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OFC. OF ENVIRONMENTAL
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Mr. Joseph K. Conant
Executive Director
Department of Budget and Finance
Housing and Finance Development Corporation
Seven Waterfront Plaza, Suite 300
500 Ala Moana Boulevard
Honolulu, Hawaii 96813

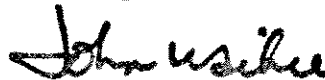
Dear Mr. Conant:

I am pleased to accept the final Environmental Impact Statement for the Kealakehe Planned Community as satisfactory fulfillment of the requirement of Chapter 343, Hawaii Revised Statutes. This environmental impact statement will be a useful tool in the process of deciding if the action described therein should be allowed to proceed. My acceptance of the statement is an affirmation of the adequacy of that statement under the applicable laws and does not constitute an endorsement of the proposed action.

When the decision is made regarding the proposed action itself, I expect the proposing agency to consider if the societal benefits justify the environmental impacts which will likely occur. These impacts are adequately described in the statement, and together with the comments made by reviewers, provide a useful analysis of the proposed action.

With kindest regards,

Sincerely,



JOHN WAIHEE

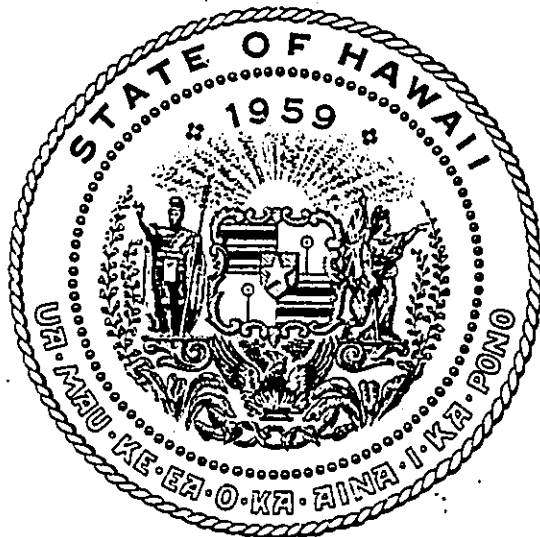
bcc: Hon. John C. Lewin
✓Dr. Bruce Anderson, OEQC

OCT - 8 1990 *JW*

KEALAKEHE PLANNED COMMUNITY

Kealakehe, North Kona, Hawaii

**FINAL
ENVIRONMENTAL IMPACT STATEMENT**



**PROPOSING AGENCY:
STATE OF HAWAII
HOUSING FINANCE AND DEVELOPMENT CORPORATION**

**PREPARED BY:
BELT COLLINS AND ASSOCIATES
SEPTEMBER 1990**

KEALAKEHE PLANNED COMMUNITY
Kealakehe, North Kona, Hawaii

FINAL
ENVIRONMENTAL IMPACT STATEMENT

This document is prepared pursuant to Chapter 343, Hawaii Revised Statutes.

PROPOSING AGENCY:

STATE OF HAWAII
HOUSING FINANCE AND DEVELOPMENT CORPORATION
7 Waterfront Plaza, Suite 300, 500 Ala Moana Boulevard
Honolulu, Hawaii 96813

PREPARED BY:

BELT COLLINS AND ASSOCIATES

RESPONSIBLE OFFICIAL:



JOSEPH K. CONANT, Executive Director

Sept 20, 1990

Date

State of Hawaii
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
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CHAPTER I

CHAPTER I
INTRODUCTION AND SUMMARY

1. APPLICANT AND BRIEF PROJECT SUMMARY

The Housing Finance and Development Corporation (HFDC) of the State of Hawaii is filing this environmental impact statement as the future landowner of the Kealakehe property. The majority of the property (approximately 800 acres) is owned by the State of Hawaii Department of Land and Natural Resources (DLNR) with an additional 10 acres owned by the Hawaii Housing Authority. The remaining 150 acres included in the proposed project area are owned by the Queen Liliuokalani Trust and intended to be purchased by the State of Hawaii for development by HFDC.

The HFDC proposes to develop the 960-acre project area as the Kealakehe Planned Community, a residential community containing approximately 4,100 units, 60% of which will be affordable for-sale and rental housing units.

2. PROPOSED GOVERNMENT ACTION

This environmental impact statement is prepared in accordance with Chapter 343, Hawaii Revised Statutes and the rules and regulations of the Office of Environmental Quality Control. It has been determined that the environmental impact statement is required pursuant to Chapter 200 of Title 11, Department of Health, Administrative Rules, Subchapter 5(b). This document is being prepared to accompany a Petition for Boundary Reclassification from Conservation and Agriculture to Urban, as well as a Conservation District Use Application for development in the Conservation District prior to requested boundary reclassification.

3. PURPOSE OF THIS DOCUMENT

The purpose of this document is to identify and assess environmental and social impacts that could result from the development of the Kealakehe Planned Community. Preparation of an Environmental Impact Statement requires a detailed analysis of the subject property and the proposed action and includes the preparation of technical support documents which are included in the appendix to the EIS. This process enables the applicant to identify weaknesses or inconsistencies in the project plan, propose mitigation measures designed to address potentially significant adverse impacts, respond to critical public and private review of the project, and ultimately create a well-planned project that is sensitive to the physical, natural and social environment within which it is proposed.

4. STATEMENT OF OBJECTIVES

The proposed project is intended to implement the Governor's Comprehensive State Housing Plan in West Hawaii. The primary objective of the Kealakehe Planned Community is to provide affordable housing units in the West Hawaii region. It is intended that the master planned residential community be developed in an economical manner. Additional objectives include: the provision of necessary infrastructure and facilities to support the residential units developed; the distribution of units such that 60% of those developed shall be targeted for persons or families meeting the income criteria for affordable housing eligibility; the provision of 40% of the developed units at market prices to generate revenue to reduce development costs of the affordable units; and, the leasing of commercial land to be developed in support of the residential uses for the purpose of deriving additional income to support the provision of affordable housing.

5. PROJECT DESCRIPTION

5.1 Project Setting

The state-owned lands of Kealakehe are located in North Kona, Hawaii approximately two miles north of Kailua-Kona and five miles south of Keahole Airport. The proposed project is situated on the western slope of Hualalai mountain on a portion of the Kealakehe property extending mauka from Queen Kaahumanu Highway to the existing Kealakehe community.

Kailua-Kona is the regional center of the western side of the Island of Hawaii. Historic Kailua Village serves as the town center and primary visitor attraction. The village is surrounded by a mix of resort, commercial, light industrial, and residential uses. In July, 1987, North Kona had a population of 20,500, compared to a population of 13,748 in 1980. Resort growth proposed in coastal areas of South Kohala and North Kona is expected to result in a significant expansion of Kailua-Kona's population over the next twenty or more years creating an increasing demand for new homes, both affordable and market-priced, as well as expanded residential-oriented public services and facilities.

5.2 Planned Community Development

The Kealakehe Planned Community is proposed as a mixed-use master planned community which will include housing, recreational uses, schools, public facilities, commercial areas, and a public golf course to be developed by the County of Hawaii. The project site is divided into fourteen villages ranging from 23 to 72 acres with an average size of 42 acres. Each village is intended to be developed as a single entity with a unifying urban design theme to be proposed and

implemented by the village's developer. While detailed design elements will be left to each village developer, the HFDC will establish overall design standards which will be included in the master plan and will be applicable to all fourteen villages. These will include guidelines to preserve viewplanes within and among villages, criteria for the sizing of infrastructure and its linkage among villages, roadway design standards to minimize through traffic on local streets, landscape requirements, and standards for the allocation and distribution of residential unit types and sales prices within the separate villages.

The master plan proposes the development of approximately 589 acres of the project site for residential land uses, with a total of 4,158 units. Each village will feature a mix of residential units equal to 60% affordable and 40% market priced. Affordable units are targeted for the elderly, special need group, assisted (very low income and lower income), and gap-group (moderate income) families and persons. Market units are targeted for families and persons of above moderate income and those earning incomes greater than 140% of the area's median income.

5.3 Proposed Infrastructure

Water: Based on the overall project demand at full buildout, a total production of 3,298 gallons per minute (gpm) will be required from wells serving the project. These wells are proposed to be located above the 1,600-foot elevation at sites yet to be determined. At full development, a total storage of about 5 million gallons (MG) will be required for the project. Storage will consist of three reservoirs. The system will also include all the necessary transmission lines to residential and non-residential land uses as well as complete fire-protection hydrant system.

Wastewater: The entire project will be linked to the Kealakehe Sewage Treatment Plant, now under construction on the makai Kealakehe parcel. The project will generate approximately 1.86 mgd of wastewater. Treated effluent from the STP will be used to irrigate the proposed Kealakehe public golf course.

Drainage: Drainage for the entire project will be handled by drywells of approximately 5 feet in diameter with a depth of 20 feet. Drywells will be situated within road right-of-ways wherever possible.

Power and Communications: The proposed development at build out will generate a demand for approximately 10.76 megawatts. This will result in the need for the development of two new 10 MVA/12 KV substation transformers and a new region-serving 69 KV transmission line. Major transmission lines will be located along primary arterial roadways.

Traffic Circulation: The project area will be intersected by two proposed region serving arterial roadways. The first will extend from Mamalahoa Highway downslope across private lands owned by Palani Ranch, through the Kealakehe property, and intersect with Queen Kaahumanu Highway. This roadway is referred to as the Kealakehe Parkway and is intended to be developed as a four to six lane arterial roadway within a 120-foot right-of-way. The roadway's intersection with Queen Kaahumanu Highway will initially require the development of channeling lanes. As traffic levels increase, the intersection will be converted to a grade separated interchange.

The second arterial roadway proposed for development bisects the project site, extending north to south, generally along the 300 foot elevation. It has been proposed by the County of Hawaii to serve as a major arterial with a 120-foot right-of-way paralleling Queen Kaahumanu Highway and extending from Palani Road to the northern end of the North Kona District. It is generally referred to as the Mid-Level roadway. Development of the Mid-Level roadway within the subject property will be timed with the phasing of residential development and related public facilities.

6. SUMMARY OF IMPACTS

Impacts to the environment are expected as a result of the development of the proposed project. Adverse impacts will be mitigated where possible and offset by benefits resulting from the project.

6.1 Short-Term Construction Period Impacts

- Increases in noise and air-borne particulate matter (fugitive dust).
- Increased construction vehicle traffic.
- Potential increase in storm run-off and potential erosion of imported top soil during revegetation period.

6.2 Long-Term Impacts

- Permanent changes to the topography of the area due to grading and site improvements.
- Loss of grazing land.
- Increases in storm run-off.
- Loss of open space character of the property.
- Loss of existing flora and introduction of exotic flora species.

- Loss of some archaeological sites.
- Increase in resident population.
- Increase in vehicular traffic.
- Introduction of pollutants associated with urbanization.
- Increase in demand for public utilities, including water service, wastewater treatment, solid waste disposal, storm water drainage, and electrical energy.
- Increase in demand for public facilities and services, including recreational opportunities, public education, public health care services, and protective services.

7. SUMMARY OF PROPOSED MITIGATION MEASURES

A variety of actions are proposed to mitigate adverse environmental and social impacts. With regard to short-term construction impacts, the use of properly muffled construction equipment should be required on the job site. State Department of Health's construction noise limits and curfew times can be enforced during project construction to reduce noise and vehicular traffic impacts. Fugitive dust can be controlled by watering active work areas, covering open bodied trucks and utilizing windscreens at construction sites. Impacts of soil runoff during the construction and pre-landscaping phases would be mitigated through careful design of residential areas, management controls established during construction, and a comprehensive landscaping program to be implemented with each phase of development.

Long-term impacts will be mitigated through the comprehensive master planning of the project and careful attention to environmentally sensitive areas and social concerns. Major mitigation measures include:

- Conformance to all appropriate regulatory guidelines and procedures.
- Preservation of significant archaeological sites and the designation of a 27-acre archaeological preserve.
- Preservation of endangered plant species, including the establishment of a 5-acre plant preserve and the funding of a long-term mitigation program.
- Design and construction of infrastructure sized to accommodate the entire project, including potable water sources and transmission lines, wastewater transmission lines, storm drainage system, all in full compliance with County Department of Public Works and State Department of Health standards.
- Implementation of a new regional roadway system including providing a 300-foot setback for Queen Kaahumanu Highway, construction of a new mauka-makai arterial

roadway and grade-separated interchange, signalization of access road intersection at Palani Road, and construction of a portion of the County's proposed Mid-Level roadway across the subject property.

- Inclusion of an elementary school site and high school site, public parks, a recreational center, neighborhood-serving commercial areas, a 30-acre Civic Center, and a public golf course in the proposed master planned community.
- Utilization of slow time release or rapid uptake fertilizers to prevent groundwater contamination.

8. SUMMARY OF ALTERNATIVES CONSIDERED

Development of the project at a small scale, that is to say, development of only a portion of the property area was considered in the course of master plan preparation. It was determined that the smaller the project, the less feasible it is to cover necessary off-site infrastructure costs, including potable water development, wastewater treatment, and roadway improvements. Many of these costs might be borne by the State regardless of the size of the project, and be passed on to the prospective owners of the housing units. Reducing the number of units in the development may, therefore, result in increasing the costs to the units and decreasing the affordability to the target group.

An alternative to the proposed project is to leave the land undeveloped (the 'no-action' alternative). While this alternative would maintain open space in an area where significant urban expansion is projected, it is not compatible with the Governor's policy promoting the utilization of State property for the development of affordable housing.

Agricultural development of the property including activities such as crop cultivation may not be economically feasible due to poor soil conditions, topography, and the lack of potable water and access roadways. The cost of developing the infrastructure necessary to support large scale crop cultivation may be prohibitive because the development costs would greatly exceed the income received from cash crops. The continued use of the property for extensive grazing of livestock may be incompatible with existing and proposed uses of neighboring properties due to primarily to odors and insects associated with large herds of cattle.

Limiting the development of the subject property to recreational purposes such as public playing fields and parks may not be economically feasible given the cost of infrastructure needed to service the site, including roadways, sewer and drainage lines, potable water, and electrical lines versus the income derived from recreational activities.

There is no evidence that the subject property would yield quarry material of sufficient quantity or quality to warrant such activity. However, the use of the property for resource extraction is not compatible with the projected uses of the neighboring Queen Liliuokalani Trust property.

The use of the property above Queen Kaahumanu Highway as a possible resort is not considered to be practical from a marketing point of view; it would simply not be competitive with ocean-oriented resorts.

Development of the entire project area for public facilities, commercial or industrial development would not contribute to the provision of affordable housing in the region, a goal clearly established by the Governor of Hawaii.

In addition to the above alternatives, eleven alternate configurations for the proposed residential community were evaluated in the course of master planning the project. The preferred project concept is based upon the refinement of these alternatives.

9. SUMMARY OF UNRESOLVED ISSUES

The cumulative result of public and private planning efforts in West Hawaii is an uncertainty at this time about the interrelationship of these plans and their collective impact upon such basic issues as the timing or phasing of regional infrastructure development and the location and phasing of major growth-inducing public and private facilities such as a new landfill, a regional hospital, a university campus and a regional sports center. Although state, county and private landowner plans are presently unresolved, the public review process of their various plans provides an adequate forum for the discussion and evaluation of the inherent issues. The publication of this environmental impact statement will contribute to the resolution of presently unresolved issues.

10. SUMMARY OF COMPATIBILITY WITH LAND USE PLANS AND POLICIES

The proposed project site is located adjacent to West Hawaii's regional center on land designated for urban expansion by the Hawaii County General Plan. A small portion of the subject property is designated Urban by the State Land Use Commission. The requested government action will permit the implementation of the project to fulfill the Governor's affordable housing goal for West Hawaii. The project has been determined to be generally consistent with State and County land use plans, goals, objectives, policies and priority guidelines.

11. NECESSARY APPROVALS AND PERMITS

Following is a list of major approvals and permits required for the implementation of the proposed project. Additional permits and approvals may be necessary. In addition to State Land Use Commission approval for redesignation of land use districts, the HFDC will seek necessary State and County approvals for the development of the project. However, pursuant to Act 15 (Session Laws of Hawaii, 1988), the proposed development can be exempted from County general and development plans, and zoning requirements. HFDC, in its implementation of the Kealahou Planned Community, will be working with the Hawaii County review agencies for the review and approval of project plans and specification and issuance of required permits as called for in Chapter 15-73A, Hawaii Administrative Rules.

<u>Permit or Approval</u>	<u>Authority</u>
Conservation District Use Permit	Board of Land and Natural Resources
Land Use Boundary Amendment	State Land Use Commission
Potable Water System Approval	State Department of Health
Underground Injection Control Line Approval	State Department of Health
Water Master Plan Approval	Hawaii County Board of Water Supply
Drainage Master Plan Approval	Hawaii County Department of Public Works
Change of Zoning	Hawaii County Council
Subdivision Approval	Hawaii County Planning Department
Building and Grading Permits	Hawaii County Planning Department

CHAPTER II

CHAPTER II
DESCRIPTION OF THE PROPOSED PROJECT

1. REGIONAL SETTING

The state-owned lands of Kealakehe are located in North Kona, Hawaii approximately two miles north of Kailua-Kona and five miles south of Keahole Airport (see Figure 2-1). The proposed project is situated on the western slope of Hualalai mountain on a portion of the Kealakehe property extending mauka from Queen Kaahumanu Highway to the existing Kealakehe community. The project consists of a total of about 960 acres of land.

Kailua-Kona is the regional center of the western side of the Island of Hawaii. Historic Kailua Village serves as the town center and primary visitor attraction. The village is surrounded by a mix of resort, commercial, light industrial, and residential uses. In July, 1987, North Kona had a population of 20,500, compared to a population of 13,748 in 1980. Resort growth proposed in coastal areas of South Kohala and North Kona is expected to result in a significant expansion of Kailua-Kona's population over the next twenty or more years creating an increasing demand for new homes, both affordable and market-priced, as well as expanded residential oriented public services and facilities and commercial and industrial uses.

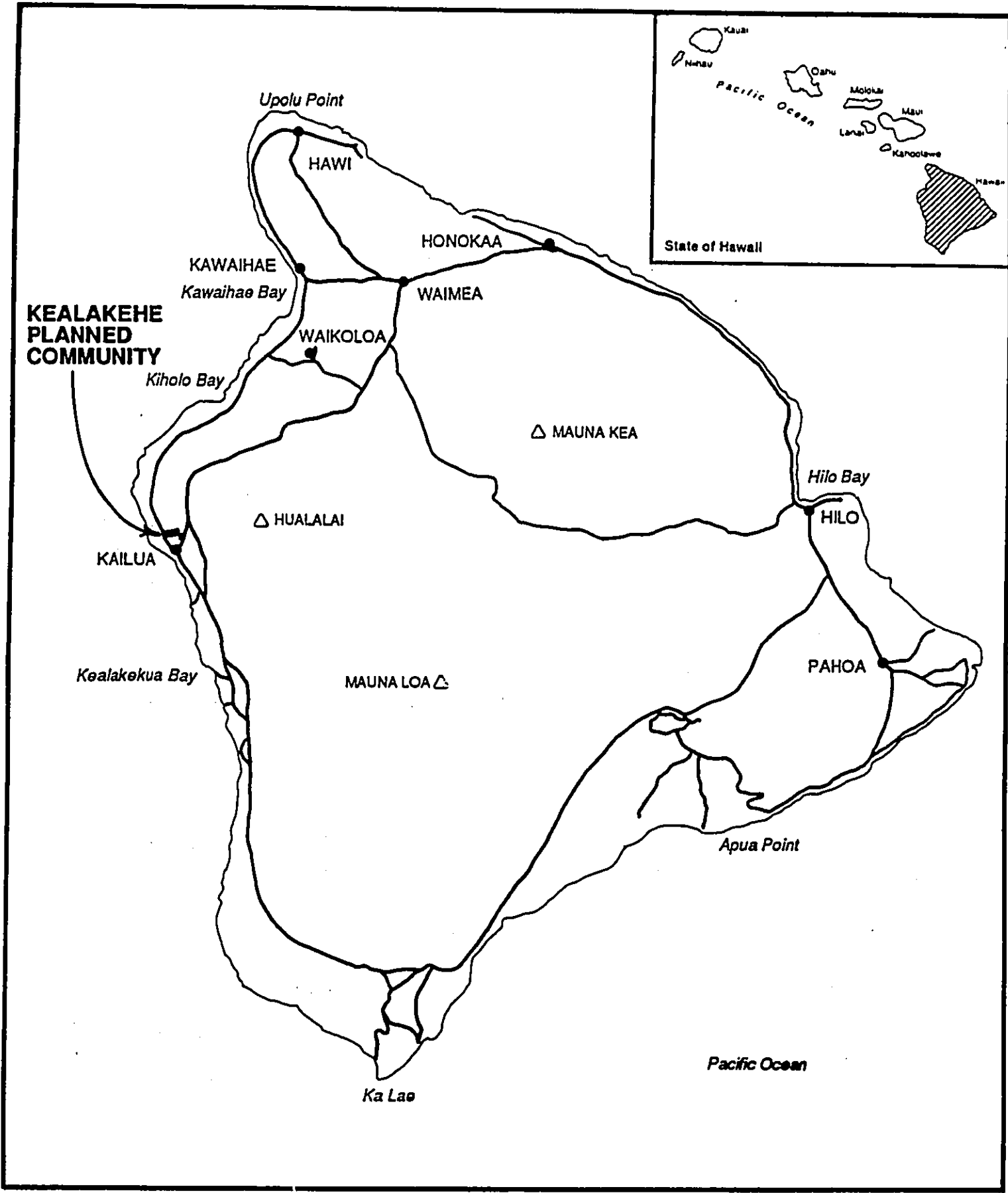
Kailua-Kona is presently served by three principal arterial roadways; Queen Kaahumanu Highway, Palani Road, and Kuakini Highway.

2. EXISTING AND SURROUNDING USES

The proposed project site consists of four primary properties identified in Table 2-1 below (see Figure 2-2a and 2-2b). All four of the properties are presently vacant.

TABLE 2-1: TAX MAP PARCELS

<u>TMK 7-4-08:</u>	<u>Acreage</u>	<u>Owner</u>
7-4-8: 17	800.823	State of Hawaii
7-4-8: por. 12	150.000	Queen Liliuokalani Trust
7-4-8: 43	8.041	State of Hawaii
7-4-19: por. 43	2.000	State of Hawaii
TOTAL:	960.863	



0 5 10 20

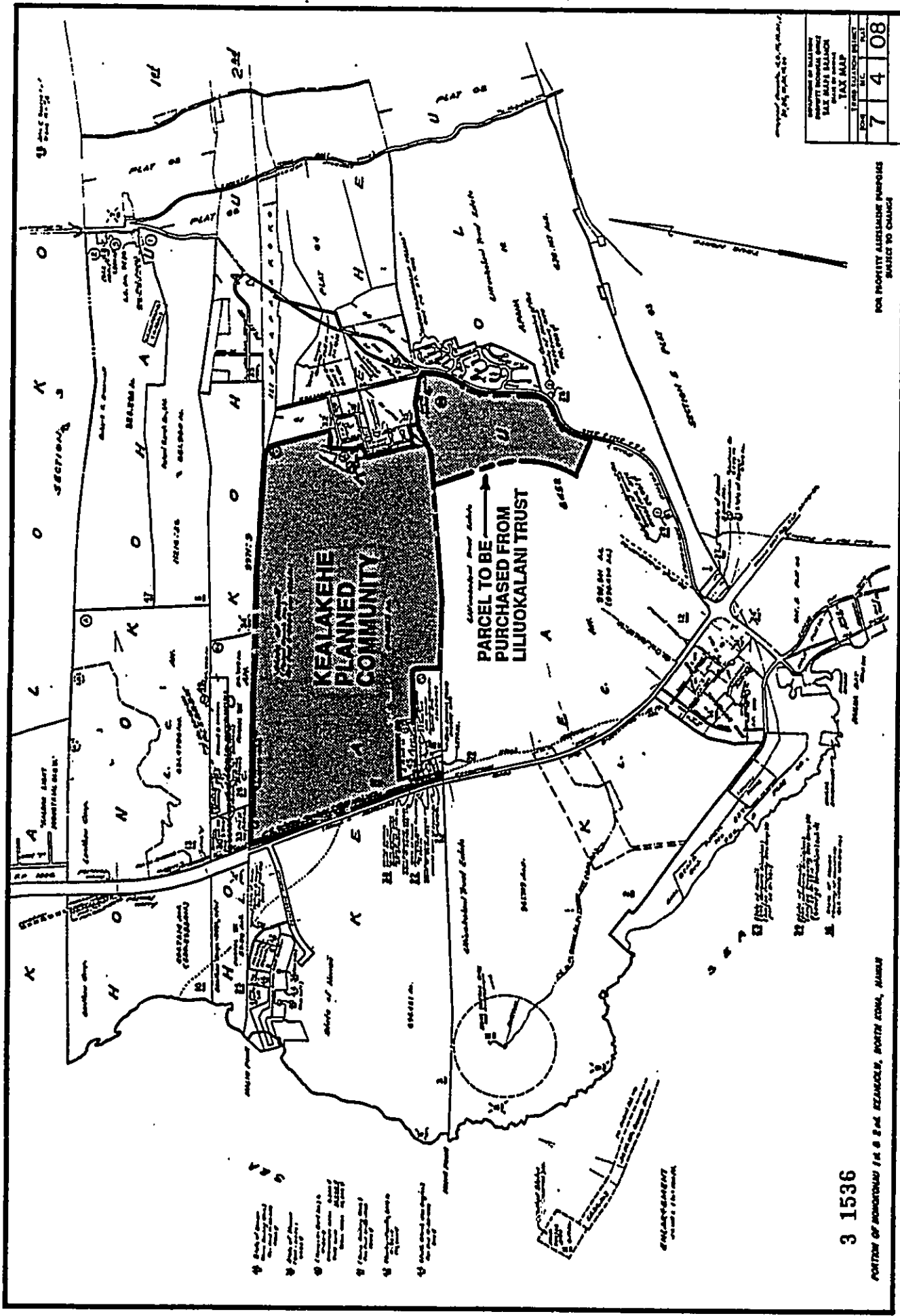
SCALE IN MILES



NORTH

Prepared By: BELT COLLINS AND ASSOCIATES • JUNE 1990

Figure 2-1
ISLAND OF HAWAII



0 1000 2000 4000
SCALE IN FEET

⬆ NORTH

Prepared by: BELT COLLINS & ASSOCIATES
Date: JUNE 1980

**KEALAKEHE PLANNED COMMUNITY
ENVIRONMENTAL IMPACT STATEMENT**

Figure 2-2a
TAX MAP 7-4-8

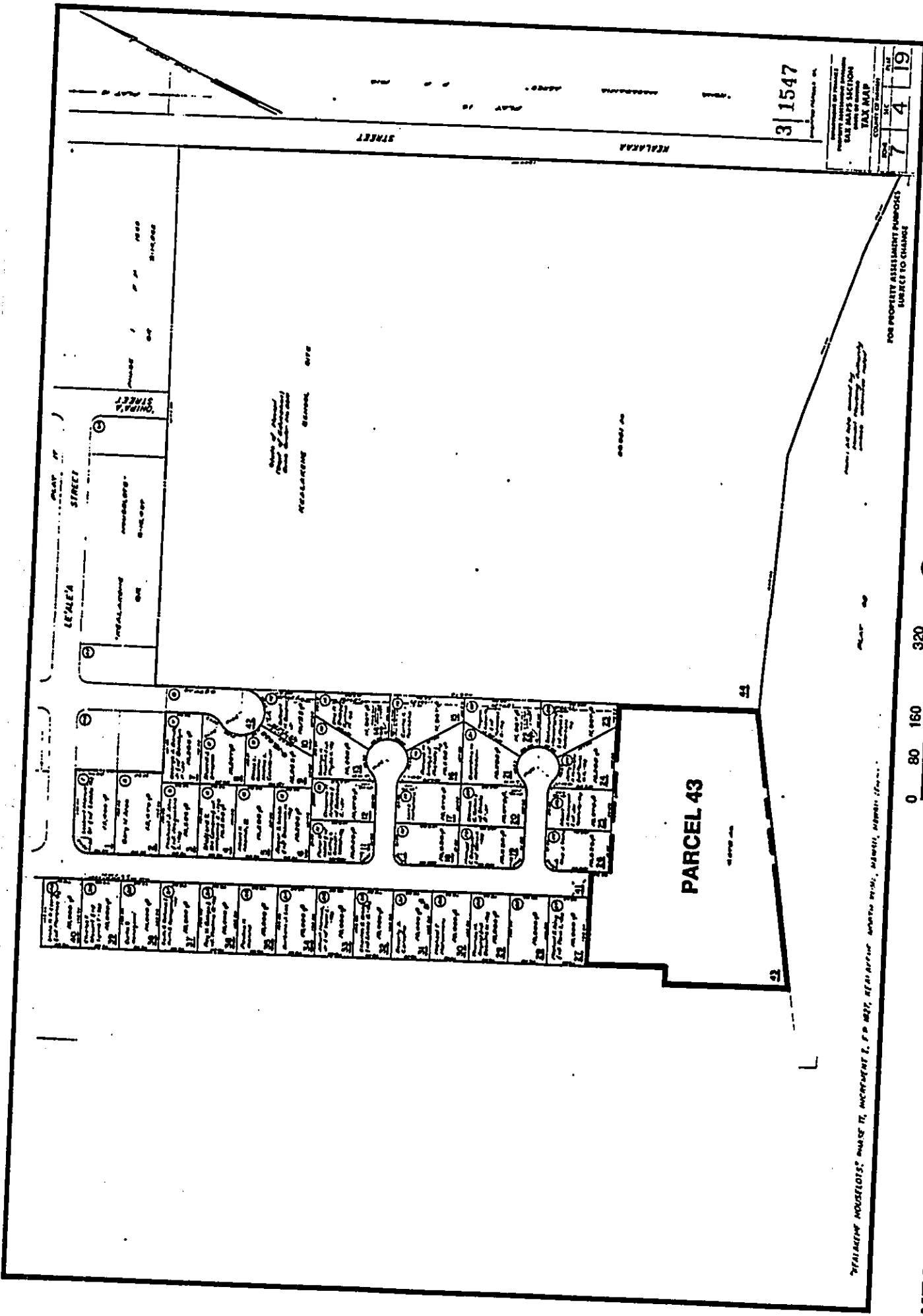
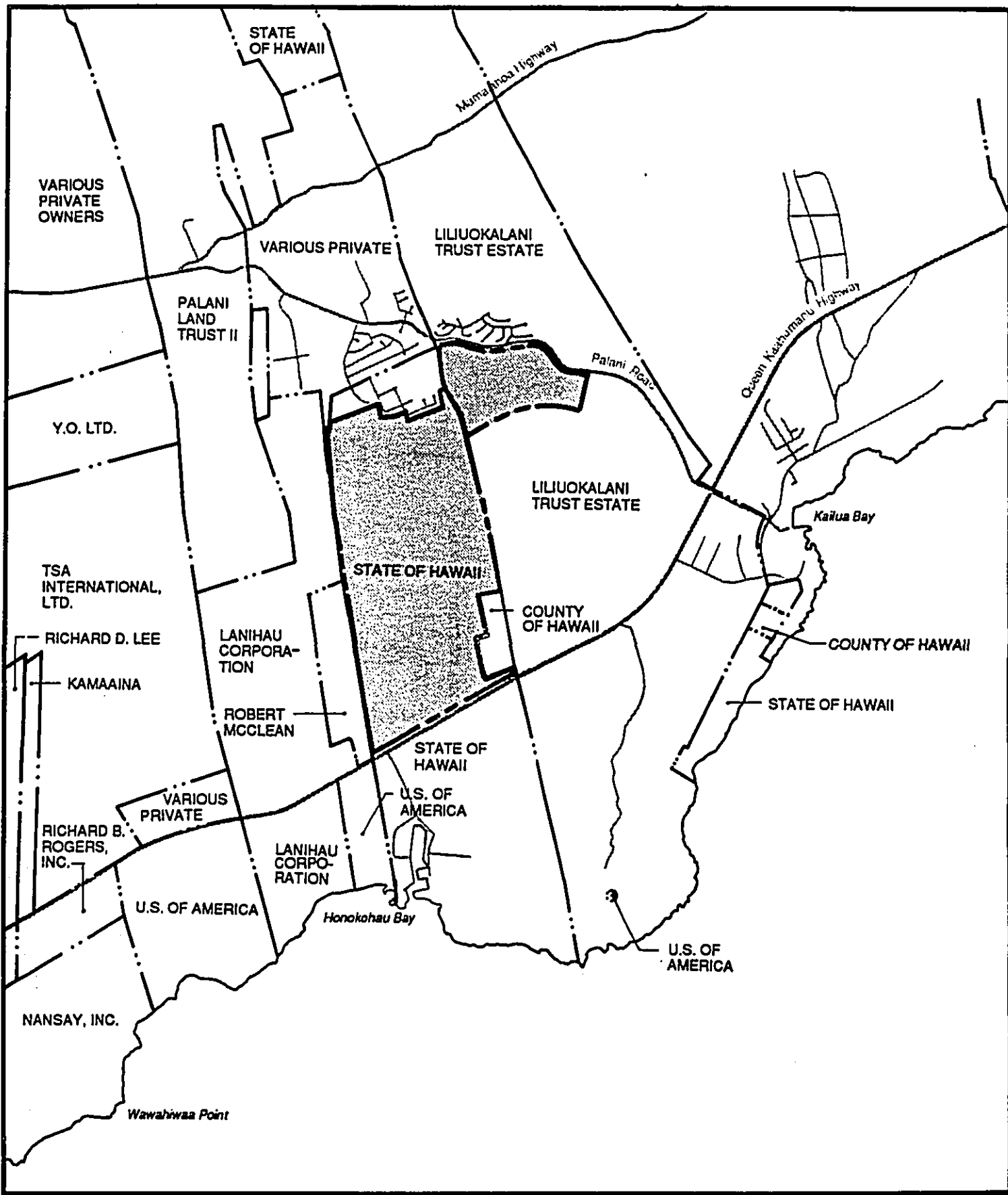


Figure 2-2b
TAX MAP 7-4-19: 43

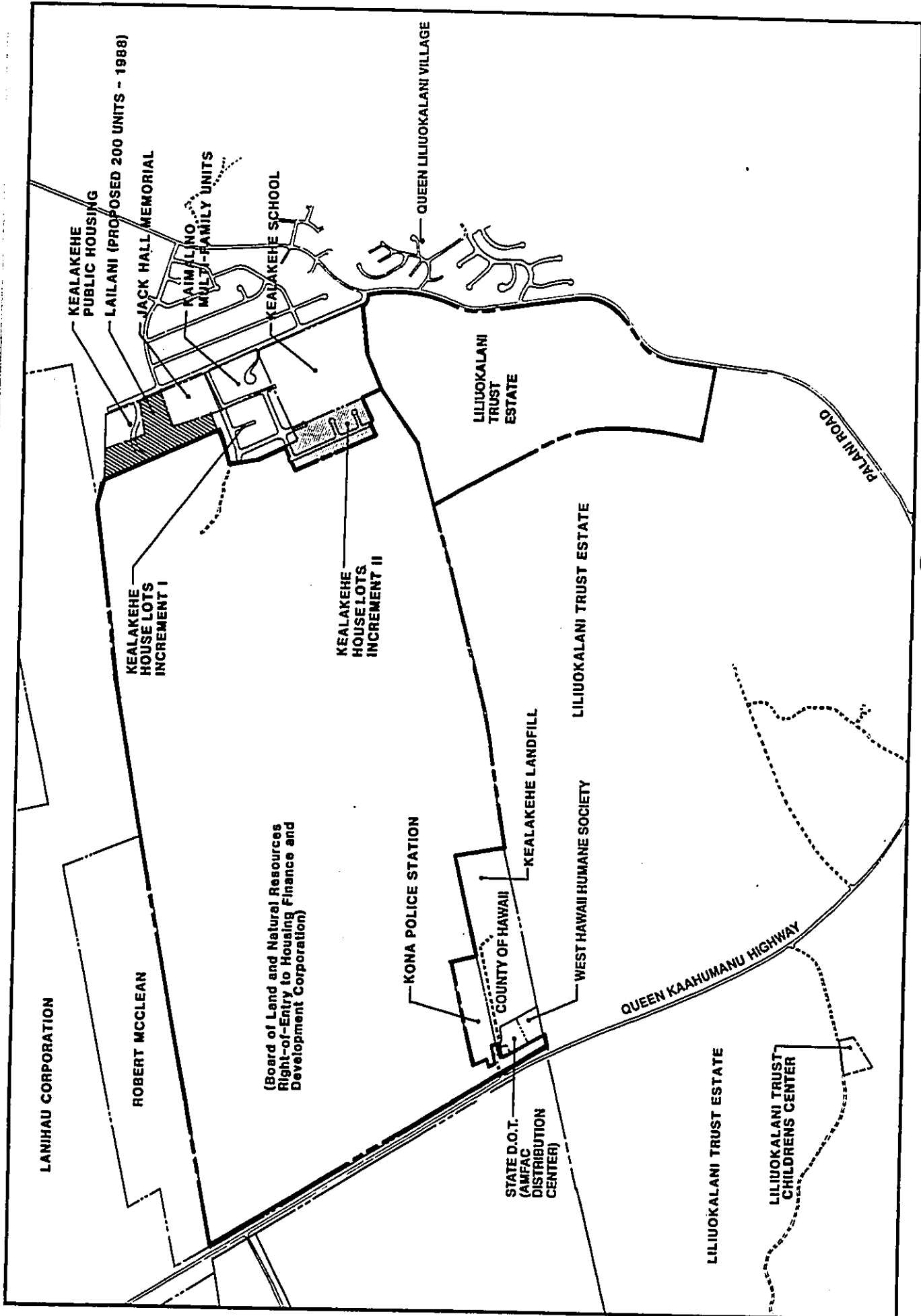


0 1000 2000 4000



SCALE IN FEET
 NORTH
 Source: COUNTY OF HAWAII, REAL PROPERTY TAX DIVISION
 Prepared By: BELT COLLINS AND ASSOCIATES • JUNE 1990

Figure 2-3
 REGIONAL LAND OWNERSHIP



**KEALAKEHE PLANNED COMMUNITY
ENVIRONMENTAL IMPACT STATEMENT**

0 400 800 1600
SCALE IN FEET
NORTH
Prepared by: BELT COLLINS & ASSOCIATES
Date: JUNE 1990

Figure 2-4
PROPERTY OWNERSHIP & LAND USE

The project area is bordered on its southwestern corner by a parcel of property totaling approximately 43 acres which contains a variety of uses including the Kealakehe Landfill, a County transfer station, the West Hawaii Humane Society animal shelter, a privately operated terminal freight storage facility, an electrical substation, and a County police substation. The 43 acre area is depicted in the project's master plan as the site of a proposed Civic Center. However, the area is not included in the HFDC's Petition for Boundary Reclassification to Urban nor this Environmental Impact Statement because it is under the jurisdiction of the County of Hawaii.

As depicted in Figure 2-3, the project area is bordered on the northeast by land belonging to Palani Ranch and used primarily for cattle grazing, and on the northwest by land owned by Robert McClean and used for quarrying of rock, a ready-mix concrete batch plant, and boat storage and repair. To the east, the property is bordered by the existing Kealakehe community (Figure 2-4) which includes a number of State-assisted public housing and affordable housing projects: Kealakehe House Lots Increments I and II (fee simple); Kealakehe Public Housing; Kairimalino Multi-Family Units; and La'ilani Multi-Family Rental Housing project; as well as the privately developed Jack Hall Memorial Housing. Together, these projects contain a total of 428 single family and multi-family units. Located adjacent to the existing housing projects are the Kealakehe Elementary and Intermediate Schools. A privately owned residential subdivision consisting of approximately 268 lots lies further east, across Kealakehe Street. To the south, the property is bordered by lands owned by the Queen Liliuokalani Trust, including the Queen Liliuokalani Village which contains 183 single family leasehold units, and a portion of Palani Road, as well as the County owned property discussed above. Queen Kaahumanu Highway borders the property on the west. The Honokohau Small Boat Harbor and the Kealakehe Sewage Treatment Plant (presently under construction) are located on State owned land makai of the highway and the subject property. The state owned Kealakehe property makai of the highway is not included in the project master plan or this environmental impact statement.

3. IDENTIFICATION OF THE APPLICANT AND THE PROPOSED ACTION

The Housing Finance and Development Corporation (HFDC) of the State of Hawaii is filing this environmental impact statement as the future landowner of the Kealakehe property. The majority of the Kealakehe property (approximately 800 acres) is owned by the State of Hawaii Department of Land and Natural Resources (DLNR). The State of Hawaii Housing Finance and Development Corporation (HFDC) intends to acquire Kealakehe lands from the DLNR for the development of residential and support uses. Two small parcels, totaling approximately 10 acres, located makai of and adjacent to the existing Kealakehe I and II projects are owned by the Hawaii Housing Authority and are available for development by the HFDC (see Figure 2-2b).

The remaining 150 acres included in the proposed project area are owned by the Queen Liliuokalani Trust and intended to be purchased by the DLNR for eventual sale to the HFDC to serve as a residential expansion area for the Kealakehe Planned Community.

The HFDC has prepared this environmental impact statement for inclusion with its application to the State Land Use Commission for a boundary amendment to redesignate the subject property from Conservation and Agriculture to Urban.

4. INTENDED USE OF THIS DOCUMENT

This environmental impact statement is prepared in accordance with Chapter 343, Hawaii Revised Statutes and the rules and regulations of the Office of Environmental Quality Control. It has been determined that the environmental impact statement is required pursuant to Chapter 200 of Title 11, Department of Health, Administrative Rules, Subchapter 5(b). This document is being prepared to accompany a Petition for Boundary Reclassification, as well as a Conservation District Use Application for development in the Conservation District prior to requested boundary reclassification.

5. ACCEPTING AUTHORITY

The accepting authority for this EIS is the Governor of the State of Hawaii.

6. PROJECT BACKGROUND

The proposed project, to be known as the Kealakehe Planned Community, is intended to implement the Governor's Comprehensive State Housing Plan in West Hawaii. Master planning of the Kealakehe Planned Community is being undertaken by the State of Hawaii through its Housing Finance and Development Corporation.

The primary goal of the project is to provide affordable housing opportunities in response to existing and projected increases in demand for affordable housing units in the West Hawaii area. It is estimated that there is a need of approximately 30,000 to 40,000 new housing units in this area of the Big Island over the next 20 years.

Planning for the Kealakehe Planned Community began in 1987 with the preparation of a Concept Feasibility Study which evaluated a number of development alternatives for the State owned Kealakehe property. Following publication and review of the Concept Feasibility Study,

the original project area which encompassed State owned land on both sides of Queen Kaahumanu Highway was reduced to include only that portion of land located mauka of the highway. Once the project area was determined, efforts were directed to the preparation of a project master plan. This environmental impact statement is based upon a master plan which is presently nearing completion.

7. DEVELOPMENT CONCEPT

On July 1, 1987, the development, financing, residential leasehold and relocation functions of the Hawaii Housing Authority (HHA) were assumed by the newly created Housing Finance and Development Corporation (HFDC). Prior to the transfer of these functions, the HHA's former Executive Director, Russell N. Fukumoto, prepared a memorandum titled *Affordable Housing Development Concept* (March 20, 1986) which stated:

"The development concept basically incorporates a planned development with emphasis on providing a large percentage of residential units affordable to lower-income and gap-group families. This concept is predicated on government acquiring, master planning, and developing large parcels of land in the various counties...Section 359G-10.5 allows the [Hawaii Housing] Authority to develop projects that include market units. Under this concept, the net income derived from the sale of these market units could be used to reduce the cost of some or all of the affordable units within the development."

The memorandum also presented the criteria for development of affordable housing by the HHA. The Kealakehe Planned Community proposal is generally consistent with four criteria set forth in the memorandum:

- reasonably priced land
- adjacent to existing or planned infrastructure
- relatively flat land; and
- close to employment centers, existing communities and/or areas of growth.

The proposed project consists of a residential community of approximately 4,100 housing units, with 60% of the units to be sold at prices affordable to persons earning low and moderate incomes and the remaining 40% of the units to be sold at market prices. As set forth in the State Housing Functional Plan (1989), "affordable housing" is defined as for-sale and for-rent units targeted for persons or families within the following income groups:

1. Very low income - those earning 50% of the area median income and below;
2. Lower income - those earning between 50% and 80% of the area median income;
3. Moderate income - those earning between 80% and 120% of the area median income;
4. Above-moderate income - those earning between 120% and 140% of the area median income.

However, it should be noted that the affordable housing to be developed in the Kealakehe Planned Community is targeted only for the first three income groups presented above. Housing units priced to meet the needs of the fourth group, above-moderate income, are considered to be market-priced units.

Development of the project will be phased over a period of approximately twenty years with the construction of a total of 14 Villages, each with the requisite 60/40 distribution of affordable and market housing units. The HFDC believes that the inclusion of a variety of housing types and families and individuals of varying income levels within each village is preferred to the establishment of homogeneous residential areas which lack variety in unit types and group people of similar incomes. The development of the market housing component within each village is intended to assist in offsetting, to some degree, the cost of providing a mix of affordable housing units targeted for a range of need groups. A developer will be selected for the construction of each village. The actual character and aesthetic design of the village and its various components will be left to the developer. The HFDC intends to coordinate the provision of regional infrastructure to serve the villages.

