Proposals (RFP) has been published requesting submittal of home designs within the specified price range, on the basis of the following design guidelines:

1. Size: 2-bedroom, one bath expandable units
3-4 bedrooms, 2 bath units

800 to 1,200 square feet (excluding garage);
single and two-story structures; covered
garages integrated with the residential
structure.
2. Roof Style
and Materials: Hip and/or gable roof with shake, wood
shingle or ceramic (Monier) tile.
3. Exterior
Appearance: Ship lap, textured exterior plywood, hollow
tile and/or brick facia.

4. Colors: As approved by the City.
5. Construction Standards: Wood framing, structural supports, and flooring shall be chemically pressure treated to resist termite infestation; installed hardware should be of acceptable quality and approved by the City.

The participating contractors will be selected on the basis of their design, price, and qualifications including an evaluation of ability to construct and deliver completed homes during the term of the project.

C. Statement of Objectives

The City recognizes that the impact of removing this parcel permanently from agricultural use must be offset by providing other uses which will clearly benefit the community beyond the present use of the site. The objectives are as follows:

To Meet State and City Policies. The impact of amending the land use classification of the area from agriculture to urban must take into consideration the provisions of alternative uses which will clearly benefit the community above and beyond the present use of the site. These uses include housing, employment and recreation.

To Provide More Affordable Residential Uses. The project will be affordable to low-moderate households unable to purchase homes in the conventional open market.

To Provide Recreation Opportunities. At least 12 acres of the total site will be used for open space and recreation. Planned improvements include a community recreation center, athletic fields and play courts.

To Create a High Quality Community for the Future. Consistent with the objectives and the market demand analysis, the proposal would provide a quality residential living environment.

D. Development Timetable and Phasing

The project which is expected to be developed in one continuous phase, will implement a very rapid construction schedule. This is necessary to reduce overall project costs due to interest on General Obligation Bonds, used to finance the project to minimize the prices of the completed houses due to rising construction costs and to the extent possible, assure the availability of affordable mortgage loans.

The following schedule is planned:

Land Use Commission Approval	February 1987
City Council Approval	February 1987
Advertise Initial Phase of Site Construction	March 1987
Award House Construction Contracts	April 1987
Bonds Issued	May 1987
Public Drawing	May 1987
Start of Construction	May 1987
First Homes Ready for Occupancy	January 1988

E. Costs and Funding

Financing of the project is a critical part of ensuring that the final product (a house and lot "package") is affordable. An estimated amount of \$50 million will be required to fund the land acquisition and site improvements. The use of General Obligation Bonds would provide the means of assuring the lowest possible interest rate and ultimate costs over the planned two and a half year development period.

Negotiations with Castle and Cooke, Inc., are continuing for the purchase of a 269.454 tract of land situated in Waipio, Oahu, makai-ewa of the point at which Kipapa Gulch intersects Kamehameha Highway. Negotiations are for the purchase price of approximately \$25,000 per acre.

Development of additional water resources and storage, expanded sewer and drainage capacity are also required to accommodate the subdivision within the context of existing and planned development in the area.

Waiola Estates Subdivision

Development Budget

Preliminary Budget Estimates - For Planning Purposes Only

Pre-development Approvals, Planning and Engineering		\$ 2,946,000
Land Acquisition		6,736,000
Site Improvements Construction		29,474,000
Off-Site Improvements	3,620,000	
On-Site Improvements	25,854,000	
Indirect Costs		6,958,000
Sales Processing	716,000	
Escrow and Closing	885,000	
Construction Management	500,000	
Financing/Carrying Costs	4,699,000	
Administrative Costs	158,000	
Contingency		4,307,000
	Total	<u>\$50,421,000</u>

F. Historic Perspective

The site is currently used for pineapple production and contains no permanent structures. Existing improvements are related to agricultural operations, including dirt roads and an irrigation ditch which bisects the property. Archaeological literature searches indicate the general area has always been used for agricultural purposes.

1. [Illegible text]

2 ALTERNATIVES CONSIDERED

IV. ALTERNATIVES CONSIDERED

A. No Project

The No Project alternative is feasible only until such time that the current cultivated pineapple acreage is harvested. The commitment that the Waiola site will become available for development is documented in a recent letter from Castle & Cooke, Inc. dated July 16, 1986 where they state that they will be vacating the site under threat of condemnation. Replacement of the pineapple acreage is also covered in the letter.

If the project is not implemented at this time, it is probable that the land would remain in its present condition for only a short period of time while other alternatives are being considered by the land owner. Alternatives likely to take place could include:

- Selling the project site.
- Allowing the project site to be in open space until the demand for housing creates public or governmental pressure to utilize this area.
- Pressure for urbanizing other agricultural lands or further development of existing urbanized areas to provide housing units that would have been provided by this project.
- Allowing for a smaller portion of the site to be developed and/or decreasing the density.

This alternative was not found to be viable because its non-use would render the properties useless to the landowner and the tremendous waste of valuable land would not provide any benefit to the surrounding communities or the State as a whole. In addition,

CASTLE & COOKE, INC.

POST OFFICE BOX 2990 • HONOLULU, HAWAII 96802
TELEPHONE (808) 548-6611 TELEEX 7430017

July 16, 1986

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

Dear Sir:

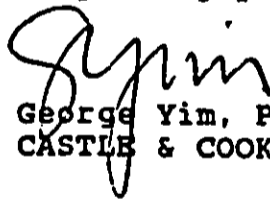
Waiola Estates

The City has threatened the condemnation of 269 acres at Waikele, TMK 9-4-7-1, which is presently in pineapple cultivation. The conversion of these lands to urban use will not affect pineapple production (or sugar) since Castle & Cooke had planned to convert acreage now in sugar cane to pineapple to reduce the operating costs of the sugar operation.

The lands that will be converted are in the Waialua district, TMK 6-4-1-portion of parcel 6, 6-5-1-portion of parcel 2, and 6-5-2-portion of parcel 19, which are equivalent in acreage and in productivity and are adjacent to pineapple lands.

Other surplus sugar lands are proposed for conversion to pineapple as part of the overall land utilization program of Castle & Cooke, Inc. and its subsidiaries.

Very truly yours,



George Yim, President
CASTLE & COOKE LAND COMPANY

86 JUL 16 P1:43

DEPT. OF HOUSING
& COMM. DEVELOPMENT

No-Action would represent a blow to rational long-term land planning. City and State governments would also suffer from losses of potential employment, tax revenues, and housing supply. Finally, because of its planned use for affordable housing, efforts to meet this critical need in the community will be delayed.

Conversely, development of the site would constitute an irretrievable use of land and would preclude other uses for the site.

B. Active Agricultural Use

Analysis of the Waiola Estate lands for active agricultural use was evaluated in a study prepared by Evaluation Research Consultants dated July 17, 1986 (Appendix B). The study discusses the present condition of the affected acreage in terms of its' productivity, the designations of the lands under the ALISH system of evaluation, and the LESA land evaluation ratings assigned to the Waiola lands.

Existing and planned urban residential land uses bordering or adjacent to the Waiola site (Gentry-Waipio, Amfac/Waikele, and Crestview) are also identified. These competing uses direct attention to the conflicting aspects of urban vs. agricultural land uses despite protective laws (Chapter 165, HRS) which limit the circumstances under which existing farming operations may be deemed a nuisance to adjoining urban residential neighbors.

The agricultural significance of the Waiola lands was also evaluated with comparable acreages. This comparison identified Waiola as constituting a very small percentage of similar quality lands. The subject lands are less than 0.5% of the "Prime" lands on Oahu and 0.1% of such lands Statewide. When an evaluation is conducted on the basis of lands currently being used in crop production, the acreage in question becomes slightly more significant. Currently, more than 41,000 acres are being used in crop production on Oahu and the decrease in acreage resulting from the conversion of Waiola

lands to urban use would be 0.65%. Total pineapple acreage would decrease by 2.3%.

Agricultural lands of similar quality and land classification ratings are not scarce. As of 1984, 266,000 acres in Hawaii were used for crop production (including sugar and pineapple). This is 58,000 acres less than were used for crop production in 1969. On Oahu, the total acreage used for crop production has decreased by 17,700 acres since 1967 to the current level of 41,600 acres as of 1984.

Even after subtracting the past conversions of crop lands to urban usages and the projected increases in agricultural land uses on Oahu in the year 2015 based on the projections in the LESA Commission report, there are over 12,000 acres of land suitable from crop production not currently in production on Oahu. If more sugarcane lands become fallow, this number will increase.

The removal of these lands from pineapple production is not expected to have any impact on the production of pineapple on Oahu. Castle & Cooke, Inc. has stated that the acreage that would be lost if the subject parcel is developed for urban uses would be replaced with lands of equivalent quality. The lands to be converted to pineapple production are currently in sugar cultivation and are adjacent to pineapple fields and are of similar quality. These lands are located in the Waialua District and are lands that were converted to sugar from pineapple 15 years ago when the pineapple industry was suffering from increased foreign competition and the sugar industry was more profitable. Recently, with the pineapple industry's success in marketing fresh pineapple, the trend on Oahu has reversed and pineapple acreage has begun to show a slight gain. The loss of the subject parcel to agricultural use will be permanent and irreplaceable upon development of the proposed project.

Alternative agricultural uses for crops other than sugar and pineapple were studied based on the physical, agronomic and environmental characteristics of the subject parcel. A summary listing of

24 vegetable crops and 8 fruit and nut crops can be considered to have an agronomic potential on the Waiola lands. These alternative crops are listed on the following Table 1 taken from the study. The analysis points out, however, that agronomic success (the crop will grow) and economic success (the crop can be grown for a profit) are not the same. Some of the crops listed have been tried and found to be unprofitable, either because of high production costs, lack of markets, or the availability of less expensive imports. Also, some of the crops listed that can be grown in the Waiola area, could be grown elsewhere in the State more profitably.

One of the more pronounced limiting factors to alternative agricultural crops is the cost and supply of water. Under existing conditions, the most readily available source of water is from the Oahu Sugar Company. This water would have to be pumped up to the Waiola Fields at a cost of \$100 per acre foot. Most crops listed require about 5 acre feet of water per year and some other crops such as perennial crops would require more. If water were to be purchased from the Board of Water Supply at agricultural rates, it would be substantially more expensive.

The evaluation of crops produced in Hawaii can be separated into two groups: those produced for export and those produced for local consumption. Crops that can be produced for export; papaya, guava, passion fruit, macadamia nuts and pineapple can all be produced on lands similar to Waiola's lands. There are various factors that affect the production of these crops on Waiola lands and these include; insect infestation (mosaic virus on papaya), installation of trellises for passion fruit cultivation, and incompatible location of cultivation and processing facilities for macadamia nut and guava cultivation.

Several vegetable crops which are imported in great quantities are not climatically suited to Waiola's lands because they require cool temperatures for good quality and profitable yields. The fruit and vegetable crops which show some potential for commercial production

TABLE I
Agronomically Feasible Crops

Crop	Honolulu Demand (1,000 pounds)	Percent of Demand Met by Local Production	Maximum Percent of Monthly Local Demand Met by Local Products	Number of Months When Local Products Exceeds 70% of the Market
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Crops for the Local Market

Avocados	1,684	59	77	2
Bananas: Appie	616	100	100	12
Bluefield	91	100	100	12
Chinese	14,505	25	43	0
Beans, Green	804	86	100	9
Bittermelon	97	96	100	11
Broccoli	4,447	8	16	0
Cabbage, Kai Choy	768	96	100	11
Corn, Sweet	485	29	100	4
Cucumbers	3,715	57	87	6
Daikon	1,488	97	100	12
Dasheens	163	94	100	10
Eggplant: Long	496	99	100	12
Round	384	71	92	8
Lettuce, Semi-head	1,321	100	100	12
Limes	554	6	19	0
Onions: Dry	13,007	5	16	0
Green	829	77	92	8
Peas, Chinese	303	5	18	0
Peppers, Sweet	2,540	37	64	0
Potatos, Table	20,941	0	1	0
Pumpkins	1,128	10	100	5
Radishes	178	98	100	12
Squash: Oriental	465	84	100	12
Italian	1,806	47	89	3
Sweetpotatoes	1,804	67	96	6
Taro	1,197	15	23	0
Tomatoes	13,356	29	47	0
Watermelon	9,546	78	99	7

Crops for Local and Export Markets

Ginger Root	1,348	80	100	8
Pineapples	34,130	100	100	12
Papayas	10,579	100	100	12

Source: Honolulu Arrivals: Fresh Fruits and Vegetables, 1985, Market News Service, Hawaii State Department of Agriculture, April 1986.

on Waiola are listed on Table 1 together with the quantities of the product or similar products sold in the Honolulu wholesale market in 1985. Table 1 further identifies market conditions that can be used to estimate the potential demand from increased production of the crops. When local production already supplies the entire market, any increase in production via additional planting will have two immediate effects: 1) the price of the product will fall, making it less profitable or unprofitable to produce; and 2) production elsewhere in the State will decline.

Crops that can be grown on Waiola lands that would be agronomically feasible are also subject to seasonal factors that would affect the crop reaching the market during those times when imports are scarce or unavailable. These crops are fragile in the sense that timing of the crop to reach market in competitive time frames also results in harvesting occurring during poor agronomic conditions when yields are low.

Lands such as Waiola are also suitable for the production of seed for crops such as corn if adequate water for irrigation is available. Seed corn cultivation is dependent to a great extent on climatic conditions elsewhere in the world. It is difficult to plan on a long term demand for such a use and it appears that sufficient lands are available to meet such current demands.

Forage crops for animal feed are also potential crops for Waiola lands. These would include corn silage and other similar products like alfalfa which would best serve the dairy industry and the feed lot at Barbers Point. Availability of low cost water and the transportation costs of a bulky product preclude Waiola from being considered an optimal location for this product.

It is concluded that placing the subject lands in an urban use will not have a significant impact on the agricultural sector of Oahu or

the State. Lands of similar quality and economic potential are currently lying fallow and there are sufficient lands available to meet current and projected future agricultural needs.

C. Multi-Family Residential

The alternative of developing multifamily units is not considered a desirable alternative. The proposed single-family use would permit six or eight units per acre as compared to the multifamily density of 20 to 30 units per acre. Development of the subject site at the higher density would result in increased loading on major infrastructure improvements beyond current carrying capacity.

The alternative of increasing the density but maintaining the same number of housing units as a means of maximizing open space was also considered and found to be undesirable due to the added maintenance and insurance costs that would be borne by each homeowner. While the development of cluster housing, zero lot line homes and townhouse apartments is currently in vogue and a means of creating open space, the Waiola project is designed to assist residents to attain the American dream of owning their own house and lot.

D. Alternative Sites

The project is a part of the City's long term program aimed at alleviating the critical need for affordable housing in Honolulu. As an ongoing part of this program, available tracts of land throughout Oahu were and are constantly being evaluated as possible sites for affordable housing projects. Consideration as an alternative site depends on affordability which is determined primarily by the price of land and the cost of its development for residential use. Thus, sites within urbanized areas of Oahu were not feasible because of high land costs.

Rural sites were also not considered because travel time, distance from centers of employment and the absence of suitable infrastructure rule out such developments. Areas such as Waialua/Mokuleia, the North Shore and most of the Windward Coast were not considered for these reasons. The Waianae Coast is also subject to the foregoing constraints on development in addition to being economically impacted at the present time. Construction of the West Beach resort and the secondary urban center may open this area for future affordable housing projects.

The Waiola site is located in Central Oahu which is well situated with respect to employment opportunities, shopping areas, recreational facilities, health care and public services. The site is ideal for the development of affordable housing as the land use designation is presently Agriculture and the land can be acquired at a comparatively low cost. Its topography and proximity to existing urbanized areas minimize site preparation and infrastructure construction costs.

While other potentially suitable sites are available in Ewa, each is already being evaluated as an additional location for affordable housing rather than as an alternative to the Waiola Estates Subdivision. The other sites under consideration are situated in the vicinity of Kapolei Park (formerly Fort Barrett), in the area bounded by Farrington Highway and the H-1 Freeway, west of Kunia Road, and in Makakilo. The sites range in size from 300 to 600 acres and vary considerably in development potential.

As their economic feasibility is established, these sites will be considered for future affordable housing projects. This approach represents the only reasonable means of alleviating the critical shortage of housing in Honolulu.

As of 1980, there were an estimated 39,366* gap group households on Oahu. As the cost of homes has increased at rates exceeding the growth of personal income, the gap group has grown substantially. Even if it is assumed that the two larger sites in Ewa are developed in addition to Waiola, the total number of homes produced will amount to only about 7,000 units--for less than the need and demand for affordable housing.

* Daly and Associates, Inc., "Affordable Housing Issue Paper," 1981

V. THE AFFECTED ENVIRONMENT

A. Geographical Characteristics

1. Topography

The project site lies on a gently sloping area of the Schofield Plateau at elevations ranging from approximately 300 feet in the southern portion of the property to 425 feet above mean sea level at the northern tip. The plateau has been built up by many successive lava flows originating from the Koolau Shield Volcano.

According to the U.S. Geological Survey (USGS) Map, slopes on the project site average less than 5 percent. The Kipapa Gulch, a major drainageway, runs along the western border of the site, although the property does not extend into the gulch itself.

The site is not subject to unusual terrain features such as steep slopes, abutting rock formations and other conditions affecting construction, drainage, site planning or livability. The proposed development will take advantage of the natural features of the site and area.

2. Geology

The proposed project area is located on the southern slope of the Schofield Plateau. This plateau was built up by many successive lava flows originating from the Koolau shield volcano. This rock unit is made up of firm to very hard volcanic rocks which form bedrock in the proposed project area and vicinity. Logs of deep borings and artesian wells indicate the volcanic rocks become harder with depth. The soils in this

area are typically residual, derived from the weathering of basic igneous rock.

3. Soils

The project area is underlain by soils consisting of silts and clays of the Molokai Soil Series. The U.S. Soil Conservation Service, "Soil Survey of Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii," August 1972, classifies the soils as Molokai silty clay loam (MuB). They consist of well-drained soils and are formed in material weathered from basic igneous rock. This type of soil is generally found in nearly level to moderately steep lands with elevations ranging mainly from near sea level to 1,000 feet. The mean annual soil temperature is 73° F. Molokai soils are geographically associated with Holomua, Keahua, Lahaina, and Uwala soils. They are reddish-brown to brown, stiff to hard, silty clays and clayey silts. Based on the Unified Soil Classification System, they can be classed as CL, MH and ML groups. The entire project area is underlain by these groups of soils.

The soil mantle at the site varies randomly from 5 to 23 feet in thickness and is underlain by reddish-brown, severely weathered basaltic rock which grades downward to the underlying hard rock. The soil thickness decreases along the gulch area and along steeper slopes. At higher elevations and along the relatively steep banks of the gulches boulders of basaltic rock are either exposed or can be encountered at shallow depths. A number of these boulders can be observed along the cane haul roads.

The upper soil zones are expected to range in thickness from 5 to 14 feet, whereas the soft weathered rock may extend up to 14 to 40 feet in some locations.

On this soil, runoff is slow and the erosion hazard is slight; permeability is moderate.

Permeability refers to movement of water downward through undisturbed and uncompacted soil. Permeability is one component, along with soil water content, of the general internal drainage characteristics of soil types. Soil permeability is categorized as (1) moderate; (2) rapid and (3) slow. Moderate permeability is the most desirable condition for this environmental factor.

The erosion hazard is no more than slight. Erosion hazard refers primarily to the danger of accelerated erosion which would result from disturbance of the natural landscape, usually by man.

The soils encountered generally exhibited high densities and relatively low moisture contents. It should be noted that the upper 12 inches of the soil mantle are relatively loose due to constant reworking of this layer for agricultural purposes. Significant roots and organic material extend to no more than 12 inches below the ground surface.

4. Climate

The mean rainfall at Waipahu is approximately 30.5 inches per year. The months of May through October are normally dry. The median monthly rainfall during these months is less than 1.4 inches.

The predominant wind direction and higher wind speeds are from a northeast to east direction. Other predominant wind come from the north-northeast and east-northeast.

The median annual temperature is 82.6° F.

B. Hydrological Characteristics

The subject site is located adjacent to Kipapa Gulch. Kipapa Stream has its head waters in the Koolau Range and it joins with Waikele Stream near Waipahu, which discharges into Pearl Harbor's West Loch. No other surface water features are in the immediate area.

1. Ground Water

The project site is located over the Pearl Harbor basal line aquifer. The ground water head in the aquifer is between 20 and 25 feet above mean sea level. Ground water, in general, should not be a problem in the project area, since water in the basal aquifer is 50 to 180 feet below the surface.

The basal ground water aquifer of Pearl Harbor consists of Koolau and Waianae lavas and comprises approximately 100,000 acres. It extends westward from Halawa Valley to Barbers and Kahe Points and north to the Schofield high level water body. Water levels are generally higher in the Koolau aquifer than the Waianae aquifer. Ground water levels rise to about 20 feet as far north as Waikakalua Valley. Beyond Waikakalua Valley the lens comes into contact with the Schofield high level water body (269+ feet msl). To the northeast the basal lens terminates against dike aquifers associated with the main Koolau rift zone.

East of Waipahu, the narrow coastal plain is comprised of terrestrial and marine sediments. There are places where this caprock cover is particularly thick and an average of approximately 50 mgd of ground water leaks out as spring discharge. West of Waipahu, the Ewa Plain forms a thick caprock wedge.

Water levels in the Pearl Harbor basin are affected by seasonal effects, long term effects, and shorter term drawdown influences due to heavy pumpage. Water levels rise rapidly when draft diminishes. Regional water levels are locally influenced throughout the district by the location of large spring flows and pumping centers which may show up as head differences of 3 feet or more, depending on discharge intensity.

2. Water Quality

The proposed project is located in the Pearl Harbor Water Use District (PHD) which includes 69 square miles and overlies the basal water formation that constitutes the major water resource of southern Oahu. In addition to the PHD, the Ewa Water District (area - 119 square miles) also partly overlies the same basal ground water. This regional ground water source serves as the major resource for all of southern Oahu as well as for portions of Honolulu and Waianae, where some of the daily draft is transported and consumed.

Water quality data for Kipapa Stream collected at a crest stage gaging station located above the existing Mililani STP discharge outfall were available, and selected parameters are given in the following table for the period 1973-75. The stream at this point is unaffected by urban-generated point and non-point discharges. Total phosphorous and total nitrogen levels are not available; however, in natural, relatively unpolluted waters dissolved orthophosphate and dissolved nitrate are considered to be the principal forms of each of these two elements. From Table 2, it is evident that for non-polluted streams, the phosphorous levels are low, typically in the order of a few hundredths of a mg/l. These levels have also been observed elsewhere on Oahu for similar non-polluted streams.

Table 2
Kipapa Stream Water Quality
Station No. 2128

<u>Date</u>	<u>Discharge cfs</u>	<u>pH</u>	<u>Nitrite and Nitrate mg/l</u>	<u>Ortho Phosphorous mg/l</u>
1-29-73	0.12	6.6	0.00	0.00
6-08-73	3.1	6.6	0.10	----
12-04-73	5.5	7.3	0.00	0.01
5-24-74	7.7	7.0	0.18	0.01
2-05-75	7.8	6.7	1.30	0.01
5-06-75	12.0	6.9	0.01	0.03

3. Drainage

The project site is naturally well drained and should not be susceptible to flooding. The Kipapa gulch is a major drainage way which collects surface run-off from a major portion of the Central Oahu Plain. These gulches cut anywhere from 100 to 150 feet below the surface of the surrounding areas, and do not pose any threat of overflowing onto the project site in the event of major rain storms. Waikele Stream is a perennial stream found at the base of the gulch.

4. Floodplain

According to the Flood Insurance Study for the City and County of Honolulu prepared by the Federal Insurance Administration (FIA) in September 1980, flood-prone areas have not been identified for these areas. Most of the development will occur in a designated Zone D, an area of undetermined, but possible flood hazard.

5. Coastal Zone

The subject site is outside the designated shoreline and tsunami inundation zone. A Shoreline Management Area Permit is required for any development within a minimum of 100 yards (300 feet) inland from the shoreline.

Tsunami or tidal waves have been a recurring menace and are given special emphasis. Scientific studies and historical records indicate that anticipated flooding generally will be limited to the shaded areas on the Tsunami Zone Map in the telephone directory.

6. Wetlands

Wetlands include marshes, swamps, bogs and tidal estuary areas. Wetlands are not found within the project area. Wetlands will usually be partially covered by natural, non-flood waters during some period of the year, as well as by flood waters during other times.

C. Biological Characteristics

1. Flora

The project area has been under agricultural cultivation since the early 1900's when its original flora was removed. It is highly unlikely that rare and endangered species of flora would remain or proliferate after agricultural use of the site. Therefore, no flora survey of the project site has been undertaken.

Except for a few Royal Poinciana and Monkeypod trees along Kam Highway and the Mango and Banyan trees next to the reservoir, the area has "scrub brush," about two to four

feet high, and various weed type grasses. The predominant plants noted were Sour Bush, Dogtail, Hairy Horseweed, Red Pua-lele, Southistle, Popolo, Guinea grass, Swollenfinger grass, Waltheria and Silky Oak. Scattered "volunteer" pineapple plants were also noted.

2. Fauna

Due to the existing agricultural use of the project site, insects, avifauna, and mammals populating the site are largely exotic in nature, and not considered rare or endangered species. Various common bird species, such as the barred dove (Gopelia striata), lace-necked dove (Streptopelia chirensis chirensis), common mynah (Actidotheres t. tristis), Japanese White-eye (Zosterops Japonica Japonica) and red-crested cardinals (Paroaria coronata) may frequent the site.

Finally, pests, such as the house mouse (Mus musculus), Polynesian rat (Rattus exulans hawaiiensis), and Indian mongoose (Herpestes auropunctatus auropunctatus) are likely to be at the project site.

D. Archaeological Characteristics

The subject site is used for pineapple production and contains no permanent structures. Existing improvements are related to agricultural operations, including dirt roads and an irrigation ditch which bisects the property.

A literature search produced the following historical references to the general project area:

"Waipio. Between West Loch of Pearl Harbor and Loko Eo the lowlands were filled with terraces which extended for over a mile up into the flats along Waikele Stream It is said

that the terraces formerly existed on the flats in Kipapa Gulch for at least 2 miles upstream above its junction with Waikele . .

"Waikele. In the flatland, where the Kamehameha Highway crosses the lower valley of Waikele Stream, there are the remains of terraces on both sides of the road, now planted to bananas, beans, cane and small gardens. For at least two miles upstream there were small terrace areas." (Handy, The Hawaiian Planter, 1940).

The present status of these terraces is not known, but extensive construction activities in the valleys since the time of Handy's visit have probably resulted in their destruction. No archaeological sites were mentioned in two other standard references--McAllister's Archaeology of Oahu (1933) and Sterling and Summers' Sites of Oahu 1978).

A field inspection was also made by Chiniago, Inc. on August 15, 1985 for the project area. It was concluded that structural remains (platforms, terraces, shelters, etc.) would have been destroyed by pineapple production long ago, so the only evidence of past human utilization would be unearthed fragments of food remains and artifacts.

While no evidence of such remains were found, State law requires that should any archaeological or historic remains be uncovered during construction, further disturbance should stop and the State Historic Preservation office notified immediately.

E. Existing Population and Growth Characteristics

The project is situated in Census Tract 89.03 which is in the Central Oahu District or Ewa Judicial District. Census Tract 89.03 had a 1980 population of 6,566 in 1,626 households. The household density was 4.0 persons.

The project area is surrounded by two "sets" of communities. Waipahu Town, comprising a wide range of residential subdivisions, individual lots, and commercial and public facilities, is situated to the south below the H-1 Freeway. Above the H-1 Freeway are the communities of Crestview, Seaview, Gentry-Waipio, and Waiawa.

During the 1970s, the Central Oahu DP Area was proportionately the fastest growing of Oahu's eight DP Areas. Its average annual population growth rate of 4.3 percent slightly exceeded the 4.1 percent for the Ewa DP area.

The bulk of Central Oahu's growth in the 1970s was in new communities and subdivisions, such as Waipio-Gentry above Waipahu, Melemanu Woodlands, Waipio Acres and, particularly, Mililani Town. Mililani's 1980 population of 21,365 was more than ten times its 1970 population and its growth accounted for more than half that of Central Oahu.

Since 1980, Central Oahu has continued to grow primarily in new communities and subdivisions, including both the previously named ones and a few newer areas such as Village Park.

The most recent estimate of population in the Central Oahu area is for 1984. Compiled by the City and County Department of General Planning these estimates show there was a total population of 114,400 for the entire Central Oahu Development Plan area. Population within selected communities include Waipahu (29,300) Mililani (23,600) Gentry-Crestview (9,500) Waipio Acres (4,600), and Village Park (2,300).

F. Existing Traffic Conditions

1. Roadways

The existing roads within the project site are primarily for

agricultural purposes. At the present time, access to the site is provided only by Kamehameha Highway which provides frontage along the eastern boundary.

Kamehameha Highway is a three-lane arterial highway between Mililani Town and the Waiawa Interchange, with one lane in each direction and a center lane providing a passing lane or an exclusive left-turn lane. At Waipahu Street, Kamehameha Highway becomes a four-lane, divided highway facility as it connects to the Waiawa Interchange. A third lane is added by the eastbound off ramp of Interstate Route H-1. The three lanes separate, one leading to eastbound Kamehameha Highway through Pearl City, the second connecting to the eastbound on ramp to Interstate Route H-1, and the third lane connecting to westbound Farrington Highway. There is no direct connection from southbound Kamehameha Highway to westbound Interstate Route H-1.

Northbound, Kamehameha Highway is fed by single-lane ramps from eastbound Farrington Highway, westbound Kamehameha Highway and eastbound Interstate Route H-1. Westbound Interstate Route H-1 traffic headed for northbound Kamehameha Highway must first exit at the Waipahu off ramp onto westbound Kamehameha Highway then turn onto the connecting ramp to northbound Kamehameha Highway.

The Waiawa Interchange is a six-leg freeway-to-freeway interchange between Interstate Route H-1 and the south terminus of Interstate Route H-2. Farrington Highway and Kamehameha Highway are other major arterials making freeway connections at this interchange.

2. Traffic

A manual traffic count survey was conducted by Austin, Tsutsumi & Associates (Appendix F) on Tuesday, April 1, 1986 at intersections along Kamehameha Highway during the peak periods of traffic between Ka Uka Boulevard and Waipahu Street. Additional count data were obtained from the State Department of Transportation on Kamehameha Highway, Interstate Route H-1, Interstate Route H-2 and Waiawa Interchange. The inbound (Honolulu-bound) peak period in the morning begins about 5:30 AM and continues through 8:00 AM with the inbound traffic tapering off and outbound traffic increasing. The afternoon peak period begins around 3:30 PM and continues past 6:00 PM.

a. Morning Peak Period

AM peak period traffic moves well along Kamehameha Highway. However, the intersections between Waipio Uka Boulevard and Lumiauau Street operate at capacity. Past Waipahu Street, a problem for inbound motorists occurs at the eastbound on ramp to Interstate Route H-1, where southbound Kamehameha Highway traffic merges with Waipahu traffic from eastbound Farrington Highway. AM peak hour volume is currently at approximately 1,800 vehicles per hour (vph), which is about the ramp's capacity.

A more critical problem occurs downstream on eastbound Interstate Route H-1. Traffic can be observed to queue back from the Waiawa Interchange to the Waiawa Interchange. This is primarily a result of the 2,700 vph merging from the two-lane on ramp at the Waiawa Interchange onto Interstate Route H-1 eastbound, already

carrying 6,300 vph from Waiawa Interchange. The combined demand of 9,000 vph exceeds the 7,200 vph-8,000 vph on the eastbound lanes of Interstate Route H-1. The excess demand causes queuing on the freeway upstream to the Waiawa Interchange.

b. Afternoon Peak Period

During the afternoon peak period, bottleneck conditions occur on Kamehameha Highways northbound at Waipahu Street. The two northbound lanes on Kamehameha Highway merge to one lane north of Waipahu Street, queuing traffic onto connecting ramps. A second capacity condition occurs on the westbound Kamehameha Highway connector ramp to northbound Kamehameha Highway. The traffic demand of 1,800 vph is at the ramp's capacity.

The third capacity constraint occurs on Kamehameha Highway between the westbound off ramp from Interstate Route H-1 and the connector ramp to northbound Kamehameha Highway. Freeway traffic exiting at the Waipahu off ramp must weave across Kamehameha Highway to the extreme right lane to turn onto northbound Kamehameha Highway. At the same time westbound Kamehameha Highway traffic from Pearl City, headed for westbound Farrington Highway or northbound Kamehameha Highway, creates weaving conflicts. The fourth and final problem area occurs on the Waipahu off ramp from westbound Interstate Route H-1. The 1,900+ vph demand results in capacity conditions on the ramp. The combination of these four problem areas results in queuing conditions on the right lane of westbound Interstate Route H-1.

North of Waipahu Street, traffic on Kamehameha Highway is heavy but moves well. The Kamehameha Highway intersections at Lumiauau Street and Lumiaina Street operate at capacity.

G. Ambient Air Quality

A summary of air pollutant measurements from State of Hawaii long term monitoring stations located nearest to the project is presented in Appendix G.

The sampling station for particulates and sulfur dioxide is located in Pearl City, about two miles southeast of the project area. The monitoring of sulfur dioxide in Pearl City was discontinued in 1984 and 1985 measurements are from the Barbers Point station located about 10 miles southwest of the project.

Carbon monoxide monitoring was conducted at the Department of Health building at Punchbowl and Beretania Streets in urban Honolulu. This site is about 12 miles southeast of the project. During 1981 carbon monoxide was measured at Fort DeRussy in Waikiki (13 miles southeast of the project), and in 1982 carbon monoxide was monitored at Leahi Hospital in Kaimuki, about 15 miles southeast of the project.

Ozone levels were also measured at the Department of Health building in urban Honolulu until December 1980, when the monitor was relocated to Sand Island (about 10 miles southeast of the project site).

During 1981 nitrogen dioxide was also monitored at the Sand Island location, but all nitrogen dioxide monitoring has since been discontinued. Lead measurements are from Liliha Street in Kalihi, about 11 miles southeast of the project site.

From the data presented in Appendix G, it appears that State of

Hawaii ambient air quality standards for particulates, sulfur dioxide, nitrogen dioxide, and lead are currently being met at nearest monitoring stations to the project area.

On the other hand, carbon monoxide and ozone readings from urban Honolulu indicate that allowable State of Hawaii standards for these vehicle-related air pollutants are being violated at a rate of about once or twice a year. Ozone is an indicator of the formation of photochemical pollutants in the air, a condition which tends to develop if the air mass over the islands has been fairly stable with little wind flow for a period stretching over several days.

Concentrations of carbon monoxide are more directly related to vehicular emissions and tend to be highest during periods of rush hour traffic. Carbon monoxide would thus be the pollutant most likely to cause difficulty in meeting allowable State of Hawaii AQS as a result of new residential development on Oahu.

There are power plants and other potential sources of industrial pollutants along the central portion of the leeward coast to the south of the project site, but the generally low readings of particulates and sulfur dioxide at the Pearl City monitoring station just to the south of the project indicate that these sources are not likely to cause any air pollution problems at Waiola. Likewise pineapple cultivation to the north could generate some particulates and carbon monoxide when fields are burned after harvest (about once every three years for any given field), but the consistently low readings of particulates at Pearl City indicate that this source is not likely to present any significant air pollution problems either. It is also worth noting that since the pineapple fields are to the north and the H-1 Freeway to the south, it is relatively unlikely that carbon monoxide from both these source could be carried over Waiola at the same time.

Finally, natural air pollutant producers which could affect air quality in the Waiola project area include the ocean (sea spray), plants (aero-allergens), dust, and perhaps a distant volcanic eruption on the Island of Hawaii. Concentrations of air pollutants from these kinds of sources should be fairly uniform for most Oahu locations.





H. Ambient Traffic Noise Conditions

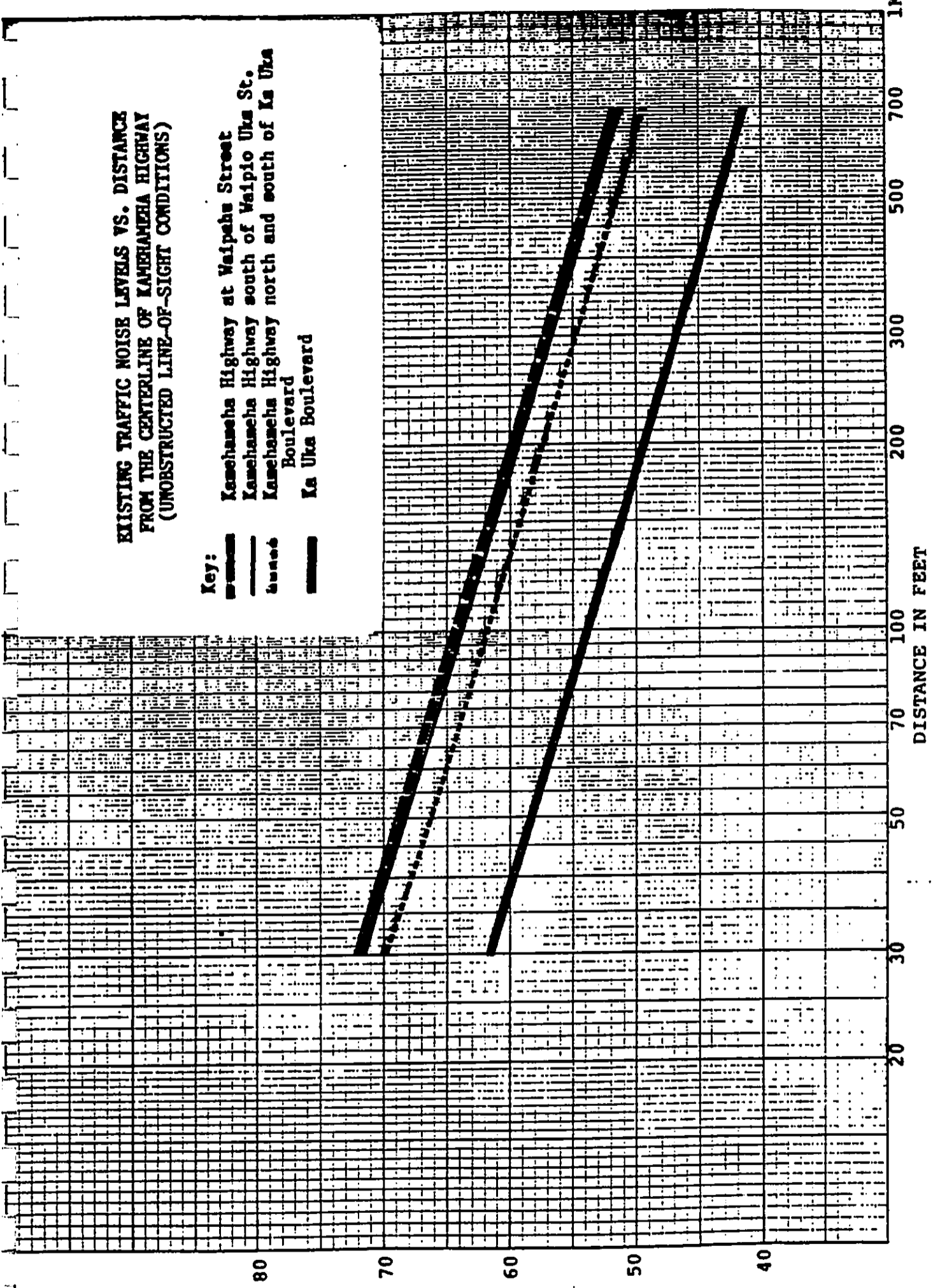
Traffic Noise Impacts are provided in Appendix H and are the basis for the following conclusions. Along the Kamehameha Highway Right-of-Way, existing traffic noise levels are in the "Significant Exposure, Normally Unacceptable" category. Existing setback distances to the 65 Ldn contour line are estimated at 60 Ft. and 81 Ft. from the centerline of the highway in directions north and south, respectively, of the project (see Figure 4). In the vicinity of the Waipahu Street intersection, where traffic volumes are highest, the existing setback distance to the 65 Ldn contour line is estimated at 90 Ft. from the centerline of Kamehameha Highway. In the Crestview and Seaview Village Subdivision areas near the Waipahu Street intersection, traffic noise levels are in the "Significant Exposure, Normally Unacceptable" category (approximately 66 to 68 Ldn) along the first row of lots which front the highway. In the Gentry Waipio Subdivision area north of the Crestview Subdivision, significantly larger (approximately 95 to 150 Ft.) setbacks exist between Kamehameha Highway and the existing dwelling units, and traffic noise levels are therefore in the "Moderate Exposure, Normally Acceptable" category at 59 to 64 Ldn.

Along Ka Uka Boulevard, existing traffic noise levels are low, and in the "Moderate Exposure, Acceptable" category, with traffic noise levels at approximately 58 Ldn along the Right-of-Way.

**EXISTING TRAFFIC NOISE LEVELS VS. DISTANCE
FROM THE CENTERLINE OF KAMEHAMEHA HIGHWAY
(UNOBSTRUCTED LINE-OF-SIGHT CONDITIONS)**

Key:

-  Kamehameha Highway at Waipahu Street
-  Kamehameha Highway south of Waipio Uka St.
-  Kamehameha Highway north and south of Ka Uka Boulevard
-  Ka Uka Boulevard



NOISE LEVELS VS. DISTANCE

FIGURE 4

Existing background ambient noise levels at the proposed subdivision site are controlled by traffic noise within 500 Ft. of Kamehameha Highway. Beyond that distance, background ambient noise is controlled by aircraft, or birds and other natural sources, and is estimated at 40 to 45 Ldn.

I. Infrastructure and Utilities

1. Water System

The proposed project is located in the Pearl Harbor Water Use District (PHD) which includes 69 square miles and overlies the basal water formation that constitutes the major water resource of southern Oahu. In addition to the PHD, the Ewa Water District (EWD) (area 119 square miles) also partly overlies the same basal ground water. This regional ground water source serves as the major resource for all of the southern Oahu as well as for portions of Honolulu and Waianae, where some of the daily draft is transported and consumed. Since the project site is not currently being used, the demand at present is zero. Waiola Estate will require 0.750 MGD for residential use at full development. The park and school sites will require an estimated additional demand of 0.072 MGD.

Based on an estimated population of 192,728 to be served in the PHD in 2000, the average daily demand is projected to be 26.30 MGD. Because of its importance as an exporter of water to the Honolulu Water District, new well fields have been proposed in the PHD to provide for these increased demands. These proposed new sources will include the two producing wells for the proposed project.

2. Sanitary Sewer System

The project will include the construction of a new trunkline in

conjunction with the adjoining Amfac Development and will connect to the existing Mililani STP Effluent Disposal System, that in turn discharges to the Waipahu SPS. The homes situated in the south eastern portion of the project will utilize the existing trunkline serving the Gentry-Waipio subdivision. Anticipated sewage volume to be generated by Waiola Estates at full development is 0.50 MGD.

The treatment, disposal, and interceptor sewer systems will be adequate to serve the proposed development. Sewage effluent receives primary treatment at the Honouliuli Wastewater Treatment Plant and is disposed of by deep ocean outfall.

The BWS notes that "the project is located in the "no pass zone" where ground disposal of wastewater is not permitted. Therefore, all wastewater should be discharged into the City's sewage system serving the area."

3. Drainage

The project site is well drained and should not be susceptible to flooding. The Waikele/Kipapa gulch is a major drainage way which collects surface run-off from a major portion of the Central Oahu Plain. These gulches cut anywhere from 100 to 150 feet below the surface of the surrounding areas, and do not pose any threat of overflowing onto the project site in the event of major rain storms. Waikele Stream is a perennial stream found at the base of the gulch. This stream flows through the Waipahu Town area into West Loch of Pearl Harbor.

The drainage area is bordered by Kamehameha Highway to the east, Kipapa Gulch to the west, and the abandoned sugar cane fields to the south. The site, which is presently covered with pineapple, gently slopes towards Pearl Harbor, with elevations ranging from approximately 310 to 420 feet over its one mile longitudinal length.

The project will include the construction of underground drainage facilities, designed for compatibility with the Amfac/Waikele system, and will maximally utilize the natural drainage contours of the property.

Surface runoff flows to two natural drainage outlets located to the south of the property. A portion of the drainage basin runoff flows into Kipapa Gulch. Ultimately, runoff from the entire area is discharged into the Pearl Harbor West Loch. Discharge for the existing drainage basin is estimated at 1,400 cubic feet per second, as determined from the Storm Drainage Standards (City and County of Honolulu, Department of Public Works, March 1969).

4. Solid Waste Disposal

According to the Division of Refuse Collection and Disposal, refuse collection can be provided with necessary increases in staff and equipment. Refuse collection service for the Waipio area is provided from the City Department of Public Works' Pearl City corporation yard. Refuse is hauled to the Waipahu incinerator for final disposal.

The Waipahu Incinerator is the existing means of solid waste disposal in the area. The planned H-Power facility which is scheduled to become operational in 1988 as well as the Waimanalo Gulch Sanitary Landfill situated in Waianae, will serve the project.

5. Electrical and Telephone Service

The electrical and communications improvements required to support the needs of the project can be accommodated by existing electrical and communications systems. They can be supported with off-site improvements that are within the normal

scope of activities for the utility companies. All utility systems will be constructed and maintained according to approved utility standards.

The existing overhead 46-KV electrical line that currently runs through the site is expected to provide service via a new Hawaiian Electric Company substation which would reduce the voltage to 12 KV for distribution throughout the proposed residential areas. It is highly desirable to have two sources of power to the substation, one as a primary and one as a backup. This will ensure better continuity of service. This can be accomplished by locating the substation along the existing line.

The entire electrical system will be an underground facility with only switching vaults, the 46-KV transmission lines, and individual service transformers visible above ground.

J. Public Facilities and Services

1. Police Protection

Presently, police protection for the area is adequate since the site is vacant and unused. The addition of the proposed project will require additional service.

2. Fire Protection

The following City Fire Department facilities are available to serve the proposed development:

	<u>Response Time</u>	<u>Service</u>
Pearl City Engine Co. 20	20 miles	Primary
Waiiau, Ladder Co. 38	6 miles	Primary
Mililani Engine Co. 36	3 miles	Secondary

Current services are not considered adequate for the proposed location due to response times and distances of existing stations. A new station in Waikele will greatly enhance fire protection for this project. Additional concerns are that adequate water mains be installed to meet fire flow requirements, adequate access for fire apparatus, and residential construction meets the existing codes.

3. Health Care Facilities

Health care for residents is available at the Waipahu Clinic and the Punawai Clinic. The latter is a Kaiser Foundation Clinic, and as such, offers specific local services with access to all facilities of the larger Kaiser Medical Center located in Moanalua. The Waipahu Clinic has a staff of about 50 serving the basic health needs of island residents from Waipahu to Waianae.

The clinic offers a variety of services such as physical, occupational and speech therapy, public health nursing, children's health services, leprosy clinics and complete mental health service. The nearest hospital services for residents are available at Wahiawa General Hospital which is approximately 8 miles north of the project.

Services provided by governmental social service agencies in such categories as child care, adult assistance, and family services are available from the Department of Social Services and Housing offices in Honolulu. In Waipahu there is a welfare unit which offers only emergency financial aid for food, shelter, and utility payments. Other public resource groups such as Child and Family Service and religious groups also offer various types of aid to those in need.

4. Educational Facilities

August Ahrens and Kanoelani Elementary, Waipahu Intermediate

and Waipahu High Schools are currently operating at capacity and will require additional classrooms to service the projected increase in student enrollment.

In the long-term, an elementary school would have to be suitably located in the development area. The proposed subdivision projects an elementary school site (6 acres) adjacent to a 12-acre public park.

5. Recreational Facilities

The development is within reasonable proximity to existing recreational facilities, both public and private.

6. Public Transportation

The Crestview, Seaview and Waipio Gentry subdivisions are currently served by MTL bus route #52 every half hour in each direction to Wahiawa and Honolulu. Although current ridership is heavy on this route, bus patronage from these subdivisions is limited. An expansion of bus services would be dependent upon additional ridership demand as well as funding of MTL, and available buses.

Senior citizens are provided free bus passes for their transportation on any bus route. The State provides school bussing for students living beyond one mile from school.

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

RELATIONSHIP TO PLANS, POLICIES, AND CONTROLS

VI. RELATIONSHIP TO PLANS, POLICIES, AND CONTROLS

A. Chapter 359G-4.1 Pre-Emption

Chapter 359G-4.1, HRS, authorizes the City Council to waive County land use and development controls for affordable housing projects.

A copy of the resolution identifying the applicable exemption is attached as Appendix A.

B. Hawaii Revised Statutes, Chapter 226, Hawaii State Plan

The Hawaii State Plan is a guide for the future long-range development of the State which identifies goals, objectives, policies and priorities for the State. The overall theme of the Hawaii State Plan is:

- Individual and family self-sufficiency
- Social and economic mobility
- Community or social well-being

Specifically, the Hawaii State Plan details objectives and policies in the various areas such as population, the economy, physical environment, facility systems, socio-cultural advancement agricultural lands, and fiscal management. The Waiola project is consistent with many of the goals and policies of the Hawaii State Plan and has been designed to facilitate its objectives. The exception is with regard to the State Agriculture Plan.

1. Population, H.R.S. Section 226-5

The Waiola project, as a specially planned community, accommodates population growth, and provides increased housing opportunities for Hawaii's people.

2. Economy H.R.S. Section 226-6

The Waiola project will promote these policies by providing new construction activity and housing which will allow additional employment opportunities in the Central and Ewa districts of Oahu.

3. Scenic, Natural Beauty and Historic Resources H.R.S. Section 226-13

The Waiola project accomplishes these objectives by providing scenic mountain and ocean view areas of open space, limited building heights and extensive landscaping. The project concept maintains the rural and historic character of the surrounding community.

4. Water H.R.S. Section 226-16

To meet the water needs of the proposed development, on-site and off-site facilities shall be developed including two new wells at the 595-foot elevation Waipio Heights site and a 1.5 million gallon concrete reservoir. The development of water sources for the development area will be contingent upon approval by the Department of Land and Natural Resources (DLNR) as the development area is within the Pearl Harbor Groundwater Control District.

5. Housing H.R.S. Section 226-19

The Waiola project is intended to be a middle income and gap group community, with all of the housing targeted to be sold at prices affordable to middle-income earners. All units will be single-family detached units with expansion capabilities.

The project is designed to take into account the physical setting, including visual and aesthetic amenities. Its location provides easy access to public facilities and services.

6. Education H.R.S. Section 226-21

The Waiola project is located in close proximity to existing public school facilities. Additional school facilities may also be developed in the proposed Waialeale project.

7. Agriculture H.R.S. Section 226-7

The Waiola Project will take 269.454 acres of prime agricultural lands out of agricultural use under the proposed implementation of the Housing land use proposal. The landowner, Castle & Cooke, Inc. has in correspondence dated July 16, 1986 indicated that the acreage lost to pineapple cultivation will be replaced by conversion of sugar lands located in the Waialua District. The Waialua lands are equivalent in acreage and in productivity and are adjacent to pineapple lands. They are identified as TMK: 6-4-1, portion of parcel 6; 6-5-1 portion of parcel 2, and 6-5-2 portion of parcel 19.

8. Transportation H.R.S. Section 226-17

The Waiola project will incorporate measures that encourage the use of mass transit and multiple ridership of private vehicles. These measures would minimize traffic impacts and meet the State Plan objective of integrated multi-modal transportation

systems. Additionally, the proposed traffic management plan should also assist in meeting the objective of transportation system support for planned growth objectives.

C. Hawaii State Functional Plans

In furtherance of the Hawaii State Plan, Hawaii Revised Statutes, Chapter 226, the 1984 State Legislature by concurrent resolution adopted ten Functional Plans to serve as guidelines for the State of Hawaii. The Waiola project conforms to and facilitates many of the objectives and policies of these Functional Plans. The exception is to the Agriculture Plan.

1. State Housing Plan

The Waiola project will significantly improve the current need for affordable housing. By providing home ownership opportunities to those whose incomes will not permit participation in the conventional home buying market, Waiola will play a major role resolving Hawaii's housing situation.

2. State Water Resources Development Plan

The Waiola project has received a water allocation from the State Department of Land and Natural Resources. The planned level of development on the site will generate an average daily water consumption of 0.85 million gallons.

The project will have little impact on the availability of fresh water supplies for other uses. The project will not prevent the attainment or maintenance of a "sustainable yield capacity" in the amount of ground water in the Pearl Harbor basin.

3. State Energy Plan

The Waiola project attempts to achieve these objectives. The project is located in an easily serviceable and concentrated area which is next to existing urban developments. The utilization of energy conservation devices will be encouraged through homeowner training and orientation programs conducted by the City.

4. State Health Plan

Residents of Waiola will have adequate health care facilities available at the Waipahu Clinic and Punawai Clinic. Punawai Clinic is associated with Kaiser Foundation and offers specific local services with access to the larger Kaiser Medical Center. Waipahu Clinic is designed to serve the basic health needs of residents from Waipahu to Waianae and offers a variety of services such as physical, occupational speech therapy; public health nursing; children's health services, leprosy clinics; and complete mental health services. Additional, Wahiawa General Hospital offers a full range of hospital services.

5. State Agriculture Plan

The functional plan objective is "The achievement of productive agricultural use of lands suitable for agriculture." Waiola Estates will remove prime agricultural lands for urban use, but the displaced acreage will be recovered in lands now in sugar cane cultivation that will be converted to pineapple. There will be a net loss of lands, but not of productivity.

6. State Transportation Plan

The Waiola traffic management plan and the proposed ride-share

and park-and-ride facilities currently under review are expected to contribute significantly towards meeting the State Transportation Functional Plan objective of developing a balanced, multi-modal transportation system. New employment centers in the region are also expected to divert town-bound traffic and thereby minimize interchange congestion.

D. H.R.S. Chapter 205-A Coastal Zone Management

The Waiola project site is not designated as a special management area for which a permit is required pursuant to H.R.S. Chapter 205-A. However, the project site is within an area controlled by the CZMA and is, therefore, subject to H.R.S. Chapter 205-A's objectives and policies.

E. City's Planning Policies

The City's planning policies are embodied in the General Plan which is a statement of long-range social, economic, environmental and design objectives for the general welfare and prosperity of the people of Oahu. The Federal Plan also contains broad policies which facilitate the attainment of the Plan's objectives. The General Plan is implemented by regional Development Plans which relatively detailed guidelines for the physical development of Oahu.

1. General Plan

The Waiola project creates conflicts among the broad objectives and policies contained within the General Plan. In particular, Economic Activity, Objective C, "To maintain the viability of agriculture on Oahu," conflicts with Housing Objective A, "To provide decent housing for all the people of Oahu at prices they can afford."

As discussed in Section VII.E., the Waiola project would also cause population guideline for Central Oahu to be exceeded. This brings Population Objective C into conflict with the Housing Objective.

In other instances, however, the Waiola project is consistent with the objectives of the General Plan as it is contiguous with existing urbanized areas and the future Amfac-Waikele project, is isolated from other agricultural lands by Kamehameha Highway and Kipapa Gulch, and has the necessary infrastructure readily available. It should be noted that Waiola is not the only development recently approved for Central Oahu.

2. Development Plan for Central Oahu

As noted in Section IV.A., the Waiola project has been exempted from the provisions of the Central Oahu Development Plan, the Public Facilities Map for Central Oahu and Zoning Map No. 9, under the provisions of Section 359G-4.1, HRS. The project will be, however, developed in conformity with the General Urban Design Principals and Controls contained in Section I.4 of the Development Plan.

Amendments have been proposed and made to the Development Plan Public Facilities Map for Central Oahu to provide for the increased infrastructure. In particular, the State Department of Transportation recently requested an amendment to provide for the widening of Kamehameha Highway from the Waiawa Interchange to Kipapa Gulch.

3. Impact of Resolution No. 86-202

The inherent conflicts in the General Plan brought about by the Waiola project are resolved in favor of the housing alternative by the City Council's adoption of Resolution No. 86-202.

The Resolution preempts the Central Oahu Development Plan (including the attendant Public Facilities Map) and the existing zoning in order to implement the project.

The effect of this exemption is discussed at length in a memorandum from the City's Department of General Planning dated September 15, 1986. This memorandum is reproduced at the back of Section XIII.

**≤ ANTICIPATED IMPACTS
AND MITIGATIVE MEASURES**

VII. ANTICIPATED IMPACTS AND MITIGATIVE MEASURES

Impacts of the proposed project can be viewed in the short-and long-term. Short-term impacts, beneficial and adverse, generally result from construction-related activities. Consequently, these impacts should last no longer than the duration of the construction. Long-term impacts, beneficial and adverse result from the implementation and operation of the proposed project.

A. Impacts on Geographical Characteristics

1. Topography

Impact on the physical terrain of the proposed parcels of land should be minimal. Since, they are generally level and will require only typical site preparation. Cutting and filling will be kept to a minimum.

Prior to beginning of any grading operation it will be necessary to strip all existing vegetation from areas to be developed. The material exposed after the stripping operation may be used for engineered fill. After stripping, slab and pavement sub grades and areas to receive engineered fill should be excavated of any and all loose soils.

To minimize the occurrence of soil erosion, temporary soil erosion and sediment control measures will be designed and implemented during the construction phase in accordance with Chapter 23, Grading, Soil Erosion, and Sediment Control, Revised Ordinances of Honolulu, 1978, as amended; the City & County of Honolulu's Grading, Grubbing, and Stockpiling Ordinance No. 3968, 1972; and the USDA Soil Conservation Services Erosion and Sediment Control Guide for Hawaii, 1981. Approval by the City & County of Honolulu Department of

Public Works will be required to ensure proper grading and erosion control.

2. Geology

No impacts are expected on the geology of the area, therefore, no mitigative measures should be required.

3. Soils

Impact on the soil will result from introduction of soil conditioners and EPA approved fertilizers, pesticides, and herbicides. These conditioners will enhance the grassing and landscaping of the project site. The introduction of such chemicals, however, will not adversely affect the soil.

Project development will not alter soil characteristics, but soils on site will determine procedures and techniques in construction of structures, paving and utilities. Characteristics of the soils investigated indicate they can be easily trenched for drainage and underground utilities. They also have good bearing capabilities to adequately support the planned residential structures and their related appurtenances with a few limitations. No mitigative measures should be required for soils impact.

4. Climate

No impacts are expected on the climate of the area.

B. Impact on Hydrological Characteristics

Associated with urban development projects such as the proposed are alterations in surface water runoff resulting from increasing the area of impervious surfaces, through development of roof tops,

roadways, parking lots, and the like. Interest in these runoff changes is generally a result of concern over two factors - one, public safety, and two, environmental impact. The first factor requires the identification of changes in peak discharge rates. It is the second concern, environmental impact resulting from increased runoff volume and sediment and nutrient loads, and its probable effect on subsequent receiving waters that is reported. Appendix D provides a study conducted by Dr. Gordon L. Dugan, Ph.D which is the basis for the following conclusions.

1. Surface Runoff Quantity

The estimated storm water runoff and constituent changes due to the proposed Waiola Estates Subdivision Development project (269 acres) are shown in Table 3. The values presented, it must be emphasized, are for comparative purposes only, and are not intended to be representative of the accuracy implied by the practice of reporting results to one decimal place.

As previously mentioned, the project site is represented by the Molokai soil series, listed by SCS as Class "B" soil, which is a fairly easily drained class of soils. Use was also made of a study of runoff from pineapple land on the island of Hawaii and Oahu through a cooperation agreement between the U.S. Conservation Laboratory in Phoenix, Arizona and the University of Hawaii at Manoa Department of Agronomy and Soil Science (Cooley and Lane, 1980). The study identified SCS curve numbers (used for runoff determinations) for pineapple land to be surprisingly lower than corresponding values from mainland conditions, 48 and 69, respectively. The net result of the lower curve number is a significant decrease in the amount of calculated surface runoff.

As can be readily observed in Table 3, there is essentially no storm runoff volume for the 1- and 5-yr, 1-hr duration

TABLE 3

Estimated Storm Water Runoff Volume and Constituent Changes due to the Proposed Waiala Subdivision Development Project, Central Oahu, Hawaii

Storm ^a		Storm Water Runoff												
Dur- ation hr	Recur- rence Interval yr	Quan- tity in.	Hydraulic			Nitrogen ^b			Phosphorus ^c			Suspended Solids ^d		
			Development		Δ	Development		Δ	Development		Δ	Development		Δ
			1986 AF event	Full AF event	AF event	1986 lb event	Full lb event	lb event	1986 lb event	Full lb event	lb event	1986 ton event	Full ton event	ton event
1	1	1.45	0.0	15.7	+ 15.7	0.0	25.6	+ 25.6	0.0	24.3	+ 24.3	0.00	5.33	+ 5.33
1	5	2.1	0.0	28.1	+ 28.1	0.0	45.8	+ 45.8	0.0	43.5	+ 43.5	0.00	9.54	+ 9.54
1	10	2.4	0.1	34.1	+ 34.0	0.9	55.6	+ 54.7	0.3	52.8	+ 52.5	0.18	11.58	+ 11.40
1	25	2.8	0.8	42.3	+ 41.5	6.4	69.0	+ 62.6	2.1	65.5	+ 63.4	1.28	14.37	+ 13.09
1	50	3.0	1.3	46.4	+ 45.1	10.9	75.8	+ 64.9	3.6	72.0	+ 68.4	2.18	15.79	+ 13.61
1	100	3.5	3.3	57.0	+ 53.7	26.7	93.0	+ 66.3	8.9	88.3	+ 79.4	5.34	19.37	+ 14.03
24	1	3.4	2.8	54.8	+ 52.0	23.1	89.5	+ 66.4	7.7	85.0	+ 77.3	4.61	18.65	+ 14.04
24	5	7.0	33.4	133.1	+ 99.7	272.8	217.3	- 55.5	90.9	206.4	+ 115.5	54.55	45.26	- 9.29
24	10	8.7	55.1	170.7	+ 115.6	449.6	278.6	- 171.0	149.9	264.7	+ 114.8	89.92	58.05	- 31.87
24	25	10.5	81.2	210.7	+ 129.5	662.8	343.9	- 318.9	220.9	326.7	+ 105.8	132.55	71.64	- 60.91
24	50	12.0	104.9	244.1	+ 139.2	855.9	398.4	- 457.5	285.3	378.5	+ 93.2	171.17	83.00	- 88.17
24	100	14.0	138.5	288.7	+ 150.2	1130.0	471.2	- 658.8	376.7	447.6	+ 70.9	226.00	98.16	-127.84

- a) From U.S. Weather Bureau "Rainfall Frequency Atlas of the Hawaiian Islands" (1962).
- b) Based on a nitrogen value of 3.0 mg/L for 1986 conditions and 0.60 mg/L for "Full" development.
- c) Based on a phosphorus value of 1.0 mg/L for 1986 conditions and 0.57 mg/L for "Full" development.
- d) Based on a suspended solids value of 1200mg/L for 1986 conditions and 250 mg/L for "Full" development.

storm for existing 1986 (pre-development) conditions; however, as the storm duration and recurrence interval increases the predevelopment conditions approaches about 1/2 of full development conditions. Among other factors causing this difference is that as the intensity and duration of the storm increases the ability of the soil to accept water decreases which approaches the less permeable conditions that would normally occur under full developed conditions, as a result of roofs, sidewalks, etc.

As would be generally expected the greatest calculated incremental storm runoff volume (288.7 acre-ft/event) resulted from the 100-year storm with a 24-hour duration under full development conditions, as shown in Table 3. These values (acre-ft/event) represent a volume of water and should not be confused with peak discharge rates which represent the maximum volume of storm water runoff discharged per unit of time (e.g., cfs). Peak discharge rates are required for engineering design or proposed drainage facilities and ascertaining the capacity of existing facilities, while total runoff volume provides a more realistic estimate of impact on water quality.

2. Surface Runoff Quality

Although the changes in the volume of storm water runoff are significant, the quality of the various constituents being transported can be of equal, if not more importance. However, as previously mentioned, estimates of water quality concentrations resulting from significant storm water runoff that occurs at the most only a few times a year is very perplexing, especially since information on this subject essentially only became available at both the local and national level in the 1970's.

The summation of nitrogen, phosphorus, and suspended solids loads from both present (1986) and projected (full) residential

development for storms of 1- and 24-hour duration at recurrence intervals of 1-, 5-, 10-, 25-, 50-, and 100-years are shown in Table 3. The incremental changes per storm event for the present and projected development conditions for the various duration and recurrence interval storms indicate that from the least to the greatest amount of rainfall: nitrogen increases for the lower intensity/duration storms and decreases for the higher level storms; phosphorus increases for all storm events, but the actual values are not particularly high; and the suspended solids values shows approximately the same pattern as nitrogen, increase at the lower values, decrease at the upper values.

As previously stated it must be emphasized that the constituent values are only for comparative purposes, and should not be taken as absolute values. Overall then (between pre-and-post developed conditions), the output of nitrogen is about the same and phosphorus is expected to increase in the runoff, while suspended solids increase slightly for the lower intensity/duration storm events even though the total quantity of storm water increases.

Other water quality constituents of general concern include biocides and heavy metals. Typically the biocides presently being used tend to break down more readily in comparison to the more long lasting types of a few years ago; however, their relatively recent determination in the deep groundwaters of Central Oahu has caused considerable concern. On the other hand, heavy metals do apparently increase somewhat as a result of urbanization; however, the possible long-term effect, if any, that increased heavy metals may have upon the biological life of the receiving waters (primarily the West Loch of Pearl Harbor) at the concentrations expected in residential runoff is presently undefined. No particular heavy metal concentration pattern, when compared for the heavy metal analyses

for the 1967 to 1984 water year period (Waialeale Stream) except that in a few cases total iron was notably higher up to several mg/L, however, dissolved iron was generally quite low, typically < 0.1 mg/L. The higher total iron content (mainly in the suspended form) is in all probability a reflection of the relatively high iron content of some soils within the drainage area.

The hydrologic and water quality aspects of the surface water runoff were only considered for the present and projected conditions. However, increases in constituent loads will undoubtedly result from construction activities, especially if a significant storm occurs during the interim period between earth moving operations and soil stabilization completion. The impact of construction activities can be minimized by adhering to strict erosion control measures.

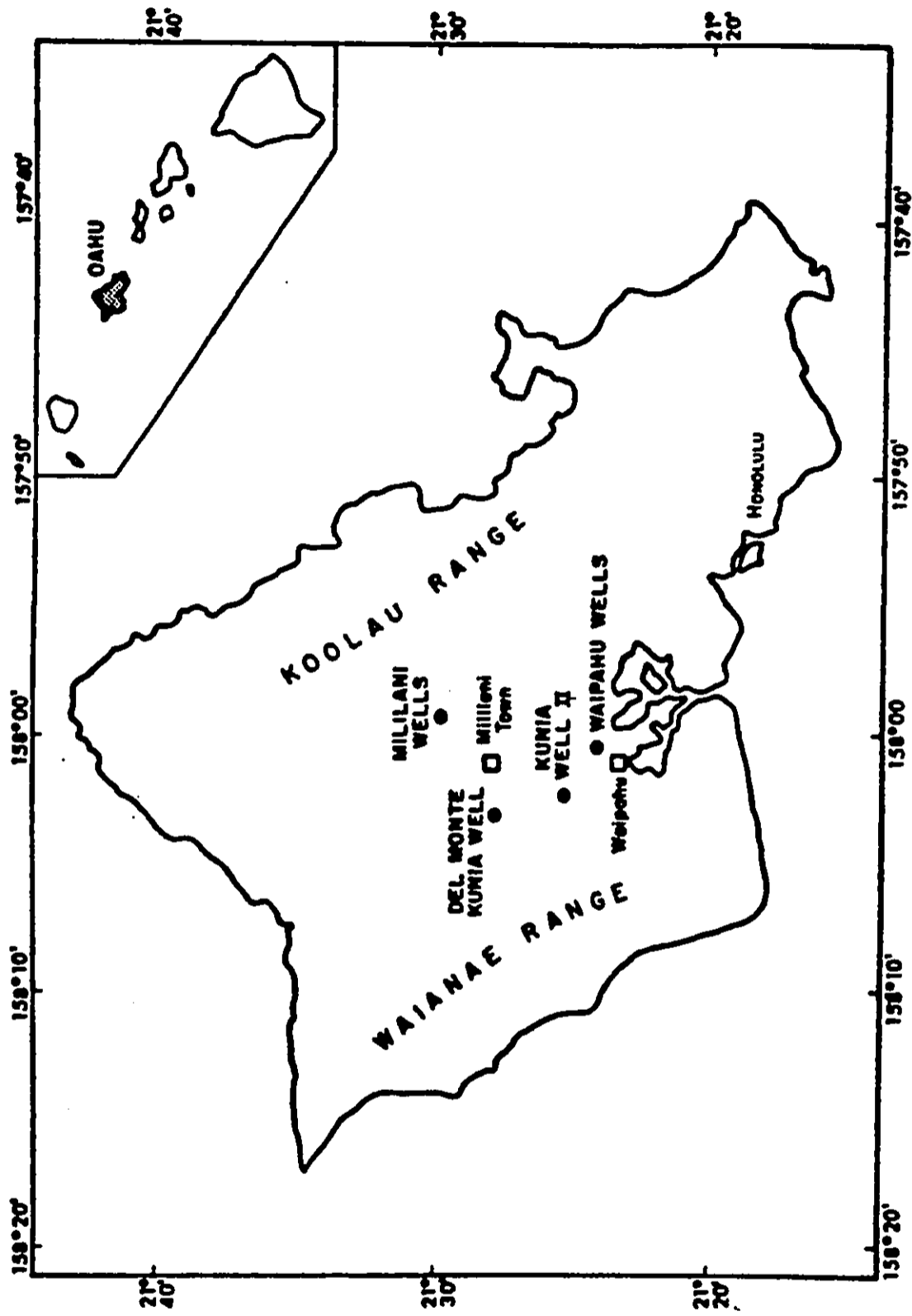
3. Volatile Organic Compounds

Pesticides at detectable levels in the drinking water supply from numerous wells in central Oahu, Hawaii, caused considerable concern, particularly since 1982, among water consumers in the service area. The pesticides of concern have been primarily EDB (ethylene dibromide) and DBCP (dibromochloropropane), generally found at < 100 ppt. Also of concern is TCP (trichloropropane) at concentrations up to approximately 700 ppt. Although these pesticides were only found in well waters of central Oahu at very low concentrations and the U.S. Environmental Protection Agency has not as yet established maximum contaminant levels, the Hawaii State Department of Health has proposed that EDB and DBCP be established below the detectable limit of 20 ppt. Despite the concern over TCP, the Hawaii State Department of Health has not proposed a maximum containment level.

The locations of the areas in central Oahu where well waters have been found to contain either EDP or DBCP at > 20 ppt concentrations are shown in Figure 5. Most of these wells, in addition to the Navy's Waiawa Shaft, have been selected to be part of the Federal Government's funded "Super Fund Wells" program. However, no funds have yet been made available.

The municipal water wells that had either EDB or DBCP concentrations of > 20 ppt were removed from service. Studies sponsored by the City and County of Honolulu Board of Water Supply proved that EDB and DBCP were readily removed down to the detectable limit (20 ppt) by either activated carbon treatment or air stripping volatilization (GMP Associates, 1984; Dugan et al., 1984). From these studies activated carbon was selected. Activated carbon treatment units have been installed or are being installed to treat all well waters above the detectable limit of 20 ppt for EDB and DBCP that are to be used as municipal water source.

Analysis of soil samples collected at various depths from the different study sites, which had received EDB treatment, within as recently as two weeks to greater than five years indicated that EDB concentration decreases rapidly with time and depth. For example, after two weeks less than 10% EDB was detected and after three months only 1% was recovered. The decrease at any given depth also appeared to correspondingly decrease with time. EDB did prove to be slightly more volatile than DBCP (Dugan et al., 1984), but health concerns over volatilization of EDB applications to the soil, particularly after a reasonable time period should be considered essentially non-existent or conservatively speaking extremely remote.



Location of Water Well Sites on Oahu that had EDB and/or DBCP Concentrations > 20 ppt.

EDB/DBCP WELLS

FIGURE 5

C. Impact on Biological Characteristics

1. Flora

A field survey indicated that no endangered or threatened species exist on the project site. While all existing vegetation will be cleared during the course of construction, these plants primarily consist of pineapple and weedy species. As the project is developed, landscaping will be implemented.

2. Fauna

Other fauna observed were considered pests or potential pests to the existing agricultural practices and all continue to be to the proposed action. Impacts, therefore, can not be considered significant.

Stream life and receiving waters in Pearl Harbor should be significantly affected by the implementation of Waiola since constituent values of urban runoff will be less severe in terms of loading and value than previous agricultural runoff.

D. Impact on Archaeology

A field inspection was made of the project area. It was concluded that structural remains (platforms, terraces, shelters, etc.) would have been destroyed by pineapple production long ago, so the only evidence of past human utilization would be unearthed fragments of food remains and artifacts.

While no evidence of such remains were found, State law requires that should any archaeological or historic remains be uncovered during construction, further disturbance should stop and the State Historic Preservation Office notified immediately.

E. Social Impact

1. Change in Level of Population

Based on an estimated household size of 3.8 to 4.0 persons (Chaney Brooks and Company, and Zabolocky, 1986), Waiola Estates is projected to house a population range of 5,700 to 6,000 people. This is well within the State's population forecasts for Oahu's share of the statewide population.

The actual population guideline of 14.7 percent already exceeds the 12.8 to 14.2 percent range allocated in the General Plan. Further, the 1,100-housing unit deficit for 2005 has already been accounted for with the 1,100 new units approved by the City Council in the 1985-1986 Development Plan Annual Review.

Waiola Estates' population will then exceed the General Plan guidelines for Central Oahu's share of population. The extent, however, will depend on the current residential origin of future Waiola residents. The most current applicant profile indicates that almost 25 percent of the applicants currently reside in Central Oahu. If this proportion is indicative of the future resident profile, then the population guidelines for Central Oahu may be exceeded by 4,275 to 4,500 people, or 25 percent less than the population estimate provided above.

2. Community Impacts

Waiola Estates is a NIMBY, or not-in-my-backyard, project. While islandwide values, as identified in public polls, suggest that this project is indeed a valuable contribution to the housing situation, it has regional "costs." Its impacts are felt the strongest by the nearby residents, those who have already invested in their current homes and existing communities. They

generally plan to continue to invest time and energy into making their living environments safe, pleasant and comfortable.

To them, Waiola Estate's proximity to their homes means more time waiting in traffic, a possible depreciation of house and land values, and a perpetuation of Waipahu's image as a "low-mod" community.

NIMBY concerns cannot be taken lightly because those who express these concerns are most likely to experience these impacts. Some of these concerns are based on a perception or expectation which is inconsistent with Waiola's goals and objectives. These could be addressed through various informational mechanisms which provide accurate project information and encourages mutual resolution of these issues.

Waiola will nevertheless generate impacts which are real and inevitable. These include increasing the waiting time in traffic, even though this will probably occur without the project, and the replacement of open space with structures, even though this will occur with the Waikele project. These are ultimately the regional trade-offs which, in the decision-making process, are weighed against the islandwide need for this type of project.

There are also islandwide trade-offs. The project is estimated to house between 5,700 to 6,000 people. This will result in a Central Oahu 2005 population which exceeds its share, as defined by the City and County of Honolulu General Plan. Even if 25 percent of Waiola's future residents already live in Central Oahu, a proportion suggested by the most recent profile of Waiola applicants, the project can still add between 4,275 to 4,500 people to Central Oahu. Again, this is a matter of trade-off.

F. Impact on Traffic Conditions

1. General

The traffic impacts are discussed in two parts; the first addressing the traffic impacts along Kamehameha Highway and the second discussing problems expected at the Waiawa Interchange. The traffic assessment of Kamehameha Highway is concerned primarily with access to and from the site. The evaluation of access to and from the freeway at interchanges becomes more complex as both the ramps and the freeway itself reach capacity.

As ramps and freeways reach their capacity, traffic volumes reflect the facility's ability to carry traffic, not the actual traffic demand. Excess traffic demand is stored upstream of the capacity restraint or are diverted to other routes. Excess demand is further dissipated by traveling during the non-peak hour, which results in the lengthening of the overall peak period, or using other modes of transportation altogether. Under these conditions, a quantitative analysis becomes unrealistic and unverifiable.

2. AM Peak Period

a. Kamehameha Highway

Capacity conditions would occur on Kamehameha Highway intersections at Waipio Uka Boulevard, Lumiauau Street and Waipahu Street. However, congestion problems on southbound Kamehameha Highway would result from capacity constraints on the on ramp from Kamehameha Highway and eastbound Farrington Highway to eastbound Interstate Route H-1. Excess demand would queue on both approaches to the on ramp or be diverted to Kamehameha Highway.

b. Waiawa Interchange

At Waiawa Interchange, the eastbound Interstate Route H-1 on ramp capacity would be influenced by through traffic on the freeway. This is a result of the Paiwa Interchange and Waipio Interchange loading inbound traffic upstream of Waiawa Interchange. The on ramp from southbound Kamehameha Highway and eastbound Farrington Highway to eastbound Interstate Route H-1 is already at capacity. Further development along Kamehameha Highway would aggravate this problem. In order to increase freeway access for the vicinity, the Paiwa Interchange and the Waipio Interchange will divert Waiawa Interchange traffic from Waipahu and Waipio Gentry, respectively. These projects, along with the widening of Kamehameha Highway would allow further development along Kamehameha Highway without significantly impacting the existing conditions.

Under present conditions, the eastbound on ramp regulates the flow of traffic onto the freeway. Excess demand would queue on the surface streets or would be diverted to Kamehameha Highway. The Waipio Interchange would load traffic diverted from the Waiawa Interchange, onto the two-lane inbound freeway connector from Interstate Route H-2 to Interstate Route H-1 to reach its capacity. Similarly, the Paiwa Interchange on Interstate Route H-1 would divert inbound Waipahu traffic to access the freeway "upstream" of the Waiawa Interchange. The eastbound on ramp from Kamehameha Highway and Farrington Highway to Interstate Route H-1 would remain at capacity due to new and continuing development of Waialeale, Waipio and Waiola Estates Subdivisions. East of Waiawa Interchange the eastbound lanes of Interstate Route H-1 would also be at capacity.

The addition of a fifth eastbound lane on Interstate Route H-1 minimizes the weaving between the inbound lanes of Interstate Routes H-1 and H-2, thereby increasing the capacities of both facilities. Under the projected 1990 traffic conditions, the additional capacity provided by the planned fifth inbound lane on Interstate Route H-1 would be absorbed and bottleneck conditions at the Waiawa Interchange would resume, causing queuing back to Waiawa Interchange.

3. PM Peak Period

a. Kamehameha Highway

Kamehameha Highway intersections north of Waiawa Interchange would operate below capacity. The widening of Kamehameha Highway to two through lanes in each direction would eliminate the bottleneck conditions in the northbound direction. However, the flow of traffic during the PM peak period would be controlled by the off ramp from westbound Kamehameha Highway to northbound Kamehameha Highway. Queuing would continue to occur on the Waipahu off ramp from westbound Interstate Route H-1 and onto the freeway.

b. Waiawa Interchange

The Waipahu off ramp on westbound Interstate Route H-1 would continue to operate at capacity due to the developments along Kamehameha Highway. Queuing from this off ramp on the right westbound lane of the freeway would leave only three lanes for through traffic. The proposed Paiwa Interchange and Waipio Interchange would attract the excess demand to these downstream exits. The through traffic demand, together with the Waipahu

off ramp traffic would result in capacity conditions on westbound Interstate Route H-1 between the Waiiau and Waiawa Interchanges. The connector ramp from westbound Interstate Route H-1 to northbound Interstate Route H-2 would also be at capacity.

4. Regional Considerations

The previous discussion on traffic impacts assumes that the traffic generated by the proposed Waiola Estates Subdivision is all "new" trips. While this assumption is valid for conditions along Kamehameha Highway, other factors need to be considered in a regional analysis. For example, given the need for affordable housing, building 1,500 units at other locations in Ewa or Central Oahu would result in the same impacts on traffic east of Waiawa Interchange as the proposed Waiola site. Furthermore, some of the new Waiola residents may already live in the Central Oahu or Ewa regions, thereby not adding to new traffic to or from Honolulu.

5. Traffic Summary

The planned residential developments in Central Oahu and West Oahu, whether they be private or City-sponsored, would deteriorate traffic conditions along the highway corridor through Pearl City. Until job opportunities, schools, shopping centers and other services can be located in secondary urban centers in these regions, West and Central Oahu residents will continue to drive to and from the primary urban center.

The proposed Waiola Estates Subdivision represents only a small percentage of new development in the region, both in terms of number of units as well as the increase in traffic. A transit improvement program, including park-and-ride facilities, additional express bus service, and free bus passes, would

attract a higher transit ridership, thereby reducing vehicular traffic generated by the proposed Waiola Estates Subdivision. Finally, a ride-sharing program can be implemented to promote carpooling and vanpooling. This program would be coordinated by a transportation facilitator for the region. Together with dedicated high occupancy vehicle (HOV) lanes on the freeway system, the ride-sharing program would increase vehicle-occupancy and further reduce vehicular traffic in the region.

G. Impact on Air Quality

1. Direct Air Quality Impact of Project Construction

During the site preparation and construction phases of this project, it is inevitable that a certain amount of fugitive dust will be generated. Field measurements of such emissions from apartment and shopping center construction projects has yielded an estimated emission rate of 1.2 tons of dust per acre of construction per month of activity. This figure assumes medium level activity in a semi-arid climate with a moderate soil silt content. Actual emissions of fugitive dust from this project can be expected to vary daily depending upon the amount of activity and the moisture content of exposed soil in work areas.

One major generator of fugitive dust during project development is construction equipment moving over unpaved roadways. This problem can be substantially mitigated by completing and paving roadways and parking areas as early in the development process as possible. Because of the relatively short time frame envisioned for project development, some construction may be taking place in close proximity to existing residential areas. In these instances, dust control will have to be an item of special concern.

Heavy equipment at construction sites will also emit some air pollutants in the form of engine exhausts. The largest equipment is usually diesel-powered. Carbon monoxide emissions for large diesel engines are generally about equal to those from a single automobile, but nitrogen dioxide emissions from this type of engine can be quite high. Fortunately, nitrogen dioxide emissions from other sources in the area should be relatively low and the overall impact of pollutant emissions from construction equipment should be minor compared to levels generated on roadways nearby.

2. Indirect Air Quality Impact of Increased Traffic

Once construction is completed the proposed project is not in itself likely to constitute a major direct source of air pollutants. By serving as an attraction for increased motor vehicle traffic in the area, however, the project must be considered to be a significant indirect air pollution source.

Motor vehicles, especially those with gasoline-powered engines, are known sources of carbon monoxide. Motor vehicles also emit some nitrogen dioxide and those burning fuel which contains lead as an additive contribute some lead particles to the atmosphere as well. The major control measure designed to limit lead emissions is a Federal law requiring the use of unleaded fuel in most new automobiles. As older cars are removed from the vehicle fleet lead emissions should continue to fall. In fact, effective January 1, 1986, the Federal Environmental Protection Agency has revised the allowable lead amount in gasoline to 0.1 grams per gallon. At the beginning of 1985 the standard was 1.1 grams per gallon. The EPA is also advocating a total ban on lead in gasoline to take effect as early as 1988.

Federal control regulations also call for increased efficiency in

removing carbon monoxide and nitrogen dioxide from vehicle exhausts. By 1995 carbon monoxide emissions from the vehicle fleet then operating are mandated to be about one third lower than the amounts now emitted. Carbon monoxide modeling conducted as a part of this report indicates that State of Hawaii Ambient Air Quality Standards are presently being exceeded at critical receptor sites along the H-1 Freeway and that additional traffic from this project is likely to slightly exacerbate that problem. Widening the Freeway by one lane in the peak direction is expected to have little impact on this situation. Once again, however, this is a regional traffic problem which will require mitigative measures beyond those that a single project developer can be expected to provide.

H. Impact on Noise Environment

Future traffic noise levels are expected to be in the "Significant Exposure, Normally Unacceptable" noise exposure category along the first row of Waiola Estates house lots which front Kamehameha Highway. This conclusion is valid for both the existing and future Right-of-Way widths of Kamehameha Highway. However, the construction of a 6 Ft. high sound attenuating wall is planned along the highway Right-of-Way as a noise mitigation measure. This mitigation measure is capable of reducing traffic noise levels by approximately 6 Ldn units, and should be sufficient to meet FHWA and FHA/HUD standards at all single story homes within 60 Ft. of the centerline of the highway. If multi-story homes are constructed within 100 Ft. of the centerline of the highway, a 6 Ft. high wall will not be adequate, and other mitigation measures, such as air conditioning or the use of sound attenuating windows, will be required to meet federal standards.

Along Kamehameha Highway, at the existing Crestview and Seaview Village Subdivisions, unavoidable traffic noise impacts are predicted

to occur in the form of increased traffic noise. Traffic noise levels at existing residences are predicted to increase from approximately 66 Ldn to 68 Ldn. Project plus non-project traffic volume increases are predicted to increase, and the relocation of the highway centerline toward Crestview (during a separate highway widening project associated with the Waikele Development) is expected to cause an additional 1.5 Ldn increase. Traffic noise increases associated with the Waiola Estates Subdivision proposal are approximately 14% of the total increases predicted along this section of Kamehameha Highway by 1990, and following the planned widening project.

At the existing Gentry Waipio residences south of Waipio Uka Street, traffic noise impacts associated with the widening of Kamehameha Highway, the additional traffic generated by Waiola Estates residences, the additional traffic generated by non-project sources, and the reflection of traffic noise from the planned wall fronting the Waiola Estates Subdivision are anticipated. Total traffic noise at those residences which front Kamehameha Highway are predicted to be approximately 69 Ldn, with the reflections from the Waiola Estates wall included, but without consideration of the possible sound attenuation benefits of the roadway cut in that area. A more detailed evaluation of the traffic noise levels in this area should be performed after the geometry of the new roadway cut is established.

Because of the large setback distance between Kamehameha Highway and Gentry Waipio residences north of Waipio Uka Street, future traffic noise is predicted to be below FHWA and FHA/HUD noise mitigation thresholds, and remain in the "Moderate Exposure, Acceptable" noise category in the Gentry Waipio area. A 1.5 Ldn increase in traffic noise levels attributable to the planned construction of a 6 Ft. high sound attenuating wall along the Waiola Estates Right-of-Way across the highway was assumed.

Along Kamehameha Highway and north of the project toward Mililani Town, project related traffic noise impacts are predicted to be

minimal and insignificant. Predicted increases in traffic noise levels attributable to project traffic were calculated to be less than 1 Ldn.

Project and non-project traffic entering and exiting H-2 Freeway via the new access ramps are predicted to use Ka Uka Boulevard between the freeway and Kamehameha Highway. Traffic noise level increases along Ka Uka Boulevard by the 1990 period are predicted to be moderate, and should not exceed federal standards at existing residences fronting the boulevard. Traffic noise impacts along the freeway are expected to be minimal because the major portion of the lands adjoining the freeway south of the planned access ramps are currently undeveloped, or are shielded from freeway noise by topographic features.

The results of the noise study indicate that sufficient setback distances exist to noise sensitive developments in the Gentry Waipio area between Waipio Uka Street and Ka Uka Boulevard, such that noise mitigation measures are not required for these existing Gentry Waipio residences. However, sufficient setback distances do not exist in the Crestview and Seaview Subdivision areas toward Waipahu Street, and will probably not exist following the planned widening of Kamehameha Highway in that area. A minimum wall height of 6 Ft. may be required along the new highway Right-of-Way to reduce future traffic noise levels below 65 Ldn. A few (approximately four) two story homes in the area will not be entirely shielded by a 6 Ft. high wall, and the use of other mitigation measures, such as air conditioning affected rooms or installation of window sound attenuators, may be employed.

A 6 Ft. high wall is being planned for mitigating traffic noise at future Waiola Estates homes fronting Kamehameha Highway. Additionally, multi-story homes should be set back at least 100 Ft. from the new highway centerline so as not to preclude FHA/HUD assistance. In order to minimize traffic noise reflections toward the existing Gentry Waipio residences across the highway, the sound

absorption or scattering characteristics of the wall should be maximized. The use of a lava rock wall, the avoidance of painting or sealing the pores on the side facing the highway) of a concrete block wall, the use of specially constructed, sound absorbent concrete blocks, and the use of foliage to visually screen the wall from the highway are possible methods of increasing the sound absorption or scattering characteristics of the wall that are under consideration. Similiar considerations may be applied to any sound attenuating wall constructed in the Gentry Waipio area south of Waipio Uka Street.

I. Impact on Infrastructure and Utilities

1. Potable Water

The proposed project is located in the Pearl Harbor Water Use District (PHD) which includes 69 square miles and overlies the basal water formation that constitutes the major water resource of southern Oahu. In addition to the PHD, the Ewa Water District (EWD) (area 119 square miles) also partly overlies the same basal ground water. This regional ground water source serves as the major resource for all of the southern Oahu as well as for portions of Honolulu and Waianae, where some of the daily draft is transported and consumed.

The average daily water demand of the proposed project can also be expressed on the basis of per acre demand. Based on an average daily demand of 0.822 MGD and an approximate urbanized area of 269 acres, the urban demand for the proposed project can be expressed as 3,056 gpad, which must be satisfied by the region's basal water. Inasmuch as the project site is not currently being used, urban demand at present is zero.

Pineapple cultivation or vacant land will add approximately

1,265 gallons per acre to the ground water supply due to rainfall percolation. Upon completion of the project, ground water recharge will be considerably less than 1,265 gpad since rainfall will be collected in the storm drainage system.

A change in land use from pineapple cultivation to urban or to other agricultural crops will result in a demand for regional basal water that is greater than what is required for pineapple cultivation. However, this demand increase resulting from the proposed project in itself must be related to the regional basal groundwater. The BWS estimates that by the year 2000, the average daily demand within its system will be approximately equal to the sustainable capacity of the region. Due to recent rapid urbanization of the Waipahu area and the increased pressure to develop additional lands in the area, the BWS is now exercising extreme caution in approving developments that require water service in the area.

The BWS produces water from 19 stations in the PHD, 17 of which are well fields and two shafts. Four stations serve the Waipahu area and the Ewa-Waianae Water Use District (located west of the PHD). These well fields are the Waipahu and Hoaeae Wells and Kunia Wells I and II. They have a combined sustained capacity of 19.87 MGD.

Eleven stations served the needs in the Pearl City, Waiiau, Waimalu and Aiea areas with 8.93 MGD in FY 1973-74. The Waipio Heights Wells in the Crestview Subdivision provided 0.33 MGD; the Waimalu Wells provided 0.08 MGD with a sustainable capacity of 0.5 MGD; the Kaonohi Wells provided 1.1 MGD; the Pearl City Wells I and II and the Pearl City Shaft provided 3.75 MGD; the Waiiau and Newtown Wells provided 0.57 MGD and have a sustainable capacity of 3 MGD each; and three well fields served the Aiea-Halawa area with 3.1 MGD.

Based on an estimated population of 192,728 to be served in the PHD in 2000, the average daily demand is projected to be 26.30 MGD. Because of its importance as an exporter of water to the Honolulu Water District, new well fields have been proposed in the PHD to provide for these increased demands. These proposed new sources will include the two producing wells for the proposed project.

To meet the water needs of the proposed development, on-site and off-site facilities shall be developed including two new wells at the 595-foot elevation Waipio Heights site and a 1.5 million gallon concrete reservoir. The development of water sources for the development area has been approved by the Department of Land and Natural Resources (DLNR) as the development area is within the Pearl Harbor Groundwater Control District.

State Department of Health notes that Chapter 20, Title II, requires that all new sources of potable water serving public water systems to be approved by the Director of Health. Such approval is based upon the submission of an engineering report which adequately addresses all concerns.

Also, Section II-20-30 requires that new distribution systems be approved by the Director of Health. Such approvals depend upon the submission of plans and specifications for the project prior to construction and the systems are capable of delivering potable water in compliance to all maximum contaminant levels as set down in Chapter 20.

The proposed project shall comply with these requirements:

The Board of Water Supply notes that "a water master plan should be submitted for our review and approval. A new source, reservoir and transmission mains are required to serve the proposed housing project."

This requirement shall be complied with by the City and County of Honolulu.

2. Sewage Treatment and Disposal

The project will include the construction of a new trunkline, in conjunction with the adjoining Amfac Development and will connect to the existing Mililani STP Effluent Disposal System, that in turn discharges to the Waipahu SPS. The homes situated in the south eastern portion of the project will utilize the existing trunkline serving the Gentry-Waipio subdivision.

The treatment, disposal, and interceptor sewer systems will be adequate to serve the proposed development. Sewage effluent from the project will then receive primary treatment at the Honouliuli Wastewater Treatment Plant and will be disposed of by deep ocean outfall.

The BWS notes that "the project is located in our "no pass zone" where ground disposal of wastewater is not permitted. Therefore, all wastewater should be discharged into the City's sewage system serving the area."