Under this development concept, the State will act as the lead in the development of the proposed project and assumes all risks associated with land acquisition, master planning and obtaining the necessary land use and zoning permits.

8. STATEMENT OF PROJECT OBJECTIVES

The primary objective of the Kealakehe Planned Community is to provide sorely needed affordable housing units in the West Hawaii region. It is intended that the master planned residential community be developed in an economical manner. Additional objectives include: the provision of necessary infrastructure and facilities to support the residential units developed; the distribution of units such that 60% of those developed shall be targeted for persons or families meeting the income criteria for affordable housing eligibility; the provision of 40% of the developed units at market prices to generate revenue to reduce development costs of the affordable units; and, the leasing of commercial land to be developed in support of the residential uses for the purpose of deriving additional income to support the provision of affordable housing.

9. MASTER PLAN

The Kealakehe Planned Community is proposed as a mixed-use master planned community which will include housing, recreational uses, schools, public facilities, and commercial areas. As

discussed earlier the total master planned area encompasses approximately 960 acres. The master plan includes the eventual development of a 30-acre Civic Center on County owned land in the vicinity of the existing police substation. However, analysis of this element is not included in the environmental impact statement. A land use summary of the master plan, including the Civic Center, is contained in Table 2-2. The master plan land use concept is presented in Figure 2-5.

The project site also includes a 195 acre area located immediately east (mauka) of the Queen Kaahumanu Highway which is reserved for development by the County of Hawaii as an effluent disposal area for the County's Kealakehe Sewage Treatment Plant which is presently under construction on the west (makai) side of the highway. The effluent disposal area will be transferred by Executive Order of the Governor from the State to the County. As a means of putting the land to its most productive and beneficial use, the County of Hawaii proposes to develop the area as a public golf course serving the Kailua-Kona area. While the golf course site has been included in the environmental analysis herein, details of its specific layout and operation fall under the jurisdiction of the County and are unknown at this time.

The project site is divided into fourteen "villages" or neighborhoods ranging from 23 to 72 acres with an average size of 42 acres. The configuration of the 14 villages is presented in Figure 2-6. Each village is intended to be developed as a single entity with a unifying urban design theme to be proposed and implemented by the village's developer. While detailed design elements will be left to each village developer, the HFDC will establish overall design standards which will be included in the master plan and will be applicable to all fourteen villages. These will include guidelines to preserve viewplanes within and among villages, criteria for the sizing of infrastructure and its linkage among villages, roadway design standards to minimize through traffic on local streets, landscape requirements, and standards for the allocation and distribution of residential unit types and sales prices within each village.

The major entry to the project is proposed at Queen Kaahumanu Highway and will offer a panoramic view of the entire community extending upslope from the eastern edge of the proposed golf course. A large commercial shopping area serving the entire community will be situated along the left (north) side of the roadway which will be bordered on the right by the public golf course. Residential development will begin at the eastern boundaries of the commercial center and the golf course. A secondary entry, which will serve as the project's initial entry during the first phase of development, will be situated at the makai end of Kealakehe Street which presently deadends at the project's eastern property boundary. Views from this entry will offer an uninterrupted vista of the entire region's coastline extending from Kailua town to Kaloko Point. Landscaped entry features will be developed at both locations. Eventually, additional entry features will be developed at

TABLE 1: LAND USE SUMMARY

VILLAGE	RENTAL (MFU)	% of TOTAL	ACREAGE	AFFORDABLE (MFU)	% of TOTAL	ACREAGE	AFFORDABLE < 120% (SFU)	% of TOTAL	ACREAGE	MARKET 120%-140% (SFU)	% of TOTAL	ACREAGE
VILLAGE 1							212	60%	35	48	13%	8
VILLAGE 2							112	60%	19	24	13%	4
VILLAGE 3	96	19%	8	36	7%	3	170	34%	28	24	5%	4
VILLAGE 4	96	23%	8	24	6%	2	136	32%	23	20	5%	3
VILLAGE 5							114	60%	19	14	7%	2
VILLAGE 6	96	40%	8	30	12%	3	18	7%	3			
VILLAGE 7	94	43%	8				36	17%	6			
VILLAGE 8	46	18%	4	24	10%	2	80	32%	13	38	15%	6
VILLAGE 9	46	15%	4	48	16%	4	90	29%	15			
VILLAGE 10	54	19%	5				114	40%	19			
VILLAGE 11				30	17%	3	74	43%	12			
VILLAGE 12	120	33%	10				96	27%	16	30	8%	5
VILLAGE 13	120	33%	10				96	27%	16	30	8%	5
VILLAGE 14	84	28%	7				96	32%	16			
TOTAL:	852	20%	71	192	5%	16	1444	35%	241	228	5%	38

TABLE 1: LAND USE SUMMARY (continued)

VILLAGE	MARKET (SFU)	% of TOTAL	ACREAGE	MARKET (MFU)	% of TOTAL	ACREAGE	TOTAL ACREAGE	TOTAL UNITS	% AFFORD.	% MARKET	VILLAGE DENSITY
VILLAGE 1	96	27%	16				59	356	60%	40%	6
VILLAGE 2	52	28%	9				31	188	60%	40%	6
VILLAGE 3	174	35%	29				72	500	60%	40%	7
VILLAGE 4	148	35%	25				61	424	60%	40%	7
VILLAGE 5	62	33%	10				32	190	60%	40%	6
VILLAGE 6	98	40%	16				30	242	60%	40%	8
VILLAGE 7	88	40%	15				29	218	60%	40%	8
VILLAGE 8	64	25%	11				36	252	60%	40%	7
VILLAGE 9	40	13%	7	84	27%	7	37	308	60%	40%	8
VILLAGE 10	36	13%	6	78	28%	7	36	282	60%	40%	8
VILLAGE 11	22	13%	4	48	28%	4	23	174	60%	40%	8
VILLAGE 12	116	32%	19				50	362	60%	40%	7
VILLAGE 13	116	32%	19				50	362	60%	40%	7
VILLAGE 14	120	40%	20				43	300	60%	40%	7
TOTAL:	1232	30%	205	210	5%	18	589	4158	60%	40%	7

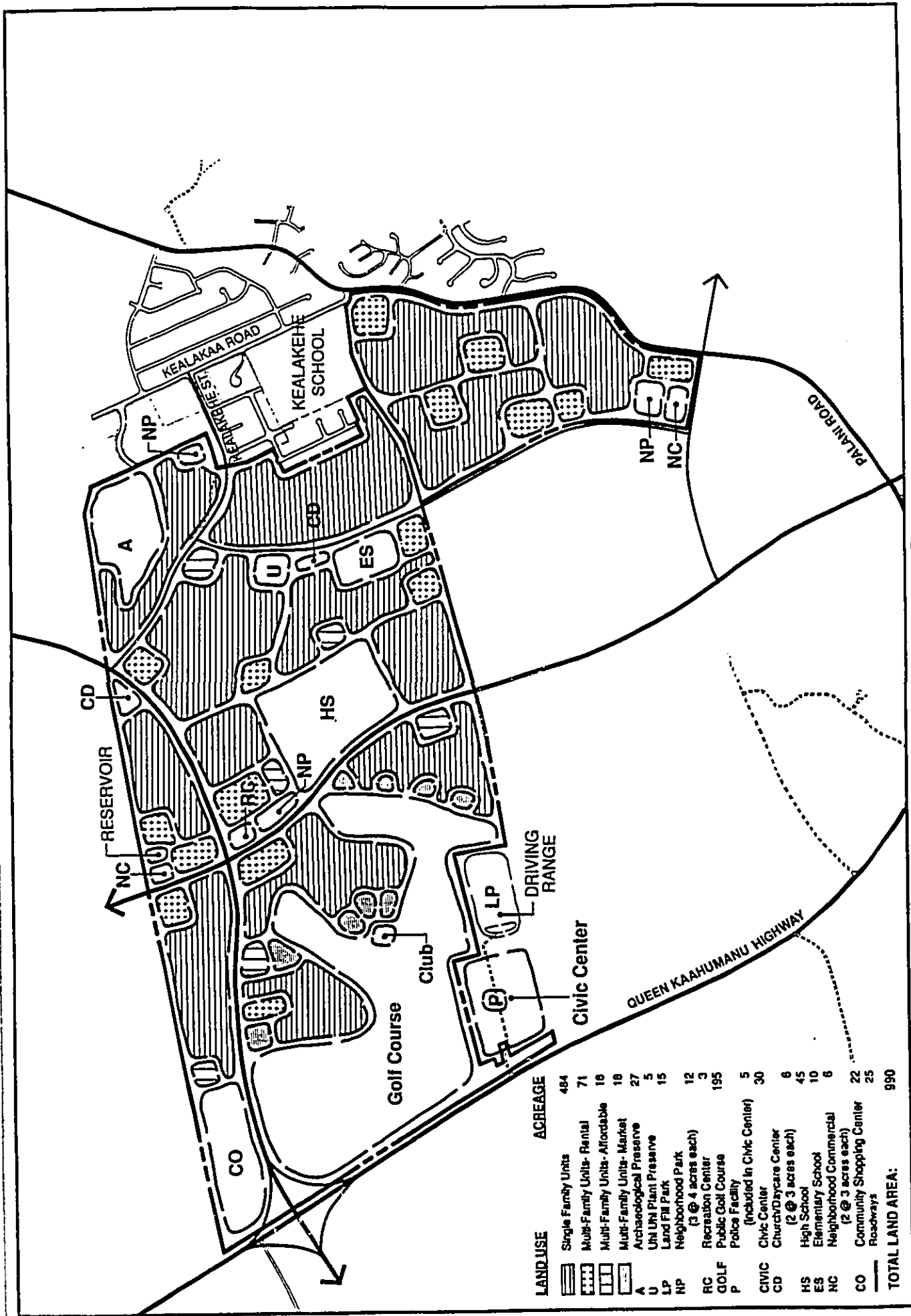
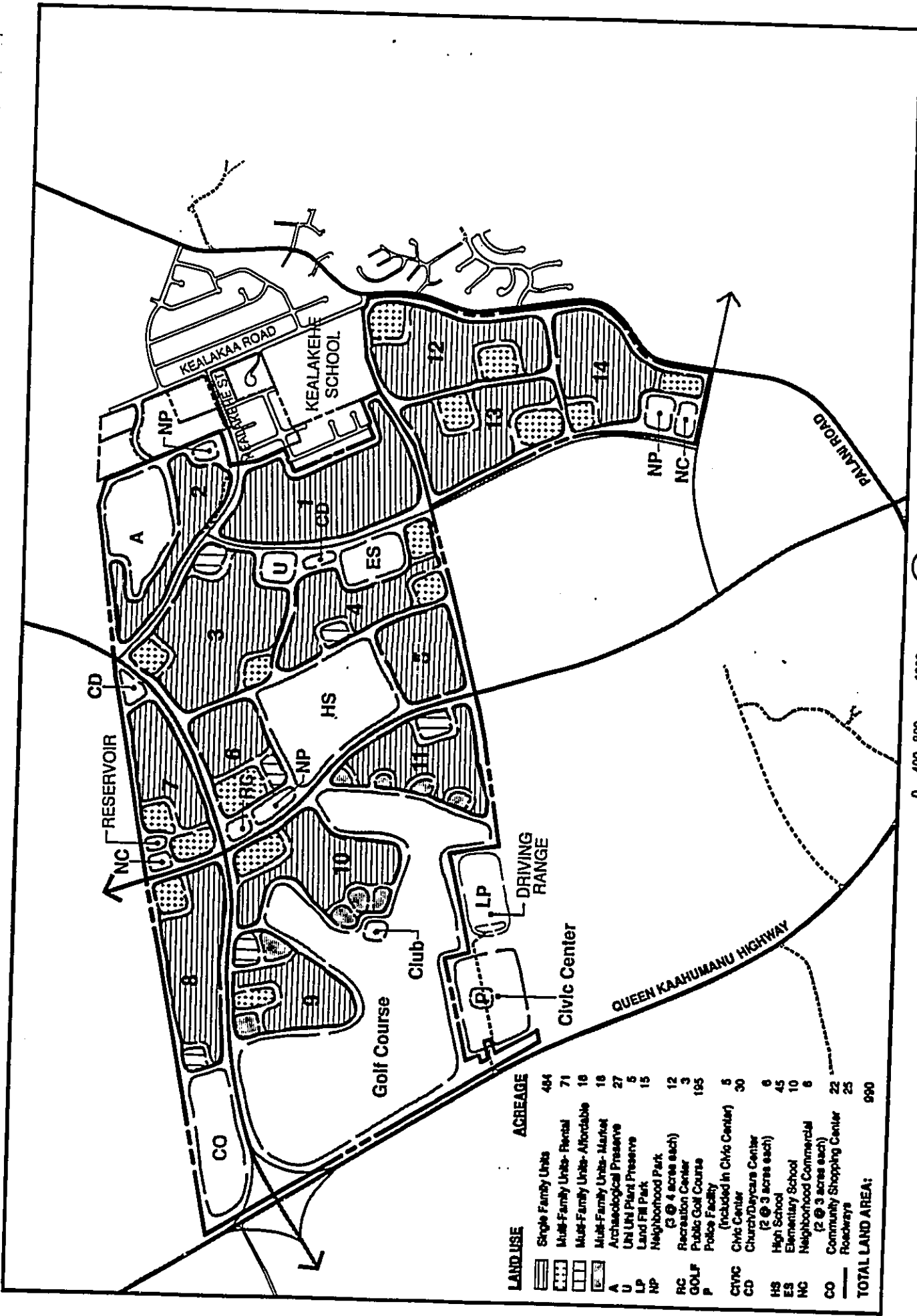



Figure 2-5
LAND USE CONCEPT PLAN

0 400 800 1600
SCALE IN FEET
NORTH

Prepared by: BELT COLLINS & ASSOCIATES
Date: JUNE 1990

**KEALAKEHE PLANNED COMMUNITY
ENVIRONMENTAL IMPACT STATEMENT**



 NORTH
 SCALE IN FEET
 0 400 800 1600
 Prepared by: BELT COLLINS & ASSOCIATES
 Date: JUNE 1980

KEALAKEHE PLANNED COMMUNITY ENVIRONMENTAL IMPACT STATEMENT

Figure 2-6 VILLAGE CONCEPT PLAN

Kealakehe Parkway's northern entrance to the property, at the Mid-Level roadway's north and south entrances, and at the intersection of Palani Road and Waena Drive, an additional roadway extending across the upper elevation of the project from Kealakehe Street.

9.1 Residential Uses

The master plan proposes the development of approximately 589 acres of the project site for residential land uses, with a total of 4,158 units. These units are distributed among the fourteen villages as presented in Table 2-2 with an average village size of about 300 units. Further, each village will feature a mix of residential units equal to 60% affordable and 40% market priced. Affordable units are targeted for the elderly, special need group, assisted (very low income and lower income), and gap-group (moderate income) families and persons. Market units are targeted for families and persons of above moderate income and those earning incomes greater than 140% of the area's median income.

Housing unit types are distributed within the Kealakehe Planned Community according to the proportions presented in Table 2-3. However, the distribution of units within each individual village varies as a result of specific design considerations. For example, because of the high density of multi-family units in the existing Kealakehe community, no multi-family units are included in the two villages abutting the existing community. Similarly, because of the opportunity to capture increased revenue, the largest number of multi-family market units occurs in the villages abutting the public golf course. However, in an effort to maintain a uniform density among the various villages, small clusters of multi-family units are scattered throughout the community. The distribution of unit types within each village is included in Table 2-2.

TABLE 2-3: DISTRIBUTION OF UNIT TYPES

UNITS	TOTAL	PERCENTAGE
Multi-Family Rental	852	20%
Multi-Family Affordable	192	5%
Single Family Affordable (low/moderate)	1,444	35%
Subtotal:	2,488	60%
Single Family Market (above moderate)	228	5%
Single Family Market	1,232	30%
Multi-Family Market	210	5%
Subtotal:	1,670	40%
TOTAL:	4,158	100%

Single Family (for sale) Units

Kealakehe Planned Community contains a total of 2,872 single family units intended for sale. This equals approximately 69% of the total units to be built. These units, which include both affordable and market units, are distributed throughout the fourteen villages on a total of approximately 479 acres of land with an average density of six units per acre. About 81% of the total amount of residential land in the community is designated for these units. Affordable and market units are scattered within each village rather than clustered to ensure a heterogeneous distribution.

Multi-Family (for sale) Units

Multi-Family units for sale total 402 units or approximately 10% of the total units in the community. At a general density of 12 units per acre, these units occupy a total of 33 acres, or almost 6% of the total residential land. The multi-family for sale units are distributed in clusters from two to four acres in size. More than half of the total number of units are market units situated in small clusters fronting the public golf course fairways and clubhouse to maximize value. The remaining units are situated in small clusters near major public facilities such as schools and shopping areas.

Assisted Multi-Family (rental) Units

In recognition of the need for assisted units for the elderly, lower income persons and families, and special need groups including single-parent families, 20% of the total units, or 852 units, have been set aside as multi-family rental units. With a density equal to that of the market and affordable multi-family units (12 per acre), these units account for 71 acres of land or nearly 12% of the total available residential land. Distributed among ten of the fourteen villages, the multi-family rental units are clustered in areas averaging about 7 acres and are located adjacent to schools, commercial areas, parks and recreation areas.

9.2 Recreation, Parks and Open Space

Nearly a quarter of the total area of the Kealakehe Planned Community is allocated to recreational, park and open space uses. The master plan distributes these uses in a manner that enhances the character of the overall community while providing visual relief and reducing urban densities within individual villages.

Public Golf Course

As discussed previously, a 195 acre site situated on the lower portion of the project area is proposed for transfer to the County of Hawaii for development of an 18-hole public golf course and effluent disposal area for the County sewage treatment plant being constructed makai of Queen Kaahumanu Highway. As presently designed, the proposed sewage treatment plant will require a minimum of 150 acres for the disposal of effluent derived from the treatment process. The use of effluent for irrigation purposes provides an efficient and cost effective method for recycling a valuable resource and lessening demand for potable water.

The golf course design features three distinct lobes intended to maximize residential frontage along fairways which, in turn, increases revenues derived from the market housing to be sited there. The golf course design provides adequate buffer areas within each lobe to ensure the safety of housing fronting the fairways. This design is intended to lessen the danger in residential areas from errant golf balls.

In addition, the course is designed to provide a physical buffer around the existing Kealakehe landfill. While the HFDC is relying upon the County of Hawaii to close the landfill in a timely manner and undertake measures that will result in the site's eventual conversion to an alternate use, it is not expected that the site will become available within the next decade. Therefore, the landfill site must be buffered to whatever extent possible from residential activity. Once the landfill has been closed, and hopefully mined so that underground fires are permanently extinguished, the site offers an excellent location for a driving range or a passive open space park area.

Finally, the proposed golf course area includes a three-acre club house site near the central lobe. This site is readily accessible from major roadways and the surrounding community, should the County wish to expand the club house use to include meeting rooms for non-golf related activities, as is the case with other golf course club houses located adjacent to residential areas.

Parks and Recreation

The proposed master plan includes three separate neighborhood parks, each approximately four acres in size. The first park is located at the mauka end of the planned community in Village #2 adjacent to the existing multi-family development along Kealakehe Street. This park provides a long-overdue recreation area for the existing community and fulfills a previous commitment by the HFDC to provide a park for the community. A second park is located near the intersection of the

Mid-Level roadway and Kealakehe Parkway in Village #6 adjacent to two multi-family unit projects. The third park is situated in Village #14 along Waena Drive near Palani Road.

A three-acre recreation center site has been proposed adjacent to the second park. The recreation center is intended to serve as a focus of activity for the entire community and is sited at the corner of Kealakehe Parkway and the Mid-Level roadway to maximize access as well as to serve as a distinctive visual element.

Natural Preserves

Two environmentally sensitive areas identified within the project site are proposed to be set aside as natural open space preserves. The first is a twenty-one acre area located in the northeastern corner of the project area which contains a number of unique archaeological sites. By setting aside the area as a preserve, the integrity and cultural value of the site is ensured. Interpretive signage within the area could be provided as a means of informing visitors of the meaning and significance of the archaeological sites.

The second preserve consists of a five acre site along Waena Drive about midway between the property boundaries near the 550 foot elevation. The purpose of this preserve is to protect a cluster of eight uhi uhi trees, a federally designated endangered species. A total of nineteen adult trees have been located within the project area; the cluster of eight and eleven additional trees scattered throughout the project area. The HFDC has been advised by the State Attorney General's Office that no endangered plant can be moved or relocated under existing state law. Therefore, in addition to preserving each individual tree, the designation of an Uhi uhi Preserve for the cluster of eight provides an opportunity to establish a passive open space area within the community that may provide educational and scientific benefits (note: detailed information concerning the Uhi uhi trees and mitigation measures to ensure their preservation are discussed in this environmental impact statement under the section pertaining to Flora).

It is anticipated that both preserves will have limited or controlled public access due to their sensitive character, although, control at the archaeological preserve may be less stringent utilizing limited hours of operation and posted instructions or rules rather than security fencing or regulated access.

9.3 Public and Quasi-public Facilities

Included in the Kealakehe Planned Community are a variety of land uses that support the

residential community, including schools, churches and day care centers, and a Civic Center. The location of these facilities within the project area helps to reduce commuting time, increases pedestrian access and enhances the overall quality of life in the community by making a full range of services readily available.

Schools

Two school sites are proposed for development within the community. A ten acre site has been selected along Waena Drive near the project's southern property boundary as the location for an elementary school to be operated by the State Department of Education. The site will provide space for a facility serving up to 900 students, play courts, library, dining room and administrative building. A forty-five acre site located on the makai side of the Mid-Level roadway, south of Kealakehe Parkway is proposed as the site of public high school to also be operated by the Department of Education. The high school is expected to accommodate a maximum of 1,700 within 75 classrooms. Included among the high school's facilities are administrative offices, a dining hall, library, physical education building, gymnasium, football/soccer and baseball fields, and tennis courts. The slope of the high school site averages from 5 to 10%. Since this is steeper than a typical facility, additional land has been provided for the site. Thus, the total area of the high school is consistent with what is required by the facilities branch of the Department of Education.

Both the elementary school and high school will be served by project infrastructure including roadways, water, sewer and electricity.

Civic Center

Included in the master plan is a 30 acre area that is designated as a Civic Center, located on County land in the vicinity of the existing police station, makai of Kealakehe landfill. While this specific property is not included in this environmental impact statement, it is included in the master plan as a long term use for the property. It is recognized that the ultimate disposition of the landfill will determine the actual use and phasing of new construction on the property.

It is recommended that the Civic Center include the existing police station, a fire station, county government office building, a judicial complex serving West Hawaii, and similar public buildings which might include a public library and federal post office.

Churches and Day Care Centers

Two separate three-acre sites have been set aside for quasi-public facilities, which would consist of a church/day care center complex. The first site is located in Village #4 along Waena Drive between a proposed Elementary School and the Uhi uhi Plant Preserve. This location helps to centralize the destination for pre-schoolers and elementary school age children. The second site is located within Village #7 near the entrance of Kealakehe Parkway into the project area. This site was selected to help buffer the intersection from the adjacent residential community by providing a complimentary land use that can serve as a visual amenity.

Commercial

The master plan also includes three separate commercial areas to serve the Kealakehe Planned Community. The first is a 20-acre site located at the intersection of Kealakehe Parkway and Queen Kaahumanu Highway. This site serves as a buffer for the main highway and the neighboring light industrial land uses proposed for the property just north of the site, and will provide commuters as well as area residents with efficient access to a variety of shopping opportunities, due to its close proximity to both region serving roadways. It is expected that the 20-acre site will be developed as a community shopping center and will include anchor tenants such as a major grocery store and department store, as well as speciality shops and consumer oriented retail outlets.

In addition to the community shopping center, two smaller neighborhood commercial centers are provided in the master plan. The first is located at the northern border of the property at the point where the Mid-Level roadway enters the project area. The second will be located on Waena Drive near its intersection with Palani Road. Both sites will be about three acres in size and could include a "mom-and-pop" type of grocery store, drug store and sundry shop, or similar facility. These centers will provide additional convenience to the residents of the community while helping to reduce the need to commute greater distances for small item or spur-of-the-moment purchases.

9.4 Infrastructure

General descriptions of the infrastructure designed to support development of the proposed community are presented below. More specific information, including graphic presentations of the individual systems are included in Chapter VI.

9.4.1 Water

Based on the overall project demand at full buildout, a total production of 3,298 gallons per minute (gpm) will be required from wells serving the project. HFDC has contributed to source development with DWS for a portion of this demand (the 276,000 gallons discussed above), so the remaining 4.47 million gallons (MG) will need to come from new supply wells. These wells are proposed to be located above the 1,600-foot elevation at sites yet to be determined.

At full development, a total storage of about 5.0 MG will be required for the project. This storage will be required as follows: a 2.5 MG reservoir at the 325 foot elevation; a 1.5 MG reservoir at the 595 foot elevation; and a 1.0 MG reservoir at the 935 foot elevation.

Three separate water line systems are proposed based on the established pressure zones. The 935-foot elevation zone will be served by a system including the 1.0 MG reservoir, a 12-inch diameter transmission line and a 12-inch branch main. The 595-foot zone will be served by the 1.5 MG reservoir, a 24-inch transmission line, a 16-inch branch line, and a 12-inch line at the mid-level road. The proposed system for the 325-foot zone includes the 2.5 MG reservoir, a 24-inch transmission main, and a 12-inch transmission line.

The system will also include all the necessary transmission lines to individual residences and non-residential land uses as well as complete fire-protection hydrant system.

9.4.2 Wastewater

The entire project will be linked to the Kealakehe Sewage Treatment Plant, now under construction on the makai Kealakehe parcel. The project will generate approximately 1.86 mgd of wastewater. The Kealakehe STP, which is presently designed with a capacity of 2.8 mgd and is planned to serve Kailua Village and areas to the south of the project, will need to be expanded to accommodate the proposed development. Treated effluent from the STP will be used to irrigate the proposed Kealakehe public golf course. The 195-acre golf course is of sufficient size to accommodate the ultimate capacity of the STP, including Kealakehe generated wastewater.

9.4.3 Drainage

Drainage for the entire project will be handled by drywells of approximately 5 feet in diameter with a depth of 20 feet. Drywells will be situated within road right-of-ways wherever possible.

9.4.4 Power and Communications

The proposed development at build out will generate a demand for approximately 14,350 kva, which is equal to 10,762 Kilowatts or 10.76 MW. This will result in the need for the development of two new 10 MVA/12 KV substation transformers and a new region-serving 69 KV transmission line to serve the proposed community. Major transmission lines will be located along primary arterial roadways.

9.4.5 Traffic Circulation

The project area is intersected by two proposed region serving arterial roadways. The first will extend from Mamalahoa Highway downslope across private lands owned by Palani Ranch and will enter the project site at its northern boundary approximately 2,100 feet west of existing Lai'ani housing development. The roadway continues downslope in a gentle curve approximately 600 to 900 feet inside the northern property boundary and eventually intersects with Queen Kaahumanu Highway just south of the intersection of the highway and the Honokohau Harbor entrance road. This roadway is referred to as the Kealakehe Parkway and is intended to be developed as a four to six lane arterial roadway within a 120-foot right-of-way. It is proposed to be developed in three phases. The first phase will consist of that portion of the Kealakehe Parkway located within the Kealakehe property. It will be linked to the existing Kealakehe community via an extension of Kealakehe Street. A second phase is proposed by the State Department of Transportation to extend makai from the highway to Honokohau Harbor and follow the shoreline into Kailua town. The third phase will link the Parkway to Mamalahoa Highway at some future date. The roadway's intersection with Queen Kaahumanu Highway will initially require the development of channeling lanes. As traffic levels increase, the intersection will be converted to a grade separated interchange.

The second arterial roadway proposed for development bisects the project site, extending north to south, generally along the 300 foot elevation. It has been proposed by the County of Hawaii to serve as a major arterial with a 120-foot right-of-way paralleling Queen Kaahumanu Highway and extending from Palani Road to the northern end of the North Kona District. It is generally referred to as the Mid-Level roadway. Development of the Mid-Level roadway within the subject property will be timed with the phasing of residential development and related public facilities; most notably the proposed high school.

A third roadway running mauka of and parallel to the Mid-Level roadway will link Kealakehe Parkway to Palani Drive. This roadway, referred to as Waena Drive by the County of

Hawaii, is proposed as a 60-foot right-of-way and will eventually require signalization on Palani Road.

9.5 Project Phasing

The project will be developed in 14 phases with a sequence corresponding to the 14-village configuration presented in Figure 2-6. Construction will begin in the mauka portion of the project area once all necessary land use approvals have been obtained and move in a westerly direction downslope to the Queen Kaahumanu Highway. It is likely that the villages fronting the golf course will not be constructed until the existing Kealakehe landfill is closed.

The first phase of the project will include the construction of the portion of the mauka-makai roadway, with the property boundaries. Construction of the mauka portion of the roadway linking it to Mamalahoa Highway will be undertaken once a specific alignment has been subjected to the necessary environmental and design analyses and land acquisition has been completed. Construction of the first phase of the roadway is targeted for commencement before the end of 1990, if all necessary land use approvals are received in a timely manner.

9.6 Project Costs

Infrastructure costs correlate to specific utilities and have been allocated in terms of off-site and on-site costs. These costs reflect only actual construction and do not include survey, design, marketing, master planning, land and other non-construction related cost items. Costs are presented based upon 1990 constant dollars.

The total off-site cost of the entire 765-acre project (960 acres less the 195-acre golf course) including an eight percent contingency factor is \$65.3 million. Average on-site development costs range between \$19,200 per multi-family unit and from \$24,000 to \$28,800 per single-family unit depending upon lot size. This results in a total on-site cost of approximately \$81.9 million.

CHAPTER III

CHAPTER III
ALTERNATIVES CONSIDERED

1. INTRODUCTION

Planning for the Kealakehe property has been coordinated by the HFDC and was begun in 1987, shortly after its creation, in an effort to fulfill the agency's mission to develop affordable housing. A Concept Feasibility Study, prepared by Belt Collins and Associates, was published the following year detailing the potential feasibility of utilizing the Kealakehe property for the development of affordable housing. At that time, the project area included the State owned lands located makai of the Queen Kaahumanu Highway. However, the publication of the Concept Feasibility Study resulted in a negative reaction to the HFDC's proposal to promote the development of a resort on the makai lands as a mechanism for funding the development of affordable homes on the mauka property. Subsequently, the makai lands were dropped from the project area and planning was focused on the property mauka of the highway.

Thus, the HFDC's planning efforts have been focused on alternative configurations of residential development on the mauka property. Non-residential uses of the property have been considered as potential revenue generators to help underwrite the cost of affordable housing, but only as secondary uses that would enhance a residential community. Therefore, non-residential uses of the entire property have not been considered in the process of developing the project master plan.

2. DESCRIPTION OF ALTERNATIVES

2.1 Smaller Scale Alternatives

Development of the project at a small scale, that is to say, development of only a portion of the property area was considered in the course of master plan preparation. It was determined that off-site infrastructure costs including water transmission lines, sewer lines and the mauka-makai arterial roadway would render a small scale project infeasible from a cost perspective. The cost of some of this infrastructure, particularly potable water wells for example, can be timed so that infrastructure development will be coordinated with housing construction, supply can equal demand, and the cost can be proportionately distributed. However, in the case of water and sewer lines and the mauka-makai roadway, the infrastructure must be oversized to accommodate the entire project and implemented in the first phase, regardless of how many actual units may be built. These costs must be borne by the project regardless of size. Thus, the smaller the project, the less feasible it is to cover necessary off-site infrastructure costs.

The Kealakehe Planned Community is based upon the concept of providing affordable housing opportunities in the West Hawaii region in response to existing and projected demand for affordable housing units. To a certain degree, development of the proposed project may require direct and indirect government subsidies. While scaling down the project may help to lower development costs of the housing units, it would not reduce the need for off-site infrastructure. Many of these costs might be borne by the State regardless of the size of the project, and be passed on to the prospective owners of the housing units. Reducing the number of units in the development may therefore result in increasing the costs to the units and decreasing the affordability to the target group.

2.2 'No-Action' Alternative

An alternative to the proposed project is to leave the land undeveloped (the 'no-action' alternative). While this alternative would maintain open space in an area where significant urban expansion is projected, it is not compatible with the Governor's policy promoting the utilization of State property for the development of affordable housing.

Retaining the land in open space may help to preserve the habitat for the endangered plant species, uhi uhi, which has been identified on the subject property. However, the preservation of a portion of the property may be sufficient to protect the uhi uhi habitat rather than designate the entire parcel as a preserve. Preservation of the remaining property for open space may not be warranted given the crucial need for affordable housing in the area.

In addition, the proposed development of the property by the State will include a new mauka-makai roadway which will transect a portion of the property and provide much needed relief to existing traffic congestion on Palani Road. Retaining the property in open space and prohibiting the construction of a region-serving roadway across it may seriously limit options for short-term and long-term transportation improvements in the area.

2.3 Agricultural Development

A total of approximately 148 acres within the project area are identified as Other Important Agricultural Land under the State's ALISH system (Agricultural Land of Importance to the State of Hawaii). These lands are located generally in the northern portion of the property adjacent to the existing urban area. About 100 acres are located within the project area presently designated as Urban. The remaining 48 acres are located with land designated as Agriculture. The remainder of the property has no agricultural value as determined by the State's ALISH system.

Agricultural development such as crop cultivation on the property may not be economically feasible due to poor soil conditions, topography, and the lack of irrigation water and access roadways. The cost of developing the infrastructure necessary to support large scale crop cultivation may be prohibitive because the development costs would greatly exceed the income received from cash crops. Archaeological field work indicates that during prehistoric and historic times crop cultivation was limited to the planting of individual plants within cracks or open blisters in the lava.

Portions of the upper project area have been leased to the neighboring Palani Ranch for livestock grazing. However, the use of the property for extensive grazing of livestock may be incompatible with existing and proposed uses of neighboring properties due to primarily to odors and insects associated with large herds of cattle.

2.4 Recreational Development

Limiting the development of the subject property to recreational purposes such as public playing fields and parks may not be economically feasible given the cost of infrastructure needed to service the site, including roadways, sewer and drainage lines, potable water, and electrical lines versus the income derived from recreational activities. However, it should be recognized that the proposed public golf course will be implemented separate from the residential component of the project. Since the golf course irrigation system will utilize effluent from the Kealakehe Sewage Treatment Plant, potable water needs will be limited to those of the club house. Vehicular access to the golf course from Queen Kaahumanu Highway will not require substantial new roadway development. Therefore, regardless of the outcome of the proposed Kealakehe Planned Community, it is possible that a substantial portion of the subject property will be used for recreational activity.

2.5 Resource Extraction

An existing quarry is located north of the subject property and an abandoned quarry is located south of the property. No quarrying activities have occurred on the Kealakehe property to the extent of the State's knowledge. There is no evidence that the subject property would yield quarry material of sufficient quantity or quality to warrant such activity. However, the use of the property for resource extraction is not compatible with the projected uses of the neighboring Queen Liliuokalani Trust property.

2.6 Resort Development

The use of the property above Queen Kaahumanu Highway as a possible resort is not considered to be practical from a marketing point of view; it would simply not be competitive with ocean-oriented resorts.

2.7 Industrial and Commercial Development

Development of the subject property for commercial and/or industrial uses may be an appropriate use of the property, especially in those areas of relatively level topography. However, these land uses would reduce lands available for housing and therefore are not consistent with the Governor's policy to provide affordable housing through the use of State owned property.

2.8 Public Facilities

A variety of public facilities are being considered for development within the Kailua area. These include a West Hawaii university campus, a regional sports center, a regional hospital, a corrections facility, schools, and a civic center which would contain county, state and federal office buildings. It has been suggested that it would be in the best interest of the community if these types of activities were developed on government owned land. To this end, the Kealakehe site offers an excellent location for many of these facilities. In fact, the master plan contains a proposal for a 30 acre Civic Center to be located on County owned land adjacent to the subject property, as well as a high school and an elementary school. However, development of the entire project area for public purposes would not contribute to the provision of affordable housing in the region, a goal clearly established by the Governor of Hawaii.

2.9 Residential Alternatives

In 1986, three separate parcels of State-owned land were evaluated for their potential as residential developments; Kealakehe, Lalamilo, and Kalaoa. The Kealakehe project site was selected based upon County projections of population growth in the area and its close proximity to the planned Kealakehe STP. Following is a description of the residential alternatives developed during the past three and a half years for the Kealakehe property. The first five alternatives, which were included in the Concept Feasibility Study discussed earlier, included the makai lands of Kealakehe. They are presented here for the sake of documenting the actual alternatives considered. However, it should be understood that the development of the makai lands is not included in the current master plan and the makai area is not analyzed in this environmental impact statement.

Concept Feasibility Study Alternatives

Alternative Concept One: This concept consists of resort, harbor expansion and an 18 hole championship County golf course with market priced residential uses on the makai side of Queen Kaahumanu Highway. This project shows the proposed County Sewage Treatment Plant occupying approximately 50 acres of the site along the southern boundary of the project. A buffer area of approximately 20 acres surrounds the STP. The ocean frontage in the conservation district is dedicated to a public ocean side park. The area adjacent to the Honokohau Small Boat Harbor is shown for harbor expansion as indicated on the State of Hawaii Department of Transportation Harbor's Division master plan. However, the area adjacent to the entry road and the highway is shown as future residential rather than industrial as shown on the Harbor Division's plan.

The concept shows an integrated plan of community uses on the area mauka of Queen Kaahumanu Highway. The area is predominantly shown as residential use. No differentiation is shown between housing types. However, the master plan will delineate both affordable and market priced housing for this area. A range of densities as well as housing types will be planned for this area including traditional single family units, alternative single family type projects, duplexes, patio homes, quadraplexes, townhouses, garden and walk-up apartments.

Community uses, parks, schools and neighborhood commercial areas are also shown on this portion of the project. The landfill area is shown as a reclamation area to be used for future community park site. Pedestrian walkways and bicycle paths providing safe places for residents and students to travel between various community uses, parks and schools are planned as a part of the total community. The area adjoining Queen Kaahumanu Highway is shown as an open space, landscaped buffer on the mauka side of the road and with the golf course front the majority of the highway on the makai side of the highway.

MAKAI AREA

<u>USE</u>	<u>SYMBOL</u>	<u>AREA</u>	<u>UNITS</u>	<u>POP.</u>
RESORT	R	100	1,500	2,850
RESIDENTIAL (Market)	RES	183	549	1,647
GOLF COURSE		170		
GOLF CLUB HOUSE	CH	5		
COMMERCIAL	C	10		
SEWAGE TREATMENT PLANT	STP	50		
HARBOR (EXISTING/EXPANSION)	H	110		
PARK/OPEN SPACE	P/O	50.5		
ROADS		18		
SUB TOTAL (Makai Area)		696.5	2,049	4,497

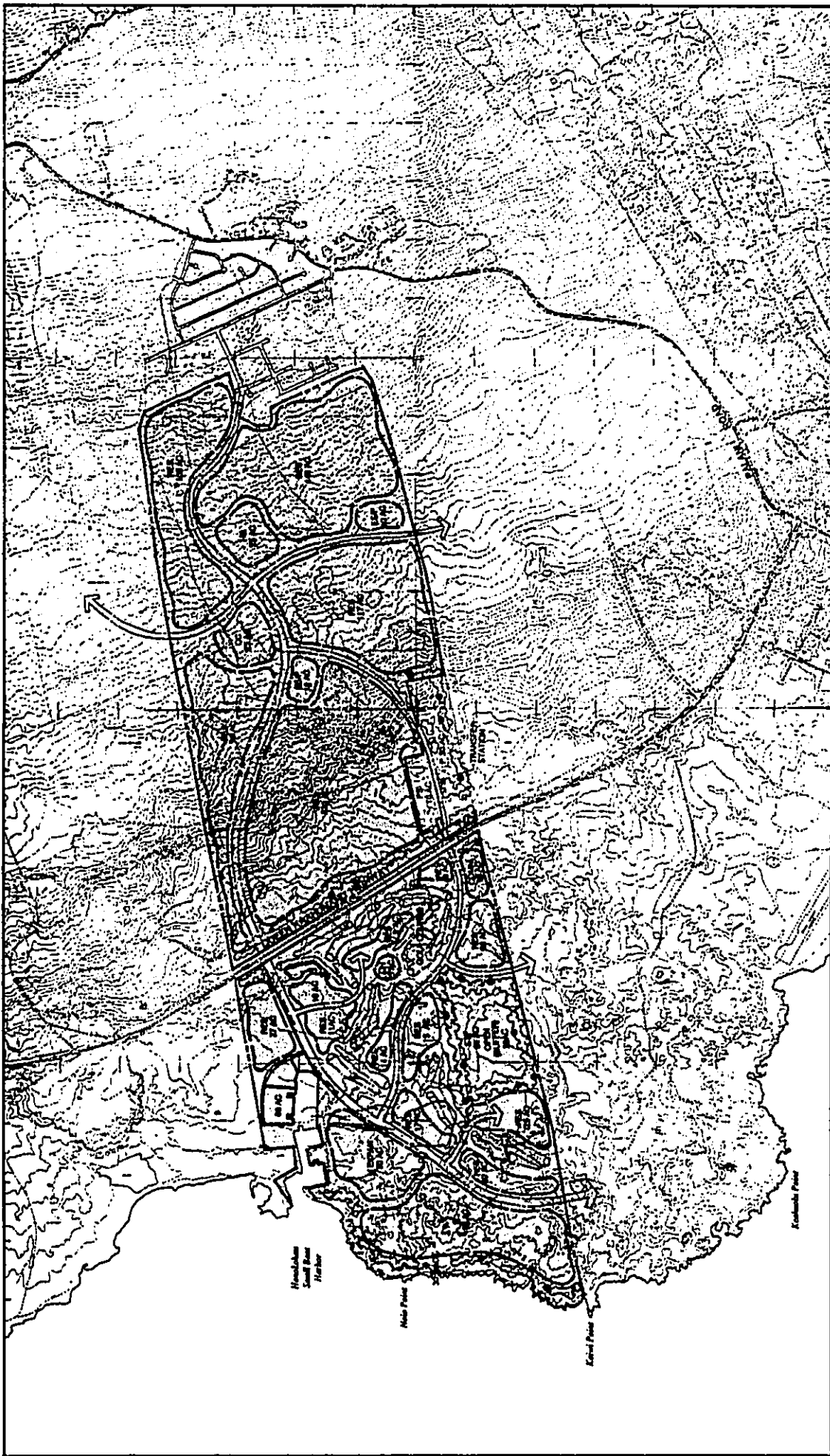



FIGURE 3-1
ALTERNATIVE CONCEPT ONE


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 SCALE IN FEET
 Prepared by: BELT COLLINS & ASSOCIATES

KEALAKEHE PLANNED COMMUNITY

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MAUKA AREA

<u>USE</u>	<u>SYMBOL</u>	<u>AREA</u>	<u>UNITS</u>	<u>POP.</u>
RESIDENTIAL (Affordable & Market)	R	684	3,420	10,260
COMMUNITY CENTER	CC	25		
HIGH SCHOOL	HS	25		
ELEMENTARY SCHOOL/PARK	ES/P	20		
PARK/OPEN SPACE	P/O	46		
ROADS		30		
POLICE STATION		10		
SUB TOTAL (Mauka Area)		840	3,420	10,260
GRAND TOTAL		1,536.5	6,469	14,757

Alternative Concept Two: This concept consists of resort uses including proposed resort use in conjunction with harbor expansion and an 18 hole championship golf course with market priced residential uses on the makai side of Queen Kaahumanu Highway. A neighborhood commercial area/parcel is located at the southern intersection with Queen Kaahumanu Highway. This project shows the proposed County Sewage Treatment Plant occupying approximately 50 acres of the site along the southern boundary of the project. A buffer area of approximately 20 acres surrounds the STP. The ocean frontage in the conservation district is dedicated to a public (County or State) ocean side park. The area adjacent to the entry road and the highway is shown as future residential rather than industrial as shown on the Harbor Division's plan.

The concept shows an integrated plan of community uses on the area mauka of Queen Kaahumanu Highway. The area is predominantly shown as residential use. No differentiation is shown between housing types. However, the master plan will delineate both affordable and market priced housing for this area. A range of densities as well as housing types will be planned for this area including traditional single family units, alternative single family type product, duplexes, patio homes, quadraplexes, townhouses, garden and walk-up apartments.

Community uses, parks, schools and neighborhood commercial areas are also shown on this portion of the project. The proposed community center is sited adjacent to the police substation now under construction mauka of Queen Kaahumanu Highway. The landfill area is shown as a reclamation area to be used for future community park site.

Pedestrian walkways and bicycle paths providing safe places for residents and students to travel between various community uses, parks and schools are planned as a part of the total community. The area adjoining Queen Kaahumanu Highway is shown as an open space, landscaped buffer on both the makai and the mauka side of the road.

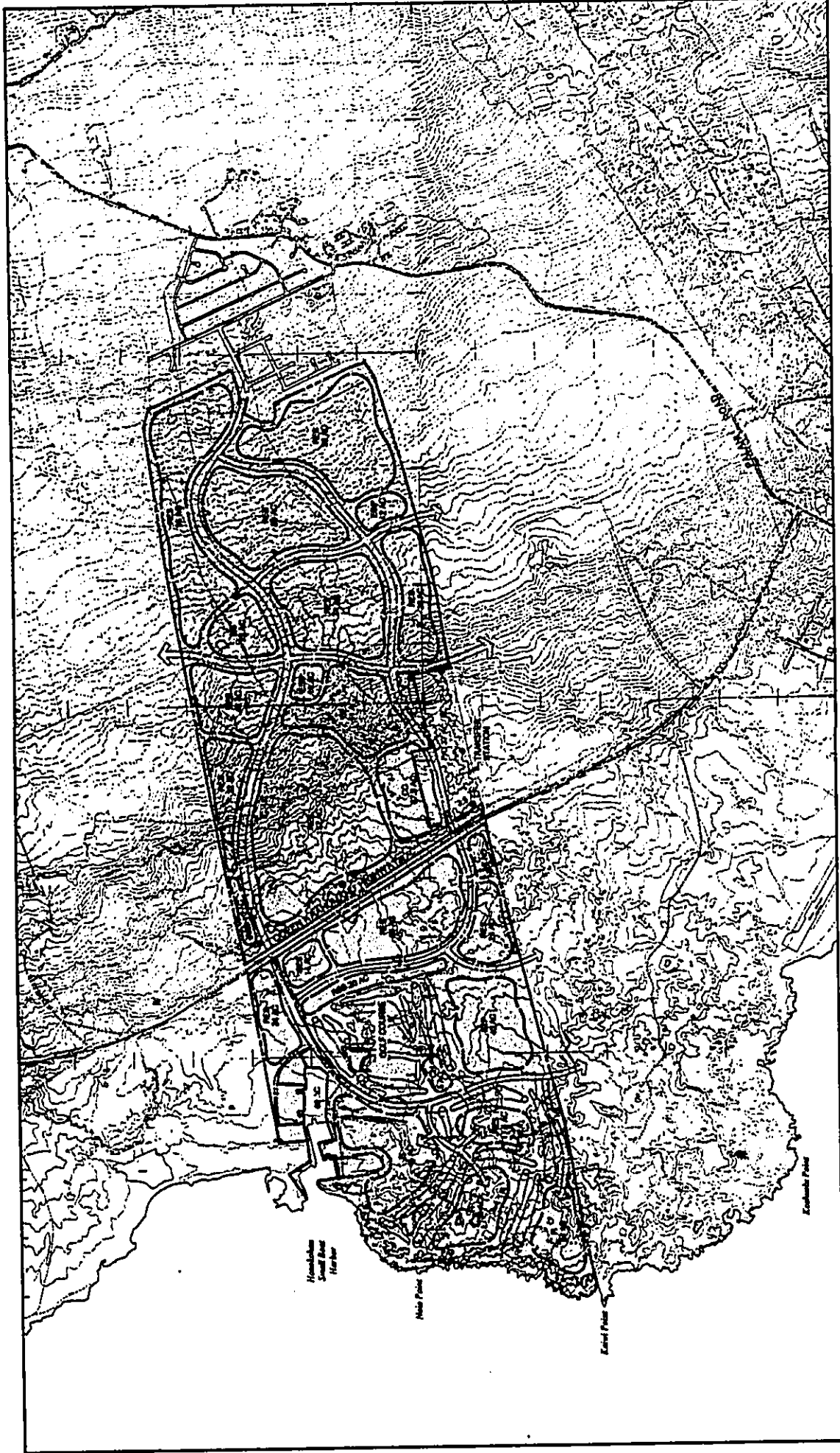


FIGURE 3-2
ALTERNATIVE CONCEPT TWO

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SCALE IN FEET
Prepared by: BELT COLLINS & ASSOCIATES

KEALAKEHE PLANNED COMMUNITY

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MAKAI AREA

USE	SYMBOL	AREA	UNITS	POP.
RESORT	R	100	1,500	2,850
RESIDENTIAL (Market)	RES	165	825	2,475
COMMERCIAL	C	6		
GOLF COURSE		176		
GOLF CLUB HOUSE	CH	5		
SEWAGE TREATMENT PLANT	STP	50		
HARBOR (EXISTING/EXPANSION)	H	60		
PARK/OPEN SPACE	P/O	116.5		
ROADS		18		
SUB TOTAL (Makai Area)		696.5	2,325	5,325

MAUKA AREA

USE	SYMBOL	AREA	UNITS	POP.
RESIDENTIAL (Affordable & Market)	R	651	3,255	9,665
COMMUNITY CENTER	CC	35		
HIGH SCHOOL	HS	25		
ELEMENTARY SCHOOL/PARK	ES/P	22		
PARK/OPEN SPACE	P/O	69		
ROADS		38		
SUB TOTAL (Mauka Area)		840	3,255	9,665
GRAND TOTAL		1,536.5	5,580	14,990

Alternative Concept Three: This concept consists of higher priced "market" residential/second homes on the ocean frontage, harbor expansion includes commercial expansion with residential above the harbor adjacent to the intersection on the highway with the harbor access road. A private 18 hole championship golf course is sited with market priced residential uses on the makai side of Queen Kaahumanu Highway. This project shows the proposed County Sewage Treatment Plant occupying approximately 50 acres of the site along the southern boundary of the project. A buffer area of approximately 20 acres surrounds the STP. The ocean frontage in the conservation district is dedicated to a public sea side park. The area adjacent to the entry road and the highway is shown as future residential rather than industrial as shown on the Harbor Division's plan.

The concept shows an integrated plan of community uses on the area mauka of Queen Kaahumanu Highway. An 18 hole championship public golf course is sited on the mauka side of Queen Kaahumanu Highway. The majority of the area is predominantly shown as residential use. No differentiation is shown between housing types. The master plan will delineate both affordable and market priced housing for this area. A range of densities as well as housing types will be planned for this area.

Community uses, parks, schools and neighborhood commercial areas are also shown on

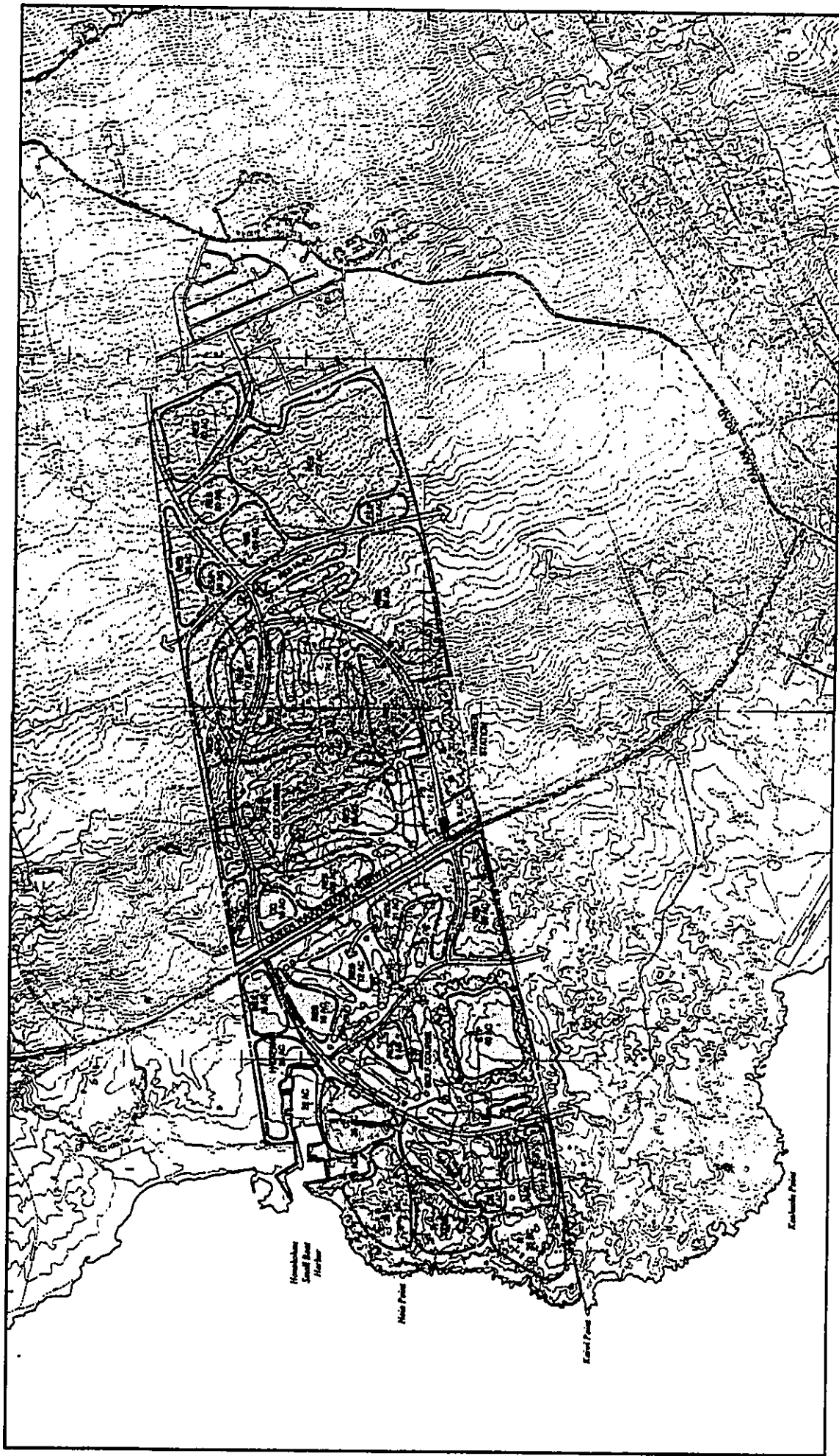



FIGURE 3-3
ALTERNATIVE CONCEPT THREE
 Prepared by: BELT COLLINS & ASSOCIATES

KEALAKEHE PLANNED COMMUNITY

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this portion of the project. The landfill area is shown as a reclamation area to be used for future community park site. Pedestrian walkways and bicycle paths providing safe places for residents and students to travel between various community uses, parks and schools are planned as a part of the total community. The community center is sited mauka of the highway opposite the harbor entry road. The area adjoining Queen Kaahumanu Highway is shown as an open space, landscaped buffer with portions of the golf course fronting both sides of the highway.

MAKAI AREA

USE	SYMBOL	AREA	UNITS	POP.
RESORT	R	100	1,500	2,850
RESIDENTIAL (Market)	RES	120.5	528	1,584
COMMERCIAL	C	15		
GOLF COURSE		175		
GOLF CLUBHOUSE	CH	5		
SEWAGE TREATMENT PLANT	STP	50		
HARBOR (EXISTING/EXPANSION)	H	81		
PARK/OPEN SPACE	P/O	132		
ROADS		18		
SUB TOTAL (Makai Area)		696.5	2,028	4,434

MAUKA AREA

RESIDENTIAL (Affordable & Market)	R	458	2,292	6,878
COMMUNITY CENTER	CC	36		
GOLF COURSE		220		
GOLF CLUBHOUSE		5		
HIGH SCHOOL	HS	25		
ELEMENTARY SCHOOL/PARK	ES/P	22		
PARK/OPEN SPACE	P/O	36		
ROADS		38		
SUB TOTAL (Mauka Area)		840	2,292	6,878
GRAND TOTAL		1,536.5	4,320	11,312

Alternative Concept Four: This concept consists of resort development along the ocean frontage with a private 18 hole championship golf course between three bulk resort parcels. One of the resort parcels is shown developed as a part of the Honokohau harbor expansion. Market priced residential uses are sited around the remainder of the private golf course. Nine holes of a public golf course are sited on the makai side of the highway. This alternate shows the proposed County Sewage Treatment Plant occupying approximately 50 acres of the site along the southern boundary of the project. A buffer area of approximately 20 acres surrounds the STP. The ocean frontage in the conservation district is dedicated to a public sea side park. The area adjacent to the entry road and the highway is shown as future commercial rather than industrial as shown on the Harbor Division's plan.

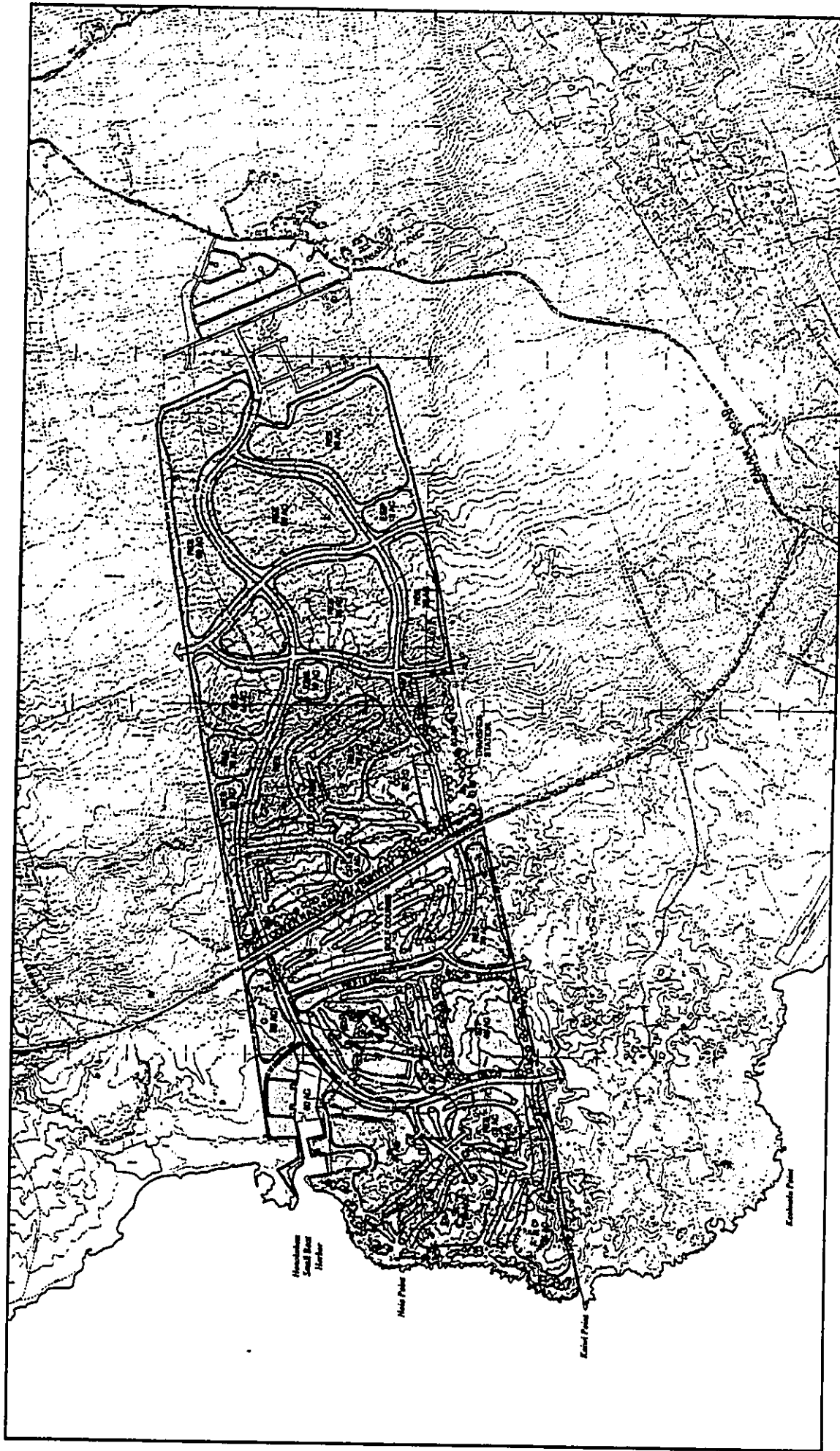


FIGURE 3-4
ALTERNATIVE CONCEPT FOUR

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SCALE IN FEET
Prepared by: BELT COLLINS & ASSOCIATES

KEALAKEHE PLANNED COMMUNITY

The concept shows an integrated plan of community uses on the area mauka of Queen Kaahumanu Highway. The area is predominantly shown as residential use. No differentiation is shown between housing types. However, the master plan will delineate both affordable and market priced housing for this area. A range of densities as well as housing types will be planned for this area including traditional single family units, alternative single family type product, duplexes, patio homes, quadraplexes, townhouses, garden and walk-up apartments.

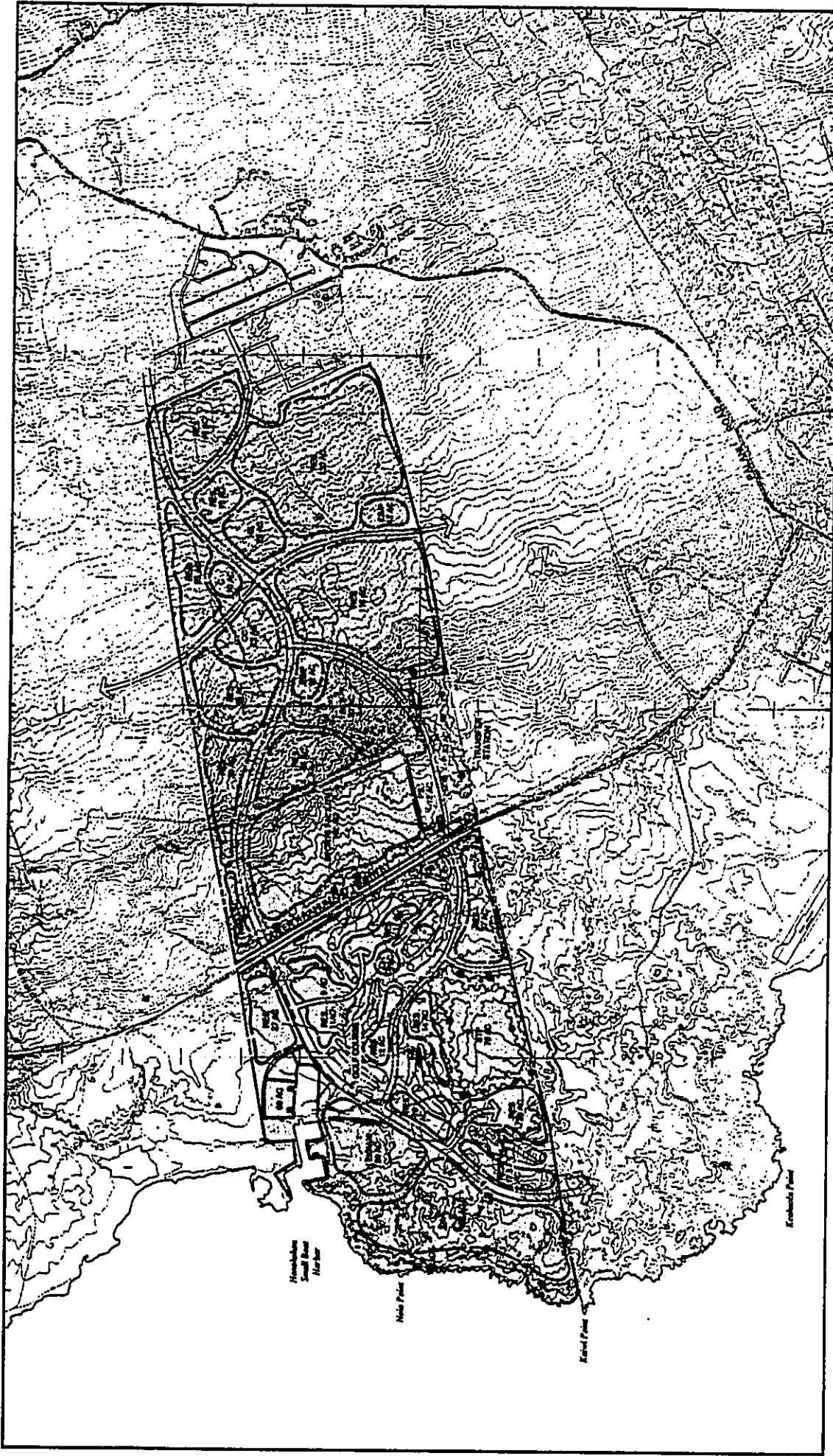
Community uses, parks, schools and neighborhood commercial areas are also shown on this portion of the project. The landfill area is shown as a reclamation area to be used for future community park site. Pedestrian walkways and bicycle paths providing safe places for residents and students to travel between various community uses, parks and schools are planned as a part of the total community. The community center is sited adjacent to the police substation now under construction. The remaining nine holes of the public golf course are sited on the mauka side of Queen Kaahumanu Highway. The public golf clubhouse is also sited on the mauka side of the highway. The area adjoining Queen Kaahumanu Highway is shown as an open space with the golf course fronting the majority of the highway on both the makai and mauka side.

<u>MAKAI AREA</u>				
<u>USE</u>	<u>SYMBOL</u>	<u>AREA</u>	<u>UNITS</u>	<u>POP.</u>
RESORT	R	100	1,500	2,850
RESIDENTIAL (Market)	RES	82	410	1,230
COMMERCIAL	C	25		
GOLF COURSE		250		
GOLF CLUB HOUSE	CH	5		
SEWAGE TREATMENT PLANT	STP	50		
HARBOR (EXISTING/EXPANSION)	H	60		
PARK/OPEN SPACE	P/O	106.5		
ROADS		18		
SUB TOTAL		696.5	1,910	4,080
<u>MAUKA AREA</u>				
RESIDENTIAL (Affordable & Market)	R	552	2,760	8,280
COMMUNITY CENTER	CC	32		
GOLF COURSE		80		
GOLF CLUB HOUSE		5		
HIGH SCHOOL	HS	25		
ELEMENTARY SCHOOL/PARK	ES/P	22		
PARK/OPEN SPACE	P/O	86		
ROADS		38		
SUB TOTAL		840	2,760	8,280
GRAND TOTAL		1,536.5	4,670	12,360

Alternative Concept Five: This concept shows the proposed 100 acre Kealakehe Sports Facility mauka of Queen Kaahumanu Highway as well as resort, harbor expansion and an 18 hole championship golf course with market priced residential uses on the makai side of Queen Kaahumanu Highway. This project shows the proposed County Sewage Treatment Plant occupying approximately 50 acres of the site along the southern boundary of the project. A buffer area of approximately 20 acres surrounds the STP. The ocean frontage in the conservation district is dedicated to a public ocean side park. The area immediately adjacent to the Honokohau Small Boat Harbor is shown for harbor expansion as indicated on the State of Hawaii Department of Transportation Harbor's Division master plan. However, the area adjacent to the entry road and the highway is shown as future residential rather than industrial as shown on the Harbor Division's plan.

The concept shows an integrated plan of community uses on the area mauka of Queen Kaahumanu Highway. The area is predominantly shown as residential use. No differentiation is shown between housing types. However, the master plan will delineate both affordable and market priced housing for this area. A range of densities as well as housing types will be planned for this area including traditional single family units, alternative single family type product, duplexes, patio homes, quadraplexes, townhouses, garden and walk-up apartments.

<u>MAKAI AREA</u>				
<u>USE</u>	<u>SYMBOL</u>	<u>AREA</u>	<u>UNITS</u>	<u>POP.</u>
RESORT	R	100	1,500	2,850
RESIDENTIAL (Market)	RES	175	800	2,400
GOLF COURSE		135		
GOLF CLUB HOUSE	CH	5		
SEWAGE TREATMENT PLANT	STP	50		
HARBOR (EXISTING/EXPANSION)	H	110		
PARK/OPEN SPACE	P/O	103.5		
ROADS		18		
SUB TOTAL (Makai Area)		696.5	2,300	5,250
<u>MAUKA AREA</u>				
<u>USE</u>	<u>SYMBOL</u>	<u>AREA</u>	<u>UNITS</u>	<u>POP.</u>
RESIDENTIAL (Affordable & Market)	R	527	2,635	7,905
KEALAKEHE SPORTS FACILITY		100		
COMMUNITY CENTER (w POLICE)	CC	35		
COMMERCIAL	C	10		
HIGH SCHOOL	HS	25		
ELEMENTARY SCHOOL/PARK	ES/P	24		
PARK/OPEN SPACE	P/O	81		
ROADS		38		
SUB TOTAL (Mauka Area)		840	2,635	7,905
GRAND TOTAL		1,536.5	4,935	13,155



**FIGURE 3-5
ALTERNATIVE CONCEPT FIVE**


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 SCALE IN FEET
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KEALAKEHE PLANNED COMMUNITY

Community uses, parks, schools and neighborhood commercial areas are also shown on this portion of the project. The landfill area is shown as a reclamation area to be used for future community park site. Pedestrian walkways and bicycle paths providing safe places for residents and students to travel between various community uses, parks and schools are planned as a part of the total community.

The area adjoining Queen Kaahumanu Highway is shown as an open space, landscaped buffer on the mauka side of the road and with the golf course front the majority of the highway on the makai side of the highway.

Conclusion

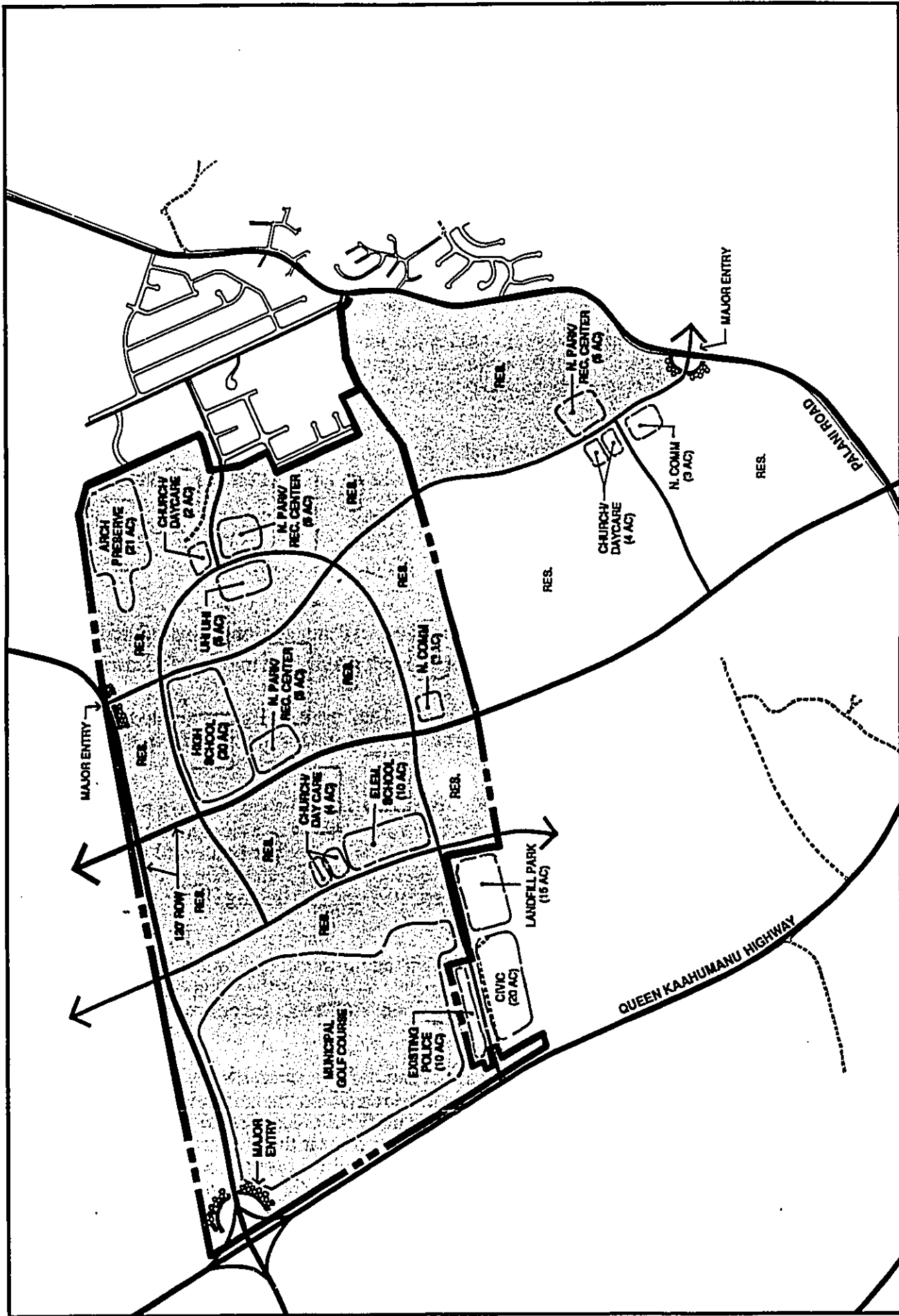
Upon review of the Concept Feasibility Analysis, the HFDC determined that development of the mauka portion of the Kealakehe property for affordable housing was possible and directed Belt Collins to begin preparation of a Master Plan for the Kealakehe project.

Kealakehe Planned Community Master Plan

Begun in July, 1989, the Master Plan has now been completed and represents the basis for this environmental impact statement. Following are the alternative plans considered during the master plan development process. Unlike the previous alternatives, these do not include the makai portion of the Kealakehe property. (Note the numbering of the alternatives in Master Plan analysis was #1 through 6, but has now been changed to #6 though 11 to avoid confusion with the first five alternatives discussed above.)

Alternative Concept 6: This alternative utilizes a series of mid-level roadways, aligned parallel to Queen Kaahumanu Highway, to establish a "terraced" development within the Kealakehe parcel.

- Land Use:** 840 acres of Kealakehe mauka of the Queen Kaahumanu Highway including a 160 acre golf course, and 450 acres of land proposed for purchase from the Queen Liliuokalani Trust.
- Traffic:** A strong lateral orientation is defined by two north-south roadways (60 foot r.o.w.) linking Palani Road to two mauka-makai roadways; one, a 120 foot r.o.w. thoroughfare situated along the northern boundary of the property, and the second, a 60 foot r.o.w. extending mauka from Queen Kaahumanu Highway at the southern boundary of the property in a grand loop around the Kealakehe property and ending at the lowest mid-level roadway.
- Residential:** Market housing borders the golf course on the north and east sides and is dispersed along the prime view corridors at the various terrace levels. Multi-



NORTH



Prepared by: BELT COLLINS & ASSOCIATES
Date: JUNE 1990

**KEALAKEHE PLANNED COMMUNITY
ENVIRONMENTAL IMPACT STATEMENT**

**FIGURE 3-6
ALTERNATIVE CONCEPT SIX**

family units are situated within the grand roadway loop near an elementary and high school. Residential villages between the midlevel roadways consist primarily of single-family unit developments.

Public Facilities:

An elementary school is located along the lower mid-level roadway, with a high school situated between the middle and upper roadways. Three church and day care center sites are distributed throughout the project, one adjacent to the elementary school, the second between the archaeological park and plant preserve, and the third situated near Palani Road. The existing police facility is preserved and the landfill area is designated for development as a park, immediately mauka of a civic center.

Special Areas:

An archaeological preserve is situated in the north eastern corner of the project area. An endangered plant park, which could be developed as an arboretum for endangered plants indigenous to the region, is located at the top of the grand loop.

Alternate Densities:

	Total Residential Acreage	@ 5 units per acre	@ 5.5 units per acre	@ 6 units per acre
Kealakehe (840 acres)	461	2,305	2,535	2,766
With 150 ac QLT land	606	3,030	3,333	3,636
With 450 ac QLT land	901	4,505	4,955	5,406

Alternative Concept 7: This alternative maximizes residential frontage along the proposed municipal golf course by segmenting the course and extending it mauka to a mid-level roadway.

Land Use:

840 acres of Kealakehe mauka of the Queen Kaahumanu Highway including a 190 acre golf course, and 450 acres of land proposed for purchase from the Queen Liliuokalani Trust.

Traffic:

The mauka-makai thoroughfare (120 foot r.o.w.) is transformed into a residential boulevard by shifting it's alignment south and creating three elongated residential parcels between it and the northern property boundary. The boulevard is bisected at mid-level by a north-south roadway (60 foot r.o.w.) connecting to Palani Road. A second mid-level roadway is situated upslope linking Palani Road to a core area of public facilities.

Residential:

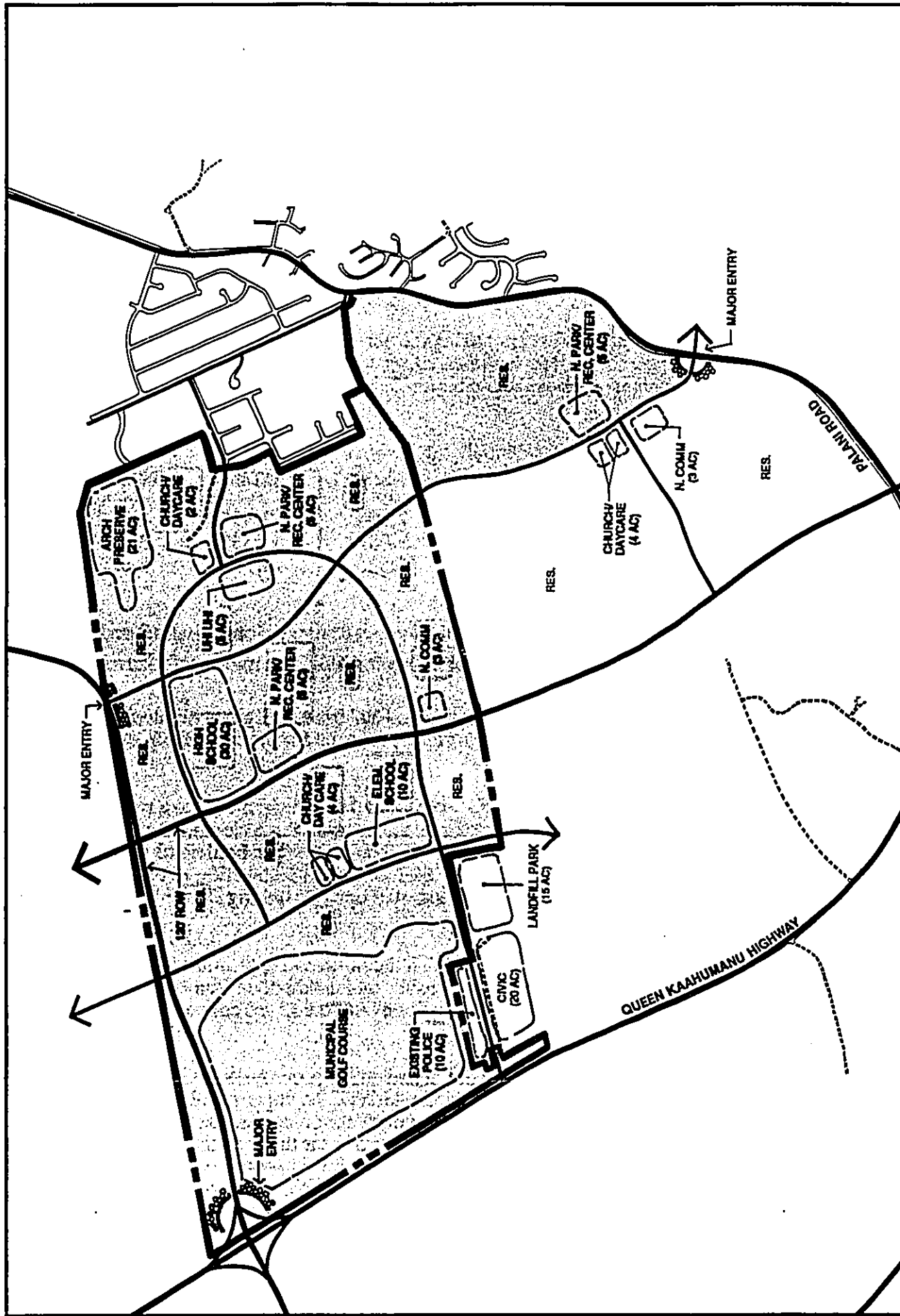
Market housing borders the golf course on the north and east and south sides. Multi-family units are situated directly mauka and makai of an elementary and high school. Affordable single-family unit developments are concentrated in the QLT portion of the project area.

Public Facilities:

An elementary school adjoining a church and day care complex is situated at the mauka intersection of the residential boulevard and the upper mid-level roadway. A high school is located south of the elementary school across the arboretum. A small neighborhood commercial center is situated near the high school just mauka of the mid-level roadway. The existing police facility is preserved and the landfill area is designated for development as a park, just mauka of a civic center.

CORRECTION

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



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SCALE IN FEET

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Date: JUNE 1990

**KEALAKEHE PLANNED COMMUNITY
ENVIRONMENTAL IMPACT STATEMENT**

**FIGURE 3-6
ALTERNATIVE CONCEPT SIX**

family units are situated within the grand roadway loop near an elementary and high school. Residential villages between the midlevel roadways consist primarily of single-family unit developments.

Public Facilities:

An elementary school is located along the lower mid-level roadway, with a high school situated between the middle and upper roadways. Three church and day care center sites are distributed throughout the project, one adjacent to the elementary school, the second between the archaeological park and plant preserve, and the third situated near Palani Road. The existing police facility is preserved and the landfill area is designated for development as a park, immediately mauka of a civic center.

Special Areas:

An archaeological preserve is situated in the north eastern corner of the project area. An endangered plant park, which could be developed as an arboretum for endangered plants indigenous to the region, is located at the top of the grand loop.

Alternate Densities:

	Total Residential Acreage	@ 5 units per acre	@ 5.5 units per acre	@ 6 units per acre
Kealakehe (840 acres)	461	2,305	2,535	2,766
With 150 ac QLT land	606	3,030	3,333	3,636
With 450 ac QLT land	901	4,505	4,955	5,406

Alternative Concept 7: This alternative maximizes residential frontage along the proposed municipal golf course by segmenting the course and extending it mauka to a mid-level roadway.

Land Use:

840 acres of Kealakehe mauka of the Queen Kaahumanu Highway including a 190 acre golf course, and 450 acres of land proposed for purchase from the Queen Liliuokalani Trust.

Traffic:

The mauka-makai thoroughfare (120 foot r.o.w.) is transformed into a residential boulevard by shifting it's alignment south and creating three elongated residential parcels between it and the northern property boundary. The boulevard is bisected at mid-level by a north-south roadway (60 foot r.o.w.) connecting to Palani Road. A second mid-level roadway is situated upslope linking Palani Road to a core area of public facilities.

Residential:

Market housing borders the golf course on the north and east and south sides. Multi-family units are situated directly mauka and makai of an elementary and high school. Affordable single-family unit developments are concentrated in the QLT portion of the project area.

Public Facilities:

An elementary school adjoining a church and day care complex is situated at the mauka intersection of the residential boulevard and the upper mid-level roadway. A high school is located south of the elementary school across the arboretum. A small neighborhood commercial center is situated near the high school just mauka of the mid-level roadway. The existing police facility is preserved and the landfill area is designated for development as a park, just mauka of a civic center.

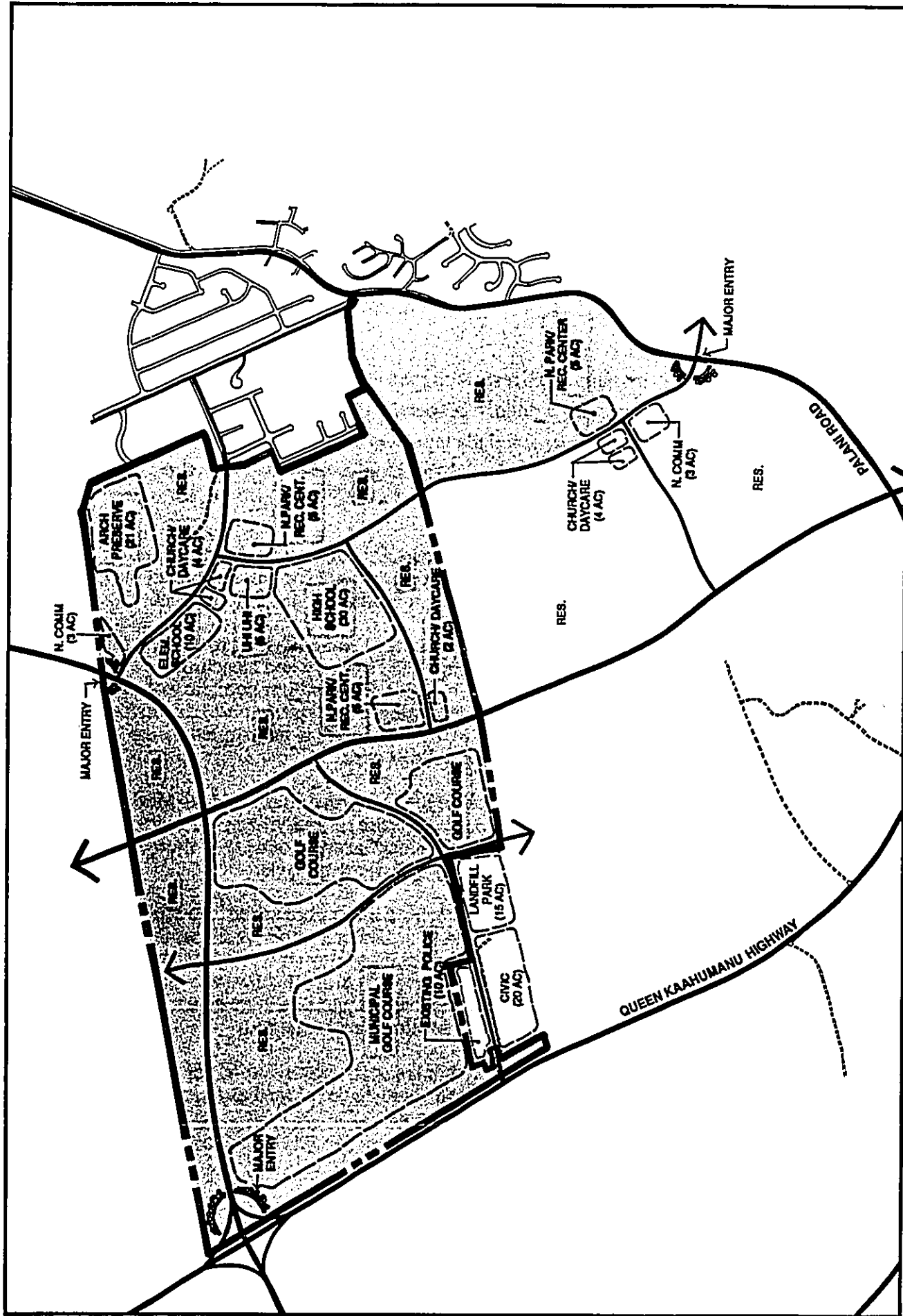




FIGURE 3-7
ALTERNATIVE CONCEPT SEVEN

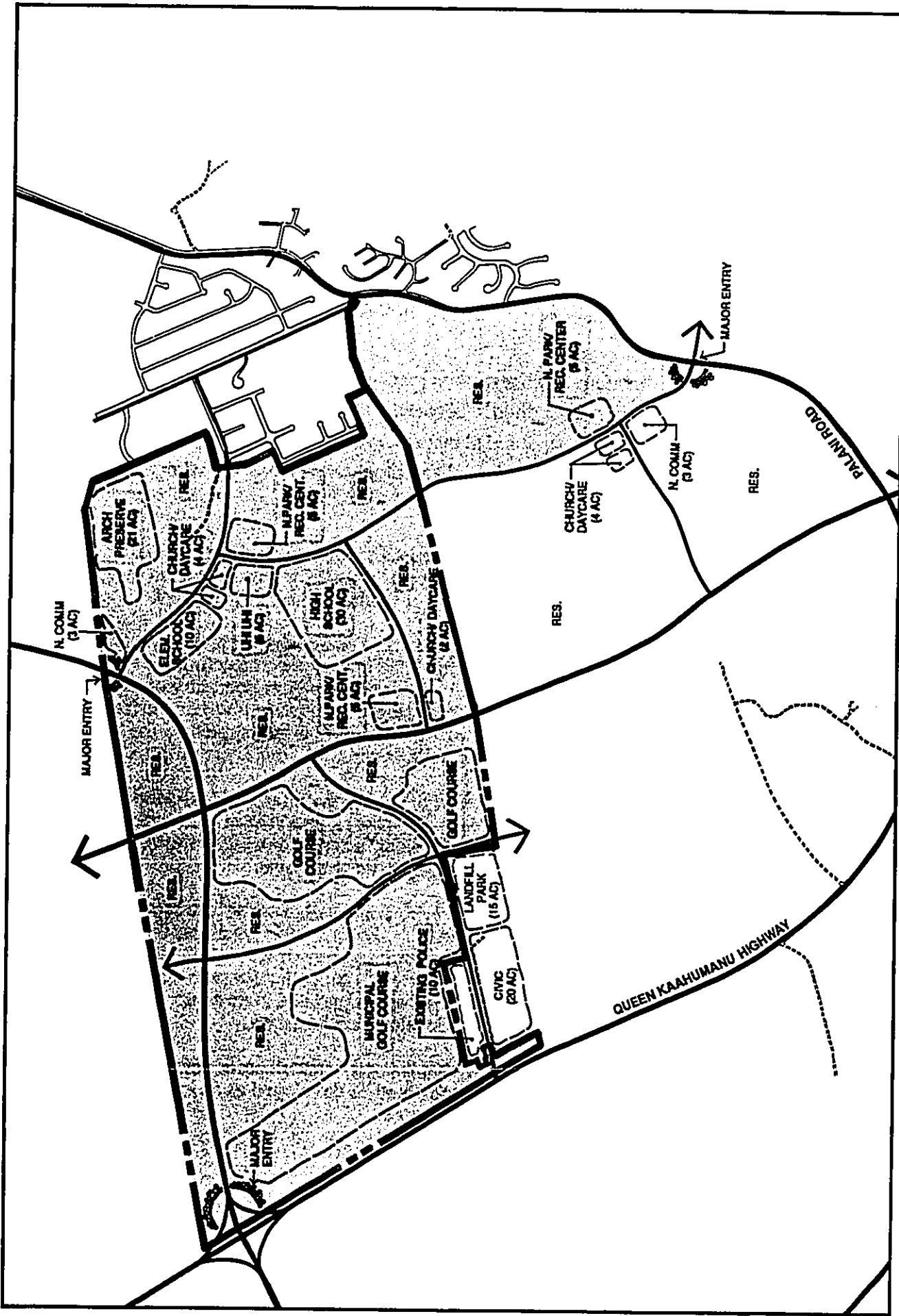
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Date: JUNE 1980

**KEALAKEHE PLANNED COMMUNITY
ENVIRONMENTAL IMPACT STATEMENT**

**FIGURE 3-7
ALTERNATIVE CONCEPT SEVEN**

Special Areas: An archaeological preserve is situated in the north eastern corner of the project area. An endangered plant park, which could be developed as an arboretum for endangered plants indigenous to the region, is located between the elementary school and high school.