3. Storm Sewer System (Drainage)

The project site is well drained and is not be susceptible to flooding. The Waikele/Kipapa gulch is a major drainage way which collects surface run-off from a major portion of the Central Oahu Plain. These gulches cut anywhere from 100 to 150 feet below the surface of the surrounding areas, and do not pose any threat of overflowing onto the project site in the event of major rain storms. Waikele Stream is a perennial stream found at the base of the gulch. This stream flows through the Waipanu Town area into West Loch of Pearl Harbor. A large portion of the site drains into the large gulch which

bisects the site and crosses under the H-1 Freeway to Waipahu Town.

The drainage area is bordered by Kamehameha Highway to the east, Kipapa Gulch to the west, and the abandoned sugar cane fields to the south.

Surface runoff flows to two natural drainage outlets located to the south of the property. A portion of the drainage basin runoff flows into Kipapa Gulch. Ultimately, runoff from the entire area is discharged into the Pearl Harbor West Loch. Discharge for the existing drainage basin is estimated at 1,400 cubic feet per second, as determined from the Storm Drainage Standards (City and County of Honolulu, Department of Public Works, March 1969).

The project will include the construction of underground drainage facilities, designed for compatibility with the Amfac/Waikele system, and will maximally utilize the natural drainage contours of the property.

A drainage report shall be submitted to the Drainage Section, Division of Engineering, for review and approval.

4. Electrical and Telephone Service

Electrical and telephone services currently serve areas adjacent to the project site. It is expected that these services can accommodate the additional demands of the project. Coordination with these utility companies will continue as the project is planned and developed.

5. Solid Waste Collection and Disposal

According to the Division of Refuse Collection and Disposal,

refuse collection can be provided with necessary increases in staff and equipment. Refuse collection service for the Waipio area is provided from the City Department of Public Works' Pearl City corporation yard. Refuse is hauled to the Waipahu incinerator for final disposal.

The Waipahu Incinerator is the existing means of solid waste disposal in the area. The planned H-Power facility which is scheduled to become operational in 1988 as well as the Waimanalo Gulch Sanitary Landfill situated in Waianae, will serve the project.

J. Impact on Public Facilities and Services

1. Police Protection

Additional police officers will be required to service the project's population. Possible methods of increasing on-site security may include the provision of fencing, alarms, and other safety devices; and the supplementing of public protective services with private services or community volunteer groups.

Since the development will be phased over several years, impact on police services and facilities will be gradual, thus providing time for governmental agencies to budget and acquire the needed personnel and facilities.

2. Fire Protection

The following City Fire Department facilities are available to serve the proposed development:

	<u>Response Distance</u>	<u>Response Time</u>	<u>Service</u>
Pearl City Engine Co. 20	3 miles	6 mins.	Primary
Waiau, Engine Co. 38	4 miles	8 mins.	
Waiau Ladder Co. 38	4 miles	9 mins.	

The above companies respond together on all structure fire calls and are supported by Aiea Engine 10, Waipahu Engine and Ladder 12 on a call for additional assistance. A City fire station is projected to be constructed in the Waikele area that would improve response time.

Current services are not considered adequate for the proposed location due to response times and distances of existing stations. A new station in Waikele will greatly enhance fire protection for this project. Adequate water mains will be installed to meet fire flow requirements, adequate access provided for fire apparatus, and construction will meet the existing codes.

3. Health Care Facilities

Health care for residents is available at the Waipahu Clinic and the Punawai Clinic. The latter is a Kaiser Foundation Clinic, and as such, offers specific local services with access to all facilities of the larger Kaiser Medical Center located in Moanalua. The Waipahu Clinic has a staff of about 50 serving the basic health needs of island residents from Waipahu to Waianae.

The clinic offers a variety of services such as physical, occupational and speech therapy, public health nursing, children's health services, leprosy clinics and complete mental health service. The nearest hospital services for residents are available at Wahiawa General Hospital which is approximately 8 miles north of the project.

Services provided by governmental social service agencies in such categories as child care, adult assistance, and family services are available from the Department of Social Services and Housing offices in Honolulu. In Waipahu there is a welfare unit which offers only emergency financial aid for food, shelter, and utility payments. Other public resource groups such as Child and Family Service and religious groups also offer various types of aid to those in need.

4. Educational Facilities

August Ahrens and Kanoelani Elementary, Waipahu Intermediate and Waipahu High Schools are currently operating at capacity and will require additional classrooms to service the projected increase in student enrollment.

The Department of Education states that:

"Our review of the proposed development of 1,500 single family housing units for low- and moderate-income families on 269 acres of land located in Waipio, Oahu, is expected to generate the following enrollment:

<u>School</u>	<u>Grade</u>	<u>Approximate Enrollment</u>
Unnamed Elementary School	K-6	500 - 900
Waipahu Intermediate	7-8	100 - 200
Waipahu High	9-12	200 - 300

On the assumption that preliminary plans indicate initial occupancy in early 1987, it will be difficult to accommodate students generated by this development. All elementary schools in the Waipahu area are overcrowded. The secondary schools are

operating at capacity. Although Waipahu Intermediate has a 10-classroom project under design, the project involves the demolition of a like number of badly deteriorated classrooms.

Short-term alternatives for the elementary level students would involve bussing to Pearl City area elementary schools. Additional portable classrooms would have to be relocated to the intermediate and high schools to accommodate the secondary level students.

In the long-term, an elementary school site would have to be suitably located in the development area. The proposed subdivision projects an elementary school site (6 acres) adjacent to a 12-acre public park.

5. Recreational Facilities

The Department of Parks and Recreation has indicated that the size of the proposed residential project will have a significant impact on our public parks and facilities in the subject area.

It is, therefore, important that adequate parks be provided to serve the project's needs.

The project will comply with the City's Park Dedication Ordinance No. 4621. Based on the 1,500 residential units proposed for development, approximately 12.0 acres of land would be required to be set aside for park purposes.

A 12- acre community park shall be provided in the proposed project. The activities would include:

- o Recreation Building with meeting rooms
- o Basketball/Volleyball Courts
- o Children's Play Area

The development is within reasonable proximity to existing recreational facilities, both public and private.

6. Public Transportation

The Crestview, Seaview and Waipio Gentry subdivisions are currently served by MTL bus route #52 every half hour in each direction to Wahiawa and Honolulu. Although current ridership is heavy on this route, bus patronage from these subdivisions is limited. An expansion of bus services would be dependent upon additional ridership demand as well as funding of MTL and available buses.

Senior citizens are provided free bus passes for their transportation on any bus route. The State provides school bussing for students living beyond one mile from school.

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

**SHORT-TERM USES AND
LONG-TERM PRODUCTIVITY**

**≡ IRREVERSIBLE/IRRETRIEVABLE
COMMITMENTS OF RESOURCES**

VIII. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY AND IRREVERSIBLE/IRRETRIEVABLE COMMITMENTS OF RESOURCES

It is anticipated that the construction of the proposed project will commit the necessary construction materials and human resources (in the form of planning, designing, engineering, construction labor, landscaping, and personnel for the sales, management, services, offices, and maintenance functions). Some of the construction materials could be reused if and when the structures are demolished; however, at the present time and state of our economy, it is felt that the reuse of much of these materials is not practical. Labor expended for this development is not retrievable. However, labor will be compensated during the various stages of the project by the developer, commercial businesses, and the building's management.

The appearance of the project site will be altered from its present open agricultural appearance to that of a completed master planned residential community. The development will be highly visible but visually integrated with the surrounding areas.

Air and noise quality will be affected by this proposed project, however, these impacts are typical of most developments. While ambient air and noise quality in the area is relatively good, the proposed development will result in greater number of vehicles going to and from the project areas, resulting in increased vehicular pollution emissions.

The project development will result in a commitment of land for a long-term period. Once residential uses are established, it is unlikely that the land will be reverted to a lower usage in the long-term future. Commitment of land for these purposes will likely foreclose certain future use options of the land such as open space and agricultural activities.

The project development will, in the short- and long-term result in residential uses which will likely benefit future homeowners, the landowner and private businesses. Furthermore, in view of the project's objective of providing affordable housing, a critical need in the Community at large will be addressed.

X PROBABLE ADVERSE ENVIRONMENTAL EFFECTS

IX. ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The following adverse environmental effects (both short- and long-term) cannot be avoided.

- (1) Agricultural use of the land will be lost.
- (2) The site-clearing and construction work will result in temporary fugitive dust, some disruption to traffic, and noise.
- (3) Traffic will increase from the number of additional cars utilized by residents of the proposed development. Additional impacts associated with increased traffic include potential air and noise quality deterioration. The traffic consultant's findings indicate that roadway modifications will adequately accommodate the traffic to be created by the proposed development.
- (4) The need for utility services will increase.
- (5) The need for public services for fire and police protection, schools, and public recreational facilities will increase slightly.
- (6) Solid waste and sewage generated by the project will increase the need for disposal and treatment and will increase total local waste output.

Countervailing policies are thoroughly described in Chapter VI, Relationship to Plans, Policies, and Controls. Rationale for proceeding with the proposed action are outlined in the sections describing Hawaii State Plan and General Plan of the City and County of Honolulu compliance-points.

X SUMMARY OF UNRESOLVED ISSUES

X. SUMMARY OF UNRESOLVED ISSUES

A. State Land Use Boundary

The project site is currently designated for Agriculture Use by the State Land Use Commission. A petition for boundary amendment has been filed with the Commission to have the site designated for urban land use. Until this petition is filed and the land use change is granted, the project site will remain as an agricultural area.

B. Site Aquisition

The project site is currently owned by Castle and Cooke which has been using the site for pineapple cultivation. Negotiations between the City and County of Honolulu and the present landowner are currently on-going and no final purchase terms have been resolved at this time.

C. Agricultural Use vs Urban Use

Competing land uses for the Waiola site hinge on its present agricultural use and the requested urban designation for affordable housing. Evaluation of impacts for both positions by the appropriate decision makers will determine whether the site should be retained as presently designated or a change in land use Policies should be made to reflect the proposed urban plans. A summary of the impacts for both positions is presented below.

Conversion of the Waiola lands will not impact the State's agricultural industry since it is not the availability of land that is limiting the expansion of the various alternative crops discussed in the Study (Appendix B), but rather the size of the market for locally produced crops. The de facto population of the State is only slightly more than a million people and in the principal market area

of Oahu, the de facto population is only 825,000. This is a very small market and it does not require substantial acreage to supply such a market, particularly when many popular foods either require temperate climatic conditions not found in Hawaii or can be produced more profitably elsewhere and imported for less than it costs to produce them locally.

Placing the subject lands in an urban use will not have have a significant impact on the agricultural sector of Honolulu County or the State. Lands of similar quality and economic potential are currently lying fallow and there are sufficient lands available to meet current and projected future agricultural needs.

In the planning and designing of these established residential communities, there was a common fabric that was woven in the development that sought a better future for residential growth. This concern over the maintenance or enhancement of lifestyle is perceived as being threatened by Waiola Estates. This has been brought out by discussions within the communities, with community leaders, and by future residents. A commonly expressed concern is that Waiola Estates is another public housing community being proposed by the City & County of Honolulu. There needs to be improved communications between these existing communities and the proponents of Waiola Estates to insure against misunderstandings based on erroneous data or lack of facts.

The need for housing projects of this type should be clarified to all segments of the affected communities and also to the islandwide community as well if this project is to succeed. It is imperative that a good, factual, community understanding is obtained for a successful Waiola Estates project.

X PARTIES CONSULTED

XI. AGENCIES CONSULTED PRIOR TO THE ENVIRONMENTAL IMPACT STATEMENT
PREPARATION NOTICE

<u>Federal</u>	<u>Response Received</u>
1. Department of Housing and Urban Development	3/26/86
2. U.S. Army Corps of Engineers	3/24/86
3. Department of the Interior, Fish and Wildlife Service	3/25/86
4. Department of Health and Human Services	---
 <u>State</u>	
1. Department of Education	3/21/86
2. Department of Planning and Economic Development	3/27/86
3. Department of Health	3/31/86
4. Department of Land and Natural Resources	4/14/86
5. Office of Environmental Quality Control	3/19/86
6. Department of Social Services and Housing	3/25/86
7. Department of Transportation	3/21/86
8. Department of Agriculture	3/20/86
9. Hawaii Housing Authority	3/25/86
10. Land Use Commission	3/19/86
 <u>City</u>	
1. Department of General Planning	3/18/86
2. Department of Land Utilization	4/ 7/86
3. Department of Transportation Services	3/17/86
4. Building Department	3/18/86
5. Department of Public Works	3/20/86
6. Department of Parks and Recreation	3/19/86
7. Board of Water Supply	3/27/86
8. Fire Department	3/31/86
9. Police Department	3/19/86
10. Office of Human Resources	4/ 2/86
 <u>Other</u>	
Waipahu Neighborhood Board No. 22	3/27/86

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

X EIS PREPARATION NOTICE COMMENTS

XII. ORGANIZATIONS AND AGENCIES CONSULTED DURING THE EIS PREPARATION NOTICE COMMENT PERIOD

<u>Agencies/Organizations</u>	<u>Date of Comment</u>	<u>Date Comment Received</u>	<u>Date of Response</u>
<u>City & County of Honolulu</u>			
City and County agencies consulted in the preparation of this document are listed on page 2. These agencies were consulted in house prior to the development of the EIS Preparation Notice and are an integral part of this City and County EIS preparation team.			
<u>State of Hawaii</u>			
Department of Transportation	7/14/86	7/18/86	7/22/86
Department of Planning and Economic Development	7/08/86	7/09/86	7/10/86
Department of Land and Natural Resources	-	-	-
Department of Health	7/03/86	7/08/86	7/09/86
Office of Environmental Quality Control	-	-	-
Department of Agriculture	6/30/86	7/02/86	7/07/86
Department of Accounting and General Services, Division of Public Works	-	-	-
Department of Education	6/20/86	6/27/86	7/01/86
Department of Social Services and Housing, Hawaii Housing Authority	6/26/86	7/03/86	7/09/86
Department of Social Services and Housing	6/26/86	7/03/86	7/09/86
Land Use Commission	6/16/86	7/18/86	6/20/86
<u>University of Hawaii</u>			
Environmental Center	-	-	-
Water Resources Research Center	6/30/86	7/03/86	7/09/86
<u>Federal</u>			
U.S. Army Corps of Engineers	6/25/86	7/02/86	7/07/86
U.S. Fish and Wildlife Service	7/08/86	7/09/86	7/10/86
U.S. Department of Agriculture, Soil Conservation Service	-	-	-
U.S. Pacific Division Naval Facilities Engineering Command	7/07/86	7/08/86	7/09/86
U.S. Army Engineering Division Real Estate Branch	-	-	-

Organizations & Agencies (Continued)

<u>Agencies/Organizations</u>	<u>Date of Comment</u>	<u>Date Comment Received</u>	<u>Date of Response</u>
<u>Federal</u>			
U.S. Department of Housing & Urban Development, Honolulu Area Office, Region IX	6/11/86	6/12/86	6/20/86
<u>Community Organizations</u>			
American Lung Association	6/20/86	6/24/86	6/27/86
Castle & Cooke, Inc.	6/09/86	6/10/86	6/20/86
Crestview Community Association	-	-	-
District Superintendent Leeward District	-	-	-
Gentry Waipio Community Association	7/08/86	7/10/86	7/14/86
Hawaii's Thousand Friends	7/07/86	7/08/86	7/17/86
J.A. Parnell	6/18/86	6/20/86	6/24/86
League of Women Voters	7/05/86	7/08/86	7/09/86
Life of the Land	-	-	-
Manana Community Association	-	-	-
Mililani Neighborhood Board No. 25	-	-	-
Pacific Palisades Community Association	-	-	-
Pearl City Community Association	-	-	-
Pearl City Neighborhood Board No. 21	-	-	-
Sierra Club	-	-	-
VTN Pacific, Inc.	6/18/86	6/19/86	6/24/86
Wahiawa Neighborhood Board No. 26	-	-	-
Waipahu 2000 Community Council	7/08/86	7/21/86	7/22/86
Waipahu Businessmen Association	-	-	-
Waipahu Community Association	-	-	-
Waipahu Neighborhood Board No. 22	6/20/86	6/23/86	6/24/86
Waipahu Neighborhood Board No. 22	7/14/86	7/16/86	7/17/86
William A. Bass	6/16/86	6/10/86	6/20/86

GEORGE R. ARTOGA
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
100 SOUTH KING STREET
HONOLULU, HAWAII 96813

July 14, 1986

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

530 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 871-6161



July 22, 1986

WAYNE J. YAMASAKI
DIRECTOR

DEPUTY DIRECTOR
JONATHAN K. SHIMODA, PH.D.
WALTER T. HO
DANIEL L. WILSON
ALAN H. WICKERT

INTEROFFICE
STP 8.1447

86 JUL 18 P2:46
DEPT OF HAWAII
COMM. OF HONOLULU

Mr. Michael M.H. Moon, Director
Department of Housing and Community Development
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Moon:

EIS Preparation Notice
Maioia Estates Subdivision

This is to notify you that our agency wishes to be consulted during the preparation of the EIS for the proposed development. Of particular interest is the traffic impacts which will be generated by a subdivision of this scope. Therefore, we feel a Traffic Impact Analysis Report should be a necessary and important component in this study effort.

We appreciate your coordinating this matter with us.

Very truly yours,

Jonathan K. Shimoda
Wayne J. Yamasaki
Director of Transportation

RECEIVED AFTER RESPONSE DEADLINE. HYM

Mr. Wayne J. Yamasaki, Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Yamasaki:

Subject: Maioia Estates Subdivision
THK: 9-4-7:1
Maipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and comments which should be considered in the preparation of the above subject environmental impact statement, which was received after the deadline on July 18, 1986.

The Maioia Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

JAMES T. NIYAGI
James T. Niyagi
ALVIN K. H. PANG, Director

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
 HONOLULU, HAWAII 96813
 PHONE 422-0151



ALVIN K. PANG
 DIRECTOR

FRANCIS M.
 SUPERINTENDENT

FRANCIS M. HATANAKA
 SUPERINTENDENT



STATE OF HAWAII
 DEPARTMENT OF EDUCATION

P. O. BOX 2106
 HONOLULU, HAWAII 96810

June 20, 1986

OFFICE OF THE SUPERINTENDENT

Mr. Alvin K. H. Pang, Director
 Department of Housing and Community Development
 City and County of Honolulu
 650 South King Street
 Honolulu, Hawaii 96813

Dear Mr. Pang:

SUBJECT: Maioia Estates Subdivision
EIS Preparation Notice

Our review of the proposed Maioia Estates Subdivision that allows 1,500 single family units for low-moderate income families indicates that it may generate the following additional enrollment in our schools:

SCHOOL	GRADE	APPROXIMATE ENROLLMENT
Pearl City Area Schools	K-6	500 - 900
Maipahu Intermediate	7-8	100 - 200
Maipahu High	9-12	200 - 350

The elementary students will need to be bussed to the Pearl City area where surplus classrooms are available. There is no space available in the Maipahu area for the elementary students. Maipahu Intermediate and High schools are both near maximum enrollments and will require legislative funding for additional classrooms.

Please keep us informed on the progress of the development so that we can budget the necessary capital improvement funds on a timely basis.

Sincerely,

Francis M. Hatanaka
 Francis M. Hatanaka
 Superintendent

FMH:jl

cc OBS
 W. Araki, Leeward Dist.

86 JUN 27 AM 11
 COMMUNICATIONS SECTION

July 1, 1986

Mr. Francis M. Hatanaka
 Superintendent
 Department of Education
 State of Hawaii
 P. O. Box 2360
 Honolulu, Hawaii 96804

Subject: Maioia Estates Subdivision

THK: 9-4-7:1
 Maipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Maioia Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

JAMES T. MIYAGI

James T. Miyagi
 ALVIN K. H. PANG, Director



GEORGE R. ARYOSH
/s/



STATE OF HAWAII
DEPARTMENT OF SOCIAL SERVICES AND HOUSING

FRANKLIN K. SUNN
DIRECTOR
RICHARD K. PAKIWAH
DEPUTY DIRECTOR
ALFRED K. SUGA
PROPERTY DIRECTOR

P. O. Box 339
Honolulu, Hawaii 96809

June 26, 1986

MEMORANDUM

TO: Alvin K. H. Pang, Director
City & County Honolulu

FROM: Franklin Y. K. Sunn, Director

SUBJECT: THE ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE
FOR THE PROPOSED WAIOLA ESTATES SUBDIVISION

Thank you for the opportunity to comment on the Environmental Impact Statement Preparation Notice for the Proposed Waiola Estates Subdivision.

The Hawaii Housing Authority has expressed our views on the proposed subdivision. A copy of their letter dated June 26, 1986 is attached.

Franklin Y. K. Sunn
Director

Enclosure

86:PLJG/3419

June 26, 1986

Mr. Alvin K. H. Pang, Director
Dept. of Housing & Community Development
City & County of Honolulu
Honolulu, Hawaii 96813
Attention: Howard Mural

Dear Mr. Mural:

Thank you for the opportunity to comment on the Environmental Impact Statement Preparation Notice for the Proposed Waiola Estates Subdivision.

The Hawaii Housing Authority supports the provision of affordable housing for Hawaii's residents. We believe that a project of this size should incorporate a balanced mix of low/moderate, gap group and market units and perhaps elderly rental and public housing to promote socio-economic integration. It appears that the proposed Waiola Estates will include low/moderate, gap group and market units. However, the planned breakdown is not yet known. The Authority therefore reserves comment on the project until further information is available.

Sincerely,

Original Signed By

RUSSELL N. FUKUMOTO
Executive Director

86 JUN -7 09:56
DEPT. OF SOCIAL SERVICES
& HOUSING

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

630 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 528-7101



FRANK P. YAU
DIRECTOR

ALVIN K. PANG
DIRECTOR

July 9, 1986

Mr. Franklin Y. K. Sunn, Director
Department of Social Services
and Housing
State of Hawaii
P. O. Box 339
Honolulu, Hawaii 96809

Dear Mr. Sunn:

Subject: Waioala Estates Subdivision

THK: 9-4-7-1
Maipio, Oahu

Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Waioala Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

JAMES T. MIYAGI

ALVIN K. H. PANG, Director





DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

STATE OF HAWAII, DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT, 100 SOUTH KING STREET, FIFTH FLOOR, HONOLULU, HAWAII 96813

GEORGE S. ANDERSON, DEPUTY DIRECTOR; ERNEST M. LEVIN, DIRECTOR; MURRAY E. TOWELL, ASST. DIR. COMMUNITY DEVELOPMENT; LINDA S. GARDNER, ASST. DIR. ECONOMIC DEVELOPMENT; JOHN W. HARRIS, ASST. DIR. PLANNING; WYATCH AND PETERSON, ARCHITECTS; ADVISORY BOARD: UNIVERSITY OF HAWAII, HONOLULU, HAWAII

Ref. No. P-4583

July 8, 1986

Mr. Howard Mural, Department of Housing and Community Development, City and County of Honolulu, 650 South King Street, Fifth Floor, Honolulu, Hawaii 96813

Dear Mr. Mural:

Subject: EIS Preparation Notice for Maiola Estates Subdivision, Waipio, Oahu

We have reviewed the subject EIS Preparation Notice (EISPN) and offer the following comments.

- 1. The EISPN states that negotiations with Castle and Cooke, Inc., were recently concluded for the purchase of the subject property (TMG: 9-4-07:1) consisting of 269.454 acres. The purchase price and the conditions attached to the transaction should be included in the EIS.
2. The project site is presently used for pineapple cultivation and was given the designation of Important Agriculture Land (IAL) by the LESEA Commission. This area has been identified as important for the production of fresh pineapple. The Hierarchy of Agricultural Lands Study by Castle and Cooke, Inc. characterizes the land as being at a low elevation with drip irrigation and having a high yield, short cycle production capability. The EIS should thoroughly discuss the agricultural resource value of the land in the context of Castle and Cooke's total pineapple operation on Oahu and the neighbor islands.
3. The subject project is adjacent to the existing developments of Gentry-Waipio and Crestview and also the proposed development at Waialeale. The EIS should discuss how this project will relate to these developments from a physical, as well as a sociological viewpoint. Particular attention should focus on the possible impacts associated with locating 1,500 families with income limitations within one project. A more accepted practice is to integrate a percentage of these families into conventional developments.

Mr. Howard Mural, Page 2, July 8, 1986

- 4. One of the primary infrastructural problems in this area and downstream is the transportation system. The impacts associated with this project, as well as the cumulative impacts of existing and other proposed projects, should be thoroughly discussed.
5. The cumulative impact of land use changes from agricultural to urban areas in Central Oahu may have significant implications for the sustainable yield of the ground water resource in the area. The Draft EIS should discuss not only the water requirements of the proposed development, but also the cumulative effect of land use changes on the water resources of the Pearl Harbor Basin. In addition, the availability of water for existing and future developments, as well as existing and future agricultural operations, should be critically assessed.
6. The estimated cost of the subdivision improvements, including planning and engineering, is \$39 million. A cost breakdown should specify the required subdivision improvements separate from planning and engineering costs. It should also be made clear if the development will market house and lot packages or only lots.
7. The affordability of the homes or lots should be analyzed, reflecting projected interest rates and various public or private financing schemes.
8. The proposed development has the potential to significantly impact valuable coastal resources. Of greatest concern in this regard is the hazard which erosion poses to life and property and the impact of erosion on the quality of streams and nearshore waters, and on riverine and littoral ecosystems.
9. We note that the project is one of several large residential developments proposed for construction on lands designated for agricultural use. We, therefore, suggest that the EIS include an assessment of the project's direct and cumulative impact on the State's agriculture industry.
10. The scope of the Alternative Actions section in the EIS should be expanded to include a feasibility analysis on the use of different sites and on the provision of housing for "gap-group" families in a manner which is not as land intensive.
11. The EIS should review the relationship of the proposed project to the appropriate objectives, policies and priority guidelines of the Hawaii State Plan, and the policies and implementing actions of applicable Functional Plans.

F 88 7 6 4 2

Mr. Howard Murai
Page 3
July 8, 1986

Thank you for this opportunity to review and comment on the subject document.

Very truly yours,

Kent M. Keith
Kent M. Keith

cc: Office of Environmental Quality Control

July 10, 1986

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

850 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 573-4161



FRANK P. PANG
DIRECTOR

ALVIN K. PANG
DIRECTOR

Mr. Kent M. Keith, Director
Department of Planning and
Economic Development
State of Hawaii
P. O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Keith:

Subject: Waiala Estates Subdivision
TMK: 9-4-7:1
Maipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Waiala Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

JAMES T. KUYAGI

James T. Kuyagi
ALVIN K. H. PANG, Director



ALVIN K. PANG
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF SOCIAL SERVICES AND HOUSING
HAWAII HOUSING AUTHORITY
P. O. BOX 17847
HONOLULU, HAWAII 96817

June 26, 1986

Mr. Alvin K. H. Pang, Director
Dept. of Housing & Community Development
City & County of Honolulu
Honolulu, Hawaii 96813

Attention: Howard Mural

Dear Mr. Mural:

Thank you for the opportunity to comment on the Environmental Impact Statement Preparation Notice for the Proposed Waioala Estates Subdivision.

The Hawaii Housing Authority supports the provision of affordable housing for Hawaii's residents. We believe that a project of this size should incorporate a balanced mix of low/moderate, gap group and market units and perhaps elderly rental and public housing to promote socio-economic integration. It appears that the proposed Waioala Estates will include low/moderate, gap group and market units. However, the planned breakdown is not yet known. The Authority therefore reserves comment on the project until further information is available.

Sincerely,

Russell N. Fukumoto
RUSSELL N. FUKUMOTO
Executive Director

RUSSELL N. FUKUMOTO
EXECUTIVE DIRECTOR

FRANK P. FANG
DIRECTOR

10

86:PLMG/3419

86 JUN 30 10 00 AM '86

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

430 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 531-5151



FRANK P. FANG
DIRECTOR

ALVIN K. PANG
DIRECTOR

July 9, 1986

Mr. Russell N. Fukumoto
Executive Director
Hawaii Housing Authority
Department of Social Services
and Housing
State of Hawaii
P. O. Box 17907
Honolulu, Hawaii 96817

Dear Mr. Fukumoto:

Subject: Your reference 86:PLMG/3419
Waioala Estates Subdivision
TRK: 9-4-7:1
Maipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Waioala Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

JAMES T. MUYAKI
ALVIN K. H. PANG, Director



STATE OF HAWAII
DEPARTMENT OF HEALTH

P. O. BOX 328
HONOLULU, HAWAII 96813

STATE OF HAWAII
DEPARTMENT OF HEALTH

P. O. BOX 328
HONOLULU, HAWAII 96813

Mr. Howard Mural
July 3, 1986
Page 2

Mr. Howard Mural
Department of Housing and
Community Development
City & County of Honolulu
650 S. King St., 5th Floor
Honolulu, Hawaii 96813

Dear Mr. Mural:

Subject: Environmental Impact Statement (EIS) Preparation Notice for Proposed
Development at Waiole Estates Subdivision, Waipio, Oahu

Thank you for allowing us to review and comment on the subject EIS Preparation
Notice. We provide the following comments for your consideration:

Air Pollution

The EIS Preparation Notice does not have a section on air quality. The EIS should
address the potential impact on the ambient air quality as a result of increased vehicular
activity from the proposed project and all other projects which were previously approved
but have not started construction. Projections on the increased traffic volume and the
impact on the ambient air quality should be for the associated corridors, roadways and
highways. The results should be compared to the State and Federal ambient air quality
standards. Should a potential violation be determined, the assessment should address the
mitigating actions which shall be implemented.

Drinking Water

Reference is made to Part IV, Major Impacts, Section D, Water Supply System.
Section 11-20-29, Title 11, Administrative Rules of Chapter 20, "Potable Water Systems,"
requires all new sources of potable water serving public water systems to be approved by
the Director of Health prior to their use to serve potable water. Such approval is based
primarily upon the satisfactory submission of an engineering report which adequately
addresses all concerns as set down in Section 11-20-29. The engineering report must be
prepared by a registered professional engineer and bear his or her seal upon submittal.

Section 11-20-30 requires that new or substantially modified distribution systems for
public water systems be approved by the Director of Health. Such approval depends upon
the submission of plans and specifications for the project prior to construction and the
demonstration that the new or modified portions of the system are capable of delivering
potable water in compliance to all maximum contaminant levels as set down in Chapter 20
once the distribution system or modification is completed.

In the event that the proposed well is solely intended to serve irrigation or other
non-domestic purposes, or if the proposed well will not serve the minimum number to
qualify as a public water system as defined earlier, then the new well and distribution
system are not subject to Chapter 20 requirements.

Noise

1. Concerns toward construction noise impacts and the necessity of complying with
Title 11, Administrative Rules, Chapter 43, Community Noise Control for Oahu,
were addressed on page IV-2, Section B, of the preparation notice.
2. The following potential noise impacts must be addressed when preparing the EIS for
the subject project.
 - a. Noise emanating from the existing Gentry-Waipio Industrial Park may
adversely affect residents of the proposed project.
 - b. Due to the integration of various land uses, noise emanating from the planned
12-acre park and schools may adversely affect adjacent residential areas.
Mitigative measures must be incorporated to reduce noise impacts.
 - c. The design and location of residential units should be planned so that the noise
impact from Kamehameha Highway will be minimized.
 - d. Stationary equipment such as air-conditioners, exhaust fans, pumps and
compressors must be designed so that noise emanating from such equipment
will be in compliance with Title 11, Administrative Rules, Chapter 43,
Community Noise Control for Oahu.
 - e. Military operations should also be considered as another source of noise which
may impact residents of the proposed project.
 - f. Traffic noise from heavy vehicles travelling to and from the construction site
must be minimized near existing residential areas and must comply with the
provisions of Title 11, Administrative Rules, Chapter 42, Vehicular Noise
Control for Oahu.

Sincerely yours,

James K. Ikeda
JAMES K. IKEDA
Deputy Director for
Environmental Health

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

850 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 535-4111



ALVIN H. PANG
DIRECTOR

July 9, 1986

FRANK F. KASI
MAYOR

Mr. James K. Ikeda
Deputy Director
Environmental Health
Department of Health
State of Hawaii
P. O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Ikeda:

Subject: Your reference EPHSD
Maioia Estates Subdivision
THK: 9-4-7:1
Maipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Maioia Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

JAMES T. MIYAZI

JT ALVIN K. H. PANG, Director

STATE OF HAWAII
DEPARTMENT OF PLANNING
AND ECONOMIC DEVELOPMENT



LAND USE COMMISSION

Room 104, Office Building, 335 Merchant Street
Honolulu, Hawaii 96813 (Telephone 534-4111)

GEORGE R. ARYOSH
Governor

TERUO MITO, TACILAN
Chairman

FREDRICK F. WITTENBERG
Vice Chairman

COMMISSION MEMBERS

Richard B. F. Day

Lorraine F. Day

Brentell L. Oshida

William E. Reale

Steve Searle

Robert L. Toney

WILLIAM V. L. TONG
ESTHER UEDA
Executive Officer

June 16, 1986

Mr. Alvin K. H. Pang, Director
Department of Housing and
Community Development
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Pang:

Subject: EIS Preparation Notice for the Proposed
Waiala Estates Subdivision Project

We have no comments to offer at this time. However,
we wish to be a consulted party during the preparation
of this Environmental Impact Statement.

Sincerely yours,

ESTHER UEDA
Executive Officer

EU:tc

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 533-4101



June 20, 1986

Ms. Esther Ueda, Executive Director
Department of Planning and
Economic Development
Land Use Commission
335 Merchant Street, Room 104
Honolulu, Hawaii 96813

Dear Ms. Ueda:

Subject: Waiala Estates Subdivision
THK: 9-4-7:1
Maipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party
and/or comments which should be considered in the preparation of the above
subject environmental impact statement.

The Waiala Estates Subdivision represents a major undertaking and is a part
of the City's efforts to alleviate the critical shortage of affordable
housing in Honolulu. Your interest in the project and willingness to
assist us in the planning of this development is very much appreciated.
Thank you very much.

Sincerely,

JAMES T. AMYATA

ALVIN K. H. PANG, Director

'86 JUN 18 P2:00

DEPT. OF HOUSING AND COMMUNITY DEVELOPMENT

JUN 23 1986

Mr. Alvin K. H. Pang
June 30, 1986
Page -2-



GEORGE R. ARIYOSHI
GOVERNOR

JACK K. SUWA
CHAIRPERSON, BOARD OF AGRICULTURE
SUZANNE D. PETERSON
DEPUTY TO THE CHAIRPERSON

State of Hawaii
DEPARTMENT OF AGRICULTURE
1478 So. King Street
Honolulu, Hawaii 96814-2512
June 30, 1986

Mailing Address:
P. O. Box 22159
Honolulu, Hawaii 96822-0159

Mr. Alvin K. H. Pang, Director
Department of Housing and Community Development
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

Attention: Mr. Howard Mural

Dear Mr. Pang:

Subject: Environmental Impact Statement Preparation Notice
(EISP) for Waiala Estates Subdivision
TK: 9-4-07; 1; 269.454 acres Waipio, Oahu

The Department of Agriculture has reviewed the subject
EISP and offers the following comments.

According to the EISP, the City and County of Honolulu
Department of Housing and Community Development is seeking to
develop a single family residential subdivision with
approximately 1,500 housing units on the subject parcel.

We submitted our comments on an Environmental Assessment
for the same project to you on March 20, 1986 (copy attached).
In that letter, we provided information on three soil
classifications as they apply to the subject parcel (Soil
Conservation Service Soil Survey, Land Study Bureau Detailed
Land Classification for the Island of Oahu, and the Agricultural
Lands of Importance to the State of Hawaii system). The
following classification system should also be considered in the
Draft EIS.

LAND EVALUATION AND SITE ASSESSMENT SYSTEM

The Hawaii State Constitution requires the State to provide
standards and criteria to conserve and protect agricultural
lands, promote diversified agriculture, increase agricultural
self-sufficiency and assure the availability of agriculturally
suitable lands. The Constitution also provides for the
identification of "important agricultural lands". Once

identified, these lands may be reclassified or rezoned only
after meeting the criteria established by the State Legislature
and approved by a two-thirds vote of the body responsible for
the reclassification or rezoning action.

The Land Evaluation and Site Assessment (LESA) Commission
was assigned the task of identifying and recommending, for
adoption by the Legislature, a system to identify important
agricultural lands (IAT). The recommendations of the
Commission, if approved by the Legislature, would carry out the
Constitutional mandate to protect important agricultural lands.

From the illustrative maps (1:24,000 scale) which apply the
IAL methodology as part of the work of the LESA Commission, the
project site is entirely within the illustrative "Important
Agricultural Land" (IAL) boundary as defined by the LESA
Commission ("A Report on the State of Hawaii Land Evaluation and
Site Assessment System", February 1986). The IAL are lands
capable of producing high agricultural yields, lands which
produce commodities for export and local consumption, lands not
currently in production but needed to attain desired projected
levels of agricultural activities and income, and lands
designated by public policies as important agricultural lands
resulting from some unique quality, setting or use.

The project site has Land Evaluation (LE) ratings of 88 and
81, which is on a scale of 12 to 96 (Land Evaluation Data with
Weighted LE Rating - Oahu; Exhibit A; LESA Commission Report).
Briefly, the LE rating represent the physical characteristics of
the soil resources of Hawaii. The LE ratings are a composite of
the Soil Conservation Service Soil Survey, Land Study Bureau
Detailed Land Classification, and the Agricultural Lands of
Importance to the State of Hawaii system. Site Assessment (SA)
factors or criteria which express the relative quality of a site
or area based upon its non-physical characteristics, further
indicate the agricultural viability of a parcel, site or area.

Although the LESA Commission Report and corresponding
legislative bill were not acted upon by the Legislature this
past Session, the Department of Agriculture believes that the
definition and identification of "Important Agricultural Land"
by the methodology proposed by the LESA Commission provides the
most comprehensive and rational indication of the relative
importance of agricultural lands in the State.

86 JUN 2 12:0

Mr. Alvin K. H. Pang
June 30, 1986
Page -4-

Mr. Alvin K. H. Pang
June 30, 1986
Page -3-

OTHER ISSUES

The Draft EIS should include discussion on the following issues (this list supersedes that found in our March 20, 1986 letter):

- what alternative sites for the proposed project were considered and why the subject site was selected;
- the relationship of the proposed project to the "Castle and Cooke Hierarchy of Agricultural Lands Study--Central Oahu Lands" study, dated March, 1984;
- the impact of the removal of productive lands from pineapple production on Dole Company's economic viability;
- the broader economic and resource impact on the State from the irrevocable loss of prime, irrigated agricultural lands;
- information such as lease rents and terms on lands described in the EISP as "... other lands equally well suited elsewhere...";
- the present source(s) and potential alternative uses of agricultural irrigation water at the project site;
- the potential of establishing viable alternative agricultural uses on the project site;
- how the proposed project conforms to the State Agriculture Functional Plan and its objectives and policies, particularly, Implementing Action B(5)(c);
- the impact on agriculture resulting from the withdrawal of water for the project's domestic consumption from the Pearl Harbor Groundwater Control Area;
- the relationship of the proposal to existing and proposed urban development in the Central Oahu and Ewa Development Plan areas;

Chapter 165 of the Hawaii Revised Statutes, which limits the circumstances under which existing farming operations may be deemed a nuisance.

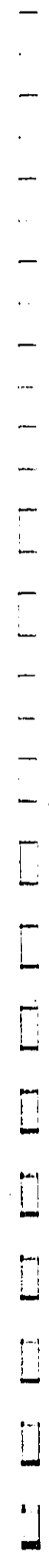
We will provide further comment upon our receipt and review of the Draft EIS.

Sincerely,

Jack K. Suwa
JACK K. SUWA
Chairman, Board of Agriculture

Attachment

- cc: DPED
- DLJ
- DGP
- OEQC



Mr. Alvin K. H. Pang
March 20, 1986
Page -3-

Copy
[Handwritten signature]

March 20, 1986

Mr. Alvin K. H. Pang, Director
Department of Housing and
Community Development
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Pang:

Subject: Environmental Assessment (EA) for Residential
Development at Waipio; TRK: 9-4-07: 1; 269 acres

The Department of Agriculture has reviewed the preliminary
information on the subject project and offers the following
comments.

According to the Project Description, the applicant will be
seeking to acquire and develop the subject parcel into a
residential community of approximately 1,500 housing units.

On January 30, 1986, we reviewed and submitted comment to
the Department of Land Utilization on an application for Plan
Review Use (PRU) to establish a pineapple cannery on a site to
the north and east of the subject parcel. We noted that in the
PRU application (Dole Kipapa Cannery Application for Plan Review
Use, December 1985, Figure 2 and page 26), the applicant, Castle
and Cooke, Inc., included some information on a proposed
development called "Waioala" that appears to involve the same
area as the subject proposal. Furthermore, in a letter from
Belt, Collins and Associates to the Department of Land
Utilization dated February 25, 1986, it is stated that the
"Waioala" project . . . has been submitted for consideration to
the Department of General Planning in the 1986/87 Development
Plan Review. A residential project is proposed consisting of
900 housing units on 270 acres of land. The timing of the
project proposes that land development commence on 1989 with
first sales in 1990." (see attached copy). The apparent
conflict of this proposal and the subject proposal should be
clarified.

- the impact on agriculture resulting from the
withdrawal of water for the project's domestic
consumption from the Pearl Harbor Groundwater Control
Area.

- the relationship of the proposal to existing and
proposed urban development in the Central Oahu and Ewa
Development Plan areas.

We will ~~not~~ provide further comment upon our receipt and
review of the Draft EA and the Draft Environmental Impact
Statement (EIS).

Sincerely,

JACK K. SUWA
Chairman, Board of Agriculture

Attachment

cc: DPED
DLU
DGP
OEGC

1 0 0 1 1

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

830 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 833 8181



FRANK P. PARI
DIRECTOR

ALVIN K. PANG
DIRECTOR

July 7, 1986

Mr. Jack K. Suwa, Chairman
Board of Agriculture
Department of Agriculture
State of Hawaii
P. O. Box 22159
Honolulu, Hawaii 96822-0159

Dear Mr. Suwa:

Subject: Maioia Estates Subdivision
THK: 9-4-7:1
Maipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Maioia Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

JAMES T. NIYAGI

for ALVIN K. H. PANG, Director



University of Hawaii at Manoa

Water Resources Research Center
Holmes Hall 283 • 2540 Dole Street
Honolulu, Hawaii 96822

30 June 1986

Mr. Howard Mural
Dept. of Housing and
Community Development
650 S. King Street, 5th Floor
Honolulu, Hawaii 96813

Dear Mr. Mural:

SUBJECT: Environmental Impact Statement Preparation Notice for the
Waiala Estates Subdivision, Waipio, Oahu, Hawaii, June 1986

We have reviewed the subject EISP and offer the following comments:

1. The reference cited under "B. Active Agricultural Use" (p. V-2) should be appended to the EIS so that it can also be reviewed since the statements are based on them.
2. The effects of the project on runoff, infiltration, and recharge and water quality of the underlying basal aquifer need to be addressed.

Thank you for the opportunity to comment. This material was reviewed by WRRRC personnel.

Sincerely,

Edwin T. Murabayashi
Edwin T. Murabayashi
EIS Coordinator

ETM:jm

AN EQUAL OPPORTUNITY EMPLOYER

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

850 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 813-4181



ALVIN K. PANG
DIRECTOR

FRANK P. PAST
CLERK

July 9, 1986

Mr. Edwin T. Murabayashi
EIS Coordinator
Water Resources Research Center
University of Hawaii at Manoa
2540 Dole Street, Holmes Hall 283
Honolulu, Hawaii 96822

Dear Mr. Murabayashi:

Subject: Waiala Estates Subdivision
THK: 9-4-7:1
Waipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Waiala Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

ALVIN K. PANG, Director

U.S. Department of Housing and Urban Development
Honolulu Area Office, Region IX
300 Ala Moana Blvd., Room 3018
Honolulu, Hawaii 96813

86-184

86-103

June 11, 1986

Mr. Alvin K. H. Pang, Director
Department of Housing & Community Development
City and County of Honolulu
650 So. King St.
Honolulu, HI 96813

Dear Mr. Pang:

Subject: Chapter 343, HRS
Environmental Impact Statement (EIS)
Preparation Notice for Proposed Development at
Waioala Estates Subdivision, Central Oahu
Tax Map Key: 9-4-07:1

This supplements our letter to you dated March 26, 1986
(copy attached) and responds to the subject Environmental Impact
Statement Preparation Notice.

The subject notice discusses the noise impacts during the
construction period and the noise generated by vehicular traffic
moving in and out of the project. These considerations are
important; however, the long term impact of noise generated by
vehicular traffic on Kamehameha should be evaluated based on
current and projected traffic volumes.

If HUD participation is being considered, then the project
must comply with 24 CFR Part 51 Subpart B: Noise Abatement and
Control.

If you have any further questions, please contact Frank
Johnson at 546-5520.

Sincerely,

James N. Noveck
for
Calvin Lew
Director, CPD Division

March 26, 1986

Mr. Alvin K. H. Pang
Director
Department of Housing & Community Development
City and County of Honolulu
650 South King Street
Honolulu, HI 96813

Dear Mr. Pang:

SUBJECT: Environmental Assessment on 260 Acres
Waialo, Oahu TNG: 9-4-1:1

This responds to your request dated March 11, 1986 on the subject
project. In the City and County of Honolulu's effort to acquire 269 acres in
Waialo for the development of approximately 1,500 units of affordable housing,
we offer the following comments and recommendations on the basis of HUD par-
ticipation or assistance:

1. HUD regulations, 24 CFR Part 50: Protection and Enhancement of
Environmental Quality, would not require the preparation of a full
Environmental Impact Statement based on the proposed 1,500 units.
However, an EIS may be required under Chapter 343 HRS.
2. Since the proposed action will convert prime agricultural land to
urban use, it must comply with the Farmlands Protection Policy Act of
1981. The implementing regulations for this act are found in 7 CFR
Part 658.7(b).
3. Traffic generated by the proposed project will add to the current
traffic congestion on Kamehameha Highway and the Waialo Interchange.
An assessment of vehicular traffic generated by the build-out of
Milliani Town and Gentry Waialo should be considered along with the
proposed project.
4. Heavy traffic on Kua Highway may threaten air quality standards for
carbon monoxide.
5. Noise generated by vehicular traffic should be examined to determine
if mitigative measures are required under 24 CFR Part 51 Subpart B:
Noise Abatement and Control.

86 JUN 12 P3:01

DEPT. OF HOUSING AND
COMMUNITY DEVELOPMENT

JUN 23 1986

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

430 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 933-4181



ALVIN K. H. PANG
DIRECTOR

FRANK P. LEW
DIRECTOR

2

6. The concentration of 1,500 low- and moderate-income families on one site should be carefully evaluated for the project's impact on social services, community facilities and existing infrastructure and developments in the area.
7. The environmental assessment should contain documentation that the proposed action is consistent with Hawaii's Coastal Zone Management Program.

If you have any questions on the above, you may contact Frank Johnson at 546-5570.

Sincerely,

Calvin Lew
Director
Community Planning and
Development Division, 9.2C

June 20, 1986

U. S. Department of Housing and
Urban Development
Honolulu Area Office, Region IX
Community Planning Division
300 Ala Moana Boulevard, Room 3318
Honolulu, Hawaii 96850

Attention Mr. Calvin Lew:

Gentlemen:

Subject: Waiala Estates Subdivision
THK: 9-4-7:1
Waipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Waiala Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated.

Sincerely,

...

ALVIN K. H. PANG, Director

JUN 24 1986



United States Department of the Interior
 FISHER AND WILDLIFE SERVICE
 100 ALA MOANA BOULEVARD
 P. O. BOX 50167
 HONOLULU, HAWAII 96850

ES
 ROOM 6307
 JUL 8 1986

FRANK P. PAU
 11/1/86



DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
 CITY AND COUNTY OF HONOLULU
 630 SOUTH KING STREET
 HONOLULU, HAWAII 96815
 PHONE 521-4111

ALVIN K. H. PANG
 DIRECTOR

July 10, 1986

Mr. Alvin K. H. Pang, Director
 Department of Housing and
 Community Development
 City and County of Honolulu
 650 South King Street
 Honolulu, Hawaii 96813

Re: Environmental Impact Statement Preparation Notice for the
 Proposed Maioia Estates Subdivision Project

Dear Mr. Pang:

We have reviewed the subject Environmental Impact Statement
 Preparation Notice and have no comments to offer at this time.

Sincerely yours,

Ernest Kosaka

Ernest Kosaka
 Project Leader
 Office of Environmental Services

Mr. Ernest Kosaka, Project Leader
 Office of Environmental Services
 United States Department of the Interior
 Fish and Wildlife Service
 300 Ala Moana Boulevard
 P. O. Box 50167
 Honolulu, Hawaii 96850

Dear Mr. Kosaka:

Subject: Maioia Estates Subdivision
 THK: 9-4-7:1
 Maipio, Oahu
 Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party
 and/or comments which should be considered in the preparation of the above
 subject environmental impact statement.

The Maioia Estates Subdivision represents a major undertaking and is a part
 of the City's efforts to alleviate the critical shortage of affordable
 housing in Honolulu. Your interest in the project and willingness to
 assist us in the planning of this development is very much appreciated.
 Thank you very much.

Sincerely,

JAMES T. MIYAGI

for ALVIN K. H. PANG, Director

'86 JUL -9 P4:07
 DEPT. OF HOUSING
 & COMM. DEVELOPMENT

CONSERVE
 AMERICA'S
 ENERGY



Save Energy and You Save America



DEPARTMENT OF THE NAVY
 COMMANDER
 NAVAL BASE PEARL HARBOR
 BOX 110
 PEARL HARBOR, HAWAII 96860-5020

Mr. Howard Murai
 Department of Housing and
 Community Development
 650 South King Street
 Honolulu, Hawaii 96813

Dear Mr. Murai:

**ENVIRONMENTAL IMPACT STATEMENT (EIS) PREPARATION NOTICE
 FOR THE MAIOLA ESTATES SUBDIVISION, MAIPIO, OAHU, HAWAII**

Letters of June 4, 1986 to this Command and to Commander, Pacific Division,
 Naval Facilities Engineering Command are being answered with this one reply.

The subject preparation notice has been reviewed with the following comments:

- a. Maiola Estates is another of several proposed large-scale housing developments on agricultural land in or near ammunition storage on the Navy reservation in Maikete and Kipapa Gulches. The EIS should address the proximity of the project to this storage and the general advisability of this site for housing.
- b. The removal of such land from agriculture can reduce ground absorption of water for replenishing the aquifers that provide water for the Pearl Harbor area. It is the cumulative effect of more and more housing projects that will have a definite long term impact. This was alluded to on page III-4 of the notice.
- c. Soil conservation methods during construction to prevent soil erosion runoff and siltation within any streams that flow into Pearl Harbor should be addressed. Such siltation increases the requirement for maintenance dredging by the Navy.

The U.S. Navy looks forward to a careful review of and comment upon the completed EIS document. Mr. Bill Liu of this command is the Navy point of contact, phone 471-3703. Two copies of the Draft EIS would be appreciated.

Sincerely,

P. O'CONNOR
 Captain, U.S. Navy
 Acting Commander, INCHLANT

NO: 2d R- 3F 98.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
 HONOLULU, HAWAII 96813
 PHONE 519-5181



July 9, 1986

FRANK P. PANG
 DIRECTOR

REPLY WITH IN
 11010
 Scr 002(202)/5128
 0 7 JUL 1986

ALVIN K. PANG
 DIRECTOR

Mr. P. O'Connor, Captain
 Acting Commander
 Department of the Navy
 Commander
 Naval Base Pearl Harbor
 Box 110
 Pearl Harbor, Hawaii 96860-5020

Dear Captain O'Connor:

Subject: Maioia Estates Subdivision
 THK: 9-4-7:1
 Maipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Maioia Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

JAMES T. PANG

ALVIN K. H. PANG, Director



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 236
FT. SHAFTER, HAWAII 96860

June 25, 1986

REPLY TO
ATTENTION OF

Mr. Howard Mural
Department of Housing and
Community Development
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii 96813

Dear Dr. Mural:

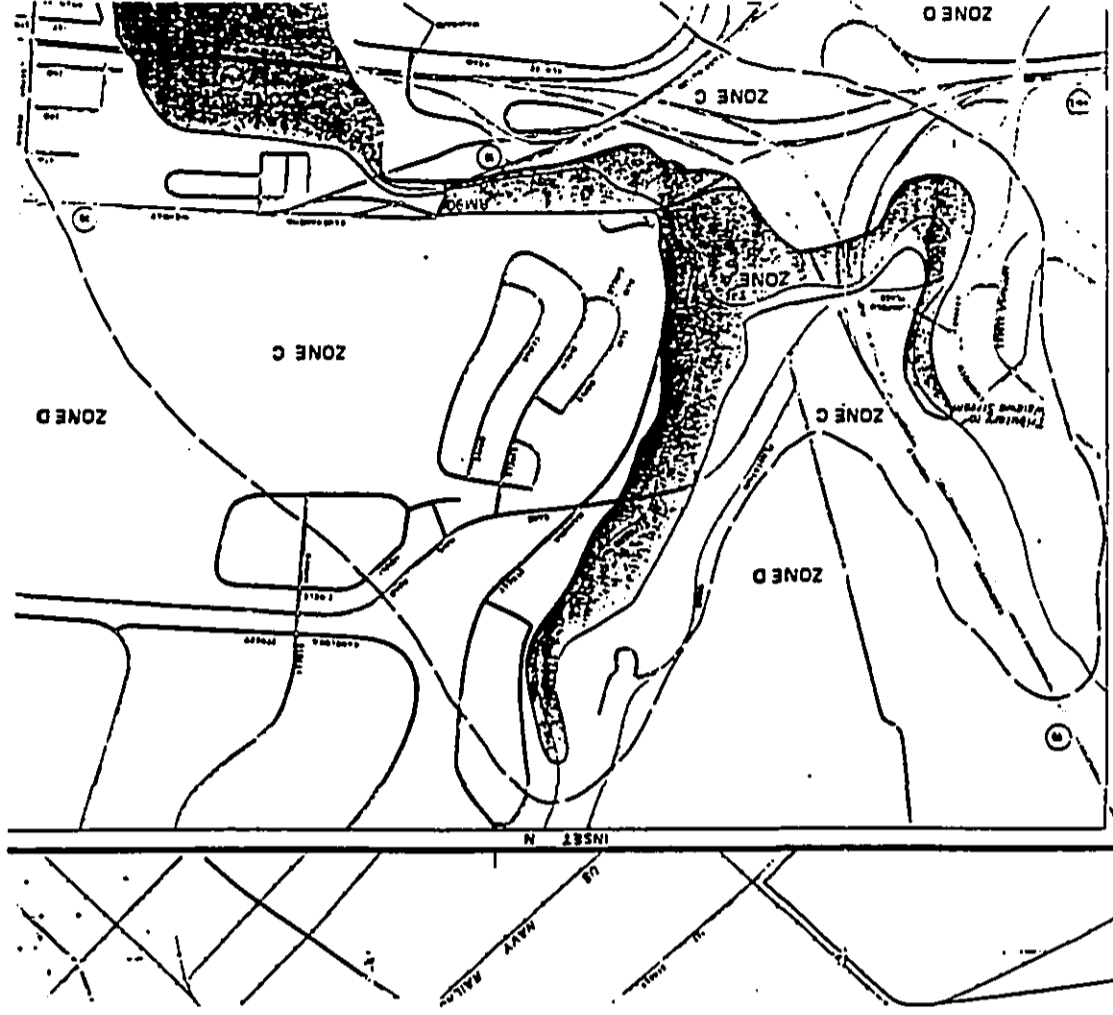
Thank you for the opportunity to review and comment on the EIS Preparation Notice for Waiola Estates Subdivision, Waipio, Oahu, Hawaii. The following comments are offered:

- a. A Department of the Army permit is not required for the project unless drainage improvements are planned with Kipapa Stream or fill material is planned in wetlands adjacent to Kipapa Stream.
- b. According to the maps from the National Flood Insurance Program, FIRM MAP INDEX dated 1/6/83, the location of the project site has not been studied. By interpolating and extending information from FIRM Panel 110, it indicates that the site would be in zone D, areas of undetermined but possible hazards (see enclosure 1).

Sincerely,

Tsauk Cheung
Chief, Engineering Division

Enclosures



APPR. PROJECT
SITE
LOCATION

REFERENCE:
FLOOD INSURANCE RATE MAP (FIRM)
PANEL 110
EFFECTIVE DATE 9/3/80

Ep...

'86 JJ -2 P... U
COPY OF MAPS
& RECORDS AVAILABLE

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

830 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 533-6181



FRANK P. PASI
DIRECTOR

ALVIN K. H. PANG
DIRECTOR

July 7, 1986

Mr. Kisuk Cheung, Chief
Engineering Division
Department of the Army
U. S. Army Engineer District, Honolulu
Building 230
Ft. Shafter, Hawaii 96858

Dear Mr. Cheung:

Subject: Waiala Estates Subdivision
THK: 9-4-7:1
Waipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Waiala Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

ALVIN K. H. PANG

ALVIN K. H. PANG, Director

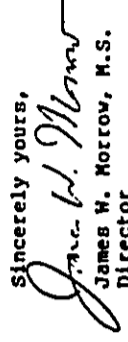
JUL 8 1986

245 North Kukui Street, Honolulu, Hawaii 96817, Telephone (808) 537-5966

AMERICAN  LUNG ASSOCIATION of Hawaii

Mr. Alvin K.H. Pang
June 20, 1986

We would also appreciate receiving a copy of the Draft EIS when it is made available for public review. Thank you.

Sincerely yours,

James W. Morrow, M.S.
Director
Environmental Health

JWH:ct

cc: DEOC
Environmental Center
DOH-EPB
Schweigert & Associates

86 JUN 24 P2:47
DEPT. OF HOUSING
& COMM. DEVELOPMENT

June 20, 1986

Mr. Alvin K.H. Pang
Department of Housing and
Community Development
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Pang:

Subject: Waiola Estates Project, Central Oahu
Consulted Party for EIS Preparation

Pursuant to Section 11-200-15 of the State's Environmental Impact Statement Rules, the American Lung Association of Hawaii hereby requests consulted party status in the preparation of the EIS for the proposed Waiola Estates project in Central Oahu.

Our interest relates to the air quality impacts associated with such a project in that particular location. We therefore urge that your EIS include the following:

1. A thorough and quantitative analysis of traffic impact including existing traffic, Waiola-generated traffic, projected traffic from other approved and forthcoming projects in the area, and cumulative impacts of all sources of traffic in the area. Focus should be on the critical intersections and freeway ramps.
2. A thorough and quantitative analysis of the air quality impacts associated with the traffic projections from paragraph 1 above.
3. A thorough analysis of the effects of emissions from agricultural activities on the residents of the proposed subdivision.



DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

690 SOUTH KING STREET
HONOLULU, HAWAII 96815
PHONE 531-6111



FRANK P. KASI
Director

ALVIN K. PANG
Director

June 27, 1986

Mr. James M. Morrow, M. S.
Director
Environmental Health
American Lung Association
245 North Kukui Street
Honolulu, Hawaii 96817

Dear Mr. Morrow:

Subject: Waioa Estates Subdivision Project
Environmental Impact Statement (EIS)

This is to acknowledge receipt of your letter dated June 20, 1986, which offered comments and requested to be a consulted party on the above subject EIS.

We are enclosing a copy of the Preparation Notice for your use and appreciate your interest and willingness to assist our efforts in the planning of the Waioa Estates Subdivision. Thank you very much.

Sincerely,-

JAMES T. MIYAGI

JTP
ALVIN K. H. PANG, Director

Enclosure

JUN 30 1986

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

430 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 433-3111



ALVIN K. H. PANG
Director

FRANK P. FAN
Director

CASTLE & COOKE, INC. P. O. BOX 2990 HONOLULU, HAWAII 96802

June 9, 1986

Mr. Howard Mural
Department of Housing and
Community Development
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

SUBJECT: WAIOLA ESTATES SUBDIVISION

Dear Mr. Mural:

Castle & Cooke Land Company wishes to be a consulted party for the preparation of your E.I.S.

Very truly yours,

George Yim
George Yim, President
CASTLE & COOKE LAND COMPANY

cc: W. Miyahira

June 20, 1986

Mr. George Yim, President
Castle and Cooke Land Company
P. O. Box 2990
Honolulu, Hawaii 96820

Dear Mr. Yim:

Subject: Waiola Estates Subdivision

TRK: 9-4-7:1

Waipio, Oahu

Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Waiola Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

JAMES T. EDGAR

ALVIN K. H. PANG, Director

JUN 24 1986

86 JUN 10 P3:43
DEPT OF HOUSING
& COMM. DEVELOPMENT

GENTRY WAIPIO COMMUNITY ASSOCIATION

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

850 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 834-4181



ALVIN H. PANG
DIRECTOR

FRANK F. PARI
MANAGER

July 8, 1986

Mr. Howard Murnai
Department of Housing and
Community Development
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

Dear Mr. Murnai:

The Gentry-Waipio Community Association would like to be consulted during the preparation of the Environmental Impact Statement on the Waioia Estates Subdivision. Also, we would like to have a copy of your Environmental Assessment as mentioned in your letter, dated June 2, 1986, to Ms. Letitia Iyehara, Director of the Office of Environmental Quality Control.

Thank you.

Yours truly,

Robert E. Heffernan
Robert E. Heffernan
Covenant Manager

cc: Paul Cathcart
President
Committee Chair

Mr. Bob Heffernan
Covenant Manager
Gentry Waipio Community
Association
94-515 Ukee Street, #15
Maipahu, Hawaii 96797

Dear Mr. Heffernan:

Subject: Waioia Estates Subdivision
THK: 9-4-7:1
Maipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Waioia Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

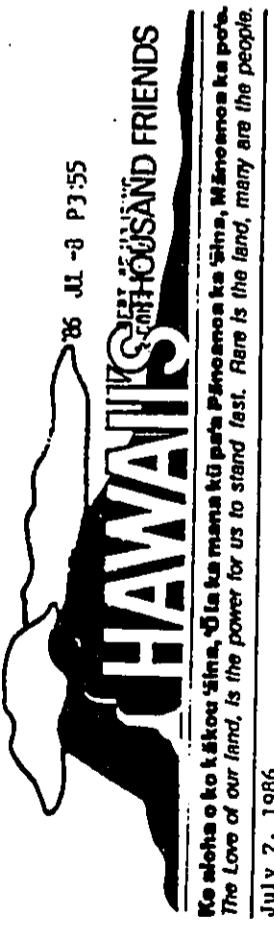
Sincerely,

JAMES T. MYNARD

ALVIN K. H. PANG, Director

JUL 15 1986

86 JUL 10 P1:52
DEPT. OF HOUSING
& COMM. DEVELOPMENT



86 JUL -8 3:55

Ke aloha o ka ika o ka ika, Oia ka mana kupa's Pānoao ka 'iina, Mānoao ka po'e.
The Love of our land, is the power for us to stand fast. Rare is the land, many are the people.
July 7, 1986

Mr. Howard Mural
Dep't. of Housing & Community Development
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

RE: City & County of Honolulu Preparation Notice For An Environmental
Impact Statement, TMK 9-4-711, proposed "Maioia Estates" Subdi-
vision, Central O'ahu.

Sir:

The City and County Department of Housing and Community Development, pursuant to City Council's decision, recognizes that an Environmental Impact Statement (EIS) is a pre-requisite for seeking a State Land Use Commission boundary amendment for Central O'ahu prime agricultural lands. The City notes in its Preparation Notice that purchase negotiations for the lands in question are concluded. We are, therefore, somewhat mystified as to why the City persists in its intention to apply for an exemption under Chapter 359G, for the above referenced project, and especially since use of 359G is being legally challenged on Constitutional grounds. It is hoped that the Draft EIS (DEIS) will elucidate the rationale for pursuing this course of action.

The following are preliminary and limited observations and requests resulting from reading the Preparation Notice. We also hereby request a copy of the Environmental Assessment referenced in Mr. Pang's June 26th letter to Ms. Letitia Ueyehara, Office of Environmental Quality Control.

As a non-profit organization dedicated to intelligent public and private land use planning and development, under the several applicable federal, state, and county laws, policies, regulations and procedures, we are especially cognizant of the directives of Subchapter 7, "Preparation of Draft and Final EIS" (Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules):

"...An EIS is meaningless without the conscientious application of the EIS process as a whole, and should not be merely a self-serving recitation of benefits and a rationalization of the proposed action."

Accordingly, the Preparation Notice under consideration inspires misgivings.

Even for an early document in the process, the Preparation Notice seems inadequate. It does not describe the action; it does not list sig-

941 River Street Suite 202 Honolulu, Hawaii 96817 (808) 538-1276

nificant beneficial and adverse impacts; it does not propose mitigation measures; it does not mention the alternatives, if any were considered; it does not list the several unresolved issues; it does not demonstrate the project's compatibility - or lack thereof - with existing and well-known land use plans and policies; nor is there a listing of other necessary permits and approvals which may be required if 359G is confirmed as being unconstitutional.

In the DEIS, will discussions of the economic characteristics of the proposal examine why acquisition under 359G is being pursued for use of prime agricultural lands in an area not planned for housing, while lands in O'ahu's Planned Secondary Urban Center in Ewa remain vacant? Will the DEIS examine the full ramifications of the economic impact on O'ahu's and Hawaii's agricultural future if the City abrogates its responsibility to protect these lands? By attempting to use 359G to exempt the City from fully examining the likely extensive negative impacts of a project in this locale, wholly inconsistent with accepted planning, it is rendered suspect.

The relationship between the landowner and the City and to another nearby development proposal at Waikolea should be fully described, as the potential for abuse to the detriment of the public and its funding is considerable. Hawaii's prime agricultural lands, of which these are deemed the very best by the state Department of Agriculture, are protected by the State Constitution. Will the DEIS detail the complexities of city, landowner and developer arrangements, and their long-term and cumulative ramifications? Will the DEIS detail the need for such an extraordinary action in this place, when Ewa lands are available?

Will maps be accurate, in order that the proposal can be correctly evaluated by pertinent agencies and the interested public? Will maps used faithfully reflect the county General Plans and Development Plans, and state land use plans? The map in the Preparation Notice incorrectly delineates the locale through incorporating Central O'ahu into a grossly expanded district it labels as "Ewa" though having no real-world authenticity. Will the DEIS provide a preliminary subdivision map identifying locations of required infrastructures, to include roads for ingress and egress, park location, school(s) to serve the subdivision, the new water storage reservoir, specifically locating the categories of housing units planned? Will the DEIS provide current state land use maps which show the status of the project area and surrounding lands? We are troubled by assumptions in the Preparation Notice that other Central O'ahu proposals pending before the State Land Use Commission are already faits accomplis.

The DEIS, in defining the proposed project - its location, costs, necessary infrastructures and rationale-for-being - should avoid the carelessness contradictions, assumptions, misstatements and unsubstantiated claims contained in the Preparation Notice. For example, we are told the site:

- o is "presently used for pineapple cultivation" (pp. II-4, III-1 &
- o is in a "vacant" or "present non-productive" state (p. V-1)
- o if undeveloped, will be rendered "useless" (p. V-2)
- o is expendable as there is an "availability of other lands equally-well suited elsewhere" for agriculture (p. II-6).

Will the DEIS, by comparison, provide meaningful and accurate descriptions and analyses of both the site and the proposed project?

Will the DEIS actively and objectively contain known alternatives which could feasibly attain the objectives of this proposal? Because of the inconsistency of this project with ongoing county planning directives, its propensity for encouraging abandonment of hard-won planning processes with resultant rampant urbanization of the state's most productive agricultural lands, fully developed alternatives are essential. If other sites in Ewa, already planned for development were considered and rejected, reviewers should know why.

As required, we look for the DEIS to address the consequences of secondary impacts and cumulative impacts through this project's anticipated need for the construction of virtually every public infrastructure necessary to urbanization: highways, roads, sewer systems, and water exploration, storage and delivery; fully comparing such necessities with Ewa sites requiring fewer publicly funded basic facilities. Will the DEIS also examine the exponential population and growth impacts which would result from this project in Central O'ahu?

The description of the environment in the Preparation Notice reads more like a real estate ad than a professional analysis of the environment. Will the DEIS avoid using environmental considerations to justify the project and instead, as required, evaluate the proposed project's impact on a uniquely productive and valued environment?

Will the DEIS discuss fully the probable impact on the underlying aquifer if overlain by urban development? Households utilize a variety of pesticides, herbicides, cleansers and chemicals known to pollute groundwater resources. A network of roads increases the likelihood of petrochemical contamination, as well. The Preparation Notice appears to consider the proximity of the aquifer to the proposed subdivision only in terms of accessing waters for service, rather than assessing its vulnerability to contamination. Alternative forms of agriculture (orchards, for instance) may enhance replenishment of the aquifer without requiring the kinds of chemicals which have already destroyed the purity of some Central O'ahu O'ahu water sources. We suggest that inflammatory remarks such as "public hysteria relating to pesticide contamination" be avoided in the DEIS since the EPA and recent court determinations in Hawai'i and elsewhere have validated public concerns for the contaminating influences frequently found in drinking water.

Will the DEIS fully evaluate the impact of this proposal on existing public infrastructures which we suspect would be overburdened if the project were approved? These would include the nearby state highway and freeway systems, sewage disposal plants, and the unstated need for expanded public transportation. Will the DEIS have fully developed public cost projections for these, as well as for the water systems only superficially addressed in the Preparation Notice?

We are dismayed by the self-serving remarks in the Preparation Notice concerning "Active Agricultural Use." Alternative crops are not limited to truck gardening. If water can be pumped for a subdivision, it can be pumped for agriculture, if necessary, and may not have to be supplied from a distant source. It should be noted that water development for municipal uses is enormously costly, by comparison. Here, and

elsewhere in the Preparation Notice, there are inappropriate statements concerning "urban encroachment" and "residential lands create conflicts with agricultural uses" inappropriate because the phrases are used more to validate the project than out of concern for the agricultural lands. It is proposals like this one which create "encroachment" and create such "conflicts". Agriculture is the most valid activity in Central O'ahu and the DEIS should accurately reflect that in evaluating the planning conflicts and environmental impacts of this proposed project. It is not agriculture which should be evaluated; the purpose of the EIS process is to evaluate the proposal, and all the alternatives, including not building the project, or locating it in Ewa.

Please provide us with a copy of the DEIS when available. We also look forward to receiving the Environmental Assessment requested above. Thank you for the opportunity to participate in the development of the DEIS.

Sincerely,

Muriel B. Seto
Muriel B. Seto,
Executive Director

cc: Ms. Letitia N. Uyebara, Director, OFMC

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

630 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 523-3111



FRANK P. FARR
Director

ALVIN K. H. PANG
Director

July 17, 1986

Ms. Muriel B. Seto
Executive Director
Hawaii's Thousand Friends
941 River Street, Suite 202
Honolulu, Hawaii 96817

Dear Ms. Seto:

Subject: Maioia Estates Subdivision
TMK: 9-4-7:1
Waipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Maioia Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

JAMES T. BRYANT

ALVIN K. H. PANG, Director

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

130 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 522-1151



ALVIN K. H. PANG
DIRECTOR

FRANK PAU
MANAGER

June 24, 1986

'86 JUN 20 P1:36

DEPT. OF HOUSING
& COMM. DEVELOPMENT

J. A. Parnell
P.O. Box 27506
Honolulu, Hawaii 96827

June 18, 1986

Alvin K. H. Pang
Dept. of Housing and
Community Development
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Re: EIS for Proposed Development at Waiala Estates Subdivision,
Central Oahu

I would like to be a consulted party on this project. Please put me on the list to receive a copy of the draft EIS.

Sincerely Yours,

J. A. Parnell
J. A. Parnell

J. A. Parnell
P. O. Box 27506
Honolulu, Hawaii 96827

Dear J. A. Parnell:

Subject: Waiala Estates Subdivision

TRK: 9-4-7:1
Maipio, Oahu

Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Waiala Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

ALVIN K. H. PANG

ALVIN K. H. PANG, Director

JUN 25 1986

League of Women Voters

49 SOUTH HOTEL STREET, SUITE 314 HONOLULU, HAWAII 96813

July 5, 1986

Mr. Howard Murai
Department of Housing and Community Development
650 S. King Street, 5th Floor
Honolulu 96813

Dear Mr. Murai:

This is in response to Mr. Pang's request of June 4 for comments on the Environmental Impact Statement preparation notice for the proposed Waiola Estates Subdivision project. Our comments center around four major aspects of the issue.

1. Consistency with State and County Planning Policy

This subject is barely mentioned in the Preparation Notice. It deserves complete analysis in that the project would conflict in a number of major respects with both State and County planning policies and land use controls.

Reliance on Chapter 359 g to exempt it from these planning considerations does not mitigate the fact of the conflict and the undesirable effects of ignoring fundamental planning policies. Land Use Commission districting, County General Plan population distribution policy, State and County agricultural land preservation policy, County Development Plan and zoning designations, and County public facility plans, all make it clear that this site is not planned to be developed as proposed. The E.I.S. should discuss each of these conflicts and their implications.

2. Secondary Impacts of Proposed Project

The project would have major and undesirable secondary growth impacts, which should be discussed fully. These include, among others:

- Increasing the pressure for more growth on the prime agricultural lands of Central Oahu and elsewhere on the island in violation of General Plan growth policies.
- Causing the prices of nearby agricultural land to rise, thus making it less economically viable for diversified agriculture.
- Encouraging land owners to take other Central Oahu land out of cultivation, so as to justify its urbanization.
- Adding to the pressure to destroy the basic growth policy in the Island's General Plan, the directing of growth to Ewa and the development of a planned Secondary Urban Center there.
- Encouraging suburban sprawl, with high attendant public facility costs, by permitting more scattered low-density subdivisions.

3. Effect on Public Facilities

The Preparation Notice contains only a superficial and inadequate analysis of the effect of the project on water, sewerage, traffic, air pollution, public transit, and other public facilities. Each of these should be carefully analyzed in terms of whether existing facilities can handle the increased load, or whether already planned improvements can do so on top of other development already approved in the area, and what additional facilities would have to be provided. Various facilities are already reaching critical levels and are being regulated to prevent their over-use. Documented justification for the ratings shown on p. III-7 should be provided.

The Preparation Notice is not only inadequate in its analysis of such factors as traffic but makes no reference to public transit. There is no projection of where the project's residents are likely to be employed and by what modes of transportation they will get to work. The transportation impacts of locating the project in Waiola should be compared with an Ewa location in terms of proximity to employment centers.

4. Analysis of Alternatives

This section is both inadequate and inaccurate. Though in several previous sections it is correctly stated that the site is in active and productive pineapple cultivation, the first sentence on p. V-1 indicates that it is "vacant" and in a "non-productive" state. At the top of p. V-2 it is concluded that not building the project would render the property "useless" to the land owner and would be a "tremendous waste of valuable land."

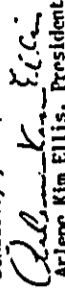
The Preparation Notice also concludes, prematurely in our opinion, that other agricultural uses would not be viable. This seems inconsistent with presently ongoing experiments and proposals by some Central Oahu land-owners to develop alternative crops. In fact, the recent L.E.S.A. report showed an estimated increase in Oahu's demand for land for fruit, vegetable, flower and other diversified crop use from 2,535 acres in 1983 to 4,120 in 1995, with no significant decrease in the amount of land in pineapple production.

The alternative analysis should also, we think, include the alternative of locating the project in the Ewa Secondary Urban Center. The various pros and cons could be compared with those of Waiola. In this connection, may we call your attention to the erroneous map entitled Exhibit I, which eliminates the Central Oahu designation and places Waiola in the middle of an enlarged Ewa, evidently in anticipation of a General Plan change recently disapproved by the City Council?

This alternative would be in accordance with existing planning objectives and would not produce a population increase in Central Oahu far exceeding that specified in the General Plan to the year 2005, as would Waiola.

We look forward to receiving the draft E.I.S. for further comment. In the meantime we would appreciate receiving a copy of the Environmental Assessment mentioned in Mr. Pang's letter of June 2 to Mr. Uyehara. Thank you for giving us this opportunity to comment.

Sincerely yours,


Arlene Kim Ellis, President

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

630 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 521-2411



FRANK F. FASI
Director

ALVIN K. PANG
Director

July 9, 1986

Ms. Arlene Kim Ellis, President
League of Women Voters
49 South Hotel Street, Suite 314
Honolulu, Hawaii 96813

Dear Ms. Ellis:

Subject: Waioala Estates Subdivision
TRK: 9-4-7:1
Waipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Waioala Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

JAMES T. MYROR

ALVIN K. H. PANG, Director



1164 Bishop Street, Suite 906
Honolulu, Hawaii 96813

June 18, 1986

Alvin K.H. Pang, Director
Dept. of Housing and Community Development
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Subject: Proposed Development at Waiala Estates
Subdivision, EIS Preparation Notice,
DEQC Bulletin June 8, 1986

Dear Mr. Pang:

This letter is to request that VTN Pacific, Inc. be a consulted party for the
Environmental Impact Statement (EIS) for the Waiala Estates Subdivision. We
would appreciate receiving a copy of the EIS Preparation Notice and the Draft
and Final EIS, when complete. Please send the documents to:

VTN Pacific, Inc.
1164 Bishop Street, Suite 906
Honolulu, Hawaii 96813

Attn: John L. Sakaguchi

We will look forward to reviewing the documents.

Sincerely,

John L. Sakaguchi
John L. Sakaguchi
Planner

86 JUN 19 P3:36
DEPT. OF HOUSING
& COMM. DEVELOPMENT

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 923-3101



June 24, 1986

VTN Pacific, Inc.
1164 Bishop Street, Suite 906
Honolulu, Hawaii 96813

Attention Mr. John L. Sakaguchi

Dear Mr. Sakaguchi:

Subject: Waiala Estates Subdivision
THK: 9-4-7:1
Waipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party
and/or comments which should be considered in the preparation of the above
subject environmental impact statement.

The Waiala Estates Subdivision represents a major undertaking and is a part
of the City's efforts to alleviate the critical shortage of affordable
housing in Honolulu. Your interest in the project and willingness to
assist us in the planning of this development is very much appreciated.
Thank you very much.

Sincerely,

JAMES T. MIYAZI

JT ALVIN K. H. PANG, Director

JUN 25 1986

FRANK F. PARI
DIRECTOR

Telephone: (808) 921-6431

ALVIN K. H. PANG
DIRECTOR

86 JUN 23 AM 11:27

DEPT OF HOUSING
& COMMUNITY DEVELOPMENT

June 20, 1986

MR. HOWARD MURAI
Department of Housing and
Community Development
650 South King St., 5th Floor
Honolulu, Hawaii 96813

Dear Mr. Murai:

I would like to request a one week delay of the
deadline to receive comments on the preparation of
the Environmental Impact Statement for the Proposed
Maioia Estates Subdivision Project.

The Waipahu Neighborhood Board received its copy only
yesterday and will not be able to adequately review the
preparation notice by the current July 8th deadline.

I would also like to request that I be a consulted
party for this project.

Thank you for your consideration.

David M. Kaufman
Vice-chair
Waipahu Neighborhood Board

94-1113 Akeu Place
Waipahu, Hawaii 96797

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 531-4141



FRANK P. PAIG
DIRECTOR

ALVIN K. H. PAIG
DIRECTOR

June 24, 1986

Mr. David H. Kaufman, Vice Chair
Waipahu Neighborhood Board
94-1113 Akeu Place
Waipahu, Hawaii 96797

Dear Mr. Kaufman:

Subject: Maioia Estates Subdivision
Environmental Impact Statement (EIS)

This is to acknowledge your letter of June 20, 1986 requesting both an extension
on the deadline to respond to the Preparation Notice until July 15, 1986 and to
be a consulted party.

We are pleased to accommodate both of your requests and appreciate your interest
and inquiry.

Sincerely,

JAMES T. HAYASHI

ALVIN K. H. PAIG, Director

JUN 26 1986

July 14, 1986

MR. HOWARD MURAI
Department of Housing &
Community Development
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Murai:

This letter represents the preliminary findings and concerns of the Waipahu Neighborhood Board's Ad Hoc Committee on Maioia. The committee has attempted to gather as much material and talk to as many people as possible within the prescribed time limits.

While the committee agrees with the City that there is a shortage of affordable housing we feel that the community would be better served by assimilation of low-mod-gap housing into the mainstream of the housing market. Instead of concentrating this housing into segregated and, as in the case of Maioia, isolated communities the city could make a major contribution not only to those in need of affordable housing but to all the people of Hawaii.

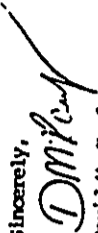
By sprinkling affordable housing throughout the community we eliminate the stigma of being one of "those people". We also avoid the problems of deterioration prevalent in many low-income areas. One can walk through Waipahu today and see where this type of planning has denied us the cross section of housing necessary to maintain a healthy community environment. The negative social impact is probably most evident in our crime statistics and the busing of many of our children to other school districts. There is no need to discriminate against low-income families or penalize the community at large when we have the option of enforced unilateral agreements.

The following are questions and comments on the prep notice and the assessment:

- II-1 Please explain the reason for the 5,000 square foot lot size. Must they be that large? The additional land could be used for more park space and recreational facilities.
- II-2 We would like to see a more detailed breakdown of the estimated improvements cost of \$39 million.
- II-3 Is it proper to spend taxpayers money on advertising, environmental assessments, environmental impact statements, and all the related expenses before determining a purchase price for the land in question? How was the \$39 million figure arrived at?
- III-4 The concern about the run-off into Maiole Stream due to blacktop surfaces was addressed in the Board's letter of March 27, 1986 to Mr. Pang. We have no record of a response. Will it be necessary to line the stream between Waipahu Street and Farrington Highway?

MR. HOWARD MURAI
Page 2
July 14, 1986

- III-6 In addressing the overall community impact the prep notice claims that the isolated housing projects within the larger community as a whole makes a "dynamic community which continues to change while still maintaining social and cultural identity". While this sounds nice, the end result is the perpetuation of social segregation and cultural prejudice.
 - IV-1 The prep notice states that pineapple operations are restricted by urban encroachment. Please explain how they have been restricted.
 - IV-3 The Waipahu interchange will do little or nothing to alleviate the traffic problems in the area because H-2 is as clogged as Kam Highway and they both feed into H-1.
- Signalizing of the Ka Uka/Kam Highway intersection may cause problems because of the blind curve coming out of Maioia Gulch. There is also the problem of the backlog of traffic into Mililani during peak hours.

Sincerely,

David M. Kaufman
Vice-chair
Maipahu Neighborhood Board

Chairman,
Ad Hoc Committee on Maioia

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

690 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 822-1161



FRANK P. PARI
DIRECTOR

ALVIN K. H. PANG
DIRECTOR

July 17, 1986

Mr. David M. Kaufman, Vice Chair
Maipahu Neighborhood Board
P. O. Box 1096
Maipahu, Hawaii 96797

Dear Mr. Kaufman:

Subject: Maioia Estates Subdivision

TRK: 9-4-7:1
Maipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and/or comments which should be considered in the preparation of the above subject environmental impact statement.

The Maioia Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

JAMES T. MIYAGI

ALVIN K. H. PANG, Director

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

830 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 534-3141



ALVIN K. H. PANG
DIRECTOR

FRANK F. ZAH
DIRECTOR

94-362 Makela Loop
Milliani Town, HI 96789
June 16, 1986

Mr. Alvin K. H. Pang
Department of Housing and
Community Development
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii 96813

Dear Mr. Pang:

As a long term (fourteen years) resident of Milliani Town,
I respectfully request to be included in your list of people to
consult in the development of the Environmental Impact Statement
(EIS) for the Waiole Estates Subdivision.

For your information, I also hold a Masters Degree in Urban
and Transportation Planning, and the proposed project stimulates my
interest from that perspective also.

Sincerely,

William M. Bass
William M. Bass

June 20, 1986

Mr. William M. Bass
94-362 Makala Loop
Milliani Town, Hawaii 96789

Dear Mr. Bass:

Subject: Waiole Estates Subdivision
THK: 9-4-7:1
Waipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party
and/or comments which should be considered in the preparation of the above
subject environmental impact statement.

The Waiole Estates Subdivision represents a major undertaking and is a part
of the City's efforts to alleviate the critical shortage of affordable
housing in Honolulu. Your interest in the project and willingness to
assist us in the planning of this development is very much appreciated.
Thank you very much.

Sincerely,

ALVIN K. H. PANG, Director

JUN 24 1986

JUN 23 1986

WAIPAHU 2000 COMMUNITY COUNCIL

July 8, 1986

Mr. Alvin Pang
Director
Department of Housing &
Community Development
City and County of Honolulu
650 South King Street, 5th Flr.
Honolulu, Hawaii 96813

Mr. John P. Whalen
Director
Department of Land Utilization
City and County of Honolulu
650 South King Street, 7th Flr.
Honolulu, Hawaii 96813

gentlemen:

Subject: WAIOLA ESTATES EIS PREPARATION NOTICE.

We have just been made aware of an effort on the part of the proponents of the above-captioned project to prepare required EIS documents for the project. Since the Waiola Estates project will be located relatively close to our Waipahu community and, thus, will impact its environment, we are very much interested in being kept informed of the preliminary and final findings regarding the project's environmental impacts. We also respectfully request an opportunity to comment on the project - as part of the EIS preparation process - and to review such findings as they become available.

Thank you very much for your kind attention to this matter.

Very truly yours,

C.O. Andy Anderson
C.O. Andy Anderson
President

Copy: Board of Directors.
cc: Central Oahu Planning Consortium.

RECEIVED AFTER THE RESPONSE DEADLINE OF 7/8/86. BYH

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
850 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 521-5151



July 22, 1986

Mr. C. O. Andy Anderson, President
Waipahu 2000 Community Council
94-229 Waipahu Depot Rd., Room 206
Waipahu, Hawaii 96797

Dear Mr. Anderson:

Subject: Waiola Estates Subdivision
TRK: 9-4-7:1
Waipio, Oahu
Environmental Impact Statement

This is to acknowledge receipt of your request to be a consulted party and comments which should be considered in the preparation of the above subject environmental impact statement, which was received after the deadline on July 21, 1986.

The Waiola Estates Subdivision represents a major undertaking and is a part of the City's efforts to alleviate the critical shortage of affordable housing in Honolulu. Your interest in the project and willingness to assist us in the planning of this development is very much appreciated. Thank you very much.

Sincerely,

JAMES T. NIYAGI
ALVIN K. H. PANG, Director

FRANK PANG
DIRECTOR

ALVIN K. H. PANG
DIRECTOR

86 JUL 21 8 59
DEPT OF HOUSING
& COMMUNITY DEV

94-229 Waipahu Depot Road • Room No. 206 • Waipahu, Hawaii 96797

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XIII
COMMENTS ON THE DRAFT EIS

XIII. ORGANIZATIONS AND AGENCIES CONSULTED DURING THE DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS) PERIOD

<u>ORGANIZATIONS/AGENCIES</u>	<u>Date of Comment</u>	<u>Date Comment Received</u>	<u>Date of Response</u>
<u>City & County</u>			
Board of Water Supply	9/08/86	9/09/86	9/22/86
Building Department	8/14/86	8/18/86	NRN
Honolulu Fire Department	8/18/86	8/20/86	9/22/86
Department of General Planning	9/04/86	9/05/86	9/22/86
Department of Land Utilization	9/05/86	9/05/86	9/22/86
Department of Parks & Recreation	-	-	-
Honolulu Police Department	8/11/86	8/12/86	NRN
Department of Public Works	8/18/86	8/19/86	9/22/86
Department of Transportation Services	9/08/86	9/08/86	9/22/86
Randall Iwase/City Council	9/15/86	9/16/86	9/22/86
<u>State Of Hawaii</u>			
Department of Accounting & General Services, Div. of Public Works	8/12/86	8/13/86	NRN
Department of Agriculture	9/08/86	9/09/86	9/22/86
Department of Education, Leeward District Superintendent	8/20/86	8/22/86	9/22/86
Department of Health	9/02/86	9/04/86	9/22/86
Department of Social Services & Housing	8/25/86	8/29/86	9/22/86
Department of Transportation	-	-	-
Department of Land & Natural Resources	-	-	-
Department of Planning & Economic Development	9/04/86	9/08/86	9/22/86
Land Use Commission	8/12/86	8/18/86	NRN
Office of Environmental Quality Control	9/08/86	9/08/86	9/22/86
State Energy Office	-	-	-
<u>University of Hawaii</u>			
Environmental Center	9/08/86	9/09/86	9/22/86
Water Resources Research Center	-	-	-

Organizations and Agencies Consulted (Consulted)

<u>Organizations/Agencies</u>	<u>Date of Comment</u>	<u>Date Comment Received</u>	<u>Date of Response</u>
<u>Federal</u>			
Department of Health & Human Services	-	-	-
Department of Housing & Urban Development	-	-	-
U.S. Army Corps of Engineers	8/14/86	8/14/86	9/22/86
U.S. Fish and Wildlife Service	8/29/86	9/03/86	NRN
Soil Conservation Service	9/05/86	9/09/86	9/22/86
U.S. Pacific Division Naval Facilities Engineering Command	9/04/86	9/08/86	9/22/86
Department of the Army Directorate of Facilities Engineering	9/04/86	9/08/86	9/22/86
<u>Community Organizations</u>			
American Lung Association	9/08/86	9/10/86	9/22/86
Hawaiian Electric Company	8/27/86	8/29/86	9/22/86
Office of Hawaiian Affairs	-	-	-
Pearl City Neighborhood Board No. 21	-	-	-
Waipahu Neighborhood Board No. 22	-	-	-
Mililani Neighborhood Board No. 25	9/08/86	9/10/86	9/22/86
Waipahu 2000	-	-	-
Waipio-Gentry Community Association	9/07/86	9/09/86	9/22/86
Hawaii's Thousand Friends	9/05/86	9/09/86	9/22/86
Wahiawa Neighborhood Board No.	-	-	-
League of Women Voters	9/08/86	9/08/86	9/22/86

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU



COPY

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

400 UNIVERSITY STREET
HONOLULU, HAWAII 96813
PHONE: 473-6181



FRANK F. FAU
DIRECTOR

September 8, 1986

TO: JOHN P. WHALEN, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

FROM: KAZU HAYASHIDA, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

SUBJECT: DRAFT EIS FOR WAIOLA ESTATES SUBDIVISION

SEP 10 1986
10 10 AM '86
RECEIVED
CITY AND COUNTY OF HONOLULU

MICHAEL M.H. MOON
DIRECTOR

ROBERT M. HAYASHIDA
MANAGER

September 22, 1986

MEMORANDUM

TO: KAZU HAYASHIDA, MANAGER & CHIEF ENGINEER
BOARD OF WATER SUPPLY

FROM: MICHAEL M.H. MOON, DIRECTOR
DEPARTMENT OF HOUSING & COMMUNITY DEVELOPMENT

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
FOR THE WAIOLA ESTATES SUBDIVISION, WAIPIIO,
EWA, OAHU, HAWAII

The comments as contained in your memorandum dated September 8, 1986 to the Department of Land Utilization have been reviewed by the staff and consultants preparing the EIS. The recommended corrections and revisions will be incorporated in the Final EIS. These are referenced at pp. VII-7, 8, 22, and 23. Thank you for your timely comments.

Robert M. Hayashida
for Mike Moon
Director

We have reviewed the Draft EIS for the proposed project and offer the following comments:

1. The average day demand in the Water Master Plan is 0.85 mgd; not 0.022 as indicated in the Draft EIS.
2. On page VI-7, the concentration for TCP is in error. Our latest analyses of wells in the area show concentrations of TCP ranging from non-detectable to 0.70 ppb or 700 ppt.
3. On page VII-8, the detectable limit for EDB and DBCP is 20 ppt.
4. Also on page VII-8, all wells with detectable levels of DBCP and EDB were removed from service, except for two of the least contaminated wells at Milliani. The two wells were needed to meet the community's water needs.
5. On page VII-22, the amount of recharge would be considerably less than the 1565 gpd mentioned in the document due to roadways, sidewalks, and buildings.
6. On page VII-23, the certified use (preserved and permitted use) for the four stations supplying water to Waipahu and the Ewa-Maiana District is 19.87 mgd.

If you have any questions, please contact Lawrence Whang at 527-6138.

Kazu Hayashida
KAZU HAYASHIDA

cc: Howard Murai (Dept. of Housing & Community Development)

PB 86-685

August 14, 1986

MEMO TO: MR. JOHN P. WEAVER, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

FROM: HERBERT K. MURAKA
DIRECTOR AND BUILDING SUPERINTENDENT

SUBJECT: DRAFT EIS FOR WAIOLA ESTATES SUBDIVISION
WAIPIO, EWA, OAHU, HAWAII

We have reviewed the draft Environmental Impact Statement
for the Waiola Estates Subdivision and have no comments.