Alternate Densities:	Total Residential Acreage	@ 5 units per acre	@ 5.5 units per acre	@ 6 units per acre
Kealakehe (840 acres)	460	2,300	2,530	2,760
With 150 ac QLT land	605	3,025	3,327	3,630
With 450 ac QLT land	880	4,400	4,840	5,280

Alternative Concept 8: This alternative utilizes a loop road to establish a village core within the Kealakehe parcel. The circular village core is divided between a mix of public facilities including schools, a church/day care complex, an endangered plant preserve/park, with a neighborhood serving commercial area on the east side; and residential areas to the west. Additional residential neighborhoods surround the village core.

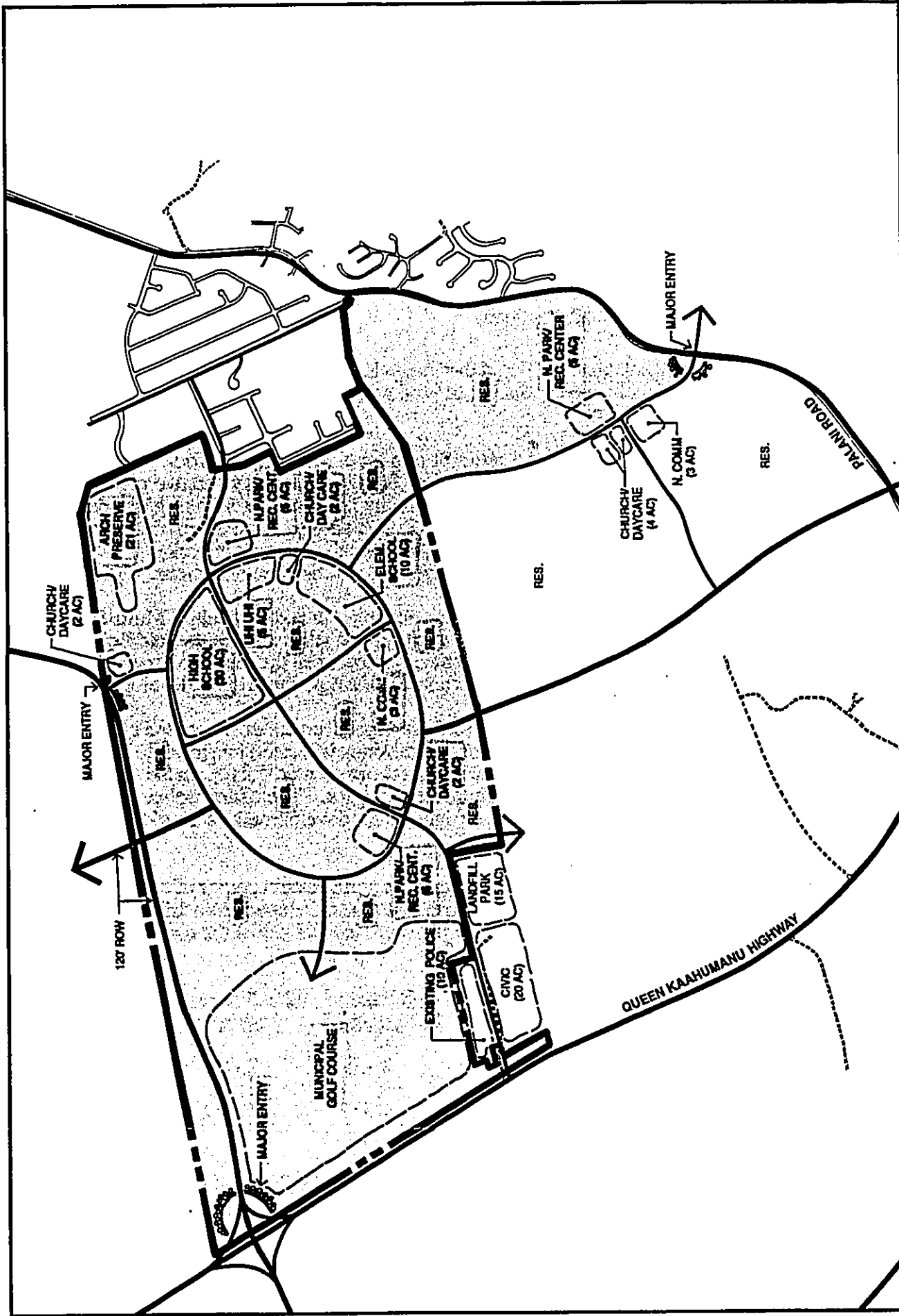
Land Use: 840 acres of Kealakehe mauka of the Queen Kaahumanu Highway including a 160 acre golf course, and 450 acres of land proposed for purchase from the Queen Liliuokalani Trust, situated between Kealakehe and Palani Road.


Traffic: A strong mauka-makai orientation is defined by two east-west roadways, one linking the mauka area to Queen Kaahumanu Highway and bisecting the village core (60 foot r.o.w.), and the second hugging the northern boundary of the property to create an unobstructed thoroughfare (120 foot r.o.w.) downslope to the highway. North-south traffic across the property is interrupted by the loop road (60 foot r.o.w.) surrounding the village core.

Residential: Market housing borders the golf course on the north and east sides. Moderate density multi-family units are situated within the central village core surrounded by single-family units developments. Residential areas outside of the village center consist primarily of single-family unit developments.

Public Facilities: Within the village core, an elementary school and a high school are separated by a large park which includes the arboretum. Additional public facilities include a church and day care center. A second church and day care center complex is situated at the southern end of the QLT property proposed for purchase by the State. The existing police facility is preserved as part of a civic center complex and the landfill area is designated for development as a park.

Special Areas: An archaeological preserve is situated in the north eastern corner of the project area. An endangered plant park, which could be developed as an arboretum is located on the eastern side of the village core.



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**KEALAKEHE PLANNED COMMUNITY
ENVIRONMENTAL IMPACT STATEMENT**

**FIGURE 3-8
ALTERNATIVE CONCEPT EIGHT**

Alternate Densities:	Total Residential Acreage	@ 5 units per acre	@ 5.5 units per acre	@ 6 units per acre
Kealakehe (840 acres)	485	2,425	2,667	2,910
With 150 ac QLT land	630	3,025	3,327	3,630
With 450 ac QLT land	905	4,525	4,977	5,430

Alternative Concept 9: This alternative utilizes a network of roadways to establish a grid pattern of development with a traditional character.

Land Use: 840 acres of Kealakehe mauka of the Queen Kaahumanu Highway including a 160 acre golf course and 450 acres of land proposed for purchase from the Queen Liliuokalani Trust.

Traffic: This alternative emphasizes a series of mid-level roadways (60 foot r.o.w.) within the property, aligned parallel to Queen Kaahumanu Highway and two mauka-makai roadways (one 120 foot r.o.w, and one 60 foot r.o.w.) linking Queen Kaahumanu Highway to the upper mid-level roadway. With the exception of a small loop roadway with the 150 acre QLT parcel, the road network is characterized by a basic grid with traditional four-corner intersections.

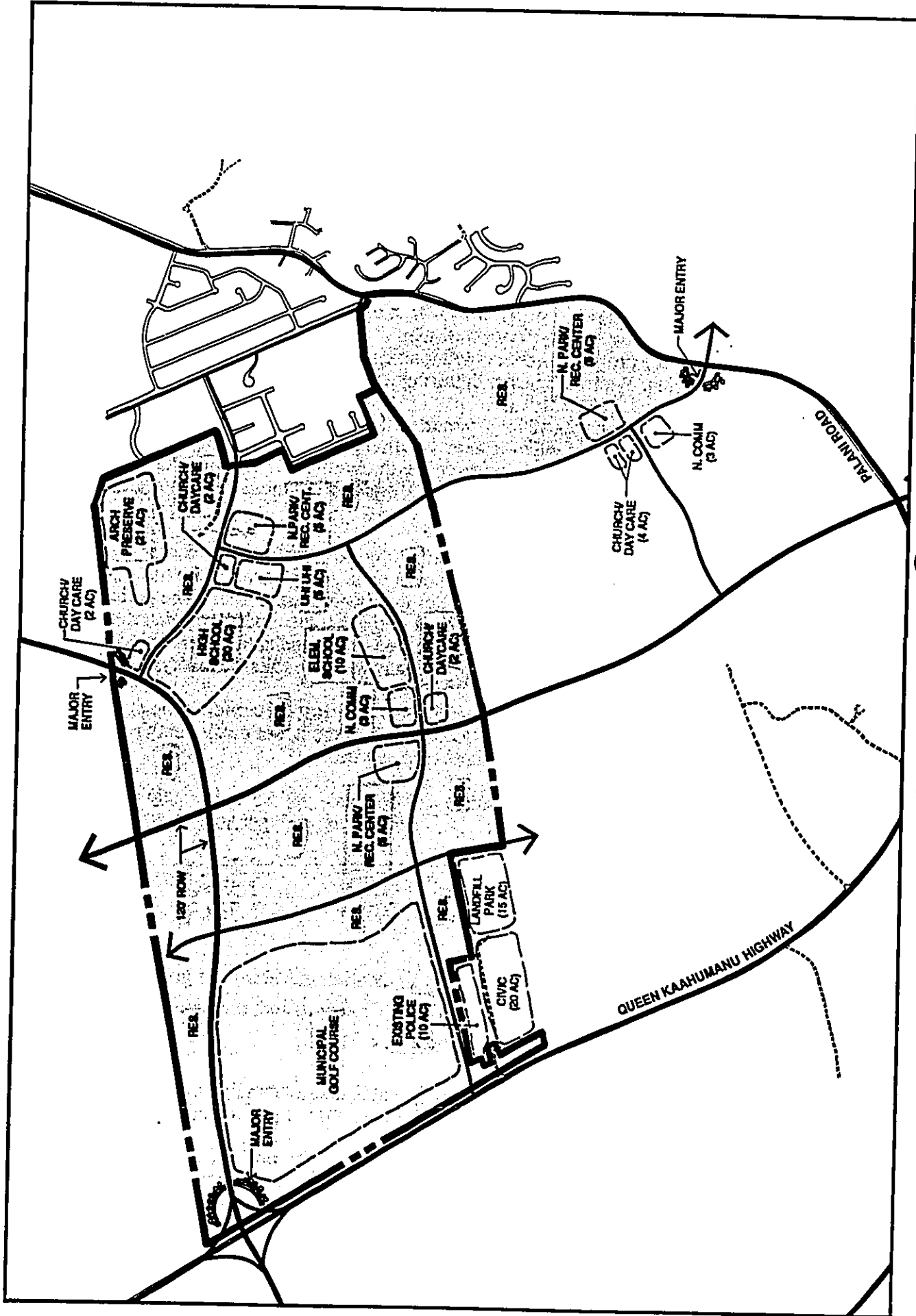
Residential: Market housing borders the golf course on the north and east sides. Multi-family units are centrally located in the Kealakehe parcel just mauka of the middle north-south (mid-level) roadway. Residential areas between the mid-level roadways and within the QLT parcel consist primarily of single-family unit developments.

Public Facilities: An elementary school and high school are situated on either side of the plant preserve park. A neighborhood commercial area is located just makai of the elementary school. A single church and day care center site lies mauka of the high school between it and the archaeological park. The existing police facility is preserved and the landfill area is designated for development as a park, just mauka of a proposed civic center.

Special Areas: An archaeological preserve is situated in the north eastern corner of the project area. An endangered plant park, which could be developed as an arboretum for endangered plants indigenous to the region, is located below the upper north-south roadway.

Alternate Densities:	Total Residential Acreage	@ 5 units per acre	@ 5.5 units per acre	@ 6 units per acre
Kealakehe (840 acres)	489	2,445	2,689	2,934
With 150 ac QLT land	634	3,170	3,487	3,804
With 450 ac QLT land	909	4,545	4,999	5,454

Alternative Concept 10: This alternative utilizes two mauka-makai roadways to link a series of six residential villages. A moderate density village is centrally located with the Kealakehe parcel



NORTH

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**KEALAKEHE PLANNED COMMUNITY
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**FIGURE 3-9
ALTERNATIVE CONCEPT NINE**

with open space on either end in the form of a golf course on the makai side and a park preserve on the mauka end.

Land Use: 840 acres of Kealakehe mauka of the Queen Kaahumanu Highway including a 160 acre golf course, and 450 acres of land proposed for purchase from QLT.

Traffic: This alternative emphasizes two mid-level roadways (60 foot r.o.w.) aligned parallel to Queen Kaahumanu Highway and two mauka-makai boulevards (one 120 foot r.o.w, and one 60 foot r.o.w.) linking Queen Kaahumanu Highway to Palani Road and Mamalahoa Highway. Both mauka-makai roadways extend through the length of the property, well within the Kealakehe boundaries, rather than hugging the property borders, with one extending to Mamalahoa, and the other ending in a T-intersection with the upper mid-level roadway.

Residential: Full development consists of six separate villages. Market housing borders the elongated golf course extended in a mauka direction. Multi-family units are centrally located in the Kealakehe parcel on the south side of the mauka-makai roadway connecting Palani Road. Four additional residential villages are aligned across the mauka portion of the property.

Public Facilities: Three village cores are created, each containing a church/day care center, a neighborhood commercial area, and a small park. A high school site lies mauka of the lower mid-level roadway along the project's northern border. The police facility is preserved as part of a civic center area and the landfill is converted to a golf course driving range. A commercial area is situated at the intersection of Queen Kaahumanu Highway and the northern mauka-makai roadway.

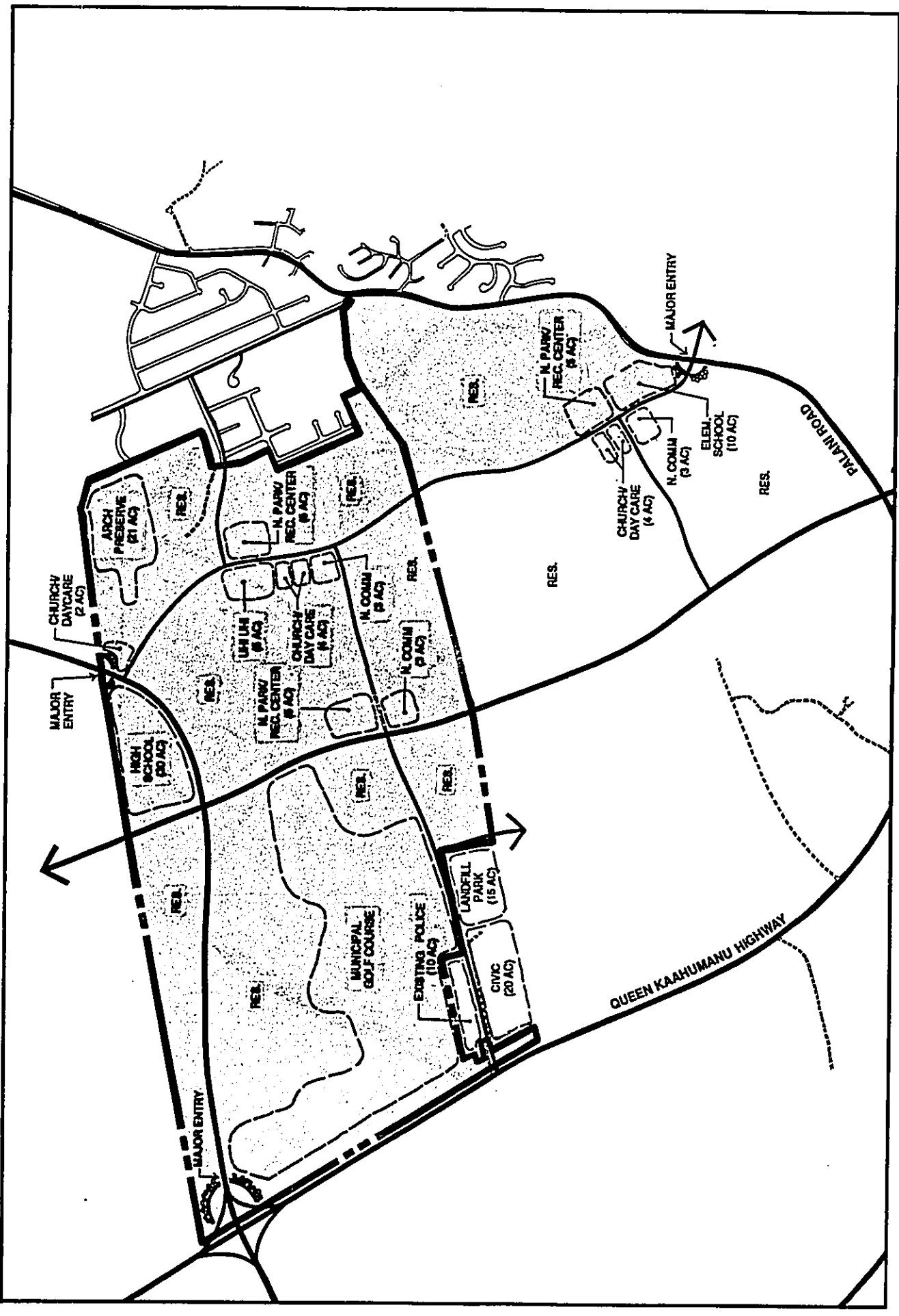
Special Areas: An archaeological preserve is situated in the north eastern corner of the project area. An endangered plant park is located below the upper north-south roadway, defining the eastern end of the central village core.

Alternate Densities:	Total Residential Acreage	@ 5 units per acre	@ 5.5 units per acre	@ 6 units per acre
Kealakehe (840 acres)	508	2,540	2,794	3,048
With 150 ac QLT land	643	3,215	3,536	3,858
With 450 ac QLT land	918	4,590	5,049	5,508

Alternative Concept 11: This alternative maximizes residential uses along the golf course by simplifying the roadway pattern. Two moderate density villages are created; one centrally located along the mid-level roadway, and a second upslope near Palani Road.

Land Use: 840 acres of Kealakehe, mauka of the Queen Kaahumanu Highway including a 166 acre golf course, and 450 acres of land proposed for purchase from QLT.

Traffic: This alternative emphasizes two mid-level roadways (one 120 foot r.o.w, and one 60 foot r.o.w.) aligned parallel to Queen Kaahumanu Highway and one mauka-makai boulevard (120 foot r.o.w.) linking Queen Kaahumanu Highway to



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**KEALAKEHE PLANNED COMMUNITY
ENVIRONMENTAL IMPACT STATEMENT**

**FIGURE 3-10
ALTERNATIVE CONCEPT TEN**

Kealakehe Street and eventually to Mamalahoa Highway. The mauka-makai roadway extends well into the property rather than hugging the property boundary, establishing a village core at its intersection with the mid-level highway.

Residential: Full development consists of six separate villages. Market housing borders the elongated golf course extended in a mauka direction. Multi-family units are centrally located in the Kealakehe parcel at the intersection of the mid-level highway and the mauka-makai roadway. Four additional residential villages are aligned across the mauka portion of the property.

Public Facilities: Two village cores are created, each containing a church/day care center, a neighborhood commercial area, and a small park. A high school site lies mauka of the lower mid-level roadway in the village core. The police facility is preserved as part of a civic center area and the landfill is converted to a public park. A 20 acre commercial area is situated at the intersection of Queen Kaahumanu Highway and the northern mauka-makai roadway.

Special Areas: An archaeological preserve is situated in the north eastern corner of the project area. An endangered plant park is located below the upper north-south roadway, defining the eastern end of the central village core.

Alternate Densities:

	Total Residential Acreage	@ 5 units per acre	@ 5.5 units per acre	@ 6 units per acre
Kealakehe (840 acres)	496	2,480	2,728	2,976
With 150 ac QLT land	629	3,145	3,459	3,774
With 450 ac QLT land	905	4,525	4,977	5,430

2.10 Development of the Project as Proposed

Based upon a careful review of all the alternatives, Concept 11 was selected by the HFDC as its Preferred Concept. Subsequently, the design of the golf course was altered to maximize residential frontage along the fairways. In addition, desired levels of density were established in order to guide infrastructure planning. It was determined that single family units would be developed at six units to the acre with multi-family units at twelve units to the acre. These refinements of Concept Plan 11 eventually led to the Master Land Use Plan upon which this document is based.

3. COMPARATIVE EVALUATION

The following table presents a comparative evaluation of major alternative actions to the proposed development. The table demonstrates the benefits, costs and general impacts associated with each alternative action.

TABLE 3-1: COMPARATIVE ANALYSIS OF DEVELOPMENT ALTERNATIVES

	PROPOSED DEVELOPMENT	REDUCED SCALE	NO ACTION ALTERNATIVE	AGRICULTURAL DEVELOPMENT	RECREATIONAL DEVELOPMENT	RESOURCE EXTRACTION	RESORT DEVELOPMENT	INDUSTRIAL/COMMERCIAL	PUBLIC FACILITIES
BENEFITS:									
affordable housing	2	1	0	0	0	0	0	0	0
recreation facilities	2	1	0	0	1	0	2	0	1
improved access	2	1	0	0	1	0	2	1	1
economic growth	2	1	0	1	1	1	2	1	1
(2 = positive impact) (1 = minimal impact) (0 = possible negative impact)									
COSTS:									
public infrastructure	0	0	1	1	0	1	0	0	0
government expenditures	0	0	1	2	0	1	0	0	0
(2 = low) (1 = medium) (0 = high)									
IMPACTS:									
endangered plants	1	1	2	0	1	0	1	0	1
archaeological sites	1	1	2	0	1	0	1	0	1
population growth	0	1	2	1	2	1	0	1	1
views	1	1	2	1	2	1	0	1	1
(2 = low) (1 = medium) (0 = high)									
TOTAL SCORE:	11	8	10	6	9	5	8	4	7

CHAPTER IV

CHAPTER IV
PHYSICAL AND NATURAL ENVIRONMENT

1. INTRODUCTION

This chapter presents a description of the environment affected by the proposed development. Following a description of each category of concern, a discussion of potential impacts is presented. The discussion is based upon the assumption of full development of the proposed project. Should the project be reduced in scale, it is presumed that potential impacts would be proportionately less for most of the categories discussed. Each section is concluded with a review of mitigation measures that would be required to minimize potential adverse impacts.

The information contained in this chapter is based upon three sources of information. The first source is detailed studies, including field studies, conducted by staff planners and engineers as well as consultants contracted specifically for this environmental impact statement. All subconsultant studies are included in their complete and final form as appendices to this document. The second source is comments received from public agencies, private groups, organizations and residents from the affected region, and elected and appointed officials, based upon their review of the environmental assessment and the concept plans for the project. The third source is comparisons and evaluations made by consultants relative to similar planned or existing projects.

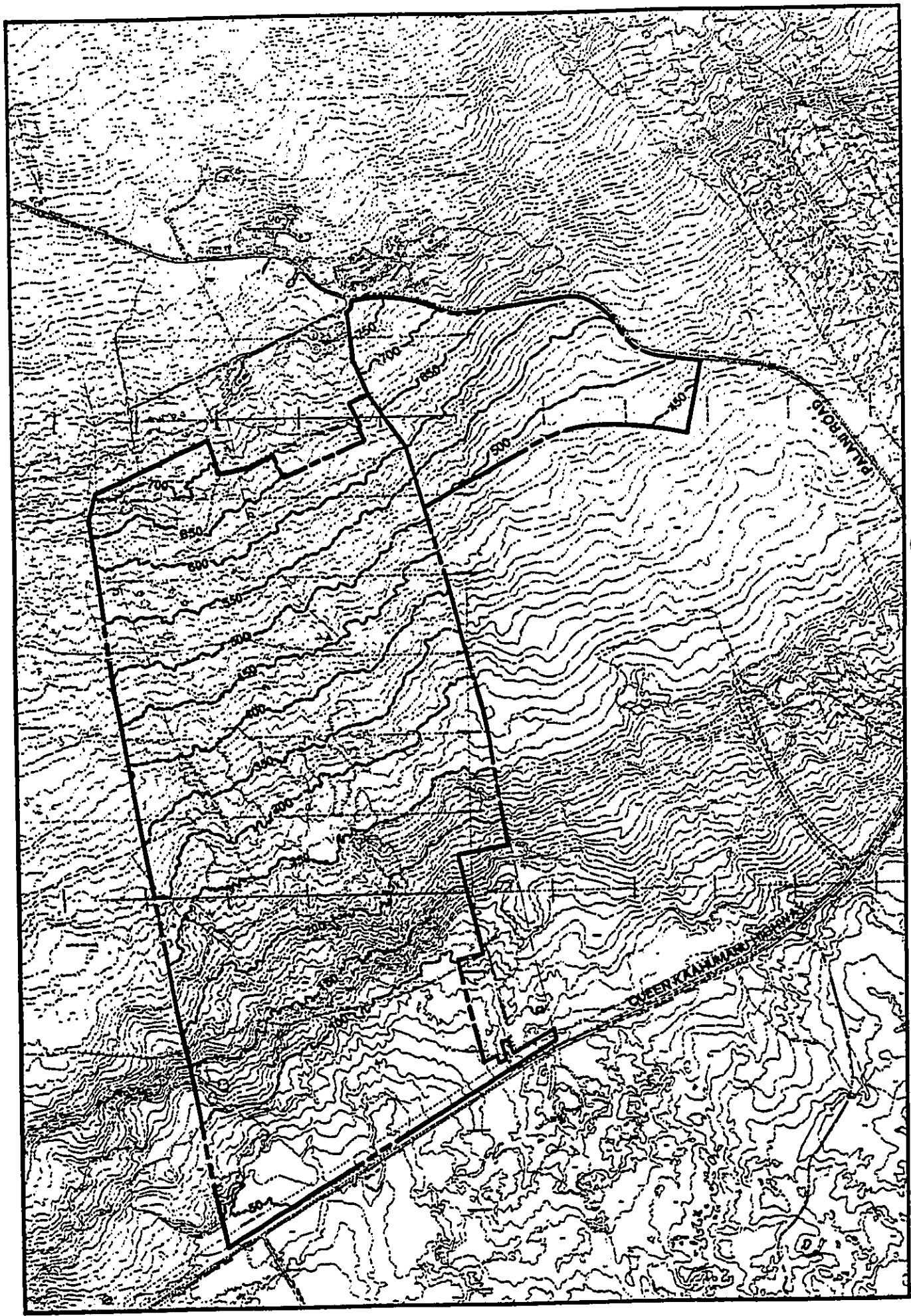
2. PHYSICAL ENVIRONMENT

2.1 Geology, Physiography, Soils, and Agricultural Potential

2.1.1 Existing Conditions

2.1.1.1 Geology and Physiography

The project area consists of approximately 960 acres of land situated between the Queen Kaahumanu Highway and the existing Kealakehe community and Queen Liliuokalani Village. The property's topography is characterized by a continuous slope from an elevation of 50 feet at the highway to an elevation of 750 foot at the upper most portion of the project area (see Figure 4-1). The site area tends to be relatively flat from the highway to a point about 1,600 feet inland with a slope of just over three percent, before the property starts to rise in a relatively consistent manner with a slope of about twelve percent. Over the length of the entire property (a 9,600 foot linear distance), the elevation increases 700 feet resulting in an average slope of just over seven percent. However, the topography of the site is best characterized as a rough, uneven surface composed of a'a and pahoehoe lava flows which have formed rubble piles, mounds and gullies.



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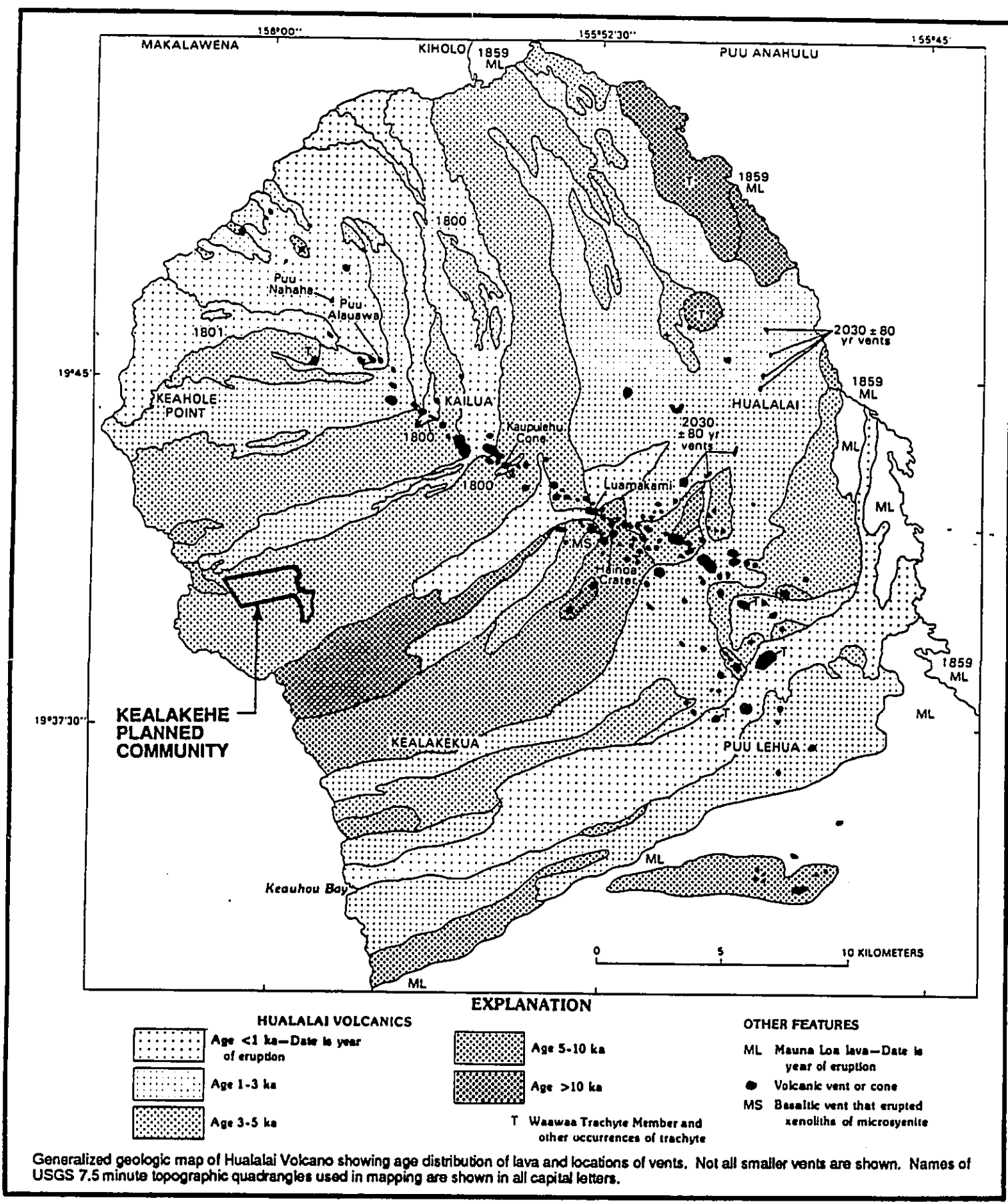
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Date: JUNE 1990

**KEALAKEHE PLANNED COMMUNITY
ENVIRONMENTAL IMPACT STATEMENT**

**Figure 4-1
TOPOGRAPHY**

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



HUALALAI VOLCANICS		EXPLANATION		OTHER FEATURES	
	Age <1 ka—Date is year of eruption		Age 5-10 ka	ML	Mauna Loa lava—Date is year of eruption
	Age 1-3 ka		Age >10 ka	●	Volcanic vent or cone
	Age 3-5 ka	T	Waawaa Trachyte Member and other occurrences of trachyte	MS	Basaltic vent that erupted xenoliths of microsyenite

Generalized geologic map of Hualalai Volcano showing age distribution of lava and locations of vents. Not all smaller vents are shown. Names of USGS 7.5 minute topographic quadrangles used in mapping are shown in all capital letters.



NORTH
 Source: VOLCANISM IN HAWAII, U.S.G.S. PROFESSIONAL PAPER 1350
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Figure 4-2
 GEOLOGY

As shown in Figure 4-2, the project area is located on the western slope of Hualalai volcano. The entire site is composed of lava estimated to be from three to five thousand years old.

2.1.1.2 Soils and Agricultural Potential

The project area consists of four soil types as classified by the United States Department of Agriculture Soil Conservation Service (December, 1973). Following is a description of the four soils types as presented in the Soil Conservation Services 1973 publication. The distribution of these soil types is presented in Figure 4-3.

- rLV A'a Lava Flows This lava has practically no soil covering and is bare of vegetation, except for mosses, lichens, ferns, and a few small ohia trees. It is at an elevation ranging from near sea level to 13,000 feet and receives from 10 to 250 inches of rainfall annually. It is associated with pahoehoe lava flows and many soils. This lava is rough and broken. It is a mass of clinkery, hard, glassy, sharp pieces piled in tumbled heaps. In areas of high rainfall, it contributes substantially to the underground water supply and is used for watershed.
- rLW Pahoehoe Lava Flows. This lava has a billowy, glassy surface that is relatively smooth. In some areas, however, the surface is rough and broken, and there are hummocks and pressure domes. Pahoehoe lava has no soil covering and is typically bare of vegetation except for mosses and lichens. In the areas of higher rainfall, however, scattered ohia trees, ohelo berry, and aalii have gained a foothold in cracks and crevices. This miscellaneous land type is at an elevation from sea level to 13,000 feet. The annual rainfall ranges from 10 inches to more than 140 inches. Some flat slabs of pahoehoe lava are used as facing on buildings and fireplaces. In areas of higher rainfall, this lava contributes to the groundwater supply.
- rKED Kaimu extremely stony peat, 6 to 20 percent slopes. This soil is at low elevations on Mauna Loa. In a representative profile the surface layer is very dark brown extremely stony peat about 3 inches thick. It is underlain by fragmental A'a lava. This soil is neutral in reaction. Permeability is rapid, runoff is slow, and the erosion hazard is slight. This soil is not suitable for cultivation. Most of it is in native woodland. Small areas are used for pasture, macadamia nuts, papaya, and citrus fruits.
- rPYD Punaluu extremely rocky peat, 6 to 20 percent slopes. This soil is low on the leeward side of Mauna Loa. Rock outcrops occupy 40 to 50 percent of the surface. In a representative profile the surface layer is black peat about 4 inches thick. It is underlain by pahoehoe lava bedrock. This soil is medium acid. The peat is rapidly permeable. The pahoehoe lava is very slowly permeable, although water moves rapidly through the cracks. Runoff is slow, and the erosion hazard is slight. Roots are matted over the pahoehoe lava. This soil is used for pasture.

According to the Detailed Land Classification, Island of Hawaii, a soil analysis published by the University of Hawaii's Land Study Bureau in 1972, the entire project area is classified as "E", or very poorly suited for agricultural productivity. This study presents a detailed analysis of

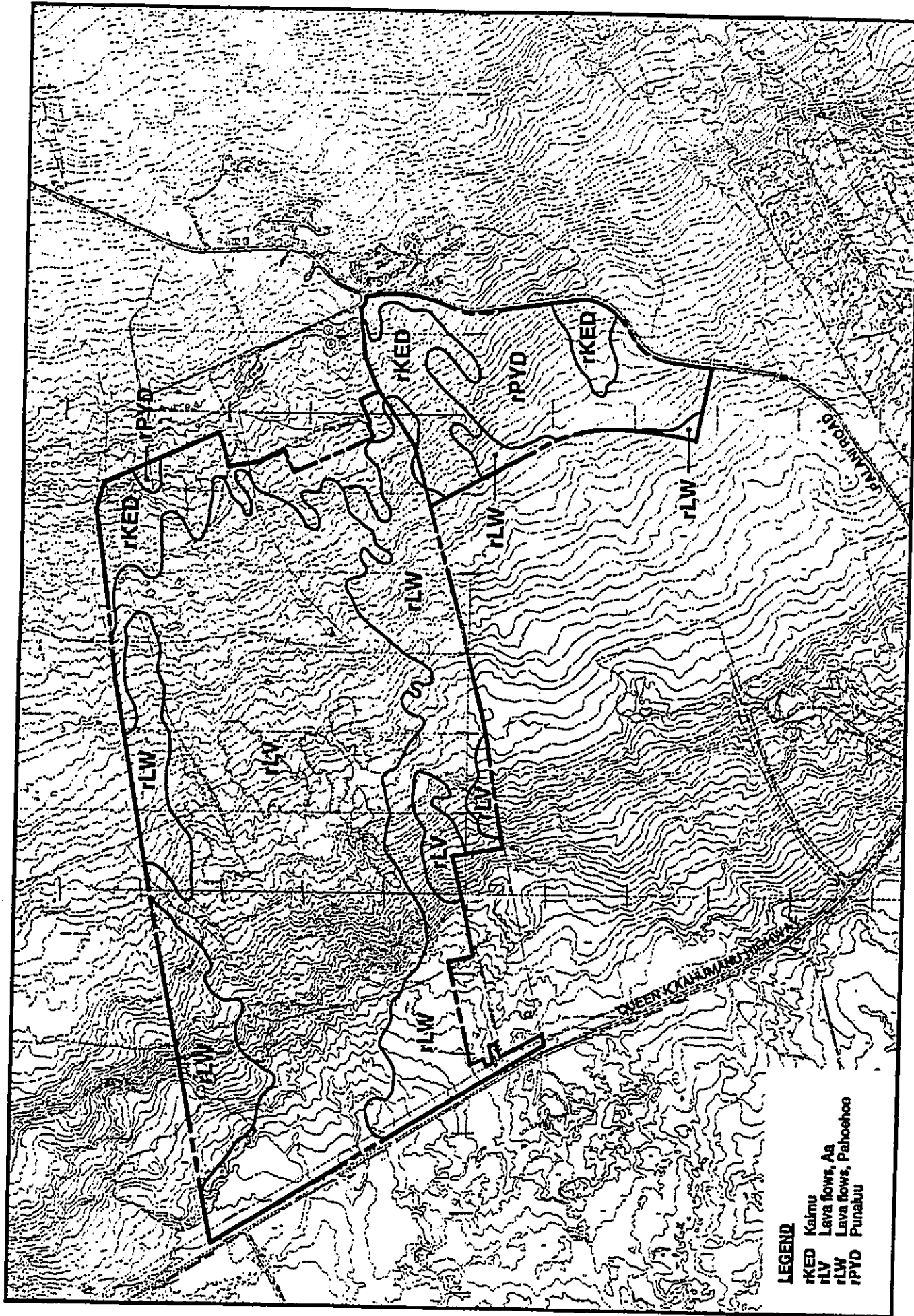
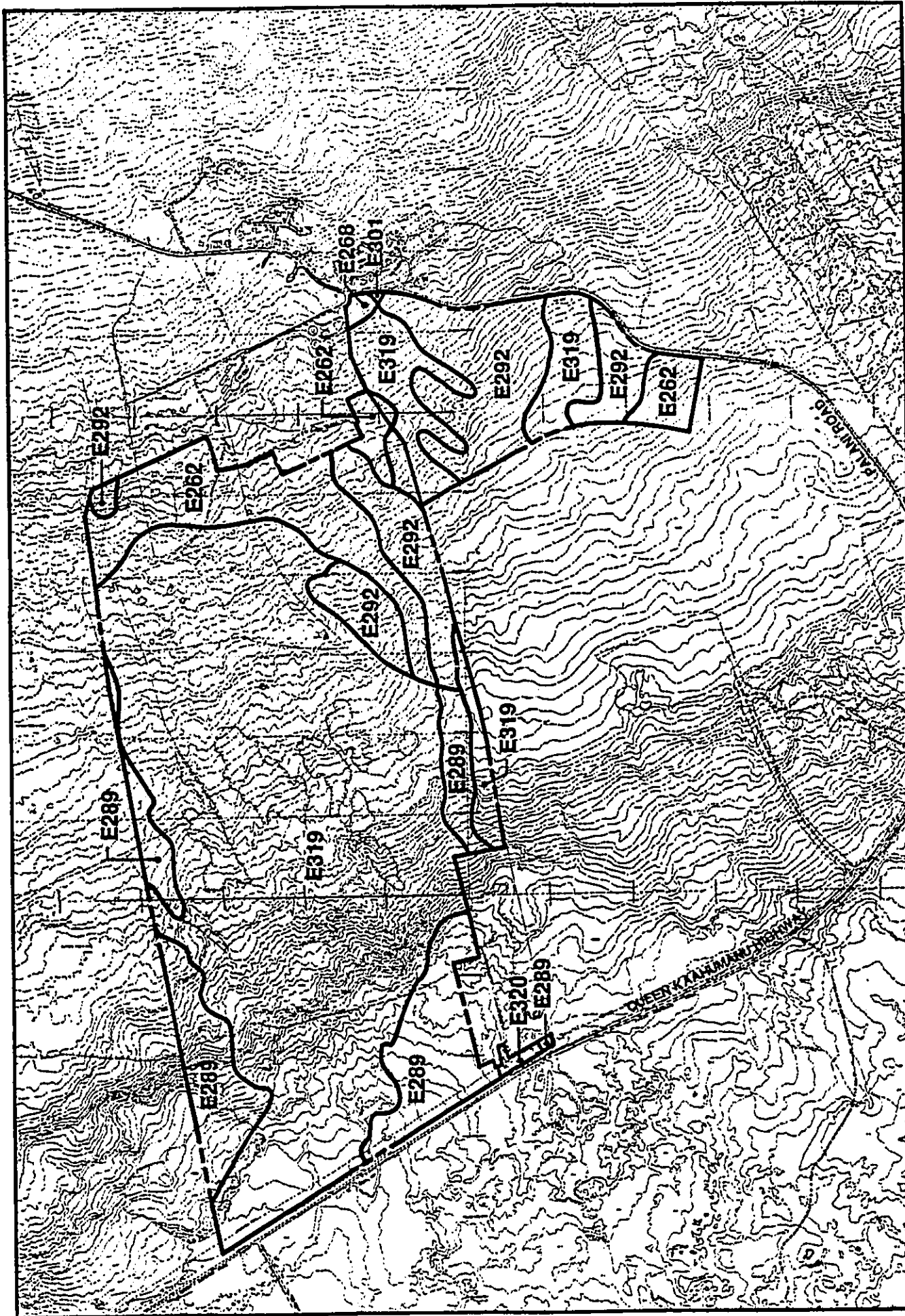


Figure 4-3
SOIL STUDY

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**KEALAKEHE PLANNED COMMUNITY
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**Figure 4-4
DETAILED LAND CLASSIFICATION**

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

soil types identifying a total of seven variations of soil in the project area. The soil types (identified by a numbering system) are presented in Figure 4-4. Following is a summary of the analysis.

TABLE 4-1: DETAILED LAND CLASSIFICATION

<u>Soil</u>	<u>Parent Material</u>	<u>Stoniness</u>	<u>Drainage</u>	<u>% Slope</u>	<u>Machine Tillability</u>
E262	A'a	Sharp lava clinkers	Excessively drained	0 to 35	Unsuited
E268	A'a pumice	Sharp lava clinkers	Excessively drained	0 to 35	Unsuited
E289	Pahoehoe	-----	Well drained	generally under 15	Unsuited
E292	Pahoehoe	-----	Well drained	generally under 20	Very poorly suited
E301	Volcanic Ash & pahoehoe	Slightly Stony	Moderately drained	0 to 35	Poorly suited
E319	A'a	Sharp A'a clinkers	Excessively drained	0 to 20	Unsuited
E320	Pahoehoe	-----	Well drained	0 to 20	Unsuited

A total of approximately 148 acres within the project area are identified as Other Important Agricultural Land under the State's ALISH system (Agricultural Land of Importance to the State of Hawaii). These lands are located generally in the northern portion of the property adjacent to the existing urban area and are identified in Figure 4-5. About 100 acres are located within the project area presently designated as Urban. The remaining 48 acres are designated as Agriculture. The remainder of the property has no agricultural value as determined by the State's ALISH system.

None of the land identified as Other Important Agricultural is utilized for the cultivation of crops due to its poor soil quality. Some areas within the upper region of the project site have been leased to Palani Ranch for cattle grazing.

2.1.2 Probable Impacts

Excavation, reshaping, grading and filling of the project area in preparation for the development of homesites, roadways, utilities and related land uses will impact the geology and

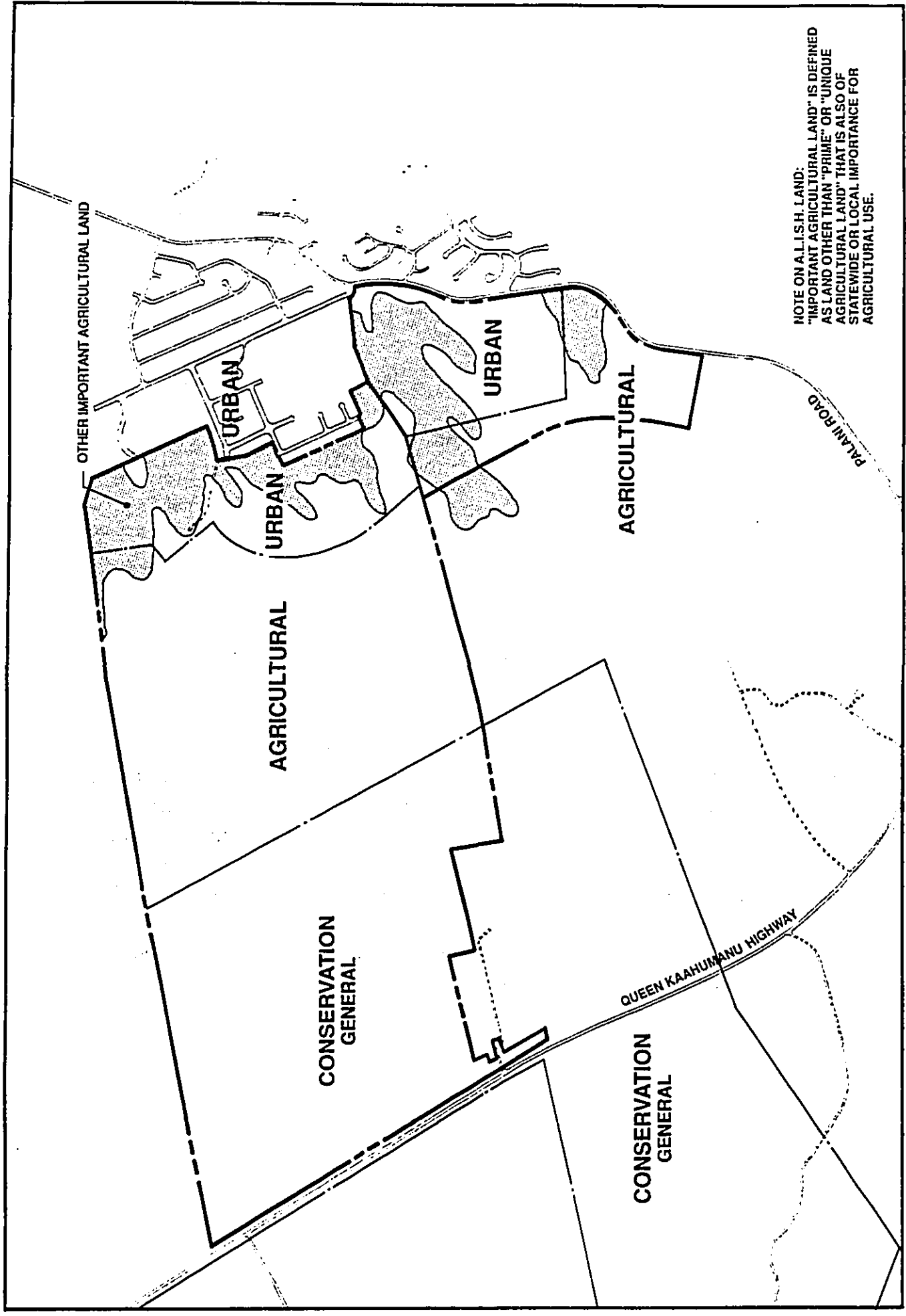


Figure 4-5
 HAWAII STATE LAND USE
 DISTRICT BOUNDARIES/ALISH

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physiography of the project area. While development of the project is intended to adhere to existing contours as much as possible, cut and fill will be required to meet county, state and federal design requirements for the various project elements.

The project will impact the limited agricultural activity (cattle grazing) existing on the property. Development of the property for residential purposes will preclude its use for cattle grazing. However, given the relatively poor quality of the soil and the scrub nature of its vegetation, the loss of these grazing lands is not considered to be a significant adverse impact. The soils of the project site are relatively thin and will be used on site for grading and project landscaping. It is likely that additional soils would be needed to be imported from other areas of the island to augment the available soil on-site. Overall, the potential impacts to soil and agricultural potential of the project site would be insignificant.

2.1.3 Mitigation Measures

Impacts to the geology and physiography of the project site can be mitigated to some degree through careful design of the project in an attempt to preserve existing contours. However, the natural formations of lava must be altered to allow construction of roadways and homesites. Construction activities will be conducted in accordance with applicable air and noise quality regulations to minimize potential fugitive dust and noise impacts on adjacent developed areas.

Due to the fact that agricultural activity on the project site is limited to cattle grazing, mitigation measures to minimize impacts on agriculture are not necessary.

2.2 Groundwater, Hydrology, Surface Water and Drainage

2.2.1 Existing Conditions

2.2.1.1 Groundwater and Hydrology

Kona's regional water resources can be classified in three categories; basal groundwater reserves, brackish basal groundwater, and dike-impounded perched groundwater. The basal aquifer extends from the upper slopes of Hualalai volcano to the shoreline and is recharged by regional rainfall. Seawater intrusion into the aquifer along the shoreline creates a brackish water reserve. The location and size of this brackish water aquifer extending inland from the shoreline is unknown due to the lack of a systematic survey to determine its extent. General assumptions about its size cannot be easily made because of the character of rainfall in the region and geologic formations which impact its distribution. Based on limited knowledge gained from existing wells, dike-impounded perched groundwater may exist at higher elevations on Hualalai. This has been

demonstrated by the success of previous well drilling efforts. However, given the size of the area and the varying geologic conditions, no specific predictions can be made about the exact location of potable water resources. Thus, beyond the knowledge of three general zones in the Kailua region, the specific character of groundwater resources under the project area is unknown. However, information gained from historical records would indicate that it is unlikely that the project lands are suitable for potable or non-potable water development, due to the project area's relatively low elevation and the probability that the brackish water aquifer could extend under at least a portion of the property (see Figure 4-6).

2.2.1.2 Surface Water and Drainage

As discussed earlier in this chapter, the subject property is covered with ancient a'a and pahoehoe lava flows. Due to the porous character of these flows and their rapid permeability, there are no known defined drainage ways or perennial streams within the project area. Consequently, no floodways or floodzones have been identified or recorded.

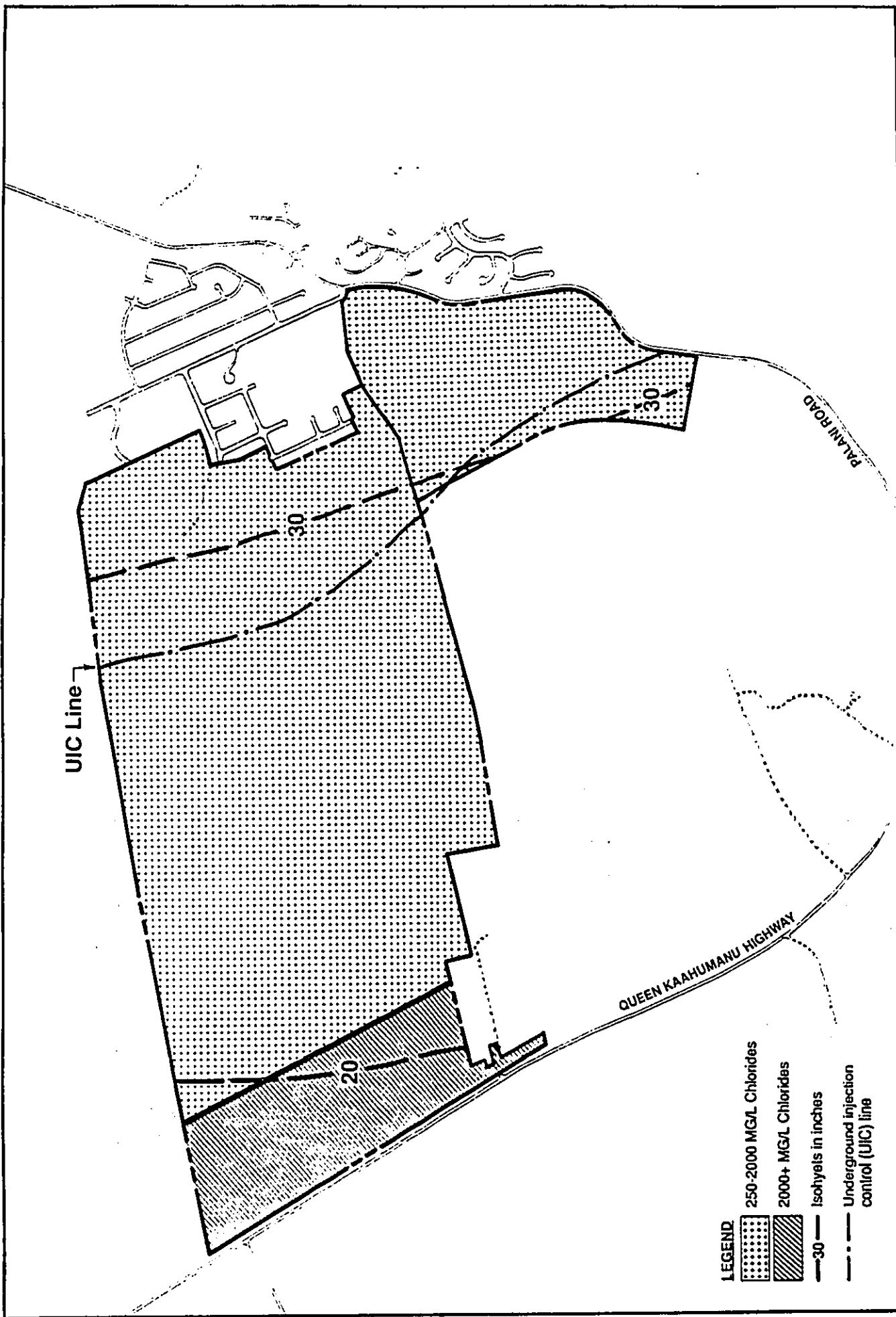
2.2.2 Probable Impacts





Immediate impacts to the groundwater, hydrology and drainage characteristics of the property could result from alterations to the existing land forms due to grading, cut and fill associated with site development and a subsequent change in percolation and drainage patterns. The importation of topsoil for landscaping purposes could result in substantial increases in soil runoff before ground cover on residential lots has been firmly established. Long term impacts could result from the introduction of pollutants associated with urbanization; most specifically biocides and fertilizers associated with landscaping and household and automotive-related chemical spills associated with the proposed residential and non-residential land uses.

Surface runoff and drainage from the property will increase due to an increase in impermeable surfaces such as rooftops, roadways, parking lots, playgrounds and sidewalks. Runoff from the roadways and parking lots could introduce petrochemicals associated with automobiles into the groundwater if allowed to percolate through underlying lava formations.

2.2.3 Mitigation Measures

Potential adverse impacts to the groundwater resources and drainage characteristics of the project site would be mitigated through the design and construction of a drainage infrastructure



- LEGEND**
-  250-2000 MG/L Chlorides
 -  2000+ MG/L Chlorides
 -  Isohyets in inches
 -  Underground injection control (UIC) line



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Figure 4-6
GROUND WATER

system in full compliance with Hawaii County Department of Public Works and State Department of Health standards. Soil runoff during the construction and pre-landscaping phases would be mitigated through careful design of residential areas, management controls established during construction, and a comprehensive landscaping program to be implemented with each phase of development. Potential adverse impacts from pollutants would be mitigated through the use of slow time release or rapid uptake fertilizers, and the United States Environmental Protection Agency and State Department of Health approved biocides that are applied by or under the direction of certified applicators. Petrochemical pollutants from street runoff can not be easily controlled.

2.3 Natural Hazards

2.3.1 Existing Conditions

Aside from storms and strong winds, the natural hazards which could have the greatest potential impact upon the physical character of the subject property are volcanic eruptions and earthquakes. Tsunamis are not considered to be a potential threat to the property because of its distance from the coastline and its elevation.

The proposed project is located on the western slope of Hualalai volcano, which rises to a height of 8,271 feet above sea level. As indicated in Figure 4-2, the project site is located between 7 and 8 miles west of Hainoa Crater, the volcano's summit, on a prehistoric lava flow estimated to be from three to five thousand years old. During the past 10,000 years (Holocene time), Hualalai has experienced about 200 eruptions with a general eruptive recurrence interval of about 50 years. However data indicates that eruptions have occurred in clusters (groups of several eruptions over a few hundred years, separated by several centuries of inactivity). Hualalai last erupted in 1800-01. Lava emerged at about the 1,600 feet elevation north of the project site and created a flow which reached the ocean north of Keahole Point. The intervals between the latest Holocene eruptions, including the 189 years since the last one, have lead geologists to suggest that a Hualalai eruption is highly probable within the next 200 years and could occur during the next few decades (Moore, Clague et. al., 1987).

Hazards associated with eruptions can be categorized in four types; lava flows, tephra falls, pyroclastic surges and volcanic gases. Volcanic hazard zones have been established for the entire island of Hawaii, including the Kailua region (Mulléneaux, et.al., 1987). The area surrounding Hualalai is designated as lava flow Hazard Zone 4 (with zone 1 being the highest and zone 9 being the lowest risk), and is characterized by lava coverage of less than fifteen percent in the past 750 years. Unlike the younger volcanoes, Mauna Loa and Kiluaea, the rift zones of Hualalai do not seem to have a distinctively higher degree of hazard than do its flanks.

Tephra, which consists of volcanic ash and coarser fragments produced by lava fountaining or explosive eruptions, is not considered to be a significant hazard at Hualalai. The entire volcano is contained in Tephra Hazard Zone 2 (on a scale of 1 to 3 with 1 representing the greatest risk), where tephra from lava fountains could be frequent but thin. A separate zone (2A) is designated for the summit and northwest rift zone of Hualalai, indicating a hazard from tephra falls more than ten centimeters thick in an area up to four kilometers on each side of the rift zone. The project area is approximately five miles outside of this zone.

Hazard zones for volcanic gases are the same as for tephra. All of Hualalai is located in Volcanic Gas Hazard Zone 2. Although the hazard is less than areas in zone 1, historical events indicate that gas effects could be significant far from a source vent. In 1977, gases from eruptions at Kilauea killed vegetation as far as 18 miles from their source (J.P. Lockwood, 1978).

No threat from pyroclastic surges, which are clouds of ash, rock fragments and gas which move at high speed outward from a source vent, has been identified for Hualalai. Pyroclastic surges are presently associated only adjacent to Kilauea caldera, although they could conceivably be initiated at other places where ground water or sea water can interact with magma.

The island of Hawaii experiences thousands of earthquakes every year, usually associated with volcanic activity or the movement of magma at shallow depths. Earthquakes endanger people and property by shaking structures and generating ground fractures, settling and landslides. Sudden subsidence along the shoreline associated with an earthquake can also generate a tsunami. The two most severe earthquakes during historical times occurred in 1868 and 1975. The magnitudes of both quakes exceeded 7 on the open-ended Richter scale and resulted in locally major damage in the Kau and Kilauea areas respectively. Both events generated a tsunami.

Although earthquakes associated with magmatic movement below Hualalai have been recorded, they are relatively infrequent when compared to earthquake activity at Mauna Loa and Kilauea. The most likely threat would, therefore, result from a large earthquake (magnitude 6 or greater) occurring at Mauna Loa or Kilauea and impacting the Kailua region. In 1983, landslides at Kealahou Bay occurred shortly after a magnitude 6.6 earthquake occurred at a depth of seven miles, approximately mid-way between Mauna Loa and Kilauea.

2.3.2 Probable Impacts

The proposed project is not likely to have any impact on natural hazards to which the land might be subjected. However, natural hazards such as lava flows and earthquakes could have a

direct impact upon the proposed project. Based upon information developed by the United States Geological Survey (USGS) and published in its Professional Paper 1350 (1987), the likelihood of volcanic eruption at Hualalai is small relative to activity at Mauna Loa and Kilauea. Nevertheless, Hualalai is considered to be an active volcano and could erupt within the next few decades based upon its eruptive pattern over the past 10,000 years. An eruption of Hualalai could result in a lava flow inundating the project site. Due to the general slope of the property, such a flow could be expected to reach the ocean in a few hours. An eruption at Hualalai could also result in thin layers of tephra impacting the project site. Volcanic gases from an eruption might also impact the project site. However, both of these latter occurrences would depend in great part upon the size of the eruption, associated fountaining of lava, and wind direction.

Buildings, including residential structures, as well as roadways, sewer and water lines could be damaged by an earthquake of sufficient magnitude. Due to the general character of the project site, landslides resulting from an earthquake are unlikely. However, construction upon areas of substantial fill could be expected to be impacted at a higher degree than areas with no fill.

2.3.3 Mitigation Measures

The impact of lava flows upon the project site can only be mitigated with the intention of protecting life. The protection of property from lava inundation has proven to be relatively ineffective on a regional scale. Therefore, mitigation of lava flow hazards is limited to the provision of adequate evacuation routes and a civil defense warning system designed to provide area residents with as much advance notice of a threatening lava flow as possible.

Mitigation of hazards associated with earthquakes include adherence to County building codes and standards in order to minimize potential damage to structures. It is recommended that all building and structures within the proposed project be designed and constructed in compliance with applicable building codes and standards. It is further recommended that the use of large volumes of fill to establish level development sites be discouraged.

2.4 Visual Attributes

2.4.1 Existing Conditions

The existing visual character of the project site can be discussed from two vantage points; the first from the existing community of Kealakehe in the vicinity of Kealakehe Elementary and Intermediate School and the neighboring residences looking makai toward the ocean, and the second from Queen Kaahumanu Highway looking mauka toward the existing community.

The view makai is to some degree obscured by existing vegetation. Views of the ocean and coastline can be seen from some parts of the existing community. Views of the subject property are generally limited to those areas abutting existing residential lots. The makai view of the project site can be best described as areas of pahoehoe and a'a rubble with vegetation cover ranging from sparse grasses to dense thickets of kiawe (*Prosopis pallida*). Kailua town and the coastline to the south cannot generally be seen. The dominant view is of the coastline west of the property, Honokohau Harbor, and the coastline extending to the north. The Kealakehe landfill is visible from portions of the existing community and wisps of smoke and fugitive dust associated with the landfill are clearly visible.

The mauka view is characterized by gently sloping land extending from the highway up to the existing community. The view of the land within the project site is much improved over the view makai from the existing community. The project site appears to consist of areas of barren lava, offset by large patches of grass and dense stands of kiawe. The existing residences of Kealakehe, as well as Kealakehe school are visible from the highway. The summit of Hualalai is visible on clear days.

2.4.2 Probable Impacts

The proposed project will result in changes to the existing views. The land will be converted from open area to a series of residential subdivisions, a community commercial area, and public golf course. The general character and density of the development will be similar to the existing community. Initial development of the area will result in a clearing of the vegetation which will improve views of the property. However, once development is completed and landscaping has taken hold, the project will appear to be an extension of the existing community and will be characterized by low residential profiles of not more than two stories, and yard and street trees. The proposed commercial center near Queen Kaahumanu Highway will be visible from the highway, but due to the relatively flat topography, will not obstruct mauka views. The proposed Civic Center in the vicinity of the Kealakehe landfill may include buildings from two to four stories or more in height. The lower portion of the project will be developed as a public golf course and will appear to be a spacious open area with tree lined fairways clearly visible from the highway and portions of the existing community. The proposed mauka-makai roadway (Kealakehe Parkway) will be visible from both the mauka and makai vantage points.

2.4.3 Mitigation Measures

Views of the ocean and coastline will be preserved wherever practicable. Residences will be sited to take advantage of makai views. Mauka views of Hualalai will also be preserved. Potential impacts to views will be mitigated through the creation of view corridors and the use of landscaping. General views will be preserved by limiting the height of residential structures. The location of the proposed golf course in the lower portion of the project area will ensure that views of the ocean from the proposed community are not obstructed. The visual impact of the commercial area and Civic Center will be mitigated through the limiting of building heights, the use of landscaping and the creation of view corridors.

3. NATURAL ENVIRONMENT

3.1 Terrestrial Flora

Following is a summary of the botanical survey conducted for the proposed project by Char and Associates. The survey is included in its entirety in the appendix to this environmental impact statement.

3.1.1 Existing Conditions

A botanical survey of the subject property was conducted in July, 1989 to assess the botanical resources present. The objectives of the survey were to (1) provide a general description of the major vegetation types; (2) inventory the terrestrial, vascular flora; and (3) search for threatened and endangered plants on the project site. A walk-through survey method was employed. Areas most likely to harbor native plant communities or rare species, such as the open, mixed shrubland and rougher a'a lava flows, were more intensively examined. Species identification was made in the field; plants which could not be positively determined were collected for later identification in the herbarium and for comparison with taxonomic literature.

A total of 145 plant species were inventoried on the project site during the field survey. Of these, 110 (76% are introduced or alien species, 31 (21%) are native, and 4 (3%) are of Polynesian origin. Among the 31 species of native plants, 16 species are indigenous (native to the Hawaiian islands and also elsewhere) while 15 are endemic (native only to the Hawaiian islands).

Four major vegetation types were identified on the project site. The distribution of the four vegetation types corresponds roughly with substrate type, rainfall, and elevation. Rainfall varies from 20 inches annually near Queen Kaahumanu Highway to nearly 50 inches annually at the

upper boundary of the project area. A'a lava flows run the length of the property, while more weathered pahoehoe flows are found along the peripheries of the property; with one small section of Punalu'u extremely rocky peat overlying pahoehoe bedrock in the northeastern corner of the project site (Sato et al. 1973).

Following is a description of the four vegetation types identified. Figure 4-7 presents the distribution of these vegetation types.

Open Mixed Shrubland. This vegetation is generally distributed above the 400 foot contour interval on a'a lava. It may extend to lower elevations on some flows with many of the native elements quickly attenuating. The physiognomy is of an open scrub with scattered trees, although in depressions with small gullies shrubs and trees may form dense thickets. Native and introduced shrubs occur in about equal numbers, although among the natives alahe'e (*Canthium odoratum*) and al'ali'i (*Dodonaea viscosa*) are locally abundant in places, while among the introduced plants koa-haole (*Leucaena leucocephala*), klu (*Acacia farnesiana*), and Christmas berry (*Schinus terebinthifolius*) are locally abundant. Trees occur as scattered individuals or small, scattered stands. Native shrubs and trees include mamane (*Sophora chrysophylla*), lama (*Diospyros sandwicensis*), alahe'e, maiapilo (*Capparis sandwichiana*), a'ali'i, *Bidens micrantha* ssp. *ctenophylla*, kalamona, (*Senna gaudichaudii*), naio (*Myoporum sandwicense*), uhi uhi (*Caesalpinia kawaiensis*), wiliwili (*Erythrina sandwicensis*), and 'ohe (*Reynoldsia sandwicensis*). The more commonly occurring introduced shrubs include koa'haole, Christmas berry, klu, lantana (*Lantana camara*), guava (*Psidium guajava*), senna (*Senna septentrionalis*), and pluchea (*Pluchea symphytifolia*). Introduced trees include kukui (*Aleurites moluccana*), jacaranda (*Jacaranda mimosifolia*), silk oak (*Grevillea robusta*), and monkeypod (*Samanea saman*).

Ground cover is usually a mixture of grasses, smaller shrubs or subshrubs, and young koa-haole plants less than a foot high. These include Natal redtop (*Rhynchelytrum repens*), fountain grass (*Pennisetum setaceum*), Guinea grass (*Panicum maximum*), love grass (*Eragrostis tenella*), molassesgrass (*Melinis minutiflora*), Bermuda grass (*Cynodon dactylon*), 'uhaloa (*Waltheria indica*), 'ilima (*Sida fallax*), coffee senna (*Senna occidentalis*), false mallow (*Malvastrum coromandelianum*), nettle-leaved vervain (*Stachytarpheta urticifolia*), indigo (*Indigofera suffruticosa*), bur bush (*Triumfetta rhomboidea*), and air plant (*Kalanchoe pinnata*).

Cattle grazing on this part of the property tends to keep most of the open mixed shrubland low and there are numerous cattle paths through the shrubland. Where cattle congregate, usually under trees and where there is some soil, plants of acute-leaved sida (*Sida acuta*), bur bush, hairy honohono (*Commelina benghalensis*), false mallow, amaranth (*Amaranthus viridus*), and coffee senna are more numerous.

There are minor variants of this shrubland. For example, along the upper boundary, adjacent to the residential area and public housing, the property has been more disturbed as evidenced by the large piles of boulders, a number of dozer

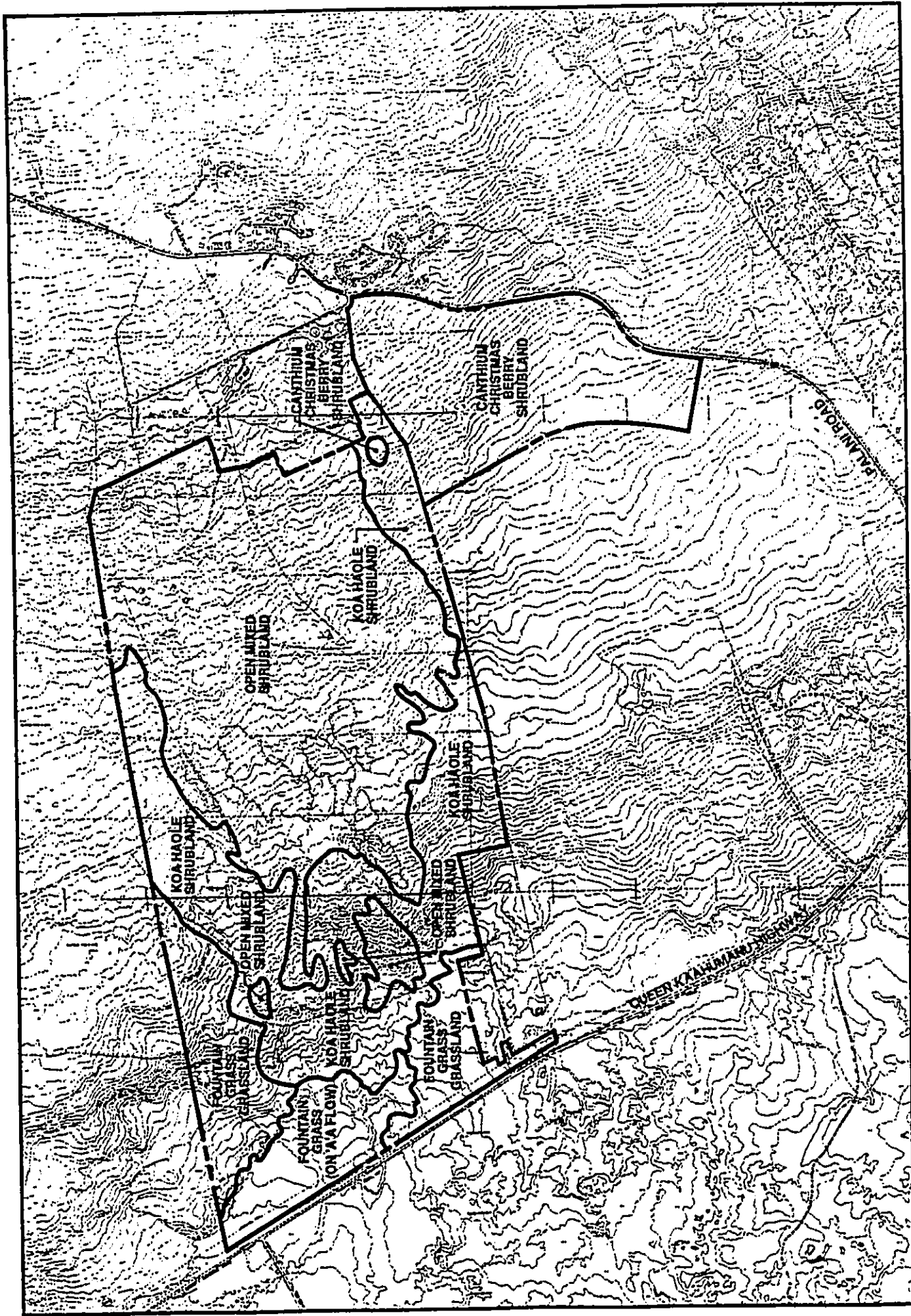


Figure 4-7
VEGETATION

**KEALAKEHE PLANNED COMMUNITY
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Date: JUNE 1980



NORTH

walks, and piles of rubbish. In this area, weedy species such as Spanish needle (Bidens pilosa), Florida beggarweed (Desmodium tortuosum), hyptis (Hyptis suaveolens), etc., are abundant, and California grass (Brachiaria mutica) forms extensive mats. Where the substrate is weathered pahoe-hoe, fountain grass becomes more numerous.

Canthium/Christmas Berry Shrubland. This vegetation type occurs on the 150-acre parcel which is included in the proposed community. The Canthium/Christmas berry shrubland continues across the slope and extends onto the adjacent Queen Liliuokalani Trust Keahuolu lands where a recent flora survey was conducted (Char, 1989).

The substrata is a'a with blocky chunks generally 4 to 6 inches in diameter. Both alahe'e (Canthium odoratum) and Christmas berry occur in almost equal numbers, though one or the other may be more abundant in places. The shrubs form dense thickets, 10 to 15 feet tall. Scattered through the shrubland are clusters of mamane, 18 to 20 feet tall; other native shrubs and trees including wiliwili, a'ali'i 'ohe, Bidens micrantha ssp. ctenophylla, lama, and 'ohi'a (Metrosideros polymorpha). Introduced trees and shrubs, which also generally occur as scattered individuals, include jacaranda, silk oak, autograph tree (Clusia rosea), guava, kukui, and monkeypod. Koa-haole forms small clumps in places but is not abundant. Near the school boundary, large plants of sisal (Agave sisalana) are found.

Ground cover varies from 40 to 50% and is composed of seedlings of the tree and shrub species mentioned above plus a mixture of grasses and weedy herbs, though litter and barren a'a predominate. Low-lying, open areas are often filled with Natal redtop, molassesgrass, lantana, fountain grass, 'ilima, and air plant. Locally abundant, twining and sprawling over shrubs, are vines of huehue (Cocculus triloba).

Koa-haole Shrubland. This vegetation type is generally found associated with pahoe-hoe substrate. Dense to open koa-haole shrublands are found adjacent to the Kealakehe residential area, the County landfill, and above the quarry and cement batching plant. The koa-haole plants vary in height from 8 to 12 feet tall, although, in places, they may be somewhat taller. Scattered trees of kiawe (Prosopis pallida) and 'opiuma (Pithecellobium dulce) are usually found associated with this shrubland. Other trees and shrubs occasionally found here include alahe'e, Christmas berry, monkeypod, lantana, maiapilo, and naio. Locally abundant are 'ilima and 'uhaloa.

Lower elevation koa-haole shrubland usually supports a dense ground cover of fountain grass, while upper elevation shrubland has a ground cover composed of Natal redtop, fountain grass, and various weedy species as nettle-leaved vervain (Stachytarpheta urticifolia), beggar's tick (Bidens pilosa, Bidens cynapiifolia), hairy abutilon (Abutilon grandifolium), and air plant.

Where this vegetation type occurs on a'a substrate, there is very little ground cover and the koa-haole shrubs tend to occur in scattered patches usually in shallow depressions.

Fountain Grass Grassland. Along the northern boundary of the subject property, where it abuts Palani Ranch, fountain grass forms a rather extensive and dense grassland. Koa-haole shrubs occur as scattered individuals, although, in low-lying areas they may sometimes form small-sized thickets. Other shrubs and subshrubs occasionally found in the grassland include 'ilima, indigo (Indigofera suffruticosa), alahe'e, 'uhaloa, and maiapilo. A few trees of kiawe and 'ohe can be observed scattered through the grassland; one rather large tree of maua (Xylosma hawaiiense), about 20 feet tall, is found on a rocky knoll near the jeep trail that begins behind the quarry.

On the a'ā flow adjacent to Queen Kaahumanu Highway, fountain grass occurs in scattered clumps. In these areas, 'uhaloa and 'ilima are abundant.

In general, these grasslands tend to be species poor as the aggressive fountain grass forms a dense cover which crowds out other plants. Fountain grass is considered a serious pest in dry areas of the Big Island as it outcompetes most native species for establishment. It is also a fire-adapted species. The grass burns swiftly and hot causing extensive damage to native dry forest. After fires it is able to quickly reestablish itself (Wagner *et al.* in press).

3.1.2 Threatened and Endangered Plants

One officially listed endangered species, the uhi uhi (Caesalpinia kavaiensis; formerly known as Mezoneuron kavaiense), and one candidate endangered species, Bidens micrantha subspecies (*ssp.*) ctenophylla (no common name), occur on the Kealakehe site. An officially listed endangered species is protected by the Federal Endangered Species Act of 1973 (16USC 1531-1543), as amended, and by the State's threatened and endangered wildlife and plants law (Chapter 124, Hawaii Revised Statutes, Title 13, Subtitle 5, Part 2). Bidens micrantha *ssp.* ctenophylla is considered a Category 1 candidate endangered species by the United States Fish and Wildlife Service (1985). Plants considered Category 1 material should be regarded as candidates for addition to the Endangered and Threatened Species List and, as such, consideration should be given them in environmental planning.

The uhi uhi is a large shrub to medium-sized tree (up to 30 feet tall) with thick, rough, dark gray bark and very dark blackish-brown heartwood. The leaves are twice divided into smaller leaflets with 4 to 8 pairs of pale green leaflets per pinnae. The flowers are borne in clusters at branch tips and are pinkish-purple to brick red. The seed pods are flat and thin; bluish-glaucous when young, pale pinkish-tan to gray when older. The Hawaiians used the strong, dark, heavy wood for spears and fishing implements called la'au melomelo or la'au makalei (Rock 1913, 1920).

Uhi uhi was first described from the island of Kauai in 1867. Later specimens were

collected on O'ahu and Maui. Uhi uhi plants were discovered in the North Kona area in 1909. Today the populations have been greatly reduced. Only a single tree is known from the Kaua'i plantation, a few plants occur in the Wai'anae mountains on O'ahu, and about two dozen plants have been recorded on the slopes of Hualalai in the Pu'uwaawaa-Ka'upulehu ahupua'a on the island of Hawaii. Cattle, goats, and other feral herbivores were probably responsible for most of the population decline, but in recent years exotic plants, such as fountain grass, have become so abundant as to inhibit regeneration and to increase the chances of wildfire (Lamoureux 1982).

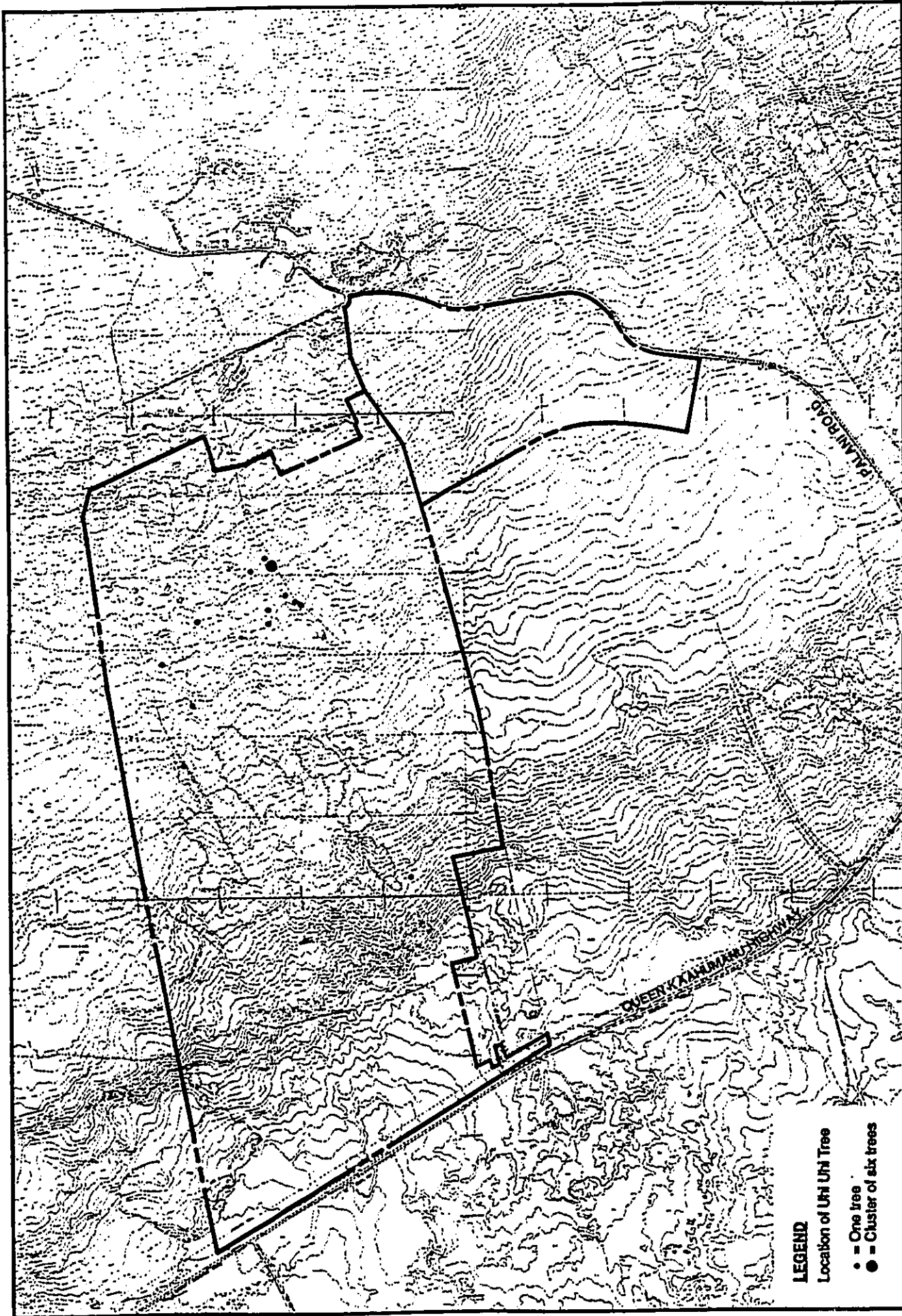
Nineteen uhi uhi plants were located on the Kealakehe project site. This represents a significant increase in the number of known plants and also extends the range of distribution of the species from Pu'uwaawaa-Ka'upulehu across to the Kailua-Kona area. On the project site, the majority of the plants are found between the 500 and 550 foot elevation contours in open mixed shrubland. A few plants occur in koa-haole shrubland on a'a flows. The location of the 19 plants is presented in Figure 4-8. The plants vary in height from 8 feet to about 25 feet tall, with the majority of them from 12 to 15 feet tall. Most are multi-branched and, at the time of the field survey, had flowers and many seed pods. Although an intensive search around the plants was made, no seedlings or saplings of uhi uhi were located.


Bidens micrantha ssp. ctenophylla occurs in shrubland and dry forests on the leeward slopes of Hualalai. In addition to being a candidate endangered species, it is also considered vulnerable or threatened by extensive habitat destruction or modification or by other environmental disturbances (Wagner et al in press). It is an attractive plant with dense clusters of yellow, daisy-like flowers. The dense inflorescences may contain 15 to 75 or more flowers per cluster. Bidens is an erect, much-branched, perennial herb from 2 to 5 feet tall. Under optimum growing conditions, it may reach 7 to 8 feet in height.

On the Kealakehe project site, Bidens is found scattered through-out the open mixed shrubland and Canthium/Christmas berry shrubland in fairly large numbers.

3.1.3 Probable Impacts

Impacts to the existing flora would result from preparation of the project site for the development of residential units and supporting infrastructure. Grading, cut and fill work, and similar construction activities will destroy existing plant cover. Impacts would also occur from the introduction of alien or exotic plant species which might outcompete existing species. The significance of potential impact has been evaluated on the basis of the extent of loss of existing vegetation, the potential for introduction of competitive exotic species, and the potential for loss of



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KEALAKEHE PLANNED COMMUNITY ENVIRONMENTAL IMPACT STATEMENT

**Figure 4-8
ENDANGERED FLORA SPECIES LOCATION**

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

endangered or threatened species.

The impact to existing vegetation is considered to be significant due to the need for extensive grading and clearing associated with site preparation. However, the loss of existing vegetation will be offset, to some degree, by the introduction of extensive landscaping. Virtually all of the areas designated for residential development will need to be cleared. The remaining property will also be cleared for the development of infrastructure and non-residential uses, including school sites and parks. Approximately 80% of the land cleared will be landscaped as residential yards, neighborhood parks, school play fields and golf course fairways.

Because they are a federally designated endangered species, the 19 uhi uhi plants identified on the project site must be preserved. As part of the analysis of environmental impacts conducted for the proposed project, an opinion was sought from the State Attorney General concerning the ability to move or relocate uhi uhi plants from areas designated for development. The Department of the Attorney General responded, in part, "...because it does not seem the uhi uhi trees can be successfully transplanted, and because it cannot be said that destruction of any of the species would help propagate the species as a whole, under existing statutes the uhi uhi trees must be preserved in place." (letter to William W. Paty, Chairman of the Board of Land and Natural Resources, December 20, 1989). Therefore, while impact upon the habitat of the uhi uhi plants may be significant due to grading and site preparation, there will be no significant impact upon the uhi uhi plants because they will be preserved.

Impacts upon the Bidens, a candidate endangered species, may be significant because of the need for removal of existing vegetation in the course of site preparation.

3.1.4 Mitigation Measures

To offset the loss of native plants, the use of native plant material for landscaping is recommended. Native plants adapted to the low rainfall and lava substrates of the Kealakehe site are recommended for inclusion into the overall landscaping of residential and non-residential areas, including parks and school sites and similar common areas. While the golf course fairways and greens must be recultivated using exotic grasses, much of the area designated as rough can be left undisturbed or recultivated with native plants. In addition, homeowners may also be interested in planting native plants if they were made available to them. Many of the native plants are attractive and of ornamental value; these include the uhi uhi, wiliwili, 'ohe, naio, alahe'e, mamane, kalomona, and Bidens micrantha ssp. ctenophylla.

In order to mitigate the potential impact of the proposed project upon the habitat of the uhi uhi plants and upon the Bidens, it is proposed that a five-acre endangered plant preserve be established around a cluster of eight uhi uhi trees located in the upper portion of the project area. This preserve would also help to preserve a number of other native species in the area including the candidate Bidens species. Propagation material from other native plants not found within the 5 acre preserve, such as maua, wiliwili, halapepe (Pleomele hawaiiensis), olopua (Nestegis sandwicensis), and pua-kala (Argemone glauca) as well as from the separate uhi uhi plants, should be collected for inclusion onto the site. The preserve should be an actively used nature study park with trails, jogging paths, picnic shelters, etc. Descriptive signs should be provided for the plants. Pamphlets for a self-guided tour could be provided and would highlight the native species, describe how the Hawaiians used the plants, and present ways these plants could be used in landscaping to conserve water. In addition to the five-acre preserve, it is recommended that a one-half acre preserve should be established around each of the remaining eleven uhi uhi plants. Long-term management of these separate one-half acre lots and the five-acre preserve would include an active management program for the eradication of introduced plants, especially fountain grass, koa-haole, and Christmas berry.

Additional mitigation measures will include the following: 1) the preparation of a mitigation plan for the uhi uhi plants in the Kealakehe area, which will include a plan for the propagation of the uhi uhi plants and Bidens plants with seeds and cuttings from the mature trees and plants on site; 2) the initiation of State legislation to bring Hawaii State law into conformance with Federal law concerning the relocation of endangered plant species; and 3) the establishment of an escrow fund for the long-term preservation of endangered and candidate endangered species with start-up funds not to exceed \$100,000. Conducted in tandem, these three mitigation measures will provide the means to cultivate seedlings and cutting from the existing plants in a funded preserve, monitor the impacts of development upon the endangered and candidate endangered species, and eventually relocate the endangered plants to a more secure area once their genetic line is secured through the cultivation of seeds and cuttings from each adult plant.

Finally, the United States Fish and Wildlife Service has been contacted and advised of the existence of the endangered plants. Because two of the uhi uhi plants are located within the golf course area (to be transferred by Executive Order of the Governor to the County of Hawaii) which is to serve as the effluent disposal area for the Kealakehe Sewage Treatment Plant, the County of Hawaii's Public Works Department has formally requested a "biology opinion" from the FWS. While the biology opinion, which amounts to a recommendation, will not be completed before publication of this environmental impact statement, it is expected to provide additional guidelines and recommendations for mitigation measures applicable to both the HFDC and County of Hawaii.