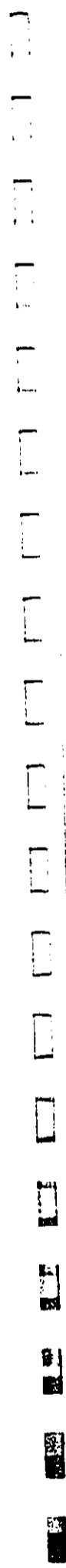
Thank you for the opportunity to review the draft EIS.


HERBERT K. MURAKA
Director and Building Superintendent

Ri:jo J. Harada
cc: / H. Hural, Housing & Comm.
Develop. Dept.

NO RESPONSE NEEDED

EC 15 P4:13



DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

400 SOUTH KING STREET
HONOLULU HAWAII 96813
PHONE 533-6181



MICHAEL M. MOON
FRANK E. CASE
DEPUTY DIRECTOR

September 22, 1986

MEMORANDUM

TO: FRANK KAHOOHAHOHANO, FIRE CHIEF
HONOLULU FIRE DEPARTMENT

FROM: MICHAEL M. MOON, DIRECTOR
DEPARTMENT OF HOUSING & COMMUNITY DEVELOPMENT

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
FOR WAIOLA ESTATES SUBDIVISION, WAIPIO, EWA,
OAHU, HAWAII

The comments contained in your memorandum dated August 18, 1986 have been reviewed by staff and the consultants preparing the EIS. The recommended corrections to the fire protection units and response times will be corrected in the Final EIS as per your request. Thank you for calling these to our attention.

Robert M. Munn
for Mike Munn
Director

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU

1415 BERTHOLD STREET, SUITE 201
HONOLULU HAWAII 96813



FRANK E. CASE
DIRECTOR

26 20 12:56

FRANK E. CASE
DIRECTOR

August 18, 1986

TO : MR. JOHN P. WAHLEN, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

FROM : FRANK K. KAHOOHAHOHANO, FIRE CHIEF

SUBJECT: WAIOLA ESTATES SUBDIVISION
WAIPIO, EWA, OAHU

We have reviewed the subject EIS and find that fire protection response units and time need to be altered.

The following city fire department facilities are available to serve the proposed development:

	Response Distance	Response Time	Service
Pearl City Engine Co. 20	3 miles	6 mins.	Primary
Maiau Engine Co. 38	4 miles	8 mins.	
Maiau Ladder Co. 38	4 miles	9 mins.	

The above companies respond together on all structure fire calls and are supported by Aiea Engine 10, Waipahu Engine and Ladder 12 on a call for additional assistance. A city fire station is projected to be constructed in the Waikole area that would improve response time.

Occupancies, water supply and access roads must conform to existing fire and building codes. You can contact our Fire Prevention Bureau at 943-3165 for any questions concerning code requirements.

Thank you for permitting us to review the EIS for this proposed project.

Further questions may be directed to Captain Henry K. Kaalekahi of our Administrative Services Bureau at 943-3848.

Frank K. Kahooahoano
FRANK K. KAHOOHAHOHANO
Fire Chief

FKK:HKK:sb

cc: Howard Murai, Project Manager, Maioia
Department of Housing & Community Development

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU
 550 SOUTH KING STREET
 HONOLULU HAWAII 96813



FRANK P. FAY
 MAYOR

DONALD A. CLEGG
 CHIEF PLANNING OFFICER
 GENE CONNELL
 DEPT. CHIEF PLANNING OFFICER

ML/DGP 8/86-9231

September 4, 1986

MEMORANDUM

TO: JOHN P. WHALEN, DIRECTOR
 DEPARTMENT OF LAND UTILIZATION

FROM: DONALD A. CLEGG, CHIEF PLANNING OFFICER
 DEPARTMENT OF GENERAL PLANNING

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE
WAIOLA ESTATES SUBDIVISION

This is in response to your request for comments on the EIS for the Waiola Estates Subdivision.

We have no comments on the EIS for the Waiola Estates Subdivision. The amendment to the Central Oahu Development Plan was preempted under Chapter 359G, Hawaii Revised Statutes.

Thank you for giving us an opportunity to comment on this matter.

Donald A. Clegg
 DONALD A. CLEGG
 Chief Planning Officer

cc: Howard Mural, Project Manager, Waiola
 Department of Housing and Community Development

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
 550 SOUTH KING STREET
 HONOLULU HAWAII 96813



FRANK P. FAY
 MAYOR

MICHAEL M.H. MOON
 DIRECTOR

ROBERT MIZRANO
 DEPT. CHIEF PLANNING OFFICER

September 22, 1986

MEMORANDUM

TO: DONALD A. CLEGG, CHIEF PLANNING OFFICER
 DEPARTMENT OF GENERAL PLANNING

FROM: MICHAEL M.H. MOON, DIRECTOR
 DEPARTMENT OF HOUSING & COMMUNITY DEVELOPMENT

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS) FOR
 THE WAIOLA ESTATES SUBDIVISION, WAIPIO, EWA, OAHU,
 HAWAII

The comments contained in your memorandum dated September 4, 1986 to the Department of Land Utilization have been received and will be included in the Final EIS. We appreciate your timely response.

Robert Mizrano
 for
 Mike Moon
 Director

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813-1001



MIKE MOON, DIRECTOR
PAGE 2
SEPTEMBER 5, 1986

JOHN P. WHALEN
DIRECTOR
(BM)
1616F

September 5, 1986

MEMORANDUM

TO : MIKE MOON, DIRECTOR
DEPARTMENT OF HOUSING & COMMUNITY DEVELOPMENT

ATTN. : HOWARD MURAI, HOUSING DEVELOPMENT DIVISION

FROM : JOHN P. WHALEN, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

SUBJECT: DRAFT EIS FOR WAIOLA ESTATES SUBDIVISION
WAIPIO, EWA, OAHU, HAWAII
(AUGUST 1986)
TAX MAP KEY 9-4-07: 01

We have reviewed the Draft Environmental Impact Statement (DEIS) for the Waiola Estates Subdivision and have the following comments:

A. Water

1. A Water Master Plan should be submitted.
2. The location of existing reservoirs, transmission lines, and deep wells which are to be used for the development should be mapped. The location of the proposed water reservoirs, transmission lines, and deep wells should also be mapped.
3. The supply of water available within the Department of Land and Natural Resources (DLNR) established ground water control area should be noted. A listing of the existing wells together with declared capacities and DLNR preserved use amounts should be noted, together with data on exported or imported water to establish the

water supply available within the ground water control district. Existing and proposed water usage should be noted. Proposed water deep wells should be noted with capacities. If water from Waiahole Ditch is to be used, this should also be noted.

4. There is concern regarding wells which may have pesticide contamination. These are Kunia Wells I and II, Waipahu Wells, and Waipio Wells II. Which water sources will be used for the project? Will Federal "Super Fund" monies be available for the clean up of the contaminated wells? If Federal funds are not available, what are the funding plans for the clean up of contaminated wells?

B. Sewerage

The capacity of the Waipahu Wastewater Pump Station (WMPS) and the Honolulu Wastewater Treatment Plant (WWTP) is a concern. Will the WMPS and the WWTP be operating near full or over capacity with the proposed development and other proposed developments in the tributary area? If expansion is necessary, what are the plans for funding and construction?

C. General Plan/Development Plan

Section VI should contain a section relating the project to the City's General Plan and Development Plan.

D. Consideration of Comments Made by Agencies and Organizations During the EIS Consultation and Preparation Notice Comment Period

1. The comments made by agencies during the consultation phase (March/April 1986) should be reproduced in full in Section IX. Responses to these comments may be incorporated into the Final EIS or appended, at your discretion.
2. Comments made during the Preparation Notice Comment Period should be responded to either by incorporation of the responses into the Final EIS or by letter (with point-by-point responses) appended to Section XII.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

500 KAPUNAHUENUE STREET
HONOLULU, HAWAII 96813
PHONE: 433-6181



MICHAEL M.H. MOON
DIRECTOR

ROBERT MURRAY
DEPUTY DIRECTOR

MIKE MOON, DIRECTOR
PAGE 3
SEPTEMBER 5, 1986

3. If the responses are incorporated, please note where in the Final EIS (by section and page number), the concerns are addressed.

4. The Administrative Rules, entitled "Environmental Impact Statement Rules", at Section 11-200-23(3) requires this in order for the EIS to meet acceptability requirements.

If there are any questions regarding these comments, please call Bennett Mark of our staff at 527-5038.

Very truly yours,

John P. Whalen
JOHN P. WHALEN
Director of Land Utilization

JPH:fm

September 22, 1986

MEMORANDUM

TO: JOHN P. WHALEN, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

FROM: MICHAEL M.H. MOON, DIRECTOR
DEPARTMENT OF HOUSING & COMMUNITY DEVELOPMENT

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
FOR THE WAIOLA ESTATES SUBDIVISION, WAIPIO, EWA,
OAHU, HAWAII

The comments contained in your memorandum dated September 5, 1986 have been reviewed by staff and the consultants preparing the EIS and we respond as follows:

A. Water

1. The Water Master Plan dated May 1, 1986 was approved by Board of Water Supply (BWS) on May 9, 1986.
2. Precise plans, drawings and specifications for sewerage, water, and drainage will be prepared as required by the subdivision approval process. Due to funding limitations, these items are not available at the present time.
3. Water availability for this project has been discussed on pp. VII-22, 23, 24 and identifies the localized source for Waiola Estates as being the development of "on-site and off-site facilities... including two new wells at the 595-foot elevation Waipio Heights site and a 1.5 million gallon concrete reservoir." All of these new facilities were approved by the Department of Land & Natural Resources (DLNR) on August 26, 1986. There will be no imported water from outside the District and the Waihole Ditch will not be utilized as a potable water source.

Mr. John P. Whalen
September 22, 1986
Page 2

4. The concerns expressed over the recent discovery of chemicals in potable water sources in Central Oahu has led to extensive research and mitigative measures being taken by the Board of Water Supply. Gordon I. Dugan, Ph.D. in his work appended as Appendix D, "Environmental Aspects of Storm Water Runoff," discusses in detail on pp. 14, 15, 16, 17, 18, and 19, the implications and measures taken recently to mitigate the impacts caused by these chemical compounds. This discussion is included on pp. VII-7 and 8. The Project will include the development of a new water source for the Waiola Estates project and the well drilling will be pre-tested prior to active use. All potable sources for the project will require prior clearance by DWR as well as the State Department of Health, Drinking Water Branch, and the Board of Water Supply. Information as to the efforts and funding necessary to clean-up contaminated wells in the area is not available at this time.

B. Sewerage

Correspondence received from the Department of Public Works (August 18, 1986) provide corrections and revisions to the description of sewerage system. This has been incorporated as a part of the narrative at pp. V-18, 19 and VII-24. "The project will include the construction of a new trunkline in conjunction with the adjoining Amfac Development and will connect to the existing Milliani STP Effluent Disposal System that in turn discharges to the Waiolu SPS." The statement that capacities are adequate cited on p. V-19 is accurate.

C. General Plan/Development Plan

The relationship of the Waiola Estates to the City's General Plan and Development Plan has been discussed in detail by the Chief Planning Officer in a memorandum dated September 15, 1986.

By approval of Resolution No. 86-202 on May 28, 1986, the City Council specified that the Waiola Estates Subdivision project would be exempt from, among other things, the requirements of the City's General Plan and Development Plan, pursuant to Chapter 359G of the Hawaii Revised Statutes. That provision of State law was intended to resolve conflicting priorities in favor of and as a means of facilitating and expediting the development of affordable housing.

D. Consideration of Comments Made by Agencies and Organizations During the EIS Consultation and Preparation Notice Comment Period

1. Comments made during the EIS Consultation Period have been incorporated in entirety in Section XII. Responses to the comments received have been incorporated into the DEIS in the appropriate sections and this process will continue for the Final EIS. As is the

Mr. John P. Whalen
September 22, 1986
Page 3

case here, we are responding to the comments received during the DEIS review period.

2. As indicated above, the comments made during the EIS Preparation Notice will be responded to in the Draft and Final EIS. These comments and responses will also be included as part of the final documents in Section XIII.
3. This request for inclusion of the responses and changes to the narrative by page number and section has been forwarded to the consultants who have expressed their willingness to cooperate to the extent practicable.
4. The rules section cited provides that "Comments submitted during the review process have received responses satisfactory to the accepting authority, and have been incorporated or appended, at the discretion of the applicant or proposing agency, to the statement."

We trust that we have responded adequately to your department's comments. Thank you for your continuing cooperation.

Robert M. Mearns
for Mike Moon
Director

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU

1445 SOUTH WAIKAI PALMA STREET
HONOLULU, HAWAII 96813. AREA CODE 808/521-3111

FRANK F. PAN
WATOR



DOUGLAS G. GIBB
CHIEF
WARREN FERREIRA
DEPUTY CHIEF

OUR REFERENCE DI-JS

August 11, 1986

TO: JOHN P. WHALEN, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

FROM: DOUGLAS G. GIBB, CHIEF OF POLICE
HONOLULU POLICE DEPARTMENT

SUBJECT: WAIOLA ESTATES SUBDIVISION
WAIPIO, EWA, OAHU, HAWAII
TK: 9-4-07:1

We have reviewed the subject materials and have no objections to the proposed project.

Thank you for providing us with this information and the opportunity to comment.

DOUGLAS G. GIBB
Chief of Police

BY WARREN FERREIRA
Deputy Chief of Police

CC: Mr. Howard Mural, Project Manager, Waiola
Department of Housing and Community Development
City and County of Honolulu
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

NO RESPONSE NEEDED

'86 AUG 12 11:02
DEPT OF HOUSING
& COMM DEVELOPMENT



86 AUG 19 AM 10:3

RECEIVED
AUG 19 1986



FRANK FAY
DIRECTOR

MICHAEL M. MOON
DIRECTOR

ROBERT MURRAY
DIRECTOR

ENV 86-174

September 22, 1986

August 18, 1986

MEMORANDUM

TO: MR. JOHN P. WHALEN, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

FROM: RUSSELL L. SMITH, JR., DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

SUBJECT: DRAFT EIS FOR WAIOLA ESTATE SUBDIVISION,
WAILOA, EWA, OAHU

MEMORANDUM

TO: MR. RUSSELL L. SMITH, JR., DIRECTOR AND CHIEF
ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: MICHAEL M.H. MOON, DIRECTOR
DEPARTMENT OF HOUSING & COMMUNITY DEVELOPMENT

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS) FOR
WAIOLA ESTATES SUBDIVISION, WAIPIO, EWA, OAHU,
HAWAII

We have reviewed the subject draft EIS and have the following
comments.

1. For that portion of the proposed subdivision that drains to Mailele Stream, provisions should be made for an alternate facility to the stream in the event the adjoining makai Amfac Development is not completed.
2. Subsections 1. 2. Sanitary Sewer System (pages V-18, 19), and 1. 2. Sewage Treatment and Disposal (page VII-24), the first line in both subparagraphs should read as follows: "The project will include the construction of a new trunkline in conjunction with the adjoining Amfac Development and will connect to the existing Mililani STP Effluent Disposal System that in turn discharges to the Waipahu SPS." In addition, (page V-19), the effluent is disposed of by a deep ocean outfall.

Russell L. Smith, Jr.

RUSSELL L. SMITH, JR.
Director and Chief Engineer

cc: DHCD (Attention: Mr. Howard Mural)

This is in response to your memorandum dated August 18, 1986 commenting on the subject DEIS.

1. In the event that the Amfac/Waikole project is not built, the Waiola Estates would utilize the natural drainageway in that project area which includes an existing drainage basin at its' makai end. All plans will be submitted for review to your department.
2. Relative to the description of the sanitary sewer system, the referenced corrections to the DEIS on Pages V-18, 19 and VII-24 will be made in the final EIS. Thank you for calling these to our attention.

Robert M. Moon

for Mike Moon
Director

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
 HONOLULU MUNICIPAL BUILDING
 650 SOUTH KING STREET
 HONOLULU, HAWAII 96813



FRANK F. FAU
 DIRECTOR

JOHN E. HIRTEN
 DEPARTMENT OF TRANSPORTATION SERVICES
 JOSEPH M. MAGALON, JR.
 DEPARTMENT OF TRANSPORTATION SERVICES

September 8, 1986

MEMORANDUM

TO: JOHN P. WHALEN, DIRECTOR
 DEPARTMENT OF LAND UTILIZATION

FROM: JOHN E. HIRTEN, DIRECTOR

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT (EIS)
 REVIEW OF WAIOLA ESTATES SUBDIVISION

We have reviewed the draft Environmental Impact Statement for the Waiola Estates Subdivision. We agree with the conclusions and recommendations contained in the document. We will, however, be reviewing the plans for the development and will be considering the impact of future traffic along the affected interior streets at ultimate build-out. This may substantially affect roadway and intersection design as well as possible signalization requirements.

John E. Hirten
 for JOHN E. HIRTEN

cc: Howard Mural (DH&CD)

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
 430 SOUTH KING STREET
 HONOLULU, HAWAII 96813



FRANK F. FAU
 DIRECTOR

MICHAEL M.H. MOON
 DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
 ROBERT W. WASSERMAN
 DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

September 22, 1986

MEMORANDUM

TO: JOHN E. HIRTEN, DIRECTOR
 DEPARTMENT OF TRANSPORTATION SERVICES

FROM: MICHAEL M.H. MOON, DIRECTOR
 DEPARTMENT OF HOUSING & COMMUNITY DEVELOPMENT

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
 FOR THE WAIOLA ESTATES SUBDIVISION, WAIPIO, EWA,
 OAHU, HAWAII

The comments contained in your memorandum to the Department of Land Utilization dated September 8, 1986 have been received and will be included in the Final EIS. The future review of the plans and design of the interior streets will be closely coordinated with your office to ensure that future traffic requirements can be satisfactorily accommodated.

Thank you for your timely comments.

Robert M. Magallon
 for Mike Moon
 Director

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII 96813 / TELEPHONE 523-4000

September 15, 1986



RANDALL Y. IWASE
Mayor
City and County of Honolulu

Mr. Michael M. H. Moon
Director
Department of Housing and
Community Development
City and County of Honolulu
Honolulu, Hawaii 96813

Dear Mr. Moon:

Subject: Comments to the Draft Environmental
Impact Statement for the Maioia Estates
Subdivision

This is in response to the solicitation of comments for the proposed Maioia Estates Subdivision, Waipio, Oahu, Hawaii. I would like to offer the following comments to the draft environmental impact statement.

Section IV. Alternatives Considered

I find this section to be incomplete in two respects. First, the EIS has not examined the possibility of an agricultural park on the proposed site. In testimony received before Council on the recent General Plan amendment proposal, the Farm Bureau testified that they thought "prime" agricultural areas in Central Oahu could be feasibly farmed provided the land was made available to farmers at a reasonable cost. We have seen the success of agricultural parks statewide, especially on the neighbor islands. The concept of the State purchasing significant areas of prime agricultural land, providing the necessary infrastructure and subdividing the land for lease to farming activities can be a viable opportunity for farmers. I would like to see this alternative explored in depth by the EIS document.

Secondly, HUD guidelines for preparing an "alternatives section" for an EIS document clearly recommends that "other available alternative sites" be considered in this section.

Mr. Michael M. H. Moon
Page 2
September 15, 1986

This has not been accomplished in the draft EIS document. Specifically, the document should examine alternative sites in Ewa or other areas of the island and do a comparison of the relative advantages/disadvantages of those sites that are potentially available. The City has indicated an expressed interest in developing sections of the Ewa plain for affordable housing. These proposed sites need to be examined in light of fulfilling the affordable housing needs of the region and island.

Section VII.B. Impact on Hydrological Characteristics

The Department of Agriculture, the University of Hawaii--Water Resources Research Center, and the Department of Navy have requested the need to address environmental impacts related to hydrologic infiltration and recharge and any effects on the underlying basal aquifer. This potential impact has not been adequately addressed by the draft EIS document.

Section VII.E. Social Impact

I believe the third paragraph of the section on page VII-11 represents a false notion about the population impact of the proposed project. The paragraph contends that 25 percent of the applicants currently reside in Central Oahu and that population in the region would be exceeded by only a 75 percent influx. This notion is not necessarily a viable argument based on the following example.

Let us assume that through some miracle of probability, all applicants from the Central Oahu area are selected in the drawing for houses. We can then subtract a 25 percent population figure from Central Oahu's population guideline total. However, what about the units that were vacated by these applicants? We must assume that the vast majority of this percentage were living in units that will now probably be vacant and would represent a housing opportunity for persons from outside the Central Oahu region. In other words, those applicants from the Central Oahu region will merely be "filtering up" through the housing market. This means that unless those applicants were "doubling up" in "overcrowded" housing conditions, their move to Waioala will mean the availability of their former units. As I see it, this will present a housing opportunity for families outside of the region to find housing in Central Oahu. Therefore, the net population impact will not necessarily translate to just a 75 percent influx of population and a simple 25 percent shift from areas of Central Oahu to Waioala. I find the logic of this

Mr. Michael M. H. Moon
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argument not well thought out. Therefore, I request that this section be re-examined in light of the above reasoning.

The section also does not address probable social impacts of the proposed project by matching applicant social and demographic data to the characteristics of the surrounding community. Specifically, no data is included on income, age, number of subsidized units, type of units, price ranges, rental/ownership characteristics of the applicants and surrounding communities and the possible social implications of developing such a project on those communities. Further, what are the social impacts of concentrating such a large number of low/moderate income homes on one site and is such a concentration consistent with the goal of the General Plan, to wit, "fair distribution of low and moderate income housing throughout the State" (emphasis added)?

Section VII.F. Impact on Traffic Conditions

The section does not adequately address the regional and cumulative impacts of traffic generated by the proposed project on existing facilities which are already at or above design capacities. The projected number of vehicles that would be generated by the project seems an under estimation. I would recommend that further explanation and elaboration on the methodology used to derive the traffic impacts be clarified.

There appears to be an inherent need in this section to conduct extensive traffic count surveys and match such data against information provided by the potential applicants. Relevant applicant information should include places of employment, number of vehicles per household, and work times.

Traffic for this area needs to be examined in light of social and demographic projections over time. Such projections may reveal a potential increase in traffic for the area over time due to certain age groups coming of age to obtain drivers licenses. If this were the case, the cumulative traffic potential of the proposed project over time could place a very significant burden on transportation facilities. The EIS should also analyze the traffic situation in Central Oahu through a comprehensive approach to transportation systems impacts that take into account future land use changes.

The section states that the project would represent traffic that is "only a small portion of the growth planned for Central Oahu" and, therefore, would pose only a marginal increase in

Mr. Michael M. H. Moon
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traffic. If we all accepted this attitude, our transportation problems would truly be an enigma. We cannot simply tell the public to "grin and bear it." The EIS does not propose any substantive mitigative measures which will be implemented by the developer and which is designed to address the potential traffic problem. Although the EIS does suggest a transit improvement program that would include park-and-ride facilities, additional express bus service, and a ride-sharing program, the EIS does not address who will pay for such improvements or whose responsibility it will be to operate and maintain these facilities and programs.

I would note that the EIS states that locating the 1,500 units in Ewa rather than Central Oahu "would result in the same impact on traffic east of Waiawa Interchange." As you know, the purpose of the "Second City" in Ewa is to create a commercial and residential area outside of Honolulu. Such a development would, necessarily, relieve the traffic congestion caused by cars heading towards Honolulu. The creation of the Second City would either redirect traffic towards the Ewa commercial center or reduce the number of cars on the H-1 (Honolulu bound in the morning) by providing a residential community in Ewa and next to a second commercial center. The concept of a Second City has been in the General Plan since 1977, and we must now commit to its growth. Locating 1,500 housing units in Ewa will be a step in that direction and will help in achieving the "critical mass" necessary for the Second City concept to work. Your "regional consideration" analysis and its conclusion (noted above) fails to take this fact into account.

Section VII.G. Impact on Air Quality

The section does not adequately address the potential air pollution impacts that would be generated by the proposed project. The Department of Health data for the area suggests that State and Federal air quality standards during peak traffic hours are currently very close to being violated. The EIS suggests that emissions would be reduced by 1995 from stricter Federal emission requirements on vehicles. The analysis, however, does not address the cumulative air quality impact of a wide range and accumulated number of vehicles in the area during peak hours and the possible effect of air pollutants on the health of area residents.

Mr. Michael N. H. Moon
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Section VII.I. Impact on Infrastructure and Utilities

The section on water cites the need to closely consider the regional basal groundwater system and its sustainable capacity. The EIS further states that the Board of Water Supply is "now exercising caution in approving developments that require water service in the area." In light of all committed projects and future development proposals, this section needs to be expanded and elaborated on. Has any exploratory work been done to see if there is water potential for the proposed wells that will service the development? Since the development of any water sources in the area would be within the Pearl Harbor Groundwater Control District, has there been any indication from the Department of Land and Natural Resources on the feasibility of developing new water sources in the region?

The section on sewage treatment and disposal should provide more detailed data and information on the adequacy of the Honouliuli Treatment Plant facility. Will there be adequate capacity in the sewage treatment plant to handle the proposed project based on other proposed development in the region that would "feed in" to the treatment plant? Has the Environmental Protection Agency unequivocally approved the method of treatment and disposal for the Honouliuli STP?

Section VII.J. Impact on Public Facilities and Services

The proposed project area as stated by the Department of Education indicates an overcrowded situation in the classrooms of schools in the area. Although the proposed project does plan for a school site within the subdivision, who will pay for the construction of the necessary classrooms? What are the financial implications with the stated need to bus children to schools in Pearl City during the short term? Will the City have to provide this service? Could portable classrooms be set up at the proposed school site for elementary school children?

I appreciate the opportunity to offer my comments for the EIS for the proposed project. We request that the draft EIS be revised to address the concerns cited above. If, in your review of our comments, your office determines that no revisions are warranted, please inform us of the rationale supporting your analysis.

Very truly yours,



RANDALL Y. IWASE
Councilmember
Council District I

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

230 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 533-6181



FRANK P. FARI
DIRECTOR

MICHAEL N. H. MOON
DIRECTOR

ROBERT MIVASATO
DIRECTOR

September 22, 1986

The Honorable Randall Iwase, Councilmember
Council District I
City Council
City and County of Honolulu
Honolulu, Hawaii

Dear Councilmember Iwase:

Subject: Draft Environmental Impact Statement (DEIS) for the
Waioala Estates Subdivision, Waipio, Oahu, Hawaii

This is in response to your letter dated and received on September 15, 1986, commenting on the subject DEIS. Unfortunately, your letter was received immediately prior to the scheduled printing of the EIS which precluded preparation of a full response to each of your comments. Each of the issues raised, however, has been addressed in our response to comments received earlier from other consulted parties as part of the resulting modifications incorporated in the Final EIS. A copy of that document will be made available to you and each of the other councilmembers upon completion.

In summary terms, we respond to your comments as follows:

Section IV Alternatives Considered

In regard to your reference to an agricultural park on the proposed site, specific discussions as to the effect of land costs and the proximity of residential development on the feasibility of continued agricultural operations is contained in our response to the Department of Agriculture. In the event such an alternative use is desired, the report on "Agricultural and Economic Evaluation of Lands in the proposed Waioala Development" (included as Appendix B of the DEIS) concludes that there are lands of similar quality and agronomic potential currently lying fallow which could be acquired for purposes of an agricultural park.

The availability of other potential sites for affordable housing such as those indicated in Ewa is acknowledged. However, such sites represent additional rather than alternative locations for future affordable housing developments. As the economic feasibility is established, they will be utilized for projects

similar in the Waiola Estates Subdivision. The Department of Housing and Community Development has a mandate to develop critically needed affordable housing units and Waiola represents only the initial part of our long range housing program.

As noted in the DEIS, the availability of agricultural land is more than sufficient to meet foreseeable requirements. Within this context, a balance between the need to preserve land for agriculture and the provision of affordable housing is necessary. The need and demand for affordable housing is already such that projects such as Waiola must be developed wherever it is economically feasible to do so. At the same time, however, we recognize that concentrating affordable housing developments in a single area or district is undesirable and must be avoided. In view of these competing requirements, as a practical matter, alternative sites for the Waiola Estates Subdivision do not exist.

Section VII.B. Impact on Hydrological Characteristics

Full discussions of water quality and storm runoff are provided in a consultant study prepared by Gordon L. Dugan, Ph.D. included as Appendix D of the DEIS. Water availability for this project has been discussed on pp. VII-22, 23, 24 and identifies the localized source for Waiola Estates as being the development of "on-site and off-site facilities... including two new wells at the 595-foot elevation Waiolo Heights site and a 1.5 million gallon concrete reservoir." All of these new facilities were approved by the Department of Land & Natural Resources (DLNR) on August 26, 1986. Approval would not have been received from both DLNR and the Board of Water Supply if the project adversely impacted the underlying basal aquifer.

Section VII.E. Social Impacts

We acknowledge that the probability exists that current residents vacating a rental unit in Central Oahu will be replaced by another tenant family. However, please note that the net increase would then be the number persons in the new tenant household, as the current residents would presumably already be included in the population count for Central Oahu. This assumption would not hold true if the family currently doubles up in an ohana situation. The projection of population change represent our best estimate based upon reasonable and rational assumptions.

With respect to your comment regarding the impact caused by "low/moderate" income houses in the Waiola Estates Subdivision, please recognize that only 20% of the homes (approximately 300) will be marketed to families making less than 80% of the median income for their household use. The balance of the homes will be sold to "gap-group" households who represent a broad cross-section of the community.

Although the Waiola Estates Subdivision will provide 20% of the units to "low and moderate" income households (as defined above) as opposed to the 10%

requirement for private developments such as Gentry Waiolo and Amfac-Waikole under contractual agreements, we do not believe the provision of the 150 additional homes for the target group will cause a significant social impact.

Section VII.I. Impact on Traffic Conditions

The traffic study was based upon accepted professional guidelines and standards and expanded somewhat to fully utilize available applicant data.

The traffic situation is recognized as a major problem in the area and all planned traffic improvements to be made available within the immediate future were examined as possible mitigative measures. These concerns are addressed in our response to the comments received from Neighborhood Board No. 25.

In regard to your comment about the "Second City" in Ewa, we noted earlier that additional projects are being contemplated in the Ewa area. These projects will be implemented as their economic feasibility as established and will help to attain the "critical mass" necessary to support the proposed "Second City."

Section VII.G. Impact on Air Quality

As noted in the study prepared by Barry Root at Appendix F, State Air Quality Standards already are being exceeded along portions of the H-1 corridor and this situation is likely to continue with or without the project. This issue was addressed in our response to the American Lung Association of Hawaii.

Section VII.I. Impact on Infrastructure and Utilities

As noted earlier, the Board of Water Supply in correspondence dated May 9, 1986 approved the Water Master Plan as submitted on May 1, 1986 and the State Department of Land and Natural Resources approved allocation of the water necessary for the Project on August 26, 1986. Both agencies predicate their approval upon the capacity of the underlying basal aquifer to support the contemplated withdrawal of water.

Sewers

The Department of Public Works in their letter dated August 18, 1986, described the necessary improvements required to accommodate the additional sewage to be generated by the Waiola Estate Subdivision. These improvements consist of the transmission lines that will be installed in conjunction with the Amfac-Waikole project.

The Department of Public Works is waiting for the EPA waiver on secondary treatment for the Honouliuli Treatment Plant. This waiver has been pending since the opening of the plant and was requested on the basis of conditions similar to those in existence at the Sand Island Treatment Plant which was approved.

Councilmember Randall Iwase
September 22, 1986
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Section VII.J. Impact on Public Facilities and Services

The schedule and availability of an elementary school at the Waiala Estates site will be determined almost entirely by the State Department of Education. As the housing units are occupied, the generation of school age children will require that facilities be provided for them. The Facilities Branch of the State DOE will be monitoring overall facility requirements in the area and will be pre-planning the design and development of school facilities at the 6 acre site as appropriate.

We will be working closely with that agency to ensure that additional facilities are available as needed.

Thank you for your comments.

Sincerely,

Robert Mungaut

for Mike Moon
Director

(P)1844.6

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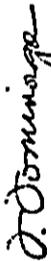
Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Waioala Estates Subdivision
Waipio, Ewa, Oahu

We have reviewed the above EIS and have no comments to offer.

Very truly yours,



TEUANE TOMINAGA
State Public Works Engineer

SM:jjs
cc/Mr. Howard Murai

NO RESPONSE NEEDED

GEORGE W. ARIYASIN
GOVERNOR



JACK K. SURA
CHAIRMAN, BOARD OF AGRICULTURE
SUZANNE D. PETERSIN
DEPUTY TO THE CHAIRMAN

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814

Mailing Address:
P. O. Box 22159
Honolulu, Hawaii 96822

September 8, 1986

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MEMORANDUM

To: Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu

Subject: Draft Environmental Impact Statement (EIS) for
Waioala Estates Subdivision
City and County of Honolulu
Department of Housing and Community Development
TNK: 9-4-07:1 Waipio, Oahu, Hawaii
Acres: 269

The Department of Agriculture has reviewed the subject document and offers the following comments.

According to the Draft EIS, the applicant is seeking to redesignate the subject property from the State Agricultural District to the Urban District for a "low and moderate income" residential community of 1,500 housing units.

The Draft EIS does not adequately address most of the concerns found in our comments on the EIS Preparation Notice (EIS, Section 12, letter of Department of Agriculture to Mr. Alvin K. H. Pang, dated June 30, 1986), as detailed below.

ISSUES THAT NEED TO BE ADDRESSED

1. What alternative sites for the proposed project were considered and why the subject site was selected.

It is unclear why the subject site was selected and there is no mention of alternative sites for the proposed project. As noted on page IV-1 of the Draft EIS, the City has "threatened" Castle and Cooke, Inc. with condemnation of the subject parcel, presumably to acquire the land for the Waioala project. While there are legitimate reasons to support the concept of the proposed development, the possibility should be thoroughly explored that the objectives sought to be accomplished could be implemented on other sites where there would be less adverse

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impact on agriculture. For example, recent media accounts have indicated that equivalent-sized parcels of land have been offered for "affordable" or "gap-group" housing at Ewa and Makakilo.

2. The relationship of the proposed project to the "Castle and Cooke Hierarchy of Agricultural Lands Study -- Central Oahu Lands" report, dated March, 1984.

The Hierarchy Study states that "The drier, lower and intermediate elevation fields which have high insolation and economical irrigation capability are Castle and Cooke's prime agricultural lands...The prime economical production zones for sugar, pineapple and diversified crops are contained in these areas" (Study, page 22). The subject property (Field 4119) is clearly within this "prime economical production zone" and is drip irrigated with water from the Waihole Ditch. The Hierarchy Study does not appear to be referenced in the EIS (but see below).

3. The impact of the removal of productive lands from pineapple production on Dole Company's economic viability.

This concern is adequately addressed in the Draft EIS. According to the letter of George Yim contained on page IV-2 of the Draft EIS, "The conversion of these lands to urban use will not affect pineapple production (or sugar) since Castle and Cooke had planned to convert acreage now in sugar cane to pineapple to reduce the operating costs of the sugar operation." The Draft EIS indicates that Castle and Cooke would replace the 269-acre Waioala parcel with three parcels currently in sugarcane production north of Waioala. These lands are said to be of similar quality and productivity (EIS, page IV-4). It should be noted, however, that the loss of the subject parcel to agricultural use will be permanent and irreplaceable upon development of the proposed project.

4. The broader economic and resource impact on the State from the irreversible loss of prime irrigated agricultural lands.

The Draft EIS states that "...placing the subject lands in an urban use will not have a significant impact on the agricultural sector of Oahu or the State. Lands of similar quality and economic potential are currently lying fallow and

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there are sufficient lands available to meet current and projected future agricultural needs." (EIS, page IV-7, 8).

We disagree that the project site is necessarily similar in quality to other lands currently lying fallow. One of the more significant determinants of good quality agricultural land is the availability of sufficient quantities of irrigation water, especially that which is inexpensive. The entire subject parcel already has drip irrigation facilities installed and has irrigation water supplied by Waihole Ditch. The same cannot be said of the many of the other lands identified in the Draft EIS as "Prime", in particular those which have been voluntarily withdrawn from sugar or pineapple production.

5. Information such as lease rents and terms on lands described in the EISP as "... other lands equally well suited elsewhere ..."

The EIS should also identify the location of lands supposedly "available" to meet current and projected future agricultural needs. The amount and cost of irrigation water and sale or lease prices and terms to farmers should be addressed. Only after comprehensively examining and comparing other lands to the subject parcel can a conclusion be reached regarding the impact of removing this site from agriculture.

6. The present source(s) and potential alternative uses of agricultural irrigation water at the project site.

Everything else being equal, the ability to control moisture is one of the principal means to increase agricultural production. As mentioned earlier, the site is drip irrigated with water from Waihole Ditch. Systems such as this usually provide water at lower cost than through a system of pumped groundwater. Furthermore, drip irrigation is a more efficient means to provide moisture to crops than sprinkler or furrow irrigation. Information on the relative costs of irrigation systems was provided to the Land Use Commission during its consideration of the petition by Waitec Development, Inc. (docket no. A86-600). Similar data should be contained in the present EIS.

7. The potential of establishing viable alternative agricultural uses on the project site.

Regarding the economic potential of alternative crops that are agronomically suited to the subject parcel, Appendix B of

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the EIS indicates that some are limited by high production costs, lack of markets, availability of less expensive imports, and the possibility of growing agronomically viable crops more profitably elsewhere in the State.

The Land Evaluation and Site Assessment (LESA) Commission Report (February 1986) estimated that approximately 689,000 acres of important agricultural land are needed to meet production goals by 1995 (page 12). In arriving at this total acreage figure, the Commission followed a scenario of "industry expectations" based on market events and trends and an attainable increase in self-sufficiency at competitive conditions. Commodities which were considered for this assignment were divided into two groupings: export and local consumption. Export commodities included aquaculture, coffee, flowers/nursery, guava, macadamia nuts, papaya, pineapple, seed corn, and sugar. Local consumption commodities included bananas, beef, dairy products, eggs and poultry, feed and forage, fruits, swine, taro, and vegetables and melons. The statewide totals for cropland were adjusted upward by a factor of 10 percent, which allows some assurance of adequate land area in the future for agricultural activities which are considered non-viable or marginal today. One such crop now under initial consideration is cacao bean.

As of 1983, Oahu had 62,539 acres in agricultural production (LESA Commission Report, page 14). Excluding grazing and pasture lands and pineapple and sugarcane cultivated lands, 5,310 acres were in what can be considered diversified agricultural activities. By 1995, the acreage in diversified agriculture for Oahu is expected to rise to 10,462 acres for both local consumption and export. Pineapple acreage is expected to remain relatively stable, while sugarcane acreage will decline. The same trends are expected for the rest of the State.

The State of Hawaii will be unable to accommodate the possibility of new agricultural export crops as well as attain self-sufficiency in local market crops unless we protect important agricultural lands as an irreplaceable resource in their own right.

8. How the proposed project conforms to the State Agriculture Functional Plan and its objectives and policies, particularly implementing Action R(5)(c).

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The Draft EIS does not explain how the proposed project conforms with Implementing Action B(5)(c). In recognition of the efforts of the IESA Commission to carry out its Constitutional mandate, Implementing Action B(5)(c) states that "Until standards and criteria to conserve and protect important agricultural lands are enacted by the Legislature, important agricultural lands should be classified in the State Agricultural District and zoned for agricultural use, except where, by the preponderance of the evidence presented, injustice or inequity will result or overriding public interest exists to provide such lands for other objectives of the Hawaii State Plan." The subject parcel fits the provisional description of important agricultural lands.

9. The impact on agriculture resulting from the withdrawal of water for the project's domestic consumption from the Pearl Harbor Groundwater Control Area.

The Draft EIS discusses the physical characteristics of the Pearl Harbor basal ground water but does not state whether the withdrawal of .822 million gallons per day of water for the proposed project will have adverse impacts on agriculture in the affected region. This is especially important in the light of the cumulative water withdrawal impacts that the various planned and proposed developments in the Central Oahu/Ewa areas may have on the Pearl Harbor Ground Water Control Area. On August 22, 1986, the Board of Land and Natural Resources allocated .85 mgd to the Board of Water Supply for the Waiola project. Presently, 6.653 mgd of groundwater remains unallocated, of which only .19 mgd is from the Koolau subarea.

10. The relationship of the proposal to existing and proposed urban development in the Central Oahu and Ewa Development Plan areas.

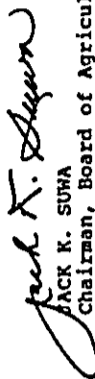
We understand that the City Council has granted the proposed development an exemption from the requirements found in the Central Oahu Development Plan, the Public Facilities Map for Central Oahu, Zoning Map No. 9, the Comprehensive Zoning Code standards for lot area, width, set-back and coverage, and design and construction standards for curbs (EIS, Appendix A). Nevertheless, we feel that the relationship of the proposed development to the City and County of Honolulu General Plan policies and to other planned and proposed developments in the Central Oahu and Ewa DP areas should be addressed in Section VI of the EIS.

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11. Chapter 165 of the Hawaii Revised Statutes, which limits the circumstances under which existing farming operations may be deemed a nuisance.

The EIS appears to contain no reference to the provisions of the Hawaii Right-to-Farm Act and its possible beneficial impact on retaining agriculture at the project site.

Thank you for the opportunity to comment.


JACK K. SUWA
Chairman, Board of Agriculture

cc: Mr. Howard Murai, DHCD
OEQC
DPED
DGP

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

411 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE: 523-2181



FRANK F. FANG
DIRECTOR

MICHAEL M. MOON
DIRECTOR

ROBERT MITSURATO
DEPUTY DIRECTOR

Mr. Jack K. Suwa, Chairman
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September 22, 1986

September 22, 1986

Mr. Jack K. Suwa, Chairman
Department of Agriculture
1428 South King Street
Honolulu, Hawaii 96814

Dear Mr. Suwa:

Subject: Draft Environmental Impact Statement (DEIS) for the
Maioia Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

The comments contained in your memorandum dated September 8, 1986 have been reviewed by staff and the consultants preparing the EIS and we respond as follows:

1. What Alternative Sites for the Proposed Project Were Considered and Why the Subject Site Was Selected

The availability of other potential sites for affordable housing such as those indicated in Ewa and Makalo is acknowledged. However, such sites represent additional rather than alternative locations for future affordable housing developments. As the economic feasibility of these sites for housing is established, they will be utilized for projects similar to the Maioia Estates Subdivision. The Department of Housing and Community Development has a commitment to develop critically needed affordable housing units and Maioia represents only the initial part of our long range housing program.

As noted in the DEIS, the availability of agricultural land is sufficient to meet foreseeable requirements. Within this context, a balance between the need to preserve land for agriculture and the provision of affordable housing is necessary. The need and demand for affordable housing is already such that projects such as Maioia must be developed wherever it is economically feasible to do so. At the same time, however, we recognize that concentrating affordable housing developments in a single area or district is undesirable and must be avoided. In view of these competing requirements, as a practical matter, alternative sites for the Maioia Estates Subdivision do not exist.

2. The Relationship of the Proposed Project to the Castle and Cooke Hierarchy of Agricultural Land Study--Central Oahu Lands Report, Dated March, 1984

The DEIS is consistent with the Castle and Cooke (C & C) "Hierarchy of Agricultural Lands Study--Central Oahu Lands" in that both identify the project site as prime pineapple production lands. The C & C study, however, is a planning document intended to aid their corporate managers in making future decisions. The manner in which C & C will make its decisions and how this internal planning tool may be modified in the future are clearly beyond the scope of this EIS.

3. The Impact of the Removal of Productive Lands from Pineapple Production on Dole Company's Economic Viability

As indicated in the DEIS, the conversion of these lands to urban use will not affect pineapple production. However, it is acknowledged that once urban residential uses are implemented, the loss of the project site to future agricultural use is permanent and irrevocable.

4. The Broader Economic and Resource Impact on the State from the Irrevocable Loss of Prime, Irrigated Agricultural Lands

It should be noted that the Maioia Ditch does pass through lands which have been allowed and withdrawn from sugar production. We agree that the availability of inexpensive water is an important consideration in determining the agricultural value of the land. However, if the subject parcel is developed, the water currently being utilized there would become available for use elsewhere.

5. Information Such as Lease Rents and Terms on Lands Described in the EISPR as "...Other Lands Equally Well Suited Elsewhere..."

The price of land, either in fee or under a leasing agreement, is a function of the demand for land which is in turn, a function of all the alternative uses of the land. "Available lands" are defined as land suited for agriculture which are not currently being used. Given that some lands on Oahu are being farmed and some are not, it should be clear that either the total cost of farming the unused lands (land costs, improvement costs (if any) and water costs) is greater than that for lands currently farmed, or that productivity of the unused lands is expected to be lower, or both. Farmers and plantation owners will always choose to farm the lands that are most profitable first.

It should be pointed out, however, given that land that once was farmed has been removed from production, it becomes apparent that the availability of land is not the limiting factor to the expansion of agriculture. As stated in the DEIS, it is production costs, including

Mr. Jack K. Suwa, Chairman
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the cost of water, and market factors that currently constrain the expansion of agriculture. These same factors are expected to constrain the future growth of agriculture.

6. The Present Source(s) and Potential Alternative Uses of Agricultural Irrigation Water at the Project Site

It is acknowledged that existing surface water systems such as the Waiahole Ditch generally provide water at a lower cost than pumped ground water. It should be noted, however, that while drip irrigation is currently the most efficient irrigation system for several crops, including sugar and pineapple, it is not the most efficient system for all crops. For example, the use of drip irrigation is less than optimal for the cultivation of alfalfa.

With respect to the production of pineapple, C & C uses water from several surface sources in addition to the Waiahole Ditch, including the Mahiwa, Opaewa, Kamanui, upper Helemanoao ditch systems and several holding reservoirs. As noted earlier, the development of the project site for urban uses would make the water from the Waiahole Ditch available for other agricultural uses elsewhere.

7. The Potential of Establishing Viable Alternative Agricultural Uses on the Project Site

As stated in Appendix B, there are a multitude of alternative crops that could be grown on the project site. It should be noted, however, that while this is so, the cultivation of pineapple would probably continue, given current market conditions and production costs.

8. How the Proposed Project Conforms to the State Agricultural Functional Plan and Its Objectives and Policies, Particularly Implementing Action B (5)(c).

As noted on page VI-5 of the DEIS, while the proposed project will remove prime agricultural lands from pineapple production, its replacement by agronomically equivalent land that would otherwise be fallowed will not result in any loss of productivity. Furthermore, we believe the use of the project site to provide critically needed affordable housing does not constitute the overriding public interest specified as an exception in the Functional Plan.

9. The Impact of Agriculture Resulting from the Withdrawal of Water for the Project's Domestic Consumption from the Pearl Harbor Groundwater Control Area

The withdrawal of the water necessary for the project should not have significant adverse effect on agriculture. In addition to an overall reduction of agricultural acreage in the area, a substantial amount of

Mr. Jack K. Suwa, Chairman
Page 4
September 22, 1986

acreage has also been withdrawn from cultivation and not restored to productive use. This is confirmed by the approval granted by the Department of Land and Natural Resources for the release of the 0.85 mgd for the Waiala Estates Subdivision and the approval of its Water Master Plan by the Board of Water Supply.

10. The Relationship of the Proposal to Existing and Proposed Urban Development in the Central Oahu and Ewa Development Plan Areas

Correspondence dated September 15, 1986 relating to the Waiala Estates Subdivision from the Department of General Planning, the full text of which will be incorporated into Section XII, includes a complete discussion by the Chief Planning Officer of its relationship with the City's planning policies.

By approval of Resolution 86-202 on May 28, 1986, the City Council specified that the project is exempt from the requirements of the General Plan and Development Plan, pursuant to Chapter 359G, HRS. That provision of State law was intended to resolve conflicting priorities in favor of and as a means of facilitating and expediting development of affordable housing.

11. Chapter 165 of the Hawaii Revised Statutes, Which Limits the Circumstances Under Which Existing Farming Operations May Be Deemed a Nuisance

Appendix B "Agricultural and Economic Evaluation of Lands in the Proposed Waiala Development" (July 18, 1986), as conducted by Evaluation Research Consultants discusses this subject on pp. 3, 8, and 9. Briefly, the study notes that those agricultural operations which are adjacent to residential communities, experience difficulties in operation due to the general incompatibility of these land uses. The noise, dust, use of chemicals, illegal harvesting of cultivated crops, danger to children by heavy equipment all contribute to higher operating costs and other problems which, in spite of the protections afforded by Chapter 165, HRS, make it difficult to continue agricultural operations in areas like that of the project site which are already substantially urbanized.

Thank you for your timely comments. We trust that the foregoing adequately addresses your concerns.

Sincerely,

Robert M. Moon
for MIKE MOON, Director

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

140 SOUTH KING STREET
HONOLULU HAWAII 96813
PHONE: 533-5241



MICHAEL M. SHYON
Director

ROBERT MURRAY
Deputy Director

FRANK F. FASI
Manager

FRANCIS W. MATHIAS
Superintendent



STATE OF HAWAII
DEPARTMENT OF EDUCATION - LEeward DISTRICT
OFFICE OF DISTRICT SUPERINTENDENT
94 366 PUPUPANI STREET
WAIKALE, HAWAII 96797

August 20, 1986

September 22, 1986

Mr. William M. Araki, District
Superintendent
Office of District Superintendent
Department of Education-Leeward
District
94-366 Pupupani Street
Waipahu, Hawaii 96797

Dear Mr. Araki:

Thank you for the opportunity to make comments on the draft Environmental Impact Statement for the Waioala Estates Subdivision, Waipio, Ewa, Oahu, Hawaii. We have examined the documents and would like to comment on the Education HRS Section 226-21 on page VI-3. We have met on the Waioala subdivision project and agreed to consider a six-acre site for an elementary school. This consideration was based on the development of Waioala and Castle and Cook Development, now Waioala subdivision. Although we have schools within bussing distances, all the schools will be crowded. The Waioala project will create problems for housing students within the Gentry, Waioala and Village Park area presently.

The need for either a school site at Waioala or Waioala will be necessary if Waioala subdivision's growth for housing peaks within a period of two to three years from 1987.

Consideration for housing students if the project is considered should be discussed with our Department of Education personnel in the Facilities Branch.

WMA:WKT:mt

Subject: Draft Environmental Impact Statement, (DEIS) for the Waioala Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

The comments contained in your memorandum dated August 20, 1986 have been reviewed by the project management staff. The need for additional school facilities to accommodate the children generated by the Waioala Estate project is being addressed by including a 6 acre school site within the subdivision. Your office has indicated that current school facilities for children from the Gentry, Waioala, Village Park and Waioala projects are or will be at capacity and will require a school site at Waioala or Waioala or in both Developments.

As our project proceeds through the land use approval process, we will be in contact with your Facilities Branch to assure close coordination on future planning for the educational needs of the children in that area of Oahu. Thank you for your continuing concern and attention to this matter.

Sincerely,

Robert Mufson
for Mike Moon
Director

'86 ALI 22 P1:54
DEPT. OF HOUSING & COMM. DEVELOPMENT



STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 219
HONOLULU, HAWAII 96821

'86 : -4 P12:15

ISSUE 5 MATURANA

IN REPLY, PLEASE REFER TO
E PWSO

Mr. John P. Whalen
September 2, 1986
Page 2

September 2, 1986

MEMORANDUM

To: Mr. John P. Whalen, Director
Department of Land Utilization, City & County of Honolulu

From: Deputy Director for Environmental Health

Subject: Draft Environmental Impact Statement for Waiola Estates Subdivision, Waipio,
Ewa, Oahu, Tax Map Key 9-4-07: 1

Thank you for allowing us to review and comment on the Draft EIS. We provide the following comments:

Noise

1. Concerns toward this project regarding noise impacts were addressed in comments to the Environmental Impact Statement Preparation Notice (July 2, 1986).
2. The applicant has discussed, in detail, noise impacts from vehicular traffic along Kamehameha Highway and has addressed mitigative measures.
3. The following potential noise impacts were not addressed in the Draft EIS:
 - a. Noise emanating from the existing Gentry-Waipio Industrial Park.
 - b. Noise emanating from the planned 12-acre park and schools.
 - c. Noise emanating from stationary equipment.
 - d. Noise emanating from military operations.

These concerns must be included in the EIS with plans for mitigative measures.

4. Concerns toward construction noise impacts were addressed in the preparation notice, however, was not included in the Draft EIS.

Air Pollution

In the section on the air quality impact, the EIS should be addressing the exceedance of the State ambient air quality standards (SAQS) for carbon monoxide as indicated in the study by Barry Root. The study indicated that with and without the Waiola Estates Project and roadway improvements, the SAQS for carbon monoxide will be exceeded at critical receptor sites.

Although not the major cause for the exceedance, the project will be contributing to and exacerbating the carbon monoxide problem.

James K. Ikeda
JAMES K. IKEDA

cc: Mr. Howard Murali ✓

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

520 ORCHARD STREET
HONOLULU, HAWAII 96813
PHONE 532-5151



FRANK J. ZEN
DIRECTOR

MICHAEL M. MOON
DIRECTOR

ROBERT MISKALZO
DEPUTY DIRECTOR

September 22, 1986

Mr. James K. Ikeda, Deputy Director
Environmental Health Division
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Ikeda:

Subject: Draft Environmental Impact Statement (DEIS) for Waiola
Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

The comments contained in your memorandum dated September 2, 1986 have been reviewed by staff and the consultants preparing the EIS, and we respond as follows:

NOISE

- 3.a. Noise concerns regarding the adjacent Gentry-Waipio Industrial Park were examined by checking on the tenant mix contained in the Industrial Park. There are no tenants involved in activities considered heavy noise generators (i.e. there are no repair shops, metal works, body and fender repairs, etc). The Waiola Estates Subdivision is also located some distance away from the Industrial Park and the two areas are separated by Kamehameha Highway. In addition, a 6-foot high wall which will be constructed fronting Kamehameha Highway as a means of attenuating traffic noise.
- b. The planned 12-acre school/park site will generate the typical noise levels that are prevalent today at all public and private school sites. All activities at these locations must comply with the Community Noise Regulations as administered by your Department.
- c. The Waiola Estates Subdivision is entirely a single family subdivision and will not be a mixed commercial use/residential use project. It is expected that a minimum of stationary equipment will be located within the project. Such equipment must comply with the applicable Noise Code requirements for installation and operation.

Mr. James K. Ikeda
Department of Health
September 22, 1986
Page 2

d. The military operations of the U.S. Navy which are located in the gulch area to the west of the lower half of the site, are largely below ground in tunnels and only minimal noise from traffic and similar activities within the gulch itself may reach Waiola Estates.

The U.S. Army has abandoned operations in the upper half of the Kipapa Gulch bordering the project site.

In each of the above cases, it would be the responsibility of the noise generator to contain the noise at the boundary line of the generating activity.

AIR POLLUTION

The reference to the likelihood that the State Ambient Air Quality Standards (SAAQS) will be exceeded regardless of whether or not the project is constructed, has been included in the narrative of the text on pp. VII-19 from the Barry Root study.

Thank you for your comments.

Sincerely,

Robert Misakzo
for Mike Moon
Director

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

150 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE: 935-6101



MICHAEL M. MOON
DIRECTOR
ROBERT MURATA
DEPUTY DIRECTOR

86 AUG 29 P3:31

DEPT. OF HOUSING
& COMM. DEVELOPMENT

86:PLNG/5410

August 25, 1986

September 22, 1986

Mr. John P. Whalen, Director
Department of Land Utilization
City & County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Draft Environment Impact Statement (EIS)
for Proposed Development at Waiala Estates
Subdivision, Waipio, Oahu

The Hawaii Housing Authority has reviewed the subject EIS
and offers the following comment for your consideration.

The Waiala community, as presented, is a concentration of
low- and moderate-income families. It may be more
appropriate for a development of this size, to broaden its
economic make-up by including other income groups. Chapter
359C, HRS, allows for a 60/40 ratio of affordable to market
units. By using this mix or some derivative, a more
socio-economically balanced community may be achieved.

Sincerely,

RUSSELL N. FUKUMOTO
Executive Director

cc: ✓ Howard Mural

Mr. Russell N. Fukumoto
Executive Director
Department of Social Services
and Housing
Hawaii Housing Authority
P.O. Box 17807
Honolulu, Hawaii 96907

Dear Mr. Fukumoto:

Subject: Draft Environmental Impact Statement (DEIS) for the
Waiala Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

The comments contained in a memorandum to the Department of Land Utilization
dated August 25, 1986 have been reviewed by the project management staff and
we respond as follows:

We have had similar concerns and plan to include a limited number of market-
priced homes within the Waiala Estates project to provide both a broader
socio-economic mix of homeowners and a means of subsidization for the low-
moderate income purchasers. In addition, we wish to clarify that only 20% of
the units will be targeted to low-moderate income households with the majority
of the units marketed to "gap-group" purchasers.

There will be a continuing review of the project as market and financing
conditions change to ensure maximum benefit to the home buyers within the
Waiala Estates Subdivision.

Thank you for your timely comments.

Sincerely,

Robert Mural
for Mike Moon
Director



DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

STATE OF HAWAII, DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

GEORGE S. ARMITAGE
RICHARD L. BROWN
LESLIE M. HARRIS
MURRAY E. KOWAL
ROBERT A. UICHELING
DIRECTOR

Ref. No. P-4992

September 4, 1986

The Honorable John P. Whalen
Director
Department of Land Utilization
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Waiola Estates Draft Environmental Impact Statement (EIS),
Ewa, Oahu

We have reviewed the subject Draft EIS and have the following comments to offer.

1. Navy Property

The Draft EIS should identify, preferably on a map, the location of the Navy's property in relation to the subject project. The map should also include the location of the active and "now discontinued" munitions storage in tunnels located within Kipapa Gulch, and the location of the designated blast zone that is mentioned on Page III-1.

Page III-1 states: "The federal government has been formally asked to relinquish its easement and this request is currently being processed by the U.S. Army." The location of this easement and the nature of its use should be further described.

2. Subdivision Plot Plan

The location of the school site and park areas should be identified on Figure 3, Page III-5. The Draft EIS states that the proposed park will be situated adjacent to the proposed elementary school. The other large parcel on Figure 3 should also be identified.

3. Agricultural Resources

The Draft EIS should identify whether the subject property has been designated as Important Agricultural Land by the Land Evaluation and Site Assessment Commission.

The Honorable John P. Whalen
Page 2
September 4, 1986

The Draft EIS states that an equivalent acreage of sugar cane land in the Waialua area will be planted in pineapple to compensate for the loss of the agricultural use of the subject property. Information should be provided comparing the agricultural suitability of the Waialua replacement land with the subject property.

Since the property is currently owned by Castle and Cooke, information should be provided on the relationship of subject property to the findings of the Hierarchy of Lands study. Some of this information could be incorporated into Chapter VIII: Short-term Uses and Long-term Productivity, Irreversible/Irretrievable Commitments of Resources.

4. Drainage

More information should be provided on the proposed drainage system. Based on information provided for the adjacent Waialeale planned community, some of the drainage systems are at capacity. If drainage or surface runoff is expected to be diverted into Kipapa Gulch, the Draft EIS should identify the mitigating measures necessary to reduce erosion, siltation, and pollution of stream waters in the Gulch. The location of the drainage system should be designated on a map, at scales similar to Figure 2 or Figure 3.

5. Unresolved Issues

The Draft EIS recognizes that portions of the highway system are already at capacity or will be at capacity as more housing projects are built in Central Oahu. However, the Draft EIS does not indicate whether the proposing agency plans to build improvements to increase the capacity of the highway system. For these reasons, highway congestion should be identified and discussed in Chapter X: Summary of Unresolved Issues and in other applicable chapters.

6. Relationship to Plans and Policies

A discussion on transportation relating to the Hawaii State Plan was omitted in Chapter VI. The Draft EIS should discuss the project's consistency with the objectives and policies for Facility Systems-Transportation (H.R.S. Section 226-17) and the policies and implementing actions of the State Transportation Functional Plan.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

540 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE: 933-8181



MICHAEL M. H. MOON
DIRECTOR

ROBERT MIVALETO
DEPUTY DIRECTOR

FRANK F. FAY
VICE

The Honorable John P. Whalen
Page 3
September 4, 1986

Thank you for the opportunity to review and comment on the subject document.

Very truly yours,

Murray E. Tomic
Kent M. Keith

cc: Mr. Howard Mural, Waioala Project Manager
Dept. of Housing & Community Development
Office of Environmental Quality Control

September 22, 1986

Mr. Kent M. Keith, Director
Department of Planning & Economic
Development
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Keith:

Subject: Draft Environmental Impact Statement (DEIS) for the Waioala Estates Subdivision, Waipin, Ewa, Oahu, Hawaii

The comments contained in your letter to the Department of Land Utilization dated September 4, 1986 have been reviewed by staff and the consultants preparing the EIS, and we respond in the following:

1. Based on correspondence from the U.S. Navy regarding its Naval Magazine at Luualaei, Waikole Branch, the final EIS has been clarified as follows: The U.S. Navy maintains active operations within the Kipapa Gulch bordering the southern half of the site. A portion of the project is located contiguous to the Naval Station which contains an existing blast hazard zone entirely within its boundaries. The Station is also located in the gulch, a substantial distance below the elevation of the Project Site. Discussions with their contact person, Mr. Bill Liu indicated that making a map available to show the blast hazard zone is difficult and that they prefer to identify the site boundary in narrative form.

On the subject of relinquishing the easement in favor of the United States government, correspondence received by this department from the U.S. Army dated August 11, 1986 notes that its easement was originally granted by the John II Estate as a limited and perpetual easement for the location, construction, operation, maintenance and patrol of tunnels and subsurface installations. Lt. General Charles W. Ragnal advises that the Army is actively disposing of the Kipapa Military Reservation and that Waioala Estates may proceed with its acquisition of land for the Waioala Estates project despite the Army's limited estate in the small parcel under discussion.



Mr. Kent M. Keith
September 22, 1986
Page 2

2. Subdivision Plot Plan

The Subdivision Map will be modified to identify the park and school as well as the site for a surface concrete water reservoir that will serve the Waikole Development.

3. Agricultural Resources

Appendix B "Agricultural and Economic Evaluation of Lands in the Proposed Waiala Development" dated July 18, 1986 and prepared by Evaluation Research Consultants identify the Project's 269,454 acres on the LESEA scale with ratings of LE 88 and 81 on a rating scale of 12 to 96. This is confirmed by the Department of Agriculture in their comments dated June 30, 1986. This correspondence is located in Section XII, EIS Preparation Notice Comments. The parcel is also noted to be among the best agricultural lands within Castle and Cook's hierarchy of Lands study.

Lands of equivalent or comparable agricultural quality will replace those at Waiala and are described by the Castle & Cooke Land Company in a letter dated July 16, 1986, signed by George Yim, President. These lands are presently in sugar production and will be converted to pineapple. An increasing demand for fresh pineapple is resulting in the displacement of sugar, a reversal of previous conditions when sugar displaced pineapple cultivation.

4. Drainage

The City Department of Public Works, in correspondence dated August 18, 1986, related similar concerns regarding the drainage for the Waiala Project if the adjoining Waikole Development is not constructed. In the event the Amfac-Waikole project is not built, the natural drainage will be used, including the large drainage storage basin located at the makai end of that Development.

Infrastructure planning is being coordinated with Amfac-Waikole to ensure adequate facilities are available to serve both Developments. Precise maps, drawings, and specifications will be prepared to meet the requirements of the subdivision approval process.

In either case, the drainage capacity is adequate.

5. Unresolved Issues

The subject of traffic congestion on Kamehameha Highway has been discussed with Amfac-Waikole and coordination on the widening of Kamehameha Highway is presently underway. Additional traffic improvements which include the construction of the Waipin and Paliwa Interchanges, the improvements bring made to the H-1 Freeway by the State Department of

Mr. Kent M. Keith
September 22, 1986
Page 3

Transportation, and the initiation of measures to encourage the use of mass transit are expected to alleviate the traffic situation in the area. A Park and Ride Facility will also be included as a part of the Project.

6. Relationship to Plans and Policies

The discussion of transportation relating to the Hawaii State Plan will be included in the Final EIS. It was inadvertently omitted.

Thank you for your timely comments.

Sincerely,

Robert Magnum

for
Mike Moon
Director



STATE OF HAWAII
DEPARTMENT OF PLANNING
AND ECONOMIC DEVELOPMENT

LAND USE COMMISSION

Room 104, Old Federal Bldg., 825 Merchant Street
Honolulu, Hawaii 96813 Telephone 548-4611

GEORGE R. ARIYOSHI
Governor
TROYILO PHIL THOMAS
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ESTHER UEDA
Executive Officer

August 12, 1986

Mr. Alvin K.H. Pang, Director
Dept. of Housing & Community Development
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Pang:

Subject: Draft EIS for Waiola Estates Subdivision
TRK: 9-4-07:1

Thank you for the opportunity to comment on the Draft EIS for the subject project. We have no comments at this time except to point out that we have received and are processing the petition for a boundary amendment for the proposed subdivision.

Sincerely,

ESTHER UEDA
Executive Officer

EU:to

NO RESPONSE RETURN

'86 18 18:32
DEPT. OF HOUSING
& COMM. DEVELOPMENT

Mr. John P. Whalen
September 8, 1986
Page 2

LETTER TO WHALEN
TELEPHONE NO.
548-6915



STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
401 SOUTH KING STREET, ROOM 104
HONOLULU, HAWAII 96813

September 8, 1986

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Draft Environmental Impact Statement for the
Waiola Estates Subdivision, Waipio, Ewa, Oahu

We have reviewed the subject environmental impact statement and have the following comments:

1. In Section II, Purpose, it is stated that the document is being prepared for the State Land Use Commission, as required by the Honolulu City Council, and for the use of the Department of Housing and Community Development. This gives the appearance that the provisions of Chapter 343, Hawaii Revised Statutes (HRS), would not normally apply for projects such as this one. This office has always maintained that Section 359G-4.1, HRS, cannot be used to exempt a project from the provisions of Chapter 343, HRS. Attorney General Opinion No. 86-13 supports this position.
2. The project location section on page III-1 makes reference to a U.S. government easement. There seems to be some confusion regarding the size of this easement. Is this easement included as part of the 269 1/2 acre parcel that is to be developed?
3. The project description indicates that a number of offsite improvements including widening of Kamehameha Highway to accommodate the increased traffic, development of additional water resources and storage, expanded sewer and drainage capacity are required. No indication is given as to the extent of these improvements and whether these improvements can be completed prior to the implementation of the proposed project.

4. In the discussion of traffic impacts due to the project, the proposed Paia and Waipio Interchanges and widening of Kamehameha Highway are cited as projects that would allow further development along Kamehameha Highway without significantly impacting the existing conditions. However, this office questions whether these improvements will be completed in time to mitigate the impacts of the project.
5. Along with mitigating the traffic impacts, the previously cited transportation improvements would be necessary to prevent violations of the State of Hawaii Air Quality Standards for carbon monoxide. This should be clarified in the section on air quality impacts.
6. Pursuant to Section 11-200-17, Environmental Impact Statement Rules, the summary sheet should also include a discussion of the following:
 - a. Significant beneficial and adverse impacts;
 - b. Proposed mitigation measures;
 - c. Alternatives considered;
 - d. Unresolved issues; and
 - e. Compatibility with land use plans and policies and listing of permits or approvals.

Should you have any questions regarding these comments, please contact Faith Miyamoto of my staff at 548-6915.

Sincerely,
Letitia N. Uyebara
Letitia N. Uyebara
Director

cc: Howard Mursi, DHCD

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

1500 KALANOAHI STREET
HONOLULU, HAWAII 96813
PHONE: 522-4181



MICHAEL M. MOON
DIRECTOR

ROBERT MITSUO
DEPUTY DIRECTOR

Ms. Letitia N. Uyebara
September 22, 1986
Page 2

- to ensure the completion of these proposed traffic improvements on a schedule that will accommodate the increasing traffic demand in the area.
5. The State Department of Health has made similar comments on the DEIS, noting the State Ambient Air Quality Standards will be exceeded for carbon monoxide. The Air Quality study attached as Appendix F will be incorporated into the body of the narrative on pp. VII-19.
 6. The requested additions as cited (a-e) will be provided in the Final EIS.

Thank you for your timely comments.

Sincerely,

Robert M. Moon
for Mike Moon
Director

September 22, 1986

Ms. Letitia N. Uyebara, Director
Office of Environmental Quality Control
456 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Ms. Uyebara:

Subject: Draft Environmental Impact statement (DEIS) for the
Waiala Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

Your comments contained in a letter to the Department of Land Utilization dated September 8, 1986, has been reviewed by the staff and consultants preparing the EIS and we respond as follows:

1. The differing legal opinions as to the applicability of Section 359G-4.1, HRS, in the environmental review process, is acknowledged. This document was prepared in compliance with the provisions and applicable Rules & Regulations of Chapter 343, HRS; our interests are in seeing that the Project moves as expeditiously as possible and with a minimum of delay to permit the development of affordable homes at the Waiala Estates.
2. There is an easement currently being held by the U.S. Army for the Kipapa Military Reservation located along the northwest perimeter of the project site. Release of that easement is already in process by the Army. In correspondence received by our office dated August 11, 1986 from Lt. General Charles W. Dagnal, it was stated that the City may proceed with acquisition of land for the Waiala Estates project. The entire 269.454 acres provided by the parcel will be utilized.
3. The off-site improvements described on page III-4 will be completed prior to the full build-out of Waiala Estates. This will be accomplished on phased schedule necessary to support the construction and occupancy of the homes in the Waiala Estates Subdivision.
4. The proposed traffic mitigation measures on Kamehameha Highway and the Palwa Interchange described in section on Traffic are being coordinated with the adjacent Amfac-Waikole Development. Every effort is being made



University of Hawaii at Manoa

Environmental Center
Crawford 317 - 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Draft Environmental Impact Statement
Waiala Estates Subdivision
Waipio, Ewa, O'ahu

The Environmental Center has reviewed the Draft EIS for the proposed Waiala Estates Subdivision with the assistance of Paul Ekern, Soils and Agronomy; Yu-Si Fok, Civil Engineering; Peter Flachsbart, Urban and Regional Planning; and Scott Derrickson, Environmental Center.

Hydrological Characteristics

The section on drainage (p. V-6) states "the project site is naturally well drained and should not be susceptible to flooding" is inconsistent with the section on flooding (p. V-6) where the reader is told "most of the development will occur in a designated zone D, an area of undetermined, but possible flooding. Disposal of drainage water may well be a problem worth more detailed discussion in the Final EIS. Milliani Town has experienced severe problems in the past due to poor design of a storm drainage system. The Final EIS should discuss what will be done with storm runoff and surface drainage due to occasional heavy seasonal rainfall and include a map locating the runoff patterns and drains. Careful design needs to be carried out to insure that problems of downstream flooding, such as occurred in Milliani Town, are not repeated.

Indirect Air Quality Impact of Increased Traffic

The statements on pages VII-18 and VII-19 give the impression that the air pollution from increased motor vehicle traffic will not be a problem due to replacement of the vehicle fleet with newer cars that meet more stringent Federal emission standards. While the statement is true, the discussion on these two pages omits the major findings provided by the consultant, Mr. Barry Root, in Appendix F. Mr. Root projected that the worst case carbon monoxide levels would exceed State of Hawaii ambient air quality standards off-site along H-1 with or without the proposed

Mr. John P. Whalen

-2-

September 8, 1986

project, and that standards would be met along the feeder road to and from the project only if highway improvements occur. The text of the EIS and Appendix F should be consistent, and the text should mention the mitigative measures recommended by Mr. Root.

Mr. Root used a 1981 model (MOBILE2) to project emissions from motor vehicles. Currently, EPA recommends that consultants use a newer model (MOBILE3), which has been available since 1985. The newer model is more accurate, because it accounts for the fact that many motorists contaminate their catalytic converters with leaded gasoline or have the converters removed from their cars. Thus, the MOBILE2 model underpredicts air pollutant concentrations.

Water Supply and Development

The subject of water availability and supply are not covered in any detail within this EIS. Further studies seem warranted regarding the ability of the proposed Waiala wells to provide sufficient water for the development, the possible draw down problems, and whether the withdrawal of water will exceed the "sustainable yield" of the Pearl Harbor Aquifer. If any such studies have been or will be undertaken they should be provided in the Final EIS along with a detailed discussion of the proposed water supply system for the subdivision.

Alternatives Considered

There is no discussion of alternative sites for the proposed development. Since the land presently proposed is considered "Important Agricultural Lands", and several other significant concerns have been raised during the review process including traffic congestion and water supply issues, it would seem necessary to include a discussion of alternative sites.

We appreciate the opportunity to offer comments on this document.

Yours truly,

Jacqueline M. Miller
Jacqueline M. Miller
Acting Associate Director

cc: Patrick Takahashi
OEQC
Howard Mural ✓
Peter Flachsbart
Paul Ekern
Yu-Si Fok
Scott Derrickson

AN EQUAL OPPORTUNITY EMPLOYER

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

400 KALANIAN'OLAH STREET
HONOLULU, HAWAII 96813



MICHAEL M. MOORE
DIRECTOR
ROBERT MIYASATO
DEPUTY DIRECTOR

Ms. Jacquelin N. Miller
September 22, 1986
Page 2

Reference to the availability of newer computer model (MODEL 1) has been discussed with Mr. Root. He notes that this model is not yet available to him.

3. Water Supply and Development

Water availability has been discussed on pp. VII-22, 23, and 24. The local source of potable water for the Waiola project is described as "on-site and off-site facilities being developed including two new wells at the 595-foot elevation Waipio Heights site and a 1.5 million gallon concrete reservoir." Further, the Board of Water Supply in correspondence dated May 9, 1986 approved the Water Master Plan as submitted on May 1, 1986 and the State Department of Land and Natural Resources approved allocation of the water necessary for the Project on August 22, 1986.

4. Alternatives Considered

As noted in the DEIS, the availability of agricultural land is sufficient to meet foreseeable requirements. Within this context, a balance between the need to preserve agricultural lands and the housing needs of the people is necessary. The critical and growing need for affordable housing can only be met by developing projects similar to this one wherever it is economically feasible to do so. At the same time, however, concentrating affordable housing developments in a single area or district should also be avoided. As a practical matter, alternative sites do not exist.

As a final consideration, the issues of traffic and water availability will not differ from site to site regardless of location on Oahu. Review of comparable projects will bear this out.

Thank you for timely comments.

Sincerely,

Robt. Miyasato

Robt. Miyasato
Director

September 22, 1986

Ms. Jacquelin N. Miller
Acting Associate Director
Environmental Center
University of Hawaii
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

Dear Ms. Miller:

Subject: Draft Environmental Impact Statement (DEIS) for the Waiola Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

Your comments to the Department of Land Utilization contained in a letter dated September 8, 1986 have been reviewed by the staff and consultants preparing the EIS and we respond as follows:

1. Hydrological Characteristics

As stated in the section on Drainage at page V-6, the site is naturally well drained and should not be susceptible to flooding. Although designed as Zone D by the U.S. Army Corps of Engineers and maps provided by the National Flood Insurance Program, FIRM MAP INDEX dated January 1, 1983, as an area of "undetermined but possible flood hazard," its elevation and topographical characteristics minimize the possibility of serious flooding.

The Department of Public Works, City & County of Honolulu will review all design plans for drainage and has specified that the natural storage reservoir at the makai end of the Waiola project site be utilized retain heavy runoff that may occur during major rainstorms.

2. Indirect Air Quality Impact of Increased Traffic

The State Department of Health has also requested that excerpts from the Harry Root study noting that the State Ambient Air Quality Standards will be exceeded be included in the narrative on pp. VII-18 and 19 in the Final EIS.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96858-5440

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
450 SOUTH KING STREET
HONOLULU, HAWAII 96813



REPLY TO
ATTENTION OF

August 14, 1986

FRANK F. FAU
DIRECTOR



MICHAEL M. MOON
DIRECTOR
ROBERT MICALASTO
DEPUTY DIRECTOR

Mr. John Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
7th Floor
Honolulu, Hawaii 96813

September 22, 1986

1986 AUG 14 PM 3:27
CITY & COUNTY OF HONOLULU

Dear Mr. Whalen:

Thank you for the opportunity to review and comment on the EIS for Waiola Estates Subdivision, Waipio, Ewa, Oahu. The following comments are offered:

- a. The letter dated June 25, 1986 regarding the Department of the Army permit is still applicable.
- b. The flood hazards have been addressed on page V-6 of the report covering the affected environment. The proposed Waiola Estates subdivision is located in Zone D, area of undetermined, but possible, flood hazards.

Kisuk Cheung, Chief
Engineering Division
Department of the Army
U.S. Army Engineering District,
Honolulu
Building 230
Ft. Shafter, Hawaii 96858-5440

Dear Chief Cheung:

Subject: Draft Environmental Impact Statement, (DEIS) for the Waiola Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

The comments contained in your letter to the Department of Land Utilization dated August 14, 1986 have been reviewed by staff and the consultants preparing the FIS. Your comments will be included in the Final FIS. Thank you for your timely response.

Sincerely,

Kisuk Cheung
Kisuk Cheung
Chief, Engineering Division

Sincerely,

Robert Micalasto
for Mike Moon
Director



United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 ALA MOANA BOULEVARD
P O BOX 50187
HONOLULU HAWAII 96850

ROOM 6307
AUG 29 1986

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Re: Environmental Impact Statement on Waiola Estates
Subdivision, Waipio, Ewa, Oahu

Dear Mr. Whalen:

We have reviewed the referenced Environmental Impact Statement
and have no additional comments to add at this time.

We appreciate the opportunity to comment.

Sincerely yours,

William R. Kramer
Ernest Koska
Project Leader
Office of Environmental Services

cc: Dept. of H&CD
C&C of Hnl (H. Mural)

NO RESPONSE NEEDED

86 SEP -2 P2:57
DEPT. OF HOUSING
COMM. DEVELOPMENT



Save Energy and You Serve America!

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
400 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 521-6181



MICHAEL M. MOON
DIRECTOR
ROBERT NEPESATO
DEPUTY DIRECTOR

FRANK F. FAU
MANAGER

cc: H. Mural

P. O. BOX 50004
HONOLULU, HAWAII
96850

SOIL
CONSERVATION
SERVICE

UNITED STATES
DEPARTMENT OF
AGRICULTURE

September 5, 1986

86 SEP -9 P2:19
A COMMUNITY DEVELOPMENT OFFICE

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, HI 96813

Dear Mr. Whalen:

Subject: Draft EIS for the Waiola Estates Subdivision, Waipio, Ewa, Hawaii
We reviewed the subject draft environmental impact statement and offer the following comments:

The project area is Prime Agricultural Land which should be retained for agricultural use.

If the subdivision is approved for development, however, it should be built in increments rather than "in one continuous phase" (EIS p. III-8). Erosion control practices should be installed in the first increment before grading begins in the next. By grading and developing in small increments, the whole area is not exposed to erosion all at once.

Thank you for the opportunity to review the document.

Sincerely,

RICHARD N. DUNCAN
State Conservationist

cc: Mr. Howard Mural, Project Manager, Waiola
Department of Housing and Community Development
City and County of Honolulu
650 South King Street, 5th Floor
Honolulu, HI 96813

September 22, 1986

Mr. Richard N. Duncan
State Conservationist
U.S. Department of Agriculture
Soil Conservation Service
P.O. Box 50004
Honolulu, Hawaii 96850

Dear Mr. Duncan:

Subject: Draft Environmental Impact Statement (DEIS) for the Waiola Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

The comments contained in your memorandum dated September 5, 1986 to the Department of Land Utilization has been reviewed by the staff and consultants preparing the EIS and we respond as follows:

Erosion control by incremental grading will be ensured by compliance with the City Ordinance on grading which limits the acreage that can be cleared at one time. The Grading Ordinance also provides for mulching to further assure erosion and dust control.

Thank you for your timely comments.

Sincerely,

for Mike Moon
Director

UNITED STATES
DEPARTMENT OF
AGRICULTURE

SOIL
CONSERVATION
SERVICE

cc: H. Murai

P. O. BOX 50004
HONOLULU, HAWAII
96850

September 5, 1986

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, HI 96813

Dear Mr. Whalen:


Subject: Draft EIS for the Waioala Estates Subdivision, Waipio, Ewa, Hawaii
We reviewed the subject draft environmental impact statement and offer the following comments:

The project area is Prime Agricultural Land which should be retained for agricultural use.

If the subdivision is approved for development, however, it should be built in increments rather than "in one continuous phase" (EIS P. III-8). Erosion control practices should be installed in the first increment before grading begins in the next. By grading and developing in small increments, the whole area is not exposed to erosion all at once.

Thank you for the opportunity to review the document.

Sincerely,


RICHARD N. DUNCAN
State Conservationist

cc: Mr. Howard Murai, Project Manager, Waioala
Department of Housing and Community Development
City and County of Honolulu
650 South King Street, 5th Floor
Honolulu, HI 96813

86 SEP -9 P2:19
DEPT OF HOUSING
& COMM. DEVELOPMENT

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

850 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 573-8181



FRANK FISH
DIRECTOR

MICHAEL M. MOON
DIRECTOR

ROBERT MITSUBATO
SENIOR DIRECTOR

September 22, 1986

Mr. Richard N. Duncan
State Conservationist
U.S. Department of Agriculture
Soil Conservation Service
P.O. Box 50004
Honolulu, Hawaii 96850

Dear Mr. Duncan:


Subject: Draft Environmental Impact Statement (DEIS) for the
Waioala Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

The comments contained in your memorandum dated September 5, 1986 to the Department of Land Utilization has been reviewed by the staff and consultants preparing the EIS and we respond as follows:

Erosion control by incremental grading will be ensured by compliance with the City Ordinance on grading which limits the acreage that can be cleared at one time. The Grading Ordinance also provides for mulching to further assure erosion and dust control.

Thank you for your timely comments.

Sincerely,


Mike Moon
Director



DEPARTMENT OF THE NAVY
COMMANDER
NAVAL BASE PEARL HARBOR
BOX 110
PEARL HARBOR, HAWAII 96805-5020

WHILEY REFER TO
11010
002(202)/5855
0 4 SEP 1960

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Whalen:

**DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS)
WAIOLA ESTATES SUBDIVISION, WAIPIO, EMA, OAHU, HAWAII**

This letter is in response to the State of Hawaii, Office of Environmental
Quality Control letter of August 1, 1966, which requested a review of the
subject EIS.

Earlier comments appearing in Section XII relative to the EIS Preparation
Notice are still applicable. Additionally, there are three concerns that are
submitted for consideration in developing the final EIS and are as follows:

a. Storm Surface Runoff/Storm Drainage System

This section must adequately address the impacts of increased runoff
over the cliff line and into the Kipapa Gulch. The addressal should discuss
mitigating provisions to be implemented during the construction phase and
design phase to preclude damage to the existing facilities at the Waikale
Branch of Naval Magazine Lualualei. Appropriate measures and provisions
should be incorporated in the development plans.

b. Project Location

The description of the project location in relation to the existing
blast hazard zone is incorrectly stated. The existing blast hazard zone is
located up to the boundaries of Naval Magazine Lualualei, Waikale Branch. The
statement should be revised to read as follows: "The U.S. Navy maintains
active operations within the Kipapa Gulch bordering the southern half of the
site. A portion of the project is located contiguous to the station boundary
and immediately adjacent to the existing blast hazard zone."

c. Fencing along Cliffline

No indication is given in the subject EIS if fencing will be
constructed to enhance residential safety along the edge of Kipapa Gulch.
The U.S. Navy looks forward to receiving two copies of the final subject EIS.
Mr. Bill Liu of this command is the U.S. Navy point of contact and can be
reached at 471-3703.

Sincerely,

P. O'CONNOR
Captain, U. S. Navy
Chief of Staff

Copy to:
Mr. Howard Mural, Project Manager, Waiola
Department of Housing and Community Development
City and County of Honolulu
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

400 KULUWAHINE STREET
HONOLULU, HAWAII 96805
PHONE 533-6181



FRANK P. FAU
DIRECTOR

MICHAEL M. MOON
DIRECTOR
ROBERT W. SASSANO
DIRECTOR

Captain P. O'Connor
September 22, 1986
Page 2

however, we believe it would be more appropriate to leave such matters to the discretion of the individual homeowners.

Thank you for your timely comments.

Sincerely,

for Michael M. H. Monn,
Director

September 22, 1986

Captain P. O'Connor
Department of the Navy
Commander Naval Base Pearl Harbor
Box 110
Pearl Harbor, Hawaii 96860-5020

Dear Captain O'Connor:

Subject: Draft Environmental Impact Statement (DEIS) for the Waiola Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

The comments contained in your memorandum to the Department of Land Utilization dated September 4, 1986 have been reviewed by the staff and consultants preparing the EIS and we respond as follows:

1. Storm Surface Runoff/Storm Drainage System

The design of the Storm Drainage System will be coordinated with that of the adjacent drainage system for the Waikole development so that there will be a minimum of runoff into the Waikole Gulch. We are aware of the Naval facilities located at the Waikole Branch of the Naval Magazine at Luahala and will make every effort to minimize the runoff generated by this project. The location of the drainage reservoir between the Waiola and Waikole projects will be maintained for this purpose.

2. The recommended change to correct the section describing the Project Location will be incorporated into the Final EIS and include its relationship to the existing blast hazard zone which is located entirely within Kipapa Gulch at a level substantially below that of the Project Site.

3. The suggestion regarding the provision of fencing has been reviewed,



DEPARTMENT OF THE ARMY
HEADQUARTERS, UNITED STATES ARMY WESTERN COMMAND
FORT SHAFTER, HAWAII 96848-5100

August 11, 1986

0 4 SEP 1986

Directorate of Facilities Engineering

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Whalen:

The Draft Environmental Impact Statement (DEIS) for the Waioala Estates Subdivision, Waipio, Ewa, Oahu, Hawaii has been reviewed. The attached letter from our higher command, U.S. Army Western Command, indicates the Army's position with regards to the proposed development and the status of Kipapa Military Reservation.

Thank you for the opportunity to comment on the DEIS.

Sincerely,

Original signed by
DAVID A. MAXON, MAJ, EN
Joseph S. Wasielewski
Colonel, Corps of Engineers
Director of Facilities
Engineers

Attachment

Copy Furnished:

Mr. Howard Kurai, Project Manager,
Waioala
Department of Housing and Community
Development
City and County of Honolulu
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

Mr. Michael Moon, Director
Department of Housing and
Community Development
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Moon:

This is in response to the former Director's letter of July 17, 1986 regarding the portion of Kipapa Military Reservation which is included in your planning for the Waioala Estates Subdivision.

The Army does not own or control the surface rights to the parcel known as Tract 9-E, formerly shown as Tract 23 in the Declaration of Taking of Civil Action No. 541. The interest acquired by the Army consists only of a perpetual easement for the location, construction, operation, maintenance and patrol of tunnels and subsurface installations. The owner, John Ii Estate, Limited, retained the right to make necessary excavations to a depth of 10 feet, in connection with construction of buildings and other surface improvements and for maintenance of ditches and streams.

We are actively involved in disposing of Kipapa Military Reservation. Disposal of this property requires approvals at several levels locally and by the Department of the Army. Depending on the value of the property, which has not yet been established, we may need the approval of the Armed Services Committees of the Congress, as well. We do not intend to separate Tract 9-E from the disposal action but will include it in the upcoming Declaration of Excess.

It appears that the City can proceed with its acquisition of land for the Waioala Estates project despite the Army's limited estate in the small parcel under discussion here.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

550 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE: 533-8181



MICHAEL M. MOON
Mayor
ROBERT MIVASABO
Deputy Mayor

September 22, 1986

FRANK P. FAU
Director

-2-

I hope this information is helpful. Please feel free to contact me if I can be of further assistance in this or any other matter of mutual concern.

Sincerely,

Charles W. Baggett

Charles W. Baggett
Lieutenant General, U.S. Army
Commanding General

CF:
Commander, US Army Engineer Division, Pacific Ocean, Fort Shafter, HI 96858-5440
Commander, US Army Support Command, Hawaii, Fort Shafter, HI 96858-5000

Major David A. Maxon
Department of the Army
Director of Facilities Engineering
Corps of Engineers
Fort Shafter, Hawaii 96858-5100

Dear Major Maxon:

Subject: Draft Environmental Impact Statement, (DEIS) for the
Waiala Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

The transmittal of correspondence regarding the Army's position on the proposed Waiala Estates development which partially borders the Kipapa Military Reservation was previously received. We are maintaining contact with your office as well as that of the Army's Real Estate Division and can hopefully be of assistance in expediting disposition of this now surplus military property.

We appreciate the Army's comments and will maintain contact with your agency as the project continues through the land use approval process.

Thank you for your attention to this matter.

Sincerely,

Robert Mivassabo

for Mike Moon
Director

245 North Kukui Street, Honolulu, Hawaii 96817, Telephone (808) 537-5966
KU 7/86 - 5156

AMERICAN  LUNG ASSOCIATION of Hawaii

September 8, 1986

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Draft EIS for Waiola Estates Subdivision

We have reviewed the subject EIS with particular attention to those sections addressing traffic and air quality impacts and have the following comments to offer.

The section on indirect air quality impacts (pp. VII-18 - VII-19) gives a misleading picture of the project's impacts because it appears to focus on the positive aspects of EPA's emission control efforts instead of the project's impacts. A serious shortcoming is the failure to point out that the consultant's report (Appendix F) indicates that the project will contribute to possible violations of State air quality standards for carbon monoxide.

The section also points out that a one-third reduction in carbon monoxide emissions from the vehicle fleet is expected by 1995. No clarification is provided to indicate that this is the national vehicle fleet and that an increase in traffic volume can overcome this emissions decrease resulting in a net increase in ambient carbon monoxide levels, i.e., the air people breathe.

The section also fails to mention air quality problems identified in previous air quality impact studies done for that same area. The Final EIS (October, 1979) for the Gentry Waipio Development directly across Kamehameha Highway from the proposed Waiola project indicated possible violations of both state and federal carbon monoxide standards. More recently, the PRU Application for the proposed Dole Kipapa Cannery (1986), also indicated possible violations of both federal and state carbon monoxide standards in the vicinity of Ka Uka Boulevard which appears to serve the Waiola Estates site.

Mr. John P. Whalen
September 8, 1986
Page 2

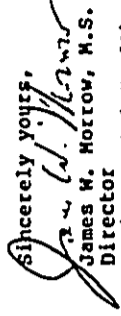
1986 SEP 10 10:44
CITY & COUNTY OF HONOLULU

The air quality impact analysis (Appendix F) itself deserves some comment. While relatively low vehicle speeds representative of congested conditions were apparently used, there is no indication that an intersection analysis incorporating queues was conducted. This is important because it is this queuing at intersections that results in the highest ambient carbon monoxide levels. This could be one reason why the report did not predict the same high carbon monoxide levels predicted in the Waipio-Gentry and Kipapa Cannery reports.

Another contributing reason for the low predictions is the use of stability category 4 for a.m. peak-hour traffic conditions. In a relatively open, mixed agricultural/suburban area such as Waipio, much more stable atmospheric conditions are likely to occur during the 5:30 - 7:30 a.m. peak traffic hours. Use of stability categories 5 or 6 would have been more appropriate for worst case a.m. conditions and would have resulted in significantly higher carbon monoxide levels. Stability category 4, as used, would have been more appropriate for the afternoon peak-hour period.

One final comment pertains to carbon monoxide exposure of vehicle occupants. The EIS makes no mention of the increased exposure of drivers and passengers to carbon monoxide as they sit in their vehicles proceeding slowly towards Honolulu. The additional traffic to be contributed by Waiola Estates will increase this exposure which is significantly higher than ambient levels because of the proximity of the people to the sources.

The reviewers of this EIS and especially the residents of Central Oahu who will have to endure the traffic volumes and carbon monoxide levels should be made well aware of the impacts associated with the additional traffic contributed by the proposed Waiola Estates project. As written, the EIS does not provide this awareness.

Sincerely yours,

James W. Morrow, M.S.
Director
Environmental Health

JWM:ct
18624

cc: Mr. Howard Mural
OEQC
UH-Environmental Center
EPA Region IX

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

630 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 473-6161



FRANKY FAY
DIRECTOR

MICHAEL W. MORROW
DIRECTOR

ROBERT MITSURATO
DEPUTY DIRECTOR

Mr. James W. Morrow, M.S.,
Director
Environmental Health
American Lung Association
of Hawaii
245 North Kukui Street
Honolulu, Hawaii 96817

Dear Mr. Morrow:

Subject: Draft Environmental Impact Statement (DEIS) for the
Waiala Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

The comments contained in your letter to the Department of Land Utilization dated
September 8, 1986 have been reviewed by the staff and consultants preparing
the EIS and we respond as follows:

1. Comment: The EIS fails to point out that an increase in traffic volume
can overcome the decrease in carbon monoxide emissions that has been
mandated by the Federal government by 1995.

Response: This is pointed out clearly in the air quality study and is
cited as the reason that a detailed carbon monoxide modeling study has
been carried out.

2. Comment: The EIS fails to mention air quality problems identified the
Gentry Waipio Final EIS, 1979, and the Dole Kipapa Cannery PRU Appli-
cation, 1986.