3.2 Terrestrial Fauna

Following is a summary of the survey of avifauna and feral mammals conducted for the proposed project by Phillip L. Bruner. The survey is included in its entirety in the appendix to this environmental impact statement.

3.2.1 Existing Conditions

A survey of terrestrial fauna was conducted in August, 1989 to assess the biological resources present at the project site. The objectives of the survey were to: 1) document what bird and mammal species occur on the property or may likely occur given the type of habitats available; 2) provide some baseline data on the relative abundance of each species as well as general habitat preferences; 3) determine the presence or likely occurrence of any native fauna particularly any that are considered "Endangered" or "Threatened". If such occur or may likely be found on the property, identify what features of the habitat may be essential for these species and suggest how those resources may best be protected; and, 4) determine if the property contains any special habitats that if lost or altered by development might result in a significant impact on the fauna in this region of the island. Field observations for birds were made with the aid of binoculars and by listening for vocalizations. Attention was also paid to the presence of tracks and scats as indicators of bird and mammal activity. A trail was cut and marked in the dense upper section of the property. At various locations along the trail, as well as in all types of habitat elsewhere on the property, eight minute counts were made of all birds seen or heard. Between count stations observations of birds seen or heard were also noted. Observations of feral mammals were limited to visual sightings and evidence in the form of skeletal remains, scats and tracks. No attempts were made to trap mammals in order to obtain data on their relative abundance and distribution. Three evenings were devoted to searching for the presence of owls and the Hawaiian Hoary Bat (Lasiurus cinereus semotus).

3.2.1.1 Avifauna

No endemic (native) species of land or water birds were recorded during the course of the field survey. The Short-eared Owl o Pueo (Asio flammeus sandwichensis) is the only species which might occur at this site because it is relatively common on Hawaii particularly at higher elevations. No other endemic birds would be expected at the site given the elevation and location of the site and nature of the habitats available to the birds.

Of all migratory indigenous (native) shorebirds that winter in Hawaii, the Pacific Golden Plover (Pluvialis fulva) is the most abundant. However, no plover were recorded during the field survey. This result was not unexpected due to the time of year of the survey and the type of habitat present at the site. It is likely that during the time of year when plover are present in Hawaii (August to May) very few actually utilize the property. In its present state the property is unsuitable for migrating shorebirds because they prefer open areas such as mud flats, lawns, pastures and plowed fields.

No indigenous species of resident native birds were recorded nor would any be expected at the site. No seabirds were observed on the property. Some seabirds nest and roost on barren lava flows in Hawaii but at much higher elevations.

A total of 18 species of exotic birds were recorded during the field survey. The most abundant species at Kealakehe is Japanese White-eye (Zosterops japonicus), Common Myna (Acridotheres tristis), House Finch (Carpodacus mexicanus), and Zebra Dove (Geopelia striata). Given the range of habitats found on the property as well as from survey elsewhere in West Hawaii, the following exotic bird species might also be expected to occur on or near the property: Erckel's Francolin (Francolinus erkelii), California Quail (Callipepla californica), and Japanese Quail (Coturnix japonica). The most unexpected sightings were: Lavender Waxbill (Estrilda caerulea), Yellow-fronted Canary (Serinus mozambicus), and Saffron Finch (Sicalis flaveola). These popular cage birds have become increasingly more common in this region over the past few years. The Yellow-billed Cardinal (Paroaria capitata) has likewise expanded its range along the Kona coast. This species does not at present occur elsewhere in the State. A close relative, the Red-crested Cardinal (Paroaria coronata), is common on Oahu. Like its relative, the Yellow-billed Cardinal prefers coastal habitat and does not range into dense middle and upper elevation forests.

3.2.1.2 Mammals

A total of 7 Small Indian Mongoose (Herpestes auropunctatus) were seen or heard during the survey. Three feral cats were observed as well as the skeletal remains of pigs and cows. Cattle were also heard along the north boundary of the property. Evidence of rats and mice were also found in the area of the sanitary landfill. The presence of the landfill provides a concentrated food source for birds as well as rats, mice, mongooses and cats.

Records of the endemic and endangered Hawaiian Hoary Bat (Lasiurus cinereus semotus) are sketchy, but the species has been reported on the island of Hawaii. Bats have been found on

the Sheraton Waikoloa Beach Resort property (Bruner, 1984). However, none were observed during the field survey at Kealakehe despite three nights of observations. This species roosts primarily in trees. Much remains to be known about the natural history of this bat and its ecological requirements in Hawaii.

3.2.1.3 Endangered and Threatened Species

No endangered or threatened species of birds or mammals were observed during the field survey.

3.2.1.4 General Conclusions

General conclusions regarding bird populations include the following: 1) the dense forested mauka section of the property contained many more species of birds than the open habitat located on the lower slope; and 2) the present habitats provide a limited range of living spaces which are utilized by the typical array of exotic species of birds one would expect at this elevation and in this type of environment in Hawaii. However, it should be noted that the number of species and the relative abundance of each species may vary throughout the year due to available resources and reproductive success. While, only long-term studies can provide a comprehensive view of bird populations in a particular area, when brief field studies are coupled with data gathered from other similar habitats the value of the conclusions drawn are significantly increased.

With regard to the mammal populations, it is concluded that the existence of the landfill provides an unnatural concentration of food resources for mammals (as well as birds). In order to obtain more definitive data on mammals, a trapping program would be required. Census data obtained by trapping would likely show a greater than normal number of rats, mice, mongoose and cats than would be expected without this resource.

3.2.2 Probable Impacts

The proposed development will create an urban environment which will result in a significant change over the existing conditions. The present habitat provides a limited range of living spaces that are utilized by exotic species of birds expected to occur at the project site. The residential character of the project will probably result in an increase in the variety of bird species and their relative abundance. It is likely that the Pacific Golden Plover would be attracted to the open spaces created by proposed parks and lawn areas. Some species of birds (particularly the Common Myna and House Sparrow) presently concentrated around the landfill will likely be more

widespread on the property following development. This increase is not expected to positively or adversely affect population levels of other species or the nature of the proposed project. Other species such as the Japanese White-eye, House Finch and game birds like the Black Francolin will decline in abundance once the forested area is eliminated. This can be interpreted as an adverse impact. However, given the vast amounts of undeveloped land around the project site, it is evident that other habitat opportunities are available and that development will not threaten the existence of these birds. Thus, the impact is not viewed as significant.

Changes resulting from the proposed development will impact the habitat of mammals identified on site. However, the impact is viewed as insignificant because there are abundant alternative habitats for the mammals around the project site, and the species identified, particularly rats, mice, mongooses and feral cats can easily adapt to more urban settings.

3.2.3 Mitigation Measures

As stated above, no endangered or threatened avifauna or mammal species have been identified on the project site. The majority of bird and mammal species identified on site area exotic. The value of these species is somewhat subjective, in that birds such as the Common Myna and House Sparrow, as well as rats and mice, are considered to be pests and nuisances by some. However, in general impacts to existing exotic species are considered to be insignificant. Therefore, no mitigation measures are necessary.

3.3 Historical and Archaeological Resources

Following is a summary of the archaeological inventory survey conducted for the proposed project by Paul H. Rosendhal, Ph.D., Inc. (PHRI) in September 1989. The scope of work for the survey was determined to be adequate by the staff of the Historic Sites Office of the State's Department of Land and Natural Resources. The significance of all archaeological remains identified within the project area was assessed in terms of the National Register criteria contained in the Code of Federal Regulations (36 CFR Part 60) and the criteria for evaluation of traditional cultural values prepared by the national Advisory Council on Historic Preservation (ACHP). These criteria are currently used by the Hawaii Department of Land and Natural Resources-Historic Sites Section/State Historic Preservation Office (DLNR-HSS/SHPO) for the evaluation of cultural resources.

The project area consists of portions of two ahupua'a's; Kealakehe and Keahuolu. The majority of the project area (approximately 840 acres) is located within Kealakehe and is identified

as 5(b) ceded land by the Office of Hawaiian Affairs. The remainder (approximately 150 acres) is located within Keahuolu, which is presently owned by the Queen Liliuokalani Trust.

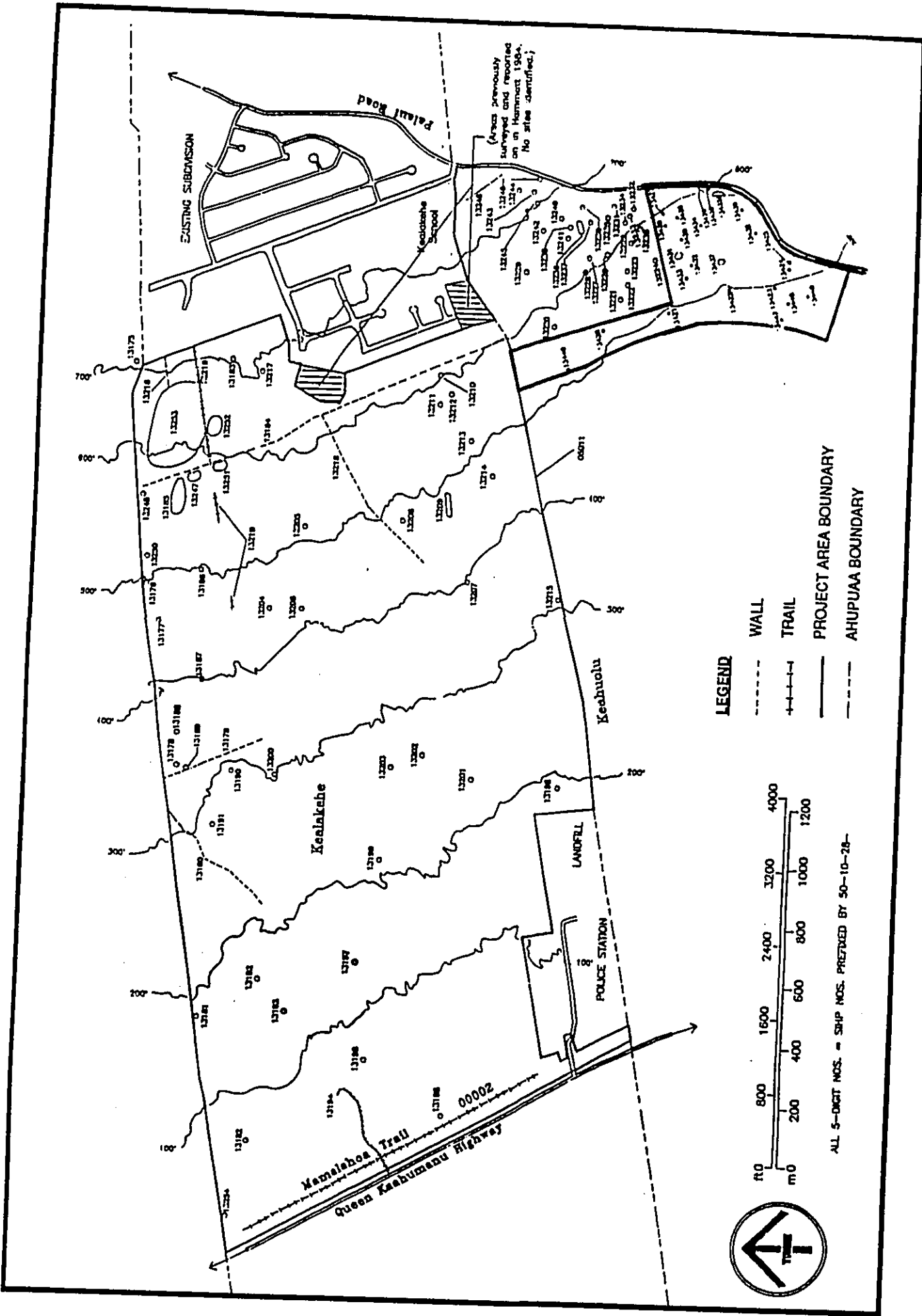
Aerial reconnaissance of the project area indicated that cultural features occurred on all lava types present, and that much of the surface was not visible from the air due to heavy vegetation. Therefore, a pedestrian survey was conducted maintaining a uniformly high-intensity level (30 foot intervals). After the initial pedestrian survey, a crew returned to all sites that were flagged for recording purposes. Sites were tagged, photographed, measured, and described. In certain cases, sites were cleared of vegetation and mapped. Generally, surface visibility was such that all or nearly all surface features could be located with persons spaced about 30 feet apart on a sweep line. However, surface visibility was limited in the Keahuolu property area and in the northern portion of the the upper Kealakehe parcel. In these areas, it is therefore likely that not all features were observed during the pedestrian sweep, or during the recording phase. There are undoubtedly additional rock mounds, pahoehoe excavations, and other minor agricultural features that have not been enumerated in the final report. Finally, subsurface testing was conducted at Site 13188.

3.3.1 Existing Conditions

A total of 106 sites consisting of 1,119 component features were identified in the project area (see Figure 4-9). Four of the sites have been previously identified. Two of those previously identified had been listed on the State Inventory of Historic Places (SIHP). These are Mamalahoa Trail (SIHP site 00002) and the Kealakehe/Keahuolu ahupua'a boundary wall (Site 5011). The remaining two previously identified sites are Site 13188, a habitation cave (Hammatt et al., 1987), and Site 13253, a terrace complex interpreted by Soehren (1975) as a burial site.

Among the 106 sites identified, 53 are in Kealakehe, 52 are in Keahuolu, and one (the ahupua'a boundary wall discussed above) is between the two lands. Overall site density is greater in the Keahuolu parcel, where 49% of the identified sites and 69% of the features occur on 16% of the total project area. Thirty-four of the identified sites consist of a single feature; usually a wall, trail, enclosure or cairn. Multiple feature sites consists of up to 120 or more individual features. Twelve complexes contain 30 or more features; eight of these complexes are in Keahuolu.

Twenty-four formal features types were identified within the subject property. These are presented in Table 4-2. Feature frequencies indicate a predominance of pahoehoe excavations and rock mounds, which together comprise nearly 71% of all features. The frequencies of these and other features such as modified outcrops, terraces, small enclosures and low mounded walls indicates relatively intense use of the area for agricultural purposes.



KEALAKEHE PLANNED COMMUNITY ENVIRONMENTAL IMPACT STATEMENT

Sources: PAUL H. ROSENDAHL, PH.D., INC
Date: MAY 1990
Prepared by: BELT COLLINS & ASSOCIATES
Date: JUNE 1990

Figure 4-9
ARCHAEOLOGICAL SITES

TABLE 4-2: FEATURE COUNTS BY FORMAL TYPE

<u>Formal Type</u>	<u>Count</u>	<u>%</u>	<u>Formal Type</u>	<u>Count</u>	<u>%</u>
Alignment	3	.2	Cairn	38	3.4
Cave	8	.7	C-Shape	1	.08
Enclosure	31	2.8	Faced mound	8	.7
Filled blister	9	.8	Filled crevice	1	.08
Hearth	2	.2	Kerbstone trail	5	.4
Midden scatter	1	.08	Modified pahoehoe blister	7	.6
Modified outcrop	59	5.2	Overhang	1	.08
Pahoehoe excavation	342	30.5	Paved area	4	.3
Pavement	6	.5	Platform	19	1.7
Roadbed	3	.2	Rock mound	452	40.3
Steppingstone trail	12	1.1	Terrace	84	7.5
Trail	3	.2	Wall	20	1.8
TOTAL:			1,119 99.4%		

In general, the Keahuolu area exhibits a greater concentration of features than does the Kealakehe portion of the project. The Kealakehe portion contains a wider range of functional types than Keahuolu, which has a relatively specialized agricultural pattern. This pattern consists of a large number of rock mounds, pahoehoe excavations, and modified outcrops with a limited number of terraces and platform features. The difference between the two ahupua'a as they are represented within the project area appear to be most related to: 1) a more intensive use of Kealakehe for cattle ranching, resulting in a differential preservation of surface features between the two ahupua'a; 2) more intensive use of Keahuolu for agriculture, due to its more favorable location in relation to rainfall patterns; 3) a possible period of intensive agricultural activities in Keahuolu during the historic period, related to a sisal mill and plantation referred to in historical reference texts; and 4) the presence of the Great Wall of Kuakini in Keahuolu, indicating the likely presence of relatively concentrated and/or politically important residential sites associated with Kailua village.

Features that may contain human interments occur at seven sites and include faced mounds, platforms and terraces. The most concentrated occurrence of these features is at Site 13253, where seven terraces and three platforms are present. This site was described by Soehren (1975) as a burial area. A second concentration of probable graves is located at Site 13181, where four platforms occur. A third concentration of possible burials is at Site 13185, where six faced terraces occur. Additional agricultural features are present at this site and the probability of burials being present here is felt to be not as great as at the preceding two sites. Four faced mounds, three

at Site 13254 and one at Site 13193, are included in the list of possible burials. However, subsequent research conducted with regard to the siting of the Kealakehe Parkway (mauka-makai roadway) indicates that no burials are present at Site 13193. On the basis of findings during excavations of eight faced mounds in Kealakehe by Hammatt et al. (1987), the likelihood of locating skeletal remains in Site 13254 is not extremely high, but the possibility nevertheless exists. Finally, it is of interest to note that the literal translation of the name Ke-ala-kehe is "road to the burials". This may be due in part to the close proximity of Sites 13253 and 13181 to the Mamalahoa Trail or "King's Highway" which parallels Queen Kaahumanu Highway on the mauka side.

A single radiometric dating sample was collected from Site 13188 during the subsurface testing. The sample was comprised of numerous small scattered woody plant flecks. The sample was determined to have a count rate statistically indistinguishable from the modern count rates. Although the radiometric sample was determined to be indistinguishable from the modern, the presence of volcanic flakes in association with the sample indicates a likely occupation sometime before the twentieth century. However, the carbonized materials scattered in the deposit may have been derived from a brush fire, rather than from a fire inside the site (a cave). The entrance to the cave is oriented in such a manner that wind-born materials are easily accumulated inside. A date was previously derived by Hammatt et al. from a site east of the survey area and was determined to have a calendric range of AD 1645-1950.

3.3.2 Probable Impacts

Impacts to the features found within the project area would primarily be a loss of the features due to excavation and/or construction of the proposed project. For those sites identified for possible preservation, impacts could also include increased human activity around and exposure to the sites. This is especially important for sites that might be preserved with interpretive development in park-like or educational setting.

The significance of individual sites and features have been evaluated based on the definitions derived from the National Register of Historic Places criteria for evaluation (Table 4-3). The Hawaii State Historic Preservation Office also employs these criteria for evaluating cultural resources.

Of the 106 identified sites, 27 are assessed as significant solely for information content. No further work is recommended for these sites. They have been measured, mapped, described, photographed, and plotted. Data collected from them during the present survey is considered

sufficient; their preservation is not essential, although they could perhaps be considered for inclusion into development landscaping. The remaining 79 sites are recommended for further data collection. Table 4-3 summarizes the general significance assessments and recommended general treatments for all sites identified in the current survey.

**TABLE 4-3:
SUMMARY OF GENERAL SIGNIFICANCE ASSESSMENTS
AND RECOMMENDED GENERAL TREATMENTS**

Site Number	<u>Significance Category</u>				<u>Recommended Treatment</u>			
	A	X	B	C	FDC	NFW	PID	PAI
13175	-	+	-	-	-	+	-	-
13177	-	+	-	-	-	+	-	-
13182	-	+	-	-	-	+	-	-
13188	-	+	-	-	-	+	-	-
13191	-	+	-	-	-	+	-	-
13195	-	+	-	-	-	+	-	-
13196	-	+	-	-	-	+	-	-
13198	-	+	-	-	-	+	-	-
13199	-	+	-	-	-	+	-	-
Subtotal	0	9	0	0	0	9	0	0

General Significance Categories:

- A = Important for information content, further data collection necessary (PHRI = research value)
- X = Important for information content, no further data collection necessary (PHRI = research value, SHPO = not significant)
- B = Excellent example of site type at local, regional, island, State, or National level (PHRI = interpretive value); and
- C = Culturally significant (PHRI = cultural value).

Recommended General Treatments:

- FDC = Further data collection necessary (intensive survey and testing, and possibly subsequent data recovery/mitigation excavations)
- NFW = No further work of any kind necessary, sufficient data collected, archaeological clearance recommended, no preservation potential
- PID = Preservation with some level of interpretive development recommended (including appropriate related data recovery work); and
- PAI = Preservation "as is", with no further work (and possible inclusion into landscaping), or minimal further data collection necessary.

(Table 4-3 continued)

Site Number	Significance Category				Recommended Treatment			
	A	X	B	C	FDC	NFW	PID	PAI
13200	-	+	-	-	-	+	-	-
13208	-	+	-	-	-	+	-	-
13215	-	+	-	-	-	+	-	-
13216	-	+	-	-	-	+	-	-
13217	-	+	-	-	-	+	-	-
13237	-	+	-	-	-	+	-	-
13243	-	+	-	-	-	+	-	-
13245	-	+	-	-	-	+	-	-
13249	-	+	-	-	-	+	-	-
13250	-	+	-	-	-	+	-	-
13251	-	+	-	-	-	+	-	-
13424	-	+	-	-	-	+	-	-
13426	-	+	-	-	-	+	-	-
13432	-	+	-	-	-	+	-	-
13433	-	+	-	-	-	+	-	-
13434	-	+	-	-	-	+	-	-
13439	-	+	-	-	-	+	-	-
Subtotal	0	17	0	0	0	17	0	0
05011	+	-	-	-	+	-	-	-
13179	+	-	-	-	+	-	-	-
13180	+	-	-	-	+	-	-	-
13183	+	-	-	-	+	-	-	-
13184	+	-	-	-	+	-	-	-
13186	+	-	-	-	+	-	-	-
13187	+	-	-	-	+	-	-	-
13189	+	-	-	-	+	-	-	-
13190	+	-	-	-	+	-	-	-
13201	+	-	-	-	+	-	-	-
13202	+	-	-	-	+	-	-	-
13203	+	-	-	-	+	-	-	-
13207	+	-	-	-	+	-	-	-
13210	+	-	-	-	+	-	-	-
13211	+	-	-	-	+	-	-	-
13212	+	-	-	-	+	-	-	-
13213	+	-	-	-	+	-	-	-
13214	+	-	-	-	+	-	-	-
13218	+	-	-	-	+	-	-	-
13220	+	-	-	-	+	-	-	-
13221	+	-	-	-	+	-	-	-
13222	+	-	-	-	+	-	-	-
13224	+	-	-	-	+	-	-	-
Subtotal	23	0	0	0	23	0	0	0

(Table 4-3 continued)

Site Number	Significance Category				Recommended Treatment			
	A	X	B	C	FDC	NFW	PID	PAI
13225	+	-	-	-	+	-	-	-
13226	+	-	-	-	+	-	-	-
13227	+	-	-	-	+	-	-	-
13229	+	-	-	-	+	-	-	-
13230	+	-	-	-	+	-	-	-
13231	+	-	-	-	+	-	-	-
13232	+	-	-	-	+	-	-	-
13233	+	-	-	-	+	-	-	-
13235	+	-	-	-	+	-	-	-
13236	+	-	-	-	+	-	-	-
13238	+	-	-	-	+	-	-	-
13239	+	-	-	-	+	-	-	-
13240	+	-	-	-	+	-	-	-
13241	+	-	-	-	+	-	-	-
13244	+	-	-	-	+	-	-	-
13246	+	-	-	-	+	-	-	-
13247	+	-	-	-	+	-	-	-
13248	+	-	-	-	+	-	-	-
13252	+	-	-	-	+	-	-	-
13420	+	-	-	-	+	-	-	-
13421	+	-	-	-	+	-	-	-
13422	+	-	-	-	+	-	-	-
13423	+	-	-	-	+	-	-	-
13425	+	-	-	-	+	-	-	-
13427	+	-	-	-	+	-	-	-
13428	+	-	-	-	+	-	-	-
13429	+	-	-	-	+	-	-	-
13430	+	-	-	-	+	-	-	-
13431	+	-	-	-	+	-	-	-
13435	+	-	-	-	+	-	-	-
13436	+	-	-	-	+	-	-	-
13437	+	-	-	-	+	-	-	-
13438	+	-	-	-	+	-	-	-
13440	+	-	-	-	+	-	-	-
13447	+	-	-	-	+	-	-	-
13448	+	-	-	-	+	-	-	-
13449	+	-	-	-	+	-	-	-
Subtotal	37	0	0	0	37	0	0	0
00002	+	-	+	+	+	-	+	-
13194	+	-	+	+	+	-	+	-
13219	+	-	+	+	+	-	+	-
Subtotal	3	0	3	3	3	0	3	0

(Table 4-3 continued)

Site Number	Significance Category				Recommended Treatment			
	A	X	B	C	FDC	NFW	PID	PAI
13178	+	-	-	*	+	-	-	*
13193	+	-	-	*	+	-	-	*
13205	+	-	-	*	+	-	-	*
13223	+	-	-	*	+	-	-	*
Subtotal	4	0	0	4	4	0	0	4
13176	+	-	+	*	+	-	+	*
13181	+	-	+	*	+	-	+	*
13185	+	-	+	*	+	-	+	*
13209	+	-	+	*	+	-	+	*
13228	+	-	+	*	+	-	+	*
13253	+	-	+	*	+	-	+	*
13254	+	-	+	*	+	-	+	*
Subtotal	7	0	7	7	7	0	7	7
13197	+	-	*	*	+	-	*	-
13204	+	-	*	*	+	-	*	-
13206	+	-	*	*	+	-	*	-
13234	+	-	*	*	+	-	*	-
13242	+	-	*	*	+	-	*	-
Subtotal	5	0	5	5	5	0	5	0
Total	61	21	15	19	61	21	15	11

* Provisional assessment; definite assessment pending further data collection (i.e., testing features for presence/absence of skeletal remains).

Note: Subsequent tests of Site 13193 reveal no skeletal remains (see Appendix).

3.3.3 Mitigation Measures

To ensure that the archaeological and historical sites identified within the project site are not adversely impacted, the treatments recommended by the consulting archaeologist and presented in Table 4-3 will be implemented subject to the concurrence of the State's Historic Preservation Office. Additional mitigation measures include the designation of an Archaeological Preserve in

the northeastern corner of the project area corresponding to Sites 13254, 13185 and 13219. Because Site 13254 is the largest single site within the project area, it represents a unique opportunity to provide an educational resource through interpretive development (signage). Trails recommended for preservation will be protected "as is" and where their alignments may be intersected by proposed roadways, surface treatment and signage will identify the alignment.

In those instances where skeletal remains are confirmed, the burial will be preserved "as is" or will be reinterred within the proposed archaeological preserve to ensure that the remains are not removed from the Kealakehe ahupua'a.

Additional sites proposed for preservation will be integrated into the proposed community through the use of landscaping or similar design treatments.

Finally, should any additional site be uncovered during construction, work will stop and the appropriate State and County officials notified. Work will resume upon approval of the State Preservation Officer and the Hawaii County Planning Department.

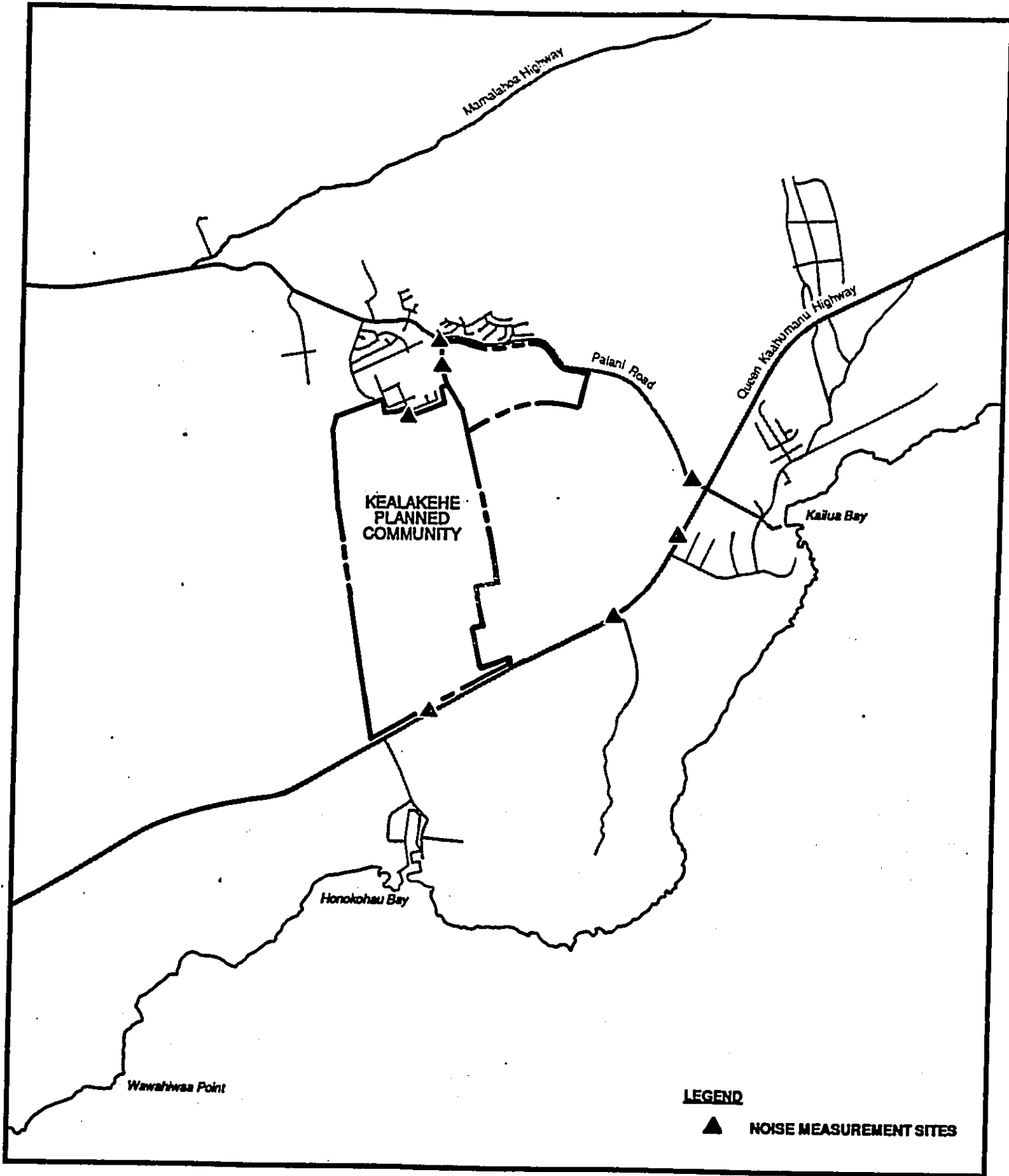
3.4 Noise Quality

Following is a summary of the noise impact study conducted for the proposed project by Y. Ebisu and Associates in June 1990. The complete study is included in the appendix of this environmental impact statement.

3.4.1 Existing Conditions

Existing traffic noise levels were measured at seven locations in the project environs to provide a basis for comparing the project's traffic noise contributions along the roadways which will service the proposed development; Queen Kaahumanu Highway, Palani Road, the Honokohau Boat Harbor Road, and the proposed Mauka-Makai Kealakehe Parkway. The locations of the measurement sites are presented in Figure 4-10.

Four basic categories are utilized in determining exterior noise exposure for residential areas; minimal exposure ($\leq 55 L_{dn}$), moderate exposure ($56 L_{dn}$ to $65 L_{dn}$), significant exposure ($66 L_{dn}$ to $75 L_{dn}$), and severe exposure (above $75 L_{dn}$). Minimal exposure is considered to be "unconditionally acceptable". Moderate exposure is considered to be "acceptable". Significant exposure is considered to be "normally unacceptable", while severe exposure is considered "unacceptable".



0 1000 2000 4000

SCALE IN FEET



NORTH

Prepared By: BELT COLLINS AND ASSOCIATES • JUNE 1990

Figure 4-10
LOCATIONS OF NOISE MEASUREMENT SITES

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

The existing traffic noise levels in the project area are in the "significant exposure, normally unacceptable" category at 50-foot distances from the centerlines of Queen Kaahumanu Highway and Palani Road. Traffic noise levels along the right-of-way of a roadway generally represent the worst case or highest levels due to the close proximity to noise levels. At greater setback distances of approximately 92 to 96 feet, traffic noise along Queen Kaahumanu Highway decrease to the "moderate exposure, acceptable" category. Setback distances of approximately 49 to 86 feet are required from the centerline of Palani Road to be in the "moderate exposure, acceptable" noise exposure category. Existing background ambient noise measurements obtained at sites near the existing residential community and the Kealakehe schools confirm that noise levels are very low, in the order of 45 to 50 L_{dn} . Based on this information, it was concluded that noise levels at the proposed residential portions of the project area are not expected to exceed current FHA/HUD noise standards or cause adverse noise impacts on future project residents.

3.4.2 Probable Impacts

As a result of the construction of the mauka-makai road, Kealakehe Parkway, traffic noise levels are expected to increase at the inland areas mauka of Queen Kaahumanu Highway. Following construction of this new roadway, background ambient noise levels at the phase 1 portion of the proposed project (Village 1) are expected to increase significantly from existing low levels. However, in the planned residential areas fronting the major roadways, noise levels below 65 L_{dn} are expected less than 20 feet from the centerline of the new roads. For this reason, traffic noise impacts along this roadway are not expected following completion of phase 1.

At buildout of the project, noise attributable to both project plus non-project traffic increase significantly by 3 to 5 decibels. Setback distances along Queen Kaahumanu Highway will require 176 to 201 feet to reach normally acceptable levels (65 L_{dn}). Along Palani Road, moderately large setback distances of 100 to 144 feet will be required to reach normally acceptable levels (65 L_{dn}). Table 4-4 presents a comparison of noise impacts in 2010 with and without the project.

TABLE 4-4: PROJECT AND NON-PROJECT NOISE IMPACTS (2010)

<u>Roadway</u>	Noise Level Increases (L_{dn}) Due to:	
	<u>Non-Project Traffic</u>	<u>Project Traffic</u>
Queen Kaahumanu (north of project)	4.3	0.8
Queen Kaahumanu (fronting project)	4.1	0.2
Queen Kaahumanu (south of project)	4.1	0.2
Palani Road (near Queen Kaahumanu intersection)	3.4	-0.1
Kealakehe Parkway	N/A	73.0

As indicated in Table 4-4, the increases in traffic along Queen Kaahumanu Highway due to the project are very small when compared to those increases expected from non-project related traffic. Similar conclusions apply along Palani Road. Project traffic noise increases are expected to be greatest relative to non-project traffic along Ulua'oa and Kealakehe streets, and the two new access roadways to the project site.

As a result of the construction of the mauka portions of the Kealakehe Parkway, traffic noise levels are expected to increase in the inland areas mauka of Queen Ka'ahumanu Highway and along the northern boundary of the project. By 2010, background ambient noise levels at planned residential areas along the parkway are expected to increase significantly from existing low levels. Future traffic noise levels along the parkway's right-of-way and at the intersection with Queen Kaahumanu Highway are expected to be slightly above the 65 L_{dn} following complete project buildout. Although commercial and golf course uses are planned at the intersection, traffic noise mitigation measures may be required along the planned residential areas fronting this roadway.

Audible construction noise will probably be unavoidable during the entire project construction period. However, it is anticipated that the actual work will be moving from one location on the project site to another. Therefore, actual exposure to construction noise at any receptor location will probably be less than the project's total construction period. Analysis indicates that the general distance from construction noise necessary to reach normally acceptable levels (65 L_{dn}) will be about 450 to 550 feet. Adverse impacts from construction noise are not expected to be in the "public health and welfare" category due to the temporary nature of the work and due to the administrative controls available for its regulation. Instead, these impacts will probably be limited to the temporary degradation of the quality of the acoustic environment near the project site.

3.4.3 Mitigation Measures

The increases in traffic noise attributable to the project from the present to the year 2010 are predicted to range from 0.2 to 0.8 L_{dn} along Queen Kaahumanu Highway, where traffic noise levels are expected to remain above 65 L_{dn} along the highway right-of-way. This degree of increase in traffic noise levels attributable to the project will be difficult to perceive over a 20-year period, and is therefore, not considered to be significant. Existing and planned land uses along the highway are primarily commercial, recreational and light industrial (to become the Civic Center). Therefore, traffic noise impacts along the highway resulting from project traffic are not considered to be serious.

Relatively large increases in traffic noise levels along the improved Palani Road are expected to occur as a result of the project plus non-project traffic. By 2010, traffic noise levels are expected to increase along Palani Road by 3.4 L_{dn} , primarily as a result of non-project traffic. Setback distances of 100 to 144 feet from Palani Road's centerline will be required to meet FHA/HUD noise standards under unobstructed line-of-sight conditions between the roadway and noise sensitive receptors. Under conditions of noise shielding by terrain features or man-made obstructions, setback distances required to meet FHA/HUD standards would be significantly less, and be probably less than 100 feet from the roadway center line.

Potential noise along the improved Palani Road are possible, both in respect to existing and planned noise sensitive receptors (such as homes) along the roadway. Existing residences located along the roadway may be impacted by the added traffic noise as well as by the future roadway improvements if noise mitigation measures are not included with the construction of the roadway improvements. Mitigation of off-site traffic noise impacts are generally performed by individual property owners fronting the roadway's right-of-way or by public agencies during roadway improvements. These mitigation measures generally take the form of increased setbacks, sound attenuating walls, total closure and air conditioning, or the use of sound attenuating windows. Severe noise impacts should not occur as a result of the proposed project as long as noise mitigation measures are incorporated into any improvement projects along Palani Road.

Mitigation of construction noise to inaudible levels will not be practical in all cases due to the intensity of construction noise sources (80 to 90+ dB at 50 feet distance), and due to the exterior nature of the work (pile driving, grading and earth moving, trenching, concrete pouring, hammering, etc.). The use of properly muffled construction equipment should be required on the job site. In addition, if soil conditions allow, the use of vibratory pile driving equipment is also recommended for minimizing construction noise impacts. However, due to the residential character of the proposed development, pile driving will typically not be necessary. The incorporation of the State Department of Health's construction noise limits and curfew times is another noise mitigation measure which can be applied to this project.

3.5 Climate, Meteorology and Air Quality

Following is a summary of an air quality impact analysis conducted for the project by Barry D. Neal and Associates in July, 1990. The complete study is included in the appendix to this environmental impact statement.

3.5.1 Existing Conditions

Nearly the entire western side of the Big Island is sheltered from the prevailing northeasterly trade winds that typify Hawaiian island weather patterns due to the shielding effect of the great volcanic masses of Mauna Kea, Mauna Loa, and Hualalai. Due to wind shadow effects caused by the Kona region's terrain, winds in the Kealakehe area are predominantly light and variable. Local winds such as land-sea breezes and/or upslope-downslope winds tend to dominate the wind pattern for the area. During the daytime, winds typically move onshore because of seabreeze and/or upslope effects. At night, winds generally are land breezes and/or 'drainage' winds that move downslope and out to sea. Calms occur about 29% of the time at nearby Keahole Point.

The project area's leeward location and low-level elevation results in a relatively moderate temperature profile compared to windward locations near sea-level. At the Old Kona Airport located about two miles to the south west, average daily minimum and maximum temperatures are 67 degrees (F) and 83 degrees (F), respectively. The extreme minimum temperature on record at this location is 47 degrees (F) and the extreme maximum is 93 degrees (F). Temperatures at the project site are probably about 1 to 3 degrees cooler on average compared to the airport and show a slightly larger diurnal variation due to the somewhat elevated and inland location.

Atmospheric turbulence, caused by mechanical and thermal forces, is often described in terms of Stability Class. Stability class 1 is the most turbulent and class 6 the least. In suburban, coastal areas like Kealakehe, stability class 5 or 6 is generally the highest class that occurs, developing during clear, calm nighttime or early morning conditions. Stability classes 1 through 4 occur during the daytime, depending mainly on the amount of cloud cover and incoming solar radiation and the onset and extent of the seabreeze.

The Kealakehe climate is relatively dry. Average rainfall at the Old Kona Airport amounts to about 24 inches per year but may vary significantly from one year to the next. Average annual rainfall at the project site is estimated from 20 to 30 inches depending upon elevation (see Figure 4-6).

Present air quality in the project area is mostly affected by air pollutants from natural, industrial, agricultural and/or vehicular sources. Natural sources include sea spray, aero-allergens from plants, wind-blown dust, and volcanic emissions. The project region is periodically plagued by the latter, especially since the latest eruption phase of Kilauea which began in 1983. The American Lung Association is currently studying the character and concentration of volcanic air

pollution in the Kona area, but to date, no results of the study are available.

Major industrial sources of pollution include the Keahole Power Plant and the Kealakehe Landfill. Air pollution emissions from the power plant consist mostly of sulfur dioxide and oxides of nitrogen. Emissions from the landfill consist mainly of fugitive dust from heavy equipment and noxious fumes from underground fires, the latter of which has been the subject of numerous complaints from people residing and working nearby. Emissions from the landfill tend to be carried over the project site by prevailing winds mostly during the daytime.

Queen Kaahumanu Highway forms the western boundary of the project area and is the major source of vehicular pollution. While some contamination from the exhausts of motor vehicles using the highway and other roadways nearby occurs, elevated concentrations are likely confined to limited areas near intersections where and when traffic congestion occurs during poor dispersion conditions.

The only available data from air quality monitoring stations operated by the State Department of Health (DOH), consists of sulfur dioxide and particulate measurements that were made about 12 miles to the south of Kealakehe during 1985 and 1986. During that two-year period, measurements of 24-hour average sulfur dioxide concentration at this location were consistently low. No instances of levels in excess of the state/national 24-hour air quality standards were recorded.

At this time there are no reported measurements of lead, ozone, nitrogen dioxide or carbon monoxide in the project vicinity. These are primarily motor vehicle related pollutants. Lead, ozone, and nitrogen dioxide are typically regional scale problems and levels of these substances generally have not been found to exceed accepted standards elsewhere in the State. Carbon monoxide air pollution, on the other hand, typically is a microscale problem caused by congested motor vehicle traffic. To assess the impact of emissions from motor vehicles, an air quality modeling study was undertaken to estimate current ambient concentrations of carbon monoxide along the primary access routes and to predict future levels both with and without the proposed project. Present carbon monoxide concentrations were estimated to be well within the national 1-hour ambient air quality standard at all locations. However, concentrations in the vicinity of Queen Kaahumanu Highway and Palani Road may occasionally exceed the 8-hour national limit as well as the more stringent 1-hour and 8-hour state standards during adverse traffic and meteorological conditions. Predicted exceedence of the state standard is not unusual as this occurs at many locations in the state where even moderate traffic volumes are involved.

3.5.2 Probable Impacts

It is inevitable that some short- and long-term impacts on air quality will occur either directly or indirectly as a consequence of project construction and proposed land uses. Short-term impacts from fugitive dust will likely occur during the project construction phase. To a lesser extent, exhaust emissions from stationary and mobile construction equipment and from workers' vehicles also may affect air quality during the period of construction.

After construction, long-term impacts on air quality will occur primarily from emissions emanating from vehicular traffic traveling to and from the development. Primary access to the site will occur via Queen Kaahumanu Highway, Mamalahoa Highway, Palani Road and the proposed Kealakehe Parkway. In the year 2010 without the project, concentrations at most locations were predicted to decrease even though traffic is expected to increase; this is due to the effects of newer motor vehicles equipped with more efficient emission control devices and to the planned roadway improvements. Worst-cast concentration levels, however, will continue to occasionally exceed the state standards in small "hot spot" areas near congested intersections, but the national standards will probably be met.

In the year 2010 with-project scenario, the highest concentrations in the project area (at the intersection of Queen Kaahumanu Highway and Palani Road) will likely be about 10 percent higher compared to the without-project scenario but considerably lower compared to existing conditions. Concentrations at other locations for this scenario will be about the same or higher compared to the existing and without-project cases. This assumes that all mitigative measures discussed in Section 1.3 of Chapter VI, relating to traffic improvements, are implemented.

Air pollution impacts on the endangered species of trees (uhi uhi) existing on the project site due to project-related automotive emissions should be nil. This conclusion is based on the fact that estimated maximum concentrations of nitrogen dioxide that will occur will be much less than the injury threshold levels even for sensitive vegetation.

Long-term, indirect impacts are also possible due to the project's electrical power and solid waste disposal requirements. Quantitative assessments of these potential impacts were not made, but based on the estimated emission rates involved and compared to the current levels of demand, the attendant impacts are expected to be small.

The proposed project will have no measurable air quality impacts upon the Kealakehe Landfill. Potential impacts on the project from landfill emissions will be lessened but may not

eliminated with the closure of the landfill. Recurring subsurface fires could continue to persist even after landfill operations cease. The analysis of potential impacts on the project from emissions emanating from the landfill suggests further study of this problem is warranted before drawing any definitive conclusions. The little data that are available indicate the concentrations of some air contaminants may presently exceed both occupational health and safety standards within the landfill and community property lines for a distance of a few hundred feet. Nuisance odor problems may persist for several thousand feet downwind (upslope during the day and downslope at night) of the landfill.

3.5.3 Mitigation Measures

Both federal and state standards have been established to control ambient air quality. At the present time, six parameters are regulated including; particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and lead. Hawaii state air quality standards are more stringent than the comparable national limits except for the standards for sulfur dioxide. State and national standards for sulfur dioxide are the same.

State air pollution control regulations require that there be no visible fugitive dust emissions at the property line of a project. Hence, an effective dust control plan must be implemented to ensure compliance with state regulations. Fugitive dust emissions can be controlled by limiting areas disturbed, watering of active work areas, covering of open-bodied trucks and using wind screens during grading and construction. Paving and landscaping early in the construction schedule also will reduce dust emissions.

Mitigation measures to reduce the impact of carbon monoxide pollutants from increased volumes of vehicular traffic include those measures discussed in Chapter VI, Section 1.3 relating to Traffic. Additional mitigation measures could include; promoting mass transit/bus service and car pooling, adjusting local school and business hours to begin and end during off peak periods, and reducing motor vehicle emissions. However, most of these mitigative measures, and especially the latter, are beyond the control of a single developer.

The impacts of the Kealakehe Landfill on the proposed project can only be lessened by preventing or quickly extinguishing fires as they occur. Hawaii County's proposal to mine the landfill for recyclable materials, extinguish the underground fires and cover the landfill with soil is probably the most comprehensive and effective solution. The alternative of closing and capping the landfill with soil may help to reduce the frequency of underground fires, but it may still be necessary to extinguish fires periodically with boring and fire fighting equipment.

CORRECTION

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

eliminated with the closure of the landfill. Recurring subsurface fires could continue to persist even after landfill operations cease. The analysis of potential impacts on the project from emissions emanating from the landfill suggests further study of this problem is warranted before drawing any definitive conclusions. The little data that are available indicate the concentrations of some air contaminants may presently exceed both occupational health and safety standards within the landfill and community property lines for a distance of a few hundred feet. Nuisance odor problems may persist for several thousand feet downwind (upslope during the day and downslope at night) of the landfill.

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CHAPTER V

CHAPTER V
SOCIO-ECONOMIC FACTORS

1. **SOCIAL IMPACTS**

Following is a summary of the socio-economic impact assessment conducted for the project by Community Resources, Inc. and completed in January, 1990. The report is included in its entirety as an appendix to this environmental impact statement.

1.1 **Existing Social Conditions**

1.1.1 **Population Trends**

West Hawaii has been one of the fastest growing areas in the State of Hawaii. Its population nearly tripled from 1970 to 1988 (from 14,500 to 40,700). The growth rates have been particularly high in North Kona and South Kohala, sites of major resort development in the 1970's and 1980's.

TABLE 5-1: POPULATION TRENDS

<u>Geopolitical Area</u>	<u>4-1-70</u>	<u>4-1-80</u>	<u>% Change</u> <u>1970-80</u>	<u>7-1-88*</u>	<u>% Change</u> <u>1980-88</u>
North Kona District	4,832	13,748	184%	21,600	57%
South Kona District	4,004	5,914	48%	7,500	27%
South Kohala District	2,310	4,607	99%	7,900	71%
North Kohala District	3,326	3,249	-2%	3,700	14%
Total West Hawaii Area	14,472	27,518	90%	40,700	48%
County of Hawaii	63,468	92,053	45%	117,500	28%
State of Hawaii	769,913	964,691	25%	1,098,200	14%

* Estimated population

As of 1980, nearly a quarter of North Kona's population had been living on the mainland five years previously, and 40% had been mainland-born; much larger percentages than Hawaii County as a whole.

1.1.2 **Housing Supply**

Housing in West Hawaii (with the possible exception of North Kohala) is now considered to be in very short supply, leading to crowding and to high rentals and sales costs. During the 1980's, the West Hawaii housing inventory grew more slowly than did the resident population, meaning that more people must share living quarters. From 1980 to 1988, population increased

approximately 48% (Table 5-1). However, Hawaii County's analysis in Table 5-2 indicates that, even by March 1989, the total West Hawaii housing unit inventory had increased only 26%. In North Kona, population increased 57% while the housing unit inventory increased only about 30%. In the rest of Hawaii County, proportionate growth in housing units more closely matched population.

TABLE 5-2: HOUSING UNIT INVENTORY

<u>Unit Type by Area</u>	<u>1980</u>	<u>1989</u>	<u>% Change 1980-89</u>
North Kona			
--Single Family	4,105	5,322	29.6%
--Duplex	122	146	19.7%
--Multi-Family	2,934	4,109	40.0%
--Other	<u>379</u>	<u>N/A</u>	
--District Total, All Units	7,540	9,577	27.0%
South Kona			
--Single Family	1,631	1,974	21.0%
--Duplex	28	34	21.4%
--Multi-Family	48	88	83.3%
--Other	<u>15</u>	<u>N/A</u>	
--District Total, All Units	1,722	2,096	21.7%
North Kohala			
--Single Family	1,092	1,235	13.1%
--Duplex	12	14	16.7%
--Multi-Family	7	7	0.0%
--Other	<u>11</u>	<u>N/A</u>	
--District Total, All Units	1,122	1,256	11.9%
South Kohala			
--Single Family	8,520	10,767	26.4%
--Duplex	172	278	61.6%
--Multi-Family	3,500	4,857	38.8%
--Other	<u>410</u>	<u>N/A</u>	
--District Total, All Units	2,218	2,973	34.0%
Total West Hawaii			
--Single Family	8,520	10,767	26.4%
--Duplex	172	278	61.8%
--Multi-Family	511	653	27.8%
--Other	<u>410</u>	<u>N/A</u>	
--TOTAL, ALL UNITS	12,602	15,902	26.2%

Furthermore, Hawaii Visitors Bureau data indicate that nearly 2,000 of the 16,000 West Hawaii housing units are actually condominiums for visitor use (condominiums in resort areas may be made available for visitor use during peak travel periods, then revert to long-term residential rentals when tourism declines). An unknown number of West Hawaii single-family homes may also now be reserved for visitor rentals or as second homes.

Further indications that the supply of housing for residents in West Hawaii is severely limited are:

- West Hawaii homes in 1988 had an average resale price at least \$65,000 more than the average resale price for the rest of the island. Prices throughout the island increased in 1989, but West Hawaii retained its lead (Pang, 1989).
- The average price of residential properties in all West Hawaii districts was over \$200,000 in 1989 -- over twice the amount which would be affordable for a family with a median income.
- 1980 housing costs were roughly 50% higher in West Hawaii, except for North Kohala, than in East Hawaii, suggesting that West Hawaii residents have struggled with a lack of affordable housing for years.
- The supply of units for rent to residents diminished during most of the 1980's, until there were nearly no vacancies in West Hawaii in 1987. More rental housing has become available since 1987 (KPMG Peat Marwick, 1990).
- Rental prices have increased steadily by about 10% per annum since 1980 in both Hilo and Kailua.

The current shortage of affordable housing is well known to West Hawaii residents, who call the need "critical", "severe", and "drastic". In interviews conducted for the socio-economic impact study, area residents cited several telling examples:

- No houselots near Kailua are available for under \$100,000.
- Recently, only three fee simple homes were listed in the greater Kailua area for less than \$200,000.
- Kona area low- to moderate-income rental projects are filled, and have waiting lists.
- At one rental complex, the prospective tenants at the top of the waiting list have been there for at least six months to a year.
- According to some Kona Realtors, there are sub-unit rentals in 50% to 80% of the homes in certain neighborhoods.

- One realtor observed that 70% of all potential single family homes buyers are looking for homes with rental units.
- Some see certain neighborhoods as overcrowded because the original buyers' households now contain their grown children and grandchildren.
- Many residents know of single-family houses in which three or more families live, or one-bedroom apartments sheltering families with four or more children.
- The Hawaii Tribune Herald reported that County officials and advocates for the homeless estimate as many as 800 people in West Hawaii lack permanent shelter (Harada-Stone, 1989).

1.1.3 Economic and Labor Force Trends

West Hawaii's economy is based on the visitor industry, construction, diversified agriculture and ranching, and high technology initiatives (in ocean science and astronomy). The visitor industry has emerged as the leading industry both in terms of size and potential growth.

Construction activity has continued to increase in Hawaii County -- construction put in place in 1988 was valued at \$162,750,000, an increase of 26.6% over 1987. Currently, a new major luxury hotel is under construction in West Hawaii.

Presently, West Hawaii employers report a labor shortage, particularly among skilled construction workers and entry level service workers for restaurant, retail, and resort operations. Recent available unemployment and workforce estimates from the Department of Labor and Industrial Relations show:

TABLE 5-3: LABOR FORCE & UNEMPLOYMENT RATES

Area	1988 Annual Average		August 1989	
	Civilian Labor Force	Unemployment Rate	Civilian Labor Force	Unemployment Rate
North Kona	9,776	3.7%	10,645	2.1%
South Kona	3,778	4.0%	4,108	2.4%
North Kohala	1,795	6.6%	1,929	3.9%
South Kohala	2,819	4.4%	3,060	2.6%
West Hawaii	18,168	4.3%	19,742	2.4%
Hawaii County	54,676	5.0%	59,206	2.9%

A review of occupational patterns in West Hawaii based upon the 1980 Census reveals the following:

- Compared to workers countywide and statewide, employed residents of North Kona and South Kohala were much more likely to be in tourism-related occupations or industries in 1980.
- In North Kohala, there was a dramatic 1970-80 shift from agriculture to tourism-related work, due to the phaseout of sugar operations. Many such tourism jobs were located outside of North Kohala, resulting in higher average commute times.

Continuing West Hawaii resort development would suggest even more concentration in tourism today, as well as more intensive use of available workers. Preliminary results of a 1988 survey by the Department of Business and Economic Development indicates:

- The percentage of employed workers who consider themselves "in the visitor industry" was around 40% in Kona and 35% in Kohala, compared to an islandwide figure of just 25%.
- North Kona's civilian labor force participation rate is now close to 80%, i.e., four out of every five potential workers aged 15 or above now holds a job or is actively seeking one.

1.2 Likely Future Social Trends

The following discussion is a review of future changes expected to occur with or without the proposed Kealakehe Planned Community Project.

The State of Hawaii's official "M-K Series" forecast for the period through the year 2010 indicates substantial economic and population growth for Hawaii County. Resident population is forecast to increase by 75% over the estimated 1988 figure of 117,500 to reach 180,800 persons by the year 2005 and 206,100 persons by the year 2010. The average daily visitor population is forecast to grow threefold from 11,400 in 1990 to 39,600 in 2010. Civilian jobs are forecast to increase from 50,800 in 1990 to 89,800 in 2010.

In West Hawaii, projected growth in the visitor industry is expected to produce major increases in employment and population. Population forecasts by the State of Hawaii, Hawaii County, as well as CRI and KPMG Peat Marwick (the HFDC socio-economic and market consultants, respectively) all conclude that the West Hawaii population will roughly double by the year 2005 to approximately 79,000 to 89,000 persons. (Note: population forecasts may vary due to the application of different methodologies and variables. Therefore, while specific conclusions may vary among forecasts, general consistency among them tends to validate their conclusions. Thus, a comparison of the four forecasts referred to above results in a forecast of a range of

growth rather than a commonly agreed upon number). Table 5-4 presents a summary of key assumptions and results concerning project social and economic trends, based upon a market study conducted by KPMG Peat Marwick for the Kealahou Planned Community project. Again, it should be noted that this discussion focuses on projected increases resulting from development and growth other than the proposed project.

TABLE 5-4: PROJECTED WEST HAWAII SOCIAL & ECONOMIC TRENDS

	<u>1990</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>
Resident Population:					
North Kona	31,200	35,600	40,100	45,200	51,500
South Kona	7,800	9,000	10,100	11,400	13,000
North Kohala	3,900	4,400	5,000	5,600	6,400
South Kohala	13,800	15,800	17,800	20,100	22,900
West Hawaii Total	56,700	64,800	73,000	82,300	93,800
West Hawaii Share of County Residential Population:	45.5%	45.5%	45.5%	45.5%	45.5%
Projected New Visitor Units (Cumulative):					
Hotel	0	5,700	9,085	9,085	9,785
Condominium	230	2,010	4,110	5,990	6,470
Total New Hawaii County Jobs Attributable to New Visitor Unit Development:	70	10,270	16,570	22,180	23,490
Persons per Housing Unit in Hawaii County:	2.8	2.8	2.75	2.75	2.7
Cumulative Housing Unit Demand (1):					
North Kona	800	2,920	5,800	9,130	13,680
South Kona	840	1,210	1,720	2,210	2,870
North Kohala	190	370	630	850	1,160
South Kohala	500	1,540	3,020	4,830	7,440
West Hawaii Total	2,330	6,040	11,170	17,020	25,150

(1) Baseline for estimation is 1987 Hawaii County Planning Department Inventory (14,094 units in West Hawaii)

The CRI analysis for this environmental impact statement forecasts a total project West Hawaii job count of 37,700 for the year 2005 and 45,000 for 2010. New labor supply resulting from natural population increase (excess of births over deaths) in the existing West Hawaii population would be able to fill only about 13% of the new jobs from 1990 to until 2005 and about 14% of the projected new jobs for the entire period until 2010. If there is no increase in commuting from East Hawaii, the remaining 86% of new jobs would have to be filled by net in-migration (that is, more people moving into West Hawaii than moving away) and by children born to in-migrants. (Note: the actual proportion of jobs going to net in-migrants may be somewhat lower, perhaps only 60% by 2005. This is because the analysis is based primarily upon the State's M-K assumptions for Hawaii County, and these assumptions include very low rates of labor force participation when compared to other counties. If existing residents and their children absorb more jobs, fewer in-migrants will be needed.)

The CRI analysis forecasts job growth and population growth over a twenty year period, and does not distinguish recent in-migrants from one who have lived in the area for decades. If in-migrants come to take West Hawaii jobs at a constant pace, recent in-migrants who have lived 5 years or less in West Hawaii could account for only about 12% of the 2005 workforce, and 11% of the 2010 workforce -- a lower percentage of in-migrants to West Hawaii than 1980 Census figures indicate for recent years.

Proposals for housing developments in West Hawaii, would, if all were built, yield over 21,000 new housing units, not including the Kealakehe project (KPMG Peat Marwick, 1990). Many of these developments have no permits as yet, and it is likely that fewer units will be built in the next twenty years or so.

Affordable housing commitments by resort developers would, when the resorts and the associated housing are built, yield over 3,330 employee housing units for low-income, moderate-income, and gap group families. Also, about 3,680 of the housing units in proposed residential developments are targeted as affordable units.

The total demand for new housing in West Hawaii is projected as about 25,000 units by the year 2010 (Table 5-4). This demand is higher than the supply of units proposed to be build in the projects discussed above. Also, the need for affordable housing units is great -- if housing ownership patterns continue as they have in recent years, the number of families owning their own homes in West Hawaii would be about 4,000 below that mandated by the State Housing Functional Plan, according to the market assessment for this project.

New private residential projects may well account for a much bigger part of construction spending than in recent years in West Hawaii, but these projects are not likely to meet the demand for new housing, especially affordable units.

1.3 Qualitative Changes

The social impacts of the preceding quantitative changes (that is to say, changes projected in West Hawaii not related to the proposed Kealakehe Planned Community) will depend in large part on; 1) geographical distribution of growth, 2) location and timeliness of infrastructure development (including housing), and 3) characteristics of in-migrant workers. Following is a brief discussion of current actions, conditions and plans that may affect future growth.

1.3.1 Geographic Distribution of Growth

The County's project population distributions (as well as those included in the market analysis for this environmental impact statement) indicates that West Hawaii growth will be concentrated primarily in North Kona and secondarily in South Kohala. The State of Hawaii's West Hawaii Regional Plan calls for development of a major new support community in Kealakehe as well as South Kohala development at Waikoloa, Lalamilo, and Kawaihae. The Hawaii County's draft development plan for the North Kona area from Palani Road to Keahole Airport (the Keahole to Kailua Development Plan, or "K to K" plan) identifies major residential development extending north of Palani Road, and including the Kealakehe property. The draft K to K plan also indicates a new regional Civic Center of up to 100 acres to be located in the vicinity of the Kealakehe property.

1.3.2 Infrastructure Development

The location and timeliness of infrastructure development is the second major qualitative determinant of West Hawaii's future. The magnitude of growth being planned for West Hawaii could intensify social impacts unless solutions are found. Both the State and County governments are currently in the process of exploring various mechanisms (impact fees, taxing authority, etc.) to assure that physical and social infrastructure development no longer lags far behind population growth in the future.

State and County planners are currently addressing new North Kona road alignments. The draft K to K Plan includes a new shoreline road from Honokohau Harbor to Kailua, a new mauka-makai road extending from Mamalahoa Highway across Palani Ranch and through Kealakehe to

Queen Kaahumanu Highway, major grade separated interchanges at Kealakehe and near the Keahole Airport, and a new regional roadway paralleling Queen Kaahumanu Highway on its mauka side, and the widening of Queen Kaahumanu Highway to at least six lanes.

Both State and County agencies are presently drilling for new potable water resources and the County plans to develop three new wells in 1990. A new reservoir is also planned.

The Kealakehe Landfill is proposed to be closed by the County in 1991 and a new landfill opened near Puuanahulu after about a year's construction work. However, a lawsuit challenging the new landfill project's EIS could affect scheduling drastically.

The Kealakehe Sewage Treatment Plant is presently under construction and is projected for completion by September 1991. Connections to the plant could be finished in another year. The facility is proposed to serve primarily Kailua and areas to the south.

1.3.3 Characteristics of New In-Migrant Population

The third determinant of social impacts resulting from future West Hawaii growth is the characteristics of new in-migrants. The distribution of in-migrants among two principal categories, retirees and workers, will guide the nature of future impacts.

Relatively affluent retirees and second-home owners could tend to widen the gap between "have's" and "have-nots" in West Hawaii. The State of Hawaii in its West Hawaii Regional Plan estimates that under ten percent of resort-induced population growth will be on-site resort residents, whose isolation from the general community would probably reduce any impacts, positive or negative. Undetermined, however, is the likely future number or geographic distribution of off-resort wealthy in-migrants, who would have more direct impacts on residential real estate values and the fabric of community life.

In-migrant workers and their children (who may be West Hawaii born), as earlier noted, will be required to fill anywhere from 60% to 90% of new West Hawaii jobs. The question remains as to where these in-migrant workers will come from. They will, most likely, come from a variety of locations, including East Hawaii, neighbor islands, Pacific Islands, and the continental United States. The degree to which the cultural values and lifestyles of the in-migrants differ from those of existing West Hawaii residents will determine, in great part, the extent of social impacts. While the exact composition of the in-migrant workers cannot be predicted at present, it may, however, be safely predicted that the projected growth levels imply some types of very major shifts

in the Big Island's overall population composition over the next 15 to 30 years.

1.4 Community Concerns

Community concerns are presented in two parts; those concerns independent of the proposed project, and those concerns raised in response to direct questions about the perceived impact of the proposed project.

1.4.1 Independent Concerns

The most recent community survey shedding light on major issues in West Hawaii was the State Tourism Impact Management System (TIMS) study conducted in late 1988. Results of the survey indicated the following:

- Lack of affordable housing was the top issue throughout the island, but was ranked even more highly in West Hawaii, and particularly in North Kona where 76% said it was a "big problem" for that part of the island (as opposed to 48% islandwide).
- Cost of food/clothing and existing traffic congestion were the next most important North Kona issues, rated as "big problems" by nearly 60% (as opposed to 44% and 28% respectively islandwide). For virtually all issues, North Kona residents were more likely than people elsewhere on the island to feel there was a serious problem. However, the gap was particularly wide for traffic congestion. The proportion of North Kona residents saying this was a "big problem" was twice as much as the rate for the island as a whole.
- Lack of sports/recreation facilities was also counted as a major problem by more than 50% of both North Kona and South Kona/Ka'u residents (52% as opposed to 33% islandwide).
- Environmental and/or crowding concerns (rapid population growth, crowded parks, destruction of natural beauty, pollution) were counted as "big problems" by more than a third of North Kona residents; higher than in most other parts of the island.
- Overall quality of life was felt to have grown worse over the past five years by about a third of North Kona residents (compared to only 18% islandwide). However, 36% of North Kona residents felt that overall quality of life had grown better. Statewide, North Kona was the only heavily resort-impacted area in which a few more people felt life had grown "better" rather than "worse". In West Maui 63% said "worse" versus just 16% "better".
- Negative attitudes toward future tourism growth were prevalent throughout the island (and the state), but even more so in West Hawaii than elsewhere in Hawaii County. Statewide preliminary TIMS results indicate such attitudes largely reflect growth-related problems.

Both the TIMS survey and a recent study by the University of Hawaii School of Social Work (Matsuoka et al., 1988) found that most Kona respondents thought tourism impacts to date have been, on balance, very positive because of the economic benefits. There were, however, strong concerns about continued growth.

1.4.2 Issues and Concerns Regarding the Current Project

As part of its socioeconomic impact analysis for the Kealakehe Planned Community, CRI conducted interviews with 88 "key informants" who were selected on the basis of knowledge of the community and/or being tentatively identified as belonging to some potentially affected interest group such as nearby residents, business operators, Hawaiians, and community leaders. The interviews were conducted in October and November, 1989. Following is a summary of the findings.

Kona interviewees generally welcomed the Kealakehe project as the first major effort to address the area's need for affordable housing. Still, they were concerned that such a solution might further aggravate current problems with traffic congestion and impact other infrastructure.

Kona residents identified housing as a critical problem that had grown much more severe in the past two years. They felt the demand for houses in the proposed project would be strong since there are now so few units that the average Kona family can buy or rent.

The interviewees pointed out that the project's location would mean more traffic on Palani Road, a road they depend on greatly but they consider to be unsafe and a major traffic bottleneck.

More than anything else, the interviewees wanted to see all of the project's infrastructure in place before anyone moved into the project. They felt this would minimize traffic congestion and strain upon water and sewer lines.

Kona residents identified several current social concerns in their area. They thought these could be either magnified or alleviated in the new Kealakehe community. They felt that if those problems were addressed in the planning and design of the project, then the new neighborhood would serve as a model community for the entire West Hawaii region. The Kealakehe project would, they hoped, respond to needs for affordable housing, recreational facilities, transportation, and child care, without straining the limited means of community residents.

Most of those interviewed said they hoped the proposed housing would be available to the

average Kona resort workers and others who currently have little chance of owning a home. People wondered if the housing would actually be priced to be affordable for young Kona families.

The interviewees clearly wanted the development to be attractive and a source of pride to its residents. They suggested financing methods to enable average working families to buy homes. They felt the area could remain desirable if strong community associations enforced housing standards. Many commented on lot sizes, setbacks, the mix of houses in the community, and overall layout of the project. Most wanted the project to include recreational facilities.

Kona residents raised concerns about the relation of the Kealakehe project to surrounding areas. First, some residents expressed very strong concern regarding possible future uses of the State's property makai of Queen Kaahumanu Highway. Some suggested that the golf course be located makai of the highway, to block other uses of that area. Others were divided in their views of the most appropriate site for the proposed golf course. Next, several persons were concerned about the impacts of the project on nearby residential areas and on Honokohau Harbor.

1.5 Probable Social Impacts

1.5.1 Quantitative Impacts

Major quantifiable socio-economic impacts of the proposed development are population and employment. This section deals with the resident population at the project, employment associated with the project, both during construction and after buildout, and indirect and induced employment linked to the project.

1.5.1.1 Population

The project will be built out over about 20 years; sooner or later depending partly upon demand for affordable housing in West Hawaii. A market assessment conducted for the project shows that 3,620 to 5,530 units could be absorbed at Kealakehe by about the year 2010, based upon an average household size of about 2.7 persons. While the ultimate number of units to be built at Kealakehe is not yet fixed due to continuing planning efforts, current estimates place the actual number of units in the range from 4,100 to 4,400, about mid-way within the market assessment's range.

At full occupancy, the proposed project's expected on-site population will range from between 9,774 to 14,931 persons, depending upon the actual number of units built. This is based upon the market assessment's range of units that could be absorbed. However, it is more likely

that occupancy of the project will average at about 95%. Therefore, the number of projected occupants will more likely fall into a range of between 9,285 and 14,184 persons. For purposes of evaluation, the higher number is assumed to be the ultimate increase in population.

1.5.1.2 Employment

Employment associated with the proposed project includes: 1) construction jobs, which are generated for a limited time; 2) operational jobs, which are presumed to last the lifetime of the project; and, 3) indirect and induced jobs in the larger State economy, created as the development and project workers buy goods and services from other establishments. (Note: indirect and induced jobs are estimated using a model of the State economy which can be applied to any project or enterprise).

Project construction is estimated to generate a total of 3,830 to 5,570 direct jobs over the entire construction period. The actual average number of construction jobs in any given year is expected to be in the range of 190 to 280 jobs, while the number of jobs on-site will be somewhat smaller.

Indirect and induced jobs generated by construction of the project are calculated as amounting to roughly 8,000 to 12,000 jobs over the construction phase, of which about 3,000 to 5,000 could be located in Hawaii County -- yielding an estimated annual average of 170 to 250 indirect and induced jobs in Hawaii County. The total direct, indirect, and induced jobs for project construction would then average about 360 to 530 in Hawaii County annually.

On-site jobs (operational jobs) will be created as the residential and other components in the project area are developed. After buildout, the project is estimated as providing about 370 to 470 direct jobs, and from 50 to 80 indirect and induced jobs.

1.5.2 Qualitative Impacts

By adding thousands of housing units to the West Hawaii housing supply, the project is likely to have a stabilizing effect on the price of housing and rentals. By providing units for families with low, moderate, and gap-group incomes, the project will address needs of existing West Hawaii residents. The project will give many families a chance to own their own home. It will encourage less crowding in existing households by providing new opportunities for young adults who are presently living with parents or relatives. It will also help to decrease stress and social problems that can accompany crowded living conditions.

Impacts on project residents' incomes will vary. Renters are likely to benefit from lower rents and/or a decrease in the rate of appreciation of rents. Many new homeowners will pay more for housing than they would in rental housing, but they will be gaining equity.

The project will most obviously benefit its residents by providing them homes. Others who will also be affected by a larger housing supply include in-migrants and commuters. More rental units for low- and moderate-income families can encourage working in-migrant couples (from other counties of Hawaii or from outside Hawaii) to stay in the area, leading to lower transience among new in-migrants. New in-migrants attracted by visitor sector jobs will be more likely to find appropriate housing in the future than they have in recent years. Some of the "working homeless" -- commuters from other parts of Hawaii County who work in West Hawaii but live in their cars during the work week -- are likely to find better shelter. Finally, as West Hawaii affordable housing supply increases, commuters and new West Hawaii employees from elsewhere in Hawaii will move to West Hawaii in increasing numbers.

The creation of a large-scale planned community in West Hawaii will affect residential life in the larger West Hawaii area both directly and indirectly. The project's community association and enforcement of controls on building and use violations (such as illegal rentals) may serve as a model for other neighborhoods. With an increased housing supply, the demand for illegal rental units and the need for families to double up will decrease, leading to lowered population density in some neighborhoods. The provision of licensed child care providers in the project area will help to meet growing needs among West Hawaii families for child care.

1.5.3 Impacts on Nearby Areas and Activities

1.5.3.1 Residential Areas

As West Hawaii's population grows, residents of existing neighborhoods will see residential areas grow, and new residential areas created where there is now open space. With a large-scale residential project located at Kealakehe, residents of the existing Kealakehe neighborhoods and adjacent neighborhoods, including Kailua Village, are likely to see their surroundings as changing markedly. By increasing the nearby area's population, the project is likely to bring mixed impacts:

- According to residents, increased traffic congestion on Palani Road is highly likely. This increase will be offset to some degree by the proposed mauka-makai roadway.
- With greater population, the frequency of crime and domestic disturbances in the nearby area is likely to increase. However, the proposed mauka-makai

roadway will reduce travel time between the police station and the Palani Road subdivisions, improving police response time. New social programs and services at the proposed Civic Center may also help to compensate for some of the problems of urban growth.

- The project's commercial areas will include stores and services of use to residents, so nearby residents will no longer have to go down Palani Road to Kailua for their shopping. This will increase convenience to residents while reducing traffic impacts on Palani Road.
- Public facilities, infrastructure, and services developed within the project or in connection to the project will benefit nearby residential areas as well. The location of a high school and elementary school at Kealakehe, for example, will greatly reduce commuting time for students living north of Kailua Kona. In addition, the public golf course, while of benefit to golfers living throughout West Hawaii will be especially convenient for nearby residents.
- By locating homes with larger lots near existing market price subdivisions, and by mixing product types within the project, the project will avoid creating the low-income "slum" that some area residents fear could be created in time.
- Improved access to public facilities on the project site, such as the proposed high school and elementary school, is likely to add to the value of an area home.

1.5.3.2 Industrial and Commercial Areas

The Kealakehe community's impact upon businesses at the Kaloko Industrial Park north of the project site, the Queen Liliuokalani Trust lands south of the project area, which include the existing industrial subdivision and expansion area, and in Kailua town is generally positive. A large residential population in the immediate vicinity would help to support retail, amusement, and service establishments.

Increased traffic flow on Queen Kaahumanu Highway -- likely if the QLT commercial areas attract many customers -- would have a negative impact on these sites. Road improvements are accordingly planned as part of the Keahuolu Lands project.

1.5.3.3 Honokohau Harbor and Kaloko-Honokohau National Historic Park

Honokohau Harbor and Beach. Development of the Kealakehe Planned Community will increase the number of users of the Honokohau boat harbor, commercial area, and shoreline, since these will be easily accessible to residents. As a result, demand for boat slips will increase. This demand will eventually be addressed by the State's proposed expansion of the boat harbor, but before this occurs, boat owners living in the Kealakehe project will likely keep their boats on

trailers. Increased use of Queen Kaahumanu Highway and other roadways to transport boats is likely. The existing commercial area at the harbor and additional 20 parcels being developed by the State will benefit from increases in the nearby population of potential customers and workers. Honokohau beach, which is now used by fishermen and nudists along with others, will be impacted by increases in usage. This increase may limit current uses.

Kaloko-Honokohau National Historic Park. Development of the proposed project will increase the number of potential visitors to the Historic Park which is operated by the National Park Service. The park boundaries include the 20-acre Aimakapa Fishpond, a brackish water pond and wetland providing habitat for endangered Hawaiian waterbirds, waterfowl and shorebirds. Archaeological sites and anchialine ponds within the park could be impacted by increased numbers of visitors. Knowledge of the park area is presently limited to area residents. However, significant increases in population will be accompanied by increased knowledge of the park as a destination area and potentially increased demand for services and activities at the park. However, the National Park Service estimates a daily visitor capacity for the park at 1,500 visitors and a "projected annual visitation" of 500,000 visitors, once the park's proposed facilities are fully developed. Planned facilities include a parking area for up to 250 cars and buses, an orientation structure and an administrative office building.

1.5.3.4 State-owned Lands (Kealakehe Makai)

In addition to the Kealakehe Sewage Treatment Plant (STP) presently under construction on the state-owned Kealakehe lands makai of Queen Kaahumanu Highway, the State's Department of Transportation is proposing the expansion of Honokohau Harbor and the development of an industrial area to provide support services for the harbor, as well as the construction of a shoreline highway extending from the proposed mauka-makai roadway across the makai parcel and into Kailua.

Project development will require expansion of the STP to accommodate the increased demand for sewage treatment. As discussed above the Harbor will likely experience increased numbers of users. The proposed makai extension of the mauka-makai roadway would likely be used regularly by project residents travelling to shoreline recreational areas and Kailua.

1.5.3.5 Other Nearby Property and Activities

Adjacent Pasture Land. The Lanihau Corporation and Palani Ranch run cattle on two parcels adjacent to the northern boundary of Kealakehe at the mid-level elevation. Incidents of

trespassing, causing conflict between ranchers and residents, are likely when pasture land is located next to residential areas. Landowners hope that fencing can keep hunters, children, dogs, and others out of the area.

Adjacent Industrial Land. Property owned by Robert S. McClean and located along the northern boundary of Kealakehe extending east from Queen Kaahumanu Highway is proposed for a variety of industrial uses including production and sale of concrete and concrete products; boat storage, sales and repair; lumber and hardware sales; automotive sales, service and repair; storage of trucks, buses and construction equipment; self-storage facilities; offices and storage areas for contractors; and other light industrial uses. Development of the proposed residential project will have a positive impact upon the industrial area by providing new customers for the proposed services. Since the proposed light industrial activities will be located adjacent to the Kealakehe commercial shopping center, no direct impacts generated from the residential areas are anticipated. The Kealakehe commercial area will have no adverse impact on the proposed light industrial activities on the McClean property.

Kealakehe Landfill, Transfer Station, Police Substation, Amfac Distribution Center and West Hawaii Animal Shelter. A mixture of light industrial uses are located along the southern boundar of the Kealakehe community near Queen Kaahumanu Highway. These activities are located on land owned by the County of Hawaii. The County has indicated that it intends to close the existing landfill. Conversion of the site to usable land will take between 10 and 30 years based on standards established by the federal Environmental Protection Agency. In view of this, access to the site from the residential community will most likely be restricted.

The existing County transfer station is expected to remain during the early phase of the proposed residential development. It will provide a convenient service for community residents wishing to dispose of bulky items.

Until May, 1990, the County's recently constructed Police substation was proposed as the core of a planned Civic Center reflected on the Kealakehe master plan. However, the Hawaii County Planning Commission has recently approved a proposal that the Civic Center be located on state-owned land makai of the Queen Kaahumanu Highway. Therefore, it is unclear at this time what the County's long-term plans are for its site. The Amfac warehouse and West Hawaii Animal Shelter are leased from the County. The status of their continued presence at the site will be determined by the County and is presently not known. However, the proposed residential development will have little impact upon them.

Nearby Shoreline Recreational Space. The growth in population at Kealakehe will mean an increased demand for recreational space at the Old Airport State Park. The park is currently the only major park in the Kailua Kona area and its open space and limited sports facilities will be more easily accessible to Kealakehe residents using the proposed mauka-makai roadway and shoreline roadway extending from Kealakehe into Kailua. Recently, Hawaii County has approved construction of a new gymnasium at the County park adjacent to the Old Airport Park. Increases in population at Kealakehe will result in increased demand for services and activities at the proposed gym. Expansion of the park is also proposed and will include multi-purpose playing fields, tennis courts, and a swimming pool.

Increased use of the Harbor area, the Old Airport Park and County park, and the QLT's vacant property makai of the highway will mean more people will be closer to the Trust's Children Center and its family camping program at Papawai Beach. The program may be impacted by more people along the shoreline, more neighborhood lighting, and increased noise. However, the Kealakehe project's contribution to these impacts is considered to be minor.

Minimum-Security Corrections Facility. The State of Hawaii's Department of Accounting and General Services (DAGS) is presently preparing a site evaluation study and draft environmental impact statement for a 100-bed Minimum-Security Corrections Facility in the Kealakehe area. Although the actual site has not been determined, HFDC has been advised that the proposed Civic Center and the Kealakehe lands makai of the highway are under consideration and that the facility would be constructed in conjunction with a State Judicial complex. According to DAGS, "this facility will take advantage of all the most recent technologies, combining courts, detention, and a justice center with a minimum of neighborhood impacts." While the proposed planned community will have little impact upon such a facility, the development of a correctional facility near the residential community may have substantial and significant impacts.

1.5.4 Social Impacts of Golf Course Development

By providing a public golf course (to be built by the County or its designated developer on land transferred to the County), the project will offer West Hawaii residents a less expensive alternative to resort courses. Demand for a golf course from residents is projected as generating high levels of play on the course.

Only limited locational impacts of golf course development are evident. Its placement could minimize potential difficulties with the siting of a residential development adjacent to existing industrial areas. Golf course frontage will increase the value of adjacent lots, providing additional

subsidies for affordable housing and encouraging the development of a wide range of units in the project's product mix.

2. MARKET CONDITIONS

The following discussion summarizes the findings of a market assessment prepared for the project by KPMG Peat Marwick in June 1990. The complete market assessment is included in the appendix to this environmental impact statement.

2.1 Housing Demand

The Kealakehe Planned Community is being developed to accommodate existing and future demand for affordable housing units associated with current and projected development in West Hawaii. The visitor industry is expected to be the primary source of economic and demographic growth during the development period for the Kealakehe project. Development of new resorts on the South Kohala coast over the past twenty years has contributed to a five-fold increase in population in North Kona (see Table 5-1).

Many new and expanded resorts are planned for development by the year 2010 on the Big Island. New resort development will result in a substantial increase in employment opportunities leading to increased demand for more affordable housing from new workers entering the West Hawaii market. Indicators of this projected growth include the following:

- The 450-unit Ritz Carlton Mauna Lani hotel is presently under construction.
- Nine resorts have all principal development approvals, including six with existing hotels. Additional hotel rooms at existing resorts could amount to almost 5,000 units.
- Three new resorts have received all principal development approvals, and could be built out to about 2,700 rooms.
- The sum of planned resorts could represent almost 13,000 new hotel rooms, compared with the current inventory of less than 6,000 rooms.
- More than 75% of the hotel rooms proposed would be developed in the West Hawaii region.
- A total of 697 resort condominium units are under construction or expected to begin construction before the end of the year.

- More than 7,350 additional resort condominium units could be developed in existing resorts.
- About 1,300 resort condominium units are planned for new resorts with government approvals.
- Almost 3,600 additional condominium units are proposed.
- A total of almost 13,000 condominium units could be developed by 2010. More than 10,000 of these units could be constructed in West Hawaii.

The construction activity discussed above is expected to result in almost 24,000 new visitor industry related positions on the island of Hawaii. The location within the County of the new employment will depend on many factors, such as transportation links and the availability of land for industrial use. However, since more than 75% of the new visitor jobs are projected for West Hawaii, that region is expected to be most heavily impacted by employment growth. As presented below, this growth in employment could result in demand for over 25,150 new housing units in West Hawaii by 2010, with an annual average demand of over 1,100 units.

TABLE 5-5: WEST HAWAII CUMULATIVE HOUSING DEMAND

	<u>1990</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>	<u>2010</u>	<u>Units per Year</u>
North Kona	800	2,920	5,800	9,130	13,680	570
South Kona	840	1,210	1,720	2,210	2,870	120
North Kohala	190	370	630	850	1,160	50
South Kohala	500	1,540	3,020	4,830	7,440	30
West Hawaii Total	2,330	6,040	11,170	17,020	25,150	1,050

(1) Baseline for estimation is 1987 Hawaii County Planning Department Inventory (14,094 units in West Hawaii)

2.2 Housing Supply

With regard to present development plans for housing units, about 21,000 units are presently planned for construction in the West Hawaii region. However, more than 11,500 of these units are still in the conceptual design stage or are awaiting government approvals. In most cases, major infrastructure improvements will be necessary before actual residential construction can begin. An additional 800 of the 21,000 units are planned as agricultural or large-lot estates at either Waikoloa Village or Kohala Ranch.

If all proposed projects are built as planned, State and County affordable housing requirements will result in developers having to commit to about 7,000 affordable units. About half of these units represent potential commitments by resort developers. The remaining half represent affordable housing project planned by government agencies.

2.3 Demand for Affordable Units

Historically, the extent of homeownership has been related to household income level in the State of Hawaii. There is a direct relationship between income and ownership. While less than 25% of households earning under \$10,000 in 1979 were homeowners, more than 80% of those earning more than \$35,000 owned their own homes. Although homeownership is less widespread in lower income brackets, many lower-income households are owners. This reflects many elderly-headed households, whose lower incomes do not reflect long-term ownership of homes purchased at far lower price levels than currently prevail. On the other hand, a sizable minority of households with incomes seemingly sufficient to qualify for homeownership still rent. In 1979, almost half (45%) of households earning from \$20,000 to \$25,000 annually were renting. This reflects a shortage of moderately-priced housing, and also a possible lack of units suitable for families at moderate prices.

Using the State Housing Functional Plan's goal of 60% homeownership among resident households as a target, the demand for affordable housing in Hawaii County is determined by distributing the projected number of households by the year 2010 among income deciles according to historical patterns. The result is that homeownership is projected to decline in the County from 57.3% of resident households in 1980 to 38.3% in 2010. A total of 13,100 units of affordable housing will be needed in Hawaii County to enable the 60% goal to be attained. Of these units, approximately 7,860 will be needed in the Kealakehe market area. Using a similar analysis, it is projected that approximately 8,500 rental units will be needed in Hawaii County by 2010. Of these rental units, about 5,100 will be needed in the Kealakehe area.

2.4 Kealakehe Market Share

The number of homes of each type supportable at the project site is estimated on the basis of project demand in the market area and anticipated market conditions.

The Kealakehe project is estimated to capture from about 30% to 35% of affordable homeownership in the West Hawaii market area, and from about 15% to 25% of affordable rental unit demand. By the year 2010, total affordable housing unit support at Kealakehe is estimated at

about 2,490 to 3,260 units.

The Kealakehe project is intended to address a broad range of housing needs, including those which can be met with market-priced units. Market housing demand is based on the overall market area demand of 25,150 units discussed above, minus a mid-range estimate of affordable units demand of approximately 2,150 units. The result is a market area demand of about 23,000 units through the year 2010. It is estimated that the Kealakehe community could capture from 5% to 10% of this demand. The Kealakehe share of new market units could represent from 1,130 to 2,270 units.

In general, market support will increase over the 20-year development period, in line with projected regional growth. Annual absorption of units from 1990 to 1995 could reach from 180 to 270 units at average capture rates. The highest degree of potential market absorption, after initial development, could occur in the 2005 to 2010 period, when from 190 to 290 units could be absorbed annually. Over the entire development period, annual absorption could range from 160 to 250 units, depending upon the size of the development program.

Cumulative market support for Kealakehe housing units is projected to be from 220 to 290 affordable units and from 110 to 220 market units in 1990. Cumulative support could increase from 1,720 to about 2,590 units by the year 2000. Market support for the total project could further grow to a range of 3,620 units to 5,530 units by 2010.

2.5 Development Phasing

The Kealakehe Planned Community would be built out over a period of about 20 years, with all housing units completed by about 2010. The mix of housing developed (affordable ownership units, affordable rental units, and market units) should be relatively flexible in order to respond to market needs and opportunities. Housing development could proceed at higher levels to the year 1995, in order to accommodate growth in a period of strong employment expansion and to service pent-up demand for housing units in the market area. Market units could be phased in early in the Kealakehe development program so as to establish the community as an attractive location and to provide future move-up opportunities for home owners.

TABLE 5-6: RECOMMENDED ANNUAL PRODUCTION RATES

<u>Type of Unit</u>	<u>1990-1995</u>	<u>1996-2000</u>	<u>2001-2005</u>	<u>2006-2010</u>	<u>Average</u>	<u>Total</u>
Affordable:						
-Ownership units	90	90	70	40	70	1,400
-Rental units	60	35	45	70	50	1,000
Market:						
-Market units	100	60	60	90	80	1,600
TOTAL UNITS PER YEAR:	250	175	175	200	200	4,000

The phasing of units recommended in Table 5-6 differs somewhat from projected absorption rates discussed above. Absorption estimates were based on average capture rates. Recommended phasing produces absorption at the same average capture rate over the 20-year period, but with varying (rather than constant) capture rates in each of the four five-year intervals constituting the overall development program. Overall development would be highest in the first five years at 250 units per year, stabilize at about 175 units each year over the next ten years, and be completed with about 200 units in each of the last five years. Affordable ownership housing production would decline as a proportion of total development after the first five years, and would range from about 40 to 90 units annually. Affordable rental units would represent about 60 units per year through 1995, but would decline for the 1996-2005 period, when other rental projects in the market area are expected to be developed. Market units would range from about 60 to 100 units per year, with the highest production levels in the first and final five-year periods.

3. FISCAL IMPACTS

This section estimates the projected incremental revenues and costs which may accrue to the State of Hawaii and County of Hawaii from the development of the Kealakehe Planned Community. To assess the impact of this project, estimates of incremental revenues and costs were used to calculate a revenue-cost ratio. The approach consisted of:

- Identification of the major revenue and cost components, based on discussions with the planner and economist.

- Estimation of the dollar amounts that would be associated with each revenue and cost component.
- Comparison of the 1990 constant dollar total revenues and costs.

The objective of the analysis was to determine whether the additional public revenues from this project would be sufficient to offset the additional public costs incurred.

The purpose of this analysis was to provide information to HFDC concerning the fiscal impacts that may result from the estimated incremental revenues and costs and should not be construed to be a presentation of expected future results. Accordingly, this analysis may not be useful for other purposes. Even if the projected impacts occur, there will usually be differences between projected and actual results, because events and circumstances frequently do not occur as expected, and those differences may be material.

3.1 Information and Data

During the analysis, verbal and written information was obtained from planners, government officials, and other knowledgeable individuals. This information was accepted as accurate and no responsibility is assumed for information furnished by others and believed to be reliable. The right to make such adjustments to the values reported, as may be required by the consideration of additional or more reliable data that may become available is reserved, but there is no obligation to do so.

All project estimates are based on 1990 constant dollars. Actual results will vary, due to inflation and other economic conditions.

3.2 Revenue and Cost Variable Selection and Estimation

Only those variables which were expected to produce a significant impact on the State of Hawaii and County of Hawaii revenues and costs were analyzed in detail in this study. The major incremental sources of revenue for the State of Hawaii were the 4% general excise tax and individual income taxes from the development and operations of the golf course and commercial property. Secondary sources of revenue were from additional state income taxes from corporations developing and operating the project. The major source of incremental revenue for the County was from real property taxes on the residential units and commercial property. Other County revenues were assumed to increase proportionally based on current per capita levels.