The Gentry Waipio air quality study was conducted before the availability
of the HIWAY 2 Model. The previous model failed to account for turbu-
lence near the roadway and its effect on carbon monoxide dispersion. The
model therefore produced much higher predictions than were found in
monitoring studies conducted in the late 1970's. The Highway 2 model
accounts for this turbulence to a certain degree and yields much lower
predictions. HIWAY 2 was not available until after 1980. At the time
of the Gentry Waipio EIS Kamehameha Highway was also not slated for
widening and the study addresses only a two lane roadway.

The Dole Kipapa Cannery project would have generated a high volume of
traffic in the vicinity of Ks Uka Boulevard. The project has been
cancelled and the traffic it would have generated is not considered in
the air quality study for Waiala.

Mr. James W. Morrow
September 22, 1986
Page 2

3. Comment: There is no indication that an intersection analysis incorporat-
ing queues was conducted. This could be one reason why the report did
not predict the same high carbon monoxide levels predicted by the above
mentioned two studies.

Response: A detailed intersection study including queuing times was
conducted for Site 1, the intersection of Waipio Uka Extension and
Kamehameha Highway, where project-related traffic would be most likely
to egress onto the existing road system during morning rush hour.
Predicted values are not as high as those in the above mentioned studies
for reasons described above.

4. Comment: Use of stability categories 5 or 6 would have been more
appropriate for worst case a.m. conditions and would have resulted in
significantly higher carbon monoxide levels.

Response: The User's Guide for HIWAY 2 shows results of two tracer
experiments conducted beside roadways in 1976 and 1978. The measure-
ment data indicated that dispersion downwind from the roadway was
typically between stability Class A and C (1 and 3) even though the data
represented a large number of cases when the ambient atmosphere was
stable (i.e. stability 5 or 6 indicated). These studies clearly illustrated
that turbulence near the roadway (generated by the traffic there) is far
more important in pollutant dispersion than is the stability of the overall
ambient atmosphere. It was largely because of these studies that EPA
modified the existing HIWAY Model to take this turbulence into account.
The major problem with using Gifford - Pasquill stability categories for
defining worst case air pollution diffusion conditions is that the empiri-
cal work defining these parameters was carried out for distances greater
than 100 meters from elevated pointed sources for a 10 minute time period.
To use these values for a one hour period for locations within 10 meters
of a roadway constitutes a significant extrapolation of their intended
purpose. More importantly, the stability of the atmosphere depends on
five factors: wind direction, wind speed, and the vertical pressure,
thermal, and moisture structure of the atmosphere. At night, with light,
steady winds, stability categories 5 or 6 are indicated, but this is
supported by measurements only for windspeeds greater than 2 meters
per second. At lower windspeeds, the wind direction tends to vary
significantly, or to approach calm, in which case warm exhausts tend to
rise nearly vertically in the surrounding cooler air, a very unstable
situation (Category 1 or 2 indicated).

So the proper pairing of windspeed and stability category to yield worst
case values appears to be a moot point. In the Gaussian Model used by
HIWAY 2 downwind pollutant concentration is directly proportional to the
inverse of the windspeed. If a 2 meter per second windspeed had been
used instead of the one predicted carbon monoxide concentrations would
have been only half as high. Furthermore, Figure 4 in the User's Guide

Mr. James W. Morrow
September 22, 1986
Page 3

for HWAY 2 clearly shows that concentration predictions based on stability categories 4, 5, or 6 tend to merge at distances close to the roadway. Thus, had stability category 6 and a one meter per second wind been used in the computations, the projected values would have been only slightly higher, not significantly higher. The point, remains, however, that the purpose of a model is to simulate reality, and the values projected in the study do indicate the worst case conditions that are likely to exist in the project area.

5. Comment: The FIS does not discuss carbon monoxide exposure of vehicle occupants.

Response: There are no National or State Environmental Standards which apply to moving receptors, nor are there any models to predict exposure of vehicle occupants to ambient air concentrations of pollutants for which models do exist. Measurements and common sense indicate that a person stuck in traffic will be exposed to high levels of carbon monoxide, but that situation will not be changed by putting the housing slated for Waiola Estates even further away from Honolulu. While the subject of vehicle occupant exposure to air pollutants is interesting, an Environmental Impact Statement is not the proper forum for its investigation.

Thank you for your timely comments.

Sincerely,

Robert Mufsonate
for Mike Moon
Director

HAWAIIAN ELECTRIC COMPANY, INC. - PO BOX 2750 - HONOLULU, HI 96840 0001

EW 2-1
W/G



Brenner Munger Ph.D., PE
Manager
Environmental Department
(808) 538 6830

August 27, 1986

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Whalen:

Subject: Waiola Estates Subdivision
Environmental Impact Statement

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

1. The increased load caused by the proposed Waiola Subdivision is estimated to be 4 MVA.
2. A new substation will not be required to serve the subdivision either alone or even if the projected loads of both the Waiola and Waikale proposed subdivisions were added.
3. We have the service request for Waiola and are working on it now.

Sincerely,

Brenner Munger

cc: Mr. Howard Murai

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

575 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE: 533 8181



FRANK F. SAND
DIRECTOR

MICHAEL W. MOON
DIRECTOR

ROBERT MUYARATO
DEPUTY DIRECTOR

September 22, 1986

Dr. Brenner Munger, Manager
Environmental Department
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840-0001

Dear Dr. Munger:

Subject: Draft Environmental Impact Statement, (DEIS) for the
Waiola Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

The comments contained in your letter dated August 27, 1986 have been reviewed by staff and the consultants preparing the EIS, and we respond as follows:

1. The estimated additional load is acknowledged.
2. The deletion of the requirement for a substation is acknowledged.
3. The processing of the service request for the Waiola Estates is acknowledged.

Thank you for your comments and as this project continues through the land use approval process, we will remain in contact with your company.

Sincerely,

Robert Muyaato
for Mike Moon
Director

MILILANI/WAIPILO/MELEMANU NEIGHBORHOOD BOARD NO. 25
P.O. BOX 3718
MILILANI, HAWAII 96719



September 8, 1986

Mr. Alvin K.H. Pang
Director
Department of Housing and
Community Development
650 S. King Street 5th floor
Honolulu, Hawaii 96813

Dear Mr. Pang:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the Maioia Estates Subdivision (August 1986). The following comments have been prepared by our Planning and Zoning Committee which, in its deliberations, have drawn upon the concerns raised in the two public hearings on Maioia that were held in Mililani, other public hearings on other development projects in the area, and the responses in the community opinion survey conducted by the Mililani/Waipilo/Melemanu Neighborhood Board in 1985.

In general, the need for gap group housing and the City's desire to fill this need is recognized. However, there has been minimal dialogue between the City and affected area residents. This limited discussion of project information and concerns of area residents has only served to fuel controversy and suspicions of the motivations of the project and the "fast-track" land use approvals process. As recommended by the consultants, the City must "increase its efforts to meet with study area and islandwide residents to discuss the subject" so as to insure that perceptions and expectations are based on accurate information and to aid in the mutual resolution of concerns. If the City firmly believes that the Maioia project is worthwhile, both for the intended occupants and in terms of added impacts and costs to area residents, then together with its ability to "fast-track" the process is the added responsibility to produce a product that can be supported by the surrounding community with minimal adverse impacts.

In the interest of brevity, the following represents our most major concerns with particular sections of the DEIS:

Alvin K.H. Pang
September 8, 1986
Page 2

Section III, E; Section VII, F: Resolution 86-202 includes 11 conditions upon which stipulated exemptions are authorized by the City Council. Of particular interest to the Mililani Board are the two conditions pertaining to traffic -- No. 7, Kamehameha shall be widened to four lanes fronting the project site with no part of the cost passed on to any purchaser of a lot in the project; and No. 11, Additional traffic improvements shall be made as prescribed by the Department of Transportation Services (DTS) after a thorough review of the project's effects.

After a thorough review of the DEIS, we have found no specific City improvements to the transportation system proposed in conjunction with the Maioia project. All references to any improvements appear to be dependent on already proposed improvements by other planned developments. The estimated costs for on- and off-site improvements do not reflect what is included. We believe that this information should be detailed to provide more accurate information regarding planned project improvements.

Finally, the DEIS is silent about the two-lane Roosevelt Bridge in Kipapa gulch which is a dangerous safety hazard. See enclosed.

Section VII, E.1: We take particular issue with a summary statement by the traffic consultant that "future Maioia residents would represent a redistribution of population rather than an increase, thereby not impacting overall traffic in the region." Likewise, the consultant's report on demographic impacts of Maioia alludes to the estimate that 25 percent of Maioia applicants already reside in Central Oahu and, therefore, will cause the population to be exceeded by 25 percent less than the projected 5,700 to 6,000 people. This is also the basis for the report claiming that the project will not be adding any "new" trips and "to the extent undoubling occurs in the study area there will be no traffic impact." These reports seem to ignore the fact that 1) whether or not Maioia residents already live in Central Oahu, the project will cause these people to be concentrated in one area and will significantly impact traffic conditions on Kamehameha Highway and the H-1, and 2) the Central Oahu domiciles displaced by future Maioia residents will be reoccupied by additional new Central Oahu residents.

an elementary school site would have to be suitably located in the development area." What does this mean? How soon can a school be expected to be in operation?

Section VI, J.5: It is not clear whether the 12-acre park and the recreational facilities will be for use only by Maioia residents. The consultant's report refers to a "recreational center and private park managed by a community association with mandatory membership for the residents at an estimated fee of \$15 per month per lot."

Section VI, J.6: In addressing public transportation, the DEIS claims that although there is heavy bus ridership, patronage from Crestview, Seaview, and Maipio Gentry is limited. There is no mention of Hiliiani which is also a part of this bus route. The report appears to ignore the fact that limited patronage from the named subdivisions is largely due to the overcrowded conditions by the time the bus reaches them. Bus service to Hiliiani is limited and demand for more service over the years has not resulted in any increase. Expansion of bus service is not proposed as a mitigative measure to lessen vehicular traffic, except for a brief statement that any expansion is dependent on additional ridership demand and available funding and buses.

Section III, C & Section VI, B.3: These sections state that Maioia would meet the objectives of providing a "a quality residential living environment" that will be fully compatible with the surrounding community and will accomplish State Plan objectives of scenic, natural beauty and historic resources with extensive landscaping. What is lacking, however, is specifics. How can a project which encroaches on open space be in conformance with its open space objective? Are there to be covenants and restrictions for the project to ensure maintenance of the quality environment? What kind of landscaping is being proposed?

In conclusion, while the City has an important role in attempting to fill the need of gap group housing, it must also:

1. Fully address the negative impacts caused by the project itself as well as the cumulative impacts generated by other planned developments in the area; and

What is important to area residents is the fact that the demand on Kamehameha Highway will increase about 25 percent over existing conditions. This cannot be dismissed as insignificant. The reports acknowledge that capacity conditions are occurring now, but assumptions are made that the Paia and Maipio interchanges together with the widening of Kamehameha Highway will allow further development along Kamehameha Highway without significantly impacting existing conditions. Not only is this conclusion highly questionable but it is also absurd in view of the consultant's failure to analyze the regional transportation impact of those Central Oahu proposed projects which already have Development Plan approval.

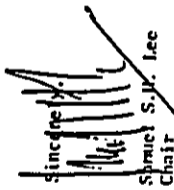
Section VII, F.2b: The diversion of traffic further upstream of H-2 and H-1 (Maipio and Paia interchanges) will only load the eastbound traffic faster, which, in turn, will cause continued adverse impact of southbound Kamehameha Highway and the east-bound Maia on-ramp. This is especially significant since it is estimated that 85.1 percent of the Maioia applicants work east of the Maia on-ramp change.

Section VII, F.5: While there is agreement that any planned development in Central Oahu and West Oahu will further deteriorate traffic conditions, it is important to know what the City is planning to do to help mitigate these conditions. The reports all tend to downplay the City's responsibility in traffic impacts and its attendant air and noise pollution by claiming to represent only a small percentage of new development. The closest reference to any type of mitigative action is a transit improvement program (carpooling, express buses, HOV lanes, etc.) aimed at reducing vehicular traffic. However, it is not clear if the City will be actively participating in and implementing these activities which have been proposed by the State Department of Transportation, or how such activities will be phased in relative to the timetable of proposed Central Oahu developments.

Section VII, J.4: With regard to educational facilities, the report states that Maipio schools are operating at capacity and cannot accommodate students from the proposed project. Short-term alternatives of bussing to Pearl City and the addition of portable classrooms are given. While there is a 6-acre school site proposed for the project, the report only states that "in the long-term,

- 2. Set the example and demonstrate how a trade-off situation need not necessarily create a negative situation but can be made to blend with community priorities for the mutual benefit of all concerned. It is not enough to say that the need for gap group housing balances out any adverse impact.

Thank you again for the opportunity to express our views.


Samuel S.W. Lee
Chair

cc: Neighborhood Board No. 25 Members

Millilani/Waipio/Melemanu Neighborhood Board No. 25

Is

KAMEHAMEHA HIGHWAY THROUGH

Kipapa Gulch Dangerous?

On August 25, 1983, the Neighborhood Board wrote to the State Department of Transportation Director Rykichi Higashionna, pointing out that the Kipapa Gulch section of Kamehameha Highway is one of the most dangerous stretches of roadway in the State. The Board recommended that the Department of Transportation begin designing and planning for an extension of the divided Kamehameha Highway from Lanikuhana Avenue through Kipapa Gulch, to connect with H-1.

In his letter of September 19, 1983, Mr. Higashionna replied that that portion of Kamehameha Highway is not considered to be dangerous and stated that stricter enforcement policies probably would curtail much of the accidents.

The texts of these two letters are reproduced below. Should you have any views on the subject, please send them to the Neighborhood Board in care of State Savings, Millilani Shopping Center, Millilani 96789.

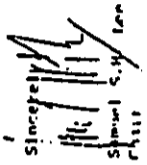
Dear Mr. Higashionna:

At its regular meeting on August 24, 1983, the Millilani/Waipio/Melemanu Neighborhood Board adopted a resolution asking the State of Hawaii, specifically the Department of Transportation, to begin designing and planning for an extension of the divided Kamehameha Highway from Lanikuhana Avenue through Kipapa Gulch to connect with H-1.

Kipapa Gulch, or Roosevelt Bridge and its approaches on Kam Highway, is one of the most dangerous stretches of roadway in the entire state. Almost everyone on the Board has heard of the many serious accidents, and some may have had friends or acquaintances killed or injured in traffic accidents. The following statistics show how dangerous Kipapa Gulch is - that is, the 2.5 mile stretch on Kam Highway from Lanikuhana Avenue to Ka Uka Street (Gentry Business Park).

	1980	1981	1982
Accidents	37	37	18
Deaths	2	2	2
Injuries	36	25	28

A divided bridge and highway would help avoid the head-on collisions which have plagued Kipapa Gulch. In addition, the continued growth of population in Waipio now heavily congested with traffic. Finally, emergency call boxes, particularly urgent because of the many accidents, and better street lighting are also imperative to make Kam Highway a safer road.

Sincerely,

Samuel S.W. Lee
Chair

PLEASE TURN OVER,
CONTINUED ON OTHER SIDE.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

150 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE 473-4161



MICHAEL M. MOON
DIRECTOR

ROBERT WYKALSKI
DEPUTY DIRECTOR

FRANK F. FAY
CHIEF

September 22, 1986

Mr. Samuel S.H. Lee, Chair
Milliani/Waipio/Melemanu Neighborhood
Board No. 25
P.O. Box 3116
Milliani, Hawaii 96789

Dear Mr. Lee:

Subject: Draft Environmental Impact Statement (DEIS) for the
Waioala Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

The comments contained in your letter dated September 8, 1986 have been reviewed by staff and the consultants preparing the EIS and we respond as follows:

1. Community Input and Discussion:

The formal public hearing on the project and series of informational meetings have been intended to ensure both that the community is informed regarding the project and to provide a means of open discussion. The Department of Housing and Community Development plans to conduct additional public meetings in the future. The objectives of keeping the community informed and providing for open discussion were and are being implemented as an integral part of the project.

2. Section III.E.; Section VII. F:

The traffic improvements being planned include the widening of Kamehameha Highway from the Ka Uka Boulevard intersection to the Waiala Interchange, the construction of the Waipio and Paia Interchanges, and the signalization necessary to assure safe traffic flow. The planning of each of these components is being carried out independently by different parties and construction schedules vary. At this point, cost estimates are not available. However, the design, planning, and implementation for each component of these improvements are being carried out under the supervision of the State Department of Transportation (DOT). It should also be noted that if the opportunity to obtain Federal aid to fund these improvements arises, the State DOT has indicated that they will pursue this avenue of assistance. We regret having omitted this information.

Dear Mr. Lee:

Thank you for your letter of August 25, 1983.

Although that portion of Kamehameha Highway has had a number of accidents, it is not considered to be dangerous. Our review of the accidents indicate that driver inattention (e.g. falling asleep), speeding and drinking were major causes; stricter enforcement policies probably would curtail much of the accidents.

Our review also indicates that the existing street lights are adequate, however, we can increase the brilliance in the area by upgrading the lights to the more efficient high pressure sodium type when funds become available.

While emergency call boxes are desirable, installing them will cost as much as \$5,000 to \$10,000 each depending on the location. It will also cost approximately \$1500 a year to operate them. As with other desirable items, we do not now have funds to install and operate them.

Extending the divided highway to the vicinity of Waiala Interchange was considered in 1953, prior to Statehood and the availability of Interstate funds. Since the construction of H-2, we now consider the project to be of lower priority.

The plan at that time was to construct a separate 2-lane one-way highway, outbound, on the Koolau Range side of the existing Kamehameha Highway and use the existing 2-way roadway for inbound traffic only. The cost of a new outbound lane facility is presently estimated at \$12 million. Additionally, improvements to the existing highway for inbound traffic only would probably be another \$2-\$3 million.

We are continually working with developers of the areas along this portion of Kamehameha Highway to find mutually satisfactory solutions to a perplexing problem. Until more permanent solutions and sufficient funds are available the most cost effective alternative appears to be stricter enforcement of present regulations.

If there are other questions or if more detailed information is required, please call me at 548-3205.

Very truly yours,

Ryokichi Higashimura
Ryokichi Higashimura
Director of Transportation

No. 4-10/83

3. Section VII, F.1:

Regarding the "redistribution" versus "new" population in Waiola, the traffic impact analysis conducted in the immediate vicinity for the proposed project was based upon the assumption that all the future Waiola residents would be "new" population and not a "redistribution" of the West Oahu and Central Oahu population. Therefore, the analysis of Kamehameha Highway was based upon all "new" trips generated by the proposed Waiola Subdivision. The increased demand generated by the Waiola project would be accommodated by the widening of Kamehameha Highway to four lanes. The widening of a two lane highway to four lanes, triples its theoretical capacity.

The "redistribution" of population refers to "ohana" residents already living in the region; i.e., grown-up offspring with their own families living with their parents. In analyzing the impacts of Interstate Route II-1, the "ohana" assumption represents the lower limit of Honolulu-bound trips (447 vph) during the AM peak hour. The upper limit (641 vph) is based upon the assumption that all residents living in the Waiola Estates Subdivision will be "new" population.

In our regional transportation analysis, the projected 1990 peak hour traffic was adopted from the most recent State Department of Transportation travel forecast for the region that was available. The new developments in Waipio Gentry and Waikole were added to the 1990 forecast.

4. Section VII, F.2b:

The Waipio Interchange would attract traffic away from Kamehameha Highway, thereby reducing the demand. The Paliwa Interchange is expected to attract Waipahu traffic away from the Waiawa Interchange ramp, thereby reducing the ramp demands during the peak hours. The net effect would be to reduce the existing demand on Kamehameha Highway and at the Waiawa Interchange ramps. As the area develops the increased freeway access would accommodate the expected growth.

5. Section VII, F.5:

Beyond making physical improvements to the major roadway and freeways, planning is already underway to implement measures that encourage the use of mass transit and multi-rider automobile use at Waiola and the Amfac-Waikole Development. Park and Ride facilities will serve both developments.

While all of these measures may not solve the traffic problem to everyone's satisfaction, they do represent the mitigative measures that can be implemented within the City's authority and jurisdiction.

6. Section VII, J4:

The schedule and availability of an elementary school at the Waiola Estates site will be determined almost entirely by the State Department of Education. As the housing units are occupied, the generation of school age children will require that facilities be provided for them. The Facilities Branch of the State DOE will be monitoring overall facility requirements in the area and will be pre-planning the design and development of school facilities at the 6 acre site as appropriate.

7. Section VI, J5:

At the present time, it is planned that the 12 acre park at Waiola Estates will be privately maintained by the community association. The rules that will govern the use of the park and its facilities, including the availability to non-project residents, will be developed by that organization.

8. Section VI, J6:

Your comments on the rationale behind the limited patronage of riders from Crestview, Seaview, and Waipio Gentry are acknowledged. MITL, Inc. utilizes information like this to ensure that their planning provides for adequate bus services. At present, the possibility of providing shuttle or express bus service from a centralized departure area is being reviewed in conjunction with possible Park and Ride facilities serving Waiola and the adjacent Amfac-Waikole project. Every effort is being made to mitigate traffic congestion in the area.

9. Section III & Section VI, B3:

The sections cited here describe the intent and objectives that have and will continue to guide the planning and development of the Waiola Estates subdivision. The input provided by your Neighborhood Board and similar organizations helps to improve our product. The planning of a subdivision development should not and cannot be undertaken within a vacuum. Rather, such planning must be based on an understanding of community needs and desire. Further, we will be drawing on the plans and experience of other projects, both public and private, to develop effective covenants, rules and regulations and other restrictions to ensure that a quality residential environment is maintained. Over the long term, like all other subdivisions, it is expected that the pride of home ownership and community on the part of its residents will assure that the quality and appearance of the subdivision will be maintained.

1. The Draft and Final EIS documents do, to the extent possible, address the impacts that will accompany the development of Waiola Estates Subdivision. Mitigative measures that minimize adverse

Mr. Samuel S.H. Lee
September 22, 1986
Page 4

effects on the environment will be incorporated as a part of the project. These are responsibilities that are applicable to all developers and the City is not an exception.

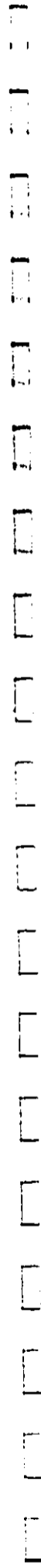
2. It is the objective of the Department of Housing & Community Development to design and build affordably priced residential housing projects that are fully compatible with the communities in which they are located. This approach is believed to be the best means of fulfilling the housing needs of Honolulu's people. Any adverse impacts that are associated with our efforts to meet this objective will be mitigated as effectively as possible.

We appreciate your timely comments. Thank you very much.

Sincerely,



for Mike Moon
Director



GENTRY WAIPIO COMMUNITY ASSOCIATION

September 7, 1986

Mr. John P. Whalen, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Subject: COMMENTS TO THE ENVIRONMENTAL IMPACT
STATEMENT - WAIOLA ESTATES SUBDIVISION

Dear Mr. Whalen:

Thank you for the opportunity to review the Draft Environmental Impact Statement for the Waiola Estates Subdivision. Our specific comments relate to the analysis of the "no project alternative" and to the description of the project's traffic and air quality impacts. Our general comments are directed to our relatively unique position of being located adjacent to a major development which has been proposed with all of the speed that government can generate, a process likely to generate substantial concern regardless of project location.

We are concerned with the impact of any additional development which would exacerbate already existing problems with the capacity of our roads and other public facilities. Just as the residents of any community, including Waiola, would be concerned about new developments which they were not aware of when they purchased their homes, we feel the right to express our concerns.

Our first specific concern is that the "no project alternative" has not been shown to be unfeasible. The Hawaii Housing Authority (HHA) and the City are apparently both intending to proceed with a 600 acre low-mod housing project in Ewa on land of comparable or lesser cost. In arguing for the transfer of H-3 funds to provide a mass transit system serving East and West Honolulu, the City has indicated that thousands of units are approved for West Oahu while very few are approved for the Windward side. The "no project alternative" should have considered other available lands since the project is not primarily to benefit the current land owner, but the public.

Mr. John P. Whalen, Director
Department of Land Utilization
September 7, 1986
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The traffic impact of Waiola is addressed from the perspective that various intersections, ramps and the H-1 Freeway (east to town) are already at capacity for peak period traffic. In the scenario utilized by the drafters, the additional volume generated by Waiola "represents only a small percentage of new development in the region" and, by inference, is of little additional adverse impact. This is a very disturbing line of reasoning to hold that since traffic is already extremely bad, a little more won't hurt. We believe the EIS should present a range of additional and total waiting time we can all, including the Waiola residents, expect to enjoy once the total project is in place. This should be a systemic analysis from point of trip generation to trip destination.


The regional traffic concerns do not quantify the impact to drivers, in terms of waiting time, of new development proposed for Ewa and Hiliilani Hauka, as well as the expansion of Hakakilo and Village Park. Even with the long term development of a second urban center in Ewa to serve as a center of new employment, it is reasonable to assume that some significant percentage of the residents of all new development in Ewa and Central Oahu will use H-1 to travel to their jobs. A prudent appreciation for the cumulative impact of all development served by H-1 would lead a reasonable person to see that traffic congestion will only get worse. The EIS leaves the impression that congestion at certain ramps is "so bad due to H-1 congestion that it is not possible to qualify the situation. Consequently, the EIS seems to conclude, additional volumes from Waiola will be of little significance in comparison to the still larger volumes of additional traffic generated by thousands of approved, but unbuild housing units which will be served by H-1. This type of analysis seems to encourage additional traffic since each incremental addition can be dismissed because traffic is already congested.

Relatedly, air quality standards appear to already be exceeded for certain periods at major intersections fronting Kaneohe Highway. Even with signalization, it is likely that longer periods of high emission motor vehicle operation are likely to occur at these intersections due to the increased number of vehicles queuing up. We believe this to be a matter of health for both vehicle occupants and nearby residents. Additionally, the increased traffic volumes may further decrease traffic flow enroute to trip destinations, thereby adding additional pollutants within and adjacent to major ramps and thoroughfares.

Mr. John P. Whalen, Director
Department of Land Utilization
September 7, 1986
Page 3

There being no quantification of these concerns, we question whether a reasonably informed decision can be made as to these impacts and the effectiveness of any measures recommended for their mitigation. We request that the draft EIS be revised to address the concerns. If your determination suggests that no revision is warranted, please inform us of the rationale supporting your decision.

FOR THE BOARD OF DIRECTORS


Paul J. Cathcart
President

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

840 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE: 473-4181



FRANK F. PAUL
DIRECTOR

MICHAEL W. MOON
DIRECTOR

ROBERT MIYASATO
DIRECTOR

September 22, 1986

Mr. Paul J. Cathcart, President
Gentry Waipio Community Association
94-515 Ukele Bay 15
Honolulu, Hawaii 96797

Dear Mr. Cathcart:

Subject: Draft Environmental Impact Statement (DEIS) for the
Waiola Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

The comments contained in your letter dated September 7, 1986 to the Department of Land Utilization have been reviewed by staff and the consultants preparing the EIS. We understand your concerns and appreciate your having communicated them to us.

Your concerns are addressed to the issues of considering alternative sites for the project, particularly in Ewa, traffic congestion and air quality. We respond as follows:

Consideration of Alternative Sites/The "No Project" Alternative

The critical and growing need for affordable housing on Oahu can only be met by developing projects similar to the Waiola Estates Subdivision wherever land costs make it economically feasible to do so. However, since concentrating developments of this type in a single area or district must also be avoided, as a practical matter, sites for affordable housing projects are limited. Given the identified demand for housing, other projects providing affordable housing must be developed in addition to, and not in lieu of, the Waiola Estates Subdivision. Briefly stated, alternative sites do not exist. In addition to Ewa, lands situated throughout Oahu, including Windward Oahu are being evaluated for feasibility as affordable housing developments.

The function of this department is to ensure that the housing needs of the people are met, particularly those of a growing group who are unable to compete effectively in the conventional housing market due to their limited financial resources. In carrying out this function, we rely heavily on the other City Departments and Agencies, as the Department of General Planning, Department of Land Utilization, Department of Public Works, and Board of

Mr. Paul J. Cathcart
September 22, 1986
Page 2

Water Supply. This ensures that each project is well planned and designed to meet community needs.

Traffic Congestion and Its Related Effects

We are aware that traffic congestion is a major problem in Leeward and Central Oahu and recognize the situation will worsen with increased development unless mitigative measures are implemented. As such, our planning for the Waiola Estates Subdivision has included coordinated planning with the adjacent Amfac-Waikole Development for the widening of Kamehameha Highway in that area and the construction of the Paia Interchange which will eventually provide residents with an alternate access to the II-1 Freeway.

We expect further improvements of the traffic flow on Kamehameha Highway with the construction of the Waipio Interchange and improvements to the II-1 Freeway which are being carried out by the State Department of Transportation. Beyond making physical improvements to the major roadway and freeways, planning is already underway to implement measures that encourage the use of mass transit and multi-rider auto use at both Waiola and the Amfac-Waikole Development. Park-and-ride facilities will be provided within both developments.

While these measures may not solve the traffic problem to everyone's satisfaction, they do represent the mitigative measures that can be implemented within the City's authority and jurisdiction.

In closing, the DEIS which your organization has reviewed is in the process of being revised and refined as a part of developing the Final EIS. Many of the concerns that you have expressed are being further addressed as a part of this process.

Thank you for timely comments.

Sincerely,

Robert M. Hoon
for Mike Hoon
Director



September 5, 1986

Mr. Howard Mural
 Dept. of Housing & Community Development
 City & County of Honolulu
 650 South King Street, 5th Floor
 Honolulu, Hawaii 96813

Re: Proposed Waiola Estates Subdivision
 Environmental Impact Statement

Dear Mr. Mural,

Hawaii's Thousand Friends recognizes there is a need for the so-called "gap group" affordable housing and low/moderate income housing that this project ostensibly would serve. However, we cannot support this development at this site, nor the manipulation of public opinion which attended the birth of the concept. We are aware that the ramifications of the project, if allowed at Waiola, are far-reaching and negative. Accordingly, we have filed suit against the City regarding a project we believe to be illegal. Public planning must be in the public interest and in harmony with citizen supported planning objectives, under the law.

II - Purpose
 It is obvious that City Council is in substantial agreement with the position taken by Hawaii's Thousand Friends (HTF) as demonstrated by its restrictions on the proposed project present in the enabling City Council Resolution 86-202 (Appendix A of the EIS). It is unfortunate, however, that Council chose to approve Waiola in any form, given the legal questions, its deviation from established island-wide planning policy, and the Waiola proposal's inherent political sophistry.

It is interesting that where the Preparation Notice claimed that purchased negotiations for the lands were concluded, (also implied in newspaper advertisements for the project) the EIS now advises that "Negotiations with Castle and Cooke, Inc., are continuing..." (III.9). Which is correct, and how does the answer relate to the use of 359G, the constitutionality of which will be decided by the courts? To what extent is this project merely an accommodation by the City to the landowner who, according to the March 20, 1986 letter from Mr. Jack Suwa (Section XII), had already submitted a

741 River Street Suite 202 Honolulu, Hawaii 96817 (808) 538-1276

Waiola proposal to the Department of General Planning for the 986/87 Development Plan review? We find no clarification in the EIS of what Mr. Suwa has called an "apparent conflict."
 III. Project Description and Statement of Objectives

A. Project Location
 The City's disclaimer that ammunition storage by the U. S. Government has been discontinued "within the Gulch" does not really answer the questions raised in Captain P. O'Connor's July 7, 1986 letter, which requested that the EIS address the proximity of the project to such storage there and at Waikale, "and the general advisability of this site for housing." We do not believe legitimate U. S. Navy concerns, having interest to the larger resident population, as well, have been adequately addressed. How amenable will the federal government be to the City's request to relinquish its easement, under these circumstances?

Further, the several queries regarding "why Waiola" instead of Ewa, planned for Secondary Urban Center development, from those testifying before City Council and in response to the Preparation Notice, are not answered in the DEIS.

B. Project Description
 We fail to see how the project as described can be economically feasible for gap group and low/moderate income clients. Infrastructure costs, alone, will be enormous. How many homes of the 1500 total house lots will actually be built by the City. As we understand the proposed project, only 20% or 300 homes for low/moderate income families are to be City-built and leased to disadvantaged tenants for a 10-year, "buy-back" resale period. We see no discussion of provisions preventing speculation during - and following - the 10 year period. City ads have led lottery participants to believe they would "own" their homes: we do not believe that the DEIS adequately describes the leasehold arrangements briefly mentioned in the Preparation Notice.

C. Statement of Objectives
 The City does not make a good case for removing these prime agricultural lands from their present use. It is absurd to claim that Constitutionally protected agricultural lands are less important than the uses listed, especially since State and City Policies would appear to be in direct opposition to this proposal.

County plans would direct new urban growth to Ewa. Ewa is not now, nor has it been historically, part of Central O'ahu despite the tortured reasoning of the current City administration. Only 300 families would derive any real benefit, and then for only a 10 year period, with rampant speculation likely to follow. The other 1200 homes intended for the gap group may be impossible without the following questions being answered satisfactorily:

- 1) Are the estimated "subdivision improvement" costs realistic? We note that a minimum \$15,000,000 will be necessary for off-site improvements with another estimated \$15,000,000 house costs required

for only 300 low/moderate income homes. If all 1500 homes were to be constructed to "turnkey" at \$50 per square foot, the housecosts alone could reach \$75,000,000. Since this does not address ingress and egress costs, nor park, school and water reservoir costs - including planning and engineering - we do not believe the table on III-9 shows adequate cost estimates and projections.

2) Will the methods for funding suggested in the Preparation Notice still apply? The DEIS does not identify numbers and locations of homes to be built at City expense, nor does it delineate the numbers and locations of "spec" lots to be sold to subsidize homes built at City expense. "Pie in the sky" is not sound urban planning.

3) If 1200 speculation houselots are to be sold at an average of \$16 per square foot, to subsidize the 300 low/moderate housing units, income to the City will be no less than \$96,000,000 (5000 sq. ft. houselot times average of \$16 per sq. ft. "market price" sale times 1200 houselots). By escalating the value of agricultural lands through urban condemnation, does the City intend to also finance purchase of the raw lands from the owner, in addition to on-site, off-site, and turnkey costs? If estimated costs are only approximately \$39,000,000 (including land costs), is the City to experience a windfall of about \$57,000,000?

4) If the usual off-site improvements per lot are estimated at a minimum of \$10,000 and the usual housecosts to turnkey of \$50 per sq. ft. apply for an 800 sq. ft. house (even with "fewer amenities") each low/moderate unit would appear to cost the City about \$50,000 to build rather than \$65,000. Surely the City does not intend to profit from the disadvantaged, since four-fifths of the subdivision would so heavily "subsidize" 300 units or the remaining one-fifth of the total? How will the costs and profits will be distributed? The DEIS does not specify.

5) We would like to know how much larger the Kipsapa Gulch rim lots would be than the "standard" lots. What are the differences between low/moderate, standard, and "subsidizing" lots? Does the method of cost distribution described in the Preparation Notice apply to the DEIS? Does this mean that only the lots abutting the Gulch will carry the development costs of the subdivision?

6) What is the role planned for HUD to play in the development of the proposed project? We note with interest the comments from the Honolulu office of the U. S. Department of Housing and Urban Development, dated June 11, 1986, and March 26, 1986; and those of the American Lung Association dated June 20, 1986.

F. Historic Perspective
The accurate statement that the land that "has always been used for agricultural purposes," also describes our expectation that the state retain its commitment to protecting prime ag lands, as required by our state Constitution.

IV. Alternatives Considered

It is our state environmental policy to "Promote and foster the agricultural industry of the State; and preserve and conserve productive agricultural lands" (emphasis added). It is obvious, as Jack Suwa, Chairman of the Board of Agriculture pointed out in his June 30, 1986 letter (DEIS section XII) that this proposed project cannot be presumed to conform to the "State Agriculture Functional Plan and its objectives and policies, particularly, implementing Action B(5)(c)."

All alternatives listed relate to the Waioala site, as though lands already designated for development were not available (with appropriate state and county land use designations) on the Ewa plain. There is no compelling reason to remove these productive lands from agriculture. The speculative nature of the city's arguments make them less than convincing. Worse, there is reason to believe that the City seeks to assist a landowner who may no longer be committed to agriculture to obtain urban redesignation for these acres which will place urban pressure on other Central O'ahu lands, as well. The negative ramifications for this development on the future of agriculture on O'ahu are considerable.

As a citizen organization dedicated to responsible planning, we support the Constitution and its commitment to agriculture, believing that the landowner, if he no longer wants to grow pineapple, should sell it at agricultural prices to other farmers for their productive use. Our laws and public planning will have no meaning if governmental agencies participate in land speculation schemes.

Water can be made available for agriculture on O'ahu today, as it has in the past, if the county recognizes its Constitutional mandate.

Crops can be produced for local and distant markets on a competitive basis if there is a concerted effort by state and county to support agriculture. It is absurd to presume that local farmers cannot compete with Mainland growers in serving local residents and the tourist industry. What is required is the governmental resolve to support such a desirable end. And for those who own agricultural lands to make them available to those who want to farm.

V. The Affected Environment

The topography, geology, soils and climate speak to the site's value as prime agricultural land.

As for the hydrological characteristics, even as we review this DEIS, a new agricultural product is being hailed: cocoa trees. We remind county planners that at the time of discovery Central O'ahu was forested (as described by Vancouver); the role that such trees played in maintaining and regenerating the Pearl Harbor aquifer was no doubt considerable. For the benefit of the future, re-

forestation through orchard crops may serve both agricultural and urban water needs, as well as farming productivity, among other desirable environmental goals.

Also, the letter from the Navy's Captain O'Connor, alluded to earlier, expressed concern for the reduction of ground absorption of water for replenishing the aquifers and the cumulative effect on same by increasing numbers of allowed housing projects in the area resulting in long term impacts on water resources. This concern was also expressed by Edwin T. Murabayashi of the University of Hawai'i Water Resources Research Center in his June 30, 1986 letter; and in both letters from Chairman Suwa, Board of Agriculture, and by Hawaii's Thousand Friends. The DEIS is not adequate in addressing these concerns.

Similarly, a number of respondents to the EISPN requested information as to how the proposed project might affect water quality: these questions remain unanswered.

The significance of the project toward creating possible drainage problems and floodplain hazards, or its potential impact on the coastal zone through erosional impacts on streams, etc. (a concern expressed by the DPED), is either ignored in the DEIS or dealt with so summarily as to have no meaning.

The discussion of polluting factors which could contaminate this sensitive area overlying O'ahu's major aquifer remains academic in the DEIS and does not seriously examine the effects of urbanization, with its pesticides, herbicides, household compounds, etc. Discussing the recent history of well water contamination in the area without relating potential impacts of the proposed subdivision does not fulfill requirements to thoughtfully assess possible environmental impacts.

HTF is in its fifth year of evaluating EIS's: seldom do the proponents of a project believe any flora or fauna are present which could be adversely affected. This DEIS follows the pattern, and has made no survey to support its prior assumptions. Similarly, no cultural/archaeological survey or literature search has been made. If a "field inspection" was made, it would be useful to know by whom, for how long, and when.

Social impact, we believe, extends far beyond the matters discussed in the DEIS. However, there is useful information in the DEIS weighing against the project, in terms of population to exceed the General Plan. This is not, as the City claims, a NIMBY issue. The facts are that the project is outside the county's General and Development Plans, is in opposition to the State Constitution, has been inappropriately and fraudulently presented to the public, and is in the wrong place at the wrong time for the wrong reasons.

Traffic conditions would be virtually impossible, if the project were to proceed, as described in the DEIS. Hope that the State would have the funding to alleviate the monstrous problems already

in the making through unwise City approval of the Waikole project may be unrealistic since H-3 goals have not been abandoned by the State. It is true that subdivisions build roads, just as roads build subdivisions. The purpose of public planning is to determine where both will be optimally located: the prior public decision has been 'Ewa.

Air quality considerations have been dealt with peremptorily in the DEIS. There is a remarkable assumption that removal of old cars from the highway will somehow make up for the numbers of cars generated by building the project. 1500 units can add 3000 or more vehicles to the area. The cumulative impact of many more autos added to increased tourist traffic and growth of the Primary Urban Center in 'Ewa argues forcibly against additional growth in Central O'ahu.

The foregoing, of course, is also true of noise. Here we note a reference to meeting FHMA and FHA/HUD standards, suggesting that there will be a federal involvement in this project. Accordingly, we find it hard to accept assumptions that merely an unpainted stone wall can resolve the problems.

We have grave misgivings over the impacts on infrastructures and utilities. The DEIS frankly states that urbanization will require more basal water than agricultural uses have. The project will need on-site and off-site facilities at great cost (to the taxpayers of the entire island?) to access more of the precious resource from the aquifer. That the Board of Water Supply hopes to gain control of waters elsewhere on O'ahu to meet developer's demands is not the same as having such control. It may also be problematical for the City to obtain approvals from the Doh without the engineering reports which do not appear to be present in this DEIS. We believe that the "water master plan" and the studies for the Doh should be available for examination by the community before consideration of land use designation changes.

There are no supporting documents to reassure the reviewer of the DEIS that the existing sewer systems can handle the effluent from proposed Waioala's 1500 homes, on top of those of soon-to-be-constructed Waikole, which raised significant questions. The DEIS is, therefore, inadequate.

The DPED, as noted before, has already questioned the wisdom of further polluting streams which drain to the coastal waters, but it appears that Waikole Stream will receive such storm sewer drainage. The amounts and kinds of pollutants are not adequately addressed in the DEIS.

Similarly, with few areas left for additional landfills, and the projected H-Power facility not yet underway, there is no discussion of the impact on existing and planned solid waste facilities through the addition of a new 1500 home subdivision housing approximately 6000 persons. Where is the data to indicate facilities are adequate?

Extension of telephone and electric services to a newly developed subdivision on raw lands results in additional costs to all users in the system. There are public costs for these private services. These are not addressed at all in the DEIS.

Discussion of the needs for new police and fire services to the Waikole and Waioala areas do not include cost estimates for personnel and structures. The DEIS is, therefore, incomplete. Since the developments make the services necessary, those costs (which are social impacts) should be made available.

Whether or not existing health care facilities are adequate, we are uncertain, and there is no discussion of the prevailing expert standards established for communities by which they could be evaluated.

It is obvious that the educational facilities are already overextended and that the project would place great burdens on existing schools, and create new traffic problems related to busing children. These are social costs properly addressed in the DEIS but are here omitted.

It has been our understanding that a park is to be included in the proposed project (III-3), yet in Section V-23 we are told that existing facilities will service the area. Which is correct?

The admitted additional strain on already overextended public transportation implies that additional public expenditures will be necessary beyond those discussed in the DEIS. Thus, the document is incomplete.

VI. Relationship to Plans, Policies, and Controls

A. We find it curious that there is no mention of our legal challenge to 358G as it applies to Waioala. This certainly imposes a "control" of sorts on the future of this project. If we are successful, County land use and development controls may not be waived.

B. The "exception" to Hawai'i State Plan goals is a major one, since Constitutional support is given to the protection of the State's agricultural lands, also a component of our suit.

1. Additional population in this area means urbanization of prime ag lands and does not satisfy the intent of HRS Section 226-5.

2. Transient construction employment on lands representing non-renewable resources does not meet the intent of HRS Section 226-6.

3. Placing housing on prime agricultural land does not "provide" open space: it destroys it. Through such urbanization, open views and vistas now enjoyed by those travelling the highway will be lost or altered. There is nothing in the housing concept which is either rural or historic. The City claims have little to do with the intent of HRS Section 226-13.

4. It is questionable that the DLNR will be inclined to approve a project which lies within the groundwater control district, and many will encourage denial of such a request under Section 226-16.

5. The original claim was that this was to provide low/moderate and gap group housing. Now we find that there will be "market" housing, as well, in abuse of the intent of both 359-G and HRS Section 226-19. To claim "easy access" to public facilities and services, most of which do not exist, is deceptive.

6. As noted elsewhere, the existing school facilities are inadequate (see letter from Superintendent Francis M. Hatanaka, dated June 20, 1986), thus in opposition to the intent of HRS Section 226-21.

7. The proposed project is in direct opposition to HRS Section 226-7.

C. We disagree that the project is in material accordance with the Hawai'i State Functional Plans.

D. There is insufficient data offered, although requested by DPED, to determine whether or not Coastal Zone Management goals of HRS Chapter 205-A are met in the DEIS.

In light of the foregoing, we find Sections VII, VIII, IX, and X misleading, inadequate, and incomplete.

Thank you for the opportunity to make these comments.

Sincerely,

Muriel B. Seto
Muriel B. Seto,
Executive Director

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

830 SOUTH KING STREET
HONOLULU HAWAII 96813
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FRANK P. FAU
Director

MICHAEL M. MOON
Assistant Director

ROBERT MITSUO
Assistant Director

Ms. Muriel B. Seto
September 22, 1986
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September 22, 1986

Ms. Muriel B. Seto
Executive Director
Hawaii's Thousand Friends
941 River Street, Suite 202
Honolulu, Hawaii 96817

Dear Ms. Seto:

Subject: Draft Environmental Impact Statement (DEIS) for the Waiola Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

Thank you for your letter of September 5, 1986 commenting on the subject DEIS. The issues raised have been reviewed by staff and the consultants preparing the EIS and we respond as follows:

II. Purpose

A. Negotiations were reopened and are continuing with Castle and Cooke, Inc., as the acquisition price for the project site was altered by the City Council.

B. The landowner did submit an application for a Development Plan amendment to the Department of General Planning prior to finalization of negotiations for acquisition of the parcel by the City. The amendment application reflected Castle and Cooke, Inc.'s own plans for development of the site.

III. Project Description and Statement of Objectives

A. Project Location

1. Correspondence received from the Navy indicates that the southern half of the Waiola project is contiguous with a Naval Station on the floor of the Kipapa Gulch having a blast hazard zone entirely within its boundaries. Briefly stated, the project is located outside and above existing blast hazard zones. The Army has discontinued operations within the portion of Kipapa

Gulch which borders the northern half of the project site. The easement in question is located adjacent to the army's parcel and we are seeking its removal.

2. The need for affordable housing is of such a magnitude that projects like the Waiola Estates have to be developed wherever land and other costs make it economically feasible to do so. This is, however, limited by the fact that such developments must not be concentrated in a single area or district.

More specifically stated, additional affordable housing projects are needed and being planned at Waiola, Ewa, and other sites on Oahu where economic feasibility can be established. Under these circumstances, alternative sites simply do not exist.

B. Project Description

1. As a means of assuring affordability for low-moderate income purchasers, leasehold conveyance of the houselots with an option of lots at "market rate" prices is also being considered as a means of providing a source of subsidization for the project. "Market rate" housing will also broaden the socio-economic mix of households within the development.

The project will be structured so that homebuyers will purchase houselots from the City and select a home from models to be made available or construct their own homes, subject to design guidelines to assure that the subdivision will be attractive, pleasant, and compatible with adjacent communities. House construction will be done by private contractors.

A 10-year "buy-back" restriction to preclude speculation will be incorporated in the deeds and/or leases for the houselots. The "buy-back" restriction will not apply to lots sold at market prices.

C. Statement of Objectives

1. In view of the critical need for affordable housing, a balance between that need and the need to preserve agricultural land is believed to be necessary. The plans and goals of both the State and the City properly seek the ideal in every area. Many times, however, ideals are mutually exclusive and in such cases, seeking a balance between ideals is the only means of meeting the needs of the community.

The legislative intent set forth in Chapter 359G, HRS, calls attention to the housing shortage which is caused by "conflicting priorities in our pluralistic society." Chapter 359G, HRS, is the means by which such conflicting priorities can be resolved -- in favor of providing affordable housing (Section 359G-1).

2. The construction cost projections listed in the DEIS are based on engineering estimates for the site work and house construction estimates by licensed homebuilders. Both have also been adjusted for inflation. Though very preliminary, every effort has been made to estimate costs (and ultimately, the home purchase prices) as accurately as possible. Costs for the roadways, park site, school site and other improvements are included in the Development Budget on pp. III-9.
3. General obligation bonds are planned for use to finance the project. The bonds will be retired by the proceeds from sale of the houselots. Briefly stated, all project costs will be paid for by its beneficiaries--the homebuyers. Any surplus funds remaining at the completion of the project will also be rebated to the low-moderate and gap group purchasers.
4. While lots throughout the project do vary in size, each lot will be a minimum of 5,000 square feet and have a minimum frontage of 50 feet.
5. The subdivision will be submitted for approval by the Federal Housing Administration and Veterans Administration to obtain approval for FHA mortgage insurance and VA loan guarantees. This will facilitate homebuyer acquisition of mortgage loans at favorable rates.

F. Historic Perspective

Please refer to the earlier statements regarding our position on the need for affordable housing versus the need to preserve agricultural lands.

IV. Alternatives Considered

Again, please refer to the earlier statements regarding our position on housing and agriculture.

V. The Affected Environment

A. Water Availability and Quality

1. Hydrological Characteristics are described in general terms on pp. V-4, 5, 6, and in more specific terms on pp. VII-2-9. These discussions are taken from Appendix D, a study prepared by Gordon L. Dugan, Ph.D., "Environmental Aspects of Storm Water Runoff." Drainage and potable water availability have been reviewed and approved by the State Department of Land & Natural Resources and the City Board of Water Supply and Department of Public Works. In granting these approvals, the agencies must comply with applicable State and City codes and standards for Drainage and Potable Water Availability. For specific references on surface runoff and volatile compounds, please refer to pp. 10-14 and pp. 14-19 of Dr. Dugan's study.

2. Water Quality in terms of the Waikole stream and surface runoff is described on pp. V-5, 6. The study by Dr. Dugan cited earlier, also contains a detailed discussion of this subject matter.

3. Ground water recharge will be altered when the transition from agricultural use to urban development takes place. The Board of Water Supply has stated in previous studies that the principal area for recharge to the island's aquifers take place in its mauika areas. Historically, the importance of recharge from agricultural uses has diminished largely because of the increased use of drip irrigation which due to its efficiency, reduces the total volume of water used for irrigation.

A. Flora, Fauna, and Archaeological Characteristics

1. Flora, Fauna, and archaeological investigations have been conducted at a level of detail comparable to that for other projects in the area such as Gentry-Waipio and Amfac-Waikole. The long term use of these project sites for sugar and pineapple cultivation virtually preclude the survival of rare or endangered plant species. This is also applicable to artifacts of archaeological significance. A field investigation was conducted by Chinlago, Inc. as a part of its report (August 15, 1985) prepared for Castle and Cooke, Inc. which was then planning for residential development of the site.

C. Social Impacts

1. The Social Impacts have been discussed in detail by Earthplan, Inc. in Appendix C, "A Study of Demographic Impacts of the Proposed Waioala Estates Subdivision." The conclusion that the project is a "not in my backyard" (NIMBY) issue is believed to be well supported by the study.

2. The Department of General Planning and the Chief Planning Officer, has in correspondence dated September 15, 1986, the full text of which is included in Section XIII, stated that the Waiola Estates project is consistent with the General Plan. The General Plan is not based on the "preservation of all agricultural lands on Oahu." Rather, it specifies a policy of maintaining the viability of agriculture on the island.

The removal of 269 acres from agricultural use will not adversely affect the viability of the industry as Castle & Cooke, Inc. will provide agronomically equivalent acreage in Waiolua as a replacement.

D. Traffic, Noise, and Air Quality

1. Traffic conditions are discussed in Sections V-12 and 13 and VII-13-17. The complete Traffic study prepared by Austin, Tsutsumi & Associates is also included as Appendix E. The study analyzes existing conditions, the mitigative measures that will be required, and the impacts on the surrounding communities. In addition to the physical traffic improvements planned as mitigative measures, the Waiola Estates and Amfac-Waikole developments will include measures that encourage the use of mass transit and multiple rider use of private automobiles. Both developments will be served by Park and Ride facilities.
2. Air Quality impacts are discussed on pp. V-14 and 15 and VII-17 and 18. The Air Quality study prepared by Barry D. Root has been included as Appendix F and provides specific details on the impacts and methodology employed to analyze those impacts. The conclusions are believed to be well supported by the findings of the study.
3. Traffic Noise impacts are discussed on pp. V-16-18 and VII-17 and 18. The complete text of the "Traffic Noise Impact Study for the Proposed Waiola Estates Subdivision" prepared by Y. Ehisu and Associates is included as Appendix G and describes the assessment methodology, existing noise environment, future noise environment, and possible mitigative measures. Again, we believe that the conclusions and recommendations are well supported by the findings of the study.

F. Infrastructure and Utilities

1. Infrastructure and utility planning have been reviewed by the agencies responsible for approval and their comments are included at Section XIII. Ensuring the adequacy of infrastructure and utility systems is an inherent part of the approval process.

2. As stated earlier, Appendix D on Storm Water Runoff by Dr. Gordon L. Fugan outlines on page 11 of his report the constituent values of storm water runoff components in detail. Solid Waste management is planned on the basis that the II-Power facility at Campbell Industrial Park will be operational prior to the full build-out of the project. The information provided on page VII-26 was provided by the Refuse Division, Department of Public Works.
 3. The estimated costs of providing utilities such as telephone service and electricity are not available as all of the planning to date, is of a preliminary nature. As project planning progresses these service requirements will be more clearly identified. A substantial portion of the costs for the installation of additional service for a new development are also normally included as development costs which are reflected in the ultimate purchase prices paid by homebuyers.
- #### F. Public Facilities and Services
1. Police and Fire protection are made available to everyone and, as such, are public costs paid for by tax revenues. The increased property values resulting from the development of Waiola will result in higher tax revenues that will contribute toward the funding of the increased police and fire protection requirements.
 2. The availability of health care facilities is described on page VII-28. There are a number of such facilities in the area providing a wide range and choice of services including that of hospitalization.
 3. Educational facility requirements for the Waiola Estates subdivision have been analyzed by the Facilities Branch of the Department of Education. They have indicated that the proposed school site of approximately six acres is likely to be necessary to accommodate the anticipated school age children in the area. Planning for construction of additional facilities will be continually reviewed by the DOE working in conjunction with our office to ensure that all requirements are met.
 4. In addition to a 12-acre park situated within the project site, Waiola residents will be able to utilize a variety of recreational facilities both public and private, which are located within proximity to the project.
 5. As noted at pp. VII-30, expansion of bus services would be dependent upon additional ridership demand as well as the

Ms. Muriel B. Seto
September 22, 1986
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funding of MTL and availability of buses." Public Transportation is constantly being reviewed by MTL, Inc. to determine how improvements can be made to provide better mass transit service within available resources.

VI. Relationship to Plans, Policies and Controls

- A. While we do not agree with your contention that Chapter 359G, HRS, is unconstitutional, we do not believe the EIS process to be appropriate for discussion of litigation.
- B. You indicated disagreement with our having met the following requirements which are being listed here for clarity:

1. The Hawaii State Plan
 - a. HRS 226-5: Objectives and Policies for Population
 - b. HRS 226-6: Objectives for the Economy in General
 - c. HRS 226-13: Objectives and policies for the Physical Environment--Land, Air and Water Quality
 - d. HRS 266-16: Objectives and Policies for Facility Systems--Water
 - e. HRS 226-19: Objectives and Policies for Socio-Cultural Advancement--Housing
 - f. HRS 226-21: Objectives for Socio-Cultural Advancement--Education
 - g. HRS 226-7: Objectives and Policies for the Economy--Agriculture
 - h. HRS-226-17: Objectives and Policies for Transportation
2. The State Functional Plans
3. HRS 205-A: Coastal Zone Management Goals

We find it difficult to respond specifically to your general disagreement that the project complies with the State Plan, its Functional Plans, and

Ms. Muriel B. Seto
September 22, 1986
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the objectives and policies of the Coastal Zone Management Act. On the basis of the information provided, we believe the project fully complies with these requirements.

Thank you for your timely comments on the DEIS.

Sincerely,

Robert Mygants
for Mike Moon
Director

League of Women Voters

49 SOUTH HOTEL STREET, SUITE 314 HONOLULU, HAWAII 96813

September 8, 1986

Mr. Howard Murai
Department of Housing and Community Development
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Re: Draft EIS for Waiola Estates Subdivision.

Dear Mr. Murai:

This constitutes the comments of the League of Women Voters of Honolulu on the Draft EIS for the Waiola Estates Subdivision. In spite of submission of our request to be a consulted party and our specific request to receive a copy of the Draft EIS, we were not notified of its availability for comment until August 25. Consequently, we have not had as much time as we would have liked to review and comment on this document.

Our comments relate mainly to the planning issues which are of major concern to us and which the Draft EIS has inadequately discussed.

Although the Draft EIS contains a cursory discussion of the relationship of the Hawaii State Plan and State Functional Plans to the project, an adequate discussion of its relationship to the County General and Development Plans is missing. The City Council in Resolution 86-202 did exempt the project from the Central Oahu Development Plan. However, Council apparently did not exempt the project from the requirements of consistency to the General Plan.

Secondly, Resolution 86-202 does require that an EIS prepared pursuant to state law be completed; under such law a full and complete discussion of consistency with both state and county planning is required. Lastly, we think a full and adequate exploration of consistency with all county planning documents necessary to serve as a basis of discussion for this controversial project not only on an administrative and public level, but also for the Land Use Commission, which will consider this aspect of the project in deciding whether to grant a district boundary amendment.

The Draft EIS does not contain a discussion of the project's consistency with county planning policies, either as stated in the General or Development Plans. The issue is mentioned briefly in Appendix C ("A Study of the Demographic Impacts of the Proposed Waiola Estates Subdivision"); however, after noting the project's inconsistency with the General Plan's population guidelines, even that study concludes, "The inconsistency with land use policies will need to be weighed against the need for this type of project." Nowhere in the Draft EIS is this inconsistency explored or justified.

The EIS should thoroughly discuss all conflicts with county planning policies and their implications. Not only the General Plan population distribution policy, but agricultural land preservation policy, the secondary urban center concept, BP and zoning designations, and public facility plans all make it clear that this site is not planned to be developed as proposed.

The Draft EIS also fails to discuss the alternative of locating this project in the Ewa Secondary Urban Center. We think this a much more viable and realistic alternative than the No Project alternative explored in the Draft EIS, given the need for affordable housing. This alternative would be more consistent with existing planning objectives, and deserves more thorough analysis.

This project's exemption from certain planning considerations by the City Council does not mitigate the fact of its conflict with fundamental planning policies and the undesirable effects of ignoring these policies. We hope to see a more complete discussion of this subject in the Final EIS. Thank you for giving us this opportunity to comment.

Sincerely,

Arlene Kim Ellis

ARLENE KIM ELLIS
President, League of Women Voters of Honolulu

AKE:ka

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
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FRANK F. FALU
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DEPARTMENT OF GENERAL PLANNING
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DONALD A. CLEGG
 CHIEF PLANNING OFFICER
 GENE CORNWELL
 DEPUTY CHIEF PLANNING OFFICER

September 22, 1986

September 15, 1986

Ms. Arlene Kim Ellis, President
 League of Women Voters
 49 South Hotel Street, Suite 314
 Honolulu, Hawaii 96813

Dear Ms. Ellis:

Subject: Draft Environmental Impact Statement (DEIS) for the
 Mainia Estates Subdivision, Waipio, Ewa, Oahu, Hawaii

This is in response to your comments regarding the subject DEIS.

Since your comments relate primarily to planning issues, we requested the assistance of the Department of General Planning in addressing these concerns. Enclosed is a copy of their memorandum to us which addresses each of the issues you have raised.

As a final matter, we again apologize for the late transmittal of the DEIS to your organization. This was the result of an oversight during the efforts to coordinate its distribution to all of the consulted parties with the State Office of Environmental Quality Control. Under these circumstances, your submittal of comments in a timely manner is even more greatly appreciated. Thank you very much.

Sincerely,

Robert M. Moon
 for MIKE MOON
 Director

Enclosure

MEMORANDUM

TO: MICHAEL M. H. MOON, DIRECTOR
 DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

FROM: DONALD A. CLEGG, CHIEF PLANNING OFFICER
 DEPARTMENT OF GENERAL PLANNING

SUBJECT: RESPONSE TO THE PLANNING ISSUES RAISED BY THE LEAGUE OF WOMEN VOTERS IN THE DRAFT EIS FOR THE WAIOLA ESTATES SUBDIVISION

The objective which the City is pursuing with regard to Waiola is affordable housing. The legislative intent set forth in Section 359G, HRS, calls attention to the housing shortage which is caused by "conflicting priorities in our pluralistic society." Section 359G is to be the means whereby the conflicting priorities can be resolved--in favor of the provision of affordable housing (359G-1 Purpose). The conflicting priorities in the case of Waiola include the use of agricultural land, the increase of population in Central Oahu, alternative locations, the development plan, zoning, etc.--all of these conflicting priorities are resolved in favor of providing affordable housing once 359G is invoked.

While the General Plan may not have been explicitly listed in Resolution 86-202, it is inherent in the exemption provision (359G-4.1) providing that housing projects

... shall be exempt from all statutes, ordinances, charter provisions, and rules of any governmental agency relating to planning, zoning, construction standards

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Mr. Michael M. H. Moon, Director
Department of Housing and Community Development
September 15, 1986
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The resolution adopted by the City Council was reviewed by the Corporation Counsel who found that it fully complied with the City's procedural requirements and applicable laws and ordinances.

Exemption from the Central Oahu Development Plan is explicitly stated in the Council resolution and it is axiomatic that any "conflicting priorities" in the General Plan, from which the Development Plan is derived, are resolved in favor of the General Plan objective for affordable housing. Such is the intent of adopting a 359C exemption.

It should be noted that the City's General Plan objective with regard to agriculture is not the preservation of all ag land, it is "to maintain the viability of agriculture on Oahu." The specific policy directed to the Central Oahu area states:

Provide sufficient agricultural land in Ewa, Central Oahu, and the North Shore to encourage the continuation of sugar and pineapple as viable industries.

Removal of 269 acres of land from agricultural use at Waiola will not adversely affect the viability of the industry. The pineapple production at the site will be relocated to an equivalent parcel in Waialua utilizing surplus sugarcane land. Furthermore, the City's evaluation of various studies and projections indicates that the removal of agricultural land at Waiola will not negatively impact on the continued growth and development of pineapple, sugar or diversified ag.

With reference to the General Plan population distribution policy, as you know, the City Council has recognized the need for a review of the General Plan growth management policies and has by resolution requested a reevaluation of Development Plan boundary alignments. Boundary realignments will, of course, impact on the population guidelines in the General Plan. The Department of General Planning's General Plan review is in recognition of the persistent housing supply shortage which has prevailed in spite of the adoption in 1977 of a General Plan having growth management policies which were largely designed to alleviate this very problem. The issue with regard to Waiola is not its consistency with an inadequate policy but rather bringing policies into line with obvious need and viable programs to fill that need.

Mr. Michael M. H. Moon, Director
Department of Housing and Community Development
September 15, 1986
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The City's approach to the affordable housing issue does not rest on a single project or on an either/or of Central Oahu decision. The magnitude of the problem is such that we need to develop projects in Central Oahu and in Ewa as well as other locations where we can obtain land at a reasonable price.

The General Plan objectives and policies provide guidance for achieving desirable uses of land. The policies are not "fundamental" in the sense of stressing strict and literal adherence because the application of the appropriate policies and the setting of priorities among all of the policies in the General Plan are done in response to a problem and not all objectives and policies will be achieved in every given situation.

Donald A. Clifgg

DONALD A. CLIFGG
Chief Planning Officer

APPENDIX A

RESOLUTION

AUTHORIZING EXEMPTIONS FROM REQUIREMENTS RELATING TO PLANNING, ZONING, CONSTRUCTION STANDARDS FOR SUBDIVISIONS, DEVELOPMENT AND IMPROVEMENT OF LAND, AND THE CONSTRUCTION OF UNITS THEREON FOR THE WAIOLA ESTATES SUBDIVISION, WAIPIO, OAHU.

WHEREAS, the Department of Housing and Community Development of the City and County of Honolulu requested certain exemptions pursuant to Section 46-15.1 and 359G-4.1, Hawaii Revised Statutes (HRS), to enable it to develop expeditiously certain real property located in Waipio, Oahu, Tax Map Key 9-4-7: 1, to be known as the Waiola Estates Subdivision project, and to develop affordable units for low- and moderate-income families thereon; and

WHEREAS, the Council of the City and County of Honolulu is empowered to authorize exemptions from statutes, ordinances, charter provisions, and rules relating to planning, zoning construction standards for subdivisions, development and improvement of land and the construction of units thereon pursuant to Sections 46-15.1 and 359G-4.1, HRS; and

WHEREAS, the project objectives are generally consistent with the housing goals and objectives of the City; and

WHEREAS, the granting of certain exemptions is necessary for the timely and successful implementation of the project; and

WHEREAS, it is the Council's intent that the proposed exemptions shall not adversely affect the public health, safety, or welfare; and

WHEREAS, it is also the Council's intent that the project shall not contravene any safety standard or tariff of the Public Utilities Commission for public utilities; and

WHEREAS, while the Department of Housing and Community Development requested exemptions from the State Land Use District designation (State Land Use District Boundary-Waipahu Quadrangle, January 20, 1974) and from Chapter 343, HRS, relating to the preparation of an Environmental Impact Statement, the Council believes the conformance of the project to the above requirements is essential to safeguard the public health, safety, and welfare; and

RESOLUTION

WHEREAS, the City Administration has publicly solicited applications for project lots without the knowledge or approval of the Council and without obtaining any necessary approvals from the Council for the project itself; and this solicitation has created a large pool of applicants who have expectations concerning their opportunity to obtain affordable housing and whose interests should now be protected; now, therefore,

BE IT RESOLVED that the Council of the City and County of Honolulu authorize exemptions from the following requirements relating to planning, zoning, construction standards for subdivisions, development and improvement of land, and the construction of units thereon for the Waiola Estates Subdivision project:

1. The Central Oahu Development Plan, as amended;
2. The Public Facilities Map for Central Oahu, as amended;
3. Zoning Map No. 9 - Waipio (Makai), as amended;
4. Section 21-4.3 of the Comprehensive Zoning Code relating to minimum lot area and lot width, yard spacing, and maximum lot coverage regulations for an AG-1 Restricted Agricultural district. In lieu of compliance with the provisions of Section 21-4.3, the project shall comply with R-6 zoning requirements as follows:
 - a. The minimum lot area shall be 5,000 square feet;
 - b. The minimum lot width shall be 50 feet;
 - c. The minimum front yard set-back shall be 10 feet;
 - d. The minimum side and rear yard set-back shall be 5 feet;
 - e. The maximum lot coverage shall be 50 percent of the lot area;

RESOLUTION

5. The design and construction standards of the Department of Public Works and Department of Transportation Services relating to street curbing, to the extent necessary to permit the use of rolled curbs; and

BE IT FURTHER RESOLVED that the above exemptions are only authorized subject to the following conditions:

1. The City shall not extend any forgiveness or any other consideration to Castle & Cooke, Inc., affecting any other parcel of land owned by Castle & Cooke as part of the acquisition of the subject parcel by the City; and
2. An Environmental Impact Statement shall be prepared and filed. The Statement shall be prepared in accordance with Chapter 343, HRS, and shall be filed prior to the issuance of a grading or building permit, whichever comes first; and
3. A State Land Use District boundary change for the project, changing the land use designation therefor to Urban District, shall be approved by the State Land Use Commission prior to the issuance of a grading or building permit, whichever comes first; and
4. The project shall comply with all applicable federal and state statutes relating to the prohibition of discrimination in housing or real property transactions; and
5. The Department of Housing and Community Development shall adopt rules in accordance with Chapter 91, HRS, defining "low-income" and "moderate-income" households for the purpose of determining eligibility requirements for its housing programs, and establishing equitable priorities and procedures for the selection of buyers of project lots from among the applications duly submitted. The Department shall reserve at least 20 percent of the Waiola project lots for sale to low- and moderate-income households as so defined. Such lots shall be dispersed throughout the project and proportionally developed as part of each project increment. The Department shall follow these rules with respect to the Waiola project.

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The Department shall further inform the Council of the completion of the final draft of the above-required rules and of the scheduling of the public hearing thereon. The Department shall further submit a copy of those rules to the Council for comment prior to their adoption; and

6. The subject parcel shall be acquired at an average per-acre price of not more than \$25,000; and
7. Kamehameha Highway shall be widened to four lanes fronting the project site with no part of the cost passed on to any purchaser of a lot in the project; and
8. The capacity of Honouliuli Waste Water Treatment Plant shall be appropriately expanded prior to offering any residential lots in the project for public sale.
9. A plan for the replacement of the agricultural lands shall be implemented prior to the issuance of any grading or building permits.
10. No City funds shall be used for advertising Waiola Estates until all plans are finalized and approved.
11. Additional traffic improvements shall be made as prescribed by Department of Transportation Services after a thorough review of the project's effects.

BE IT FURTHER RESOLVED that the final plans and specifications for the project shall not substantially deviate from any documents denominated "plans and specifications" that may have been submitted to the Council; and

BE IT FURTHER RESOLVED that no action may be prosecuted or maintained against the City Council, its officials, or employees, on account of actions taken by them in relation to the project; and

APPENDIX B

**Agricultural and Economic Evaluation of Lands
in the Proposed Waioala Development**

prepared by

**Evaluation Research Consultants
826 19th Avenue
Honolulu, Hawaii 96816**

for

**The Department of Housing and Community Development
City and County of Honolulu
Honolulu, Hawaii 96813**

July 10, 1966

Agricultural and Economic Evaluation of Lands
in the Proposed Weiole Development

The significance of the subject lands as part of the agricultural resources of the State of Hawaii can be evaluated by examining the potential uses of the land. These uses are determined by three sets of factors: (1) the physical, agronomic and environmental characteristics of the land; (2) economic variables such as the existence and location of markets for goods that can be feasibly produced on the land, the cost of inputs required to grow the goods, and the supply of similar products from other sources; and (3) the current and future demand of agricultural producers for land having the physical, environmental, agronomic, and economic characteristics of the subject lands.

The subject lands consist of gently to moderately sloping terrain (3 to 15 percent slopes). The prevailing winds are brisk to gentle from the northeast, averaging about 5 mph. The area is exposed to long hours of direct sunlight for the greater portion of the year, and receives an average of 26 inches of rain per year. The predominant soils are Molokai silty clay loess (NuB and NuC). Supplemental irrigation is required for most shallow-rooted crops. The land currently is drip irrigated and used for pineapple production. The irrigation water comes from the Weiole ditch. The location of the site is important in that it is near the major market in the State and close to major overseas shipping points.

The relative productivity of the lands in terms of agriculture can be assessed by examining a number of productivity indices. The subject lands are designated "Prime Agricultural Lands" by the State of Hawaii Department of Agriculture agricultural lands of importance to the State of Hawaii or ALISH system. The "Prime" designation used by the ALISH rating system implies that the property has all the physical and climatic conditions

which permit sustained high yields under economically advantageous operating conditions. The land has overall productivity ratings of A821 and B831 (Land Study Bureau). A rating of A is the highest. Lands rated B have some limitations.

The Soil Conservation Service Soil Survey crop classifications for the subject parcel are Iie and Iiie if irrigated. Under this rating system the highest productivity rating is I and the lowest is VIII. The crop classification scores indicate that the land has moderate to severe limitations that reduce the choice of crops or that require moderate or special conservation practices. In the case of the Weiole fields, the lands are subject to moderate to severe erosion if not protected. According to the proposed Land Evaluation and Site Assessment (LESA) the subject lands have land evaluation (LE) ratings of 88 and 81 on a scale of 12 to 96 (letter from Jack K. Sues, State Department of Agriculture, June 30, 1986).

The LESA ratings provide a summary of all the productivity ratings. In fact, the LE rating is a weighted average of five different productivity indices, including the three discussed above. The rating for the Weiole lands indicates that when irrigated the land has productive potential. It is not the very best land in the State, but it is definitely good land, capable of producing high yields with relatively low costs and little risk of damage to the physical environment if appropriate cultural practices are followed. The lands are well-suited for their current use -- the production of pineapple, primarily for the fresh market (about 50 percent goes to the fresh market and the remainder to processing).

However, once ANFAC's development in Weiole is completed, the subject parcel will be bounded on two of three sides by residential housing. The operation of commercial agriculture in close proximity to residential housing is less than optimal. Even though agricultural operations are

somewhat protected under "right to farm laws" (Chapter 165 of the Hawaii Revised Statutes) which limit the circumstances under which existing farming operations may be deemed a nuisance, the dust and noise which are inherent parts of modern agriculture are sure to cause nearby residents to complain. Past experience indicates that nearby residents are very likely to find obnoxious the dust from the mowers used as fertilizer. A large corporation (such as Dole) that is conscious of its public image is likely to attempt to mitigate the impact of its operations on nearby residents. This will increase operating costs slightly.

The agricultural significance of the subject lands can be examined in terms of the total amount of existing lands of similar quality. The subject lands constitute a very small percentage of such lands. The subject lands are less than 0.5 percent of the "Prime" lands on Oahu and less than 0.1 percent of such lands Statewide. The acreage in question appears slightly more significant when viewed as a percentage of the lands currently being used for crop production. Currently 41,600 acres are being used for crop production on Oahu (Table 1.) This would decrease by 0.65 percent if the subject lands were to be taken out of production and not replaced.

Total pineapple acreage on Oahu would be reduced by 2.3 percent. Agricultural lands similar to Waialeale are not scarce. Such lands are found throughout the State. As of 1964, 266,000 acres in Hawaii were used for crop production (including sugarcane and pineapple). This is 58,600 acres less than were used for crop production in 1969. See Table 1. On Oahu, total acreage used for crop production has decreased by 17,700 acres since 1967 to the current level of 41,600 acres (as of 1964). The data in Table 1 are graphically displayed in Figures 1 and 2.

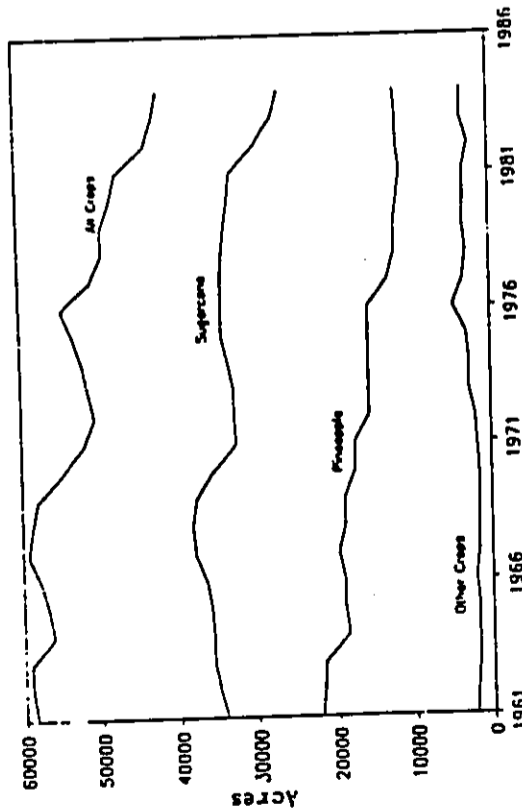
Table 1. Acreage Used for Crop Production in Hawaii and on Oahu, 1961 - 1964 (in thousands of acres)

Year	State			Oahu		
	Sugar-cane	Pine-apple	Other Crops	Sugar-cane	Pine-apple	Other Crops
1961	277.0	74.0	15.2	34.2	22.0	2.4
1962	278.9	72.0	14.9	35.2	21.7	2.2
1963	231.3	69.0	14.5	35.8	21.5	1.9
1964	233.1	65.0	15.6	35.8	18.5	1.9
1965	233.6	65.0	16.4	36.0	19.0	1.9
1966	235.4	65.0	18.1	36.5	19.0	2.3
1967	237.2	65.0	19.4	37.8	19.7	1.8
1968	238.9	65.0	19.5	38.1	18.6	1.8
1969	241.4	64.0	19.4	37.5	18.8	1.7
1970	237.9	64.0	19.4	37.5	18.8	1.7
1971	232.1	60.9	22.9	32.4	17.4	2.0
1972	229.6	58.1	22.0	32.7	15.5	2.2
1973	226.1	57.5	25.0	32.7	15.5	3.0
1974	224.2	55.0	24.4	32.5	15.5	2.9
1975	221.4	50.0	26.7	34.3	15.5	3.2
1976	221.6	48.0	26.4	34.3	15.5	4.8
1977	220.7	45.0	27.4	34.2	13.0	3.5
1978	220.7	43.0	27.7	34.0	12.0	3.1
1979	218.8	44.0	28.0	33.6	12.0	3.5
1980	217.7	43.0	30.7	33.1	11.5	3.3
1981	216.1	41.0	33.2	32.7	11.0	3.4
1982	204.8	36.0	36.0	29.2	11.5	2.6
1983	194.3	36.0	41.2	27.2	11.5	3.6
1984	188.4	35.0	42.6	26.4	11.8	3.4

Source: Statistics of Hawaiian Agriculture, Hawaii Agricultural Reporting Service, various issues.

Even after subtracting the past conversions of crop land to urban uses and the projected increases in agricultural land use on Oahu in the year 2015 based on the projections in the LESEA commission report, there are over 12,000 acres of land suitable for crop production not currently in production on Oahu (see Table 2.) If more sugarcane lands become fallow, this number will increase.

**Oahu Crop Acreages
1961 to 1984**



**State Crop Acreages
1961 to 1984**

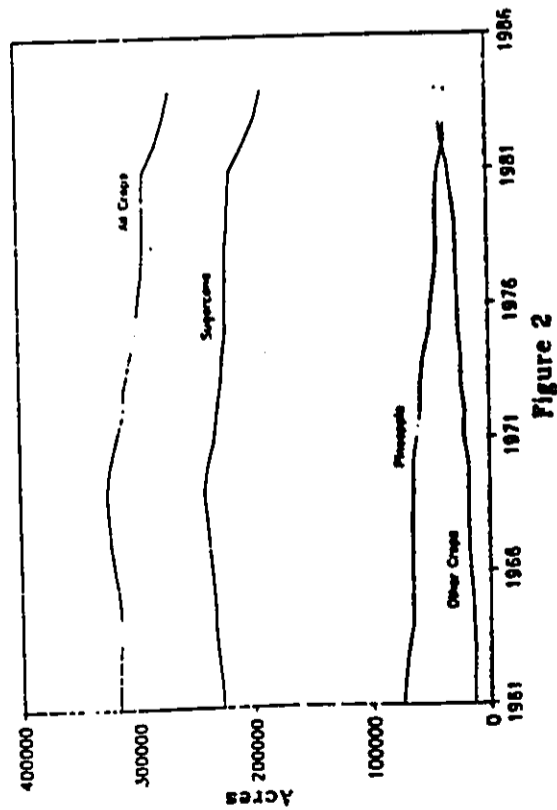


Table 2. Supply and Availability of Crop Lands

	State	Oahu	Neighbor Islands
Acreage Released from Crops	58,800	17,700	41,100
Converted to Urban Use ¹	5,700	3,800	1,900
Available	53,100	13,900	39,200
Projected Increase in Ag. Demand for Land ²			
Year			
1990	6,423	-350	6,773
1995	14,069	453	13,636
2000	20,177	643	19,533
2005	26,396	834	25,562
2015	39,241	1,219	38,022

¹ Oahu total includes: Mililani 1,600 acres; Weipio Gentry 600 acres; H-2 50 acres; Waikale 400 acres; West Beach 300 acres; Miscellaneous 550 acres. Sugarcane withdrawals for the Pepee City area were largely compensated for by new plantings and are therefore excluded. State total is an estimate based on urbanization trends on the Neighbor Islands.

² Based on projected production goals in the LEISA Commission Report, February 1986. The base year is 1983. The 1990 and 1995 acreages are taken from the LEISA report. The data for 2000 to 2015 are based on the rate of increase implicit in Tables 2 and 3 of the LEISA report. The increase in acreage reported above includes the projected increase in all agricultural land use (not just crops), except aquaculture. The most promising aquaculture activities are either brackish or saltwater systems, and these are not appropriate uses for good cropland, particularly if the lands overlay freshwater reserves.

Impact on Pineapple Production

Removal of the subject lands from pineapple production is not expected to have any impact on the production of pineapple on Oahu. Castle and Cooke Inc. has stated that the acreage that would be lost if the subject parcel is developed would be replaced with lands of equivalent quality. The land that will be substituted is currently in sugarcane. However, Castle and Cooke, Inc., plans to follow a portion of its sugarcane lands in Weipio, and even after a portion of this land is converted to pineapple, Castle and Cooke expects to have surplus land that will be followed (letter from George Yin, President, Castle and Cooke Land Company to D.C. Anderson,

July 16, 1966). The replacement acreage will probably be lands that were converted to sugar production from pineapple production starting about 15 years ago when the pineapple industry was suffering from increased foreign competition and the sugar industry was more profitable. Recently, with the pineapple industry's success in marketing fresh pineapple, the trend on Oahu has reversed, and pineapple acreage has begun to show a slight increase (see Figure 1).

Currently, the subject parcel is irrigated with water from the Waihole ditch. If the subject parcel is taken out of agricultural production, the water currently used, between 240,000 to 480,000 gallons per day depending on the weather, would become available for other agricultural uses. This is most likely to be on other lands leased by Castle and Cooke or by Oahu Sugar Co. This has the potential of lowering production costs on the lands for which additional water becomes available. However, this will not have a large impact, since the water that would be released is only sufficient to irrigate approximately 27 acres of sugarcane.

Potential Alternative Agricultural Uses

Based on the physical, agronomic, and environmental characteristics of the subject parcel previously discussed, in combination with the history of crop production in Hawaii, the following 24 vegetable crops and 8 fruit and nut crops can be considered to have agronomic potential in the Waihole area: bittermelon, broccoli, bulb onions, cucumbers, daikon, dasheen, edible ginger root, edible podded peas, eggplant, green peppers, green or snap beans, green onions, green peppers, lettuce (leaf-head types only), mustard cabbage (Kai Choy), red radish, oriental gourds, potatoes, pumpkin and winter squashes, summer squash, sweet potatoes, sweet corn, taro (upland varieties), tomatoes, watermelon, avocado, bananas, guavas, limes, yellow passion fruit, macadamia nuts, papaya, and pineapple. Forage, horti-

ture, and seed production are also agronomically possible. However, agronomic potential (the crop will grow) and economic potential (the crop can be grown for a profit) are not the same. Some of the crops listed have been tried and found to be unprofitable, either because of high production costs, lack of markets, or the availability of less expensive imports. Also, some of the crops that can be grown in the Waihole area could be grown elsewhere in the State more profitably.

Waihole has some advantages in the production of fruit and vegetables relative to other areas in the State. The primary advantage is that it is close to the principal market in Hawaii and to transportation links to overseas markets.

There are factors, however, which limit the economic potential of Waihole for the production of fruit and vegetables. One is the cost and supply of water. Under existing conditions, the most readily available supply of water is from the Oahu Sugar Company. This water would have to be pumped up to the Waihole fields and this pumping cost is substantial -- exceeding 100 dollars per acre foot. Most crops require about five acre feet of water per year, although some, such as perennial crops, require more. Thus, water pumping costs alone could exceed 500 dollars an acre. If water were to be purchased from the Board of Water Supply at agricultural rates, it would be substantially more expensive. At current agricultural rates, five acre feet of water would cost \$1,126, more than twice as much. This is exclusive of any within-field delivery costs.

Another limiting factor is that the site will be bounded by residential housing on two of three sides once ARFAC's development in Waihole is completed. Diversified agriculture and residential housing are not compatible land uses for several reasons. One is the required use of pesticides by diversified agriculture. Another is the operation of heavy farm equip-

ment near housing. This is a hazard to children, and the noise and dust are obnoxious to the residents. There is also the potential of residents harvesting some of the crop for their own use. This not only is a cost to the producer, but can be dangerous to the residents if the crop has recently been treated with pesticides. In some cases, the gardens of residents are a source of pests to the commercial operations. Even though agriculture in Hawaii is protected by a "right to farm" law, the operation of commercial farms in close proximity to residential housing increases operating costs relative to farms that are more isolated from urban communities.

A third limiting factor affecting the growth of diversified agriculture is the size of the local market and the difficulties the State has experienced in developing crops for export. These factors are discussed below.

Evaluation of Potential Fruit and Vegetable Crops for Hawaii

Crops produced in Hawaii can readily be separated into two groups -- those that are produced for export and those that are produced for local consumption. In terms of crops that can be produced for export, papaya, guava, passion fruit, seedless melon, and pineapple can all be produced on lands similar to the subject lands. Besides pineapple, papaya is the only economically feasible export crop and then only if the problems with mosaic virus can be overcome. Papaya is currently being grown on the Ewa plains near Campbell Industrial Park and on fallowed sugarcane lands in Pelehus on a trial basis.

Passion fruit is uneconomical to produce because of the high cost of installing trellises. The market for guava is beginning to grow. However, it is still too soon to recommend increases in commercial planting. Any increases in plantings are more likely to occur proximate to existing plantings in order to take advantage of existing processing facilities.

Melons can be produced more profitably elsewhere in the State. Production in Hawaii would require irrigation and the melons would have to be shipped off-island for processing or a processing facility would have to be constructed.

Several vegetable crops which are imported in great quantities are not climatically suited for production in Hawaii because they require cool temperatures for good quality and profitable yields. The following crops would be unsuitable for that reason: Chinese head cabbage, head cabbage, carrots, cauliflower, celery, head lettuce, romaine lettuce, and during most of the year, potatoes. The good storage, long-day and medium-day length onions are also not suitable because they require longer day lengths for proper growth and curing. The high incidence of insect and disease infestations limit the feasibility of producing sweet squash and melons except for zucchini and watermelon.

The fruit and vegetable crops which show some potential for commercial production in the Hawaii area are listed in Table 3. Also given in Table 3 are the quantities of the product or similar products sold in the Honolulu wholesale market in 1965. These quantities provide a crude estimate of the current demand for these products. The estimates are crude because the data for Honolulu are for aggregates of similar products. For example, all types of bulb onions are listed as "dry onions" and both oriental and American types of cucumbers are listed as "cucumbers." These quantities thus will overestimate the demand for local products since local products are not identical to all imports.

The next three columns of Table 3 provide information on market conditions that can be used to estimate the potential demand for increased production of the crops. The third column lists the percentage of the goods sold in the Honolulu market which are supplied from in State sources. When local production already supplies the entire market, any increase in production via additional planting will have two immediate effects: (1) the price of the product will fall, making it less profitable or unprofitable to produce; and (2) production elsewhere in the State will decline. That is, there will be a shift in production patterns from regions currently producing the crop to new regions. The total impact of the new planting would be a decrease in the profitability of existing operations and a resulting reduction in scale and a shift in production to the new plantings. The following crops listed in Table 3 fall into this category:

eggplant (long), green or snap beans, semi-head lettuce, daikon, dasheen, ginger root (edible), oriental squash, radishes, bittermelon, and cabbage (kai choi).

For several crops, the impact of new plantings will be smaller to the above scenario even if local production is not currently satisfying the local market. For example, crops like tomatoes and some types of cucubers can only be produced for a profit if they are marketed in the "off-season" when less expensive imports from the mainland and Mexico are not available. Other crops can only be economically produced during certain times of the year. The demand for some products is seasonal also. One example would be pumpkins. Local production satisfies the market except in the month of October. The orange gourds used for Jack-O-Lanterns are different from the pumpkins produced locally and the demand for these is met almost entirely by imports.

An indication of the seasonality of crops and potential demand for new

TABLE 3
Agronomically Feasible Crops

Crop	Honolulu Demand (1,000 pounds)	Percent of Demand Met by Local Production	Minimum Percent of Monthly Local Demand Met by Local Production	Number of Months When Local Products Exceeds 70% of the Market
Avocado	1,684	59	77	2
Bananas: Apple	616	100	100	12
Bluefield	91	100	100	12
Chinese	14,503	25	43	0
Beans, Green	804	86	100	9
Bittermelon	97	96	100	11
Broccoli	4,447	8	16	0
Cabbage, Kai Choy	768	96	100	11
Corn, Sweet	485	29	100	4
Cucubers	3,715	37	87	6
Daikon	1,488	97	100	12
Dasheens	163	94	100	10
Eggplant: Long	496	99	100	12
Round	384	71	92	8
Lettuce, Semi-head	1,321	100	100	12
Limes	354	6	19	0
Onions: Dry	13,007	5	16	0
Green	829	77	92	8
Peas, Chinese	303	5	18	0
Peppers, Sweet	2,540	37	64	0
Potatoes, Table	20,941	0	1	0
Pumpkins	1,128	10	100	5
Radishes	178	98	100	12
Squash: Oriental	463	84	100	12
Italian	1,806	67	89	3
Sweetpotatoes	1,804	47	96	6
Taro	1,197	15	23	0
Tomatoes	13,356	29	47	0
Watermelon	9,546	78	99	7
Ginger Root	1,348	80	100	6
Pineapples	34,130	100	100	12
Peppas	10,579	100	100	12

Source: Honolulu Arrivals, Fresh Fruits and Vegetables, 1965, Market News Service, Hawaii State Department of Agriculture, April 1966.

planting can be obtained by examining the supply of local production relative to imports on a monthly basis. The fourth column of Table 3 gives the percentage of supply in Honolulu of the aggregate product group during the month when local production represents the largest percentage of supply, and the fifth column gives the number of months when local supply exceeds 70 percent of total market supply in Honolulu. Whenever local supply is greater than about seventy percent of market demand, any increase in supply from local sources can be expected to affect prices downward. Whenever local production or demand is seasonal and current production provides over seventy percent of demand for some months this is an indication that increases in local production will start to depress prices. This price decrease will make the new planting a less attractive enterprise and reduce the earning for all plantings of the crop -- both the existing and new plantings. Sweet potatoes, green onions, pumpkins, and avocados are crops which are currently imported in significant quantities. However, increases in planting of these crops would be expected to depress market prices.

The three crops listed in Table 3 with the largest demands in the Honolulu market are tomatoes, dry onions, and potatoes. Most of the demand for these products is currently met by imports. This, however, does not necessarily imply that there is a substantial potential for expanded local production of these products. Potato production has been tried on Oahu and found to be unprofitable and thus this is not a likely crop for future expansion.

The demand data listed for dry onions includes several different varieties of onions. Most of the onions currently imported are the medium and long day varieties and are priced below what it would cost to produce bulb onions in Hawaii. The demand for locally produced onions, which must have a higher price in order to be profitable, is limited. The potential

for increased acreage of bulb onions is therefore limited.

Tomatoes can be a very profitable crop when marketed during the times when imports from the mainland and Mexico are scarce. However, when imports are plentiful and cheap, it is difficult to produce them competitively in Hawaii. Thus, there is some room for expansion in the production of tomatoes. However, the planting would have to be managed so as to produce during the late fall and winter. This is not the best agronomic time to grow tomatoes in Hawaii so yields will be low.

The crops for which there is a potential demand for increased acreage and which can be produced in a region with the physical, agronomic, and climatic characteristics of Waialeale are listed in Table 4. The second column gives the amount of additional acreage required to meet the entire Honolulu demand for the broad product group. However, for the reasons stated above, meeting such demand is not likely to be economically viable. The figures in the third column take into account the mix of products contained within each product group, the seasonality of local production and demand, and the availability of low-priced competing products from sources outside the State during portions of the year. These numbers represent estimates of the number of acres that could be planted to the respective crop without significantly depressing prices in the local market.

The potential acreage for taro was reduced since the apparent market demand is for wetland and dryland types and only the dryland types are feasible on the Waialeale lands. Currently, there is little or no potential for expanded avocado production. Supplies on the mainland have increased dramatically and prices have declined drastically. Also, the U.S.D.A. animal and plant health inspection service (APHIS) no longer permits the export of Hawaii produced avocados to Alaska.

Table 4. Feasible Crops for Expanded Plantings

Crop	Number of Acres Required to Meet 100 Percent of Honolulu Demand for Product Group	Number of Acres of New Plantings Estimated to be Economically Feasible
Avocados	116	0
Bananas, Chinese	543	398
Broccoli	185	80
Cucumbers	32	17
Eggplant, Round	4	1
Limes	54	43
Onions, Bulb	475	5
Onions, Green	7	1
Peas, Chinese	22	17
Peppers, Sweet	53	36
Potatoes, Table	1,632	0
Squash, Italian	38	24
Sweetpotatoes	22	9
Taro	83	10
Tomatoes	187	20
Watermelons	106	106
Total		766
Total net of bananas		368

From the viewpoint of the market, there is definitely a potential for increased production of bananas in the State. However, there are better pieces to produce bananas than Waiole. Banana production in areas such as Waiole would require irrigation. Production costs would be substantially less in areas such as Waianalo (Daha), the Puna and Hilo regions of the Big Island, and on parts of Kauai. Excluding bananas, the total potential demand for new plantings of crops suitable for lands similar to those in Waiole is 368 acres.

Lands such as Waiole, however, are not only suitable for the production of fruits and vegetables. They also could be used for the production of floral and nursery products, the production of seed, and the production of forage crops. Livestock uses, with the exception of pasture, are probably not feasible because of the proximity to residential housing.

Floral and Nursery Products

The floral and nursery industry in Hawaii has been expanding rapidly during the recent years. This industry, however, produces a large volume of highly valued products from a very small land area and does not require large acreages. The average size of all floral and nursery operations in the State is under three acres. For these crops, climate is typically more important in choosing a site than land quality. Current expansion of this industry is limited only by market availability and management capability, not by the availability of land. Also, several of the Agricultural Parks being developed make specific provisions for nurseries.

Seed Production

Lands such as Waiole are suitable for the production of seed for crops such as corn if adequate irrigation water is available. The demand for land for the production of seed corn and other seeds tends to fluctuate depending on climatic conditions elsewhere in the world. It is difficult to plan on a long term demand for such a use and it appears that sufficient lands are available to meet current levels of demand.

Forage Crop Production

Large amounts of grains are imported into the State as livestock feeds. The production of feed grains has not proven to be economically viable in Hawaii. However, the production of forage crops for green chop has potential. Corn for green chop has been produced on the North Shore of Oahu. The principal potential market for the green chop and other forage crops on Oahu is the dairy industry. However, if forage could be produced cheaply enough, the feedlot in Caspball Industrial Park is also a potential user. Lands such as Waiole are well-suited for the production of forage crops if sufficient amounts of low-cost water are available. However, the production of forage for green chop on Waiole is not likely to be an

economically viable activity because of its location. Due to the fact that forage for green chop is a very bulky product and thus expensive to transport, most commercial forage operations are on lands adjacent to the place where it will be used. The current and potential users of green chop are the feedlot at Barber's Point and the dairies in Welmes and on the North Shore. Both the dairies and the feedlot are located too far from Waioala to make Waioala an optimal location for forage production.

Conclusion

It is not the availability of land that is limiting the expansion of the crops listed in Tables 3 and 4, but rather the size of the market for locally produced crops. The de facto population of the entire State is only slightly more than a million persons and in the principal market area (Oahu), the de facto population is only 825,000 persons. This is a very small market and it does not require substantial acreage to supply such a market, particularly when many popular foods either require temperate climatic conditions not found in Hawaii or can be produced more profitably elsewhere and imported for less than it costs to produce them locally.

Placing the subject lands in an urban use will not have a significant impact on the agricultural sector of Honolulu County or the State. Lands of similar quality and economic potential are currently lying fallow and there are sufficient lands available to meet current and projected future agricultural needs.

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APPENDIX C

A Study of Demographic Impacts
of the Proposed
Waiala Estates Subdivision

Prepared for
Department of Housing and
Community Development

City and County of Honolulu

By Earthplan

July, 1986

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SUMMARY OF FINDINGS AND CONCLUSIONS

The Waiola Estates is a 1,500-unit subdivision proposed by the City and County of Honolulu and is intended for gap group income families. The site is situated in Central Oahu, across from the Gentry-Waipio community.

This study examines the potential demographic impacts, particularly as related to the character and culture of Waipahu and Mililani. Although Waiola would be in the Waipahu Neighborhood Board area, it lies only a mile away from Mililani Town. The Study Area therefore includes the communities of Waipahu Town, Gentry-Waipio, Seaview/Crestview, Village Park, and Mililani Town.

These communities of the regional "neighborhood" have a wide range of residents with different, sometimes conflicting, community goals and the social setting of the Waiola is quite diverse.

The Waipahu Neighborhood Board area has actually two "types" of communities. Waipahu Town has its roots in the plantation. The town's existing residential makeup evolved from the creation of plantation-subsidized housing in the 1940s and the rise of private and public single family units in the 1960s. Both movements targeted basically the same market and today's statistics show that Waipahu continues to experience difficulty in accommodating upwardly mobile people. When compared to Oahu and Mililani, Waipahu has proportionally more families below poverty level, more female-headed households, larger households, more crowded households, less people in managerial/professional occupations, more in-migrants, and lower educational levels.

The communities above Waipahu Town share a common identity of geographical separation from Waipahu Town because of the highway system. These communities are newer and include the developed communities of Crestview, Gentry-Waipio and Village Park. The people in these communities generally tend to have higher incomes than Waipahu Town residents, and differ on other socio-economic characteristics as well.

Mililani Town, on the other hand, has sought from its inception to accommodate a broad spectrum of the housing market. Its residential inventory ranges from architect-designed luxury homes to modest, government-assisted apartment units. Mililani residents have above average incomes, higher education levels and more two-parent households. The poverty level is low in Mililani, and its people are well represented in higher status occupations.

Given these different histories and residential makeup, Waipahu and Mililani are currently striving towards somewhat different goals. Waipahu leaders wish to see their community attain a more diverse cross section, one which is more representative of the islandwide profile. They strongly lobbied, for example, for the recent effort to amend the General Plan to include Waipahu in the Secondary Urban Center and have supported a number of private developments which include housing suited for upwardly mobile people.

Mililani leaders tend to have a different priority, one which centers around the consistency with land use policies and improvement of existing infrastructure systems before additional projects are approved.

The neighborhood reactions to Waiola are therefore rooted in these community goals. A dozen community representatives from the Study Area were interviewed to identify their feelings and concerns about Waiola and the following is a very brief summary of their reactions:

- All those interviewed believed there is a strong need for affordable housing, but most opposed this particular project. The general reason for this opposition was a feeling that the trade-off of having this type of project at this particular site outweighed any potential benefits.
- The effect of this being a "City project" was of concern. Those interviewed questioned the City's role as a developer, as well as procedures to "fast-track" this project.
- Those interviewed were very concerned that Waiola would be a homogeneous community which has the potential to be socially and economically incompatible with the planned community of Gentry-Waipio and further add to the perception that Waipahu is a "low-mod" community.
- The effect on Waiola applicants and its future residents was also discussed. Some felt that the project's affordability "was too good to be true" and that these people would be disappointed if the project cannot offer its intended price. There was also concern that the future residents would be outcasts because of socio-economic incompatibility.
- Many felt that Waiola would stress the already-strained infrastructure, particularly the roadway system. People questioned the impacts on drainage, sewerage and water systems as well.

NIMBY concerns cannot be taken lightly because those who express these concerns are most likely to experience these impacts. Some of these concerns are based on a perception or expectation which is inconsistent with Waioala's goals and objectives. These could be addressed through various informational mechanisms which provide accurate project information and encourages mutual resolution of these issues.

Waioala will nevertheless generate impacts which are real and inevitable. These include increasing the waiting time in traffic, even though this will probably occur without the project, and the replacement of open space with structures, even though this will occur with the Waioala project. These are ultimately the regional trade-offs which, in the decision-making process, are weighed against the islandwide need for this type of project.

There are also islandwide trade-offs. The project is estimated to house between 5,700 to 6,000 people. This will result in a Central Oahu 2005 population which exceeds its share, as defined by the City and County of Honolulu General Plan. Even if 25 percent of Waioala's future residents already live in Central Oahu, a proportion suggested by the most recent profile of Waioala applicants, the project can still add between 4,275 to 4,500 people to Central Oahu. Again, this is a matter of trade-off. The inconsistency with land use policies will need to be weighed against the need for this type of project.

- Other concerns raised, though not as frequently, included the agricultural impacts and loss of open space, air pollution due to high number of cars, impacts on the ammunition storage in the Navy's reservation, the necessity of the project's lot size and the unfairness of this project for those who may have already purchased comparable housing at higher prices.

Some of these concerns are based on perceptions and expectations which seem inconsistent with the current goals of this project. Those interviewed tended to see this as a typical public housing project and likened the intended market, the gap group, to residents of other government-sponsored projects. They feared that eventually community deterioration would occur because of this homogeneous community.

The gap group, however, is diverse. The income ranges and the possible employment origins suggest that this group is the average wage earner. While the 1970 average wage earner could afford to buy a home, the 1986 average wage earner cannot afford market housing and does not qualify for public assistance.

The project is also patterned after other planned communities and its residents will need to comply with design and maintenance restrictions. Based on submittals from prospective contractors, the quality and design of these homes are expected to be comparable with those of Gentry-Waipio and Hawaii Kai.

These perceptions can and should be addressed with Study Area residents, so that the community positions are based on fact, rather than inaccuracies.

Much of the concerns about Waioala is that the project is not "worth" its potential impacts on existing residents. The project is not targeted for the upper income people Waipahu leaders wish to see, and it will add to traffic congestion which plagues Millilani and other Central Oahu residents.

Waioala Estates is a NIMBY, or not-in-my-backyard, project. While islandwide values, as identified in public polls, suggest that this project is indeed a valuable contribution to the housing situation, it has regional "costs". Its impacts are felt the strongest by the nearby residents, those who have already invested in their current homes and existing communities. They generally plan to continue to invest time and energy into making their living environments safe, pleasant and comfortable.

To them, Waioala Estate's proximity to their homes means more time waiting in traffic, a possible depreciation of house and land values, and a perpetuation of Waipahu's image as a "low-mod" community.

**A Study of Demographic Impacts
of the Proposed
Waiola Estates Subdivision**

Section 1

Background and Purpose

1. BACKGROUND AND PURPOSE

1.1 Description of this Report

1.1.1 Purpose and Contents

This study was prepared for the Environmental Impact Statement (EIS) of the Waiola Estates Subdivision proposed by the City and County of Honolulu. The EIS is being prepared as directed by the City Council in Resolution 86-202.

Addressed in this study are potential demographic impacts of the proposed project. As indicated in the study's scope of work, specific areas examined include the potential changes in residential and visitor populations, possible changes to the character and culture of the neighborhood, resulting displacement, and other social impacts.

Note that while impacts related to economics, housing, and public facilities/services are somewhat social in nature, such discussions in this report are limited to subjective community perceptions and values, rather than a measurement of the actual impacts. The latter is accomplished in other reports appended to the EIS.

A key assumption of this report is that certain islandwide impacts, such as the economic impact on the homebuyers and the overall housing impacts, have been addressed in other appropriate studies. This study therefore concentrates its efforts on the potential social impacts on the Central Oahu region, namely Waipahu Town, Waipio-Gentry, Creatview, Seaview, and Milliani.

1.1.2 Overall Approach

Both quantitative and qualitative approaches are used to assess potential demographic impacts. Where possible, the study examines those impacts which can be quantified, such as growth trends and population projections. The source of these are primarily public forecasts, policies and plans.

The study also discusses less tangible impacts of lifestyle, neighborhood character, and community values. Analysis of such speculative impacts are based on discussions with knowledgeable regional community members, as well as public opinion polls and coverage by the print media.

1.2 Project Description

This section describes the physical aspects of what is being proposed in Waiola Estates, as well as identifies characteristics which differentiates this project from previous housing projects administered and/or developed by City and State agencies.

Also included is a description of the targeted market, including a breakdown of applicant information received thus far.

1.2.1 Overview of the Proposed Project

The City and County of Honolulu, hereby referred to as the City, proposes to develop this triangular-shaped 269-acre parcel into a residential community called Waiola Estates Subdivision.

Identified at Tax Map Key 9-4-07:1, the subject property consists of gently sloping lands on the southern portion of the Schofield Plateau which lies between the Koolau and the Waianae mountain ranges.

As depicted in Figure A, the project site is bounded by Kamehameha Highway (adjoining Gentry-Waipio at this location) to the east and Kipapa Gulch and the Kipapa Military reservation to the west. North of the project site is land used for pineapple cultivation. A triangular parcel of approximately 6 acres is owned by the Federal government and is wedged between the Waiola site and Kipapa Gulch. The United States government also has an easement which affects 5.879 acres along Kipapa Gulch.

Proposed plans for Waiola call for 1,500 single family residential units and the following is a breakdown of land uses:

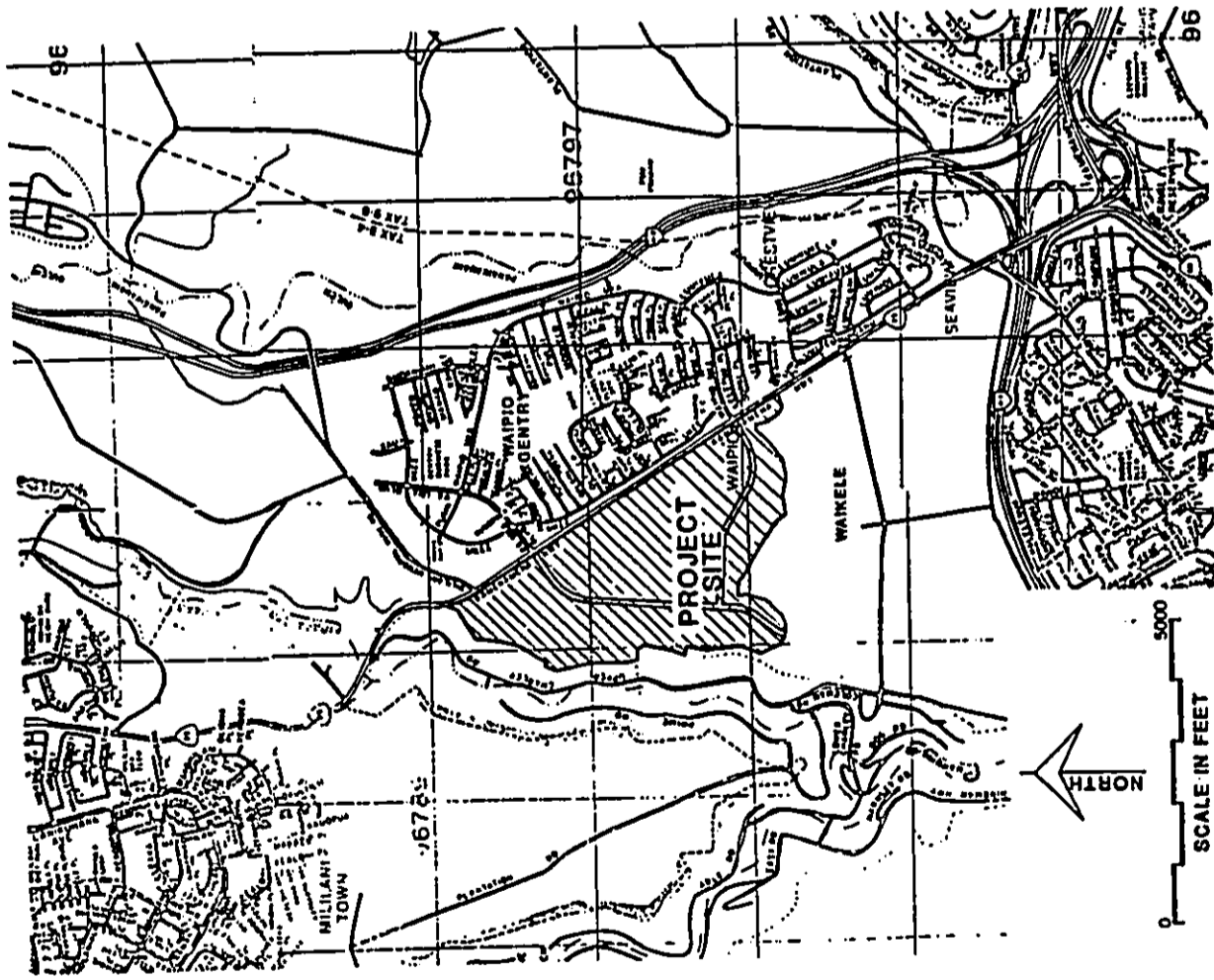
Land Use Category	Estimated Number of Acres
Residential	195
Park	12
Elementary School Site	6
Circulation and Public Facilities	54
Reservoir	2

TOTAL NUMBER OF ACRES 269

The average number of units per acres of residential use is 7.89; overall density is 5.71 units per acre.

Specific characteristics of the project are provided by the City Council in Resolution 86-202 as follows:

- minimum lot area -- 5,000 square feet
- minimum lot width -- 50 feet
- minimum side and rear yard setback -- 5 feet
- maximum lot coverage -- 50 percent of lot area



Dwellings are to consist of houses ranging in size from 800 to 1,200 square feet of interior living area. The units may be one or two-story structures, and will have covered garages. A variety of floor plans, including expandable houses, are under consideration.

Proposed community amenities include a recreational center and private park managed by a community association with mandatory membership for the residents, and a site for an elementary school.

Characteristics of the Proposed Project Which are Unique
A range of public-assistance programs are currently provided by the City and State.

The City provides opportunities for low and low-moderate income families to rent or own homes. Rental assistance is provided to applicants who qualify under the Section 8 Existing Housing Assistance Payments Program. Also administered are rental units, which may have been either developed in conjunction with a private developer or acquired.

Housing units for ownership are generally developed in conjunction with a private developer, whose profits are controlled. As with the rental units, the target market is primarily low and low-moderate income families.

In some instances, the City participates with former plantation workers in redevelopment of their existing communities and home improvements.

Currently, the City owns and operates 285 rental units, and another 460 units are under construction. Approximately 587 units have been provided for ownership, and 90 more units are under construction. Current rehabilitation projects include 497 units.

The State of Hawaii Housing Authority also provides housing assistance in a number of ways. By June 30, 1985, almost 8,900 units were completed under Act 105, since its enactment 14 years ago (Hawaii Housing Authority, Annual Report July 1, 1984/June 30, 1985).

Hula Mae provides mortgage funds at below-market interest rates. Maximum qualifying income ranges from \$36,154 for a 1-member household to \$47,407 for an 8-member household (Hawaii Housing Authority, brochure for 1986 Series A). The Authority also manages federally-aided low-rent public housing projects which have a statewide total of 6,249 units.

Figure A

Walola Estates is unlike any of these existing programs, although it does share some qualities. The differences between existing programs and the proposal are as follows:

1. Walola's market population is not specifically targeted in any of the existing programs. The City primarily provides assistance to low and low-moderate income families. Although Hula Mae is designed for gap group families, it does not specifically accommodate the "lower end" of the gap group.
2. The City is the developer on this project. Although there are legislative provisions for this approach, the development of City and State projects has been in conjunction with private developers. This role provides the ability to forego developer profit.
3. Walola will also address the needs of low-income families with 20 percent of its units. In other projects, only one group is typically targeted.

1.2.2 Characteristics of Projected Market Population

Background of the Gap Group

The project is intended to serve families who characteristically earn too much to qualify for assisted housing programs, but not enough to purchase a home with conventional financing.

The gap group is a phenomenon which arose around the mid-1970s. In a recent Bank of Hawaii newsletter, it was stated that, between 1970 and 1980, the average mortgage payment climbed far beyond the reach of the average household. The average 1970 monthly mortgage payment was \$258, requiring a monthly income of \$900. This required income was well within the average household income of \$975.

In 1980, however, monthly mortgage payments rose to an average of \$1,242, thereby increasing the required monthly income four and a half times to \$4,346. The State's average monthly income did not enjoy such an increase. By 1980, average monthly income only doubled to about \$1,900. Table 1 provides further information regarding the growing gap in affordability.

This Bank of Hawaii article further explains that, while the drop in interest rates helped improve affordability, it is only one of three factors impacting affordability. Housing price and income must also improve to achieve and maintain affordability.

The gap group, then, are people who have incomes which are either slightly below average, average, or slightly above average. Had these people been in the housing market 16 years ago, they may very well have been able to afford the typical house.

While it is pure conjecture, the converse may also apply. Had early 1970 homebuyers not bought a house, they may be unable to purchase the homes they occupy today.

Walola's Target Market

For the purposes of this project, the Department of Housing and Community Development defines the gap group as those families earning annual incomes between 80 and 115 percent of the median income. The following shows maximum qualifying incomes of the different family sizes:

Table 1
Housing Affordability

	1970	1980	1983	1985	1986
Mortgage Interest Rate 1/	8.5%	14.0%	14.0%	10.0%	9.5%
Average Price 2/	\$12,000.0	\$131,000.0	\$135,000.0	\$147,000.0	\$154,417.7
Annual Median Family Income	\$11,444.0	\$27,750.0	\$27,726.0	\$30,421.0	\$31,437.8
Average Down Payment (20%)	\$8,400.0	\$26,200.0	\$27,200.0	\$29,410.6	\$30,895.5
Average Loan Amount (80%)	\$3,600.0	\$104,800.0	\$108,000.0	\$117,471.4	\$123,522.1
Monthly Principal and Interest 3/	\$258.4	\$1,241.9	\$1,279.8	\$1,035.2	\$1,037.1
Payment as % of Income	24.6%	45.5%	55.4%	40.8%	37.4%
Monthly Income Required 4/	\$994.3	\$4,346.6	\$4,477.3	\$3,416.1	\$3,434.9
Monthly Median Income	\$972.0	\$1,893.8	\$2,310.5	\$2,375.1	\$2,434.5
Monthly Income Gap 5/	\$67.7	\$-2,452.7	\$-2,166.8	\$-1,041.1	\$-1,000.4

1/ Hawaii average

2/ Best of Hawaii Construction in Hawaii

3/ For a 30-year fixed rate loan

4/ Based on a 3.5% ratio

5/ Required monthly income less monthly median income

Source: Best of Hawaii, Business Trends, "Table A: Factors Determining Housing Affordability", May/June 1986

Number of Family Members

Maximum Annual Income

2	\$28,500
3	32,050
4	35,600
5	37,850
6	40,050
7	42,300
8	44,500

The purchaser must have sufficient income to qualify for a mortgage loan and for a downpayment.

The units must be owner-occupied, and the owners can neither currently own land suitable for residential purposes, nor have a pending application in other government housing development.

In a consultant report for this project (Chaney, Brooks and Company, and Zabotocky, 1986), typical characteristics of the gap group, thus the subdivision's future residents, were as follows:

1. The anticipated employment pattern of potential residents are expected to reflect the islandwide pattern of types of employment and place of work.
2. The greatest concentration of current residence is in the Primary Urban Center.
3. The average household size is anticipated to be 3.8 to 4.0 persons; only 1.75 persons/household are expected to be employed.
4. The typical family would have both spouses, one school age child and one grandparent, or two school age children. Single person household will not be allowed.

As of July 14, 1986, 5,614 people applied for this project. Over 36 percent, or 2,032, currently live in the Development Plan areas of Central Oahu, Ewa, Waianae, and North Shore. Over 42 percent, or 2,383, live in or around Kalihi, Fort Shafter, Moanalua, Aiea and Pearl City. The remaining 20 percent live throughout the island.

Over 25 percent of the applicants work in or near Downtown Honolulu, followed by 17.2 percent and 13.3 percent in the vicinities of the Honolulu Airport and Waikiki, respectively.

A Study of Demographic Impacts
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1

Section 2

Residential Population

2.0 RESIDENTIAL POPULATION

This section provides the islandwide and Study Area growth trends and population distribution policies.

The Study Area includes communities of Waipahu Town, Village Park, Seaview/Crestview, Gentry-Waipio, and Mililani Town, all of which fall in the Waipahu and Mililani Neighborhood Board areas. Even though the proposed project is located in the Waipahu Neighborhood Board area, Mililani Town is only a mile away and was therefore included in this Study Area.

2.1 Islandwide

2.1.1 Islandwide Growth Trends

The growth rate for Oahu has been steadily declining over the past three and a half decades although absolute population continue to increase. Table 2 shows U.S. Census population figures and derived rates for the City and County of Honolulu and the Study Area.

From 1950 to 1960, the Oahu population grew at average annual rate of 3.5 percent; from 1960 to 1970, 2.3 percent; and from 1970 to 1980, 1.9 percent. The provisional estimate July 1, 1986 population for the City and County of Honolulu was 814,642 (yet-unpublished advance information obtained from the Hawaii State Department of Planning and Economic Development) suggesting an average annual growth rate of just 1.2 percent for the early 1980s.

By comparison, the estimated 1985 population for the combined Neighbor Island counties would suggest a average annual growth rate of 3.2 percent for Hawaii outside Oahu.

2.1.2 Islandwide Growth Projections and Population Distribution Policies

The Hawaii State Department of Planning and Economic Development forecasts further decline in growth rates. The most recent population projections (1984) for the future Honolulu City and County population are as follows:

Table 2

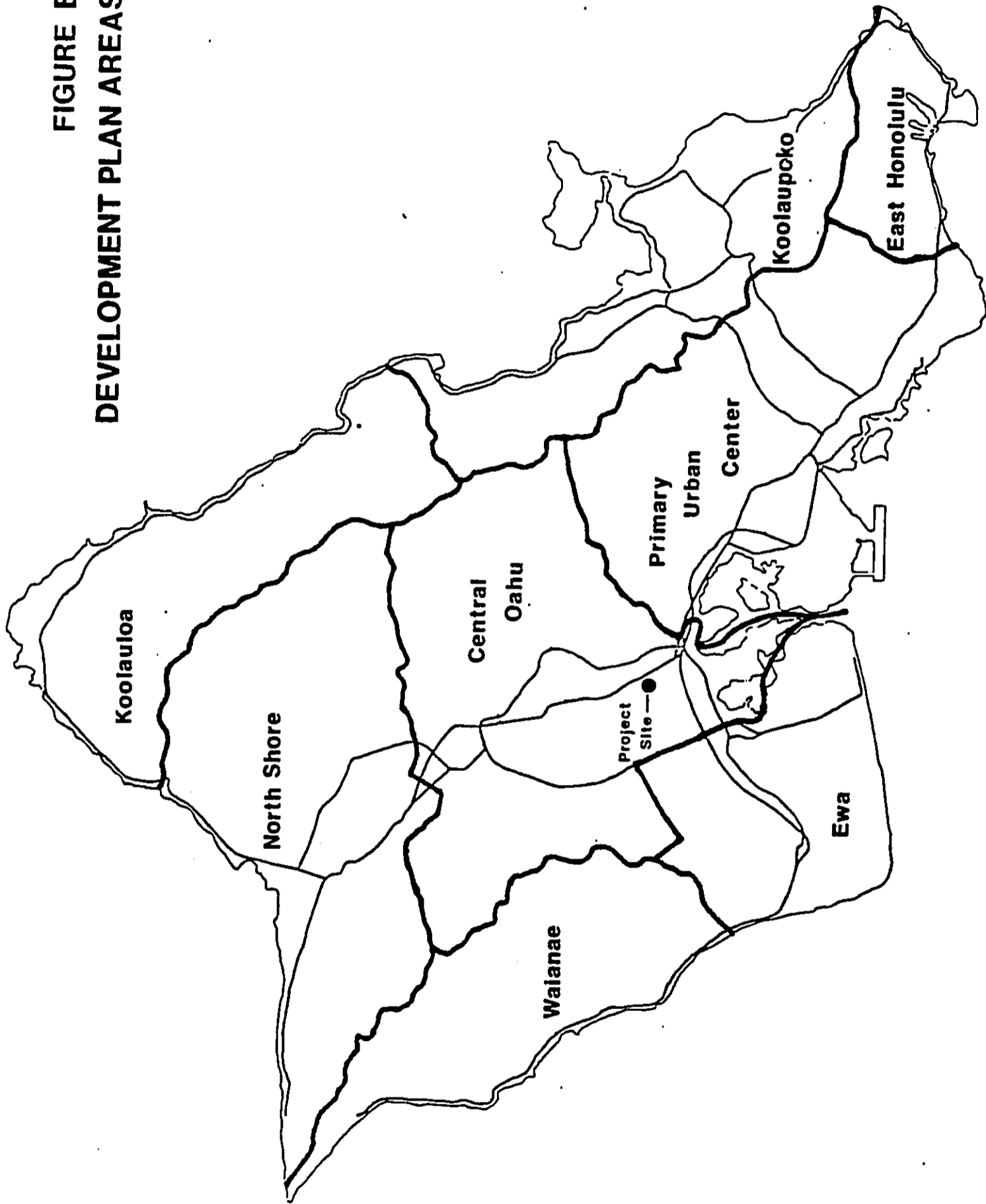
Population Growth Trends for Oahu and Study Area Communities

	1960	1970	1980	Growth 1970-80	Avg. Annual Growth 1970-80
City and County of Honolulu	550,409	630,528	762,565	20.9%	1.92%
Central Oahu Development Plan Area*	N/A	66,228	100,953	52.4%	4.30%
Waipahu CDP**	7,802	24,150	29,139	20.7%	1.90%
Mililani CDP**	N/A	2,035	21,365	949.9%	26.51%
Waipio Acres CDP**	1,158	2,146	4,091	90.6%	6.66%

* Census tracts 87.01 to 95.05. Figures here would exclude the small community of Kunia (1980 population of 829) and a few other scattered homes which are in the Ewa Census tract 86.01 but which the City counts as being within the Central Oahu Development Plan Area.

** "CDP" means "Census Designated Place." For Waipahu, this is limited to the area below the freeway and thus excludes Seaview/Crestview, Gentry-Waipio, and Village Park subdivisions.

FIGURE B
DEVELOPMENT PLAN AREAS



Year	Resident Population	Previous 5-Yr. Avg. Annual Growth Rate
1990	859,300	1.06%
1995	896,900	0.86%
2000	925,700	0.63%
2005	954,500	0.61%

The General Plan for the City and County of Honolulu contain percentage guidelines for the distribution of year 2000 population for eight "Development Plan Areas (DP Areas)" comprising the entire island of Oahu and these are shown on Figure B.

Table 3 shows these guidelines along with (1) estimated year 1984 populations for each DP Area; (2) absolute year 2000 population range for each area based on the percentage guidelines; and (3) projections made in 1985 by the City Department of General Planning (DGP) of actual year 2005 population.

The latter was based on a model which considers both population capacity for residential developments approved as of 1985 and also estimated additional future housing demand (as constrained by land use policies).

2.2. Study Area -- Waipahu and Millilani

The proposed project is located in the Central Oahu DP Area, as shown on Figure B.

Figure C provides boundary designations of the three Neighborhood Board (NB) areas which comprise the Central Oahu DP area: the Waipahu NB area, the Millilani NB area, and Waialae NB area.

The two NB areas most affected by the proposed project would be the Waipahu and Millilani NB areas. For purpose of population analyses extending back before 1980 (the first year for which NB area population figures are available), it may also be valuable to identify major separate communities within each NB area. Figure C therefore also depicts boundaries for Census Designated Places (CDPs), the largest of which are the Waipahu City and Millilani Town CDPs.

Table 3

Development Plan Area Population Guidelines

DP Area	1984 Population	Expected Year 2005 Population	Year 2005 General Plan 1 Pop. Guidelines	Year 2005 Gen. Plan Actual Pop. Guidelines
Primary Urban Center	436,400	480,000	67.5 - 52.5	653,388 - 501,113
Ewa	34,000	81,100	9.0 - 10.0	85,805 - 95,450
Central Oahu	114,600	139,000	12.8 - 14.2	122,174 - 135,519
East Honolulu	65,400	58,500	4.2 - 4.8	59,179 - 64,706
Koolaula	113,500	124,200	12.4 - 13.6	118,358 - 129,812
Koolani	12,100	13,800	1.3 - 1.5	12,409 - 14,218
North Shore	14,000	15,400	1.4 - 1.8	15,272 - 17,181
Waialae	31,400	37,300	4.2 - 4.6	40,089 - 43,407
Total	865,300	954,500	95.0 - 105.0	906,775 - 1,002,225

Sources: City and County of Honolulu, Department of General Planning, "Residential Development Implications of the Development Plan", 1985.

2.2.1 Study Area Growth Trends

During the 1970s, the Central Oahu DP Area was proportionately the fastest growing of Oahu's eight DP Areas. Its average annual population growth rate of 4.3 percent (see Table 2) slightly exceeded the 4.1 percent for the Ewa DP Area.

Most of the Central Oahu growth took place outside the long established population center of Wahiawa, where the population actually declined slightly within the boundaries of the Waipahu CDP. Encompassing the portion of Waipahu below the H-1 freeway, the Waipahu CDP growth rate simply matched the islandwide rate.

The bulk of Central Oahu's growth in the 1970s was in new communities and subdivisions, such as Waipio-Gentry above Waipahu, Helemanu Woodlands, Waipio Acres and, particularly, Millilani Town. As shown in Table 2, Millilani's 1980 population of 21,365 was more than ten times its 1970 population and its growth accounted for more than half that of Central Oahu.

Since 1980, Central Oahu has continued to grow primarily in new communities and subdivisions, including both the previously named ones and a few newer areas such as Village Park.

The most recent estimate of population in the Central Oahu area is for 1984. Compiled by the City and County Department of General Planning these estimates show there was a total population of 114,400 for the entire Central Oahu Development Plan area. Population within selected communities include Waipahu (29,300) Millilani (23,600) Gentry-Crestview (9,500) Waipio Acres (4,600), and Village Park (2,300).

Table 3 (reference in Section 2.1.2) shows the growth targeted for Central Oahu under the City and County of Honolulu General Plan. Based on the percentage guideline enacted in the General Plan, the year 2000 population for Central Oahu should range between 122,176 and 135,539.

In its 1985 report on "Residential Development Implication of the Development Plans", the DGP prepared projections based on market and land supply forces. These projections indicate that the year 2000 General Plan population guidelines are unlikely to be precisely met across the whole island, as conditions are likely to be more conducive to development in some areas than others.

The 1985 projections show an expected Central Oahu year 2000 population of 139,800, more than 4,000 persons greater than the current maximum General Plan guideline.

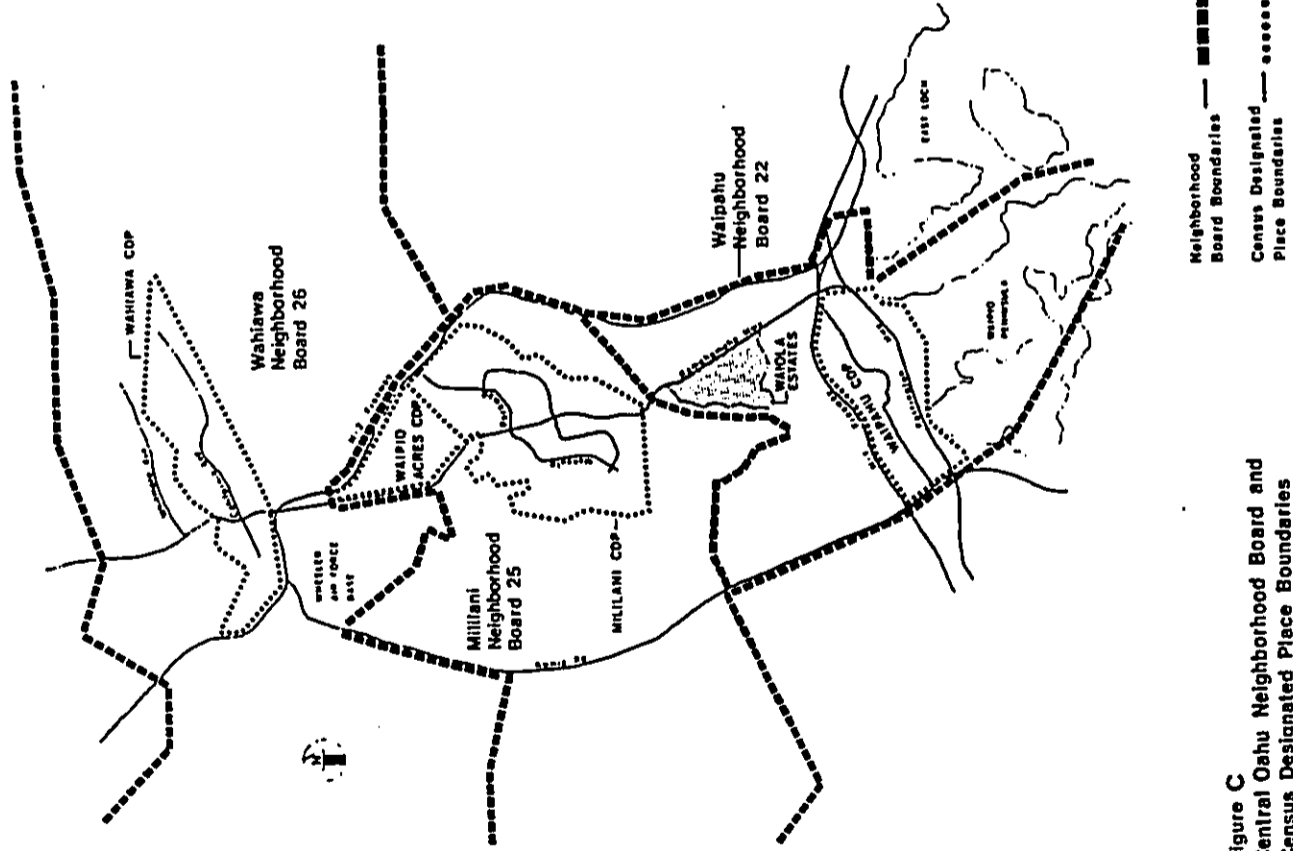


Figure C
Central Oahu Neighborhood Board and
Census Designated Place Boundaries

In 1986, the City Council acted upon a number of applications from residential developers to amend all development plans. The Department of General Planning maintained that Central Oahu's current land supply coupled with its economic projections would produce a deficiency of 1,100 dwelling units in Central Oahu by the year 2005. Development Plans were amended to include three new projects totalling 1,100 units in the Central Oahu Development Plan. These projects included the expansion of Village Park (500 units), Mililani Town expansion (300 units) and partial acceptance of a new proposal, Waiala Ridge (300 units).

With the 1986 amendments, land supply in Central Oahu will accommodate 40,500 housing units by 2005, which the City estimates will house a population of 139,800.

2.3 Change in Level of Population

Based on an estimated household size of 3.8 to 4.0 persons (Chaney Brooks and Company, and Zabotocky, 1986), Waiala Estates is projected to house a population range of 5,700 to 6,000 people. This is well within the State's population forecasts for Oahu share of the statewide population.

As discussed in the previous section, the actual population guideline of 14.7 percent already exceeds the 12.8 to 14.2 percent range allocated in the General Plan. Further, the 1,100-housing unit deficit for 2005 has already been accounted for with the 1,100 new units approved by the City Council in the 1985-1986 Development Plan Annual Review.

Waiala Estates' population will then exceed the General Plan guidelines for Central Oahu's share of population. The extent, however, will depend on the current residential origin of future Waiala residents. The most current applicant profile indicates that almost 25 percent of the applicants currently reside in Central Oahu. If this proportion is indicative of the future resident profile, then the population guidelines for Central Oahu may be exceeded by 4,275 to 4,500 people, or 25 percent less than the population estimate provided above.

A Study of Demographic Impacts
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Section 3

Visitor Population

3. VISITOR POPULATION

In 1985, Hawaii had a visitor population of 4,884,110 which accounted for \$4.9 billion in direct visitor expenditures (Chamber of Commerce of Hawaii, May 1986). It is projected that in 2000, our visitor population will increase to almost 7.8 million people (Department of Planning and Economic Development, 1985).

The projected project does not include any facilities which will lodge or attract visitors, and, thus, will not alter the existing or projected visitor population.



**A Study of Demographic Impacts
of the Proposed
Waiala Estates Subdivision**

Section 4

**Character and Culture
of the Neighborhood**

4. CHARACTER AND CULTURE OF THE NEIGHBORHOOD

This section addresses the islandwide and Study Area issues and concerns regarding Waioala Estates.

Section 4.1 and 4.2 provide some indications of the social setting of this project. Islandwide priorities, independent of this project, are discussed in Section 4.1. For the Study Area, the histories, census characteristics, and important community concerns and issues, again independent of the project, are presented in Section 4.2.1 (Waipahu) and 4.2.2 (Milliani).

Those concerns raised specifically about Waioala Estates are presented and discussed in Section 4.3.

4.1 Islandwide priorities and values

4.1.1 Public opinion polls

Planning and quality-of-life issues are important concerns to residents of Hawaii, and a number of surveys have gathered data on perceptions regarding community problems. This section will report on a series of polls covering the entire island community, in which relevant issues such as housing, jobs, agricultural land preservation and traffic congestion were discussed.

In formulating and updating of the Hawaii State Plan, the Hawaii State Department of Planning and Economic Development has commissioned several polls dealing with growth management issues by the Honolulu firm of SMS Research. Poll results have been of interest because they allow a direct comparison of public weighting of two issues often cast as a "trade off": more affordable housing, and the loss of agricultural land.

In each of the three surveys, housing was selected as a more critical problem than loss of agricultural land.

In the 1978 survey, respondents ranked housing as the #2 problem of 22 listed and 67 percent cited the high cost of housing as a "very important" problem. Loss of agricultural land ranked fifteenth on the same list, with 34 percent of respondents cited it as very important. Results were similar in the 1981 survey, where housing was listed as the #2 concern of the 18 listed, whereas agricultural land placed thirteenth. A 1984 poll under the same auspices placed housing third out of 11, while agricultural land was seventh.

A survey taken in 1978 by the City's Department of General Planning, and designed for use in putting together area development plans, also contained a ranking of community problems. Respondents to the City survey ranked housing the most important of the 20 problems listed, while agricultural land placed third and fifth on different sets of 20 listed problems.

The trade off issue between agricultural land and housing was specifically posed in the 1981 and 1984 surveys for DPED by SMS Research. In 1981, 59 percent of all respondents said that they would choose more affordable housing over preserving agricultural land, while 37 percent took the opposite position (SMS Research, 1981, p.37).

In 1984, respondents were asked a similar question, and again a majority (50 percent) agreed to the position that more affordable housing was needed, even if prime agricultural land had to be lost. A similar 37% of respondents disagreed with the choice (SMS Research, 1984, p.32).

The Honolulu Advertiser has commissioned surveys by SMS Research to test public priorities on a number of relevant issues. Results are published for the "Hawaii Poll" at regular intervals.

The most recent Hawaii Poll reported that jobs is the most important concern of residents (18 percent), although traffic and transportation (17 percent) and housing (14 percent) ranked highly as well. Jobs was the third most important problem listed in the previous 1984 poll, and at that time 17 percent chose jobs and 16 percent selected housing as the most important problem. Agricultural land or open space preservation was not on the list of significant problems cited in either case (Honolulu Advertiser, February 10, 1986, pp. 1-3).

These surveys indicate that housing remains, in the public's view, a significant problem worthy of government concern. Traffic congestion, too, receives some emphasis, but agricultural land loss has consistently not drawn the same public emphasis.

4.2. Characteristics of the Study Area

As stated in Section 2.2, the Study Area of this report includes Waipahu and Mililani, as defined by the Neighborhood Board areas.

To provide the geographical and cultural setting of the proposed project, this section discusses the history and census characteristics of these regions, as well as identifies some of the major forces for change without Waiole Estates. Also examined are current community concerns and issues independent of this project, as provided by information in the minutes of the Neighborhood Boards and community polls.

4.2.1. Waipahu

History

The origins and growth of Waipahu are entwined with the presence of water for agricultural pursuits, an appropriate outcome since the literal definition of Waipahu is "gushing springs". The numerous fishponds supported aquaculture by the Hawaiians, and a community of small farmers were present at Waipahu in pre-contact times. The area was particularly suited to cultivation of wetland crops such as taro (Boechert, 1974, p.1-2).

The name Waipahu was eventually given to three small parcels of land, and later to the town that grew up around it. Waipahu grew from the ahupua'a's of Waipio, Waikale and Honeae.

Waipahu's more contemporary history as an agricultural community began with James Campbell's purchase of 40,000 acres in Ewa, and his successful experiments with artesian well drilling to produce plentiful water. Campbell's efforts led ultimately to the formation of the Oahu Sugar Company and the development of the Oahu Railway, which linked Leeward and Central Oahu sugar plantations with the port of Honolulu.

Oahu Sugar developed its mill site and office headquarters at Waipahu, taking advantage of the plentiful water supplies for milling. The plantation town grew up around the mill, and the dominance of sugar can be seen today in the prominence of the mill overlooking the commercial areas that provided needed services to mill workers.

Typical of the time, the plantation was heavily involved in providing education, recreation and community services to its employees. As workers fulfilled their work contracts and left the plantation, some (like Zeman Arakawa) began businesses which relied on a worker clientele. The growth of trade unionism among agricultural workers, and the rise of the ILWU as an economic and political force, led to the evolution of the paternalistic relationship between managers and workers.

One manifestation of the changing status was that benefits, such as housing and medical care, were redefined from being provided by plantations under their supervision, to being paid for or subsidized by management but delivered with greater worker choice. For example, union contracts after World War II provided for changes in medical treatment from emphasis on company-run clinics to subsidization of medical insurance that workers could use to buy services from independent physicians and health maintenance organizations.

Such changes in allowance of housing benefits brought dramatic changes in Waipahu.

Before collective bargaining, the plantations housed workers in camps where homes were rented from and managed by the employer. Post-war union contracts called for retention of company-run housing for those workers who desired it, but the economics of property management and unrealistically low rents encouraged company and union to seek ways of encouraging homeownership. Rising wages, prevalence of multiple-income families and development of government-sponsored mortgage insurance and housing subsidy programs created a market among plantation workers for affordably priced single-family homes. Oahu Sugar began developing housing for employees in the 1940s and continued for more than thirty years, using marginally productive sugar land.

Early workers could purchase houselots for less than ten cents per square foot (Masao "Cranky" Watanabe, interviewed by Tanji, 1984, p.150).

Housing development was also undertaken in the Waipahu area by private developers and government agencies seeking a similar market, as well as responding to the growing demand for single-family homes by all residents of Oahu. Waipahu's population grew concomitantly, rising from 7,169 in 1950 to 8,353 in 1960 and 22,798 in 1970. Commercial and industrial users, centered in the strip development along Farrington Highway, grew in response to the need for local services.

Beginning in the 1970s, Hawaii's sugar industry faced a number of serious economic challenges. Oahu Sugar, though possessing some competitive advantages, had reduced its workforce somewhat and marginally productive lands were taken out of cultivation. While these decisions may free up acreage for other (notably residential) uses, it also meant that sugar became a lessor part of Waipahu's economic life, and that new residents generally have little tie to Oahu Sugar.

Local population continued to increase in the 1970s, reaching 29,139 in the 1980 Census. However, the composition of that population also evolved.

Field work has suggested that the children of old-time residents often moved away from the community. Newer residents include younger families seeking homeownership, as well as recent immigrants who are attracted by the availability of lower-cost housing among older dwellings in town. The dominant identified immigrant groups in Waipahu Town are Samoan and, especially, Filipino.

Filipino immigrants differ from long-time co-ethnics with plantation ties in that they are recent transplants from the Philippines. Approximately 10 percent of Waipahu's public school students are "limited English speakers" (unpublished Hawaii State Department of Education data).

Many long-time Waipahu residents appear to be "moving up" in the housing market, and thus leaving Waipahu. At the same time, newer residents are often moving up from rental units in Honolulu. Older units in Waipahu offer opportunities to expand the dwelling or divide an existing unit into several units, thus easing the pressure of housing costs on larger immigrant families. Homeownership is clearly an important value to many immigrants, as evidenced by a recent survey of Ilocano immigrants which showed that owner occupancy was much higher among members of this group residing in Waipahu (80 percent) than in lower Kailhi (33 percent) or upper Kailhi (23 percent) (East-West Population Institute and Operation Manong, 1985, p.5).

Housing development in the Waipahu area has created two highly differentiated social environments. The preceding discussion describes the growth of Waipahu Town.

At the same time, the older town area has been supplemented by the growth of suburban-type subdivision tracts with a different character. These newer areas include the developed communities of Crestview, Gentry-Waipio and Village Park, as well as planned projects on Waiawa Ridge and at Waikale. While each development has its own character, these more suburban areas above Waipahu Town share a common identity of geographical separation because of the highway system.

Crestview is the only area of the mauka communities that is fully developed, and actually consists of both the Crestview and Seaview subdivisions. The Crestview area is characterized by widespread homeownership, a substantial number of low/moderate income residents who are primarily of Hawaii origin, and an orientation of life around family values.

The Waipio project is in the same general location as Crestview, sited between the H-2 Freeway and Kamehameha Highway, but has a substantially different character. Waipio development began in 1978, and is scheduled to be built out by 1987. It features more than 2,200 residential units, about two thirds of which are single-family homes, as well as a neighborhood commercial center and industrial park. Due to the higher values of most Waipio units (many of which sell for \$150,000 and above), Waipio residents tend to have higher incomes than other Waipahu-area people, and differ on other socio-economic characteristics as well.

The Village Park project has become the fastest growing of the mauka communities. Originally planned to encompass about 1,800 multifamily units, actual development since 1979 has stressed smaller single-family units marketed at the lower end of the conventional single-family homebuying constituency. More than 800 units have been built at Village Park, and buyers there tend to be younger than average, two-income families, often with younger children. Village Park buyers also differ from Waipio residents in other socio-economic dimensions, reflecting the various submarkets for single-family housing. In 1986, the Central Oahu Development Plan was amended to permit expansion of Village Park including 500 more single-family units.

Further expansion of Waipahu's mauka communities is envisioned in official plans of the City and County of Honolulu. Amfac Development has received approval to build more than 2,700 new homes at Waikale, using marginally productive land from Oahu Sugar. Waikale will also include an office park and commercial center, to be located at the project's lower end near the H-1 Freeway.

A new project on Waiawa Ridge (above the eastern end of Waipahu and on the east side of the H-2 Freeway) also received preliminary Development Plan approval in 1986. While the 1986 action would allow 300 units, the entire Bishop Estate parcel includes more than 2,000 acres for potential future growth.

Census Characteristics

This section will focus upon Waipahu's socio-economic characteristics, although limited comparisons will be made to Millilani and Oahu as a whole. Tables 4 through 7 shows selected demographic, income, labor force, and housing characteristics for the City and County of Honolulu and the neighborhood board areas encompassing both Waipahu and Millilani Town.

Waipahu's age profile indicates a relatively young population. The median age for Waipahu in 1980 was 25.0 years, compared to 28.1 years for the entire island. Waipahu's population contains a higher percentage of children five years or less in age and youths aged 5-19, and a lower percentage of adults (20-64) and senior citizens (65 years or older).

Waipahu contains both a higher percentage of Hawaii-born and foreign immigrant populations than for Oahu as a whole. Fifty eight percent of Waipahu's residents were born in Hawaii, while 26 percent were born in a foreign country (versus 14.8 percent for all of Oahu). Clearly, then, the number of residents born elsewhere in the United States is lower than for Oahu generally (15.7 percent, compared to 30.1 percent), and is considerably lower than Millilani Town (38.2 percent).

Waipahu's population lags behind the island in education levels. The proportion of residents who have completed college is about half of the Oahu average -- 11.1 percent compared with 21.7 percent. Conversely, the number of Waipahu residents completing eight years or less of education is almost twice the Oahu average (24.8 percent to 14.4 percent for all of Oahu).

Statistics on family characteristics illustrate that Waipahu has some of the measures linked with poverty, to a slightly greater extent than Oahu as a whole.

- The number of families headed by a female (14.5 percent) is higher than for Oahu (12.7 percent) and considerably greater than for Millilani (8.1 percent).
- As age statistics would suggest, Waipahu families with minor children present is greater than for all of Oahu (65.2 percent compared with 54.8 percent), but less than in the family-oriented Millilani community (69.8 percent).
- Female-headed households with children are considerably more widespread in Waipahu than for all of Oahu (11.6 percent, relative to 7.5 percent).
- Waipahu has a much greater incidence of families below poverty levels (12.1 percent) than all of Oahu (7.5 percent).

Table 4
Population and Demographic Characteristics:
City and County of Honolulu and Millilani and Waipahu Neighborhood Boards, 1980

	CITY AND COUNTY OF HONOLULU		WAIPAHU NEIGHBORHOOD BOARD		MILLILANI NEIGHBORHOOD BOARD	
	No.	%	No.	%	No.	%
TOTAL POPULATION	742,545		33,777		24,131	
ETHNICITY						
Caucasian	237,035	31.1	5,053	14.9	9,541	34.6
Japanese	199,079	24.9	N/A	N/A	N/A	N/A
Chinese	52,811	4.9	N/A	N/A	N/A	N/A
Filipino	97,545	12.8	N/A	N/A	N/A	N/A
Hawaiian	80,172	10.5	N/A	N/A	N/A	N/A
Other	87,731	11.8	28,874	85.1	16,573	63.4
AGE						
Less than 5 yr.	97,507	7.8	3,372	10.0	3,469	11.2
5 - 19 yr.	184,712	24.2	9,733	28.7	6,579	28.5
20 - 64 yr.	433,046	48.7	18,845	53.4	15,653	60.0
65 or more yr.	55,250	7.2	1,937	5.7	481	1.8
Median age	28.1 yr		25.0 yr		24.4 yr	

	CITY AND COUNTY OF HONOLULU		WAIPAHU NEIGHBORHOOD BOARD		MILLILANI NEIGHBORHOOD BOARD	
	No.	%	No.	%	No.	%
PLACE OF BIRTH						
Hawaii	470,170	35.1	19,734	58.2	14,036	53.8
Other U.S.	227,234	30.1	3,331	15.7	9,433	34.2
Foreign country	113,211	14.8	8,016	24.1	7,622	10.0
RESIDENCE 5 YRS. PREVIOUS (people aged 5+)						
Same house	337,833	48.2	13,789	43.0	7,451	37.2
Same island	179,184	25.5	11,275	34.8	8,758	37.8
Different island	9,100	1.3	337	1.1	187	0.7
Different state	129,119	18.4	2,765	8.8	5,972	24.1
Different country	44,478	6.6	2,560	8.3	1,704	5.2
EDUCATION (selected people aged 25+)						
8-9 years only	61,995	14.4	4,298	24.8	775	5.6
Hi school only	195,074	46.0	8,119	47.8	5,413	39.2
Some post. H.S.	78,336	18.3	2,743	16.3	3,453	25.8
College, 4+ yr.	93,201	21.7	1,887	11.1	4,175	30.2

Sources: U.S. Bureau of the Census, 1980 Census of Population and Housing--Special Report: Neighborhood Statistics Program, Part 13--Hawaii--PC80-SP1-13, 1983
"N/A" = Not Available

Table 5
Family Characteristics and Income Levels:
City and County of Honolulu and Mililani and Waipahu Neighborhood Boards, 1990

	CITY AND COUNTY OF HONOLULU		WAIPAHU NEIGHBORHOOD BOARD		MILILANI NEIGHBORHOOD BOARD	
	No.	%	No.	%	No.	%
POPULATION IN FAMILIES	637,110		37,404		25,066	
as percentage of total population	85.62		95.52		94.02	
NUMBER OF FAMILIES	179,516		7,378		4,903	
HEAD						
Husband/wife	117,879	65.8	5,199	70.5	4,172	85.1
Male only	7,972	4.5	332	4.5	137	2.8
Female only	22,695	12.7	1,644	22.3	542	11.0
WITH OWN CHILDREN UNDER 18	97,798	54.9	4,819	65.2	4,829	98.6
Female head	13,437	7.5	890	11.9	425	8.7
BELOW POVERTY LEVEL	13,465	7.5	896	12.1	777	15.8
MEDIAN FAMILY INCOME	923,334		975,948		924,976	

Sources: U.S. Bureau of the Census, 1990 Census of Population and Housing--Special Reports: Statistics Program, Part 13--Hawaii--PHC90-SR1-13, 1993

Table 6
Labor Force Size and Characteristics:
City and County of Honolulu and Mililani and Waipahu Neighborhood Boards, 1990

	CITY AND COUNTY OF HONOLULU		WAIPAHU NEIGHBORHOOD BOARD		MILILANI NEIGHBORHOOD BOARD	
	No.	%	No.	%	No.	%
POTENTIAL LABOR FORCE (aged 16+)	574,903	100.0	23,617	100.0	17,645	100.0
not in labor force	177,016	30.8	7,338	31.2	4,943	22.9
armed forces	58,076	10.1	1,433	7.0	2,437	11.0
civil. labor force	337,883	59.1	14,406	61.8	11,155	63.1
CIVILIAN LABOR FORCE	337,883	100.0	14,406	100.0	11,155	100.0
employed	13,750	4.6	861	5.9	438	4.1
TOTAL EMPLOYED	324,133	100.0	13,785	100.0	10,617	100.0
CIVILIAN LABOR FORCE						
service	54,939	17.6	2,795	19.7	1,272	11.9
manager./profes.	79,934	24.7	1,970	14.3	3,007	28.1
technical, sales & adminis.	109,321	33.7	4,001	29.7	4,925	37.6
farm/fish/forest	3,838	1.8	370	2.4	179	1.7
precision, craft, repair	34,346	11.3	2,201	16.6	1,315	12.4
operators, laborers	35,335	10.9	2,377	17.3	919	8.6
INDUSTRY (collected)						
agric., forest, fish, mining	5,642	1.7	279	2.0	277	2.1
construction	21,423	6.4	1,341	9.8	486	4.4
manufacturing	21,972	7.7	1,712	12.4	893	8.3
retail trade	64,338	20.5	2,933	21.3	1,672	15.2
financial, insur., real estate	24,195	8.1	812	5.9	444	4.1
personal, entertain. & recreat. services	24,252	8.1	1,198	8.7	377	3.5
health, educ., & professional	59,977	18.5	1,711	12.4	2,072	19.4
public adminis.	35,407	10.9	1,361	11.4	1,940	18.2

Sources: U.S. Bureau of the Census, 1990 Census of Population and Housing--Special Reports: Neighborhood Statistics Program, Part 13--Hawaii--PHC90-SR1-13, 1993

Table 7
Housing Stock and Characteristics

City and County of Honolulu and Hiliwai and Waipahu Neighborhood Boards, 1980

	CITY AND COUNTY OF HONOLULU		WAIPAHU NEIGHBORHOOD BOARD		HILIWAI NEIGHBORHOOD BOARD	
	No.	%	No.	%	No.	%
TOTAL YEAR-ROUND HOUSING UNITS	794,864		8,513		8,603	
vacant (total)	29,452	3.7	232	2.7	292	3.4
vacant for sale	1,393	0.2	79	0.9	34	0.4
vacant for rent	9,637	1.2	149	1.7	37	0.4
held for owner's use	2,331	0.3	2	0.0	7	0.1
other	7,904	1.0	81	1.0	116	1.3
TOTAL YEAR-ROUND OCCUPIED UNITS	765,412		8,281		7,901	
TENURE						
owner-occupied	114,773	15.0	4,496	54.3	5,173	64.4
renter-occupied	115,421	15.0	3,775	45.7	1,928	24.4
SELECTED CONDITIONS						
lacking one or more						
plumbing	3,644	0.5	79	1.0	23	0.3
1.51 or more persons/room	14,793	1.9	1,076	12.9	234	3.0
PERSONS PER HOUSEHOLD	3.15		4.83		3.37	
RENTAL CASH RENT (renter-occupied)	9279		9793		9354	
as % of median family income	16.2		14.0		15.8	
RENTAL VALUE (owner-occupied)	\$139,460		\$118,790		\$134,300	
RENTAL MONTHLY MORTGAGE (owner-occupied)	\$491		\$487		\$430	
as % of median family income	23.2		21.4		29.0	

Source: U.S. Bureau of the Census, 1980 Census of Population and Housing--Special Reports: Neighborhood Statistics Program, Part 13--Hawaii--PC80-59-13, 1983

At the same time, Waipahu's median income of \$25,068 is higher than the island average of \$23,554, suggesting a wider distribution of incomes.

Measures of Waipahu's labor force show that unemployment in 1980 was more widespread in this locality (5.9 percent) than for the entire island (4.6 percent). In keeping with differing age and education levels, Waipahu's workers are represented in greater than average numbers in the following categories:

- service (19.7 percent, compared with an overall proportion of 17.6 percent),
- precision, craft or repair services (16.6% and 11.3%),
- operators, fabricators and laborers (17.3% and 10.9%).

The Waipahu labor force is under-represented in managerial and professional and technical, sales and administrative fields. Likewise, the industries represented by the Waipahu labor force reflect the community's setting, history and socio-demographic character -- Waipahu workers are found in greater than average proportions in agriculture, construction, manufacturing and retail services.

The Waipahu housing stock is both more intensively used and more owner-occupied than for the City and County of Honolulu as a whole.

More than half (54.3 percent) of the 1980 housing inventory in Waipahu was owner-occupied, compared to a 49.9 percent island average. Meanwhile, Waipahu had a 2.9 percent vacancy rate while Honolulu's overall figure was 8.2 percent.

Lack of plumbing facilities was not widespread, but crowding was -- 12.4 percent of Waipahu housing units contained 1.51 or more persons per room, well above the island average of 7.4 percent. Greater crowding can be related to the larger size of households in Waipahu -- 4.03 persons, compared to 3.15 for the island as a whole.

On an overall basis, housing costs in Waipahu did not deviate greatly from islandwide figures. Median cash rent of \$293 was slightly higher than the \$279 recorded for Oahu, although Waipahu's higher median family incomes resulted in a slightly lower percentage of median income spent for both rental and owned housing units. While median monthly mortgage levels for Oahu and Waipahu were virtually identical, the median value of owner-occupied homes was significantly lower in Waipahu (\$118,700) than the \$130,400 measured for Oahu.

Major Forces for Change Without Waiala Estates

The forces shaping Waipahu's future center around residential growth. A number of major new housing projects are being planned in the areas mauka of Waipahu Town; the Village Park development is expected to continue incremental growth, and large new communities are being planned at Waikole and on Waiala Ridge.

While development at Millilani Town will also continue, the recent policy actions of the City and County of Honolulu suggest that Waipahu will feel the impacts of growth in the near future.

Of course, residential growth has been occurring in the Waipahu area since the 1950s, but a number of trends indicate that future development may have a different nature and impacts.

Both the Waiala Ridge and Waikole projects seek to expand Waipahu's employment base with commercial and office park projects. Further Village Park expansion may contain job-producing projects as well.

Decentralization of local jobs may further strain the vitality of Waipahu's historic town center and service core located along Farrington Highway.

A growing corps of newcomers may bring about changes in community life. Waipahu's active community organizations tend to consist more of long-time residents in central Waipahu, than of newly established residents in the developing project areas. The possible physical and transportation separation of the existing and new mauka communities from Waipahu Town, some fear, may lessen resident identification with Waipahu.

Many residents are unwilling to simply let the aging core of Waipahu Town wither. Historic and cultural preservation efforts marking Waipahu's plantation past have already resulted in creation of the Waipahu Cultural Garden Park, and this site is planned for significant expansion in coming years.

At the same time, citizens have embarked on the "Waipahu 2000" planning process which intends to revitalize the central business area of Waipahu Town. Waipahu may be an older community in transition, but it retains a great degree of life.

4.2.2 Millilani

HISTORY

Millilani Town is a planned "new town" developed by Oceanic Properties, a subsidiary of Castle & Cooke. The growth of this community reflects economic and social developments in postwar Hawaii which have affected the growth of other Central Oahu areas, such as increasing family incomes, the desire for single-family homeownership coupled with shortages of land in areas more proximate to the Honolulu population center, expansion of Federal Government mortgage assistance programs, and the greater land efficiency of plantation agriculture.

Millilani Town also reflects a belief in the value of a comprehensively master-planned, balanced new community designed to provide a higher quality living environment than might be experienced in conventional tract subdivision development.

By the 1950s, Castle & Cooke's holdings included the Dole pineapple plantation and Waialua Sugar Company, with total land holding of 40,000 acres on Oahu. Improvements in plantation technology, development of a mature market with little growth potential, and greater crop yields per unit of land made it feasible to look to other uses for land formerly held for agricultural use. Studies by government and private planners in the period around Hawaii's statehood pointed to coming economic growth and an accompanying increase in population.

In the context of this outlook, Oceanic Properties developed plans for a new community of between 2,000 and 3,000 acres in size. The "Waipio Plan" new town proposal envisioned residential expansion as well as creation of local employment through an industrial park to be integrated into the overall plan. The name "Millilani" was selected for the new community from the Hawaiian words "to look up to" (Kaina, 1984).

An early revision of the plan established the ultimate size of Millilani at 3,500 acres, to incorporate about 15,000 dwelling units housing a population of from 50,000 to 55,000 persons; development was to be completed over a 20 year period.

Oceanic Properties received General Plan approval for the new town project in 1985. The State Land Use Commission gave the first of a series of incremental approvals in 1964. A golf course opened in Millilani in 1966, and the first housing units were completed in 1968.

Development at Millilani has gone through a number of marketing phases.

In the early days of the project, potential buyers were unfamiliar with the concept of a planned new community, including such features as imposition of restrictive covenants to control exterior building appearance. Marketing difficulties were also presented by Millilani's geographical remoteness; it was located "in the country".

Overall housing demand, however, began to grow in 1972. Transportation improvements accompanied development, notably the opening of the H-2 freeway in 1977. By 1984, Millilani's population exceeded 23,000 people. The housing stock reached 4,438 single family units and 2,451 multi-family units.

The Millilani Master Plan includes 3,500 acres divided into three distinct geographic areas.

One area is located on the Waianae side of Kamehameha Highway and includes 1,118 acres. This area is fully built out, and is mainly residential in character. It also includes the Millilani Town golf course and community facilities such as churches, schools, parks and community association recreational facilities.

The central portion of Millilani Town includes 1,413 acres between the H-2 Freeway and Kamehameha Highway, and this area has become the core of the community. Located in the central area are higher density uses such as medium-density apartments, Millilani High School, a shopping area and the Town Center.

The third portion of Millilani Town incorporates 1,250 acres on the Koolau side of the H-2 Freeway. Oceanic Properties has developed plans for residential and community facility uses in this area, but has not received either State or City & County Planning approval.

In keeping with the intention to provide increased employment opportunities for the new town project, the developer is also preparing to create a high-technology park for research and development activity on lands near the Millilani Town holdings. The high technology park is planned to ultimately support more than 14,000 new jobs.

From the inception of the development, Millilani Town has sought to accommodate a broad spectrum of the housing market; thus, the residential inventory ranges from architect-designed luxury homes to modest, government-assisted apartment units. While the majority of Millilani's first homebuyers in 1968 had lived nearby (within a six mile radius of the new town), subsequent buyers have come from throughout Oahu. Millilani Town's location clearly appeals to many families, whose livelihoods are tied to defense industries and other businesses based outside of Honolulu. Fully 50 percent of household heads worked outside of Honolulu, and 15 percent reported military employment.

In 1984, new Millilani homebuyers reported average family incomes of \$42,000; ages of family heads were in the lower reaches of middle age (1984 average: 37 years), and 87 percent of new buyer families reported two or more workers in the family.

Census characteristics

Tables 4 through 6 display selected demographic, income, occupational and housing characteristics for the entire City and County of Honolulu, as well as for the Waipahu and Millilani Town neighborhood board areas. This section concentrates on Millilani's characteristics, although selected comparisons will be made to similarities and differences related to Oahu as a whole, or to Waipahu.

The Millilani neighborhood board area had a 1980 population of 26,134, compared with Waipahu's figure of 33,927. About 22,000 of area residents lived in the Millilani Town planned community.

Millilani's age structure shows a preponderance of working-age adults and children. A considerably higher percentage of persons under 5 years of age are found in this area than for all of Oahu (11.7 percent versus 7.8 percent) and somewhat greater numbers of children aged 5-19 are present as well (26.5 percent compared to 24.2 percent). On the other hand, Millilani has a much lower percentage of residents 65 years of age or older (1.8 percent compared to Oahu's 7.2 percent). The median age of Millilani residents, at 26.4 years, is significantly lower than for the entire island's level of 28.1 years.

Residents of this area show greater proportions born in parts of the United States other than Hawaii (36.2 percent) than for all of Honolulu (30.1 percent). While the Hawaii-born component is similar to islandwide figures, Millilani has fewer immigrants born outside the United States (10.0 percent) than for the island as a whole (14.8 percent).

The educational attainment levels of Millilani residents is quite high, even as compared to the entire island. More than thirty percent of Millilani residents aged 25 and above had completed at least four years of college in 1980, relative to 21.7 percent of island residents of comparable age. Another 25 percent had some education beyond high school, well above the 18.3 percent figure for all of the City and County of Honolulu. Similarly, the percent having completed eight years or less of school was far lower than average.

Owner-occupants are heavily preponderant in Millilani. Few units in this area are crowded (3.0 percent) or lack plumbing facilities (0.3 percent), well below the respective Oahu averages of 7.4% and 1.6%.

While Millilani's average household size (3.39 persons) is significantly higher than the Oahu level of 3.15, it is well below the Waipahu average household size of 4.03.

Rents, owner-occupied housing values and monthly mortgage payments are somewhat higher in Millilani than for all of Oahu. Median cash rent was \$356 per month in 1980, relative to the island average of \$279. Millilani renters paid 15.8 percent of income for rent, above Oahu's proportion of 14.2 percent.

The median value of owner-occupied homes was \$136,300, above the Oahu average of \$130,400 and well above Waipahu's \$118,700. Millilani homeowners paid considerably higher monthly mortgage payments (\$630 median) than did all owner-occupants on Oahu (\$494), and payments as a percentage of income was 28 percent in 1980, compared to 25.2 percent for the island.

The disparity in mortgage payments and values is probably explained by greater mobility of Millilani homebuyers, resulting in greater numbers of mortgages at contemporary higher values and interest rates. Almost 68 percent of Millilani residents reported having moved in the previous five years, compared with 51.8% of Oahu residents.

Major Forces for Changes Without Maloia Estates

Retention of a superior quality of life is an important consideration to Millilani residents, many of whom have moved to the area because of its amenities. Population growth will continue to be the largest single force affecting the Millilani area, but diversification of employment opportunities would have impacts as well.

As noted earlier, the third segment of Millilani Town's major land parcels remains unbuilt. Oceanic Properties has unveiled an ambitious plan combining housing and community facility uses for the area across the H-2 Freeway from Millilani Town's central portion. Planning approvals have not been obtained, and active community discussion can be expected before a government decision is made. Addition of this site, with a possible increase in population by some 20,000 residents, would substantially complete development of the planned community dedicated in 1968.

Community life may well be shaped further by Oceanic's pioneering attempt to attract high technology industry to Hawaii. The Planned High Technology Park is designed to accommodate more than 14,000 employees in the future. Successful development of the high technology project would produce a new employment center in Central Oahu far larger than anything before attempted.

Family characteristics are also markedly different for Millilani than for all of Oahu. First, the proportion of the population situated within families (96 percent) is far higher than Honolulu's 85.6 percent. Millilani families have a greater proportion with both husband and wife present and far fewer female-headed families. A total of 69.8 percent of Millilani families have children present, again emphasizing the preponderance of children in the Millilani population. In comparison, 54.9 percent of Oahu families have children under 18 in the household.

Likewise, poverty is less widespread in Millilani, where incomes are higher than average; 7.5 percent of all Oahu families were below poverty level in 1980, a figure reached by only 4 percent of Millilani families.

Median income for Millilani was \$26,996, well above the island average of \$23,554.

As income data would suggest, Millilani is well represented in Oahu's labor force. A smaller percentage of this area's adults is not in the labor force (22.9 percent) than for all of Oahu (30.8 percent).

Millilani also has above-average numbers of armed forces members; 14 percent are in the armed forces as against an islandwide percentage of 10.1 percent.

Unemployment was somewhat lower for Millilani residents than for Oahu as a whole.

In similar manner, Millilani's civilian workers are represented in above-average numbers in higher-status occupations. Almost two-thirds hold positions in either managerial and professional or technical, sales and administrative fields. Local residents are slightly more prevalent in the precision, craft and repair area (12.6 percent) than for all of Oahu (11.3 percent), and are fewer than average in service, operation and laborer and other positions.

By industry, categories of Millilani residents compare closely to the island as a whole, although residents of this area are fewer in retail trade (15.2 percent, versus 20.5 percent for Oahu) and notably higher in public administration (18.3 percent, compared with 10.9 percent islandwide).

Millilani's image as a desirable suburban area is well defined by 1980 measures of housing use and quality. While Oahu as a whole had an 8.2 percent vacancy rate in 1980, the Millilani vacancy rate was a low 2.5 percent.

4.2.3 Regional Issues and Concerns Independent of the Proposed Project

Minutes from Neighborhood Board Meetings

A review of the Waipahu and Millilani/Waipio/Gentry Neighborhood Board minutes during the last year (July 1985 through June 1986) was conducted in order to provide an indication of the topics which are of current importance. The following list of topics is not intended to be a complete enumeration of all subjects of discussion, but rather an overview of issues which give a sense of the major concerns as indicated by lengthy or repeated discussion.

The two Neighborhood Boards were the Waipahu Neighborhood Board No. 22 and the Millilani/Waipio/Melemanu Neighborhood Board No. 25; the latter is hereby referred to as the Millilani Neighborhood Board.

During the past year, both the Waipahu and the Millilani Neighborhood Boards dealt with general land use issues and proposed development projects. The Waipahu Neighborhood Board expressed a desire to see Waipahu share the role of secondary urban center with Ewa, and supported some of the proposed private developments in their area.

The Millilani Neighborhood Board generally felt that further development should occur only until inconsistencies between development plans and the general plan were resolved, particularly as they related to the provision of infrastructure and public facilities/services necessary to accommodate the existing and anticipated population.

Other issues related to crime, education and beautification and improvement of existing communities.

Waipahu Neighborhood Board No. 22 Topics

- Halfway houses located in residential areas. Concerns regarding noise and disturbances, as well as Waipahu's relatively large share.
- Crime/Neighborhood Watch efforts were initiated to alleviate increasing crime, drinking and disturbances in neighborhood areas.
- Abandoned cars were becoming increasingly evident in the neighborhood areas and concerns were related to safety and appearance of the community.
- Bus routes, expanding services into neighborhood areas.

- Waipahu 2000 Community Council Citizen Group initiated efforts towards working with City Council to identify problem areas or residents concerns prior to implementation of future proposed projects.
- Various items in the Central Oahu Development Plan.
- Waipahu Schools. Concern expressed regarding the continued busing of students to Pearl City, because of insufficient classrooms, funding and teachers. The overall concern was that such busing educates the need to improve Waipahu's educational facilities and removes students residing in newer subdivisions from the mainstream of Waipahu's community.
- Waterfront Manor. A proposed project to be located on 18.9 acres of agriculturally zoned land, consisting of 861 rental apartment units.
- Neighborhood Plan 5-Year Review/Reorganization of Neighborhood Commission. Bill 86-26.
- Reallocation of H-3 funding. Support for alternative use of funding for improvement of existing H-1, H-2 Highways.
- Millilani/Waipio/Melemanu Neighborhood Board No. 25 Topics
 - Central Oahu Development Plan. Board presented testimony regarding the provision of adequate public services and facilities prior to approval of additional developments, as current infrastructure, transportation corridors, and educational institutions are lacking.
 - Hokualii Hale Association addressed the Board concerning the Department of General Planning "notice of intent" to rezone an 80 acre parcel from agriculture to residential.
 - Proposed Waikole Development.
 - Melemanu Woodlands Phase III. 1,100 units in Waikakalaua Gulch, beyond Waikakalani Woodlands.
 - Neighborhood Board Plan 5-Year Review.
 - Park Designation at Waihanua Place, Waipio Acres. Request to amend the Central Oahu Development Plan to rezone land designated for park to residential use.
 - Development Agreements. Neighborhood Board concerns regarding ordinance passed, which would allow developers to enter into agreements with City and County. Opposed as it excludes community input and is in retreat from the tri-party planning Agreement.

- Transportation Forum. This was to address proposed H-3 highway and alternative uses of H-3 funding for other projects.

- Village Park Expansion (Waitec) - Community opposed to this project, as well as further development projects (based on resolutions of August 1985, October 1986) until such time that inconsistencies between the Development Plans and General Plan are resolved, and assessments of impacts (especially infrastructure and transportation) are made.

Community Surveys and Polls

Several surveys taken in the Millilani and Waipahu Neighborhood Board areas provide further indication of community values and issues.

The Waipahu Neighborhood Board sponsored a survey of all residents in December, 1985. Completed forms were returned by 2.8 percent of all solicited. This return rate, by its low level, suggests some need for caution in interpreting results.

The most significant problems cited in the Waipahu survey were crime and the quality of city street maintenance. The need to repair public school buildings and complaints about trash and abandoned vehicle dumping on the streets were considered next most important.

A similar survey, though on different subjects, was conducted by the Millilani Neighborhood Board and reported upon in its September, 1985 community newsletter. Millilani's mail questionnaire was returned by 23 percent of those mailed. The most important problem cited by Millilani residents was law and order, dealing with property crime and physical security. Transportation was the second most important concern, followed in fourth place (of seven items) by land use.

In 1982, Amfac commissioned a survey of both Waipahu area and other Central Oahu residents. Although information is proprietary, Amfac authorized release of summary results in 1985 for use in another project. In its report on the proposed expansion of Village Park, Community Resources noted that the most important problems to both groups of residents were the need to keep Oahu Sugar in business, and provision of more affordable housing. Only the priority of these two concerns changed, with the Oahu Sugar issue first among Waipahu residents and affordable housing first among other Central Oahu residents. The importance of keeping Dole Pineapple Company in business was the third most important concern (of a total of 19) in both groups (Community Resources, Inc., 1985, pp. 59-60).

4.3 Social Impacts Related to the Project

While Section 4.2 discussed those issues independent of Waioala, this section presents those concerns and impacts specifically related to the proposed project.

4.3.1 Islandwide Issues and Concerns

This section presents an overview of islandwide issues and concerns specifically related to the Waioala Estates Subdivision. Because no polls or other systematic mechanisms to measure community feelings on this project, such discussions are based on articles appearing in Honolulu's two major newspapers over a two and a half month period, supplemented by interviews with City personnel, and public positions expressed by islandwide organizations.

The news articles are valuable in that, in addition to reporting on the various events related to this project, they also discuss reactions to these events by the community and its designated representatives. These reactions give some indication of what the islandwide population sees as issues and concerns. Appendix A lists those articles reviewed for this study.

Public Meeting and Hearings

The proposed project was made public in the first week of April (4/7) and has since been a frequent topic. Interested persons provided comment on the proposed project at meetings and hearings, including a public hearing at Farrington High School (5/15), a City Council Housing Committee meeting (5/21), and a community meeting at Millilani (5/27). An informational meeting was held at Waipahu High School in early May (5/9), which provided information on the project and application procedures. While the audience asked questions, no testimony was provided at this time.

Comments supporting the project at these meetings generally came from applicants who responded to a number of advertisements sponsored by the City Department of Housing and Community Development. At the Farrington High School meeting, most of the speakers at the full-to-capacity meeting (1,200 + people) described how "Waioala Estates was their dream come true" (The Honolulu Advertiser, May 16, 1986). Comments opposing the project were provided by the League of Women Voters, and the Waipahu and Wahiawa Neighborhood Boards.

Whereas the crowd was smaller at the City Council Housing Committee meeting (estimated 200 people), the general pattern of the earlier meetings was the same (The Honolulu Advertiser, May 22, 1986).

Approximately 250 people attended the Milliani community meeting and people were invited to provide informal testimony. Generally about half of the speakers opposed the project, with the other half, typically applicants, supporting Waioala Estates (Personal communication, Howard Murai, Department of Housing and Community Development).

The specific issues apparently raised at these meetings are as follows:

Personal need to purchase a home -- Most of the people who publicly spoke on this project express their own personal frustration at being unable to purchase a home of their own, as typified by the comment -- "I am sick and tired of paying high rent and moving from place to place . . ." (The Honolulu Advertiser, May 16, 1986). They expect that this project will make available a house/lot they can buy.

Islandwide need for affordable housing -- This was expressed by all who testified, including those who opposed the project.

Inconsistency with current land use policies -- One of the major reasons for project opposition is the inconsistency of Waioala with the designation of Ewa as the secondary urban center. One of the speakers felt that such a project would be more appropriate in Ewa . . . because it is closer to employment opportunities, has better highway connections, is already zoned for urban use and would protect farmland for diversified agriculture (The Honolulu Advertiser, May 16, 1986). Central Oahu, on the other hand, is not targeted for the type of population growth resulting from the proposed project.

Need to go through full land use procedures -- This comment was directed to the City's request to exempt Waioala from certain exceptions pursuant to Sections 46-15.1 and 359G-4.1 of the Hawaii Revised Statutes. It was felt that the project needed the "checks and balances of the city and state established to protect our lands" (The Honolulu Advertiser, May 22, 1986).

Need to improve transportation system and other public facilities -- This concern was raised at the Milliani meeting where residents complained that existing problems need to be solved before added more residents/cars to Central Oahu.

Note that the issues and concerns raised at public meetings are very similar to those discussed as part of the "Regional Issues and Concerns Related to This Project" and are commented on in that section.

Other Islandwide Issues and Concerns Raised in Newspaper Articles

A number of sub-topics have been reported in these newspapers. Of the 33 articles reviewed, most reported on the interaction between the City administration and the City Council. Issues raised by Council members are summarized as follows:

- Concern about the project's relationship to existing land use policies, particularly as related to the preservation of Central Oahu agricultural land and the designation of Ewa as the secondary urban center.
- Achieving a balance between the need for affordable housing and the existing and increasing traffic problems; and
- The overall procedure in publicizing and requesting 359G exemptions, and potential political benefits.

As reported in a May 29th article of The Honolulu Advertiser, these issues have been subsequently addressed in the City Council Resolution 86-202.

Another sub-topic covered by the print media is related to a complaint filed by Hawaii Thousand Friends in State First Circuit Court. This suit is currently pending.

Analysis of Print Media Information

While a particular news article may reflect a reporter's perception of an incident, a review of these articles over a period of time indicates trends of how this project is perceived by the general community. Over the two and a half month period, the following is a summary of these trends:

April: Waioala quickly becomes a controversial item when the day after it was announced, City Council members express strong concern over the traffic, planning and politics of the proposal. This controversy is heightened with the City's advertisements soliciting an "initial application" to indicate the extent of community response on this project. An editorial in The Honolulu Advertiser comments on this "skirmishing" and suggests that . . . at this stage the need is to approach affordable housing projects in a way that puts residents' interests above the obvious election-year politics" (April 20, 1986).

Mar: Waiola clearly becomes a two-sided issue centered around the "trade-offs" between affordable housing and other community priorities. Individuals and organizations begin to publicly express their viewpoint. Generally most of the individual speakers were supportive and tended to be applicants, with individuals opposing the project being residents of surrounding communities. Organizational representatives raised those issues mentioned earlier. An editorial in the Honolulu Advertiser expresses support for the 359E exemption, including the Council conditions (May 30, 1986). The Star Bulletin editorial is critical of the conditions feeling that "Council made certain that Waiola will not get off the drawing board anytime soon" (May 30, 1986).

Early June: The newspapers continue to examine the "trade-off" mentioned earlier. The Honolulu Advertiser devotes almost an entire page to a profile of two families, one supportive and one opposing the project (June 3, 1986).

From an islandwide standpoint, Waiola is a classic example of weighing one community value/priority over another.

As found in Section 4.1.1, affordable housing is clearly a priority, along with traffic and jobs. While most people do not deny the importance of affordable housing, the opponents believe that other community values and considerations conflict with the goals of this project. This conflict is further explored in Section 4.3.2.

In terms of sheer numbers, the supportive testimony would suggest that this particular project reflects the community desire to have more affordable housing. The balancing of this value with other aforementioned community values was partially achieved in the conditions of the City Council Resolution 86-202, which calls for an Environmental Impact Statement.

Islandwide Community Organizations

At the time of this writing, two islandwide organizations have responded to the EIS Preparation Notice. In a letter dated July 5, 1986, the League of Women Voters commented on the project's conflict with public planning policies, the secondary impacts of removing this land from agricultural use for urban purposes, the adequacy of the public infrastructure, and the analysis used to identify alternatives to this project.

The Hawaii Thousand Friends (letter dated July 7, 1986) raised similar land use and environmental concerns, and strongly emphasized the need to accurately portray such impacts in the EIS process.

Both organizations expressed their intent to further scrutinize the current studies through the EIS process.

Most of the concerns raised by these organizations are somewhat similar to those raised by Study Area residents (see Section 4.3.2), though these organizations tended to express their views with more detail. It is understood that the EIS document will be addressing the relationship of this project to the public policies and plans, the quantitative adequacy of infrastructure systems, and the land use implications of urbanizing this land.

Table 8
COMMUNITY MEMBERS CONTACTED FOR
SOCIAL IMPACT ASSESSMENT OF WAIOLA ESTATES

Name	Organizations/Affiliations
C. O. "Andy" Anderson	President, Waipahu 2000 Community Council Waipahu Neighborhood Board Waipahu Community Assn. Waipahu Cultural Gardens Park
Paul Cathcart	President, Gentry-Waipio Community Area Assn.
Frances Devera	Seaview resident
Robert Heffernan	Treasurer, Waipahu Community Assn. Covenant Manager, Gentry-Waipio Community Area Assn.
Les Hill	President, Waipahu Community Assn. Waipahu Business Assn.
Richard Hirata	Waipahu Community Assn. Waipahu Cultural Garden Park
David Kaufman	Waipahu Neighborhood Board represents Waipio-Gentry, Crestview and Seaview
Cal Kawamoto	Chair, Waipahu Neighborhood Board Waipahu Community Assn. Executive Director, Waipahu Cultural Gardens Park
Samuel S. H. Lee	Chair, Milliani Neighborhood Board
Brad Oyama	Gentry-Waipio Community Area Assn.
Loreen Stern	Secy., Waipahu Community Assn.
Hiroshi Yamashita	Community Relations Officer, Asfac Waipahu 2000 Community Council

4.3.2. Project Issues and Concerns of the Study Area

This section discusses those concerns expressed by Study Area individuals and organizations on Waiola Estates.

Interviews with Study Area Residents

During the early stages of this project, many community issues were raised at public hearings and meetings. It is important to further explore these issues to gain a better understanding of the community's concerns, as well as to identify other concerns which have not been voiced.

One to one interviews with certain individuals were held during this study. These individuals were selected because they have been visible in community affairs through their positions in organizations, although it was made clear that their views were being solicited as individuals, rather than as organizational representatives. Individuals who were not officers or apparently active in organizations were recommended by those initially interviewed because of their known interest/concern in this project. None of those interviewed indicated they were applicants. Table 8 lists those interviewed.

A summary of issues raised is hereby listed, followed by further discussion on each issue. Note that these are not presented in any particular order and are not intended to indicate priority. A systematic poll is recommended if such priority identification is desired.

- All those interviewed believed there is a strong need for affordable housing, but most opposed this particular project. The general reason for this opposition was a feeling that the trade-off of having this type of project at this particular site outweighed any potential benefits.
- The effect of this being a "City project" was of concern. Those interviewed questioned the City's role as a developer, as well as procedures to "fast-track" this project.
- Those interviewed were very concerned that Waiola would be a homogeneous community which has the potential to be socially and economically incompatible with the planned community of Gentry-Waipio and further add to the perception that Waipahu is a "low-mod" community.

- The effect on Waiola applicants and its future residents was also discussed. Some felt that the project's affordability "was too good to be true" and that these people would be disappointed if the project cannot offer its intended price. There was also concern that the future residents would be outcasts because of socio-economic incompatibility.

- Many felt that Waiola would stress the already-strained infrastructure, particular the roadway system. People questioned the impacts on drainage, sewerage and water systems as well.

- Other concerns raised, though not as frequently, included the agricultural impacts and loss of open space, air pollution due to high number of cars, impacts on the ammunition storage in the Navy's reservation, the necessity of the project's lot size and the unfairness of this project for those who may have already purchased comparable housing at higher prices.

Each of these issues is hereby discussed. The issues are first presented in the manner in which they were raised, followed by comments addressing each item.

Need for Affordable Housing -- There was no doubt in anyone's mind that this is a crucial need. Most people were concept supporters -- they believed the need exists, but felt that, either the City's role is questionable, or that this site is inappropriate. The reasons for non-acceptance of this project are later addressed.

For a few people, the benefits they associated with Waiola outweighed the potential problems. Generally, they felt that this project is well-designed, and would provide an innovative approach to addressing housing needs. These people also indicated their desire to remain consistent with their previous support of private development projects in Central Oahu. These people pointed out that, despite the potential impacts, including traffic, they supported these private projects because they wish to see more growth in Central Oahu. Another reason for supporting Waiola was a personal identification with the dilemma facing the gap group.

These supporters expressed a certain amount of frustration because they felt their views were of the minority. They felt that, when they attempted to clarify information or provide another viewpoint, some of their colleagues tended to oppose the project based in incorrect information.

Comment: Much of the opposition is based on a feeling that Waiola is not "worth" its potential impacts on existing residents. In their desire for affordable housing, those interviewed were consistent with the islandwide surveys cited in Section 4.1.1. They were also consistent with the Study Area community polls described in Section 4.2.3. Of the three polls cited, only one indicated that affordable housing was a priority, and this was expressed mostly by Central Oahu residents outside of Waipahu.

City's Role and Procedures -- All of those interviewed raised this two-fold issue. First, some believed that the City should not become a sole developer, primarily because this would cause unfair competition with private developers. Some acknowledged, however, that the City's role is justified since no private development of this type has been proposed.

Second, and of more importance to those interviewed, are the City's procedures in informing the impacted communities, and "fast-tracking" this project. Related to this is the suspicion that the project is based on political motives.

People felt that the two presentations made to Study Area residents were inadequate because these residents would feel the brunt of the project.

The City's fast-tracking method was a common topic. Some suspected illegality (relative to requirements imposed on private developers), while others felt that the project should undergo the same public scrutiny as private development proposals. A few people felt that the City's reason for using this method is politically motivated.

Comment: Regarding competition with private developers, Waiola Estates is an experiment. Its success depends on a number of factors, including the stability of the current interest rates, the land costs and other variables. Right now, the City's role is enhanced by the relatively low land costs and favorable mortgage interest rates. If all proceeds as currently proposed, and the units can be offered at their intended prices, then the project may indeed add another dimension to the private housing market.

While the project's success may spur competition with private developers, it may also stimulate further innovation in housing, such as different forms of joint ventures.

This competition may also be healthy for the housing market. As stated in a recent banking newsletter, "The deceleration of growth in housing stock has put upward pressure on prices and has helped keep the statewide owner-occupancy rate from changing over the last 10 to 15 years" (Bank of Hawaii, May/June, 1986). Thus, increasing the housing supply may help keep housing prices down.

Previous attempts to disseminate project information to Study Area residents have been limited, and it is strongly recommended that the City increase its efforts to meet with Study Area and islandwide residents to discuss the project.

The fast-tracking method is basically rapid approval and implementation of this development. This rapidity is achieved primarily by foregoing some of the typical development procedures, thus shortening the period between project inception and implementation. It is understood that this method was chosen to take advantage of current interest rates. This method is provided for in the Hawaii Revised Statutes, Section 359G, "Housing development; exemption from statutes, ordinances, charter provisions, rules", and many government-sponsored projects have chosen this route.

On May 28, 1988, the City Council passed Resolution 86-202 which exempts Waiola from certain land use procedures, but stipulated that, among other conditions, the project adhere to R-5 zoning requirements and be studied in the EIS process.

The perception of political motives is fueled by this being an election year for key positions, as well as considerable media attention. This study does not attempt to resolve this issue, but points out that, just as the fast-tracking method is allowed by legislation, so is the pursuit of affordable housing encouraged in City plans and policies.

Creation and Perpetuation of a Homogeneous Community -- Those interviewed were particularly concerned that this project would 1) constitute a community with only one type of people and 2) perpetuate Waipahu's reputation of being a "low-mod" community.

It was felt that a project housing only one segment of the community would have internal and external negative impacts.

It was predicted that internally, the residents would allow their individual quarters to deteriorate, and eventually the project site would be blighted, a characteristic believed to be typical of other government-subsidized projects.

Externally, this anticipated deterioration would be incompatible with the planned community of Gentry-Waipio. Another problem would be crime. A few Gentry-Waipio residents cited the existing crime-related problems between their community and Seaview/Crestview and they feared they would get more of this with Waiola.

It was felt that the effects of this homogeneity would also impact Waipahu Town. Some of those interviewed felt that Waiola would "only add more of the same" people to the already "low-mod" community. They felt that Waipahu already has a reputation for catering almost exclusively to the needs of those with low and moderate incomes.

They cited the region's high proportion of renters, halfway houses and boarding homes. They frequently raised the educational system which buses the newer residents of Village Park and Gentry-Waipio students to Pearl City facilities. The result of this busing is a ghetto effect, whereby Waipahu schools increasingly cater to the needs of lower-income and immigrant children and this is reflected in the schools' curriculum and facilities.

Another example given is that, based on the results of a survey of Waipahu businesses, only 40 percent of the Waipahu business owners live in Waipahu.

It is stressed that those interviewed wished to continue its services for lower income families, but they also desired to have a cross-section of residents which better reflects the islandwide socio-economic patterns. For them, Waiola conflicts with this goal.

Comment: This set of comments is mostly based on an association of Waiola with other government-sponsored housing projects. Such association is understandable, because, as stated in Section 1.2.1, previous government efforts primarily target incomes at the lower end of the spectrum.

As also stated in that section, however, Waiola is not the typical public project. In fact, its target are those families who do not qualify for most housing programs.

Waiola is also not a typical subsidized project. It is understood that, except for those restricted by Resolution 86-202, all project costs, including preliminary studies and land acquisition costs, will be passed on to the homebuyer.

The one trait shared by the gap group families is the inability to qualify for both public assistance, because of too high an income, and conventional mortgage financing, because of insufficient income. As discussed in Section 1, the gap group family is basically the average wage earner.

Beyond that however, their homogeneity is questionable. It is conceivable that a two-person household with an annual income of \$27,000 will be next door neighbors with a family of six earning \$13,000 more. This two-person household may be depend on the earnings of two wage earners with relatively low-paying jobs, while the six-person household is supported by a single wage earner holding a managerial position.

Perhaps a clue to the makeup of Waiola's future residents lies in existing subdivisions which arose in the 1970s. They too were bought and occupied by the average wage earner of the time, as pointed out in the Bank of Hawaii newsletter, yet are stable, thriving communities today.

The likelihood of there being a diverse population in Waiola does not, however, dispel the perception that this project will house the typical recipient of public housing assistance.

It is therefore important to, first, provide as much information as possible to help Study Area residents understand the nature of Waiola and, second, make every effort to ensure that the project's future population is indeed diverse. As one person said, "Even if you are targeting the entire group, I bet only the lower end will apply."

Regarding the potential for Waiola eventually deteriorating, it is understood that the City will include strict provisions in its covenants, similar to that of other planned developments. Design compatibility with surrounding neighborhoods is expected to be achieved, mostly because many of the bids submitted by prospective contractors are based on houses built in communities such as Hawaii Kai.

The concern about Waipahu's current negative image has arisen on a number of occasions. As discussed in the history of Waipahu, the town's existing residential makeup evolved from the creation of plantation-subsidized housing in the 1940s and the rise of private and public single family units in the 1960s. Both movements targeted basically the same market and today's statistics show that Waipahu continues to experience difficulty in accommodating upwardly mobile people.

When compared to Oahu and Mililani, Waipahu has proportionally more families below poverty level, more female-headed households, larger households, more crowded households, less people in managerial/professional occupations, more in-migrants, and lower educational levels.

The addition of Waiola residents may slightly improve these statistics, simply because it will add more average wage earners to the region. Waiola will not, however, add the full range of housing, with some executive homes, desired by some.

To some extent, Waiola will add diversity because of housing types and desired range of residents. Further, if these residents are successfully assimilated into the regional community, some may then be active participants in the effort to improve the community.

Impacts on the Waiola Applicants/Residents -- Some of those interviewed feared that the quoted housing prices were too good to be true and applicants for this project will be disappointed when their expectations are not met. There was also a concern that, because of the controversy surrounding this project, Waiola's future residents will be outcasts among their neighboring communities.

Comment: Addressing applicant expectations is extremely important because a change in any of the cost variables may mean a change in quoted housing prices. To date, six letters providing status reports have been sent to the applicants and these should continue as the project progresses.

Every effort should also be made to have Waiola residents blend in with the existing region. This may be somewhat difficult, since there is already a distinction between Waipahu Town and the communities above the freeway, as discussed in Section 4.2.1. This distinction may or may not be aggravated by the new Waikole project.

To some extent, the project's design compatibility can contribute to this blending in. Also necessary are social events, such as open house type gatherings sponsored by Waiola residents, and active participation of future residents in community affairs.

Adequacy of Transportation and other Systems -- Most of those interviewed felt that the traffic situation was already intolerable and would be worsened by the additional cars this project would bring. They felt that most of the solutions proposed were band-aid attempts and would not really solve the problem.

Drainage was another major concern. There are already drainage problems along Farrington Highway and people felt that urbanizing mauka lands would exacerbate these drainage problems. When the Waikole project was proposed, the developer was asked to line the portion of Waikole stream on the project site to mitigate this flooding. A similar solution was proposed for Waiola Estates.

People also questioned the adequacy of the water supply and the capacity of the Honouliuli Wastewater Treatment Plant.

Comment: Other studies on this project address the infrastructure improvements required to accommodate this project.

It is noted that the traffic concerns were translated into very personal terms. Many of those interviewed talked about their having to leave at 5:00 a. m. to reach their downtown job site by 8:00 a. m. Any addition of cars would mean more time in traffic to them, regardless of the technical projections and recommended solutions.

Other Concerns -- Though not as frequently raised, the following concerns were also expressed:

- the loss of open space and agricultural lands;
- the increase in air pollution because of more cars on the road;
- the necessity of the 5,000 square foot lots;
- the limitations placed on Navy ammunition storage facilities; and
- the unfairness of this project for those who have purchased comparable housing at higher prices.

Comment: Most of these are presumably addressed in other studies on this project because they have been raised in responses to the EIS Preparation Notice.

Regarding the loss of open space, the project site is in the view plane of Waipahu Town and the communities of Gentry-Waipio and Seaview/Crestview. The view from Waipahu Town will be altered by the Waikale project and this project will be a part of that visual fabric.

The view from the communities of Gentry-Waipio and Seaview/Crestview will also be altered, although the structures will be low enough to not obstruct the view toward the Waianae mountain range. The extent of this impact is a matter of aesthetics. To those who place a high value on the current view, any alteration will be a major impact. To others in this area, this project may simply be a visual extension of the adjoining Waikale project. Good urban design principles and maintenance of the project frontage can help achieve a visual balance.

It is difficult to address the feeling that Waioala is unfair for those who have already purchased comparable homes at a higher price. While these feelings are understandable, this type of commentary is rooted in a societal context, such as philosophical questions regarding the extent to which society should provide assistance to those who need it, which is much greater than the scope of this study.

Positions of Study Area Organizations on the Waioala Estates

Formal positions on Waioala Estates have been taken by the Waipahu Neighborhood Board No. 22, the Waipahu Community Association, and the Gentry-Waipio Community Area Association.

In its May 22nd meeting, the Waipahu Neighborhood Board reported that several letters have been sent to elected representatives outlining the community's opposition of this project. The Board reaffirmed that although they supported the General Plan Amendment that provided for affordable housing, they opposed the proposed Waioala project in Waipahu for two reasons:

- The Board objects to any actions which circumvent land use review procedures which must be administered fairly and be adhered to at all times in order to work. The Board went on to state that they insist on public hearings, environmental impact statements and community input.
- The Board objects to any special treatment being considered for any developer meeting the City's 10% affordable housing requirement, as it is not conducive to balanced growth and unfair to other developers.

It is noted that these concerns were subsequently addressed in the Council Resolution 86-202. Since then, in response to the EIS Preparation Notice, the Board transmitted related concerns and these have been incorporated into this report.

The Waipahu Community Area Association also opposes the project and a petition by "Citizens Against Waioala Estates" was distributed prior to City Council's May 28, 1985 decision.

In May of 1986, the Mililani/Waipio/Melelanu Neighborhood Board circulated the City Council's resolution exempting the Waioala Housing Project from land use laws with several conditions. Most felt that the Resolution addressed public housing and not specifically Waioala. One member stated that "the Board should follow its previous resolution which places a moratorium on development until transportation and infrastructure improvements are effected." The Board voted unanimously to defer action on Waioala until it sponsors a public forum and meets with city, state and development officials.

The Waipahu 2000 Community Council had previously advised the City that they oppose the project if it is intended for low and moderate income families because they feel that Waipahu already has a substantial share of this type of housing. This organization has since received a project presentation from the City and has not taken a position on the project.

Analysis of Study Area Issues and Concerns

In their desire for affordable housing, those interviewed were consistent with the islandwide surveys cited in Section 4.1.1.1.

There was also consistency, however, with the Study Area community polls described in Section 4.2.3. Of the three polls cited, only one indicated that affordable housing was a priority, and this was expressed mostly by Central Oahu residents outside of Waipahu. The other concerns were more "immediate", such as traffic, property crime, and abandoned vehicles.

Much of the concerns about Waioala is that the project is not "worth" its potential impacts on existing residents.

Waioala Estates is a NIMBY, or not-in-my-backyard, project. Whereas this project addresses a societal need, its impacts are felt the strongest by those who have already invested in their current homes and existing communities. They generally plan to continue to invest time and energy into making their living environments safe, pleasant and comfortable. To them, Waioala Estate's proximity to their homes meant more time waiting in traffic, a possible depreciation of house and land values, and a perpetuation of Waipahu's image as a "low-mod" community.

NIMBY concerns cannot be taken lightly because those who express these concerns are most likely to experience these impacts. Some of these concerns are based on a perception or expectation which is inconsistent with Waioala's goals and objectives. These could be addressed through various informational mechanisms which provide accurate project information and encourages mutual resolution of these issues.

Waioala will nevertheless generate impacts which are real and inevitable. These include increasing the waiting time in traffic, even though this will probably occur without the project, and the replacement of open space with structures, even though this will occur with the Waioala project. These are ultimately the trade-offs which, in the decision-making process, are weighed against the islandwide need for this type of project.

A Study of Demographic Impacts
of the Proposed
Waiala Estates Subdivision

Section 5

Displacement

5. DISPLACEMENT

Waiola Estates will replace the site's current pineapple cultivation with urban uses. This does not necessarily constitute displacement, however, because of the landowner's intent to relocate these activities.

In two letters from Castle and Cooke Land Company (dated April 23, 1986 and July 16, 1986) to the Department of Housing and Community Development, the landowner expressed its intent to relocate the current pineapple activities on lands currently used for sugar cultivation. Located in Waiailua, these sugar lands were targeted to be fallowed because of economic considerations.

As discussed in the agricultural study for this project (Evaluation Research Consultants, 1986), the relocation site is agronomically similar to the Waiola site, particularly because the site was previously used for pineapple cultivation (Personal communication with Peter Garrod, July 17, 1986).

No employees will be displaced by this relocation effort.

APPENDIX A

LIST OF NEWSPAPER ARTICLES

REVIEWED FOR THIS REPORT

Articles from The Honolulu Advertiser

Date	Title
April 7	"Anderson unveils plans for low-cost subdivision"
April 8	"Council cool to Fasi's housing plans"
April 10	"Fasi planning new housing project as Council members blast another"
April 11	"Cayetano says Waiola project a 'cruel hoax' by Anderson"
April 12	"Waiola critics are 'two-bit politicians', Fasi charges"
April 15	"Fasi: Waiola project a no-lose situation"
April 20	"Waiola skirmishing" (Editorial)
April 23	"Waiola housing support asked"
April 24	"Battle of Waiola Estates heating up"
April 25	"Group charges Waiola used to speed ag land conversion"
May 8	"Waipio housing plan tangled in a web of red tape"
May 14	"Group sues city over Waiola plan -- charges ads used to boost Andy"
May 16	"Crowd heavily in favor of Waiola"
May 16	"Lawyer demands apology from Anderson by noon"
May 17	"Hink says administration misled people at meeting"
May 22	"Applicants for homes in Waipio hear hot debate by Council, administration"
May 23	"Waiola' in Ewa" (Editorial)
May 27	"Waiola vote no picnic for Council"
May 29	"Waiola gets Council nod -- however..."
May 30	"Waiola: what now?" (Editorial)

May 30	Various letters to the editor
May 31	"Sewage plant can handle Waiola, engineer says"
June 3	Various letters to the editor
June 3	"Waiola Estates is: . . ."
June 3	"For: Lani Laloulu's long dream"
June 3	"Against: losing landscape they've paid for"
June 13	"Waiola Estates: Bornhorst says officials play politics with applicants"

Articles from Star Bulletin

April 10	"Traffic-Wearry Commuters Rip Waiola Housing Plan"
April 10	"State Officials Ponder City's 'Fast Track' Proposal"
April 13	"City Wants Competition at Waiola Estates"
April 13	"Waiola Estates Has Design Standards, Buyer Qualifications"
May 30	"Hedging City Council's Bets on Waiola"

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APPENDIX D

ENVIRONMENTAL ASPECTS OF STORM WATER RUNOFF

Maiole Estates Subdivision Development, Central Oahu, Hawaii

July, 1986

by

Gordon L. Dugan, Ph.D.
Environmental Consultant

July 5, 1986

MEMORANDUM

TO: F.J. Rodriguez, President
Environmental Communications Inc.

FROM: Gordon L. Duggan, Ph.D. *Gordon L. Duggan*
Environmental Consultant
704 Ainalopo St.
Honolulu, HI 96825

SUBJ: Environmental Aspects of Storm Water Runoff for the Proposed
Maioia Estates Subdivision Development, Central Oahu, Hawaii.

Attached herewith are the results of a study concerning the projected environmental aspects of storm water runoff resulting from the proposed Maioia Estates Subdivision Development, Central Oahu, Hawaii.

Please advise me of any questions you have concerning this report.

Enclosure:

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INTRODUCTION

The proposed 269-acre Maloia Estates Development is situated on the west side of Kamehameha Highway, approximately two miles northwest of the Middle Loch of Pearl Harbor in central Oahu, as shown in Figure 1. The site, presently covered with a full stand of pineapple, gently slopes towards Pearl Harbor, with elevations ranging from approximately 310 to 420 ft over its approximately one mile longitudinal length. A more detailed boundary/location map is presented in Figure 2. A photograph of the pineapple fields covering the proposed site is shown in Figure 3.

The latest available isohyetal (rainfall) maps (Dowald, 1982) indicate that the average annual rainfall at the project site is near 32 in., which corresponds very close to the previous long-term isohyetal lines, such as those shown in Figure 1. The evapotranspiration for the site is expected to be near 70 in./yr. based on previous studies using accurately measured lysimeters and long-range pan evaporation rates (Lau et al., 1974). Thus, the groundwater recharge potential of the site itself is quite limited, except for heavy storm events. In addition there is essentially no upgradient surface water runoff potential to the site as Kamehameha Highway and Kipapa Gulch forms the proposed project's upper boundaries (Figure 2). Over the years irrigation water movement has transversed and/or flowed into the site. The site is just inside the periphery of the 45.7 sq. mile Waikole Watershed, the largest on Oahu, which includes the land use by agriculture, military, and municipal endeavors, as well as undeveloped land. The soil at the site is essentially completely represented by the Molokai soil series (Foote et al., 1974), which is typically encountered in central Oahu.

Inasmuch as the scope of work consisted of estimating the alterations in volume and quality of surface water runoff resulting from the proposed project, it was necessary to identify those factors that affect runoff generation and runoff quality for both pre- and post-development conditions.

Methods currently available to estimate the surface water runoff volume from a specific storm event requires the determination of reasonable rainfall-runoff coefficients for varying magnitude and duration storms, and for different land management, vegetation, soil, and soil moisture conditions, to name but a few hydrologic factors. In most practical situations, it is not considered feasible, due to the numerous influencing factors, to determine varying rainfall-runoff coefficients; rather, it is more practical for design and evaluation purposes to use a single coefficient for a particular land-use over a given rainfall-intensity range. However, in order to circumvent a major portion of the unavoidable error created by using a constant rainfall-runoff coefficient, a method developed by the Hawaii Environmental Simulation Laboratory (HESL) of the University of Hawaii, was utilized to determine representative storm water volumes under varying conditions (Lopez, 1974; Lopez and Dugan, 1978).

The HESL method is based on an incorporation of U.S. Soil Conservation Service (SCS) data and U.S. Weather Bureau data from the "Rainfall-Frequency Atlas of the Hawaiian Islands" (1962). The SCS data involves the use of soil maps (Foote et al., 1972) and SCS-derived curve numbers obtained from empirical data, including precipitation, soil and changing soil moisture conditions and vegetative cover information from the classification of thousands of soils throughout the nation. These soils were classified into four groups, labeled, A, B, C, and D, with Class A having the highest water intake rates and Class D soils the lowest. These curve numbers, modified for

Hawaiian conditions, pertain only to non-urban conditions. For urban conditions, the HESL method utilized information published by Miller and Viessman (1973).

Once the increase in surface water runoff volume had been established, it was necessary to determine the runoff quality for pre- and post-development conditions.

The quality parameters of stormwater runoff considered the most representative to identify potential changes under different land management practices (i.e. pre- and post-development conditions) are: total nitrogen; total phosphorus; and suspended solids (sediments).

The U.S. Geological Survey (USGS) in conjunction with its national stream flow gaging program periodically collects and analyzes samples from selected streams. The Waikole Stream at Waipahu, which as previously mentioned is the largest drainage area on Oahu (45.7 sq. miles to gaging site) is one of the most intensively (if not the most) sampled (water quality) stream site in the State of Hawaii. The gaging station is located 300 ft upstream of Highway 90 (Farrington Highway), about one-half mile above the point where it discharges into the West Loch of Pearl Harbor and about two miles directly south of the lower boundary of the proposed project site.

Although water sampling was conducted to some extent at the Waikole Stream gaging site from 1967 to 1972 extensive water quality sampling and analysis didn't commence until the summer of 1972. Since that time the full nitrogen series and total and phosphate phosphorus have been periodically conducted as well as numerous other water quality parameters including the major cations and anions, heavy metals, and occasionally various pesticides and biological parameters. In addition, an automatic sediment sampler was installed for relatively continuous suspended sediment samples in July 1972.

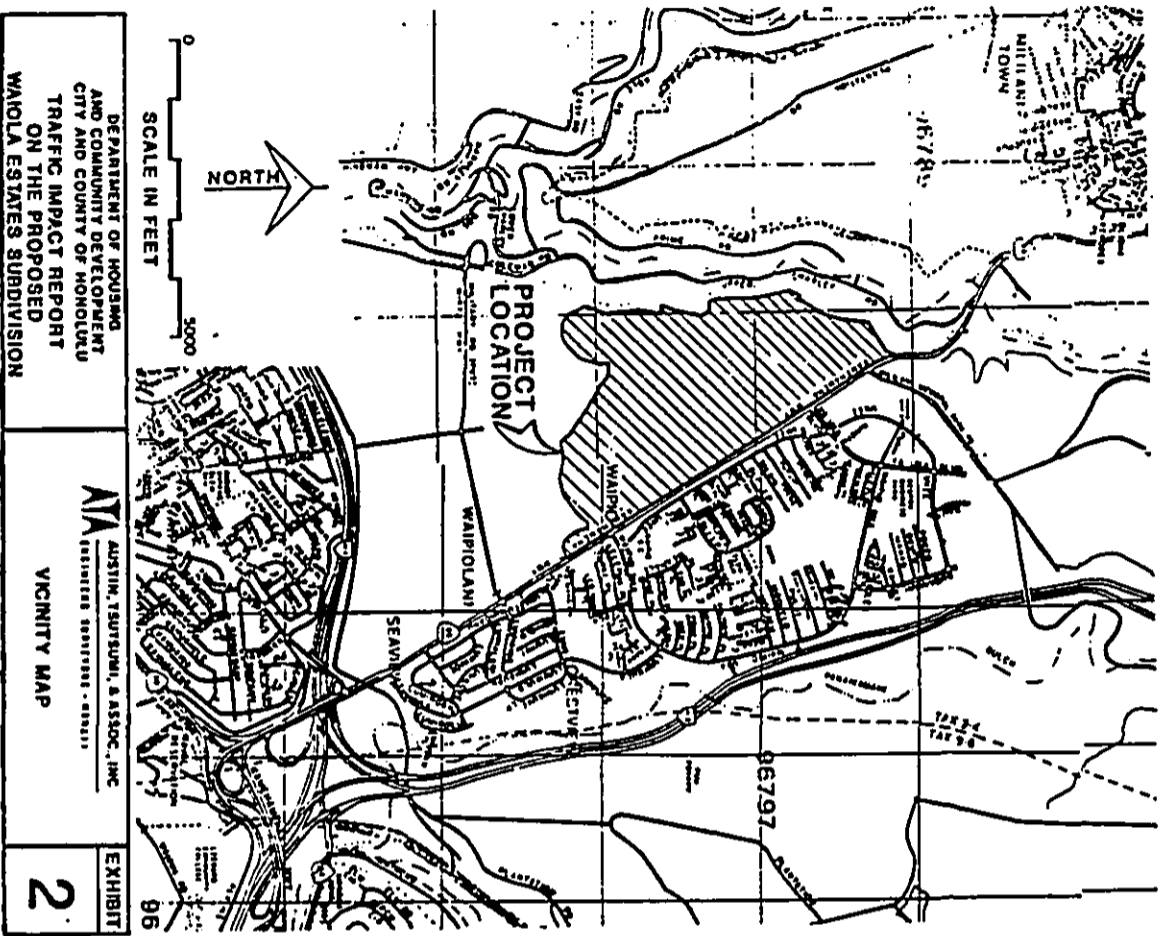


Figure 2. Proposed Waioala Estates Subdivision Development Site, Central Oahu, Hawaii

PURPOSE AND SCOPE

The purpose of this study is to evaluate the environmental impact of the proposed Waioala Estates Subdivision Development Project as it relates to surface water runoff. From an assemblage of baseline hydrologic and water quality data, an estimate of the existing and projected volume and quality characteristics of surface water runoff will be made, along with an assessment of the environmental impact resulting from this runoff, in the form of written comments.

METHODOLOGY

The methodology used in this study consisted of assembling, analyzing, and interpreting existing data from federal, state, and county agencies, as well as from on-site surveys of field conditions.



Figure 3. View (facing West Loch of Pearl Harbor) of the Pineapple Forest covering the Proposed Waioala Estates Subdivision Development Site.

SURFACE WATER RUNOFF ALTERATIONS

Quantity

The estimated storm water runoff and constituent changes due to the proposed Waioala Estates Subdivision Development Project (269 acres) are shown in Table 2. The values presented, it must be emphasized, are for comparative purposes only, and are not intended to be representative of the accuracy implied by the practice of reporting results to one decimal place. This was done primarily for convenience of calculations and balancing.

As previously mentioned the project site is represented by the Molokai soil series, listed by SCS as Class "B" soil, which is a fairly easily drained class of soils. Use was also made of a study of runoff from pineapple land on the island of Hawaii and Oahu through a cooperation agreement between the U.S. Conservation Laboratory in Phoenix, Arizona and the University of Hawaii at Manoa Department of Agronomy and Soil Science (Coolley and Lane, 1980). The study identified SCS curve numbers (used for runoff determinations) for pineapple land to be surprisingly lower than corresponding values from mainland conditions, 48 and 69, respectively. The net result of the lower curve number is a significant decrease in the amount of calculated surface runoff.

As can be readily observed in Table 2, there is essentially no storm runoff volume for the 1- and 5-yr, 1-hr duration storm for existing 1986 (pre-development) conditions; however, as the storm duration and recurrence interval increases the predevelopment conditions approaches about 1/2 of full development conditions. Among other factors causing this difference is that as the intensity and duration of the storm increases the ability of the soil to accept water decreases which approaches the less permeable

Table 1
Representative Storm Water Quality Data for a Honolulu Residential Area^{a/}
All units in mg/L except total coliform, fecal coliform, and fecal strep which are listed as No./100 mL.

Constituent	Concentration
Total Solids	511
Suspended Solids	252
COD	142
BOD	10
Dissolved Oxygen	7.1
NO ₃ -N	0.211
TKN	0.381
Total P	0.57
Ortho P	0.27
Grease	2.8
Lead	0.407
Chromium	0.013
Zinc	0.512
Copper	0.036
Iron	0.377
Total Coliform	83,000
Fecal Coliform	1,965
Fecal Strep	6,393

^{a/} Storm water samples collected on Aupuni Street near Nuhelewa Stream.
• Values obtained from Fujiwara (1973).

Prior to the summer of 1972 nitrate was the only nitrogen series analyzed for, there was no phosphorus analysis, and suspended sediment samples were collected by grab samples (USGS, 1967-1984). The automatic sediment (suspended) sampler enables the determination of the total daily sediment load and average concentration.

The total nitrogen and phosphorus concentration values, for comparative purposes for undeveloped conditions were derived by calculating the mean of the median yearly values for the period 1973 through 1984 (water year basis), which were 3.39 mg/L and 1.20 mg/L, respectively. For comparative purposes, and for conservative reasons, these values were rounded-off to 3.0 and 1.0 mg/L, respectively, for total nitrogen and total phosphorus. The average output of nitrogen, using the calculated values, for the mean flow over the 31 years of record (38.3 cfs) (USGS, 1967-1984) relates to a nitrogen output of approximately 8.8 lb/acre-yr, with phosphorus being about one-third less. These output values appear somewhat higher, but not particularly out of the range, than those reported by Lochr (1972) for various rural and agricultural lands throughout the nation, which seemed to produce nitrogen output values of near 3 lb/acre-yr and phosphorus values one magnitude less. The higher values from the Waikolee Watershed is not surprising considering the composition of the land use within the Watershed.

The suspended solids (sediment) values were derived by plotting the weighted suspended solids concentration values (total suspended sediment load divided by mean daily flow) against the average daily flow for stream flows during the 1973-1984 water year period which appeared to have unweighted suspended sediment concentrations of > 500 mg/L. The weighted suspended sediment values proved to be higher than the unweighted values in all cases. A total of 53 values were plotted and nearly all appeared to approach or

exceed the previously reported 1-year return interval flow for Waikolee Stream (Department of Land and Natural Resources, 1971), however, this comparison can only be used as a rough indication inasmuch as instantaneous flow is compared to mean daily flow.

As would be expected and also reported in the extensive Oahu Water Quality Program Study (Department of Public Works, 1971) the suspended sediment output tended to increase with increasing flow. This was quite apparent in the plot of the 53 values, but there were a few seemingly deviate values, again as generally expected. Nevertheless, for conservative comparative purposes the approximately lower one-third of the concentration values were assumed to represent the suspended sediment concentration value a derived comparative value of nearly 1200 mg/L was obtained, a value which was subsequently adopted.

Quality data for urban storm water (post-development conditions) is sparse, both locally and nationally. Locher (1974) compiled urban storm water runoff quality data collected from throughout the United States, as well as from a few international locations. As expected, the data are diverse. Locally, Fujiwara (1973) reported urban storm water quality data collected from storm drains in different land use drainage areas of Honolulu, the residential portion of which is shown in Table 1. For the present study, his results were used to simulate post-development runoff quality, which were, respectively, 0.60, 0.57, and 250 mg/L, for nitrogen, phosphorus, and suspended solids. Attention is likewise drawn to the heavy metal content in residential runoff.

Applying these concentrations to the post-development runoff volumes, the projected sediment and nutrient loads from the project site could then be estimated.

TABLE 2

Estimated Storm Water Runoff Volume and Constituent Changes due to the Proposed Mafoia Subdivision Development Project, Central Oahu, Hawaii

Storm ^a		Storm Water Runoff															
Dur- ation	Recur- rence Interval	Quan- tity in.	Hydraulic				Nitrogen ^b				Phosphorus ^c				Suspended Solids ^d		
			Development		Full		Development		Full		Development		Full		1986	Development	
hr	yr		1986 AF event	AF event	Δ AF event	1986 1b event	Full 1b event	Δ 1b event	1986 1b event	Full 1b event	Δ 1b event	1986 1b event	Full 1b event	Δ 1b event	1986 ton event	Development ton event	Δ ton event
1	1	1.45	0.0	15.7	+ 15.7	0.0	25.6	+ 25.6	0.0	24.3	+ 24.3	0.0	24.3	+ 24.3	0.00	5.33	+ 5.33
1	5	2.1	0.0	28.1	+ 28.1	0.0	45.8	+ 45.8	0.0	43.5	+ 43.5	0.0	43.5	+ 43.5	0.00	9.54	+ 9.54
1	10	2.4	0.1	34.1	+ 34.0	0.9	55.6	+ 54.7	0.3	52.8	+ 52.5	0.18	52.8	+ 52.5	0.18	11.58	+ 11.40
1	25	2.8	0.8	42.3	+ 41.5	6.4	69.0	+ 62.6	2.1	65.5	+ 63.4	1.28	65.5	+ 63.4	1.28	14.37	+ 13.09
1	50	3.0	1.3	46.4	+ 45.1	10.9	75.8	+ 64.9	3.6	72.0	+ 68.4	2.18	72.0	+ 68.4	2.18	15.79	+ 13.61
1	100	3.5	3.3	57.0	+ 53.7	26.7	93.0	+ 66.3	8.9	88.3	+ 79.4	5.34	88.3	+ 79.4	5.34	19.37	+ 14.03
24	1	3.4	2.8	54.8	+ 52.0	23.1	89.5	+ 66.4	7.7	85.0	+ 77.3	4.61	85.0	+ 77.3	4.61	18.65	+ 14.04
24	5	7.0	33.4	133.1	+ 99.7	272.8	217.3	- 55.5	90.9	206.4	+ 115.5	54.55	206.4	+ 115.5	54.55	45.26	- 9.29
24	10	8.7	55.1	170.7	+ 115.6	449.6	278.6	- 171.0	149.9	264.7	+ 114.8	89.92	264.7	+ 114.8	89.92	58.05	- 31.87
24	25	10.5	81.2	210.7	+ 129.5	662.8	343.9	- 318.9	220.9	326.7	+ 105.8	132.55	326.7	+ 105.8	132.55	71.64	- 60.91
24	50	12.0	104.9	244.1	+ 139.2	855.9	398.4	- 457.5	285.3	378.5	+ 93.2	171.17	378.5	+ 93.2	171.17	83.00	- 88.17
24	100	14.0	138.5	288.7	+ 150.2	1130.0	471.2	- 658.8	376.7	447.6	+ 70.9	226.00	447.6	+ 70.9	226.00	98.16	-127.84

a) From U.S. Weather Bureau "Rainfall Frequency Atlas of the Hawaiian Islands" (1962).

b) Based on a nitrogen value of 3.0 mg/L for 1986 conditions and 0.60 mg/L for "Full" development.

c) Based on a phosphorus value of 1.0 mg/L for 1986 conditions and 0.57 mg/L for "Full" development.

d) Based on a suspended solids value of 1200mg/L for 1986 conditions and 250 mg/L for "Full" development.

conditions that would normally occur under full developed conditions, as a result of roofs, sidewalks, etc.

As would be generally expected the greatest calculated incremental storm runoff volume (288.7 acre-ft/event) resulted from the 100-year storm with a 24-hour duration under full development conditions, as shown in Table 2. These values (acre-ft/event) represent a volume of water and should not be confused with peak discharge rates which represent the maximum volume of storm water runoff discharged per unit of time (e.g., cfs). Peak discharge rates are required for engineering design or proposed drainage facilities and ascertaining the capacity of existing facilities, while total runoff volume provides a more realistic estimate of impact on water quality.

Quality

Although the changes in the volume of storm water runoff are significant, the quality of the various constituents being transported can be of equal, if not more important. However, as previously mentioned estimates of water quality concentrations resulting from significant storm water runoff that occurs at the most only a few times a year is very perplexing, especially since information on this subject essentially only became available at both the local and national level in the 1970's.

The summation of nitrogen, phosphorus, and suspended solids loads from both present (1986) and projected (full) residential development for storms of 1- and 24-hour duration at recurrence intervals of 1-, 5-, 10-, 25-, 50-, and 100-years are shown in Table 2. The incremental changes per storm event for the present and projected development conditions for the various duration and recurrence interval storms indicate that from the least to the greatest amount of rainfall: nitrogen increases for the lower intensity/duration storms and decreases for the higher level storms; phosphorus increases for

all storm events, but the actual values are not particularly high; and the suspended solids values shows approximately the same pattern as nitrogen, increase at the lower values, decrease at the upper values.

As previously stated it must be emphasized that the constituent values are only for comparative purposes, and should not be taken as absolute values. Overall then (between pre-and-post developed conditions), the output of nitrogen is about the same and phosphorus is expected to increase in the runoff, while suspended solids increase slightly for the lower intensity/duration storms, and then generally decrease for the higher intensity/duration storms. The decreased amount of exposed soil in residential areas tend to reduce the quantity of the suspended solids load at the higher intensity/duration storm events even though the total quantity of storm water increases.

Other water quality constituents of general concern include biocides and heavy metals. Typically the biocides presently being used tend to break down more readily in comparison to the more long lasting types of a few years ago; however, their relatively recent determination in the deep groundwaters of central Oahu has caused considerably concern. This aspect will be addressed in a subsequent section of the report. On the other hand heavy metals do apparently increase somewhat as a result of urbanization; however, the possible long-term effect, if any, that increased heavy metals may have upon the biological life of the receiving waters (primarily the West Loch of Pearl Harbor) at the concentrations expected in residential runoff (Table 1) is presently undefined. No particular heavy metal concentration pattern, when compared to drinking water standards (Public Health Regulations, 1981) was noted for the heavy metal analyses for the 1967 to 1984 water year period (Mailele St except that in a few cases total iron was notably higher up to several mg/L, however, dissolve iron was generally quite low, typically <0.1 mg/L. The

higher total iron content (mainly in the suspended form) is in all probability a reflection of the relatively high iron content of some soils within the drainage area.

The hydrologic and water quality aspects of the surface water runoff were only considered for the present and projected conditions. However, increases in constituent loads will undoubtedly result from construction activities, especially if a significant storm occurs during the interim period between earth moving operations and soil stabilization completion. The impact of construction activities can be minimized by adhering to strict erosion control measures.

VOLATILE ORGANIC COMPOUNDS

The determination and consequent extensive media coverage of various pesticides at detectable levels in the drinking water supply from numerous wells in central Oahu, Hawaii, caused considerable concern, particularly since 1982, among water consumers in the service area. The pesticides of concern have been primarily EDB (ethylene dibromide) and DBCP (dibromochloropropane), generally found at < 100 ppt. Also of concern is TCP (trichloropropane) at concentrations up to approximately 3 ppt. Although these pesticides were only found in well waters of central Oahu at very low concentrations and the U.S. Environmental Protection Agency has not as yet established maximum concentration limits, the Hawaii State Department of Health has proposed that EDB and DBCP be limited to 20 ppt, the lowest maximum concentration limit in the United States. Despite the concern over TCP, the Hawaii State Department of Health has not proposed an upper limit.

Prior to 1980 it was assumed that the volatile organic compounds (VOC) (pesticides) that were applied to agricultural land, most notably the soil fumigants EDB and DBCP, which were used to control nematodes that infest the

roots of pineapples, would volatilize in the top layers of the soil or at least prior to traversing the relatively deep distance (several hundred feet) to the basal groundwater. Credence was given to this theory by previous studies conducted by the University of Hawaii's Water Resources Research Center (WRRC) which showed that chemicals were generally retained in the soil column and only trace amounts of the more refractory materials might break through and be transported to the basal water (Eto et al., 1967, and Fischer, Green, and Burbank, 1977). However, neither EDB nor DBCP were included in these tests and what was then considered as trace materials could now be easily picked up with the present more sensitive detection equipment. In 1977, the pineapple industry voluntarily stopped utilizing DBCP in Hawaii. EDB is also an additive in leaded gasoline and aviation fuels. There is a record of petroleum fuel spills in central Oahu by the military, particularly along their petroleum pipeline that extends from the Hickam AFB to near Wheeler AFB. However, at this time there is apparently no conclusive evidence that this source actually affected the contaminated wells (Wilson, 1984; Engineering-Science, Inc., 1984).

The initiation of the sequence leading to the monitoring of groundwater on Oahu for VOC's at low concentration levels commenced in April 1977 when it was reported that an estimated 495 gal of EDB (with 0.25% DBCP) was spilled within 60 ft of a Del Monte well at Kunia in central Oahu. Testing for EDB from the well's pumped water a short time later proved negative. The ground elevation at this well site is about 850 ft while the basal groundwater head at that time was approximately 17 ft above msl (Mint, 1981).

The discovery of DBCP in a California well in 1979 prompted the retesting of the Del Monte Kunia well, but the results proved ambiguous, inasmuch as both high and negative values were reported. As a consequence of the

ambiguous results, a joint sampling program was organized by the Pineapple Growers' Association of Hawaii and the Hawaii State Department of Agriculture and the Department of Health. The initial results indicated significant concentrations of EDB (92,000 ppt) and DBCP (11,000 ppt), but the concentrations decreased with increased pumping (Mink, 1981).

Subsequent testing of all the municipal water wells on Oahu, starting in 1982, at a high sensitivity level (ppt) indicated that several central Oahu wells had detectable concentrations of EDB, DBCP, and/or TCP, but with the exception of the aforementioned Del Monte Kunia well the other wells typically have average EDB and DBCP concentrations of < 100 ppt. The minimum detectable level of both EDB and DBCP is considered to be 10 ppt. In prior years the less sensitive detection equipment was only able to measure at the ppb range, which is 1000 times greater than the ppt. Consequently results that were previously reported as < 1.0 ppb may actually have been several hundred ppt, a figure that appears very significant to water consumers.

The locations of the areas in central Oahu where well waters have been found to contain either EDB or DBCP at > 20 ppt concentrations are shown in Figure 4. Most of these wells, in addition to the Navy's Malawa Shaft, have been selected to be part of the Federal Government's funded "Super Fund Wells" program.

The municipal water wells that had either EDB or DBCP concentrations of > 20 ppt were removed from service. Studies sponsored by the City and County of Honolulu Board of Water Supply proved that EDB and DBCP were readily removed down to the detectable limit (10 ppt) by either activated carbon treatment or air stripping volatilization (GWP Associates, 1984; Dugan et al., 1984). From these studies activated carbon was selected. Activated carbon treatment units have been installed or are being installed to treat all well

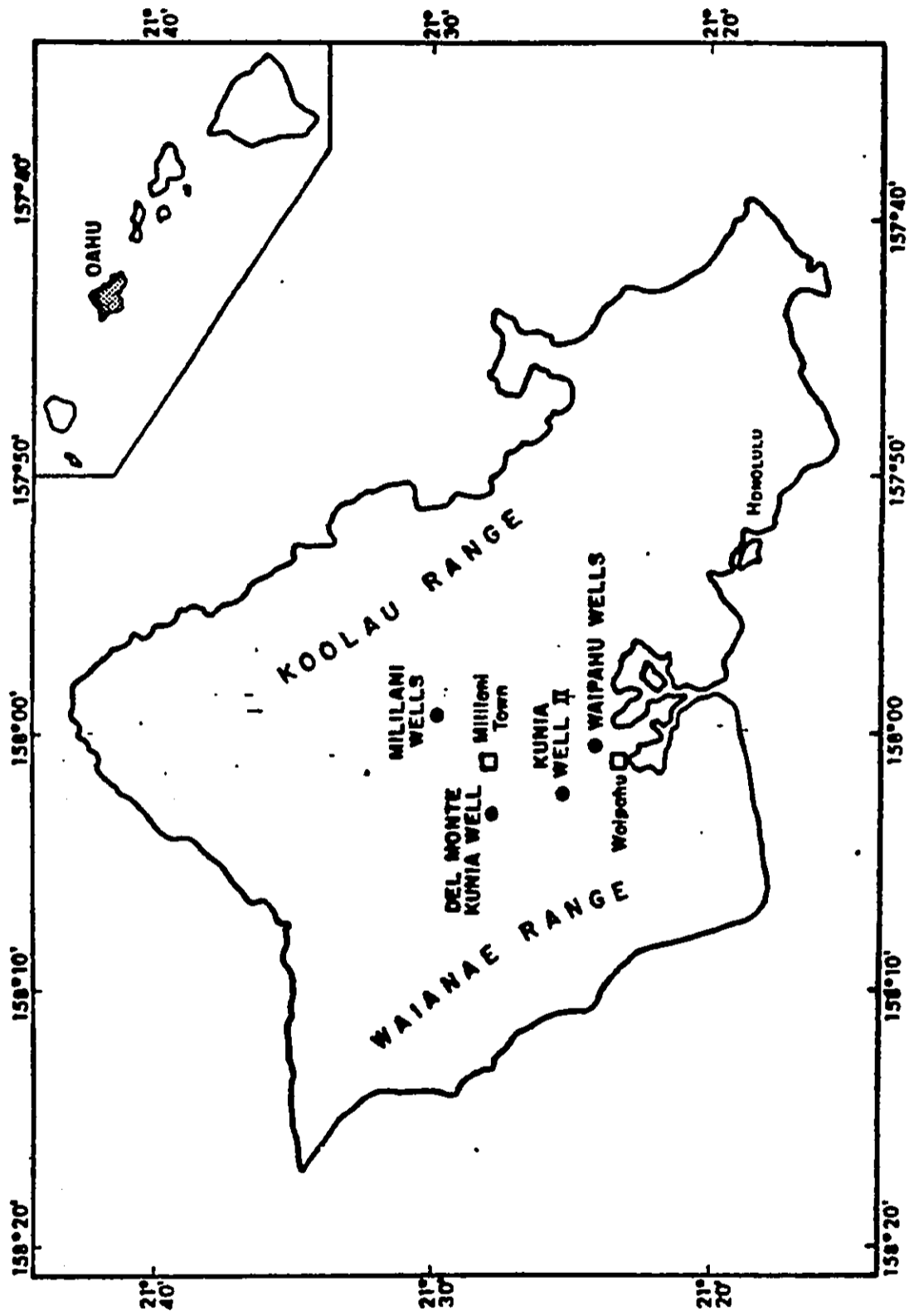


Figure 4. Location of Water Well Sites on Oahu that had EDB and/or DBCP Concentrations > 20 ppt.

waters above the 20 ppt limit for EDB and DBCP that are to be used as municipal water source.

In addition to the water well sampling program, extensive studies of soil core sampling for EDB, DBCP, and TCP have (and are still continuing) taken place at various sampling sites in central Oahu since 1983, with particular emphasis given to EDB, inasmuch as DBCP application was curtailed by Dole Pineapple in 1977. The Del Monte Corporation on Oahu has used EDB as the primary soil fumigant for approximately 38 years and in 1978 Dole Pineapple commenced using EDB after phasing out the use of DBCP (Dept. of Agriculture, 1983). Dr. John Hylin's Laboratory at the University of Hawaii's Department of Agricultural Biochemistry performed the soil analyses for EDB, DBCP and TCP.

A report outlining the results of the soil sampling program was issued in September, 1983 (Dept. of Agriculture, 1983) and since that time Dr. Richard Green and Dr. Frank Petersen with the University of Hawaii's Department of Agronomy and Soils and Department of Geology and Geophysics, respectively have continued to conduct soil sampling for EDB, DBCP and TCP at three separate areas in central Oahu under a MRRC sponsored grant. Dr. John Hylin's Laboratory is still conducting the chemical analysis for the studies. An array of soil coring samples have been taken at the various study sites in central Oahu and surprisingly DBCP is still being recovered even though its use was reported to have been terminated on Oahu after the 1977 pineapple planting season. The emphasis of the study was, however, on the persistence and movement of EDB, since this is the fumigant in current use for pineapple cultivation.

Analysis of soil samples collected at various depths from the different study sites, which had received EDB treatment, within as recently as two

weeks to greater than five years indicated that EDB concentration decreases rapidly with time and depth. For example, after two weeks less than 10% EDB was detected and after three months only 1% was recovered. The decrease at any given depth also appeared to correspondingly decrease with time. EDB did prove to be slightly more volatile than DBCP (Dugan et al., 1984), but health concerns over volatilization of EDB applications to the soil, particularly after a reasonable time period should be considered essentially non-existent or conservatively speaking extremely remote.

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APPENDIX E

TRAFFIC IMPACT REPORT
FOR THE PROPOSED
WAIALA ESTATES SUBDIVISION

PREPARED FOR
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

Randy S. Clark


BY
AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS * SURVEYORS
HONOLULU, HAWAII

MAY 12, 1966

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EXECUTIVE SUMMARY

The proposed Mainia Estates Subdivision is a 1,535 dwelling unit, single family residential development sponsored by the Department of Housing and Community Development of the City and County of Honolulu. It is located amidst other new and growing residential developments such as, Waipio Gentry to the east, Milliani to the north, and Waitele to the south. Initially, access would be provided on Kamehameha Highway. Ultimately, the Waioia Estates' primary collector road would lead to the proposed Waipio Interchange on Interstate Route H-2 and the proposed Palua Interchange on Interstate Route H-1.

The Waipio Interchange is expected to divert existing and new traffic generated by the Waipio Gentry Subdivision from the Waioia Interchange ramps to Interstate Route H-2. Similarly, the Palua Interchange is expected to attract existing Waipahu traffic and new Waitele traffic from the Waioia Interchange ramps to a point on Interstate Route H-1, west of Waioia Interchange. These two improvements would reduce much of the existing demand at the Waioia Interchange on and off ramps.

The proposed widening of Kamehameha Highway between Waipahu Street and Ka Uka Boulevard and the signalization of major intersections would mitigate much of the site access problems currently experienced and those expected from new and expanding developments along Kamehameha Highway. The construction of the Waipio Interchange on Interstate Route H-2 and the Palua Interchange on Interstate Route H-1 is expected to decrease the future traffic demand on Kamehameha Highway and the Waioia Interchange ramps.

Traffic generated by the proposed Waioia Estates Subdivision is expected to make up 24 percent of the southbound Kamehameha Highway traffic demand during the AM peak hour and 25 percent of the northbound Kamehameha Highway traffic demand during the PM peak hour. East of Waioia Interchange, the proposed project is expected to increase existing eastbound traffic on Interstate Route H-1 and Kamehameha Highway by between 424 vehicles per hour (vph) and 605 vph or between 5.2 percent and 7.5 percent of the total. In the westbound direction, during the PM peak hour along this corridor, the proposed project is expected to increase existing traffic volumes by 469 vph to 641 vph or between 5.9 percent and 8.4 percent of the total.

Ewa and Central Oahu have been designated for population growth. Until both regions develop viable secondary urban centers, Honolulu will remain the primary employment center. Growth in these areas, regardless of the specific location, would result in the increase in commuter traffic, causing longer peak periods and increased travel times. The proposed Mainia Estates Subdivision comprises only a small portion of the growth planned for Central Oahu and Ewa. Furthermore, given a commitment to build affordable housing, the site's location, whether in Waioia, Ewa or Waianae, would result in the same traffic impacts on traffic along the Pearl City Corridor. Finally, the Mainia Estates Subdivision fills a demand for affordable housing which is evident among the "ohana" type housing or multiple household dwelling units in Central Oahu and West Oahu. Future Waioia residents, currently living under these conditions, would represent a redistribution of population rather than an increase, thereby not impacting overall traffic in the region.

The establishment of secondary urban centers in Ewa and Central Oahu represents a long range solution to the daily commuter traffic congestion to and from Honolulu. However, since population growth in a region usually precedes economic growth, the increase in peak period traffic to and from the Honolulu area is an immediate concern and will continue to be so in the near future. Coordinated efforts to maximize the people-moving capabilities of existing transportation facilities are needed, such as those improvements proposed by the City and State transportation departments. Improving existing highway facilities, encouraging ride-sharing programs, expanding the existing bus system, and ultimately constructing a high capacity mass transit system would all contribute to the mitigation of "rush" hour traffic.



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TRAFFIC IMPACT REPORT
FOR
THE PROPOSED MAIOLOA ESTATES SUBDIVISION

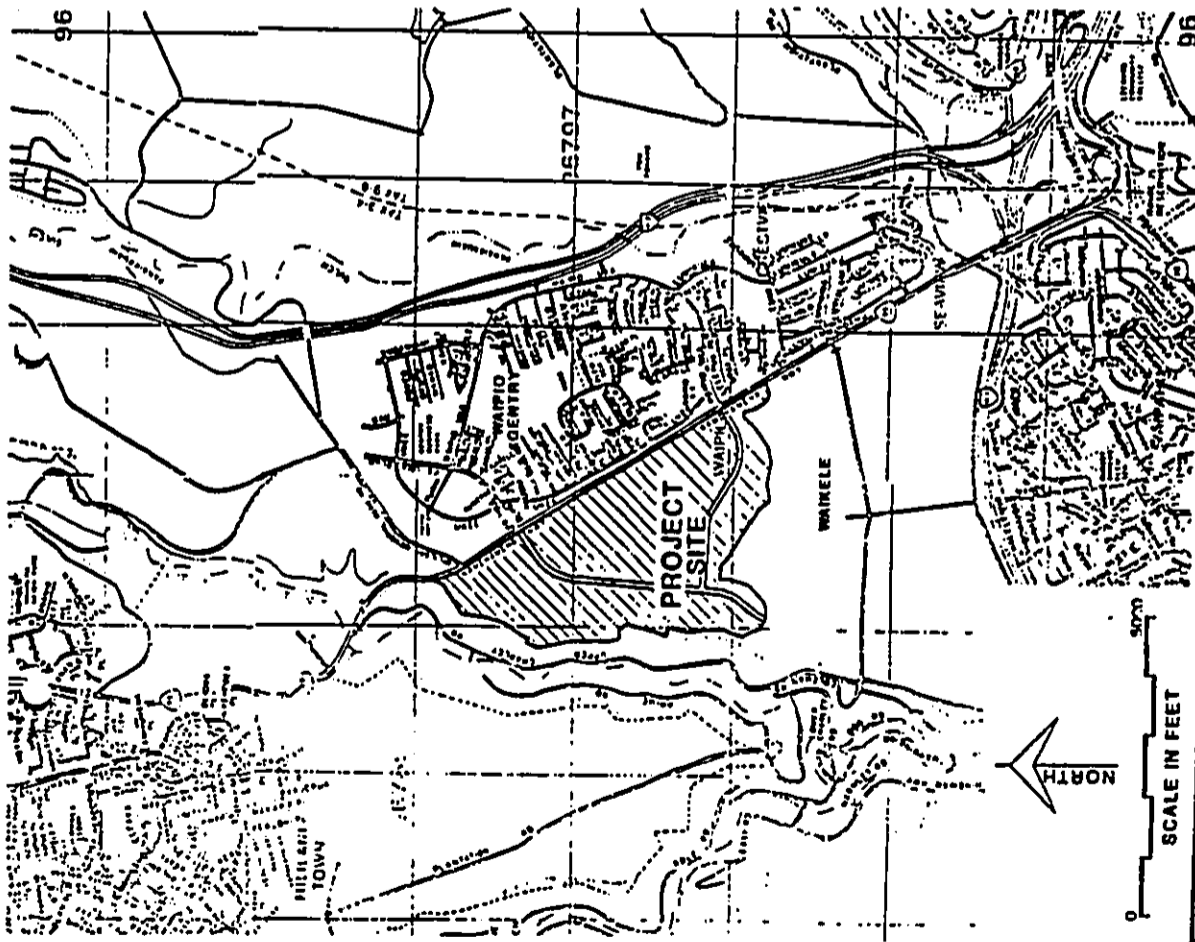
1. INTRODUCTION

A. Purpose and Scope

The purpose of this study is to identify and assess the impacts of traffic generated by the proposed Maioloa Estates Subdivision in the Maipahu-Kaipio area. This report presents the findings and recommendations of this traffic study which include:

1. A brief description of the proposed project.
2. An evaluation of the existing conditions.
3. Trip generation characteristics of the proposed project.
4. Identification and assessment of the traffic impacts in the vicinity, resulting from the proposed project, superimposed over projected conditions.
5. The relative traffic impacts during the existing AM and PM peak hours on the highway system.
6. Recommendations to mitigate the traffic impacts identified in this study.

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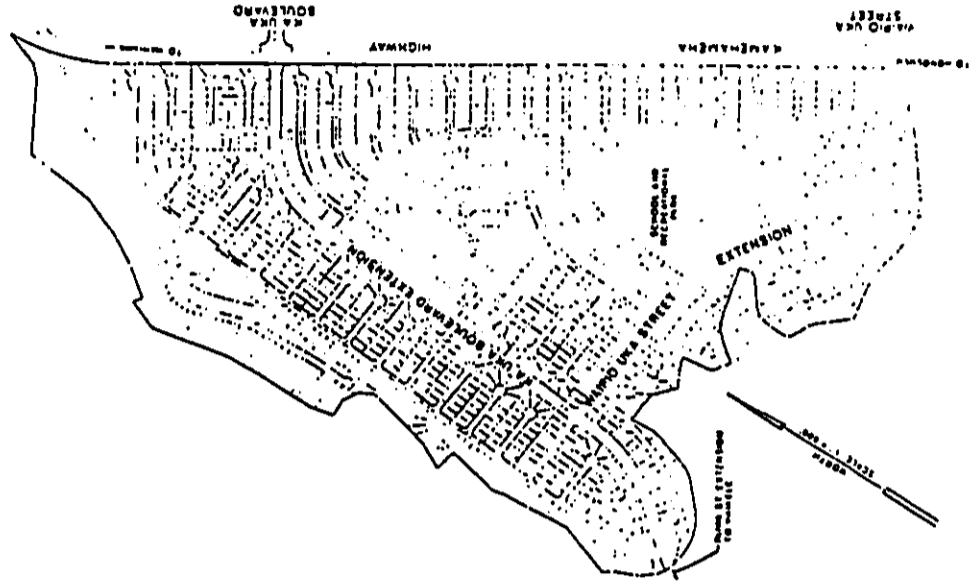


DEPARTMENT OF HOUSING
AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
TRAFFIC IMPACT REPORT
FOR THE PROPOSED
WAIOLA ESTATES SUBDIVISION

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VICINITY MAP

EXHIBIT **2**



DEPARTMENT OF HOUSING
AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
TRAFFIC IMPACT REPORT
FOR THE PROPOSED
WAIOLA ESTATES SUBDIVISION

ATA AUSTIN, TSUTSUMI, & ASSOC., INC.
REGISTERED PROFESSIONAL ENGINEERS

PROPOSED SITE PLAN

EXHIBIT **3**

From Kamehameha Highway, the Ka Uka Boulevard Extension proceeds southward, intersecting with the Waipio Uka Street Extension. In the future, Ka Uka Boulevard Extension would connect with the Pajwa Street Extension, which begins at the proposed Pajwa Interchange on Interstate Route H-1, and extends northward through the proposed Waikale Development. Ka Uka Boulevard, through Waipio Gentry, will eventually connect to the proposed Waipio Interchange on Interstate Route H-2. The Waioala Estates Subdivision would eventually have three access points to the freeway system: the Waioala Interchange, the Waipio Interchange and the Pajwa Interchange.

D. Basis of Study

The present development plan for the proposed project calls for the first delivery of houses by mid 1987 and the completion of the total project by early 1990. Therefore, this study's traffic assessment will be projected for the Year 1990 conditions.

By the Year 1990, it is assumed that Waipio Gentry will reach full development. The Waikale Development, proposed by Amfac Property Development Corp., is also assumed to reach completion of Phase I of its development plan by the Year 1990 as described in the "Traffic Impact Report for the Proposed Waikale Development Master Plan", September 1985, prepared by Austin, Tsutsumi & Associates, Inc.

Traffic projections for the year 1990 were adapted from the HALI 2000, prepared by the Oahu Metropolitan Planning

Organization (OHPO), is intended to update Oahu's long-range transportation plan. The traffic projections adopted for use in this study are derived by the HALI 2000 transportation forecast at the highway screening across Kipapa Gulch.

II. EXISTING CONDITIONS

A. General

The project site is currently in pineapple cultivation. The proposed Waioala Estates Subdivision would be located amidst new, growing and mature residential communities in Central Oahu including Milliani, Waipio Gentry, and Crestview/Seaview, and the proposed Waikale Development.

Current and future employment opportunities in the region include: the Milliani Shopping Center, an industrial park in Waipio Gentry, a business park in Waikale, the new Dole Pineapple Cannery in Central Oahu, the Campbell Industrial Park Expansion, the new deep draft harbor in Ewa and the West Beach Resort.

B. Roadways

The existing roads within the project site are primarily for agricultural purposes. At the present time, access to the site is provided only by Kamehameha Highway which provides frontage along the eastern boundary.

Kamehameha Highway is a three-lane arterial highway between Milliani Town and the Waioala Interchange, with one lane in each direction and a center lane providing a passing lane or an exclusive left-turn lane. At Waipahu Street, Kamehameha Highway becomes a four-lane, divided highway facility as it connects to

The Waiawa Interchange. A third lane is added by the eastbound off ramp of Interstate Route H-1. The three lanes separate, one leading to eastbound Kamehameha Highway through Pearl City, the second connecting to the eastbound on ramp to Interstate Route H-1, and the third lane connecting to westbound Farrington Highway. There is no direct connection from southbound Kamehameha Highway to westbound Interstate Route H-1.

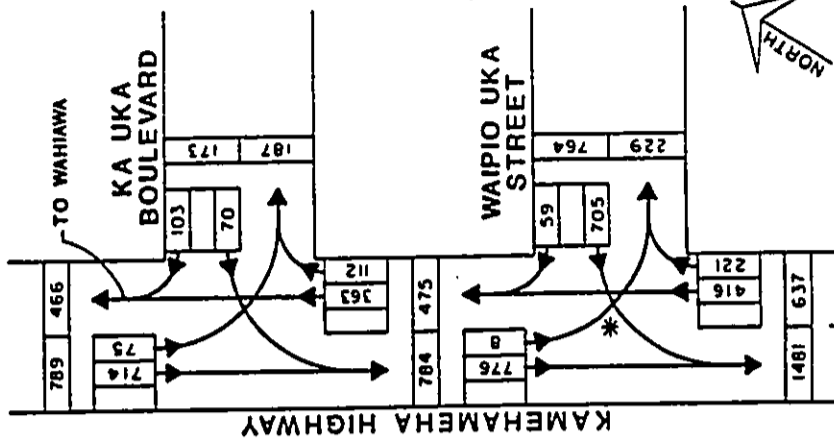
Northbound, Kamehameha Highway is fed by single-lane ramps from eastbound Farrington Highway, westbound Kamehameha Highway and eastbound Interstate Route H-1. Westbound Interstate Route H-1 traffic headed for northbound Kamehameha Highway must first exit at the Waipahu off ramp onto westbound Kamehameha Highway then turn onto the connecting ramp to northbound Kamehameha Highway.

The Waiawa Interchange is a six-leg freeway-to-freeway interchange between Interstate Route H-1 and the south terminus of Interstate Route H-2. Farrington Highway and Kamehameha Highway are other major arterials making freeway connections at this interchange.

C. Traffic

1. General

A manual traffic count survey was conducted on Tuesday, April 1, 1986 at intersections along Kamehameha Highway during the peak periods of traffic between Ka Uka Boulevard and Waipahu Street. Exhibits 4 and 5 show the existing AM peak hour traffic conditions. Exhibits 6 and 7 show the

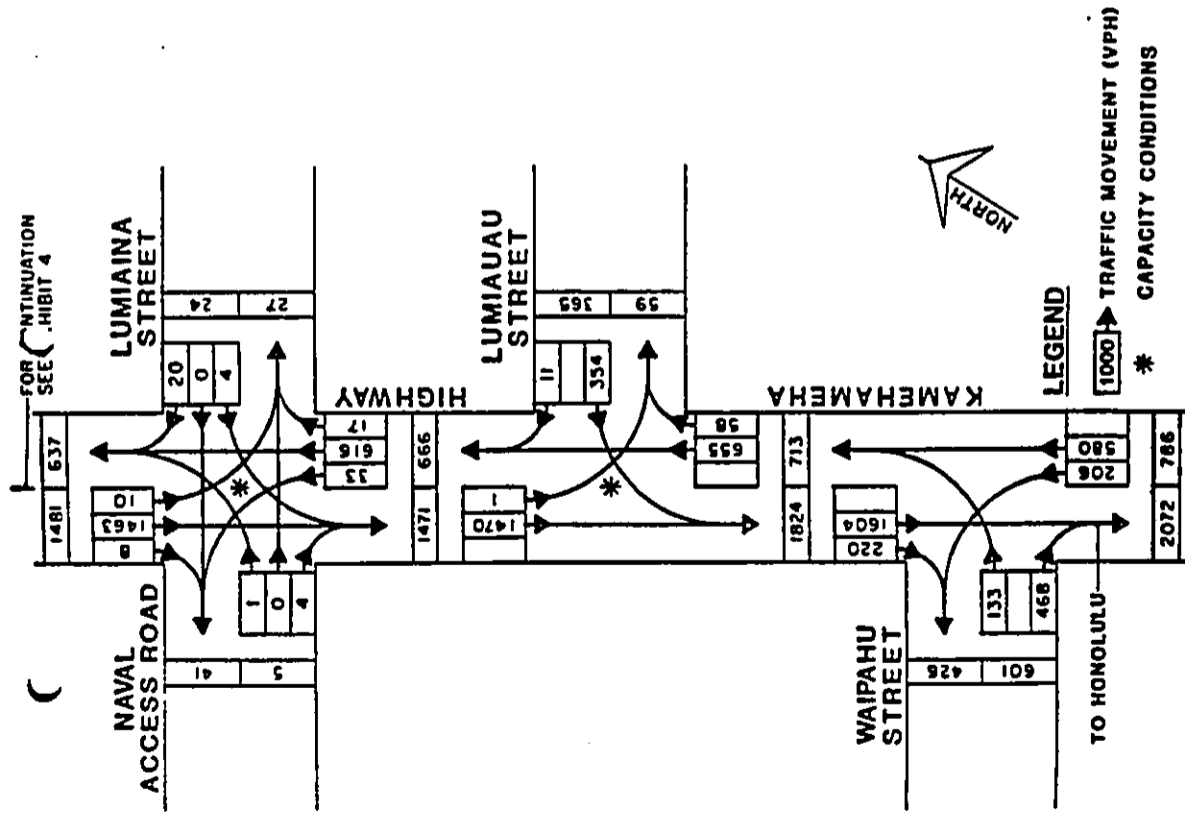


FOR CONTINUATION
 SEE EXHIBIT 5

LEGEND

1000 → TRAFFIC MOVEMENT (VPH)
 * CAPACITY CONDITIONS

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT CITY AND COUNTY OF HONOLULU TRAFFIC IMPACT REPORT FOR THE PROPOSED WAIOLA ESTATES SUBDIVISION	EXISTING A.M. PEAK HOUR TRAFFIC	EXHIBIT 4
	ATA <small>AUSTIN, TSUTSUMI, & ASSOC., INC. ENGINEERS - ARCHITECTS - PLANNERS</small>	

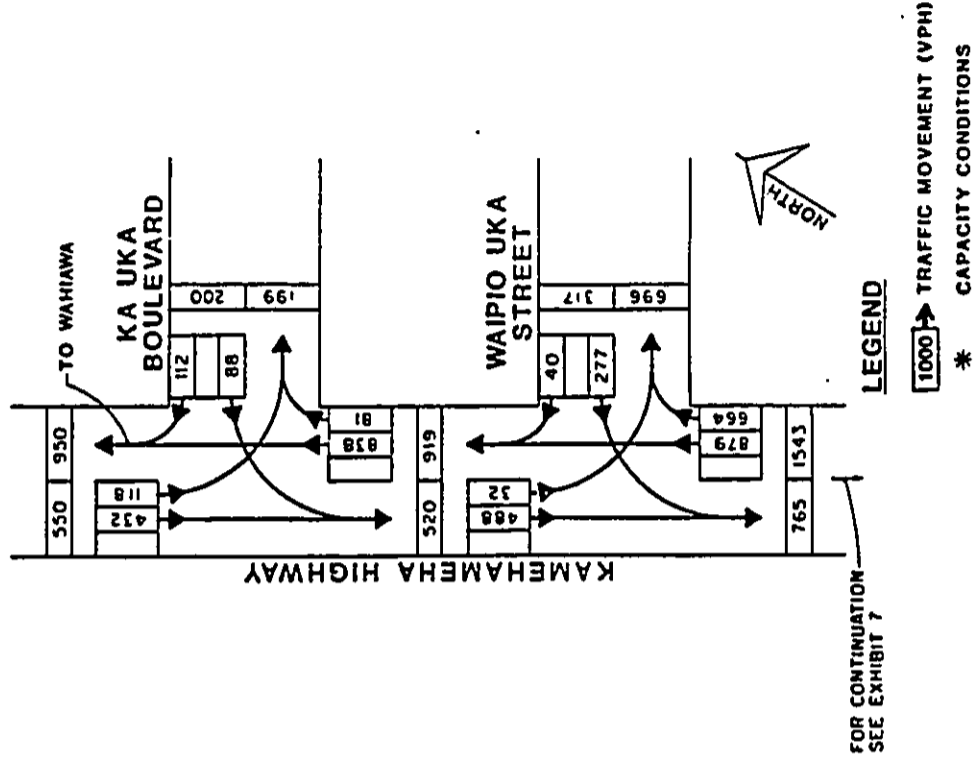


DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU
TRAFFIC IMPACT REPORT
FOR THE PROPOSED
WAIOLA ESTATES SUBDIVISION

AIA
AUSTIN, TSUTSUMI, & ASSOC., INC.
REGISTERED PROFESSIONAL ENGINEERS

EXHIBIT
5

EXISTING A.M. PEAK HOUR TRAFFIC (CONT'D.)

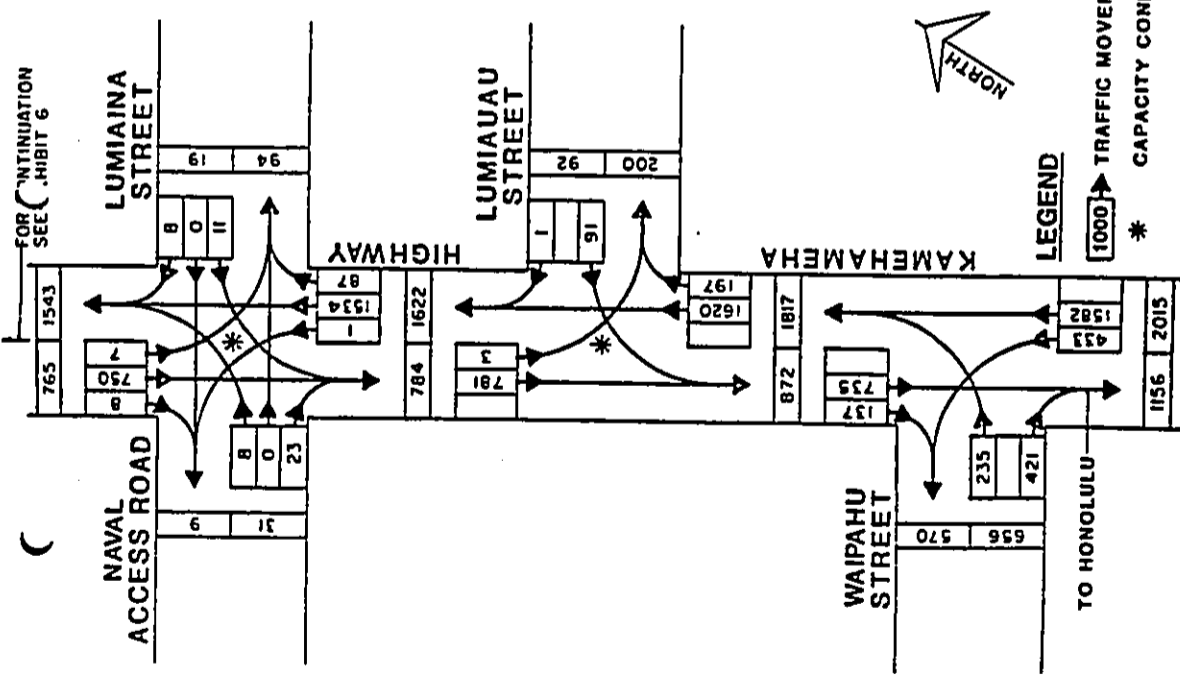


DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
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EXHIBIT
6

EXISTING P.M. PEAK HOUR TRAFFIC



ATA
 AUSTIN, TRUTSUMI & ASSOCIATES, INC.
 ENGINEERS ARCHITECTS PLANNERS

existing PM peak hour traffic conditions. Additional count data were obtained from the State Department of Transportation on Kanehameha Highway, Interstate Route H-1, Interstate Route H-2 and Maiawa Interchange. The inbound (Honolulu bound) peak period in the morning begins about 5:30 AM and continues through 8:00 AM with the inbound traffic tapering off and outbound traffic increasing. The afternoon peak period begins around 3:30 PM and continues past 6:00 PM.

For the purposes of this report, the intersection analysis was performed using the Planning Analysis procedure for signalized intersections presented in the Highway Capacity Manual (HCM) Special Report 209, Transportation Research Board, 1985. This method is a broad evaluation of the capacity of an intersection without specifically considering signalization. It provides a basic assessment of whether or not intersection capacity would be exceeded or not given a set of traffic demand volumes and roadway geometrics. Although the HCM provides a separate procedure for unsignalized intersections, this method does not give an overall operational analysis of the intersection. Furthermore, it does not provide a common basis for comparison with signalized intersections. Since most of the unsignalized intersections in the study area are being planned for future signalization, the Planning Analysis procedures provide a more uniform assessment for the highway network.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT CITY AND COUNTY OF HONOLULU TRAFFIC IMPACT REPORT FOR THE PROPOSED WAIOLA ESTATES SUBDIVISION	EXHIBIT 7
	AUSTIN, TRUTSUMI, & ASSOC., INC. ENGINEERS ARCHITECTS PLANNERS

Freeway and ramp capacities will be based on 1800-2000 vehicles per hour per lane for comparison purposes. The HCM procedures present a more precise assessment for purposes of design and operational analysis, however, such precision is not necessary for planning purposes.

2. Morning Peak Period

AM peak period traffic moves well along Kamehameha Highway. However, the intersections between Waipio Uka Street and Lumiauau Street operate at capacity. Downstream of Waipahu Street, a problem for inbound motorists occurs at the eastbound on ramp to Interstate Route H-1, where southbound Kamehameha Highway traffic merges with Waipahu traffic from eastbound Farrington Highway. AM peak hour volume is currently at approximately 1,800 vehicles per hour (vph), which is about the ramp's capacity.

A more critical problem occurs downstream on eastbound Interstate Route H-1. Traffic can be observed to queue back from the Waiau Interchange to the Waiaua Interchange. This is primarily a result of the 2,700 vph merging from the two-lane on ramp at the Waiau Interchange onto Interstate Route H-1 eastbound, already carrying 6,300 vph from Waiaua Interchange. The combined demand of 9,000 vph exceeds the 7,200 vph-8,000 vph on the eastbound lanes of Interstate Route H-1. The excess demand causes queuing on the freeway upstream to the Waiaua Interchange.

3. Afternoon Peak Period

During the afternoon peak period, bottleneck conditions occur on Kamehameha Highway northbound at Waipahu Street. The two northbound lanes on Kamehameha Highway merge to one lane north of Waipahu Street, queuing traffic onto connecting ramps. A second capacity condition occurs on the westbound Kamehameha Highway connector ramp to northbound Kamehameha Highway. The traffic demand of 1,800 vph is at the ramp's capacity. The third capacity constraint occurs on Kamehameha Highway between the westbound off ramp from Interstate Route H-1 and the connector ramp to northbound Kamehameha Highway. Freeway traffic exiting at the Waipahu off ramp must weave across Kamehameha Highway to the extreme right lane to turn onto northbound Kamehameha Highway. At the same time westbound Kamehameha Highway traffic from Pearl City, headed for westbound Farrington Highway or northbound Kamehameha Highway, creates weaving conflicts. The fourth and final problem area occurs on the Waipahu off ramp from westbound Interstate Route H-1. The 1,000 vph demand results in capacity conditions on the ramp. The combination of these four problem areas results in queuing conditions on the right lane of westbound Interstate Route H-1.

North of Waipahu Street, traffic on Kamehameha Highway is heavy but moves well. The Kamehameha Highway Intersections at Lumiauau Street and Lumiauau Street operate at capacity.

III. TRIP GENERATION

A. General

The trip generation resulting from the proposed Watola Estates Subdivision is based upon generally accepted rates developed by the Institute of Transportation Engineers (ITE) and published in the informational report on "Trip Generation, Third Edition - 1982". These empirical rates are based upon commonly used independent variables which describe trip generation potential in terms of land use intensity. This methodology makes no assumptions about trip purpose, household size, or auto ownership.

Full build-out of the proposed project is expected within four years. Because of the relatively rapid rate of development, trip generation for the development was analyzed in its entirety.

B. Trip Generation Characteristics

The proposed 1,535 unit, single family residential development is expected to generate 15,350 trip ends per day. During the morning peak hour, 322 vph are expected to enter the site and 845 vph are expected to exit. During the afternoon peak hour, 967 vph are expected to enter the site and 568 vph are expected to exit. Table 1 shows the trip generation characteristics for the proposed project.

IV. TRAFFIC ASSIGNMENT

A. General

The traffic assignment techniques used in this study are based upon traditional methods of assigning traffic flows onto

TABLE 1 - TRIP GENERATION

LAND USE OR BLDG. TYPE - LOCATION -	SINGLE FAMILY HOUSING WATOLA ESTATES SUBDIVISION	ITE CODE	210
INDEPENDENT VARIABLE - DWELLING UNIT		THK: 9-4-02:1	1535
		UNITS	
		AVG. TRIP RATE	VOLUME
AVERAGE WEEKDAY VEHICLE TRIP ENDS			
PEAK	10.00	15350	
A.M.	Enter	322	
Between	Exit	845	
7 and 9	Total	1167	
ADJACENT	0.63	967	
P.M.	Enter	568	
Between	Exit	1535	
4 and 6	Total	322	
TRAFFIC	0.21	845	
A.M.	Enter	1167	
Between	Exit	967	
P.M.	Enter	568	
Exit	1.00	1535	
Total	0.76	1167	
A.M.	0.21	845	
Exit	0.55	845	
Total	0.76	1167	
GENERATOR	0.63	967	
P.M.	Enter	568	
Exit	0.37	568	
Total	1.00	1535	
SATURDAY VEHICLE TRIP ENDS			
PEAK	10.10	15503	
Enter	0.51	783	
Exit	0.45	691	
Total	0.96	1474	
SUNDAY VEHICLE TRIP ENDS			
PEAK	8.70	13354	
Enter	0.49	752	
Exit	0.45	691	
Total	0.94	1443	

the highway network based upon major destination points and the shortest path to each destination. Trip distribution is based upon directional traffic demands observed on the highway network during peak periods. The distribution of traffic is based upon traffic count data at Maiala Interchange to and from Kanehameha Highway. This methodology makes no assumptions about trip destination, secondary destinations or trip purpose. The trip distribution is shown in Table 2.

TABLE 2 - TRIP DISTRIBUTION

Peak Hour	Origin/Destination (VPH)			
	East	West	North	
AM	Entering	182 (56.5%)	79 (24.5%)	61 (19.0%)
	Exiting	605 (71.6%)	113 (13.4%)	127 (15.0%)
PM	Entering	641 (66.3%)	195 (20.2%)	131 (13.5%)
	Exiting	335 (59.0%)	87 (15.4%)	145 (25.6%)

B. Highway Network

The 1990 highway network is assumed to include:

1. Widening of Kanehameha Highway from Maipahu Street to Ka Uka Boulevard to provide two lanes in each direction and exclusive left and right turn deceleration/storage lanes at all intersections.
2. The signalization of major intersections on Kanehameha Highway.
3. Fifth lane added on eastbound Interstate Route II-1 from Maiala Interchange to Maiala Interchange proposed by the State Department of Transportation.

4. Waipio Interchange on Interstate Route II-2 at the Milliani Cemetery Road Overcrossing as proposed by the State Department of Transportation.
 5. Palwa Interchange on Interstate Route II-1 at the Palwa Street Undercrossing as proposed by Amfac Property Development Corp.
- Completion of the proposed Palwa Street Extension connecting with the Ka Uka Boulevard Extension through the proposed Maiala Estates Subdivision is not expected by the Year 1990 and is not included on the study network.

C. Traffic Projections

The 1990 traffic conditions are based upon highway corridor projections developed in HALL 2000 by the Oahu Metropolitan Planning Organization. Peak hour conditions were derived from current traffic count data. Table 3 shows the existing and projected traffic conditions across the highway screenline north of the project site (Kipapa Gulch).

V. TRAFFIC IMPACTS

A. General

The traffic impacts are discussed in two parts; the first addressing the traffic impacts along Kanehameha Highway and the second discussing problems expected at the Maiala Interchange. The traffic assessment of Kanehameha Highway is concerned primarily with access to and from the site. The evaluation of access to and from the freeway at interchanges becomes more complex as both the ramps and the freeway itself reach capacity.

As ramps and freeways reach their capacity, traffic volumes reflect the facility's ability to carry traffic, not the actual traffic demand. Excess traffic demand is stored upstream of the capacity restraint or is diverted to other routes. Excess demand is further dissipated by traveling during the non-peak hour, which results in the lengthening of the overall peak period, or using other modes of transportation altogether. Under these conditions, a quantitative analysis becomes unrealistic and unverifiable.

TABLE 3
 TRAFFIC PROJECTIONS AT KIPAPA GULCH SCREENLINE

	H-2 FREEWAY		KAM HIGHWAY		KUNIA ROAD		TOTALS	
	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND
<u>1984</u>								
ADT	21812	20411	9136	9624	3155	3443	34103	33478
AM PEAK	2660	1093	1105	365	205	500	3970	1958
PM PEAK	1629	2403	514	1021	421	240	2564	3664
<u>2000</u>								
HALI 2000	39587	30671	13375	15581	3553	9985	56515	56237
REV. HALI	36147	34287	15140	16167	5228	5724	56515	56237
<u>1990</u>								
ADT	26361	24793	11041	11690	3813	4182	41215	40666
AM PEAK	3215	1328	1335	443	248	607	4798	2378
PM PEAK	1969	2919	621	1240	509	292	3099	4451

B. AM Peak Period

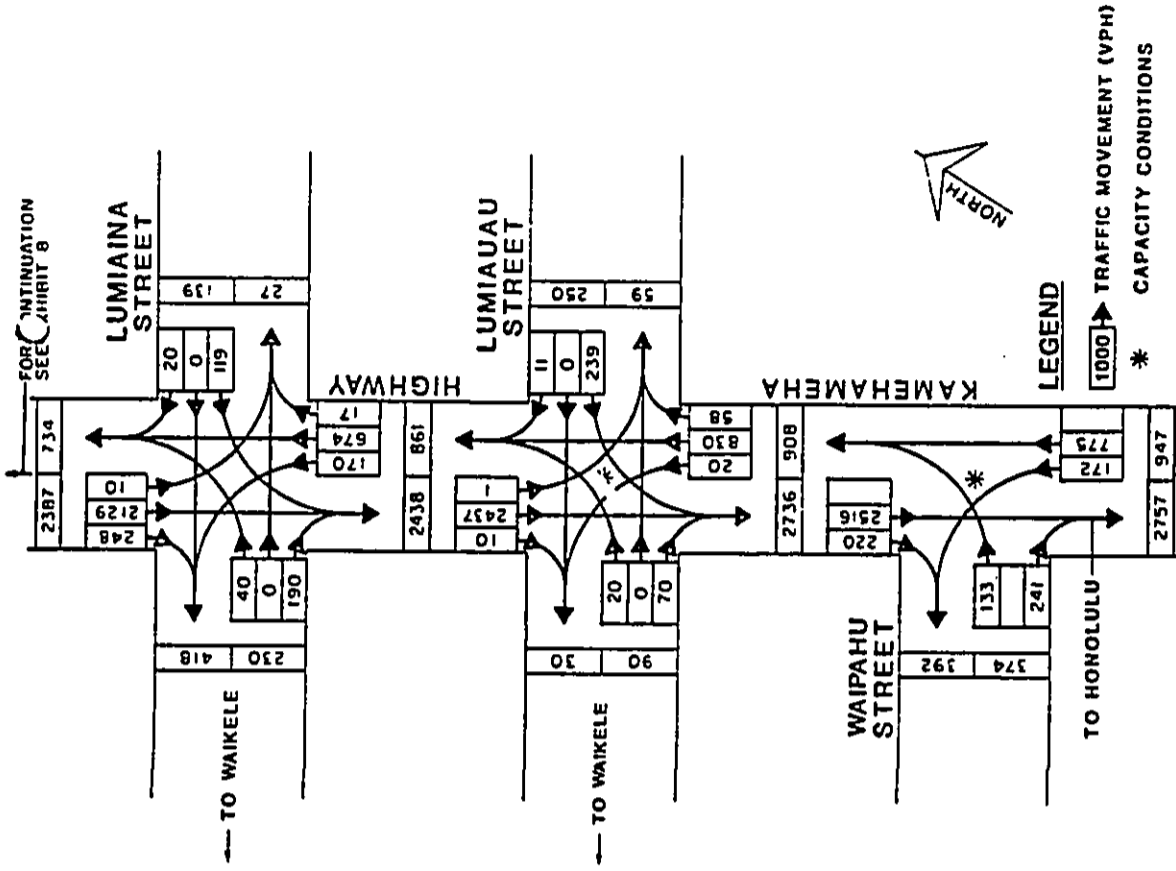
1. Kamehameha Highway

Exhibits 8 and 9 shows the projected AM peak hour traffic conditions on Kamehameha Highway between Ka Uka Boulevard and Waipahu Street. Capacity conditions would occur on Kamehameha Highway intersections at Wainio Uka Street, Lumiasu Street and Waipahu Street. However, congestion problems on southbound Kamehameha Highway would result from capacity constraints on the on ramp from Kamehameha Highway and eastbound Farrington Highway to eastbound Interstate Route H-1. Excess demand would queue on both approaches to the on ramp or be diverted to Kamehameha Highway.

In order to assess the relative impacts of the proposed Waiola Estates Subdivision, Exhibits 10 and 11 show the contribution of each of the developments in the vicinity to AM peak hour traffic demand on Kamehameha Highway in the southbound direction. Exhibit 10 shows the traffic demand under the existing highway network. Exhibit 11 shows the traffic demand under the 1990 highway network, including the already scheduled construction of the Paia and Wainio Interchanges. The proposed interchanges are expected to reduce the projected southbound demand on Kamehameha Highway by 1,260 vph during the AM peak hour.

2. Waiawa Interchange

At Waiawa Interchange, the eastbound Interstate Route H-1 on ramp capacity would be influenced by through traffic

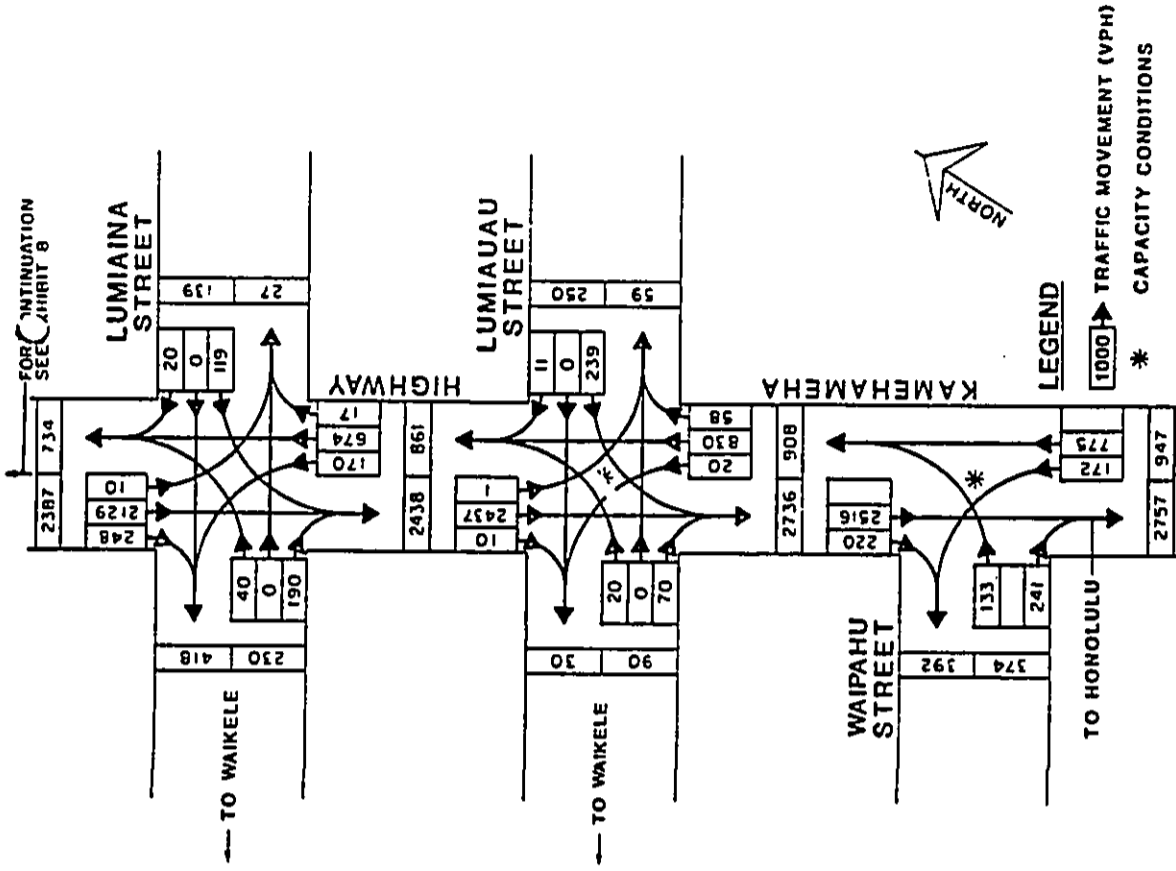


DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
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ATA
AUSTIN, TSUTSUMI, & ASSOC., INC.
TRAFFIC ENGINEERS - ARCHITECTS

EXHIBIT 8

PROJECTED A.M. PEAK HOUR TRAFFIC

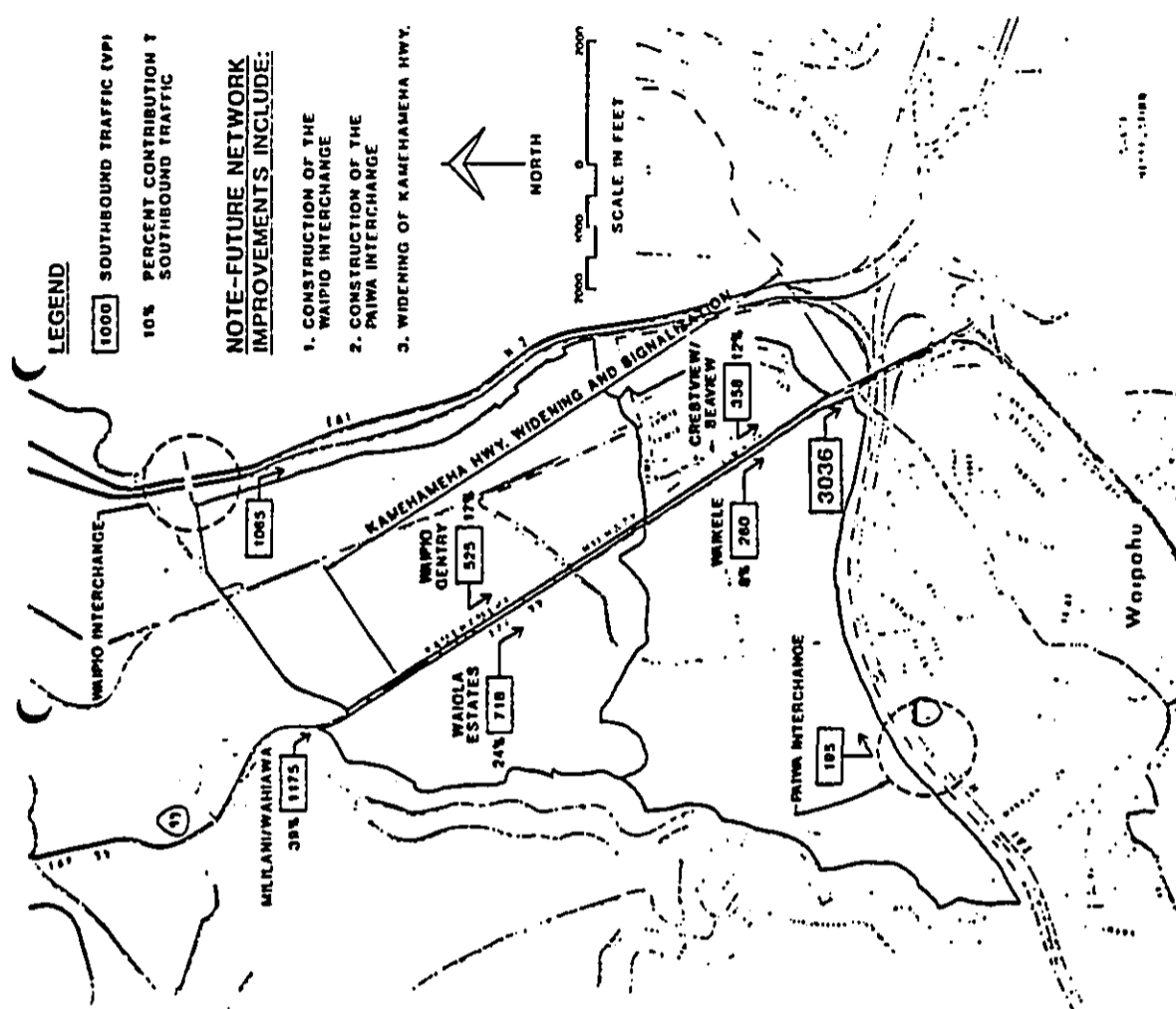


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TRAFFIC IMPACT REPORT
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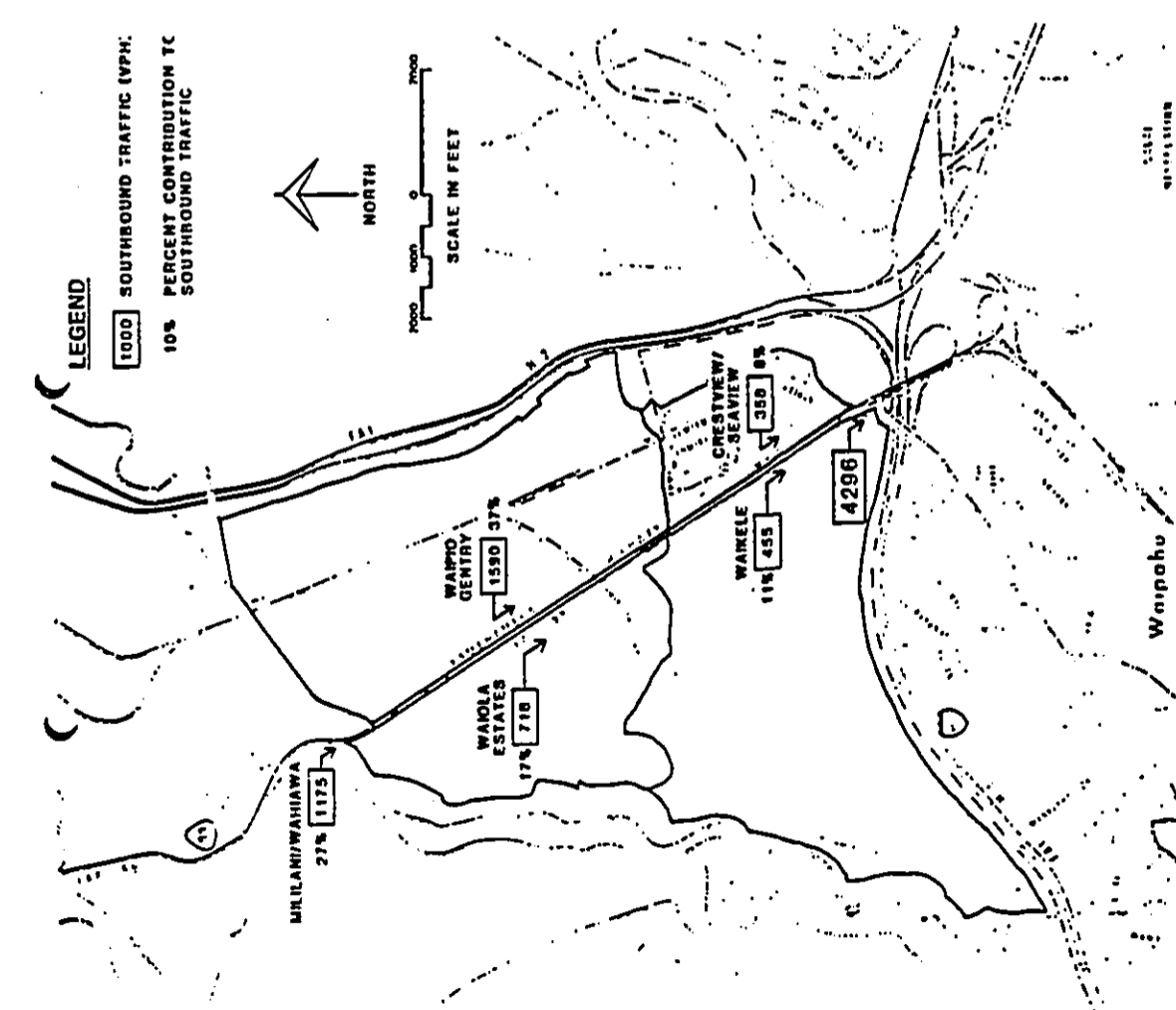
ATA
AUSTIN, TSUTSUMI, & ASSOC., INC.
TRAFFIC ENGINEERS - ARCHITECTS

EXHIBIT 9

PROJECTED A.M. PEAK HOUR TRAFFIC (CONT'D.)



DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT CITY AND COUNTY OF HONOLULU TRAFFIC IMPACT REPORT FOR THE PROPOSED WAIOLA ESTATES SUBDIVISION	ATA AUSTIN, TRUTSUM, & ASSOC., INC. <small>REGISTERED PROFESSIONAL ENGINEERS</small>	EXHIBIT 11
	PROJECTED 1990 A.M. PEAK HOUR TRAFFIC FUTURE NETWORK	



DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT CITY AND COUNTY OF HONOLULU TRAFFIC IMPACT REPORT FOR THE PROPOSED WAIOLA ESTATES SUBDIVISION	ATA AUSTIN, TRUTSUM, & ASSOC., INC. <small>REGISTERED PROFESSIONAL ENGINEERS</small>	EXHIBIT 10
	PROJECTED 1990 A.M. PEAK HOUR TRAFFIC EXISTING NETWORK	

on the freeway. This is a result of the Paia Interchange and Waipio Interchange loading inbound traffic upstream of Waiaua Interchange. As discussed earlier, the on ramp from southbound Kanehameha Highway and eastbound Farrington Highway to eastbound Interstate Route H-1 is already at capacity. Further development along Kanehameha Highway would aggravate this problem. In order to increase freeway access for the vicinity, the Paia Interchange and the Waipio Interchange are being proposed to divert Waiaua Interchange ramp traffic from Waipahu and Waipio Centry, respectively. These projects, along with the widening of Kanehameha Highway would allow further development along Kanehameha Highway without significantly impacting the existing conditions.

Under present conditions, the eastbound on ramp requires the flow of traffic onto the freeway. Excess demand would queue on the surface streets or would be diverted to Kanehameha Highway. The proposed Waipio Interchange would load traffic diverted from the Waiaua Interchange ramps, onto the two-lane inbound freeway connector from Interstate Route H-2 to Interstate Route H-1 to reach its capacity. Similarly, the proposed Paia Interchange on Interstate Route H-1 would divert inbound Waipahu traffic to access the freeway "upstream" of the Waiaua Interchange. The eastbound on ramp from Kanehameha Highway and Farrington Highway to Interstate Route H-1 would remain at capacity due to new and

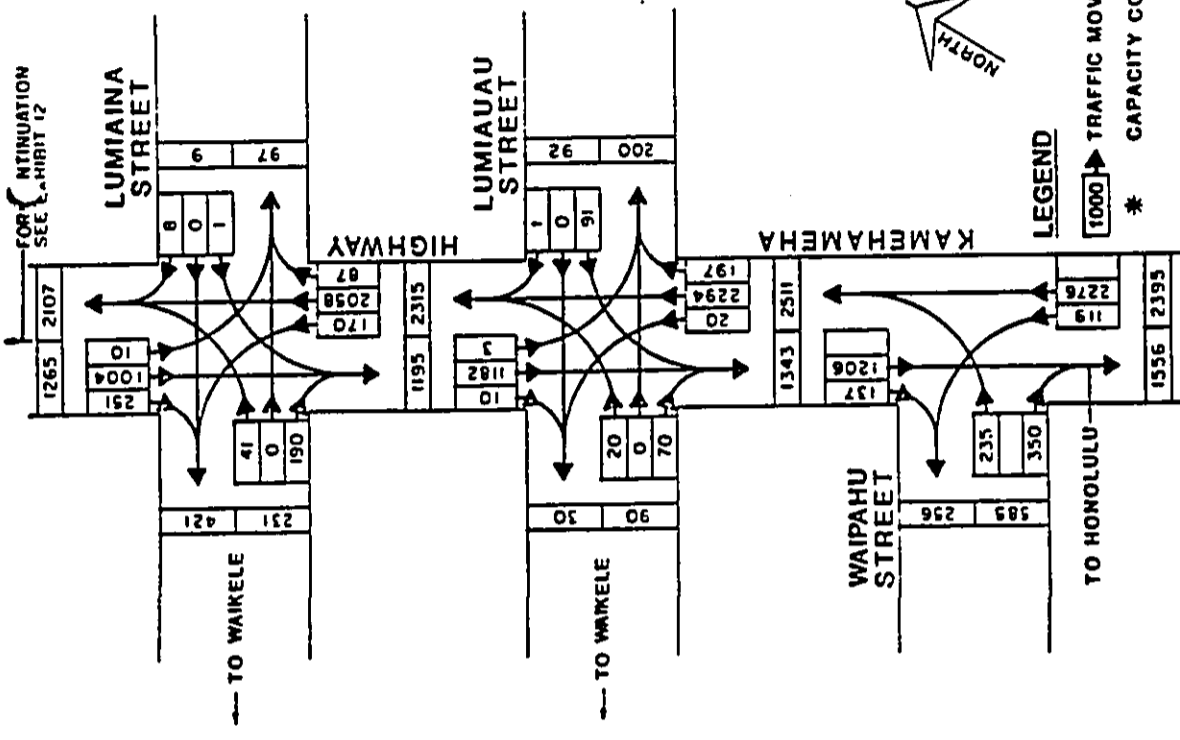
continuing development of Waikole, Waipio and Mainia Estates Subdivisions. East of Waiaua Interchange the eastbound lanes of Interstate Route H-1 would also be at capacity.

The proposed addition of a fifth eastbound lane on Interstate Route H-1 minimizes the weaving between the inbound lanes of Interstate Routes H-1 and H-2, thereby increasing the capacities of both facilities. Under the projected 1990 traffic conditions, the additional capacity provided by the planned fifth inbound lane on Interstate Route H-1 would be absorbed and bottleneck conditions at the Waiaua Interchange would resume, causing queuing back to Waiaua Interchange.

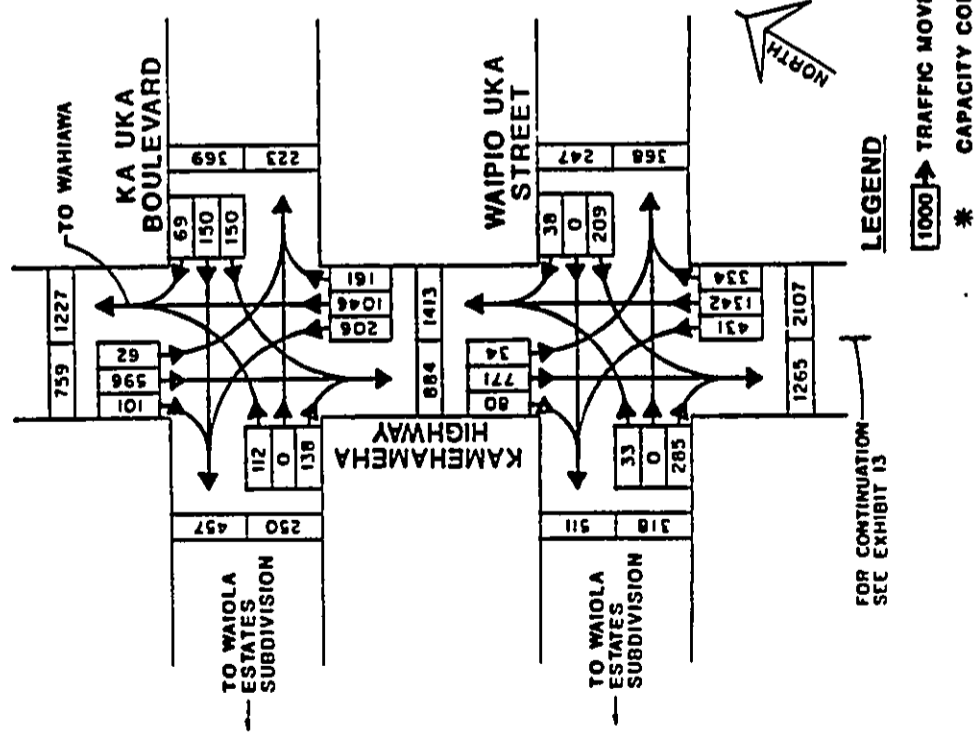
C. PM Peak Period

1. Kanehameha Highway

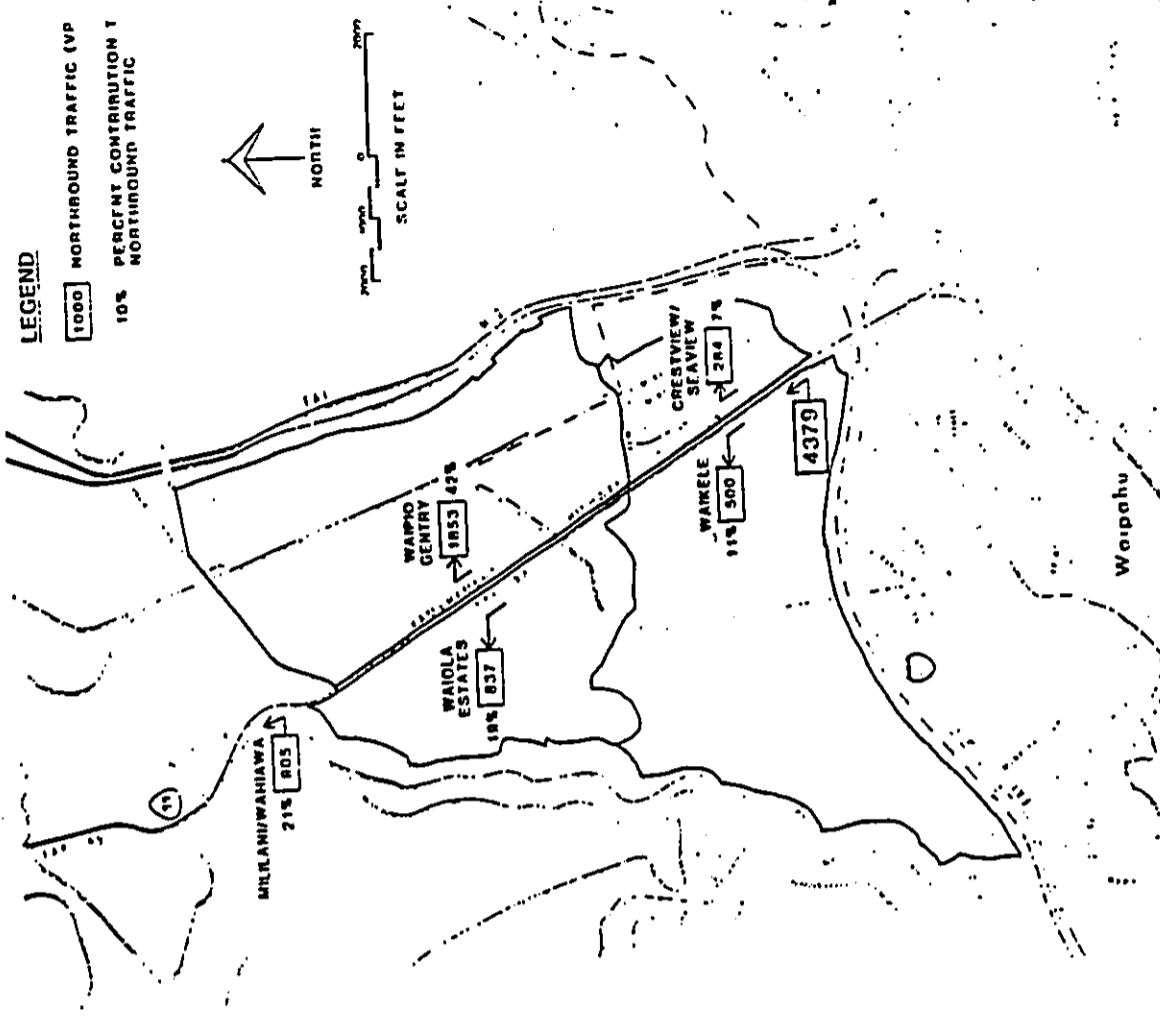
Exhibits 12 and 13 show the projected PM peak hour traffic conditions on Kanehameha Highway between Ka Ika Boulevard and Waipahu Street. Kanehameha Highway Intersections north of Waiaua Interchange would operate below capacity. The widening of Kanehameha Highway to two through lanes in each direction would eliminate the bottleneck conditions in the northbound direction. However, the flow of traffic during the PM peak period would be controlled by the off ramp from westbound Kanehameha Highway to northbound Kanehameha Highway. Queuing would continue to occur on the Waipahu off ramp from westbound Interstate Route H-1 and onto the freeway.



DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT CITY AND COUNTY OF HONOLULU TRAFFIC IMPACT REPORT FOR THE PROPOSED WAIOLA ESTATES SUBDIVISION	EXHIBIT 13
	AIA AUSTIN, TROTSMAN, & ASSOC., INC. ENGINEERS ARCHITECTS - 000111 PROJECTED P.M. PEAK HOUR TRAFFIC (CONT'D.)



DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT CITY AND COUNTY OF HONOLULU TRAFFIC IMPACT REPORT FOR THE PROPOSED WAIOLA ESTATES SUBDIVISION	EXHIBIT 12
	AIA AUSTIN, TROTSMAN, & ASSOC., INC. ENGINEERS ARCHITECTS - 000111 PROJECTED P.M. PEAK HOUR TRAFFIC



The relative impacts of the Waioala Estates Subdivision and other new and existing developments along Kamehameha Highway are shown on Exhibits 14 and 15, again for two conditions. Exhibit 14 shows the contribution of traffic from each of the developments in the vicinity to the northbound Kamehameha Highway traffic under the existing highway network. Exhibit 15 shows these traffic demands under the 1990 highway network when both the Palua and Waipilo Interchanges would have been constructed. These new interchanges are expected to divert northbound traffic away from Kamehameha Highway, thereby reducing the northbound demand by 1,868 vph during the PM peak hour.

2. Waioala Interchange

The Waipahu off ramp on westbound Interstate Route H-1 would continue to operate at capacity due to the developments along Kamehameha Highway. Queuing from this off ramp on the right westbound lane of the freeway would leave only three lanes for through traffic. The proposed Palua Interchange and Waipilo Interchange would attract the excess demand to these downstream exits. The through traffic demand, together with the Waipahu off ramp traffic would result in capacity conditions on westbound Interstate Route H-1 between the Waiau and Waioala Interchanges. The connector ramp from westbound Interstate Route H-1 to northbound Interstate Route H-2 would also be at capacity.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT CITY AND COUNTY OF HONOLULU TRAFFIC IMPACT REPORT FOR THE PROPOSED WAIOLA ESTATES SUBDIVISION	ATA AUSTIN, TSUTSUMI, & ASSOC., INC.	EXHIBIT 14
	PROJECTED 1990 P.M. PEAK HOUR TRAFFIC EXISTING NETWORK	

VI. REGIONAL CONSIDERATIONS

A. General

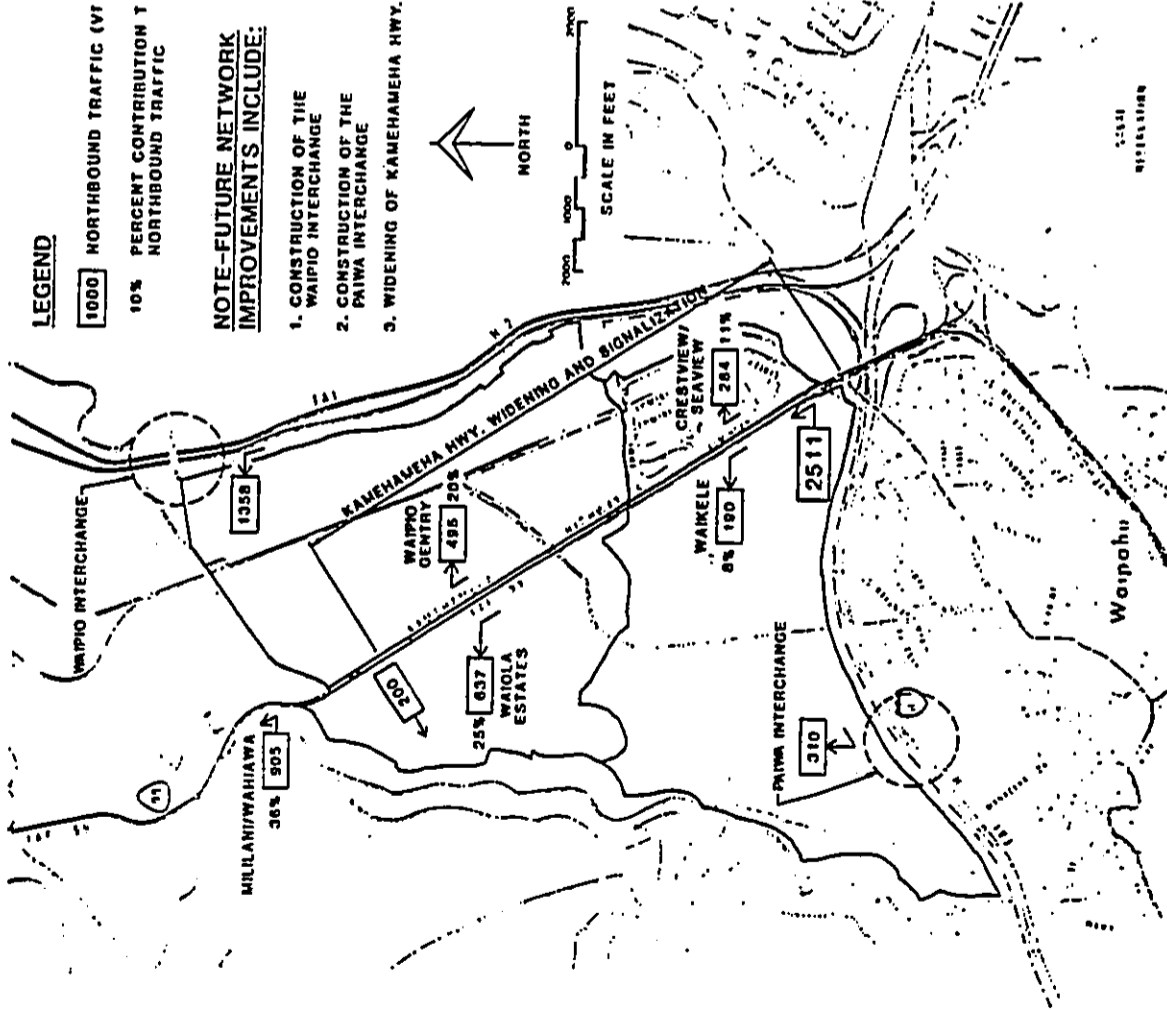
The previous discussion on traffic impacts assumes that the traffic generated by the proposed Waiola Estates Subdivision is composed of all "new" trips. While this assumption may be valid for conditions along Kamehameha highway, other factors need to be considered in a regional analysis. For example, given the commitment for affordable housing, building 1,535 units at other locations in Ewa or Central Oahu would result in the same impacts on traffic east of Waiala Interchange as the proposed Waiola site. Furthermore, some of the new Waiola residents may already live in the Central Oahu or Ewa regions, thereby not adding to new traffic to or from Honolulu.

B. Analysis of the Waiola Estates Applicants

An advertising campaign for Waiola Estates calling for qualified applicants as of April 23, 1986, resulted in 2,705 responses, of which 2,387 responses indicated both work and home telephone numbers. Home and work telephone prefix numbers were analyzed to determine the current residences and places of work. Table 4, compiled by the Department of Data Systems of the City and County of Honolulu, shows this work versus home cross classification table. The island is divided according to Council districts as shown on Exhibit 16.

If it is assumed that all of the applicants living in Districts 1 (Central Oahu) and 9 (Ewa-Waianae) are living in "ohana" or multiple household situations, there would be no net effect on

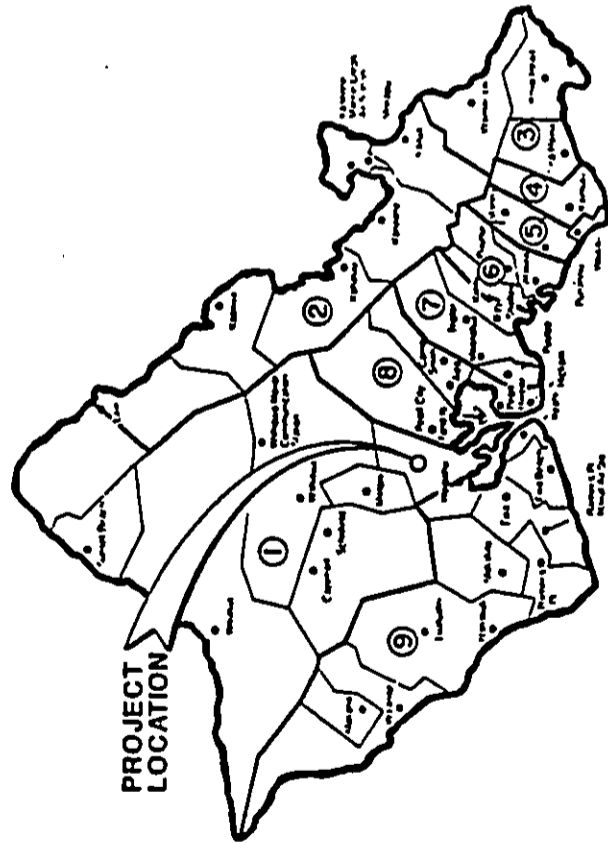
- LEGEND**
- 1000 NORTHBOUND TRAFFIC (VT)
 - 10% PERCENT CONTRIBUTION TO NORTHBOUND TRAFFIC
- NOTE-FUTURE NETWORK IMPROVEMENTS INCLUDE:**
1. CONSTRUCTION OF THE WAIPIO INTERCHANGE
 2. CONSTRUCTION OF THE PAIWA INTERCHANGE
 3. WIDENING OF KAMEHAMEHA HWY.



<p>DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT CITY AND COUNTY OF HONOLULU</p>	<p>ATA AUSTIN, TSUTSUMI, & ASSOC., INC. REGISTERED ENGINEERS - GEORGETOWN</p>	<p>EXHIBIT 15</p>
<p>TRAFFIC IMPACT REPORT FOR THE PROPOSED WAIOLA ESTATES SUBDIVISION</p>		
<p>PROJECTED 1990 P.M. PEAK HOUR TRAFFIC FUTURE NETWORK</p>		

TABLE 4
 WAIOLA ESTATES APPLICANTS' RESIDENCE/WORK DATA
 BY ESTIMATED COUNCIL DISTRICTS

COUNCIL DISTRICTS BY HOME TELEPHONE	COUNCIL DISTRICT BY WORK TELEPHONE										TOTAL	PCT.
	1	2	3	4	5	6	7	8	9			
1	144	5	1	1	38	79	78	100	42	488	20.4	
2	5	26	0	0	10	43	16	11	2	113	4.7	
3	0	2	2	0	9	17	6	4	0	40	1.7	
4	3	1	0	8	27	37	15	10	1	102	4.3	
5	4	5	2	7	56	66	23	10	2	175	7.3	
6	6	5	1	8	64	173	70	27	15	369	15.5	
7	12	7	3	10	64	129	81	78	15	399	16.7	
8	22	2	0	2	31	75	65	96	13	306	12.8	
9	30	5	0	5	29	85	102	76	63	395	16.5	
TOTAL	226	58	9	41	328	704	456	412	153	2387		
PERCENTAGE	9.5	2.4	0.4	1.7	13.7	29.5	19.1	17.3	6.4	100.0		



Source: Department of Data Systems, City and County of Honolulu

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT CITY AND COUNTY OF HONOLULU TRAFFIC IMPACT REPORT FOR THE PROPOSED WAIOLA ESTATES SUBDIVISION	ATA <small>ARCHITECTURAL TECHNOLOGICAL ASSOCIATES</small> COUNCIL DISTRICT MAP	EXHIBIT 16
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population in the area from this portion of the future Waioala residents. If we further assume that all the peak hour trips are primarily work trips, then only the future Waioala residents formerly living in Districts 2 through 8 and working in Districts 2 through 8 will affect the peak hour traffic inbound in the morning and outbound in the afternoon. By summing rows 2 through 8 between columns 2 through 8, 1,404 of the applicants live and work in the Pearl City/Honolulu/Mindward Oahu area. Summing columns 2 through 8, 2,008 applicants work in the Pearl City/Honolulu/Mindward Oahu area. Therefore, during the AM peak hour, it can be expected that 70 percent of the trips headed in the eastbound direction (71.6 percent of the total trips exiting the project) would be "new" traffic. This would reduce the 605 vph eastbound on Interstate Route H-1/Kamehameha Highway to 424 "new" vehicles per hour. Similarly, during the PM peak hour, it can be expected that 70 percent of the trips returning home in the westbound direction (66.3 percent of the total trips entering the project) would be "new" traffic. This would reduce the 641 vph westbound on Interstate Route H-1/Kamehameha Highway to 449 "new" vehicles per hour.

If it is assumed that all of the new Waioala residents presently live in rental units, then new population can be expected to enter the area to occupy these vacated units. Under this assumption, all of the future Waioala residents working in the Pearl City/Honolulu/Mindward Oahu area would add 605 vph in the

inbound direction during the AM peak hour of traffic and 641 vph in the outbound direction during the PM peak hour of traffic.

These assumptions do not explicitly include primary and secondary school trips. The designated public intermediate and high schools for the proposed Waioala Estates subdivision are located in Pearl City. An elementary school is being planned within the proposed subdivision. Leeward Community College is located in the vicinity while the University of Hawaii and other private colleges are located in Honolulu. Therefore, the trips to the elementary school and Leeward Community College would not affect traffic conditions east of Waiawa Interchange while the school trips to intermediate, high school and other post high school institutions would.

C. Department of Transportation Services Traffic Impact Analysis

The Department of Transportation Services (DTS) of the City and County of Honolulu conducted an independent traffic impact analysis of the proposed Waioala Estates Subdivision using methodology developed in the HALL 2000, prepared by the Oahu Metropolitan Planning Organization (MPO). The DTS/MPO analysis is contained in the Appendix.

The HALL 2000 model predicts 0.51 trips/dwelling unit exiting the project site during the AM peak hour, as compared to the 0.55 trips/dwelling unit rate developed by ITE. Furthermore, the HALL 2000 model predicts 55 percent of the AM peak hour trips would be bound for the primary urban center (Pearl City-Honolulu) as opposed to the 71.6 percent observed for existing conditions.

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Finally, the DTS/DMPO analysis concluded that 300 vph to 428 vph, generated by the proposed project, would be added to the inbound traffic along the Pearl City corridor during the AM peak hour. This is compared to the 424 vph to 605 vph predicted by the analysis presented in this study.

The HALL 2000 methodology utilizes trip generation rates specific to Oahu, while the methodology used in this study utilizes standard trip-making characteristics developed nationally. Furthermore, the HALL 2000 study uses a disaggregate model breaking down travel behavior by the number of person-trips, trip purpose, choice of travel mode, and by specifying the origin and destination of each trip based upon land use characteristics of each designated zone in the region. The ITE methodology implicitly incorporates person-trips, trip purpose and modal choice in developing its vehicle trip rate. The trip distribution for this study is developed from empirical analysis of existing traffic patterns. Finally, the HALL 2000 was developed for an island-wide analysis while the methodology presented here is site-specific. Each approach has separate perspectives and levels of analysis for different applications.

VII. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

The planned residential developments in Central Oahu and West Oahu, whether they be private or City-sponsored, would deteriorate traffic conditions along the highway corridor through Pearl City. Until job opportunities, schools, shopping centers

and other services can be located in secondary urban centers in these regions, West and Central Oahu residents will continue to drive to and from the primary urban center. The 1986 Development Plan amendments propose the addition of another 60,000 dwelling units in Central Oahu and Ewa. Another 49,000 dwelling units were denied, however, future reconsideration is likely. The increase in commuter traffic is expected to lengthen the already congested peak periods. While the construction of the Paiwa and Waipio Interchanges would relieve some of the demand at the Waiawa Interchange ramps, Interstate Route H-1 and Kamehameha Highway would remain at capacity east of Waiawa Interchange during the peak hours of traffic.

The proposed Waioala Estates Subdivision represents only a small percentage of new development in the region, both in terms of number of units as well as the increase in traffic. Furthermore, the ITE trip rates are based upon typical suburban subdivisions and can be considered conservative. A transit improvement program, including park-and-ride facilities, additional express bus service, and free bus passes, would attract a higher transit ridership, thereby reducing vehicular traffic generated by the proposed Waioala Estates Subdivision. Finally, a ride-sharing program can be implemented to promote carpooling and vanpooling. This program would be coordinated by a transportation facilitator for the region. Together with dedicated high occupancy vehicle (HOV) lanes on the freeway system, the ride-sharing program would

increase vehicle-occupancy and further reduce vehicular traffic in the region.

The increase over the existing eastbound traffic, during the AM peak hour along the Waimo Screenline (east of Waiawa Interchange), which includes Interstate Route H-1 and Kamehameha Highway, would be between 424 vph and 605 vph or between 5.2 percent and 7.5 percent of the total eastbound traffic demand. In the westbound direction during the PM peak hour, the increase in traffic would be between 449 vph and 641 vph or between 5.9 percent to 8.4 percent over the existing outbound traffic demand.

The State Department of Transportation (DOT) proposes an improvement program which would maximize use of the existing facilities such as, using the shoulders for traffic lanes, dedicating HOV lanes, and implementing contra-flow HOV lanes. Long range plans include exclusive bus facilities which could be converted into a higher capacity mass transit system.

The methodology presented herein has taken a conservative approach throughout the analysis except where pertinent data were available for incorporation into this study. Therefore, the traffic impacts discussed in this report can be considered as conservative. While the proposed improvements to Kamehameha Highway would mitigate much of the problems currently experienced as well as the impacts anticipated for the Waiola Estates Subdivision, the Interstate Route H-1/Kamehameha Highway corridor would remain a critical problem area. The proposed project's incremental contribution to the overall congestion, however, is

nominal. Mitigating measures proposed by the City and State transportation departments, discussed briefly herein, are not easily quantifiable and therefore, were not considered in the analysis. It can be said however, that successful implementation of these programs would reduce much of the existing and anticipated traffic congestion.

R. Recommendations

1. The State DOT Transportation Improvement Program be implemented.
2. The Palua Interchange on Interstate Route H-1 and the Waiola Interchange on Interstate Route H-7 be constructed.
3. Kamehameha Highway be widened between Waiapahu Street and Ka Uka Boulevard to two through lanes in each direction with exclusive left- and right-turn lanes at all intersections.
4. Kamehameha Highway at Ka Uka Boulevard be signalized and coordinated with other signalized intersections along this corridor.
5. A transit improvement program and ride-sharing program be implemented in a timely manner.

APPENDIX

APPENDIX
 PRELIMINARY TRAFFIC GENERATION ANALYSIS
 FOR MAIOLA ESTATES SUBDIVISION

PREPARED BY THE DEPARTMENT OF TRANSPORTATION SERVICES

For 1,535 proposed single family dwelling units, the following income/ family size distribution was assumed based on an initial sample distribution of 1,790 applicants received.

Income Class	Household Size			
	1	2,3	4	5+
Less than \$30,000/yr. (Percent of Total)	8	642	359	296
	0.5%	41.8%	23.4%	19.3%
\$30,000 to \$60,000/yr. (Percent of Total)	0	0	91	138
	0%	0%	5.9%	9.0%

The above distribution was input into the DMPO Auto availability submodel and the trip generation submodels for home-based (HB) trip purposes to estimate the number of daily production-attraction trips which would be generated from the proposed project.

Home-Based	Person Trips
Work	2,520
Shopping	1,315
Social-Recreation	1,657
School	2,126
Other	3,569
TOTAL	11,187

This averages to 7.3 home-based person trips per dwelling unit, in comparison to the ITE trip rate of 10 vehicle trips per dwelling unit. Accounting for modal split and multiple auto occupancy rates, the calculated trip generation rate is about half the ITE rate. In defense of this low rate, it could be said that a very high proportion of the applicants have annual incomes less than \$30,000, and more than 40 percent of the households have three members or less. These two factors would tend to reduce the number of trips generated from the proposed subdivision.

A trip distribution, modal split, and peak hour factor analysis were conducted to estimate the peak hour vehicle trips to the primary urban center (PUC). The following factors were used for trips to the PUC and trips to elsewhere.

Trip Purpose	Trip Distribution (%)	Modal Split Analysis		Peak Hour Factor
		% To Auto	Avg. Auto Occupancy	
TO PUC:				
HB Work	60	85	1.3	0.25
HB School	30	85	2.0	0.41
HB Other	50	95	1.7	0.25
TO ELSEWHERE:				
HB Work	40	95	1.3	0.25
HB School	70	95	2.0	0.41
HB Other	50	95	1.7	0.25

The trip distribution, modal split, and average auto occupancy rates were estimated from the results for the 1980 HALI E validation printouts. The peak hour factors are from the DMPO model. The trips to the PUC were also increased by 40 percent in compliance with the DMPO modeling procedure and trips were divided by two in converting from production-attraction to origin-destination format. The results of this analysis are shown below:

Trip Purpose	To PUC
HB Work	124
HB School	56
HB Other	125
	<u>305</u>
	x 1.4
	428 (55%)
To Elsewhere	
HB Work	98
HB School	131
HB Other	125
	<u>354 (45%)</u>
TOTAL	782

This analysis results in a trip rate of 0.51 vehicle trip/dwelling unit exiting the project site compared to the ITE trip rate of 0.55 vehicle trip/dwelling unit. Hence, DMPO estimate is 93 percent of the ITE rate. Existing traffic patterns indicate that 71.6 percent of the site-generated trips would be bound for the PUC, or 605 vehicles per hour. The DMPO estimate of 55 percent of the trips bound for the PUC is 71 percent of this report's estimate.

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By applying the analysis of Waioala applicants discussed in Section VI.B. of this report, 70 percent of the 428 vph bound for the PUC are "new" trips. This reduces the traffic attributed to the proposed project to 300 vph bound for the PUC during the AM peak hour.



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APPENDIX F

AIR QUALITY STUDY
FOR THE
PROPOSED MAIOIA ESTATES SUBDIVISION
OAHU, HAWAII

Prepared by
Barry D. Root
Kananhae, Hawaii
July 4, 1986

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SUMMARY

1. The proposed Waiala Estates Subdivision involves site preparation and construction of 1,535 single family residences on a 269 acre parcel of land in central Oahu. The project is expected to be completed as expeditiously as possible and may be completed as early as 1990.

2. Judging from readings at nearest long term monitoring stations, air quality in the project area is presently well within allowable State and National Ambient Air Quality Standards. Existing air pollutants in the area include dust and smoke generated by pineapple cultivation, and emissions from vehicles traveling on nearby roadways.

3. Except for dust emissions during the construction phase of the development, no significant short term direct air quality impacts are expected. Adequate control measures exist to limit the impact of windblown dust, but special care will have to be exerted to insure that previously developed residential areas are not subjected to excessive levels of particulate pollution from construction activities.

4. Indirect air quality impacts are expected to result from new demands for electrical energy. This impact is most likely to occur in the vicinity of existing power plants such as the Kane Point on the Waianae coast where increased levels of particulates and sulfur dioxide can be expected. Maximum use of solar energy designs in project development can at least partially mitigate the magnitude of this impact. New methods of generating electrical power such as wind or ocean thermal energy conversion may eventually also play a mitigative role in this regard.

5. Increased traffic generated by the Waiala Estates Subdivision will increase emissions of carbon monoxide along Kamehameha Highway in the project area and along the H-1 Freeway corridor. Modeling of current and projected peak hour worst case concentrations of carbon monoxide at the intersection of Waipio Ika Street Extension and Kamehameha Highway indicates that projected levels will be well within allowable State and National ambient air quality standards with or without project development, assuming that the planned widening of Kamehameha Highway takes before project completion in 1990.

6. The modeling study does indicate, however, that present and future concentrations of carbon monoxide along the H-1 corridor are likely to exceed allowable State of Hawaii Ambient Air Quality Standards under worst case traffic and meteorological dispersion conditions. This finding is the case with or without the proposed project and a planned widening of the H-1 Freeway by one lane has little impact on the situation. This is a regional traffic congestion problem that a single developer can do little to mitigate. For that reason no special air pollution mitigation measures are proposed by this study other than insuring that the proposed widening of Kamehameha Highway occurs prior to project completion.

7. No carbon monoxide concentrations exceeding National AQG are forecast by this study, but eight hour worst case values along the H-1 Freeway may be approaching the National eight hour limit.

2. AIR QUALITY STANDARDS

State of Hawaii and National Ambient Air Quality Standards (AQSS) have been established for six classes of pollutants as shown in Table 1. An AQSS is a pollutant concentration not to be exceeded over a specified sampling period which varies for each pollutant depending upon the type of exposure necessary to cause adverse effects. Each of the regulated pollutants has the potential to cause some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentration.

National AQSS for particulates and sulfur dioxide have been divided into primary and secondary levels. Primary AQSS are designed to prevent adverse health impacts while secondary AQSS refer to welfare impacts such as decreased visibility, diminished comfort levels, damage to vegetation, animals or property, or a reduction in the overall aesthetic quality of the atmosphere. State of Hawaii AQSS for all six pollutants have been set at a single level which is in some cases significantly more stringent than the lowest comparable national limit. In particular, the State of Hawaii one hour standard for carbon monoxide is four times more stringent than the national standard.

National AQSS are based on 40 CFR Part 50, while State of Hawaii AQSS are set in Chapter 11-59, Hawaii Administrative Rules. This chapter was recently amended (March 25, 1988) to make Hawaii AQSS for particulates and sulfur dioxide essentially the same as the most stringent national limits.

1. PROJECT DESCRIPTION

The proposed Maina Estates Subdivision involves site preparation and construction of 1,525 single family residences on a 269 acre parcel of land in central Oahu. Location and vicinity maps are presented in Exhibits 1 and 2.

The parcel consists of gently sloping land on the southern portion of the Schoenfeld Plateau which lies between the Koolau and Waianae mountain ranges. The site is presently used for pineapple cultivation.

Residences will be designed for two- and three- to moderate-income families on Oahu. Average lot sizes will be about 5,000 square feet.

Project development will take place as expeditiously as possible, with completion of sales and full occupancy anticipated as early as 1990.

Roadway access from the development to other urbanized parts of Oahu will be via Kamehameha Highway, adjacent to the project site. The two major roadways within the project are designed as extensions of existing Waipio Uka Street and Ka Ika Boulevard. The intersections of these two streets with Kamehameha Highway will provide the only near term entry/exit access points. At some time after 1990, however, it is assumed that the Ka Ika Boulevard Extension will connect with the roadway network of the proposed Waikoleo community to the south. This would provide a third access route via Waikoleo to the new Palms Interchange to be constructed on the H-1 Freeway to the south of Waikoleo. Other proposed roadway improvements likely to affect project access include widening and signalization of Kamehameha Highway between the project and the H-1 Waianae Interchange and construction of a new Waipio Interchange on the H-2 Freeway just to the north of the Waipio Gentry subdivision. These developments are expected to occur prior to the 1990 completion date of the Maina Estates project.

The purpose of this study is to describe existing ambient air quality in the project area and along the major access routes leading to and from the project; to estimate the magnitude of any increase in air pollutant concentrations resulting from actions related to the proposed project; and to suggest mitigative measures which could be employed to avoid or alleviate these impacts.

3. PRESENT AIR QUALITY

A summary of air pollutant measurements from State of Hawaii long term monitoring stations located nearest to the project is presented in Table 2. Data from several different sampling stations are included in the tabulation.

The sampling station for particulates and sulfur dioxide is located in Pearl City, about two miles southeast of the project area. The monitoring of sulfur dioxide in Pearl City was discontinued in 1984 and 1985 measurements are from the Barbara Point station located about 10 miles southwest of the project.

Until September 1979, and after June 1983, carbon monoxide monitoring was conducted at the Department of Health building at Punchbowl and Berrien Streets in urban Honolulu. This site is about 12 miles southeast of the project. During 1981 carbon monoxide was measured at Fort DeBussey in Waikiki (13 miles southeast of the project), and in 1982 carbon monoxide was monitored at Leahi Hospital in Kaimuki, about 15 miles southeast of the project.

Ozone levels were also measured at the Department of Health building in urban Honolulu until December 1980, when the monitor was relocated to Sand Island (about 10 miles southeast of the project site). During 1981 nitrogen dioxide was also monitored at the Sand Island location, but all nitrogen dioxide monitoring has since been discontinued. Lead measurements are from Liliuh Street in Kalihi, about 11 miles southeast of the project site.

From the data presented in Table 2 it appears that State of Hawaii ambient air quality standards for particulates, sulfur dioxide, nitrogen dioxide, and lead are currently being met at nearest monitoring stations to the project area.

On the other hand, carbon monoxide and ozone readings from urban Honolulu indicate that allowable State of Hawaii standards for these vehicle-related air pollutants are being violated at a rate of about once or twice a year. Ozone is an indicator of the formation of photochemical pollutants in the air, a condition which tends to develop if the air mass over the islands has been fairly stable with little wind flow for a period stretching over several days.

Concentrations of carbon monoxide are more directly related to vehicular emissions and tend to be highest during periods of rush hour traffic. Carbon monoxide would thus be the pollutant most likely to cause difficulty in meeting allowable State of Hawaii AQI as a result of new residential development on Oahu.

There are power plants and other potential sources of industrial pollutants along the central portion of the leeward coast to the south of the project site, but the generally low readings of particulates and sulfur dioxide at the Pearl City monitoring station just to the south of the project indicate that these sources are not likely to cause any air pollution problems at Waiala. Likewise pineapple cultivation in the north could generate some particulates and carbon monoxide when fields are burned after harvest (about once every three years for any given field), but the consistently low readings of particulates at Pearl City indicate that this source is not likely to present any significant air pollution problems either. It is also worth noting that since the pineapple fields are to the north and the H-1 freeway to the south, it is relatively unlikely that carbon monoxide from both these sources could be carried over Waiala at the same time.

Finally, natural air pollutant producers which could affect air quality in the Waiala project area include the ocean (sea spray), plants (aero-allergens), dust, and perhaps a distant volcanic eruption on the island of Hawaii. Concentrations of air pollutants from these kinds of sources should be fairly uniform for most Oahu locations.

4. DIRECT AIR QUALITY IMPACT OF PROJECT CONSTRUCTION

During the site preparation and construction phases of this project it is inevitable that a certain amount of fugitive dust will be generated. Field measurements of such emissions from apartment and shopping center construction projects has yielded an estimated emission rate of 1.2 tons of dust per acre of construction per month of activity. This figure assumes medium level activity in a semi-arid climate with a moderate soil silt content. Actual emissions of fugitive dust from this project can be expected to vary daily depending upon the amount of activity and the moisture content of exposed soil in work areas.

One major generator of fugitive dust during project development is construction equipment moving over unpaved roadways. This problem can be substantially mitigated by completing and paving roadways and parking areas as early in the development process as possible. Because of the relatively short time frame envisioned for project development, some construction may be taking place in close proximity to existing residential areas. In these instances, dust control will have to be an item of special concern.

Heavy equipment at construction sites will also emit some air pollutants in the form of engine exhausts. The largest equipment is usually diesel powered. Carbon monoxide emissions for large diesel engines are generally about equal to those from a single automobile, but nitrogen dioxide emissions from this type of engine can be quite high. Fortunately, nitrogen dioxide emissions from other sources in the area should be relatively low and the overall impact of pollutant emissions from construction equipment should be minor compared to levels generated on roadways nearby.

5. AIR QUALITY IMPACT OF INCREASED ENERGY UTILIZATION

As proposed, the Welein Estates Subdivision would contain approximately 1,500 single family residences. Energy consumption rates at the power plant for single family residential units with all electric kitchens and water heaters are about 55,000 BTU per square foot. Estimating about 1,200 square feet as the average residence size yields an energy requirement of about 1.8 billion BTU of energy per year at the power plant. This is the equivalent of about 17,000 barrels of oil if the demand were to be met totally by burning fuel oil.

The major impact of burning fuel oil to meet this increased energy demand will be increased levels of sulfur dioxide and particulates in the vicinity of existing power plants, primarily the Kuhn Power Plant on the Mustang canal.

This energy requirement could be reduced substantially by the installation of solar water heating on all new residential units. It is also possible that the new demand could be met by means other than burning fuel oil. Generation of electrical energy by wind power or by using ocean thermal energy conversion are two such possibilities.

6. INDIRECT AIR QUALITY IMPACT OF INCREASED TRAFFIC

Once construction is completed the proposed project is not in itself likely to constitute a major direct source of air pollutants. By serving as an attraction for increased motor vehicle traffic in the area, however, the project must be considered to be a significant indirect air pollution source.

Motor vehicles, especially those with gasoline-powered engines, are prodigious emitters of carbon monoxide. Motor vehicles also emit some nitrogen dioxide and those burning fuel which contains lead as an additive contribute some lead particles to the atmosphere as well. The major control measure designed to limit lead emissions is a federal law requiring the use of unleaded fuel in most new automobiles. An older cars are removed from the vehicle fleet lead emissions should continue to fall. In fact, effective January 1, 1986, the Federal Environmental Protection Agency has revised the allowable lead amount in gasoline to 0.1 grams per gallon. At the beginning of 1985 the standard was 1.1 grams per gallon. The EPA is also advocating a total ban on lead in gasoline to take effect as early as 1988.

Federal control regulations also call for increased efficiency in removing carbon monoxide and nitrogen dioxide from vehicle exhausts. By 1986 carbon monoxide emissions from the vehicle fleet then operating are mandated to be about one third lower than the amounts now emitted.

7. CARBON MONOXIDE DIFFUSION MODELING

In order to evaluate the future air quality impact of projected increases in traffic associated with the proposed Mainle Estates Subdivision in view of the previously described government mandated decreasing emission rates per vehicle, it was necessary to carry out a detailed carbon monoxide modeling study. The study was designed to yield carbon monoxide concentration values which could be compared directly to allowable State and National Ambient Air Quality Standards.

Three critical receptor sites were selected for analysis: site 1 on the east side of Keweenaw Highway near the proposed intersection with Mainle Main Street and Mainle Main Street Extension; site 2 on the west side of the H 1 Freeway near Leonard Community College; and site 3 on the south side of the H 1 Freeway near Ponobona Loop in the Mainle area. The locations of sites 1 and 2 are shown on Exhibit 2, while that of site 3 is shown on Exhibit 3.

Site 1 is a critical receptor site because it is likely to show the maximum air pollution increase likely to occur at that point where most project related traffic will egress onto Keweenaw Highway during the morning rush hour. The particular location of the site with respect to the intersection was selected because that spot would be most likely to have the highest levels of automobile-generated air pollutants, specifically carbon monoxide, under worst case peak hour traffic and meteorological diffusion conditions.

Site 2 was selected to measure the impact of project related traffic at that location where morning rush hour traffic enters the H 1 Freeway, while site 3 was selected to evaluate potential carbon monoxide levels along the most congested portion of the H 1 Freeway downstream from the project. The particular location of site 3 was selected because housing has been built closest to the freeway on a hillside that is at grade with the freeway at that location.

Expected worst case peak hour carbon monoxide concentrations at each of the critical receptor sites were computed for study years 1985 and 1990. Computations were made for traffic conditions with and without the proposed Mainle Estates Subdivision.

Morning peak hour traffic volumes for study years were determined using the traffic impact study for the project. Morning peak hour traffic volumes were used for air pollution computations because the traffic impact study found these volumes to be higher than evening peak hour volumes.

The existing peak hour vehicle mix in the project area was evaluated to be 80% gasoline powered automobiles, 13% light duty gasoline-powered trucks and vans, 1% heavy duty gasoline-powered trucks, 2% diesel-powered automobiles, 1% diesel-powered light duty trucks, 2% diesel-powered trucks and buses, and 1% motorcycles. The same vehicle mix was assumed for both study years.

The current (1986) intersection of Waipio Uka Street with Kamehameha Highway is unsignalized. Traffic on Kamehameha Highway at this location was assumed to move at 25 mph in unimpeded flow except for those few vehicles slowing down to turn right into Waipio Uka Street.

With Maioia Estates project completion in 1990, it is expected that Kamehameha Highway will be widened to four lanes at this location with a signal light at the intersection. It is also expected that the new Waipio Interchange will be constructed to provide access to H-2 for some of the traffic now using Kamehameha Highway. With the signal light controlling traffic flow, average vehicle speeds were assumed to be 5 mph upstream from red signal lights and 15 mph downstream from signals or turns. Traffic was assumed to move at 25 mph in unimpeded flow in the off peak direction. If the Maioia Estates project were to be completed and neither the widening of Kamehameha Highway, nor the construction of the Waipio Interchange on H-2 were to be completed by 1990, then the traffic in the peak hour direction on Kamehameha Highway was assumed to essentially be operating in grid lock fashion with all morning rush hour peak direction movements in the vicinity of site 1 taking place at 5 mph.

The H-1 is an eight lane divided freeway at the location of site 2. By 1990 it is assumed that an extra lane will be added in the Honolulu bound direction. Morning rush hour speeds along the off-peak side of the Freeway were assumed to be 35 mph in relatively unimpeded flow, while movements in the peak direction were assumed to be 15 mph in congested, bumper to bumper flow with occasional queuing. The same speed ratios were assumed for H-1 Freeway movements in the vicinity of Site 3.

For all computations a temperature of 68 degrees F was assumed with 20 percent of vehicles operating in the 'cold start' mode on all roadways except the Waipio Uka Street Extension exiting from the proposed project where a 75% 'cold start' percentage was considered to be more representative.

Using the above assumptions, output from the EPA computer model MOBILE 2 was used to produce vehicular carbon monoxide emission estimates for each of the years studied. These values were then used as input for the EPA computer model HWAY 2 to calculate carbon monoxide concentrations at each of the selected critical receptor sites for the various scenarios studied. Stability category 4 was used for determining diffusion coefficients. This stability category represents the most stable (least favorable) atmospheric condition that is likely to exist in a suburban area such as this.

To simulate worst case wind conditions a uniform wind speed of one meter per second was assumed with the worst case wind direction for site 1 from the northeast; for site 2 from the northeast; and for site 3 from the southeast. For each receptor site concentrations were computed at a height of 1.5 meters to simulate levels that would exist within the normal human breathing zone.

Background contributions of carbon monoxide from sources or distant roadways not directly considered in the analysis were assumed to be zero for site 1, but because of the numerous non-freeway roadways in the vicinity of sites 2 and 3 a carbon monoxide background concentration of 2 milligrams per cubic meter was added to account for sources not directly considered in the analysis.

Results of the peak hour carbon monoxide analysis are shown in Table 3. At site 1 all computed concentrations are within the allowable State of Hawaii limit so long as expected highway improvements take place before the proposed Maioia Estates project is finished. If the project should be completed before these highway improvements occur, however, then peak hour levels of carbon monoxide under worst case conditions could exceed the State of Hawaii ADS.

At site 2 both existing and projected worst case carbon monoxide levels are well above the one hour State of Hawaii standard with or without the proposed project. This situation is not likely to change appreciably even with the proposed widening of the Freeway since the net effect of the widening would serve to move the edge of the roadway closer to the selected receptor site while at the same allowing more vehicles to operate on the roadway in the same congested conditions that existed before the improvement.

A similar result obtains for concentrations at site 3 except that this site is located nearest to the off peak direction of the Freeway and the proposed widening would thus move some of the traffic further away from the site. Because the H-1 Freeway in the vicinity of site 3 is essentially operating at capacity in the peak direction, additional peak hour traffic attempting to use the facility can do so only by approaching the Freeway at an hour that is earlier or later than the time of peak volume. This serves to extend the hours of peak volume traffic, but has little effect on peak hour carbon monoxide concentrations. The increase in volume attributed to project-related traffic in 1990 is thus mainly the result of increased traffic in the off-peak direction.

Average one hour traffic volumes during the peak eight hour period are about 80 percent of the peak hour level. Eight hour carbon monoxide levels are estimated by multiplying the peak hourly values by this traffic volume ratio and a meteorological persistence factor of 0.6 which is recommended in EPA modeling guidelines to account for the fact that meteorological dispersion conditions are more variable (and hence more favorable) over an eight hour period than they are for a one hour period. Multiplying projected peak hour carbon monoxide levels by this combined factor of about 0.5 will yield values that are exactly one half those shown in Table 2. The State of Hawaii eight hour AQ5 for carbon monoxide is also one half the one hour standard. Thus the conclusions reached above regarding the State of Hawaii one hour standard will hold with respect to the eight hour standard as well.

All carbon monoxide concentrations calculated in the foregoing analysis are well within the less stringent National one and eight hour AQ5 whether the proposed project is undertaken or not. It should be noted, however, that the eight hour National carbon monoxide standard is only one quarter of the peak hour limit. Therefore, peak eight hour concentrations of carbon monoxide along the H-1 Freeway in the vicinity of site 3 under worst case conditions would be only slightly within allowable limits.

8. MITIGATIVE MEASURES

A. SHORT TERM

As previously indicated the only direct short term adverse air quality impact that the proposed project is likely to create is the emission of fugitive dust during construction. State of Hawaii regulations stipulate the control measures that are to be employed to reduce this type of emissions. Primary control consists of wetting down loose soil areas. An effective watering program can reduce particulate emission levels from construction sites by as much as 50 percent. Other control measures include good housekeeping on the job site and pavement or landscaping of bare soil areas as quickly as possible.

B. LONG TERM

Once completed, the proposed Maina Estates Subdivision is expected to have little direct impact on the air quality of the surrounding region. In fact, direct contributions of particulate pollutants to the air will be decreased, since open field fires and fugitive dust from pineapple growing activities will no longer be taking place.

Indirect long term impacts in the form of increased air pollutant emissions from power plants serving new residences in the project area can be mitigated somewhat by planning and implementing solar energy design features to the maximum extent possible.

Other indirect long term air quality impacts are expected in those areas where traffic congestion can potentially be worsened by the addition of vehicles traveling to and from the proposed project. Project planners can do very little to reduce the emission levels of individual vehicles, but the traffic impact study for the project lists several major roadway improvements which could serve to decrease traffic congestion in the immediate project area if they are implemented before project completion in 1990.

Carbon monoxide modeling conducted as a part of this report indicates that State of Hawaii Ambient Air Quality Standards are presently being exceeded at critical receptor sites along the H-1 Freeway and that additional traffic from this project is likely to slightly exacerbate that problem. Widening the Freeway by one lane in the peak direction is expected to have little impact on this situation. Once again, however, this is a regional traffic problem which will require mitigative measures beyond those that a single project developer can be expected to provide.

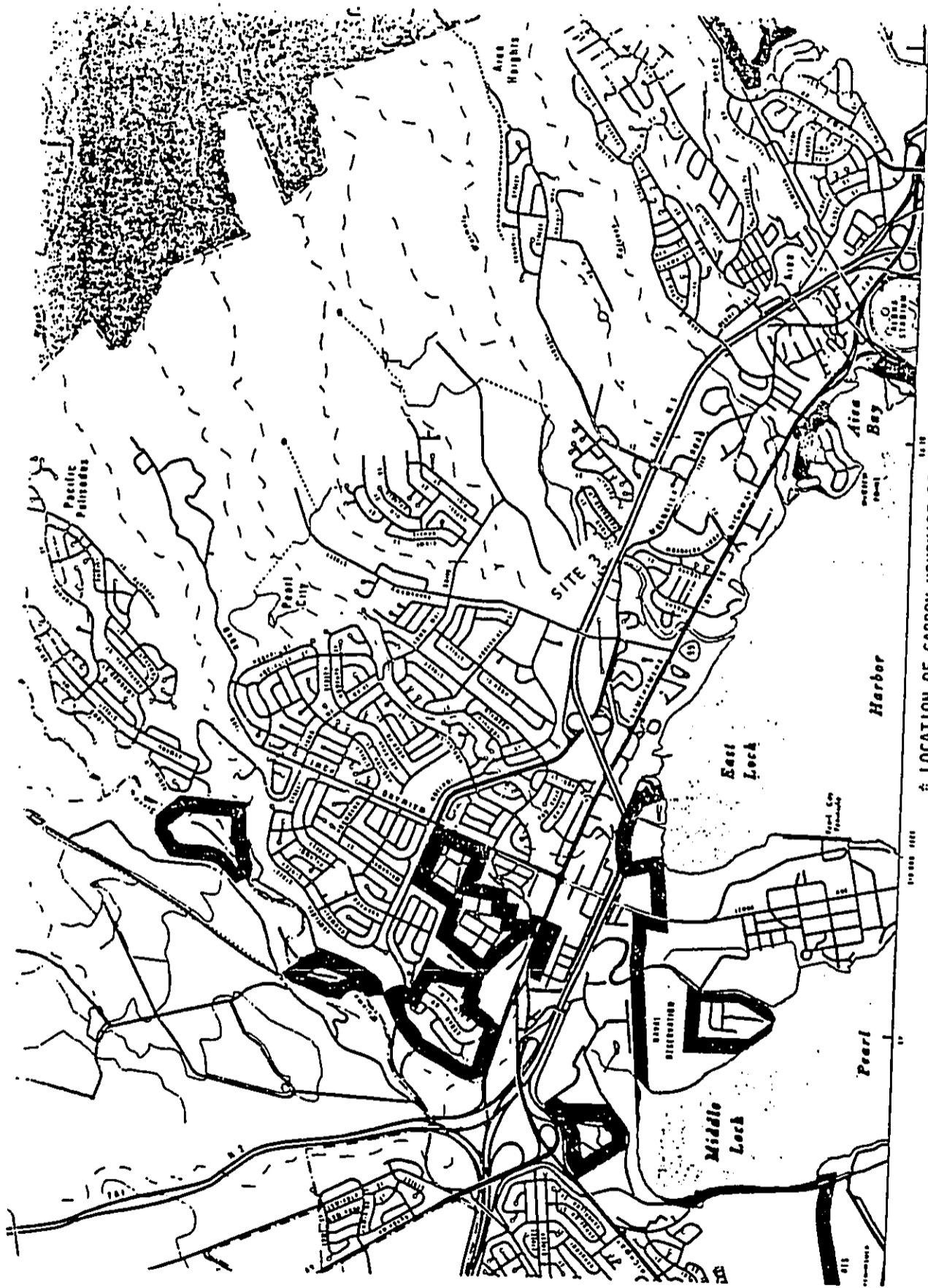
Because the stringent national vehicular emissions reduction program now being pursued is entirely the product of perpetually changing government regulations, it is always possible that economic conditions or other factors could lead to an early abandonment of the program. If that were to occur, then the projected pollutant levels presented in this study could be too optimistic. On the other hand, it is possible that technological innovation may lead to new vehicular power systems that produce few or none of the currently regulated atmospheric pollutants.

It is also important to note that the maximum impact of planned reductions in vehicle air pollution emission rates is not expected to occur until 1995. For the next 5 years at least, each year of project delay will result in lower, rather than higher, projected impacts from vehicular air pollution.

In any case, this study indicates that currently proposed mitigative measures for traffic congestion along Kamehameha Highway should be sufficient to meet existing air quality requirements in the immediate project area and no other major developer-initiated air pollution mitigation measures are proposed. It is noted, however, that tall, dense vegetation can provide some screening of residential areas from larger airborne particulates generated along roadways and near construction areas. It is thus recommended that wherever possible such vegetative cover be included in landscaping plans with plantings occurring as early in the development process as practicable.

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3. U.S. ENVIRONMENTAL PROTECTION AGENCY, Guidelines for Air Quality Maintenance Planning and Analysis, Volume 3: Evaluating Indirect Sources, January, 1975.
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5. AUSTIN, TSUNISHI & ASSOCIATES, INC., Traffic Impact Report for the Proposed Malolo Estates Subdivision, May 12, 1986.



SHEET

EXHIBIT 3 REGIONAL MAP

PEARL HARBOR

★ LOCATION OF CARBON MONOXIDE RECEPTOR SITE

TABLE 1

SUMMARY OF HAWAII AND NATIONAL AMBIENT AIR QUALITY STANDARDS
(Micrograms per Cubic Meter)

POLLUTANT	SAMPLING PERIOD	AMBIENT AIR QUALITY STANDARDS	
		NATIONAL	HAWAII
Particulates	Annual Geometric Mean	75	60
	Maximum 24-Hour Average	260	150
Sulfur Dioxide	Annual Arithmetic Mean	80	80
	Maximum 24-Hour Average	365	365
	Maximum 3-Hour Average	1300	1300
Nitrogen Dioxide	Annual Arithmetic Mean	100	70
Ozone	Maximum 1 Hour Average	240	100
Carbon Monoxide (milligrams per cubic meter)	Maximum 8-Hour Average	10	5
	Maximum 1-Hour Average	40	10
Lead	Calendar Quarter	1.5	1.5

TABLE 2

SUMMARY OF AIR POLLUTANT MEASUREMENTS AT NEAREST MONITORING STATIONS

POLLUTANT	1979	1980	1981	1982	1983	1984	1985
PARTICULATE MATTER							
No. of Samples	58	60	59	53	65	56	47
Range of Values	20-48	22-33	19-71	19-54	17-57	16-45	16-62
Average Value	33	36	34	31	30	28	35
No. of Times State AQS Exceeded	0	0	0	0	0	0	0
SULFUR DIOXIDE							
No. of Samples	56	52	56	43	49	42	50
Range of Values	<5-63	<5-15	<5-65	<5-10	<5-65	<5-65	<5-25
Average Value	10	5	6	5	6	6	6
No. of Times State AQS Exceeded	0	0	0	0	0	0	0
CARBON MONOXIDE							
No. of Samples	207	206	206	311	173	318	342
Range of Values	0-17.3	1.2-13.8	0-4.6	0-4.6	0-8.6	0-10.9	0-10.4
Average Value	2.9	5.1	1.2	1.2	2.3	2.4	1.5
No. of Times State AQS Exceeded	10	13	0	0	0	1	1
OXIDANT (OZONE)							
No. of Samples	338	296	314	335	349	296	341
Range of Values	10-80	10-84	10-104	0-151	0-123	0-104	8-198
Average Value	30	48	37	32	46	44	43
No. of Times State AQS Exceeded	0	0	1	2	2	1	3
OTHERS:							
NITROGEN DIOXIDE							
No. of Samples	46						
Range of Values	6-77						
Average Value	25						
No. of Times State AQS Exceeded	0						
LEAD							
No. of Samples	52						
Range of Values	0-5						
Average Value	0.6						
No. of Times State AQS Exceeded	0						

NOTES: See text for locations of monitoring stations. Carbon monoxide reported in milligrams per cubic meter; other pollutants in micrograms per cubic meter. Carbon monoxide and ozone are daily peak one hour values; lead is quarterly; other pollutant values are for a 24 hour sampling period.

SOURCE: State of Hawaii Department of Health

TABLE 3

RESULTS OF PEAR HOUR CARBON MONOXIDE ANALYSIS
(Milligrams Per Cubic Meter)

SITE	1986	1990	
		With Roadway Improvements	Without Roadway Improvements
SITE 1	Without Maioia Estates Project	3.0	3.2
	With Maioia Estates Project	6.8	15.2
SITE 2	Without Maioia Estates Project	14.3	14.5
	With Maioia Estates Project	15.9	15.5
SITE 3	Without Maioia Estates Project	16.1	13.8
	With Maioia Estates Project	14.6	14.1

STATE OF HAWAII AQG: 10
NATIONAL AQG: 40

Note: See Exhibits 2 and 3 for location of receptor sites; roadway improvements are described in Section 7 of this report.

APPENDIX G

TRAFFIC NOISE IMPACT STUDY
FOR THE PROPOSED
WAIJOLA ESTATES SUBDIVISION

BY
Y. EBISU & ASSOCIATES

APRIL, 1986

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II. PURPOSE AND METHODOLOGY

The purpose of this noise study was to predict the traffic noise level increases associated with the proposed Waiola Estates Subdivision Project, and to evaluate possible noise impacts on the surrounding area resulting from the project traffic noise sources. Additionally, because the widening of Kamehameha Highway (between Waipio Uka Street and Millilani Memorial Park Road) is to occur prior to completion of the Waiola project, and because the highway is a federal highway, a worst case evaluation of traffic noise impacts on existing Gentry Waipio residences and future Waiola Estates residences along the highway was also performed. Traffic noise predictions were performed using the Federal Highway Administration (FHWA) Noise Prediction Model (Reference 1), and traffic assignments from the traffic study for the project (Reference 2). Historical traffic counts obtained by the State Department of Transportation at stations on Kamehameha Highway (References 3 thru 6) were used to develop the relationships between peak hour Leq(h) and daily Ldn traffic noise levels, and to develop the assumed traffic mixes. (See Worksheets #1 thru #3 of APPENDIX C.) More recent traffic counts obtained in April, 1986 along Kamehameha Highway and reported in Reference 2 were used in conjunction with the 1985 state counts to calculate the existing traffic noise levels along the highway.

The future project and non-project traffic assignments were obtained from Reference 2, and apply to the 1990 time period. Major changes and improvements to the existing system by the 1990 time period are assumed, such as the widening of Kamehameha Highway at the Greatview and Seaview Village Subdivisions, the widening of Kamehameha Highway between Waipio Uka Street and Millilani Memorial Park Road, and the construction of access ramps to the R-2 Freeway at Millilani Memorial Park Road. Potential traffic noise impacts resulting from the additional non-project and project traffic were identified, and possible noise mitigation measures were described.

I. SUMMARY

The existing and future traffic noise levels in the vicinity of the proposed Waiola Estates Subdivision were evaluated for their potential impact on present and future residences in the project environs. The traffic noise level increases on Kamehameha Highway and Ka Uka Boulevard were calculated for the 1990 time period, and traffic noise impacts associated with project and non-project traffic were assessed. Increases in traffic noise of 0.3 to 1.8 Ldn are predicted to occur as a result of project traffic on Kamehameha Highway and Ka Uka Boulevard. Required noise mitigation measures for FHA/HUD funding assistance include the construction of a sound attenuating wall along Kamehameha Highway and fronting the planned Waiola Estates homes, and the use of a minimum 100 FT setback for multi-story homes in the new subdivision.

Although the proposed project is not expected to be the primary cause of traffic noise impacts in the area by 1990, secondary noise impacts associated with the planned widening of Kamehameha Highway in front of the subdivision are predicted for the worst case scenario of a widened highway operating at a higher capacity level in the time period beyond 1990. Noise mitigation measures will probably be required in the Gentry Waipio area south of Waipio Uka Boulevard to mitigate increased traffic noise levels, particularly if federal funding assistance is used in the widening project.

III. NOISE DESCRIPTORS AND THEIR RELATIONSHIP TO LAND USE
COMPATIBILITY

Two noise descriptors currently used to relate outdoor noise levels to land use compatibility, and to assess environmental noise in general, are the Equivalent Noise Level (Leq) and the Day-Night Average Sound Level (Ldn). Both of these descriptors are averages of instantaneous A-Weighted Sound Levels as read on a standard Sound Level Meter. In traffic noise evaluations, the averaging period for the Leq descriptor is usually an hour, and more specifically, the peak hour of traffic. In all evaluations, the minimum averaging period for the Ldn descriptor is 24 hours (by definition), with the recommended averaging period being one year for land use compatibility evaluations. Additionally, sound levels which occur during the nighttime hours of 10:00 PM to 7:00 AM are increased by 10 decibels (dB) prior to computing the 24-hour average by the Ldn descriptor. A glossary of acoustical descriptors is contained in APPENDIX B.

TABLE 1, which was derived from information contained in Reference 7, presents current federal standards and acceptability criteria for residential land uses exposed to various levels of environmental noise. As a general rule, noise levels of 55 Ldn or less occur in rural areas or urbanized areas which are shielded from high volume streets. In urbanized areas, Ldn levels generally range from 55 to 65 Ldn, and are usually controlled by motor vehicle traffic noise. Buildings which front major roadways are generally exposed to levels of 65 Ldn, and as high as 72 Ldn when the roadway is a high speed freeway. Due to noise shielding effects from intervening structures, buildings which are located within interior lots are exposed to lower exterior noise levels of 60 Ldn or less.

For the purposes of determining noise acceptability for funding assistance from federal agencies (FHWA/RUD and VA), an exterior noise level of 65 Ldn or lower is considered acceptable for residential developments. This standard is applied nationally

Potential traffic noise impacts (on existing Gentry Waipio and future Waioala Estates residences) resulting from the widening of Kamehameha Highway at the Waioala Estates Subdivision were also evaluated. A worst case noise impact evaluation was performed assuming a maximum PM peak hour, two-way, traffic volume of 5,000 VPH at 35 to 40 MPH speed on the highway at capacity conditions. The derivation of the 5,000 VPH as an upper limit (or worst case) was performed using the following two methods, and ignored any upstream or downstream capacity constraints imposed by intersections or end conditions:

A. Saturation Flow Rate Method:

1. Assume 1,600 vehicles per hour of green per lane as a median saturation flow rate. During the AM and PM peak hours, assume volumes in the peak direction to be 1,600 VPH/lane x 2 lanes = 3,200 VPH.
2. Also, assume a peak hour, directional factor of 0.44, with peak hour volume in the non-peak direction of $0.44 \times 3,200 \text{ VPH} = 1,408 \text{ VPH}$. Existing directional factors at the Waipahu Street and Waipio Uka Street intersections during the AM and PM peak hours range from 0.16 to 0.44.

3. Total peak hour volume: $3,200 + 1,408 = 4,608$, or say 5,000 VPH.

B. Waipahu Street Intersection Method:

1. Assume the existing intersection is at capacity, and that a doubling of the existing capacity would result from the widening project, if end constraints are removed.
2. Future AM peak hour volume: 2,481 VPH (existing)
x 2 = 4,962 VPH.
3. Future PM peak hour volume: 2,618 VPH (existing)
x 2 = 5,236 VPH.

TABLE 1
EXTERIOR NOISE EXPOSURE CLASSIFICATION
(RESIDENTIAL LAND USE)

Noise Exposure Class	Day-Night Sound Level	Equivalent Sound Level	(1) Federal Standard
Minimal Exposure	Not Exceeding 55 Ldn	Not Exceeding 55 Leq	Unconditionally Acceptable
Moderate Exposure	Above 55 Ldn But Not Above 65 Ldn	Above 55 Leq But Not Above 65 Leq	(2) Acceptable
Significant Exposure	Above 65 Ldn But Not Above 75 Ldn	Above 65 Leq But Not Above 75 Leq	Normally Unacceptable
Severe Exposure	Above 75 Ldn	Above 75 Leq	Unacceptable

Note: (1) Federal Housing Administration, Veterans Administration, Department of Defense, and Department of Transportation.

(2) FHWA uses the Leq instead of the Ldn descriptor. For planning purposes, both are equivalent if: (a) heavy trucks do not exceed 10 percent of total traffic flow in vehicles per 24 hours, and (b) traffic between 10:00 PM and 7:00 AM does not exceed 15 percent of average daily traffic flow in vehicles per 24 hours. The noise mitigation threshold used by FHWA for residences is 67 Leq.

(see Reference 8), including Hawaii. Because of our open living conditions, the predominant use of naturally ventilated dwellings, and the relatively low exterior to interior sound attenuation afforded by these naturally ventilated structures, an exterior noise level of 65 Ldn in local residential neighborhoods does not eliminate all risks of noise impacts. For these reasons, and as recommended in Reference 9, a lower level of 55 Ldn is considered as the "Unconditionally Acceptable" (or "Near Zero Risk") level of exterior noise for residential uses. However, after considering the cost and feasibility of applying the lower level of 55 Ldn, government agencies such as FHA/HUD and VA have selected 65 Ldn as a more appropriate regulatory standard.

For commercial and light industrial developments, exterior noise levels in the order of 65 to 75 Ldn are considered acceptable. FIGURE 1, extracted from Reference 10, depicts suggested noise level compatibility guidelines for various land use categories. Note that for commercial land uses, "Compatible" (or "Unconditionally Acceptable") noise levels are approximately 10 Ldn higher than for residential uses. This is due to the generally higher tolerance for noise in nonresidential settings, and the higher probability of total closure and air conditioning of commercial structures. Federal agencies utilize similar land use compatibility guidelines (Table 2 of Reference 7) for commercial and light industrial developments.

IV. EXISTING NOISE ENVIRONMENT

Along the Kanehameha Highway Right-of-Way, existing traffic noise levels are in the "Significant Exposure, Normally Unacceptable" category. Existing setback distances to the 65 Ldn contour line are estimated at 60 FT and 81 FT from the centerline of the highway in directions north and south, respectively, of the project (see FIGURE 2). In the vicinity of the Waipahu Street intersection, where traffic volumes are highest, the existing setback distance to the 65 Ldn contour line is estimated at 90 FT from the centerline of Kanehameha Highway. In the Greatview and Seaview Village Subdivision areas near the Waipahu Street intersection, traffic noise levels are in the "Significant Exposure, Normally Unacceptable" category (approximately 66 to 68 Ldn) along the first row of lots which front the highway. In the Gentry Waipio Subdivision area north of the Greatview Subdivision, significantly larger (approximately 95 to 150 FT) setbacks exist between Kanehameha Highway and the existing dwelling units, and traffic noise levels are therefore in the "Moderate Exposure, Normally Acceptable" category at 64 to 59 Ldn.

Along Ke Uka Boulevard, existing traffic noise levels are low, and in the "Moderate Exposure, Acceptable" category, with traffic noise levels at approximately 58 Ldn along the Right-of-Way.

Existing background ambient noise levels at the proposed subdivision site are controlled by traffic noise within 500 FT of Kanehameha Highway. Beyond that distance, background ambient noise is controlled by aircraft, or birds and other natural sources, and is estimated at 40 to 45 Ldn.

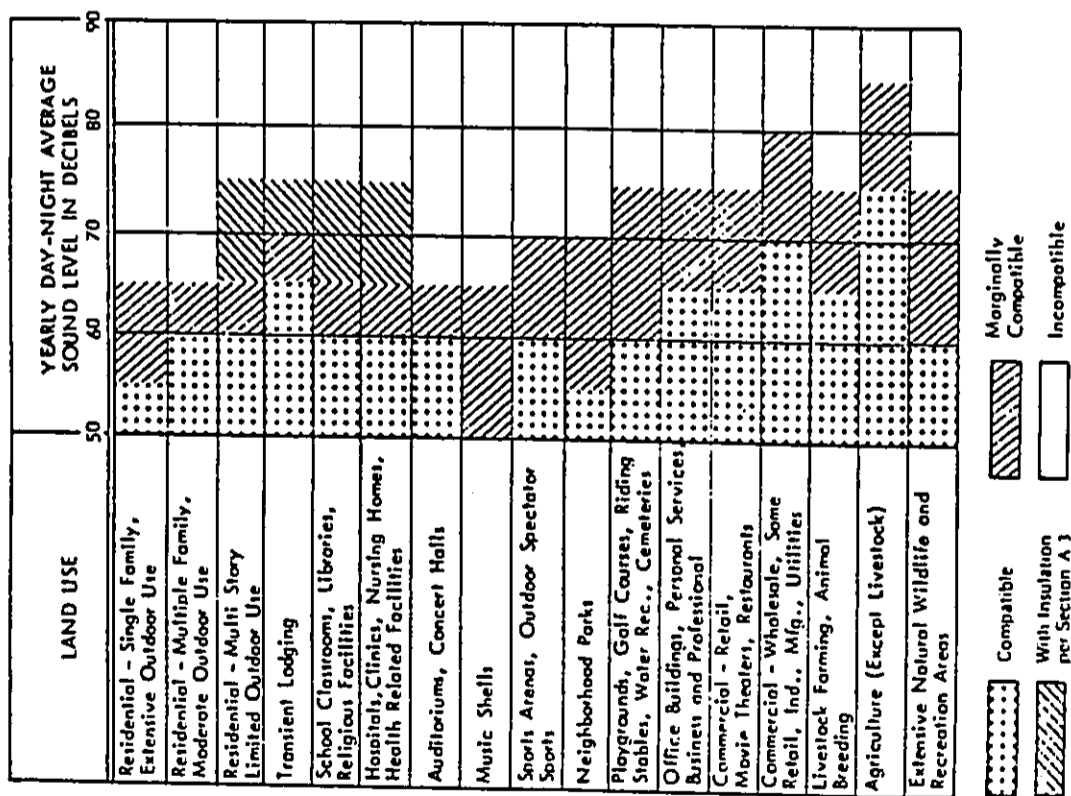
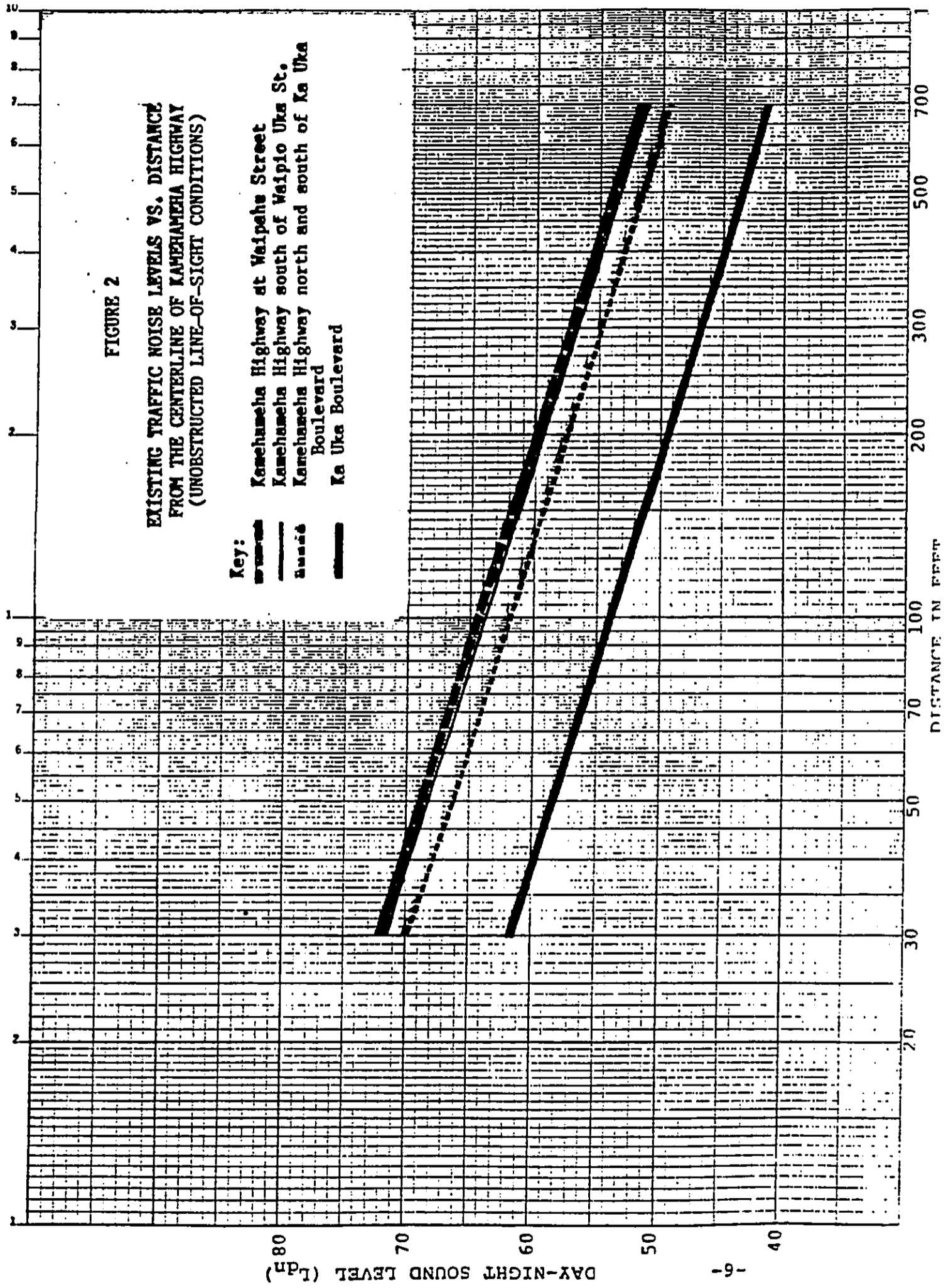


FIG. 1. Land use compatibility with yearly day-night average sound level at a site for buildings as commonly constructed [For information only, not a part of American National Standard for Sound Level Descriptors for Determination of Compatible Land Use S123-1980]



V. FUTURE TRAFFIC NOISE ENVIRONMENT

Predictions of future traffic noise levels were made using the traffic volume assignments for the project as contained in TABLE 2, and for a worst case scenario of approximately 5,000 VPH total traffic volume during the peak hour under saturation conditions. Future traffic noise levels on each roadway segment were calculated separately with and without the project traffic. Also the contributions of project traffic noise levels to the total (project plus non-project) levels were calculated.

The predicted increases in PM peak hour Leq(h) and daily Ldn traffic noise levels from the present to the completion of the development in 1990 are shown in TABLE 3. The difference between Ldn and peak hour Leq(h) was assumed to be equal to the present difference of 1.3 dB. TABLE 4 presents the predicted increases in the setback distances to the 60, 65, and 70 Ldn traffic noise contours under unobstructed line-of-sight sound propagation conditions, and with the project traffic included. For a fully developed Maioia Estates Subdivision, increases in the setback distances to the 65 Ldn contour are predicted to be approximately 12 FT along Kamehameha Highway to the north of the project; approximately 5 FT along Kamehameha Highway to the south of the project; and 14 FT along Ka Uka Boulevard. It should be noted that the predicted increases in the noise contour setback distances are the result of both project and non-project traffic volume increases.

TABLE 5 presents the anticipated increases in traffic noise levels, and the contribution of project traffic to these increases. As indicated in TABLE 5, increases in traffic noise levels associated with project traffic are predicted to range from 0.3 to 1.8 Ldn. Following completion of the subdivision project, future traffic noise levels along Kamehameha Highway south of the project site are predicted to increase by 0.3 to 0.4 Ldn, which are not significant. To the north, future traffic noise levels along Kamehameha Highway are predicted to increase by 0.7 Ldn, which is also not significant. The greatest increases in project

TABLE 2
FUTURE PROJECT AND NON-PROJECT TRAFFIC VOLUMES
FOR PM PEAK HOUR (IN VPH)

STREET SECTION	NON-PROJECT VOLUME (VPH)	PROJECT VOLUME (VPH)
Kaa. Rwy. North of Ka Uka	1,710	276
Kaa. Rwy. South of Ka Uka	1,839	457
Kaa. Rwy. S. of Waipio Uka	2,312	1,060
Kaa. Rwy. @ Waipahu St.	2,794	1,060
Ka Uka Boulevard	392	200

LOCATION	SPEED (MPH)	VPH	AUTO	*** HOURLY LEQ(H) MT	IN DB @ HT	50' *** ALL VEH	DB INCREASE
EXISTING PM PEAK HR. TRAFFIC:							
Kam. Hwy. North of Ka Uka	40	1,506	62.4	56.9	59.2	64.9	-
Kam. Hwy. South of Ka Uka	40	1,445	62.2	56.8	59.0	64.7	-
Kam. Hwy. S. of Waipio Uka	40	2,361	64.4	58.9	61.2	66.8	-
Kam. Hwy. @ Waipahu St.	40	2,753	65.0	59.6	61.8	67.5	-
Ka Uka Boulevard	35	399	54.5	49.2	52.0	57.2	-
FUTURE PM PEAK HR. TRAFFIC:							
Kam. Hwy. North of Ka Uka	40	1,986	63.6	58.1	60.4	66.1	1.2
Kam. Hwy. South of Ka Uka	40	2,296	64.3	58.8	61.0	66.7	2.0
Kam. Hwy. S. of Waipio Uka	37	3,372	64.6	59.3	61.9	67.2	0.4
Kam. Hwy. @ Waipahu St.	37	3,854	65.2	59.9	62.5	67.8	0.3
Ka Uka Boulevard	35	938	58.2	52.9	55.7	60.9	3.7

Assumed traffic mix of 97% Autos, 2% Medium Trucks, and 1% Heavy Vehicles on local streets and Kamehameha Highway.

TABLE 3

COMPARISONS OF EXISTING AND FUTURE TRAFFIC NOISE LEVELS IN PROJECT ENVIRONS

TABLE 4
EXISTING AND FUTURE DISTANCES TO 60, 65, AND 70 Ldn CONTOURS

STREET SECTION	60 Ldn SETBACK (FT)		65 Ldn SETBACK (FT)		70 Ldn SETBACK (FT)	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
Kam. Hwy. North of Ka Uka	129	155	60	72	28	33
Kam. Hwy. South of Ka Uka	126	171	58	79	27	37
Kam. Hwy. S. of Waipio Uka	174	185	81	86	38	40
Kam. Hwy. @ Waipahu St.	193	203	90	94	42	45
Ka Uka Boulevard	40	70	18	32	8	15

1-3-1

Notes: All setback distances are from the roadway centerlines. See TABLE 3 for traffic assumptions. Ldn assumed to be 1.3 dB greater than PM peak hour Leq for all roadways. Setback distances are for unobstructed line-of-sight conditions.



related traffic noise are predicted to occur along Ka Uka Boulevard, and are expected to be in the order of 1.8 Ldn. Non-project traffic noise increases along the boulevard are predicted to be of a similar magnitude at 1.9 Ldn.

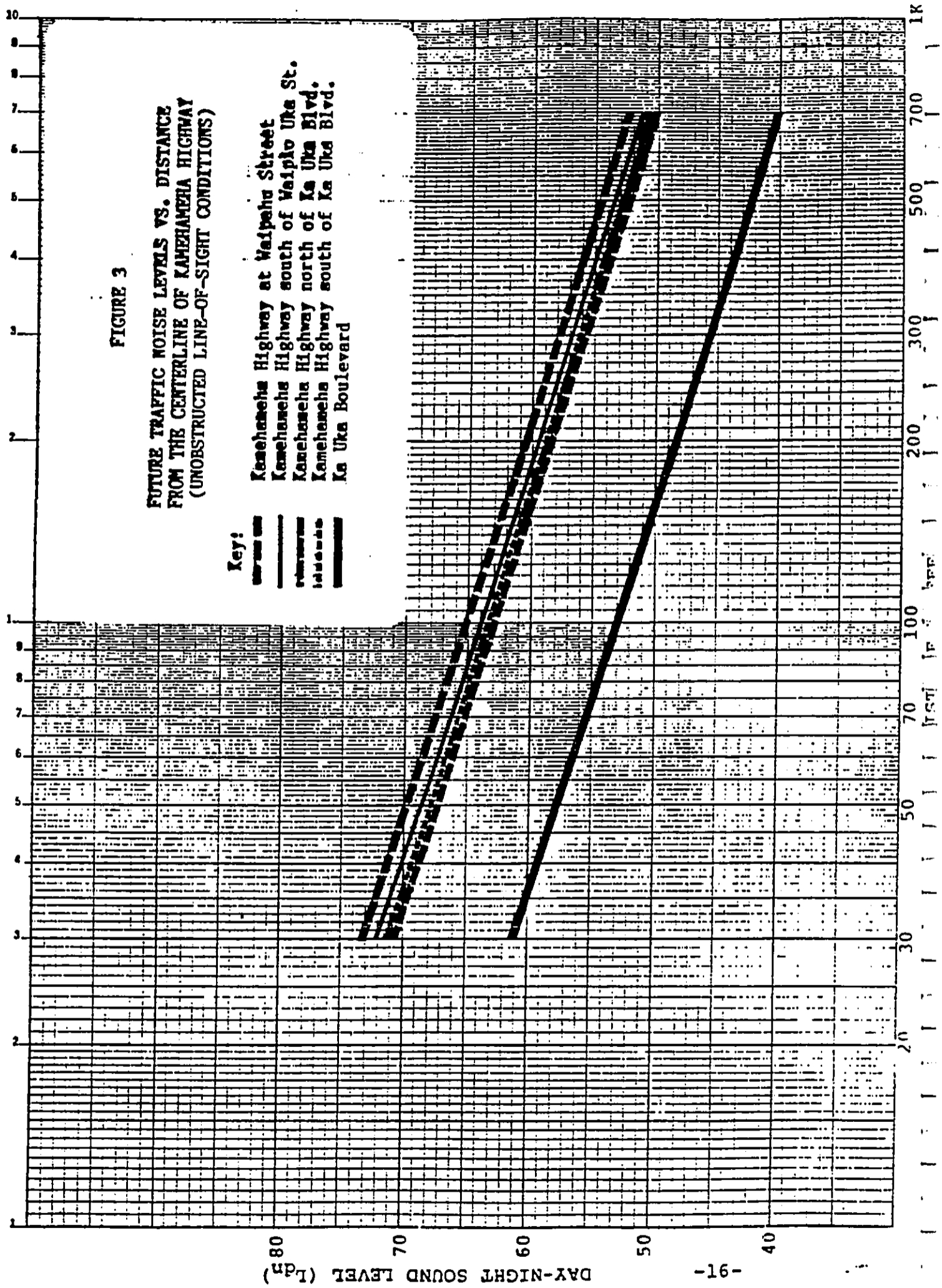
Future traffic noise levels vs. distance from the centerlines of the street segments servicing the project are depicted in FIGURE 3 for unobstructed line-of-sight conditions. Future traffic noise levels along the Kamehameha Highway Right-of-Way at the Waiola Estates Subdivision are predicted to be in the "Significant Exposure, Normally Unacceptable" category, with noise levels of 66.8 Ldn along the first row of homes fronting the highway. Along Ka Uka Boulevard, future traffic noise increases are predicted to be 3.7 Ldn. Although the increases along Ka Uka Boulevard are predicted to be the greatest, future noise levels along the boulevard are expected to remain in the "Moderate Exposure, Acceptable" category following development of the project.

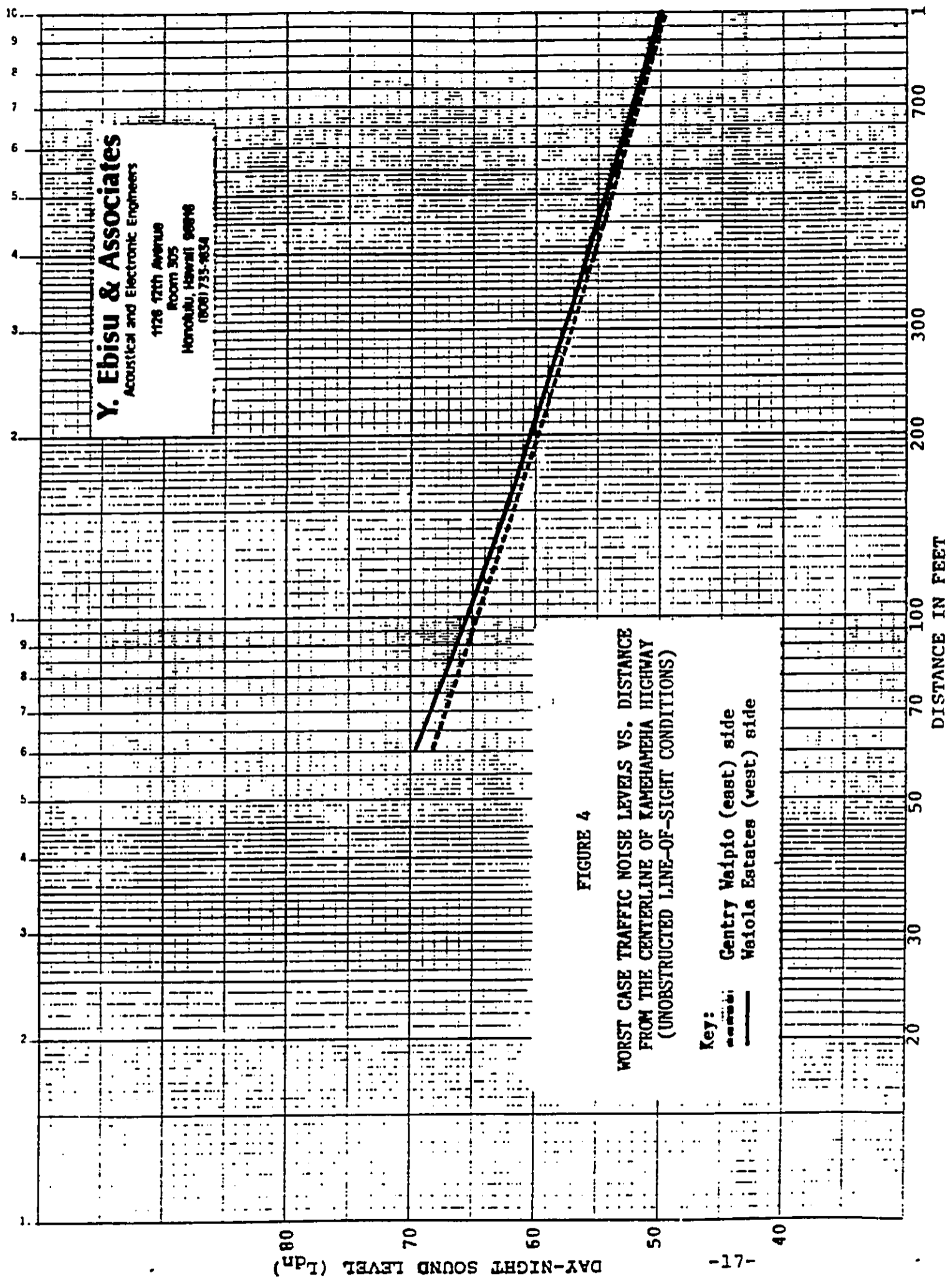
The widening of Kamehameha Highway in the project area is anticipated to result in a displacement of the current highway centerline toward the existing Gentry Waipio residences by approximately 25 FT. Additionally, the widening project is anticipated to increase the capacity of the highway, which will probably result in additional traffic noise increases above those generated by the Waiola Estates Subdivision in 1990. In order to assess the possible noise impacts beyond 1990 and attributable to the widening project along Kamehameha Highway, a worst case peak hour traffic volume of 5,000 VPH was assumed along Kamehameha Highway, and traffic noise levels under this condition were computed on the Gentry Waipio and Waiola Estates sides of the highway. A setback distance of 60 FT from the centerline of the widened highway was assumed for the first row of residences at Waiola Estates. Setback distances of 70 and 150 FT were assumed for the first row of Gentry Waipio residences south and north of Waipio Uka Street, respectively. FIGURE 4 and TABLE 6 depict the results of these calculations, and their relationship to existing FHA/HUD and FHWA

TABLE 5
PROJECT AND NON-PROJECT TRAFFIC NOISE INCREASES

LOCATION	EXISTING LDN	FUTURE LDN	PROJECT INCREASE
Kam. Hwy. North of Ka Uka	66.2	67.4	0.7
Kam. Hwy. South of Ka Uka	66.0	68.0	1.2
Kam. Hwy. S. of Waipio Uka	68.1	68.5	0.4
Kam. Hwy. @ Waipahu St.	68.8	69.1	0.3
Ka Uka Boulevard	58.5	62.2	1.8

Note: Ldn values calculated at 50 FT from roadways' centerlines.





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FIGURE 4
WORST CASE TRAFFIC NOISE LEVELS VS. DISTANCE
FROM THE CENTERLINE OF KAMEHAMEHA HIGHWAY
(UNOBSTRUCTED LINE-OF-SIGHT CONDITIONS)

Key:
 - - - - - Gentry Waipio (east) side
 _____ Waiola Estates (west) side

DAY-NIGHT SOUND LEVEL (L_{dn})

TABLE 6
 PREDICTED TRAFFIC NOISE LEVELS UNDER WORST CASE CONDITIONS
 (FOUR LANES, KAMEHAMEHA HIGHWAY)

GENTRY WAIPIO SIDE: Setback Distance (FT)	PM PEAK RR		Ldn	Above FRA?
	Leq(h)	Above FHWA?		
60	68.8	None	68.2	None
70	67.3	Yes	66.8	Yes
80	66.1	No	65.7	Yes
100	64.2	No	64.1	No
150	61.2	No	61.4	No

WAIOLA ESTATES SIDE: Setback Distance (FT)	AM PEAK RR		Ldn	Above FRA?
	Leq(h)	Above FHWA?		
60	68.8	Yes	69.5	Yes
70	67.3	Yes	68.0	Yes
80	66.1	No	66.8	Yes
100	64.2	No	65.0	No
150	61.2	No	62.1	No

Assumptions:

1. Average Vehicle Speed: 35 MPH.
2. Traffic Mix: 97% Autos; 2% Medium Trucks; 1% Heavy Trucks and Buses.
3. Peak Hour Flows: 1,730 VPH/lane in peak direction and 771 VPH/lane in non-peak direction.
4. Leq(PM peak hr) - Ldn Differences: -1.1 dB northbound and +4.1 dB southbound.
5. Sound attenuation benefits of roadway cut and other topographic features not included.

standards and noise mitigation criteria. Due to their relatively small setback distance, all front row houses of the proposed Waiola Estates Subdivision are predicted to be exposed to traffic noise levels above FHWA and FRA/HUD standards under worst case conditions. Due to their large setback distance of 150 FT, all homes of Gentry Waipio north of Waipio Uka Street will not be exposed to traffic noise above the federal standards. Existing homes of Gentry Waipio south of Waipio Uka Street, which are within 90 FT of the displaced centerline of Kamehameha Highway, are predicted to exceed FRA/HUD standards, and those within 70 FT of the new centerline are predicted to exceed both FHWA and FRA/HUD standards.

Along the internal circulation roadways of the proposed subdivision, traffic noise levels should not exceed FHWA or FRA/HUD criteria at 28 FT setback distance (from the roadway centerline) for peak hour volumes less than 750 VPH and average speeds of 35 MPH or less. Lot setback distances of approximately 28 FT are planned along the Waipio Uka Street extension, and lot setback distances of approximately 40 FT are planned along the Ka Uka Boulevard extension. Because peak hour, project traffic volumes are not expected to exceed 750 VPH on either of the two major roadways through the proposed subdivision, traffic noise levels along the internal roadways of the project should be in the "Moderate Exposure, Acceptable" noise exposure category.

VI. DISCUSSION OF FUTURE NOISE IMPACTS

Future traffic noise levels are expected to be in the "Significant Exposure, Normally Unacceptable" noise exposure category along the first row of Waiola Estates house lots which front Kamehameha Highway. This conclusion is valid for both the existing and future Right-of-Way widths of Kamehameha Highway. However, the construction of a 6 FT high sound attenuating wall is planned along the highway Right-of-Way as a noise mitigation measure. This mitigation measure is capable of reducing traffic noise levels by approximately 6 Ldn units, and should be sufficient to meet FHWA and FHA/RUD standards at all single story homes within 60 FT of the centerline of the highway. If multi-story homes are constructed within 100 FT of the centerline of the highway, a 6 FT high wall will not be adequate, and other mitigation measures, such as air conditioning or the use of sound attenuating windows, will be required to meet federal standards.

Along Kamehameha Highway, at the existing Crestview and Seaview Village Subdivisions, unavoidable traffic noise impacts are predicted to occur in the form of increased traffic noise. Traffic noise levels at existing residences are predicted to increase from approximately 66 Ldn to 68 Ldn. Project plus non-project traffic volume increases are predicted to cause a 0.3 Ldn increase, and the relocation of the highway centerline toward Crestview (during a separate highway widening project associated with the Waialeale Development) is expected to cause an additional 1.5 Ldn increase. Traffic noise increases associated with the Waiola Estates Subdivision proposal are approximately 14% of the total increases predicted along this section of Kamehameha Highway by 1990, and following the planned widening project.

At the existing Gentry Waipio residences south of Waipio Uka Street, traffic noise impacts associated with the widening of Kamehameha Highway, the additional traffic generated by Waiola Estates residences, the additional traffic generated by non-project sources, and the reflection of traffic noise from the planned

wall fronting the Waiola Estates Subdivision are anticipated. Total traffic noise at those residences which front Kamehameha Highway are predicted to be approximately 69 Ldn, with the reflections from the Waiola Estates wall included, but without consideration of the possible sound attenuation benefits of the roadway cut in that area. A more detailed evaluation of the traffic noise levels in this area should be performed after the geometry of the new roadway cut is established.

Because of the large setback distance between Kamehameha Highway and Gentry Waipio residences north of Waipio Uka Street, future traffic noise is predicted to be below FHWA and FHA/RUD noise mitigation thresholds, and remain in the "Moderate Exposure, Acceptable" noise category in the Gentry Waipio area. A 1.5 Ldn increase in traffic noise levels attributable to the planned construction of a 6 FT high sound attenuating wall along the Waiola Estates Right-of-Way across the highway was assumed.

Along Kamehameha Highway and north of the project toward Hilliani Town, project related traffic noise impacts are predicted to be minimal and insignificant. Predicted increases in traffic noise levels attributable to project traffic were calculated to be less than 1 Ldn.

Project and non-project traffic entering and exiting H-2 Freeway via the new access ramps are predicted to use Ka Uka Boulevard between the freeway and Kamehameha Highway. Traffic noise level increases along Ka Uka Boulevard by the 1990 period are predicted to be moderate, and should not exceed federal standards at existing residences fronting the boulevard. Traffic noise impacts along the freeway are expected to be minimal because the major portion of the lands adjoining the freeway south of the planned access ramps are currently undeveloped, or are shielded from freeway noise by topographic features.

VII. POSSIBLE NOISE MITIGATION MEASURES

The results of this noise study indicate that sufficient setback distances exist to noise sensitive developments in the Gentry Waipio area between Waipio Uka Street and Ka Uka Boulevard, such that noise mitigation measures are not required for these existing Gentry Waipio residences. However, sufficient setback distances do not exist in the Gentryview and Seaview Subdivision areas toward Waipahu Street, and will probably not exist following the planned widening of Kamehameha Highway in that area. A minimum wall height of 6 FT may be required along the new highway Right-of-Way to reduce future traffic noise levels below 65 Ldn. A few (approximately four) two story homes in the area will not be entirely shielded by a 6 FT high wall, and the use of other mitigation measures, such as air conditioning affected rooms or installation of window sound attenuators, may be employed.

A 6 FT high wall is being planned for mitigating traffic noise at future Waiole Estates homes fronting Kamehameha Highway. Additionally, multi-story homes should be set back at least 100 FT from the new highway centerline so as not to preclude FHA/RUD assistance. In order to minimize traffic noise reflections toward the existing Gentry Waipio residences across the highway, the sound absorption or scattering characteristics of the wall should be maximized. The use of a lava rock wall, the avoidance of painting or sealing the pores (on the side facing the highway) of a concrete block wall, the use of specially constructed, sound absorbent concrete blocks, and the use of foliage to visually screen the wall from the highway are possible methods of increasing the sound absorption or scattering characteristics of the wall. Similar considerations may be applied to any sound attenuating wall constructed in the Gentry Waipio area south of Waipio Uka Street.

APPENDIX A. REFERENCES

- (1) Barry, T. and J. Reagen; "FHVA Highway Traffic Noise Prediction Model;" FHVA-RD-77-108, Federal Highway Administration; Washington, D.C., December 1978.
- (2) Traffic Impact Report for the Proposed Waiole Estates Subdivision; Aonin, Tsutsumi & Associates, Inc.; April, 1986.
- (3) April 29-30, 1985, Vehicle Type Classification, Station 13-V, Kamehameha Highway at Waipio Uka Street; Southeast Leg; State Department of Transportation.
- (4) April 29-30, 1985 24-Hour Traffic Counts, Station C-13-K, Kamehameha Highway at Waipahu Street; State Department of Transportation.
- (5) May 9-10, 1985 24-Hour Traffic Counts, Station C-13-J, Kamehameha Highway at Kipapa Stream; State Department of Transportation.
- (6) April 29-30, 1985 24-Hour Traffic Counts, Station 13-V, Kamehameha Highway at Waipio Uka Street; State Department of Transportation.
- (7) "Guidelines for Considering Noise in Land Use Planning and Control," Federal Interagency Committee on Urban Noise, June 1980.
- (8) "Environmental Criteria and Standards, Noise Abatement and Control, 24 CFR, Part 51, Subpart B," U.S. Department of Housing and Urban Development, July 12, 1979.
- (9) "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," Environmental Protection Agency, EPA 550/9-74-004, March 1974.
- (10) American National Standard, "Sound Level Descriptors for Determination of Compatible Land Use," ANSI S3.23-1980, Acoustical Society of America.



TEXT

B. EXCERPTS FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE

Descriptor Symbol Usage
The recommended symbols for the commonly used acoustic descriptors based on A-weighting are contained in Table 1. As most acoustic criteria and standards used by EPA are derived from the A-weighted sound level, almost all descriptor symbols using pounds is contained in Table 1.

Since acoustic measurement includes weighting networks other than "A" and measurements other than pressure, an expansion of Table 1 was developed (Table II). The group adopted the ANSI descriptor-symbol scheme which is structured into three stages. The first stage indicates that the descriptor is a level (i.e., based upon the logarithm of a ratio), the second stage indicates the type of quantity (power, pressure, or sound exposure), and the third stage indicates the weighting network (A, B, C, D, E, ...). If no weighting network is specified, "A" weighting is understood. Exceptions are the A-weighted peak level and the A-weighted peak sound level which require that the "A" be specified. For convenience in those situations in which an A-weighted descriptor is being compared to that of another weighting, the alternative column in Table II permits the inclusion of the "A". For example, a report on blast noise might wish to contrast the L_{dn} with the L_{dn}.

Although not included in the tables, it is also recommended that "L_{pn}" and "L_{EPN}" be used as symbols for perceived noise levels and effective perceived noise level, respectively.

It is recommended that in their initial use within a report, such terms be written in full, rather than abbreviated. An example of preferred usage is as follows:
The A-weighted sound level (LA) was measured before and after the installation of acoustic treatment. The measured LA values were 85 and 75 dB respectively.

Descriptor Nomenclature
With regard to energy averaging over time, the term "average" should be discouraged in favor of the

term "equivalent". Hence, L_{eq} is designated the "equivalent sound level". For L_{pn} and L_{EPN}, "equivalent" need not be stated since the context of day, night, or day-night averaging is by definition understood. Therefore, the designations are "day sound level", "night sound level", and "day-night sound level", respectively.

The peak sound level is the logarithmic ratio of peak sound pressure in a reference pressure and not the maximum root mean square pressure. While the latter is the maximum sound pressure level, it is often incorrectly labeled peak. In that sound level meters have "peak" settings, this distinction is most important.

"Background ambient" should be used in lieu of "background", "ambient", "residual", or "indigenous" to describe the level characteristic of the general background noise due to the contribution of many unidentifiable noise sources near and far.

With regard to units, it is recommended that the unit decibel (abbreviated dB) be used without modification. Hence, dBA, dBB, dBC, and dBD are not to be used. Examples of this preferred usage are: the Perceived Noise Level (L_{PN}) was found to be 75 dB; L_{PN} = 75 dB. This decision was based upon the recommendation of the National Bureau of Standards, and the policies of ANSI and the Acoustical Society of America, all of which disallow any modification of the unit except for prefixes indicating its multiples or submultiples (e.g., deci).

Noise Impact

In discussing noise impact, it is recommended that "Level Weighted Population" (LWP) replace "Equivalent Noise Impact" (ENI). The term "Relative Change of Impact" (RCI) shall be used for comparing the relative differences in LWP between two alternatives.

Further, when appropriate, "Noise Impact Index" (NII) and "Population Weighted Loss of Hearing" (PLH) shall be used consistent with CHABA Working Group by Report Guidelines for Preparing Environmental Impact Statements (1977).

TEXT

TABLE II: Recommended Descriptor List

TERM	A-WEIGHTING	ALTERNATIVE (1) A-WEIGHTING	OTHER WEIGHTING	(2) UNWEIGHTED
1. Sound (Pressure) Level	L _A	L _{pA}	L _B , L _{pB}	L _p
2. Sound Power Level	L _{WA}	L _{pA}	L _{WB}	L _w
3. Max. Sound Level	L _{max}	L _{max}	L _{max}	L _{max}
4. Peak Sound (Pressure) Level	L _{pk}	L _{pk}	L _{pk}	L _{pk}
5. Level Exceeded as of the time	L _x	L _x	L _x	L _x
6. Equivalent Sound Level	L _{eq}	L _{eq}	L _{eq}	L _{eq}
7. Equivalent Sound Level Over Time (t)	L _{eq(t)}	L _{eq(t)}	L _{eq(t)}	L _{eq(t)}
8. Day Sound Level	L _d	L _d	L _d	L _d
9. Night Sound Level	L _n	L _n	L _n	L _n
10. Day-Night Sound Level	L _{dn}	L _{dn}	L _{dn}	L _{dn}
11. Yearly Day-Night Sound Level	L _{dn(y)}	L _{dn(y)}	L _{dn(y)}	L _{dn(y)}
12. Sound Exposure Level	L _S	L _S	L _S	L _S
13. Energy Average value over (non-time domain) set of observations	L _{eq(e)}	L _{eq(e)}	L _{eq(e)}	L _{eq(e)}
14. Level exceeded as of the total set of (non-time domain) observations	L _{s(e)}	L _{s(e)}	L _{s(e)}	L _{s(e)}
15. Average L _x value	L _x	L _x	L _x	L _x

(1) "Alternative" symbols may be used to assure clarity or consistency.

(2) Only B-weighting shown. Applies also to C, D, E, ... weighting.

(3) The term "pressure" is used only for the unweighted level.

(4) Unless otherwise specified, time is in hours (e.g., the hourly equivalent level is L_{eq(1)}). Time may be specified in non-quantitative terms (e.g., could be specified as L_{eq(WASH)} to mean the washing cycle noise for a washing machine).

HOOR	SPEED (MPH)	TOT VPH	AUTOS/HR	MT/HR	RT/HR	***** L2Q(R) IN @ 50' RT ALL VEH	***** L2Q(R) IN @ 50' RT ALL VEH	***** L2Q(R) IN @ 50' RT ALL VEH	***** L2Q(R) IN @ 50' RT ALL VEH	***** L2Q(R) IN @ 50' RT ALL VEH
0000-0100	40	225	218	4.5	2.5	54.2	48.7	51.4	56.8	57.3
0100-0200	40	122	118	2.4	1.6	51.5	46.0	49.4	54.3	54.3
0200-0300	40	78	76	1.6	0.4	49.6	44.1	43.9	51.5	53.3
0300-0400	40	64	62	1.3	0.7	48.7	43.2	46.0	51.3	51.7
0400-0500	40	165	160	3.3	1.7	52.8	47.3	49.7	55.3	56.5
0500-0600	40	799	775	16.0	8.0	59.7	54.2	56.5	64.2	64.2
0600-0700	40	1,123	1,089	22.5	11.2	61.1	55.7	57.9	63.6	66.1
0700-0800	40	1,340	1,300	26.8	13.2	61.9	56.4	58.6	66.4	66.5
0800-0900	40	957	928	19.1	9.9	60.4	55.0	57.4	60.9	64.7
0900-1000	40	844	819	16.9	8.1	59.9	54.4	56.5	59.0	64.7
1000-1100	40	866	840	17.3	8.7	60.0	54.5	56.8	58.5	64.7
1100-1200	40	829	804	16.6	8.4	59.8	54.4	56.7	58.5	64.2
1200-1300	40	905	878	18.1	8.9	60.2	54.7	56.9	58.7	64.4
1300-1400	40	981	952	19.6	9.4	60.6	55.1	57.2	58.5	64.2
1400-1500	40	1,119	1,085	22.4	11.6	61.1	55.7	58.1	58.7	64.4
1500-1600	40	1,379	1,338	27.6	13.4	62.0	56.6	58.7	59.6	65.3
1600-1700	40	1,489	1,444	29.8	15.2	62.4	56.9	59.3	60.5	66.2
1700-1800	40	1,472	1,428	29.4	14.6	62.3	56.9	59.1	60.8	66.5
1800-1900	40	1,329	1,289	26.6	13.4	61.9	57.1	59.5	61.0	66.7
1900-2000	40	1,067	1,035	21.3	10.7	60.9	55.5	57.7	60.3	65.9
2000-2100	40	838	813	16.8	8.2	59.9	54.4	56.6	59.1	64.8
2100-2200	40	722	700	14.4	7.6	59.2	53.8	56.2	57.2	63.4
2200-2300	40	474	460	9.5	4.5	57.4	51.9	54.0	52.8	62.9
2300-2400	40	298	289	6.0	3.0	55.4	49.9	52.3	55.1	60.7
										58.4

KAMEHAMEHA HWY @ KIPAPA STREAM, STA C-13-J (5/9-10/85)

TOTAL VPD: 19,485 LWN @ 50 FT: 63.8 58.3 60.6 66.3

KAMEHAMEHA HIGHWAY AT WAIPIO UKA STREET: SOUTHEAST LEG: STA 13-Y, (4/29-30/85)

TOTAL VPD: 28,695 LWN @ 50 FT: 65.5 60.0 62.3 68.0

C. WORKSHEET #1

C (CONTINUED). WORKSHEET #2

HOUR	SPEED (MPH)	TOT VPH	AUTOS/HR	MT/HR	HT/HR	LQX(H) IN DB @ 50'		ALL VEH	
						AUTO	MT		
0000-0100	40	303	294	6.1	2.9	55.5	50.0	52.2	57.9
0100-0200	40	156	151	3.1	1.9	52.6	47.1	50.2	55.3
0200-0300	40	119	115	2.4	1.6	51.4	45.9	49.6	54.3
0300-0400	40	91	88	1.8	1.0	50.2	44.8	47.5	52.8
0400-0500	40	241	234	4.8	2.2	54.5	49.0	50.9	56.8
0500-0600	40	1,477	1,433	29.5	14.5	62.3	56.9	59.1	64.8
0600-0700	40	2,277	2,209	45.5	22.5	64.2	58.7	61.0	66.7
0700-0800	40	2,481	2,407	49.6	24.4	64.6	59.1	61.4	67.0
0800-0900	40	1,633	1,584	32.7	16.3	62.8	57.3	59.6	65.3
0900-1000	40	1,451	1,407	29.0	15.0	62.3	56.8	59.3	64.8
1000-1100	40	1,418	1,375	28.4	14.6	62.2	56.7	59.2	64.7
1100-1200	40	1,490	1,445	29.8	15.2	62.4	56.9	59.3	64.9
1200-1300	40	1,392	1,350	27.8	14.2	62.1	56.6	59.0	64.6
1300-1400	40	1,458	1,414	29.2	14.8	62.3	56.8	59.2	64.8
1400-1500	40	1,818	1,763	36.4	18.6	63.2	57.8	60.2	65.7
1500-1600	40	2,263	2,195	45.3	22.7	64.2	58.7	61.1	66.7
1600-1700	40	2,543	2,467	50.9	25.1	64.7	59.2	61.5	67.2
1700-1800	40	2,633	2,554	52.7	26.3	64.8	59.4	61.7	67.3
1800-1900	40	2,136	2,072	42.7	21.3	63.9	58.2	60.5	66.3
1900-2000	40	1,716	1,665	34.3	16.7	63.0	57.5	59.7	65.4
2000-2100	40	1,282	1,244	25.6	12.4	61.7	56.3	58.4	64.2
2100-2200	40	1,093	1,060	21.9	11.1	61.0	55.6	58.0	63.5
2200-2300	40	653	633	13.1	6.9	58.8	53.3	55.9	61.3
2300-2400	40	405	393	8.1	3.9	56.7	51.2	53.4	59.1

KAMENNERIA HWY @ WAIPARU ST., STA C-13-K (4/29-30/85)
TOTAL VPD: 32,529 LDM @ 50 FT: 66.1 60.6 62.9 68.6

C (CONTINUED). WORKSHEET #3

HOUR	SPEED (MPH)	VPH	AUTOS	MT	HT	LQX(H) IN DB @ 50'		ALL VEH	
						AUTO	MT		
0000-0100	40	226	97	2	1	54.2	48.7	51.0	56.6
0100-0200	40	108	97	2	1	51.0	45.5	47.8	53.4
0200-0300	40	93	97	2	1	50.3	44.9	47.1	52.8
0300-0400	40	43	97	2	1	47.0	41.5	43.8	49.4
0400-0500	40	64	97	2	1	48.7	43.2	45.5	51.2
0500-0600	40	192	97	2	1	53.5	48.0	50.3	55.9
0600-0700	40	567	97	2	1	58.2	52.7	55.0	60.6
0700-0800	40	631	97	2	1	58.6	53.2	55.4	61.1
0800-0900	40	561	97	2	1	58.1	52.7	54.9	60.6
0900-1000	40	507	97	2	1	57.7	52.2	54.5	60.1
1000-1100	40	630	97	2	1	58.6	53.2	55.4	61.1
1100-1200	40	733	97	2	1	59.3	53.8	56.1	61.8
1200-1300	40	754	97	2	1	59.4	53.9	56.2	61.9
1300-1400	40	768	97	2	1	59.5	54.0	56.3	62.0
1400-1500	40	937	97	2	1	60.4	54.9	57.2	62.8
1500-1600	40	1,350	97	2	1	61.9	56.5	58.7	64.4
1600-1700	40	1,769	97	2	1	63.1	57.6	59.9	65.6
1700-1800	40	1,821	97	2	1	63.2	57.8	60.0	65.7
1800-1900	40	1,382	97	2	1	62.0	56.6	58.8	64.5
1900-2000	40	1,033	97	2	1	60.8	55.3	57.6	63.2
2000-2100	40	848	97	2	1	59.9	54.5	56.7	62.4
2100-2200	40	723	97	2	1	59.2	53.8	56.0	61.7
2200-2300	40	397	97	2	1	56.6	51.2	53.4	59.1
2300-2400	40	281	97	2	1	55.1	49.7	51.9	57.6

KAMENNERIA HIGHWAY AT WAIPARU STREET, STA C-13-K (C), MBOUND: 4/29-30/85.
TOTAL VPD: 16,418 LDM @ 50 FT: 62.2 56.7 59.0 64.6

C (CONTINUED). WORKSHEET #4

HOURLY (MFR)	VFR	% AUTOS	% MT	% HT	AUTO	MT	HT	ALL VFR
0000-0100	40	77	97	2	1	49.5	44.0	46.3
0100-0200	40	48	97	2	1	47.5	42.0	44.2
0200-0300	40	26	97	2	1	44.8	39.3	41.6
0300-0400	40	48	97	2	1	47.5	42.0	44.2
0400-0500	40	177	97	2	1	53.1	47.7	49.9
0500-0600	40	1,285	97	2	1	61.7	56.3	58.5
0600-0700	40	1,710	97	2	1	63.0	57.5	59.8
0700-0800	40	1,850	97	2	1	63.3	57.8	60.1
0800-0900	40	1,072	97	2	1	60.9	55.5	57.7
0900-1000	40	944	97	2	1	60.4	54.9	57.2
1000-1100	40	788	97	2	1	59.6	54.1	56.4
1100-1200	40	757	97	2	1	59.4	54.0	56.2
1200-1300	40	638	97	2	1	58.7	53.2	55.5
1300-1400	40	690	97	2	1	59.0	53.6	55.8
1400-1500	40	881	97	2	1	60.1	54.6	56.9
1500-1600	40	913	97	2	1	60.2	54.8	57.0
1600-1700	40	774	97	2	1	59.5	54.1	56.3
1700-1800	40	812	97	2	1	59.7	54.3	56.5
1800-1900	40	754	97	2	1	59.4	53.9	56.2
1900-2000	40	683	97	2	1	59.0	53.5	55.8
2000-2100	40	434	97	2	1	57.0	51.5	53.8
2100-2200	40	370	97	2	1	56.3	50.9	53.1
2200-2300	40	256	97	2	1	54.7	49.3	51.5
2300-2400	40	124	97	2	1	51.6	46.1	48.4

KANEHAMEHA HIGHWAY AT WAIPIRU STREET, STA C-13-I (D), SBOUND; 4/29-30/85

TOTAL VPD: 16,111 LJM @ 50 FT: 63.8 58.4 60.6 66.3

C (CONTINUED). WORKSHEET #5

LANE	SPEED (MPH)	VPH	% AUTOS	% MT	% HT	AUTO	HT	LDN @	HT	ALL VEH
GENTRY WAIPIO SIDE:										
NBound1	35	1,342	97	2	1	62.6	57.4	60.2	60.2	65.4
NBound2	35	1,342	97	2	1	60.6	55.3	58.1	58.1	63.3
None	20	1	97	2	1	21.7	17.5	22.5	22.5	25.8
						64.7	59.5	62.3	62.3	67.4
										SUBTOTAL:
SEED	35	5,003	97	2	1	64.2	59.0	61.8	61.8	67.0
SBound1	35	1,982	97	2	1	54.9	49.7	52.5	52.5	57.6
SBound2	35	1,982	97	2	1	54.3	49.1	51.9	51.9	57.1
None	20	1	97	2	1	13.6	9.4	14.4	14.4	17.7
						57.6	52.4	55.2	55.2	60.4
						65.5	60.3	63.1	63.1	68.2
										SUBTOTAL:
										GENTRY TOT:
WAIOLA ESTATES SIDE:										
SBound1	35	1,982	97	2	1	64.3	59.1	61.9	61.9	67.0
SBound2	35	1,982	97	2	1	62.2	57.0	59.8	59.8	65.0
None	20	1	97	2	1	21.7	17.5	22.5	22.5	25.8
						66.4	61.2	64.0	64.0	69.1
										SUBTOTAL:
										WAIOLA TOT:
NBound1	35	1,342	97	2	1	53.2	48.0	50.8	50.8	55.9
NBound2	35	1,342	97	2	1	52.7	47.4	50.2	50.2	55.4
None	20	1	97	2	1	13.6	9.4	14.4	14.4	17.7
						55.9	50.7	53.5	53.5	58.7
						66.8	61.5	64.4	64.4	69.5
										SUBTOTAL:
										WAIOLA TOT:

KAMEHAMEHA HIGHWAY, LEVEL VS. DIST.

WORST CASE TRAFFIC; WITH WIDENING

60 FT FROM HWY C.L.

C (CONTINUED). WORKSHEET #6

LANE	SPEED (MPH)	VPH	% AUTOS	% MT	% HT	***** LDN @			100 ALL VEH
						AUTO	MT	HT	
GENTRY WAIPIO SIDE:									
NBound1	35	1,342	97	2	1	57.3	52.1	54.9	60.1
NBound2	35	1,342	97	2	1	56.3	51.1	53.9	59.1
None	20	1	97	2	1	16.7	12.4	17.5	20.8
						59.9	54.6	57.5	62.6
									SUBTOTAL:
SEED	35	5,003	97	2	1	60.9	55.7	58.5	63.6
SBound1	35	1,982	97	2	1	53.2	48.0	50.8	55.9
SBound2	35	1,982	97	2	1	52.8	47.5	50.4	55.5
None	20	1	97	2	1	11.7	7.5	12.5	15.8
						56.0	50.8	53.6	58.7
						61.4	56.1	58.9	64.1
									SUBTOTAL: GENTRY TOT:
WAIOLA ESTATES SIDE:									
SBound1	35	1,982	97	2	1	59.0	53.8	56.6	61.8
SBound2	35	1,982	97	2	1	58.0	52.8	55.6	60.8
None	20	1	97	2	1	16.7	12.4	17.5	20.8
						61.6	56.3	59.1	64.3
									SUBTOTAL: WAIOLA TOT:
NBound1	35	1,342	97	2	1	51.5	46.3	49.1	54.2
NBound2	35	1,342	97	2	1	51.1	45.9	48.7	53.8
None	20	1	97	2	1	11.7	7.5	12.5	15.8
						54.3	49.1	51.9	57.0
						62.3	57.1	59.9	65.0

KAMEHAMEHA HIGHWAY, LEVEL VS. DIST.

WORST CASE TRAFFIC; WITH WIDENING

100 FT FROM HWY C.L.

C (CONTINUED). WORKSHEET #7

LANE	SPEED (MPH)	VPH	% AUTOS	% HT	% HT	AUTO	MT	LDM @	HT	150 ALL VEH
GENTRY WAIPIO SIDE:										
NBound1	35	1,342	97	2	1	53.9	48.7	51.5	51.5	56.6
NBound2	35	1,342	97	2	1	53.3	48.1	50.9	50.9	56.0
None	20	1	97	2	1	13.3	9.0	14.1	14.1	17.4
						56.6	51.4	54.2	54.2	59.4
										SUBTOTAL:
SEED	35	5,003	97	2	1	58.3	53.0	55.8	55.8	61.0
SBound1	35	1,982	97	2	1	51.6	46.3	49.2	49.2	54.3
SBound2	35	1,982	97	2	1	51.3	46.0	48.8	48.8	54.0
None	20	1	97	2	1	9.9	5.7	10.7	10.7	14.0
						54.4	49.2	52.0	52.0	57.2
						58.7	53.4	56.3	56.3	61.4
										SUBTOTAL:
										GENTRY TOT:
WAIOLA ESTATES SIDE:										
SBound1	35	1,982	97	2	1	55.6	50.4	53.2	53.2	58.3
SBound2	35	1,982	97	2	1	55.0	49.8	52.6	52.6	57.7
None	20	1	97	2	1	13.3	9.0	14.1	14.1	17.4
						58.3	53.1	55.9	55.9	61.0
										SUBTOTAL:
NBound1	35	1,342	97	2	1	49.9	44.7	47.5	47.5	52.6
NBound2	35	1,342	97	2	1	49.6	44.3	47.1	47.1	52.3
None	20	1	97	2	1	9.9	5.7	10.7	10.7	14.0
						52.7	47.5	50.3	50.3	55.5
						59.4	54.1	57.0	57.0	62.1
										SUBTOTAL:
										WAIOLA TOT:

KAMEHAMEHA HIGHWAY, LEVEL VS. DIST.

WORST CASE TRAFFIC; WITH WIDENING

150 FT FROM HWY C.L.

C (CONTINUED). WORKSHEET #8

LANE	SPEED (MPH)	VPH	% AUTOS	% MT	% HT	*** HOURLY LEQ IN DB @		60 ALL VEH	
						AUTO MT	HT		
GENTRY WAIPIO SIDE:									
NBound1	35	1,730	97	2	1	63.7	58.5	61.3	66.5
NBound2	35	1,730	97	2	1	61.7	56.4	59.2	64.4
None	20	1	97	2	1	21.7	17.5	22.5	25.8
						65.8	60.6	63.4	68.5
						SUBTOTAL:			
SEED	35	5,003	97	2	1	64.2	59.0	61.8	67.0
SBound1	35	771	97	2	1	50.8	45.6	48.4	53.5
SBound2	35	771	97	2	1	50.2	45.0	47.8	53.0
None	20	1	97	2	1	13.6	9.4	14.4	17.7
						53.5	48.3	51.1	56.3
						66.1	60.8	63.6	68.8
						SUBTOTAL:			
						GENTRY TOT:			
WAIOLA ESTATES SIDE:									
SBound1	35	771	97	2	1	60.2	55.0	57.8	62.9
SBound2	35	771	97	2	1	58.1	52.9	55.7	60.9
None	20	1	97	2	1	21.7	17.5	22.5	25.8
						62.3	57.1	59.9	65.0
						SUBTOTAL:			
NBound1	35	1,730	97	2	1	54.3	49.1	51.9	57.0
NBound2	35	1,730	97	2	1	53.8	48.5	51.3	56.5
None	20	1	97	2	1	13.6	9.4	14.4	17.7
						57.0	51.8	54.6	59.8
						63.4	58.2	61.0	66.2
						SUBTOTAL:			
						WAIOLA TOT:			

KAMEHAMEHA HIGHWAY, LEVEL VS. DIST.; PM PEAK HOUR.

WORST CASE TRAFFIC; WITH WIDENING

60 FT FROM HWY C.L.

C (CONTINUED). WORKSHEET #9

LANE	SPEED (MPH)	VPH	% AUTOS	% MT	% HT	AUTO	HOURLY LEQ IN DB @ HT	100 ALL VEH
GENTRY WAIPIO SIDE:								
NBound1	35	1,730	97	2	1	58.4	53.2	61.2
NBound2	35	1,730	97	2	1	57.4	52.2	60.2
None	20	1	97	2	1	16.7	12.4	20.8
						61.0	55.7	63.7
SEED								
SBound1	35	5,003	97	2	1	60.9	55.7	63.6
SBound2	35	771	97	2	1	49.1	43.9	51.8
None	20	1	97	2	1	11.7	7.5	15.8
						51.9	46.7	54.6
						61.5	56.3	64.2
WAIOLA ESTATES SIDE:								
SBound1	35	771	97	2	1	54.9	49.7	57.7
SBound2	35	771	97	2	1	53.9	48.7	56.7
None	20	1	97	2	1	16.7	12.4	20.8
						57.5	52.2	60.2
WAIOLA TOT:								
KAMEHAMEHA HIGHWAY, LEVEL VS. DIST.: PM PEAK HOUR.								
NBound1	35	1,730	97	2	1	52.6	47.4	55.3
NBound2	35	1,730	97	2	1	52.2	47.0	54.9
None	20	1	97	2	1	11.7	7.5	15.8
						55.4	50.2	58.1
						59.6	54.3	62.3
WAIOLA TOT:								

C (CONTINUED). WORKSHEET #10

APPENDIX H

CONSULTING REPORT
FOR
DEPARTMENT OF HOUSING
& COMMUNITY DEVELOPMENT
City and County of Honolulu

Prepared by
CHANEY, BROOKS & COMPANY
&
JOHN ZAPOTOCKY
May 8, 1986

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MAIOLA ESTATES CONSULTING REPORT

EXECUTIVE SUMMARY

The Administration of the City and County of Honolulu has proposed a housing project for families with incomes too great to qualify for subsidized housing programs, and insufficient to qualify for market price housing to be built on 269 acres in Waipio, known as Maiola. The price for a fee simple house and lot package will range from \$65,000 to \$95,000. The goal is to provide affordable housing to families without competing with the private sector.

This report sets forth the Consultants' findings regarding matters set forth in the Scope of Work attached as Exhibit A. The Consultants' findings are as follows.

The target group or persons that are most likely to be interested in Maiola are those who are considered the "Gap Group", which by the Department of Housing and Urban Development definition, is made up of persons with incomes ranging from \$25,050 to \$35,600, based on a family of four.

The employment pattern of the Gap Group cuts across the spectrum of jobs on Oahu in a diverse range of businesses. The geographic place of employment is equally diverse. The primary place of residence of Gap Group families is concentrated in the Primary Urban Center.

People would prefer to stay in their existing neighborhoods if a home ownership program is offered, however, the selection process may preclude such a match up at Maiola.

It is projected that, given the opportunity to purchase moderately priced homes outside of the Primary Urban Center, Gap Group families like those somewhat better off families the next rung or two up the economic ladder, would flock to the suburbs. The Gap Group, like other suburbanites, will endure excessive commute time and expense in order to own their own home, while continuing to maintain employment in traditional geographic locations in Greater Honolulu.

It is estimated that household size will average 3.8 to 4.0 persons per dwelling unit overall.

The Consultants conclude from examination of other affordable housing projects, that there is a great propensity to apply for housing closest to existing residential areas and/or places of work. However, residents of Maiola may not come from the neighborhood or district based on the proposed selection technique.

An examination of new single family dwellings in projects and properties available or recently sold through the Honolulu Board of Realtors' Multiple Listing Service, or advertised for sale but not listed with the Multiple Listing Service, indicates that only a very small percentage of the target market could qualify for market priced single family dwellings. As a crosscheck, a similar analysis was conducted of condominium apartment cooperatives and townhouses, and given the goal of the project to provide affordable homes for families, one can also conclude that Maiola will not compete with the private sector condominiums to any significant degree. That competition might exist in the multi-family area, depends to a large degree on the standard of housing one seeks to satisfy, i.e. a family of four might qualify for a one bedroom condominium at market prices, but such an apartment would not be suitable to their living needs and would constitute overcrowding by Federal and City standards.

Generally speaking, suitable affordable housing is out of reach of the Gap Group in the Primary Urban Center.

Affordability has changed dramatically as few, if any, predicted the dramatic change in interest rates which have occurred in 1986 with mortgage rates in the 9% and 10% range. A substantial number of persons have become qualified, or more qualified to purchase a house. Despite this rather dramatic change, the Gap Group family continues to have difficulty finding affordable housing.

An examination of the financial characteristics of the target market for Maiola indicates that they would be able to qualify for housing in the Maiola project.

It is not sufficient to simply provide housing in any location. Therefore the market acceptance of Maiola has been considered. Based on the performance of other large scale developments in the area, and consideration of price, fee simple ownership, community services and off-peak travel time, the Consultants have concluded that Maiola would experience a high level of market acceptability.

According to the City Department of General Planning, the population for Central Oahu, Ewa, North Shore and Waianae areas is expected to grow by approximately 72,800 persons between January, 1987 and December, 2005.

Based on information gathered about the State of Hawaii and the City and County of Honolulu, it would appear that a reasonable forecast of job requirements is 430 for every 1,000 persons in the population. Accordingly, the forecasted population for Central Oahu, Ewa, North Shore and Waianae will require approximately 30,000 new jobs.

An analysis of the forecasted Maioia population leads the Consultants to conclude that there will be approximately 1.75 persons employed outside of the home per dwelling unit, or approximately 2,700 workers. This represents approximately 45% of the proposed population at 3.8 persons per dwelling unit and 43.7% of a forecasted population based on 4 persons per dwelling unit.

In the short run it is estimated that 65% of the labor force, which will reside in the Maioia Estates Development, will be employed in the Primary Urban Center, East Honolulu and the Windward side. The remaining 35% of the labor force are expected to be employed north and west of the Maioia interchange.

The former residence of the successful buyer already living in the study area will probably be filled by a person working in the area, due to the propensity to move closer to work. To the extent that doubling occurs in the study area there will be no traffic impact. As stated earlier, applicants at the Milliam Terrace apartments lived with family or relatives 46% of the time, while buyers at Crosspointe lived with family or relatives 33% of the time.

The Consultants believe that Maioia residents will exhibit employment patterns similar to those of existing Maipahu residents, given a reasonable transition period. As an aside, the Consultants believe that the employment patterns would be similar if the project were located in another Central or Leeward location.

However, longer term new job opportunities in Central Oahu may change the pattern of employment. There are already several projects underway which can be described as job generators. These include:

- (1) Some new jobs at the new Dole Pineapple Cannery in the near term, and other new jobs for local residents as the impact of relocation causes older employees to rethink their commute.
- (2) Diversified agriculture is anticipated to grow as lands are released from sugar cultivation and decisions on land use issues are finalized.
- (3) While there are no announced plans for military expansion in Central Oahu or Ewa, changes like those recently in the Philippines could cause a major shift in defense strategies and a build up of military employment.
- (4) Campbell Industrial Park is preparing for a large expansion which is expected to generate substantial new employment.

(5) Gentry Industrial Park continues to experience growth with some major employers such as the Foodland Warehouse and Better Brands Warehouse locating in this area, a trend which is expected to continue.

(6) Oceanic Properties has plans for a 250 acre Hawaii High Tech Park that is estimated to generate 600-900 jobs per year with, according to Oceanic Properties, job profiles that will be very consistent with Maioia's demographics.

(7) Local businesses in service industries should expand.

(8) The massive West Beach Resort Development is expected to be under construction in 1986, and is projected to have approximately 6,000 permanent jobs upon completion.

(9) The Kuliama Resort Expansion, while not within Central Oahu or Ewa's projection, will create approximately 3,500 jobs in the next ten to fifteen years. This expansion should affect Central and West Oahu due to the current lack of housing in the area, and the limited housing development permitted under the General Plan and Development Plan policy for the Northshore.

(10) Construction in housing, industrial, commercial, resort and public facilities over the next ten to twenty years should provide a significant employment base.

(11) The activities of Government in areas such as Barber's Point Deep Draft Harbor, Government service jobs and the impact of the potential new Second City will all be job generators.

Based on the foregoing, it is estimated that a potential 30,000 jobs could be created in Central Oahu between 1986 and 2005. These new jobs would accommodate the projected population for Ewa, Central Oahu, Maianae and the North Shore, although it is not likely that there would be a perfect match of place of work and place of residence. The optimum relationship would be to improve the balance by having fewer (percentage) of people commute to the Primary Urban Center. In the short run, this is not achievable. However, in the long run, a balance can be achieved. The desired balance will occur, if the steps that are necessary are taken to accommodate job generation, and mitigating activities are taken to enhance the attractiveness of employment and residency in the study area. Such programs as mass transit (first low cost express buses, and then grade separated rapid transit) will assist in improving the quality of life in the area. It would appear that now is a good time to commence programs of behavioral modification to accommodate future living patterns on Oahu.

Maioia is only a portion of the West Oahu "big picture", but it is clearly the type of project needed to meet a long required housing problem for the Gap Group. Whatever its short term adverse impact, the priority need for Gap Group housing should easily serve as a counter balance.

The Consultants have been supplied with computer printouts containing work and residence data for the Maioia Estates applicants. This data was compared with the projections in the study for incorporation in the Executive Summary. A computer printout dated April 30, 1986 is attached as Exhibit D.

Residence Data

The information provided showed 35.6% of the applicants currently reside north and west of the Waiala Interchange, compared with 24.8% of the general population as estimated by DGP for 1986. This confirms the Consultants' belief that a greater percentage of applicants would come from surrounding areas than from the island as a whole.

Work Data

The information provided showed 14.9% of the applicants employed north and west of the Waiala Interchange. Thus 85.1% of the applicants are currently employed east of the Waiala Interchange. This is consistent with the Consultants' estimate that initially the work force would probably have a higher percentage of workers from other areas, due to the selection criteria, giving all eligible persons equal opportunity. It is expected that once the selection process is completed, successful applicants will seek employment closer to the Maioia project. Thus the Consultants believe that the short run employment will be consistent with that of the Waipahu area (65% east of the Waiala Interchange).

BACKGROUND

The administration of the City & County of Honolulu proposes to develop approximately 269 acres into a fee simple, affordable housing project, containing approximately 1,535 single family dwelling units during the next three years. The project is proposed in roughly three equal phases. Lot sizes will average approximately 5,000 square feet. Dwellings will consist of houses ranging in size from 900 square feet to 1,200 square feet of interior living area. A variety of floor plans are under consideration including expandable houses. Each dwelling will be provided with a two car carport.

Community amenities will include a recreational center and private park managed by a community association with mandatory membership for the residents. The estimated membership fee is \$15.00 per lot per month. No multi-family units are proposed, and no commercial/industrial uses or community services are proposed as most are available in nearby neighborhoods.

The target market (purchasers) for the project is families in the community who are unable to compete for market priced housing. By families, the City means married couples with or without children and other dependents or single persons with children and other dependents.

Generally speaking, the target purchasers will be in the 80% of Median Family Income to 115% of Median Family Income group.

It is specifically the goal of the City & County of Honolulu not to compete with developers of "market" housing. Accordingly, qualified purchasers at Maioia will be by drawing from a pool of applicants who meet maximum and minimum income limitations and who own no other real estate. Buyers must be willing to accept a ten (10) year "buy back" agreement.

Pricing is estimated to be in the \$65,000-\$95,000 range for a fee simple house and lot package, or 35%-40% below current comparable housing at market prices. These prices will be achieved by use of land acquired at a favorable price, and through use of development procedures available to the City for the stated type of program.

This Consulting Report is prepared pursuant to the Scope of Work attached as Exhibit A.

The assignment calls for the Consultants 1/ to do the following:

1/ Consultants Wendell Brooks, Jr. and John Zapotocky (see Exhibit B)

Schedule I excerpted from the STATE OF HAWAII DATA BOOK, 1985 depicts the diversity of the type of employment within the Gap Group. The Gap Group family is very typical of residents of the island of Oahu. Some members of the Gap Group do own their homes despite the fact that they do not appear to qualify statistically. Schedule I clearly demonstrates why more than one income per family is needed to qualify for market housing.

As one might expect the geographic place of employment is just as diverse, although there is clustering based on the primary location of a particular industry, e.g. Waikiki for the visitor industry, Greater Honolulu for retail, and clerical and Downtown for professional, real estate and finance.

The greatest concentration of residence of the Gap Group is in the Primary Urban Center. As will be shown later, this reflects the inability of the Gap Group to qualify for even the lowest price housing in Makiki, Milliani Town, Village Park and other similar areas. Similarly, there are only a limited number of used homes on Oahu for which Gap Group families can qualify. The result is that the Gap Group families are, in general, forced to rent or remain doubled up with family or friends.

However, given the opportunity to purchase moderately priced homes outside of the Primary Urban Center, i.e. homes they could qualify to purchase, Gap Group families, like those somewhat better off families the next rung or two up the economic ladder, would flock to the suburbs. Those who have moved to the suburbs and those who would move to the suburbs given the opportunity, demonstrate willingness to endure excessive commute time and expense in order to own their own home, while continuing to maintain employment in traditional geographic locations in Greater Honolulu.

In 1980 average household size was 3.15 persons per unit.

Per figures provided by the City and County of Honolulu, Department of General Planning, average household size in 1985 was 2.7 in the Primary Urban Center versus 3.8 in Ewa and Central Oahu. This would tend to suggest that Ewa and Central Oahu have larger families, units capable of holding larger families, a higher percent of units capable of holding larger families, more households with two or more families or all of the above.

The type of family most likely to purchase in Waiala will be composed of three or more persons. The projected profile is estimated to be husband, wife, at least one school age child and one grandparent or second school age child.

Identify the type of family most likely to be interested in purchasing in Waiala, and most probable places of employment during the development period and within a three year period thereafter, including types of industries, pay scales and geographic distribution.

(a) Based on the project's stated goals, define the lower limit of price and income requirements of "market" housing, i.e. the upper limit of eligibility for the project.

(b) Define the range of income of probable purchasers for the project, including those who may qualify, under subsidized programs for 20% of the units, at the level of 80% of Median Family Income.

(c) Define the level of income below which prospects cannot qualify as a purchaser under any existing program.

(d) Describe other demographic characteristics of the target purchasers.

II. TARGET MARKET

The persons that are most likely to be interested in Waiala are those who are in the Gap Group which, by the Department of Housing and Urban Development definition, is made up of persons/families with income ranging from \$25,050 to \$35,600 based on a family of four. This group's housing desires have been frustrated by their inability to qualify for "market" price housing, due to insufficient income and by their inability to qualify for subsidized projects due to excessive income.

An excellent example of the latter case has been described by William Barrett, Sales Manager of Milliani Town's, Milliani Terrace-1/ Mr. Barrett reports that the project requires purchasers to have income equal to a 80% of Median Family Income. The band of qualification is so narrow that only one family in nine that applies can qualify. Most rejections are based on excessive income.

The employment pattern of the Gap Group cuts across the full spectrum of jobs on Oahu, ranging from supervisory agricultural workers to upper middle management in a diverse range of businesses.

1/ Interview April 18, 1986.

SCHEDULE I

Table 345.-- EMPLOYMENT AND PAYROLLS COVERED BY THE HAWAII EMPLOYMENT SECURITY LAW AND UNEMPLOYMENT COMPENSATION FOR FEDERAL EMPLOYEES, BY INDUSTRY: 1984

Industry	Number of employers, Dec.	Average employment	Total wages (\$1,000)	Average annual wage (dollars)
All industries	21,288	421,821	7,050,512	16,714
Government	6	89,595	1,900,174	21,208
Federal	1	33,270	855,447	25,712
State	1	43,123	785,551	18,217
County	4	13,201	259,175	19,633
Private	21,282	332,227	5,150,338	15,502
Agriculture, forestry, fisheries	426	11,325	177,334	15,659
Sugar	12	3,225	66,569	20,642
Pineapple	5	1,989	29,520	14,841
Other	409	6,111	81,245	13,295
Mining and contract construction	1,595	15,788	410,971	26,031
Manufacturing	825	22,086	373,606	16,916
Sugar mills	12	3,117	52,099	16,715
Pineapple canning	2	2,241	32,839	14,654
Other food processing	195	5,210	83,228	15,975
Other manufacturing	616	11,518	205,440	17,836
Transportation	901	22,150	431,917	19,500
Communications	102	7,502	196,923	26,249
Utilities	39	2,395	75,089	31,353
Wholesale trade: Durable	885	8,981	191,810	21,357
Retail trade	974	9,862	167,196	16,783
Eating and drinking places	4,748	91,876	942,500	10,258
Other retail trade	1,553	37,628	275,397	7,319
Finance, insurance, real estate	3,195	54,248	667,103	12,297
Services	2,925	31,977	552,109	17,266
Hotels, rooming houses, etc.	7,782	107,928	1,626,084	15,066
Health services	190	28,262	369,292	13,067
Other services	1,746	21,224	435,035	20,497
Miscellaneous establishments	5,846	58,442	821,757	14,061
Nonclassifiable establishments	80	257	4,799	18,673

Source: Hawaii State Department of Labor and Industrial Relations, 1984 Employment and Payrolls in Hawaii (September 1985).

Single person households will not be permitted.

It is estimated that the household size will average 3.8 to 4 persons per dwelling unit overall, but that only 1.75 persons per dwelling unit will be employed.

A two person household consisting of a married couple who have delayed children will be anxious to purchase. Other two person households, i.e. newly married and/or older empty nesters may not find the obligations of a home (financial and physical) compatible with their capabilities and lifestyle.

The Consultants obtained copies of the list of applicants for two city projects, the Ewa Expandable Project and the Paalaa Kai Housing in Haleiwa, in order to conduct an analysis to determine if there was a correlation between project location and applicants current place of residence. The following is the result of the survey conducted:

Ewa Expandable - There were 644 applicants for the Ewa Expandable (open list). The following Schedule II illustrates the number of applications from each Development Plan area and the likelihood of an application being from a specific Development Plan area vs. that of the general population.

SCHEDULE II

Ewa Expandable Housing

DP AREA	# OF APPLICATIONS	% OF APPLICATIONS	DP % POPULATION	LIKELIHOOD OF APPLICATION FROM DP vs. GEN POP.
Ewa	191*	29	4.5	6 times
Central Oahu	198	31	14.2	2 times
PUC	220	34	54.2	1/2 times
Waianae	19	3	4.1	3/4 times
North Shore	5	1	1.7	1/2 times
Koolauoko/Koolauloa	11	2	14.1	1/7 times
TOTALS	644	100%	100%	

* In addition, there was a separate priority list for existing area residents.

Paalaa Kai - There were 123 applications that were indicated as current. The following Schedule III indicates the current residence of the applicant.

SCHEDULE IV
Paalaa Kai Housing

DP AREA	# OF APPLICATIONS	% OF APPLICATIONS	DP % POPULATION	LIKELIHOOD OF APPLICATION FROM DP vs. GEN POP.
North Shore	60	49%	1.7	28 times
Central Oahu	31	25	14.2	1-3/4 times
Remaining Areas	32	26	84.1	1/3 times
TOTALS	123	100%	100%	

The significance of the aforementioned schedules, is that major concentrations of persons eligible for Waiala Estates may already live in close proximity to the project site.

In addition, a 1980 Census indicates that the Malpahu and Ewa areas show high concentrations of overcrowding.

The Consultants believe that this factor will tend to increase the proportion of applicants that currently live in the project area. Based on the results of the surveys conducted on the Ewa Expandable and the Paalaa Kai, it appears that there is a strong indication that the location of a city housing project will have an impact on who will apply for the project. Existing area residents will be more likely to apply for the project than others outside the district and that the likelihood of applying is diminished by the distance of one's current residence from the proposed project.

III. DEFINITION OF MARKET PRICE PROJECTS

The Waiala Project is targeted toward families within a certain income range. The fact that the project is family oriented indicates to the Consultants that the definition of market priced housing should be structured to reflect housing with the ability to accommodate families. With the minimum family size to qualify being two and the upper end of the family size having no specified maximum, the Consultants believe that the average family size in the Waiala Project will be higher than the average Oahu household. Based on these assumptions, the Consultants have not considered units smaller than 2 bedrooms to be alternatives to the proposed project.

A. Single Family Dwellings

1. New Projects: Information provided by Construction in Hawaii 1985 compiled by Bank of Hawaii indicates that in 1984 the average price for a new single family home on Oahu was \$140,700. A survey conducted of developers indicated that product available in 1984 and 1985 would be priced from a low of \$94,000 to a high of \$336,000 with average prices in projects ranging from \$97,600 to \$270,000. If the two highest and two lowest priced projects are eliminated, the average price in projects ranges from \$129,000 to \$163,000. It would appear that the average price for 1985 and for 1986 would be \$140,000 or higher, depending on the mix of units sold. Inflation has been modest during this time frame.

2. Existing Inventory:

(a) MLS Listings and Sales: Information provided by the MLS service of the Honolulu Board of Realtors indicated that as of April 11, 1986, the average price of single family residential properties listed was \$301,000. Sales from January 1, 1986 to April 11, 1986, indicated an average actual sales price of \$201,500. Sales prices during this period averaged 90% of listing prices of the properties sold, i.e. properties listed at approximately \$224,000.

(b) Properties Advertised for Sale but not Listed: As an indication of the prices of properties available for sale but not participating in the MLS service, a survey of the properties advertised in the April 13, 1986 Sunday Advertiser and Star Bulletin was made. The average price of the 136 properties advertised but not indicating a MLS number was \$236,400. (This sampling excludes those properties advertised but for which no sales price is listed.)

B. Condominium, Cooperative and Townhouse Dwellings

1. New Projects: CONSTRUCTION IN HAWAII IN 1985 indicates that the average sales price of a new condominium unit in 1984 was \$81,300. (It should be noted that the average unit size in 1984 was 720 square feet, suggesting that a large number of the units were smaller than 2 bedrooms.) A survey of existing and future projects for 1984 and 1985 in the same publication showed that the prices for units 2 bedrooms and larger ranged from approximately \$80,000 to \$165,000, with the average prices in projects ranging from \$88,000 to \$147,000. The Consultants estimate that the average price of a 2 bedroom unit (900 sq. ft. or larger), is approximately \$105,000.

2. Existing Inventory:

(a) MLS Listing and Sales: As of April 11, 1986, there were 4,721 active condominium listings with an average listing price of \$116,400. From January 1, 1986 to April 11, 1986 there were 683 sales with an average sales price of \$105,600. If one considers only units of 2 bedrooms or larger, the average actual listing price is \$136,900.

(b) Properties Advertised for Sale but not Listed: A survey of 131 condominiums advertised for sale in the April 13, 1986 edition of the Sunday Advertiser and Star Bulletin indicated that the average price of a condominium 2 bedrooms or larger was \$128,600.

The fact that new single-family housing and condominium projects are priced on the average lower than the existing housing stock indicated that the existing housing stock is considered more valuable than new housing. While certain assumptions about unit size or unit quality could account for a portion of this difference, the Consultants believe the major consideration is that of location.

This belief is further advanced if one considers that if all of the rural areas are eliminated from the MLS statistics, and only units from Ewa/Central Oahu to Hawaii Kai are considered, the average listing prices for single family homes jumps to \$346,400 and increases to \$120,600 for condominiums. The fact that most of the new development is taking place in the Central Oahu and Ewa areas, which are the most distant from the city center in terms of land planned for development, explains this differential.

IV.

MINIMUM QUALIFICATIONS FOR MARKET PRICED HOUSING

Qualification requirements for persons wishing to purchase a dwelling unit have long been the subject of discussion and confusion. On a pure arithmetic basis, it has been estimated that only 20%+/- of the population has been able to afford to purchase a home based on income and mortgage repayment requirements. The pure statistics distort the practical facts. More than 40% of all households on Oahu are owner occupied. Further, one has to believe that at least some portion of the remainder rent by choice.

There are other factors which influence these calculations. None the least of these influencing factors is buyer confidence. The higher the buyer confidence level, the more creative the prospective purchaser in finding the funds with which to meet the financial requirements to purchase. Interest rate fluctuation must be considered when defining the universe of qualified buyers.

There are numerous factors which are not taken into account by straight statistical analysis, such as the following:

- A. Gifts and Loans: Parents will frequently give children a substantial tax-free cash gift or loan to be used as a down payment on a home. These funds may come from savings, or may come from leveraging high equity investments, i.e. refinancing a home with a substantial equity.
- B. Unreported Income: Numerous domestics (housekeepers, gardeners, etc.) and others have income but fail to report for income tax purposes. Cash payment and "kick backs" are common place in some industries.
- C. Illegal Income: Revenue from marijuana ("\$11.3 million, "Green Harvest" - a mere dent" according to Police Chief Gibb) in 1984, gambling, prostitution and fencing of stolen goods is not considered in the calculation of total income.
- D. Inheritance: Tax free inheritances are not included in total income.
- E. Barter Transactions: The exchanging of goods and/or services for other goods and/or services has been growing and may represent a high dollar volume.
- F. Non-Reportable and/or Non-Reported Benefits: Company cars and expense accounts could have an unreported value of three to five thousand dollars or more per year to some individuals.
- G. Co-Maker or Guarantor: Many first time buyers are able to qualify for a loan based on the personal guarantee of parents, who may be in a higher income bracket, or due to the fact that they have owned their dwelling unit for a number of years may have negligible or even no mortgage payments, and the combined debt-free incomes, net worth, etc. qualify the buyer to do something that he is statistically not able to do alone.

H. Tips and Gratuities: Another category of revenue which is estimated to be substantial in Hawaii's resort oriented community, is tips and other unreported gratuities earned by waiters, waitresses, porters, taxi drivers and others.

I. Personal Savings: Many purchasers are able to qualify to purchase a home because of the ability to make a substantial down payment after years of saving. Hawaii has a high per capita savings record.

J. Free Housing: Free or low cost housing or lodging in lieu of higher pay can be a substantial unreported portion of compensation e.g. the military, resident managers in an apartment building, and foreigners on assignment in Hawaii.

Legality and morality are not the subject of this analysis, nor is this a condemnation of society. However, the fact remains that substantially more money flows through the system than is accounted for in published statistics. This money creates buying power which, at least in part, explains the apparent disparity between the statistical inability to buy and what actually occurs in the marketplace.

Even with these factors, the following quotes from Bank of Hawaii Economics Department Publications Hawaii 85 and Construction in Hawaii 85 indicate that recent past affordability of housing has been very low.

"The State Department of Planning and Economic Development (DPED) in a recent report indicates that the share of owner occupied housing stock dropped to only 41.2 percent in 1985. This ratio is almost four percent below what it was in 1980. Although being below the national average (65 percent) is to be expected in a visitor-destination community. The new ratio in Hawaii is primarily the result of local housing prices being considerably beyond the reach of average households."

"The weakness in Hawaii's residential construction activity appears to be attributable to three major factors. First and foremost, housing prices in Hawaii are disproportionately high, making the purchase and maintenance of a house too heavy a financial commitment for the average-income household in the state. Second, mortgage interest rates during this recovery have been higher (averaging 12 to 14 percent) than in the 1977-80 upturn during which mortgage rates remained in the single digit range.

These two factors have had the effect of keeping some potential buyers out of the housing market. Finally, the low rates of inflation and subsequent lower rates of real estate appreciation have discouraged non-occupant investors and speculators from competing for available units. Since a significant change in these conditions is not likely, at least in the near future, residential construction will probably remain below past levels."

"Another important aspect of the current recovery is its unevenness. In contrast with the past, all of the increase in units as well as permit value in 1984 occurred in single-family housing. In fact, planned expenditures in the two other categories, multi-family housing and additions and alterations, declined last year. Since single-family housing is financially beyond the reach of the majority of starter families, (who now constitute most of the demand for new housing), the decline in multi-family authorizations over the last four years will surely restrict the supply of low-cost housing over the coming years. Because of tight rental housing markets, especially on Oahu, this trend has important implications for the residential construction industry and those concerned with public policy for housing."

"On Oahu where multi-family housing has been a popular alternative to single-family housing, the decline in multi-family units authorized is especially significant. Multi-family authorizations on the island, which peaked at 11,534 units in 1974, have declined consistently since, dropping to a record low of 1,054 units in 1984. On the Neighbor Island, where multi-family housing has been a relatively less popular form of accommodation, the number of units authorized dropped from their peak of 4,000 units in 1974 to 199 in 1983 and 226 in 1984.

In 1985, the Bank of Hawaii could not have foreseen the dramatic change in interest rates which have occurred in 1986. With mortgage rates in the 9%-10% range, a substantial number of persons have become qualified or more qualified to purchase a home. The shift in demand during the 80's away from multi-family to single-family homes probably does not reflect a change in preference, but rather is a recognition by the marketplace that much of the past demand for multi-family homes was based on absorption generated by investors. Despite rather dramatic changes, the Gap Group continues to have difficulty finding affordable housing.

V. ELIGIBILITY FOR THE MAIOLA PROJECT

The following Schedule IV was prepared by relating the eligibility requirements to information provided in the 1980 Census for selected areas of the City and County of Honolulu. In the case of income requirements, the relationship between current incomes and those described in the 1980 Census was achieved by using the relationship between the FIA median income for a family of four in 1986 and 1979. These amounts were \$31,300 and \$20,700, respectively. Income limits used by the Consultants range from a high of 115% of median to a low 20% below 80% of median (\$16,000 \$44,000), based on a family size of 2 to 8 persons. Relationships of families to households and owners to renters are assumed to be the same as those described in the 1980 Census, although recent data indicates a decrease of owner occupied dwelling units on Oahu.

The analysis has the following acknowledged weaknesses:

1. The relationship between FIA median incomes may be not consistent with the actual relationship between 1979 and 1986 incomes. Further, it does not take into account family size on income maximums.
2. The Census shows the income ranges of households only, not of families and not of renters, and not specifically of families that are renters. (Although there is information available on average incomes of renters and home owners).
3. The distribution of incomes within a range cannot be determined and therefore for purposes of this analysis, they were assumed to be distributed equally.
4. The analysis does not take into account the fact that households may contain two or more families and therefore, a family currently living with another family that is a homeowner may be eligible. In addition, some households with higher than permitted incomes may consist of one or more families that qualify for the project. Vice versa, some households which show adequate income may consist of two or more families neither of whom are eligible.

The Consultants believe that a number of these factors serve to cancel each other out, and that the analysis is a barometer of the percent of households on the island that may be eligible, and the difference in eligibility of areas. It probably more accurately describes differences between areas than overall eligibility.

SCHEDULE IV
HOUSEHOLDS ELIGIBLE FOR MAIOLA PROJECT
FOR OAHU AND SELECTED AREAS
(percent %)

CRITERIA	<u>SCHEDULE IV</u>							
	OAHU	AIEA	EWA	HONOLULU CITY	PEARL CITY	MAHAUA	MAIPAHU	MILILANI
Income	44	44	56	44	42	41	40	45
Non-Owners	50	37	27	56	24	56	50	17
Families	77	83	91	69	93	81	88	90
Composite Eligibility	17%	14%	14%	17%	9%	19%	18%	7%

The schedule of eligibility shown above demonstrates that there are higher than average concentrations of eligible persons in the Maipahu and Mahiwa areas.

Doubling Up

It is the opinion of the Consultants that there are a significant number of married young people that share living accommodations with their home-owner parents. As an index of overcrowding in existing units, the ratio of persons per room has been shown in Schedule V. In addition, the percentage of persons in each area with six or more persons is also shown.

A survey of applicants from the Mililani Terrace Apartments show that 35% lived with families and 11% lived with relatives. Thus, 46% of the applicants for that project were doubled up. A survey of buyers at Crosspointe show that 1/3 of them previously lived with families or relatives.

SCHEDULE V

OVERCROWDING INDEX

PERSONS	<u>SCHEDULE V</u>							
	OAHU	AIEA	EWA	HONOLULU CITY	MAHAUA	MAIPAHU	MILILANI	
More than 1 per room	15%	13%	29%	15%	13%	16%	31%	8%
6 or more per household	10%	10%	24%	7%	12%	9%	21%	6%

The schedule of overcrowding shown on the previous page, indicates that there is a high overcrowding in the Waipahu and Ewa Beach areas, which tend to make demand for more adequate living accommodations more acute in these areas.

Financing

Most (80%) persons that are eligible for the Waiala Estates project will be expected to qualify for their own financing at market rates, FHA or Hula Mae. Only those persons meeting the test of the 80% of median or lower (20%), are expected to qualify for special subsidy programs. For the purposes of this analysis, a standard thirty year fixed interest rate mortgage will be assumed (Schedule VI). Although graduated payment mortgages are available, it is assumed that these will be used to add flexibility to the program.

In most cases, potential buyers will already have a certain amount of personal debt which will prevent all of their income from being used for loan qualification purposes. Personal debt commonly consists of auto loans and installment credit.

SCHEDULE VI

	LOW	HIGH
Average Price of Home	\$65,000	\$95,000
Amount Financed 95%	\$61,250	\$90,250
Customer Trust Fund (Schedule VII)	90 mo.	120 mo.
Interest Rate	9%	12%
Principal & Interest Payment	\$ 497	\$ 635
Total Mortgage Payment w/CTF	\$ 585	\$ 725
Qualifying Ratio (25%)	\$ 2,020	\$ 2,500
Annual Income Range	\$24,248	\$30,000
Percent of Median Income (family of 4)	77%	96%
		1.12%
		1.39%

Based on Schedule VI, it is clear that the level of interest rates at the time of the loan closes will be critical if the project is to be able to service the Gap Group. With low interest rates, it is reasonable to assume that with a minimum of underwriting flexibility, most of the Gap Group could be accommodated. In general, families with income at or below 80% of median, will need some type of subsidy to qualify.

Assuming the maximum level of subsidy to be a 1% interest mortgage, the minimum level of income would be approximately \$11,000 per year to qualify for the lowest priced unit. At this level of income, however, the applicant would be subject to special qualification criteria and would qualify only under special circumstances. The Consultants believe that \$16,000 to \$20,000 will be a more practical minimum level of income.

SCHEDULE VII

The calculation for the customer trust fund was made based on the following assumptions:

CTF for \$65,000 property	45 x 6.75	= \$304 pa	= \$25/month
Real Property Taxes*	61,750 loan x .4%	= \$247 pa	= \$21
Mortgage Insurance		\$180 pa	= \$15
Fire Insurance		\$180 pa	= \$15
Community Association Fee		\$156 pa	= \$13
Contingency			\$90

CTF for \$95,000 property	75 x 6.75	= \$506 pa	= \$42
Real Property Taxes*	90,250 loan x .4%	= \$361 pa	= \$30
Mortgage Insurance		\$216 pa	= \$18
Fire Insurance		\$180 pa	= \$15
Community Association Fee		\$180 pa	= \$15
Contingency			\$120

* Assumes \$20,000 homeowner exemption and tax assessment at sales price.

Economic Gray Areas

Inevitably, there will be some overlaps between the top end of those qualified for Waiala and the bottom of the market price housing. This condition will result from human nature seeking to optimize a position. Three scenarios are predictable.

1. Lack of Accurate Estimates of Income
As noted earlier, not all sources of revenue are reported.
2. Avoidance of help
A young family of husband, wife and child might not qualify for market priced housing without the help of their willing and able parents. By rejecting that help, they will qualify for Waiala.

3. Time to have a child

A husband and wife, both working and making enough to qualify for the low end of market housing, might decide that the wife should drop out of the work force and have a child. The couple qualifies for Maioia on the husband's income only, and the wife returns to the work force after a year.

4. Give up the part time job

Like the couple described above, someone in the family can give up a part time job, qualify and then return to the work force later.

VI. CURRENT LEVEL OF AFFORDABILITY

Another means of testing the competitiveness of the proposed project, is to see if the persons who would qualify for the Maioia project would be capable of purchasing new market priced housing, or housing within the existing housing stock. The following Schedule VIII shows the income levels necessary to qualify for market priced housing within 10% of what the Consultants estimate as the average price on new units of 2 bedrooms or larger.

SCHEDULE VIII

MINIMUM INCOME LEVEL NEED TO QUALIFY FOR MARKET PRICED HOUSING

<u>Assumption:</u>	<u>Single-Family</u>	<u>Condominium</u>
110% of Average Price	\$154,000	\$115,000
Average Price	\$140,000	\$105,000
90% of Aver. price	\$126,000	\$95,000
Amount Financed	90%	95%
Customer Trust Fund (1.5%)	\$ 175/mo.	\$ 135/mo.
Qualifying Ratio	29%	29%
Interest Rates	9%-12%	9%-12%
Minimum Income	\$45,000-\$66,200	\$35,600-\$52,000
Percent of Median	143% 211%	113% 166%
Minimum Income (EPM)	\$36,000-\$53,000	\$28,500-\$41,600
Percent of Median	115% 169%	91% 133%

The above shows that few, if any, persons in the target market for the Maioia project could qualify for the lower priced single-family homes and then only if interest rates remain at the current low levels. While potential affordability is better in the condominium market, the fact that primarily larger families would be able to qualify brings into question whether these units meet the needs of the potential buyers. The Consultants estimate units in lower than average price ranges tend to be the smallest units available.

The Consultants believe that the Maioia Estates project will have a minimum impact on the sale of market priced single-family projects. The impact will be limited for the most part to those projects with product priced at less than \$120,000, which is currently a small portion of the market.

The impact on condominium sales, particularly studios, one bedroom and two bedroom units may be greater. Families who currently have limited economic choice may find that Maioia suits their physical needs far better.

There may be a short term pause in the rate of sales of lower priced market housing, due to the publicity currently associated with City projects. However, this short term phenomena should pass once the market fully understands the limitations on qualifications. Maioia is planned as a three year project which history suggests will require as long as four or more years to complete. Those who might be able to arrange their financial affairs in such a way as to qualify for either Maioia in a year or market priced housing now may not be willing to wait.

MARKET ACCEPTABILITY

Another test of the viability of Maioia is that of potential market acceptance. Central Oahu in general has demonstrated a very high degree of market acceptance evidenced by the sales records of Milliani Town, Waipio by Gentry and Village Park. These projects have consistently out performed the balance of the market in West Oahu, particularly during periods of high buyer confidence and low (relatively) interest rates.

The Department of General Planning in its report Residential Development Implications of the Development Plan August, 1985 notes demonstrated preference of (Central Oahu) over other areas by consumers with respect to residential location. The reason for the high level of market acceptance areas follows:

Price: Generally the product offered for sales has been lower than comparable new or used homes in the Primary Urban Center.

VIII. PROJECTED GROWTH IN POPULATION VS. PROJECTED GROWTH IN JOBS FOR AREAS NORTH AND WEST OF THE MAJADA INTERCHANGE

According to the City Department of General Planning, the population for the Central Oahu, Ewa, North Shore and Malanoe areas is expected to grow by approximately 72,800 persons between January of 1987 and December of 2005.

An indicator of the employment needs of the community would be the relationship of jobs to total population. The analysis shown in Schedule X compares the statewide and county wide relationships. It should be noted, that the data available on employment is collected by numerous sources at the State and Federal level for different purposes and at different times. State data shows civilian job count while Federal data shows employed persons. The statistics on Oahu tend to be close, due to the inclusion of military in the Federal statistics. The Consultants have been careful to compare only comparable information.

SCHEDULE X
Employment/Population Ratio

	State of Hawaii		
	1950	1960	1970
Civilian Employment 1/	168,000	209,000	286,000
Resident Population 2/	500,000	633,000	770,000
% Resident Population employed in civilian jobs	34%	33%	37%

1/ DPED State Data Book 1985 Table 337 p. 324 November, 1985
2/ DPED State Data Book 1985 Table 1 p. 12 November, 1985

Fee Simple: Land ownership has been offered.
Weather: Weather conditions are mild, e.g. less rain than windward Oahu, less heat than Ewa.
Community Services: After 20 years of development, Central Oahu has achieved a critical mass of community services such as: churches; schools; regional, district and neighborhood parks; shopping centers, etc.
Travel Time and distance: The H-2 Freeway and Km Highway provides excellent access to Honolulu and Leeward Oahu, except during peak commuting hours. Central Oahu is perceived to be much closer to Honolulu and is in fact closer than Ewa Beach and Makakilo.

Schedule IX compares the yearly absorption rates for three projects in Central Oahu. All three Central Oahu projects out performed the Ewa project. The cumulative comparisons of the two regions also favors Central Oahu. It is the Consultants belief that this pattern is at least partially product driven, and that it will continue until there is visible indication of significant development in the Ewa District.

SCHEDULE IX

	Yearly Absorption Rates Selected Community Projects 1/			Total
	Single Family	Multi-Family		
Mililani Town	322	130		452
Gentry Maipio Village Park	191	117		308
	229	-		229
Total				989
Makakilo City	151	40		191

1/ Source: Study done in February, 1983 revised July, 1984 - Analysis of Market Potential for Amrac Properties - Williams Kuebelbeck dated September, 1983

City & County of Honolulu

	1970	1980	1984
Civilian Employment ^{3/}	270,000	355,000	357,000
Resident Population ^{4/}	631,000	762,000	805,000
X Resident Population employed in civilian jobs	42%	47%	44%

The 1980 Census provided information on population and employment by Census tract which the Consultants converted to Development Plan areas. In the Malanæ, Central Oahu, Ewa and North Shore areas, employment consisted of 78,000 persons while population was 183,000 persons for a 43% employed factor. This is approximately 10% below the 47% calculated for the island of Oahu in 1980 from the same Census data.^{4/}

DPED projections for the year 2005 indicate that the ratio of Oahu civilian employment to population will remain at 1980 levels.^{5/} The Consultants have maintained the differential for this analysis and estimate that civilian job requirements for the area will remain at 43% of the population.

Again using 1980 Census data, the Consultants find that there were 46,000 jobs located in the study area compared to 78,000 workers, or a ratio of .59 jobs in the area for each worker. If the job creation potential identified by the Consultants in the following pages is achieved, this ratio will be improved to .63 jobs per worker by the year 2005, thus increasing employment opportunities within the area. (Note: this change is more significant than it appears, because the Consultants believe that the ratio of jobs to workers in the area has deteriorated from the figures observed in 1980 and, thus, the increase in the job ratio in 2005 will be larger than the change shown).

In the short run, the Consultants believe that Waiala residents will tend to have employment characteristics of the Waipahu area where, according to 1980 Census data, approximately 65% worked out of the study area and 35% worked in the study area. In the very short run, Waiala residents may work outside the study area to a greater extent, because many of those eligible will be from outside the study area and will tend to work outside the study area.

^{3/} DPED State Data Book 1985 Table 332 p. 319 November, 1985

^{4/} DPED State Data Book 1985 Table 342 p. 329 & Table 12 p. 27 November, 1985

^{5/} DPED Hawaii Population & Economic simulation model p. 42 July, 1984

While there is no way of predicting the actual number of working people in the Waiala Estates Development, if it is assumed that the families that occupy the project will be similar to the average family on Oahu, then the workers per family should be similar to that found in the 1980 Census for Oahu. In the 1980 Census, it was estimated that the average workers per family was 1.75.^{1/} Considering economic conditions during the early 1980's, it is not likely that this factor has declined.

Applying this ratio to the estimated 1,535 units at Waiala, it is probable that the subdivision will generate approximately 2,700 workers. (Note: this figure provides a 44-46% employment ratio based on a family size of 3.8-4.0 persons, very close to the 43% projected by the Consultants for the area as a whole).

The former residence of the successful buyer already living in the study area will probably be filled by a person working in the area, due to the propensity to move closer to work. To the extent that doubling occurs in the study area there will be no traffic impact. As stated earlier, applicants at the Milliani Terrace apartments lived with family or relatives 46% of the time, while buyers at Crosspointe lived with family or relatives 33% of the time.

Persons living in the area and otherwise qualifying for the Waiala project will be more likely to apply for the project than those living in more distant locations. However, selection procedures may frustrate this advantage.

High income families whose employment opportunities are concentrated in the Primary Urban Center would be automatically excluded.

The Consultants believe that Waiala residents will exhibit employment patterns similar to those of existing Waipahu residents, given a reasonable transition period. As an aside, the Consultants believe that the employment patterns would be similar if the project were located in another Central or Leeward location.

However, longer term new job opportunities in West and Central Oahu may change the pattern of employment. Already there are several projects underway which can be described as job generators. They are as follows:

^{1/} Telephone conversation, Karen Yamashita DPED, April 11, 1986

1. New Cannery

There is a plan to relocate the Dole Pineapple cannery from Iwilei to a Central Oahu location. It is anticipated that approximately 1,050 jobs will be created or redirected by the new facility in the fourth quarter of 1987, according to published data. New jobs for local residents will increase as the impact of the new location causes older employees to rethink their commute.

2. Diversified Agriculture

It is anticipated that opportunities for diversified agricultural operations will increase as lands are released from sugar cultivation and decisions on land use issues are finalized.

3. Military

While there are no announced plans for major expansion of any of the Central Oahu or Ewa military establishments, the changes such as those recently in the Philippines, could cause a major shift in defense strategies.

4. Campbell Industrial Park

Campbell Industrial Park is preparing for a large expansion and it is expected to generate substantial new employment at the park.

5. Gentry Park

Increased demand for industrial space in this area is expected to result in the creation of new jobs as the remaining undeveloped areas of the park are developed.

6. Hawaii High-Tech Park (Mills)

The new 250 acre high tech park proposed for the Central Oahu area is currently in the zoning process. It is estimated that 600-900 jobs per year could be created over the next 10 to 15 years beginning in 1988.

7. Local Service Business

All of the master planned communities being proposed in the Ewa and Central Oahu areas plan to provide for the neighborhood shopping requirements of residents. These facilities will offer employment opportunities.

1/ Plan Review Use Application, December 1985

8. West Beach Resort

The West Beach Resort development which is expected to be under construction in 1986, is estimated to have the potential of providing approximately 6,000 permanent jobs upon its completion in the next 10 to 20 years.

8. Kuliima

The Kuliima Resort expansion, while not within the Ewa or Central Oahu area is projected to create approximately 3,500 jobs in the next 10 to 15 years. Given the lack of housing in the North Shore and Koolauloa areas, the small population and housing base which currently exists there, and the lack of limited residential development permitted under the existing General Plan and Development Plan policy for the North Shore, a significant portion of the work force will come from Central Oahu.

9. Construction

- (a) Housing - Whether housing development in Central Oahu continues at its present pace or if most of the development takes place in the Ewa area, there is little doubt that the Ewa and Central Oahu areas will become increasingly important suppliers of housing for the Oahu Market. Thus, an increasing number of construction jobs can be forecast in the area.
- (b) Industrial/Commercial - The major influx of population and the plans for regional shopping, office and industrial expansion in the area should improve the prospects for this type of construction.
- (c) Resort - Large expenditures for construction of infrastructure and facilities at the proposed West Beach Resort can be expected to begin in 1986 and continue for the next 10 to 15 years (see 8 above).
- (d) Public Facilities - Large expenditures can be expected in the area of infrastructure for residential developments that are proposed. In addition, highway improvements, service facilities and other public facilities can be expected as population in the area increases, e.g. a garbage to energy facility is to be built in Ewa.

10. Government Employment

- (a) Barbers Point Harbor - By the year 2000, the harbor is expected to generate approximately 600 jobs while indirectly creating another 1,000 jobs at Campbell Industrial Park (see 4 above).
- (b) Miscellaneous - Government service jobs in the area such as schools, police, fire, etc., can be expected to expand with the population.
- (c) Second City - Assuming that the second city develops as projected, a government center can be expected to develop as part of the city core.

Based on the list of job opportunities, and the multiplier effect, the Consultants estimate that in excess of 30,000 jobs could be created over the next 20 years. It is also believed that as the secondary growth area matures into the Second Urban Center, a larger and larger proportion of the job inventory will be filled by workers within the study area.

The following is a summary of the potential jobs that could be created in the area between 1986 and 2005.

Cannery	1,050
Hi Tech	10,000
Mailele Office Park	1,500
Mililani Regional	
Shopping Center	1,600
West Beach	6,000
Construction	500
Harbor	1,600
Kuilima	3,500
Miscellaneous Jobs	4,300
TOTAL	<u>30,050</u>

The projected 30,000+/- jobs could accommodate approximately 70,000 people based on employment of 43% of the population. While this is compatible with the estimated population growth for the area, it is not reasonable to assume that there would be a perfect match.

A large percentage of West Oahu residents will continue to work at traditional places of employment because of seniority, vested retirement plans or personal preference. Others will choose to work closer to home, and still others living the Primary Urban Center will choose employment in the Secondary Urban Center. The balance in traffic flow will improve, but this will depend on the speed with which job development is implemented and the extent to which other plans, e.g. mass transit, proceeds.

Inertia precludes decentralization at the present time. However, as markets grow; as labor pools grow; and as land cost in the Primary Urban Center increase, decentralization will be increasingly more attractive in much the same way experienced by many mainland cities.

Employment patterns could change measurably during the next five to seven years.

IX. CONCLUSION

Based on the foregoing, it is the Consultants' conclusion that there is a clear cut need for Gap Group housing and that now (1986) is an excellent time to attempt to meet the need due to low interest rates and the substantially improved ability of Gap Group housing families to qualify for mortgage loans. However, despite the improved economic conditions for Gap Group housing, it is clear that they are not able to compete for market priced housing that meets their needs. The Maioia project as defined would clearly meet the need and be highly acceptable based on reasonable selection criteria, and in fact probably be the preferred location.

Maioia is part of a greater study area, including Central Oahu, Northshore, Ewa and Waianae which is expected to have substantial growth in population over the next ten to 20 years. A major portion of the workers in this population will continue to work in the Primary Urban Center. However, over the long term, there is potential for a substantial number of jobs to be created in the study area which, if created, would be adequate to service the new population based on current relationships between population and jobs. It is not expected that there will be a perfect match of work place and place of residence, but proportionally there will be a better balance than currently exists.

The desired balance will occur, if the steps that are necessary are taken to accommodate job generation, and mitigating activities are taken to enhance the attractiveness of employment and residency in the study area. Such programs as mass transit (first low cost express buses and then grade separated rapid transit) will assist in improving the quality of life in the area. It would appear that now is a good time to commence programs of behavioral modification to accommodate future living patterns on Oahu.

Waiala is only a portion of the West Oahu "big picture", but it is clearly the type of project needed to meet the long ignored housing problem for the Gap Group. Whatever its short term adverse impact, the priority need for Gap Group housing should easily serve as a counter balance.

S-116/6894n/tr

EXHIBIT A

SCOPE OF WORK

Chaney, Brooks & Company, with the assistance of John Zapolocky, Real Estate Consultant, will provide a consulting report covering the following areas.

I. EMPLOYMENT PATTERNS

We will identify the type of family most likely to be interested in purchasing in Waiola, and identify most probable places of employment during the development period and within a three year period thereafter. Our forecast would include types of industries, pay scales and geographic distribution.

II. MARKET SEGMENTATION

- (a) Based on the project's stated goals, we will define the lower limit of price and income of comparable "at market" housing, i.e. the upper limit of eligibility for the project.
- (b) We will define the range of income or probable purchasers for the project, including those who may qualify under subsidized programs with 20% of the residents being at the level of 80% of Median Family Income.
- (c) We will define the level of income below which prospects cannot qualify as a purchaser under any existing program.

III. DEMOGRAPHIC CHARACTERISTICS

We will describe other demographic characteristics of the target purchasers.

The report will be based on published data available from the City and County of Honolulu, Department of General Planning, the State Department of Planning and Economic Development, consulting reports submitted in conjunction with other proposed developments in Leeward Oahu, census data, other available data and reports, and our investigation of proposed developments in Central and Leeward Oahu.

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EXHIBIT B

CONSULTANTS

NEWELL BROOKS, JR., Managing Director, Chaney, Brooks & Company, Realtor, Certified Property Manager, Member Urban Land Institute, Real Estate Developer, Real Estate Consultant, former President of Milliani Town, Inc., and former General Manager of Wailea Development Company. Mr. Brooks has qualified as an expert witness before the Land Use Commission Hearing in 1984, regarding Housing and Population.

JOHN ZAPOTOCKY, Real Estate Consultant, has an MBA Degree from the University of Hawaii. Mr. Zapotocky has been a financial analyst for Kaiser Aetna (Hawaii Kai) and Wailea Development Company. He has served as Project Manager for the proposed Mokuleia Homesteads Development on Oahu's North Shore and has provided consulting services for a wide range of real estate projects.

EXHIBIT C

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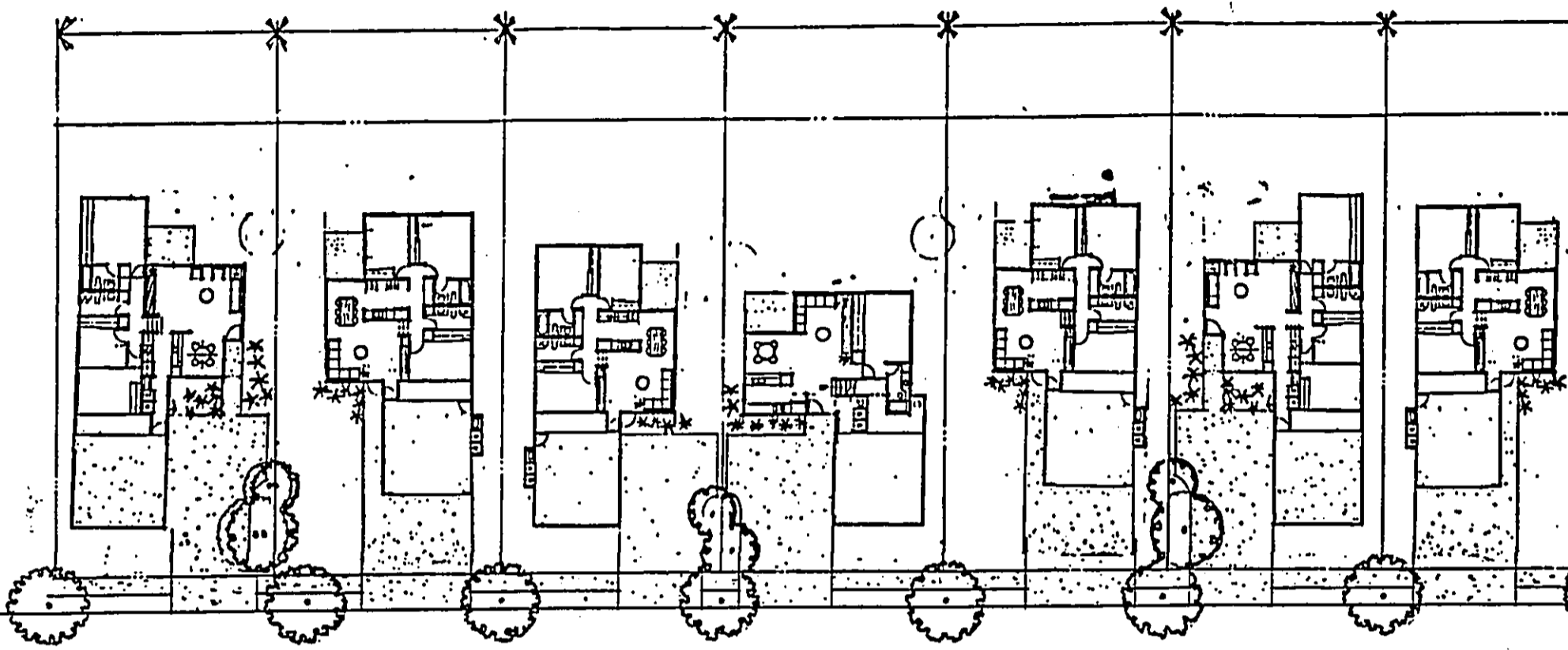
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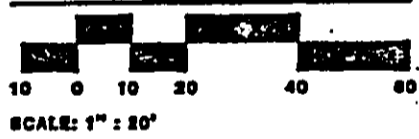
APPENDIX I

APPENDIX I

These representative unit types are presently under review by the Department of Housing and Community Development. They are offered for review in the EIS to demonstrate the type of designs being considered.



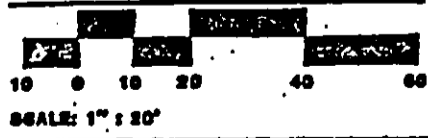
SITE PLAN



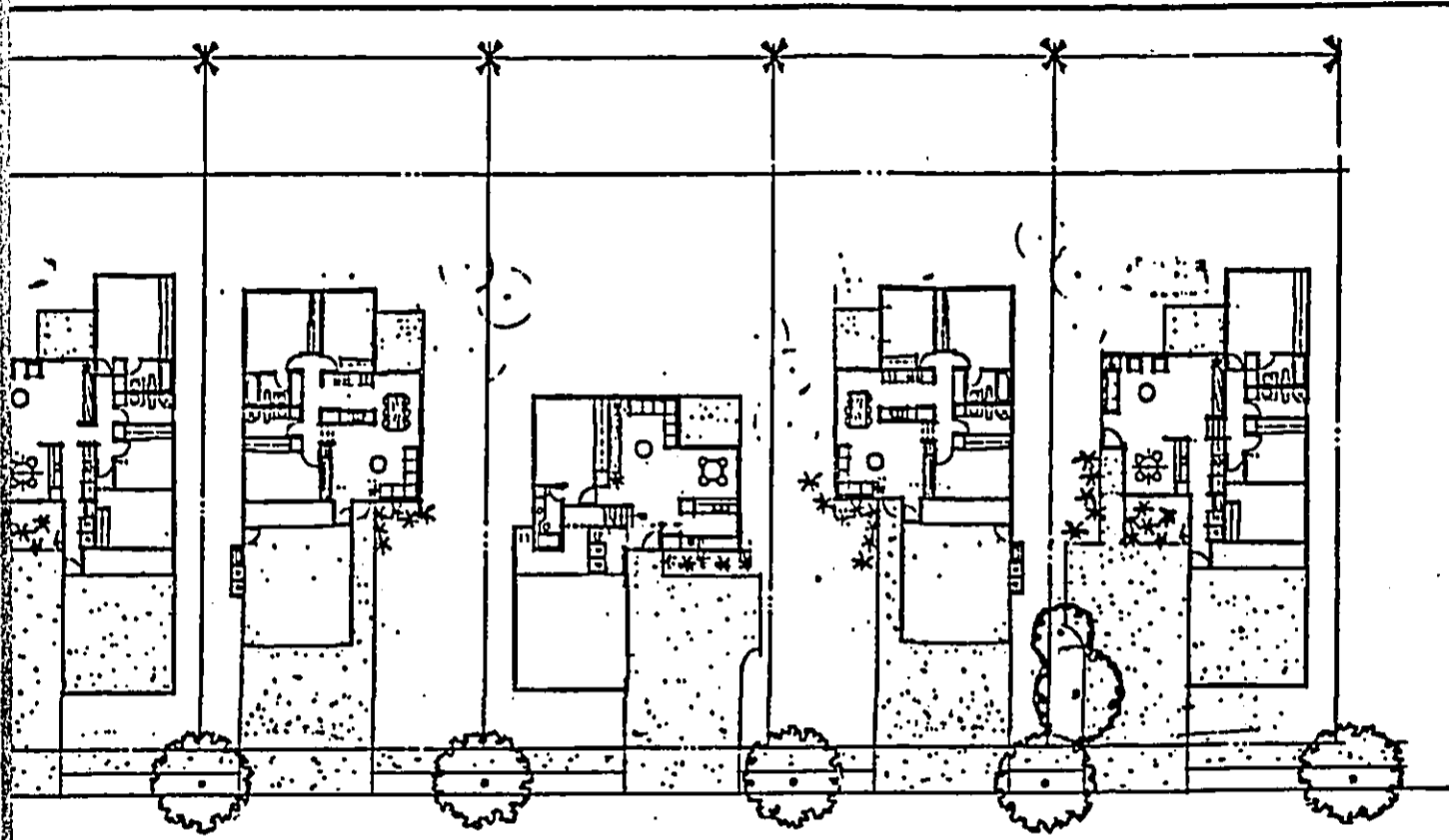
SCALE: 1" = 20'



STREET ELEVATION



SCALE: 1" = 20'



WAIOLA ESTATES SUBDIVISION
WAIPIO, EWA, OAHU, HAWAII