Based on the Market Assessment for Kealakehe, it was assumed that most of the families who will reside in the proposed project are current residents of the area. Therefore, increases in public services will primarily be due to general population growth rather than the project. The major incremental costs for the State will be for new schools. Major capital costs for roads, water, sewer, electricity, and parks were included in the project Master Plan. These capital costs were allocated to the project and therefore were not included in the analysis. Other County costs were assumed to increase based on current per capita expenditure levels.

Revenues and costs were estimated for a twenty year period from 1992 to 2011, based on the Market Assessment.

3.3 Public Revenues

Major incremental public revenues were estimated for 5 major sources:

- General Excise Tax (G.E.T.)
- Corporate Income Tax
- Individual Income Tax
- Real Property Tax
- Other County Revenues

Each major source of revenue is described below with the rationale for its inclusion, the estimation procedure and any significant assumptions.

3.3.1 General Excise Tax

3.3.1.1 Development

Under the planned development concept, only the construction cost of the golf course, the commercial center, schools, and the churches/child care centers would be subject to the 4% G.E.T. These construction costs were estimated and assessed the 4% tax rate.

Using the authority provided in Chapter 201E-205 of the Hawaii Revised Statutes, the Housing Finance and Development Corporation (HFDC) intends to exempt the developers of the affordable and market housing, off-site infrastructure and on-site infrastructure from G.E.T.

3.3.1.2 Operations

The golf course operations and the various businesses operating within the proposed commercial center will be assessed general excise taxes under the Hawaii Revised Statutes. All businesses were assumed to engage in transactions taxed at the 4% rate.

Golf course revenues from greens fees, pro shop sales, snackbar sales and driving range charges were estimated at \$20 per round, based on the Market Assessment. The number of golf rounds were estimated in the Market Assessment at 54,000 - 90,000 rounds per year from 1995 to 2011. All revenues were assumed to be taxed at the 4% G.E.T. rate.

Gross revenues for the commercial center were based on an estimated \$ 231 per net leasable square foot. The commercial center was estimated to have 260,000 square feet of net leasable space. All revenues were assumed to be taxed at the 4% G.E.T. rate.

The churches/child care centers were assumed to be non-profit organizations exempt from the G.E.T. The rental projects developed in accordance with the HFDC Rental Housing System were also assumed to be exempt from the G.E.T.

3.3.1.3 Personal Consumption Expenditures

The construction of the residential units, commercial center, golf course and new elementary and high schools will create new jobs for the community. These new jobs will result in additional income that can be used to purchase various goods and services which would be subject to the 4% G.E.T.

The G.E.T. for these additional personal consumption expenditures was calculated by estimating the net take-home pay for the "average" family. Net take-home pay was calculated by using gross pay less payroll taxes. Gross pay was based on the 1989 County of Hawaii median income for the type of work adjusted to 1990 dollars. Payroll taxes were estimated at 20% of gross pay. From this net take-home pay, it was assumed that 60% of this amount would be spent on consumable goods, excluding mortgage/rental expenditures. This consumable goods amount was used as the base figure to calculate the revenue subject to general excise tax per family/household.

3.3.2 Corporate Income Tax - Operations

It was assumed that all businesses developing the residential units, commercial center, schools, and golf course would be corporations. The net income from the proposed housing development and other operations would be subject to corporate income tax under the Hawaii Revised Statutes (HRS), Chapter 235. The current corporate income tax rate specified in HRS 235-761(a) is 6.4%.

The income subject to State income tax for the housing development was based on the estimated profit per housing unit. The net income for the commercial center, schools and golf course were based on assumed profit margins of 4% of gross sales for the commercial center, 4% of construction cost for the schools and 5% of gross sales for the golf course. The taxable income was then subject to the 6.4% corporate income tax rate.

3.3.3 Individual Income Tax

Individual income taxes were estimated for income earned by the construction workers, employees of the elementary and high school, the golf course and businesses located in the commercial center. Using the gross income estimates for family incomes and an average of \$5,020 in exemptions and deductions per family/household, the taxable income of the "average" household was estimated. The income tax was then computed assuming all employees file a married and joint return.

3.3.4 Real Property Tax

The 3,306 for-sale units will provide additional real property tax revenue for the County of Hawaii. The rental projects consisting of 852 units will be exempt from real property tax. It was assumed that all for-sale dwelling units will be fee simple. Based on the Socio-Economic Study, it was assumed that all affordable units and 50% of the market units will be owner-occupied by Hawaii residents applying for their homeowner's exemption of \$20,000. The remaining 50% of the market units were assumed to be owned by non-residents not qualifying for a homeowner's exemption. The average unit sales prices were adjusted as appropriate for comparable market costs and the buy back provision. The estimated assessed value was taxed at \$8.50 for each \$1,000 value of property and land.

The commercial property assessment was based on the cost of land, improvements and construction. The total value was then assessed at \$8.50 per \$1,000 value of property and land.

The golf course will be owned by the county, therefore, no real property taxes will be incurred.

3.3.5 Other County Revenues

Other incremental County revenues were based on current per capita levels for the following items:

- Real property tax - other (industrial, agricultural, conservation, hotel/resort and unimproved residential land and improvements)
- Fuel and public utility franchise tax

The per capita levels were multiplied by the cumulative number of new housing units produced to estimate the incremental annual revenues.

3.4 Incremental Public Cost

Major incremental public costs were estimated for 2 major areas:

- Education
- Other County Costs

Major infrastructure costs for roads, water, sewer, electricity, and parks were included in the project Master Plan. These capital costs were allocated to the project and therefore were not included in this analysis. A description of the incremental costs, the rationale for inclusion, the estimation procedure and significant assumptions are provided below.

3.4.1 Education

The Department of Education estimates that the change or shift in population will increase public education costs for teachers and schools. The Department of Education Facilities Branch estimates that the project will require one new elementary school and one new high school plus additional positions to meet the increased student population. The Facilities Branch estimates that an additional 68 positions will be needed to meet this increase. These new positions were assumed to be added as the population increases at the project.

The capital costs of building and equipping the new elementary school and high school were estimated at \$65 million by the Department of Education. Construction was assumed to be

completed in 1995.

3.4.2 Other County Costs

Other incremental County costs were based on current per capita levels for the following items:

- General government
- Public Safety
- Highways
- Sanitation and waste removal
- Health, education and welfare
- Culture and recreation
- Pension and retirement
- Health fund
- Miscellaneous

The current per capita levels were multiplied by the cumulative number of new housing units produced to estimate the incremental annual costs.

3.5 Results of Analysis

For the Kealakehe project, a revenue-cost ratio of 1.03 to 1 was attained. This indicates that an additional \$1.03 of public revenue benefits was estimated to accrue to the State of Hawaii and the County of Hawaii for every dollar of public cost caused by the proposed development. These revenues and costs are summarized in Table 5-7.

As a standard for comparison, the U.S. Army Corps of Engineers recommends proceeding with a project if the revenue-cost ratio is unity (1.0) or greater.

Based on this analysis, the estimated combined fiscal impacts on the State of Hawaii and County of Hawaii appear to be favorable and should result in a net public benefit if the project is developed.

TABLE 5-7: PUBLIC REVENUES AND COSTS

	Schedule	County FY90 Budget	FY 1992-2011 Incremental Revenues and Costs		Total
			County	State	
Public Operating Revenues:					
General Excise Tax	A			39,362,781	39,362,781
Corporate Income Tax	B			3,472,976	3,472,976
Individual Income Tax	C			29,655,431	29,655,431
Real Property Tax					
Residential, Apt., Comm'l	D	24,022,000	43,573,355		43,573,355
Other County Revenue	E				
Real Property Tax-Other		26,923,000	27,226,012		27,226,012
Fuel & Utility Taxes		6,419,563	6,742,650		6,742,650
Licenses & Permits		4,290,770	4,480,875		4,480,875
Money & Property ¹		2,714,800			
Intergovernmental Revenues		20,830,954	21,762,136		21,762,136
Charges for Services		2,368,160	2,474,027		2,474,027
Other Revenues		5,059,278	5,285,474		5,285,474
Fund Balance, Previous Year		3,374,016			
Total Public Operating Revenues		96,002,541	111,544,528	72,491,188	184,035,716
Public Operating Costs					
General Government	F-2	14,332,164	14,978,925		14,978,925
Public Safety		34,075,014	35,590,950		35,590,950
Highways		6,738,874	7,041,375		7,041,375
Sanitation & Waste Removal		4,237,651	4,438,200		4,438,200
Health, Education & Welfare	F-1	3,907,164	4,096,800	34,468,720	38,565,520
Culture & Recreation		7,299,374	7,638,825		7,638,825
Debt Service ¹		8,357,492			
Pension & Retirement		2,592,182	2,688,525		2,688,525
Health Fund		3,314,000	3,456,675		3,456,675
Miscellaneous		11,148,626	11,650,275		11,650,275
Total Public Operating Costs		96,002,541	91,580,720	34,468,720	126,049,270
Net Operating Income		0	19,963,978	38,022,468	57,986,446
Capital Costs (not incl. in Master Plan funding)					
Elementary School ²				16,000,000	16,000,000
High School ³				36,000,000	36,000,000
Total Capital Costs				52,000,000	52,000,000
Net Incremental Revenues/(Costs)			19,963,978	(13,977,532)	5,986,446
Revenue/Cost Ratio			1.22	0.84	1.03

¹ Not included in incremental revenue and cost estimates

² Pro-rata portion of \$20 million construction cost financed over 20 years

³ Pro-rata portion of \$45 million construction cost financed over 20 years

CHAPTER VI

CHAPTER VI
INFRASTRUCTURE AND PUBLIC FACILITIES

1 GROUND TRANSPORTATION FACILITIES

Following is a summary of the traffic impact assessment prepared for the proposed project in June 1990. The report is included in its entirety in the appendix to this document.

1.1 Existing Roadway Conditions

1.1.1 Highway Facilities

The major roadways in the North Kona region are Queen Kaahumanu Highway, Palani Road, and Mamalahoa Highway (see Figure 6-1).

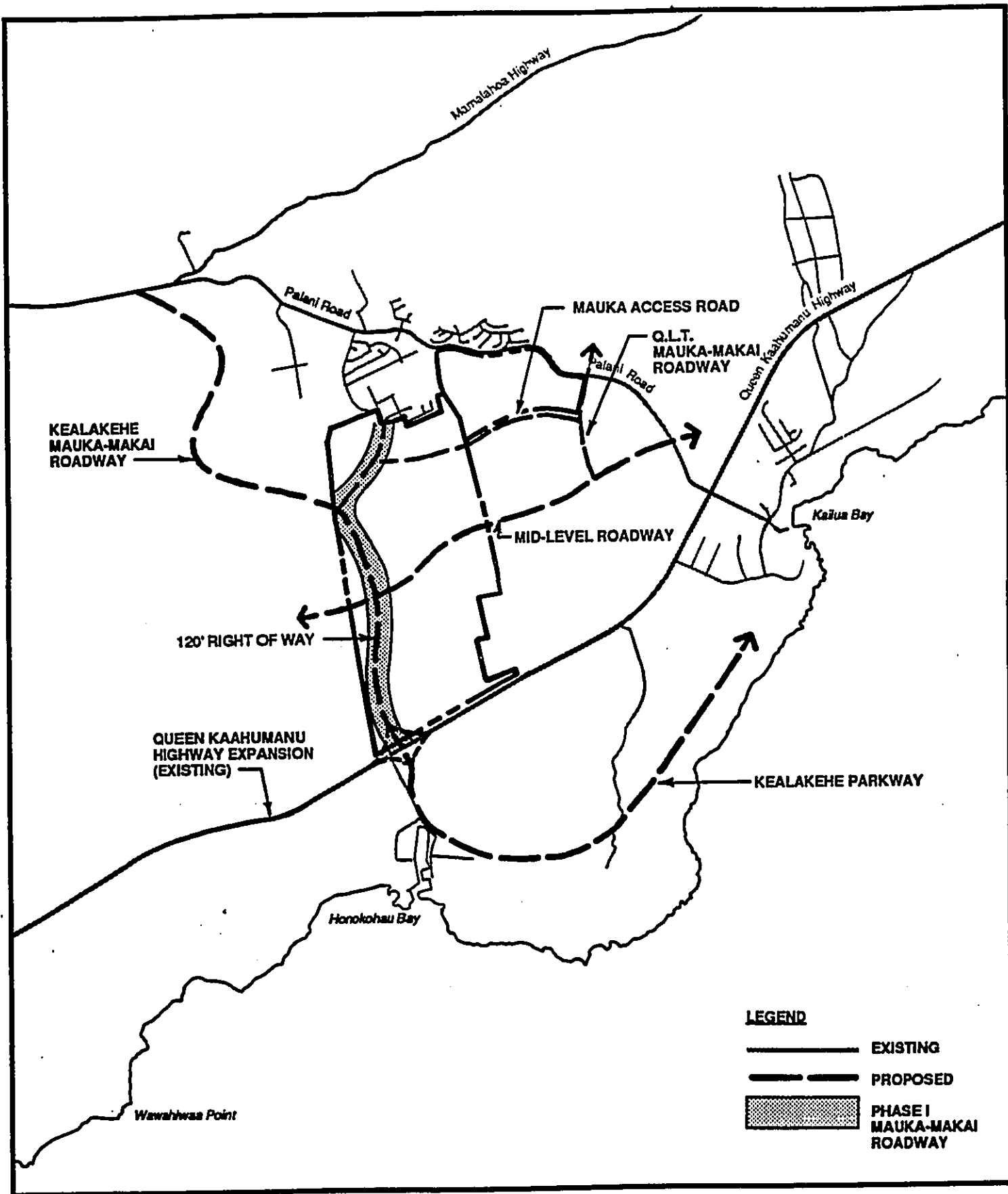
Queen Kaahumanu Highway is the main highway in the Kona region running in a north-south direction about a mile inland from the coastline between Kawaihae and Kailua-Kona. It is a State maintained two-lane undivided highway with a 24-foot wide pavement and variable speed limits of 35 to 55 mph. The major intersections along Queen Kaahumanu are channelized with left-turn storage lanes, deceleration and acceleration lanes. Queen Kaahumanu Highway forms a 4-way signalized intersection with Palani Road at the main entrance of Kailua-Kona. The posted speed limit is reduced to 35 mph near this intersection.

Mamalahoa Highway is a two-lane roadway running in a north-south direction parallel to Queen Kaahumanu Highway and serves the higher elevation areas between Waimea and North Kona. This State highway was built over a former horse-and-buggy trail and is a winding substandard roadway with a pavement width varying between 18 and 24 feet.

Palani Road is a two-lane roadway running in a northeast direction from Kuakini Highway on the coastline of Kailua Village mauka to Mamalahoa Highway. It serves as the major mauka-makai connector road between Queen Kaahumanu Highway and Mamalahoa Highway in the North Kona region. Palani Road is a Hawaii County maintained road with 12-foot wide lanes and a posted speed limit of 25 mph. Palani Road currently serves as the main vehicular access road for the existing Kealakehe and surrounding residential subdivision.

1.1.2 Street Facilities

Kealakea Street and Ulua'oa Street are relatively new two-lane roadways serving the



LEGEND

————— EXISTING

- - - - - PROPOSED

▨ PHASE I MAUKA-MAKAI ROADWAY

0 1000 2000 4000

SCALE IN FEET

Prepared By: BELT COLLINS AND ASSOCIATES • JUNE 1990



Figure 6-1
REGIONAL ROADWAY NETWORK

Kealakehe subdivision and are maintained by Hawaii County. Both streets are located makai of Palani Road and form unsignalized T-intersections with it. They both have speed limits of 25 mph. Kealakehe Street has 18-foot wide paved lanes and generally runs in a north-south direction, providing access to Kealakehe Intermediate and Elementary Schools. Ulu'a'oa Street generally runs in a mauka-makai direction linking Kealakehe Street to Palani Road. Ulu'a'oa Street has 16-foot wide paved lanes.

Kealakehe Parkway Road is a two-lane roadway running in a mauka-makai direction with 12-foot wide paved lanes. It forms an unsignalized T-intersection with Queen Kaahumanu Highway providing access to Honokohau Harbor. The posted speed limit is 25 mph.

1.1.3 Traffic Conditions

A review of State DOT 1988 vehicular traffic counts for Queen Kaahumanu Highway and Palani Road near the project site indicates that the peak hours along Queen Kaahumanu Highway and Palani Road generally occur between 7:00 am and 9:00 am (A.M. Peak) and between 3:30 pm and 5:30 pm (P.M. Peak). Manual traffic counts were taken for the intersections of Queen Kaahumanu Highway with Palani Road, Queen Kaahumanu Highway with Kealakehe Parkway Road, Palani Road with Kealakehe Street, and Palani Road with Ulu'a'oa Street on January 16 and 17, 1990. Manual counts were also taken on May 15 and 16, 1990 at the intersection of Mamalahoa Highway and Palani Road, and on May 2 and 3, 1990 at the intersection of Queen Kaahumanu Highway with Kaiwi Street. These counts provide the baseline condition with which future estimated traffic volumes are compared. Figures 6-2 and 6-3 show present volumes and movements of vehicular traffic at the study intersections. Figure 6-4 presents the State DOT's 1988 vehicular 24-hour traffic counts. Generally, traffic levels along Queen Kaahumanu Highway reach about 12,000 vehicles during a 24-hour period. Higher volumes approaching 13,450 vehicles are experienced on Palani Road between Queen Kaahumanu Highway and Kealakehe Street. Table 6-1 summarizes peak period traffic counts. As shown, nearly 800 vehicles utilize Palani Road during the peak periods. On Queen Kaahumanu Highway, the A.M. peak traffic totals about 900 vehicles and the P.M. peak totals over 1,300 vehicles. On Mamalahoa Highway, A.M. peak traffic totals just over 700 vehicles, while P.M. peak traffic is slightly more at about 740 vehicles. At the intersection of Queen Kaahumanu Highway and Palani Road, between 600 and 670 vehicles move through the intersection on each roadway during the A.M. peak. At the P.M. peak, traffic increases to between 650 and 800 vehicles on each roadway.

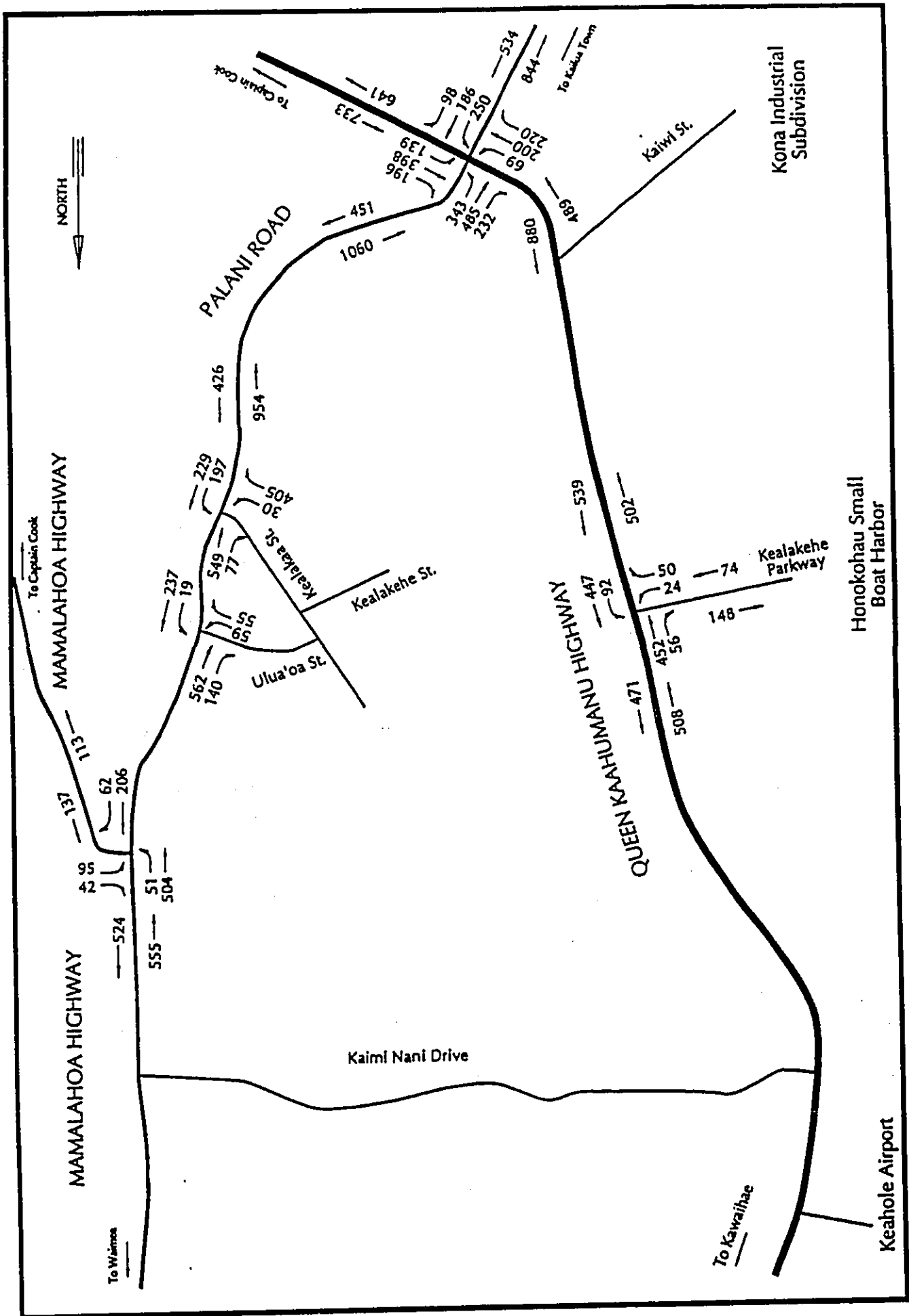


Figure 6-2
EXISTING MORNING PEAK HOUR VOLUMES

Source: PACIFIC PLANNING & ENGINEERING, INC.
TRAFFIC IMPACT ASSESSMENT REPORT
Date: JUNE 1990
Prepared by: BELT COLLINS & ASSOCIATES

KEALAKEHE PLANNED COMMUNITY ENVIRONMENTAL IMPACT STATEMENT

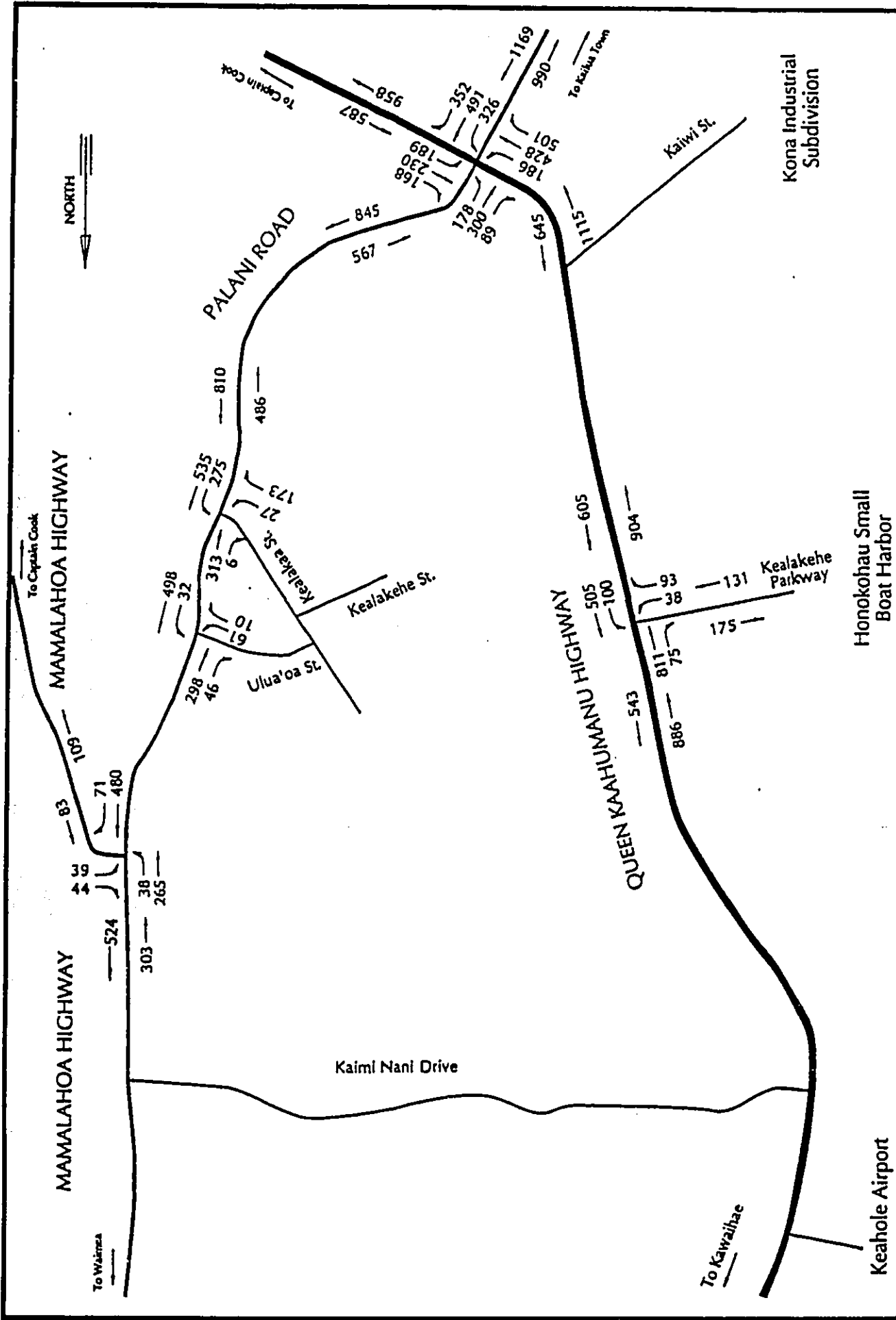


Figure 6-3
EXISTING AFTERNOON PEAK HOUR VOLUMES

Source: PACIFIC PLANNING & ENGINEERING, INC.
TRAFFIC IMPACT ASSESSMENT REPORT
Date: JUNE 1990
Prepared by: BELT COLLINS & ASSOCIATES

KEALAKEHE PLANNED COMMUNITY
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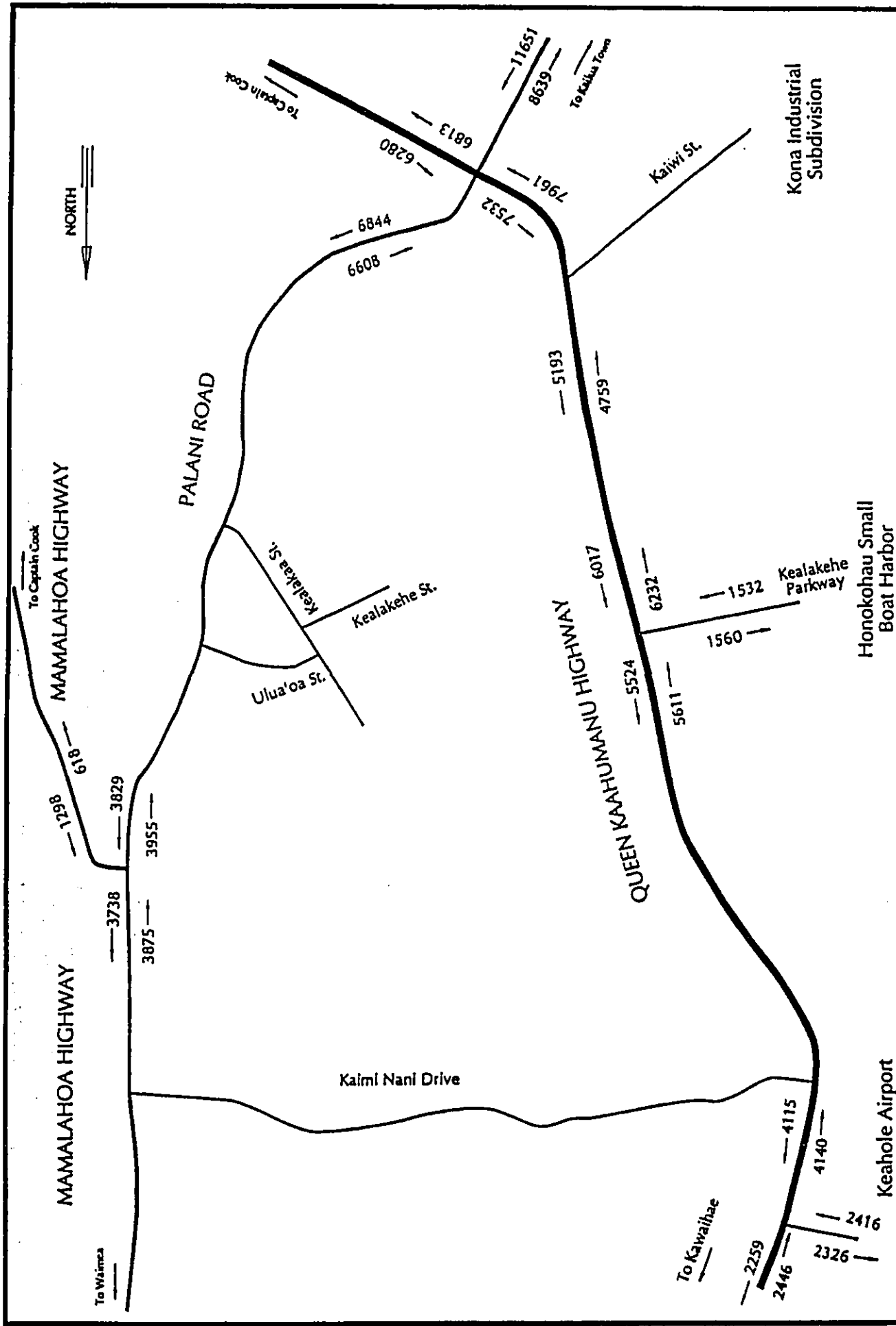


Figure 6-4
EXISTING 24-HOUR TRAFFIC VOLUMES

Source: PACIFIC PLANNING & ENGINEERING, INC.
TRAFFIC IMPACT ASSESSMENT REPORT
Date: JUNE 1990
Prepared by: BELT COLLINS & ASSOCIATES

KEALAKEHE PLANNED COMMUNITY ENVIRONMENTAL IMPACT STATEMENT

TABLE 6-1: PEAK PERIOD TRAFFIC COUNTS

Location: Palani Road and Ulua'oa Street

<u>Time</u>	<u>Palani Road</u>				<u>Ulua'oa Street</u>	
	<u>Northbound</u>	<u>Southbound</u>		<u>Eastbound</u>		
	<u>LT</u>	<u>TH</u>	<u>TH</u>	<u>RT</u>	<u>LT</u>	<u>RT</u>
A.M. Peak Totals	19	237	562	140	59	55
P.M. Peak Totals	32	498	298	46	61	10

Location: Palani Road and Kealakaa Street

<u>Time</u>	<u>Palani Road</u>				<u>Kealakaa Street</u>	
	<u>Northbound</u>	<u>Southbound</u>		<u>Eastbound</u>		
	<u>LT</u>	<u>TH</u>	<u>TH</u>	<u>RT</u>	<u>LT</u>	<u>RT</u>
A.M. Peak Totals	197	229	549	77	30	405
P.M. Peak Totals	275	535	313	6	27	173

Location: Queen Kaahumanu Highway and Kealakehe Parkway Road

<u>Time</u>	<u>Queen Kaahumanu Highway</u>				<u>Kealakehe Parkway Road</u>	
	<u>Northbound</u>		<u>Southbound</u>		<u>Eastbound</u>	
	<u>LT</u>	<u>TH</u>	<u>TH</u>	<u>RT</u>	<u>LT</u>	<u>RT</u>
A.M. Peak Totals	92	447	452	56	24	50
P.M. Peak Totals	100	505	811	75	38	93

Location: Queen Kaahumanu Highway and Palani Road

<u>Time</u>	<u>Queen Kaahumanu Highway</u>						<u>Palani Road</u>					
	<u>Northbound</u>			<u>Southbound</u>			<u>Eastbound</u>			<u>Westbound</u>		
	<u>LT</u>	<u>TH</u>	<u>RH</u>	<u>LT</u>	<u>TH</u>	<u>RT</u>	<u>LT</u>	<u>TH</u>	<u>RT</u>	<u>LT</u>	<u>TH</u>	<u>RT</u>
A.M. Peak Totals	139	398	196	69	200	220	343	485	232	250	186	98
P.M. Peak Totals	189	230	168	186	428	501	178	300	89	326	491	352

Location: Mamalahoa Highway and Palani Road

<u>Time</u>	<u>Mamalahoa Highway</u>			<u>Palani Road</u>			<u>Mamalahoa Highway</u>			
	<u>Southbound</u>		<u>RT</u>	<u>Northbound</u>		<u>RT</u>	<u>Eastbound</u>		<u>Westbound</u>	
	<u>LT</u>	<u>TH</u>	<u>RT</u>	<u>TH</u>	<u>RT</u>	<u>LT</u>	<u>RT</u>	<u>LT</u>	<u>RT</u>	
A.M. Peak Totals	51	504		206	62			95	42	
P.M. Peak Totals	38	265		480	71	39	44			

An analysis was made of the conditions for vehicles turning left or right from the various roadways using the methodology in the Highway Capacity Manual, which rates the expected delays for vehicles between Level of Service "A" (little delay) to "F" (extreme delay meriting mitigative actions). At the intersection of Queen Kaahumanu Highway with Kealakehe Parkway Road, drivers experience less delays during the morning peak hour than during the afternoon peak hour. While northbound drivers turning left from Queen Kaahumanu onto Kealakehe Parkway Road experience little or no delays (LOS A) during the morning peak hour, they experience LOS C, or average delays, during the afternoon peak hour. The same situation holds true for drivers turning right from Kealakehe Parkway Road onto Queen Kaahumanu Highway. Vehicles turning left onto Queen Kaahumanu Highway from Kealakehe Parkway Road experience long delays (LOS D) during the morning peak hour and very long delays during the afternoon peak hour.

The intersection of Palani Road with Kealakaa Street operates with short delays to long delays during the morning peak hour. Vehicles turning left from Palani Road experience short delays (LOS B) while vehicles exiting Kealakaa Street experience long delays (LOS D). During the afternoon peak hour, vehicles turning left onto Palani Road continue to experience LOS D (long delays) while vehicles turning right from Kealakaa Street onto Palani Road and vehicles turning left into Kealakaa Street experience LOS A (little or no delay).

At the intersection of Palani Road with Ulua'oa Street, vehicles turning left into Ulua'oa Street and vehicles turning right onto Palani Road experience little or no delay (LOS A) during both the morning and afternoon peak hours. Drivers turning left from Ulua'oa Street experience average delays (LOS C) during the morning peak hour and experience long delays (LOS D) during the afternoon peak hour.

The intersection of Palani Road with Mamalahoa Highway experiences from little or no delays to long delays. During the morning peak hour, drivers turning left from Mamalahoa Highway experience long delay (LOS D) while drivers for the other movements experience little or no delay (LOS A). During the afternoon peak hour, drivers turning left from Mamalahoa Highway experience average delays (LOS C) while the other movements continue to experience little or no delay (LOS A).

At the signalized intersection of Queen Kaahumanu Highway and Palani Road, the roadways are operating at capacity during the morning peak hour with extremely long delays (LOS E). During the afternoon peak hour, the intersection operates at capacity with LOS E along the Queen Kaahumanu Highway approaches and near-gridlock (LOS F) along the Palani Road approaches.

Traffic conditions along Queen Kaahumanu Highway between Kealakehe Parkway Road and Palani Road reach LOS D during the morning peak period and LOS E during the afternoon peak. At LOS E, passing is virtually impossible. On Palani Road, between Queen Kaahumanu Highway and Ulua'oa Street, traffic demand exceeds roadway capacity (LOS F) during the morning and afternoon peak hours. Between Ulua'oa Street and Mamalahoa Highway traffic conditions along Palani Road are characterized by LOS E.

1.2 Probable Impacts

Based upon projections provided by the County of Hawaii, South Kohala and North Kona will experience dramatic increases in population and employment, resulting in corresponding increases in traffic. The traffic analysis of impacts is based upon the following County projections:

TABLE 6-2: HAWAII COUNTY POPULATION AND EMPLOYMENT FORECASTS

District	-----POPULATION-----				-----EMPLOYMENT-----			
	1987	2010	Growth	% Growth	1987	2010	Growth	% Growth
South Kohala	7,097	22,300	15,203	214%	4,246	15,333	11,087	261%
North Kona	20,503	52,620	32,117	157%	13,276	26,189	12,913	97%
South Kona	7,293	10,660	3,367	46%	302	4,459	4,157	1376%

Note: While these figures differ slightly from the market study forecasts presented in Table 5-4, they are generally consistent and are presented here because they represent the basis for Hawaii County traffic planning.

The South Kohala, North Kona, and South Kona districts will have the most impact on the planned community due to their close proximity to the project site and because of their forecasted large growth. The growth in the West Hawaii region will create a tendency for more people to travel between the South Kohala and Kona Districts.

1.2.1 Methodology

Computer modeling conducted for this traffic analysis forecasts the number of vehicular trips generated by this population growth and assigns them to the existing and planned roadways based upon the distribution of existing proposed residential and employment centers. The output of the model provides a 2010 forecast of future traffic conditions without the proposed project.

The residential and non-residential land uses included in the proposed project are similarly converted to vehicular trips and assigned to the existing and planned roadways. This output provides a 2010 forecast of future traffic generated by the proposed project at build-out. These volumes are then added to the future forecast discussed above to determine future traffic conditions with the proposed project. Thus, the levels of traffic impact generated by the proposed project are determined by comparing the traffic volumes forecasted for the year 2010 without the project with the 2010 forecast that includes the project. Table 6-3 presents a summary of the turning movements at key intersections in the project area derived from the computer model.

Once traffic volume is forecast, it is compared to the design capacity of the roadway network. The results of this comparison are presented in Table 6-4, which reflects the level of service with and without the project resulting from the turning movements presented in Table 6-3. Traffic impacts resulting from the project were measured by determining the improvements required to accommodate future traffic without the project for the year 2010 and then determining the additional improvements required to accommodate traffic with the project. The additional improvements are a measure of traffic impact.

1.2.2 2010 Roadway Network Without the Project

Even without the project, extensive roadway improvements will be necessary to handle the projected future traffic from other planned developments in the West Hawaii area. The following improvements may be required based on the analysis of forecasted traffic without the project in the year 2010.

- Widen Queen Kaahumanu Highway to 4 lanes between Palani Road and the Keahole Airport
- Widen Palani Road to 4 lanes between Mamalahoa Highway and Queen Kaahumanu Highway
- Widen Mamalahoa Highway to 4 lanes between Kaimi Nani Street and Palani Road
- Signalize the intersection of Mamalahoa Highway and Palani Road when warranted
- Provide a grade separated interchange at the intersection of Queen Kaahumanu Highway and Palani Road
- Signalize the intersection of Queen Kaahumanu Highway and the Honokohau Harbor Access Road until a frontage road is in place to connect to the proposed Kealakehe Parkway (this is to conform to the State DOT policy regarding uninterrupted traffic flow condition along Queen Kaahumanu Highway)

Analysis of the projected traffic in 2010 indicates substantial increases over the existing levels. Table 6-4 assumes no major improvements to the existing intersections, but does include an eastbound roadway through the project area that intersects (unsignalized) with Queen Kaahumanu Highway. The results indicate that for 7 of the 10 applicable turning movements at key intersections, if no signalization or improvements are provided, level of service will be F by 2010 without the project. Inclusion of the project without intersection improvements results in 12 of the 18 turning movements experiencing level of service F and only four turning movements demonstrating some improvement.

Additional results of the analysis indicate that without the project, drivers attempting left-turns from or onto Palani Road from Kealakaa Street or Ulua'oa Street will experience very long delays during both morning and afternoon peak hours if the intersections are not signalized. With the project, drivers attempting left-turns will continue to experience very long delays.

As with the intersections of Palani Road with Kealakaa and Ulua'oa Street, drivers attempting left-turns from the project's proposed southern access road (Waena Drive) will experience very long delays during both morning and afternoon peak hours.

The impacts of traffic, with and without the project, are further demonstrated in Table 6-5. Without improvements to the major roadway intersections by 2010, Queen Kaahumanu Highway at Kealakehe Parkway Road will be operating over capacity with or without the project.

Based on the figures presented in Table 6-3, traffic volumes in 2010 will exceed 1990 existing traffic volumes by 149% during the A.M. peak hour and 121% during the P.M. peak hour, if the proposed project is not built. If the the project is built, A.M. peak hour traffic volumes will increase an additional 20% over the 2010 volume without the project, and P.M. peak hour traffic volumes will increase 10% over the 2010 volume without the project.

The peak hour volumes forecast without the project are depicted in Figure 6-6 (A.M.peak) and Figure 6-7 (P.M.peak). The peak hour volumes with the project are depicted in Figure 6-8 (A.M.peak) and Figure 6-9 (P.M.peak).

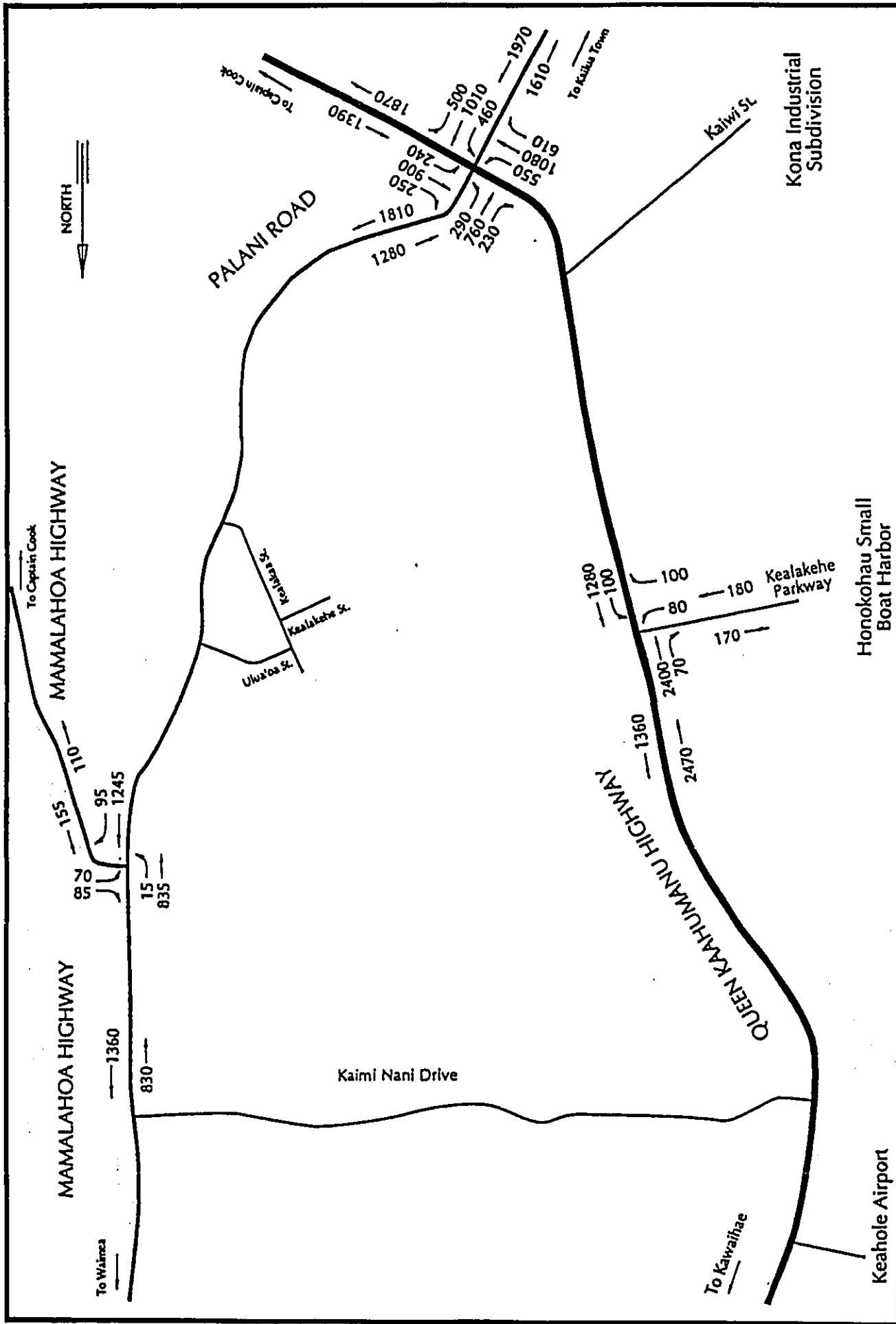


Figure 6-6
 2010 AFTERNOON PEAK HOUR VOLUMES
 WITHOUT PROJECT

Source: PACIFIC PLANNING & ENGINEERING, INC.
 TRAFFIC IMPACT ASSESSMENT REPORT
 Date: JUNE 1990
 Prepared by: BELT COLLINS & ASSOCIATES

**KEALAKEHE PLANNED COMMUNITY
 ENVIRONMENTAL IMPACT STATEMENT**

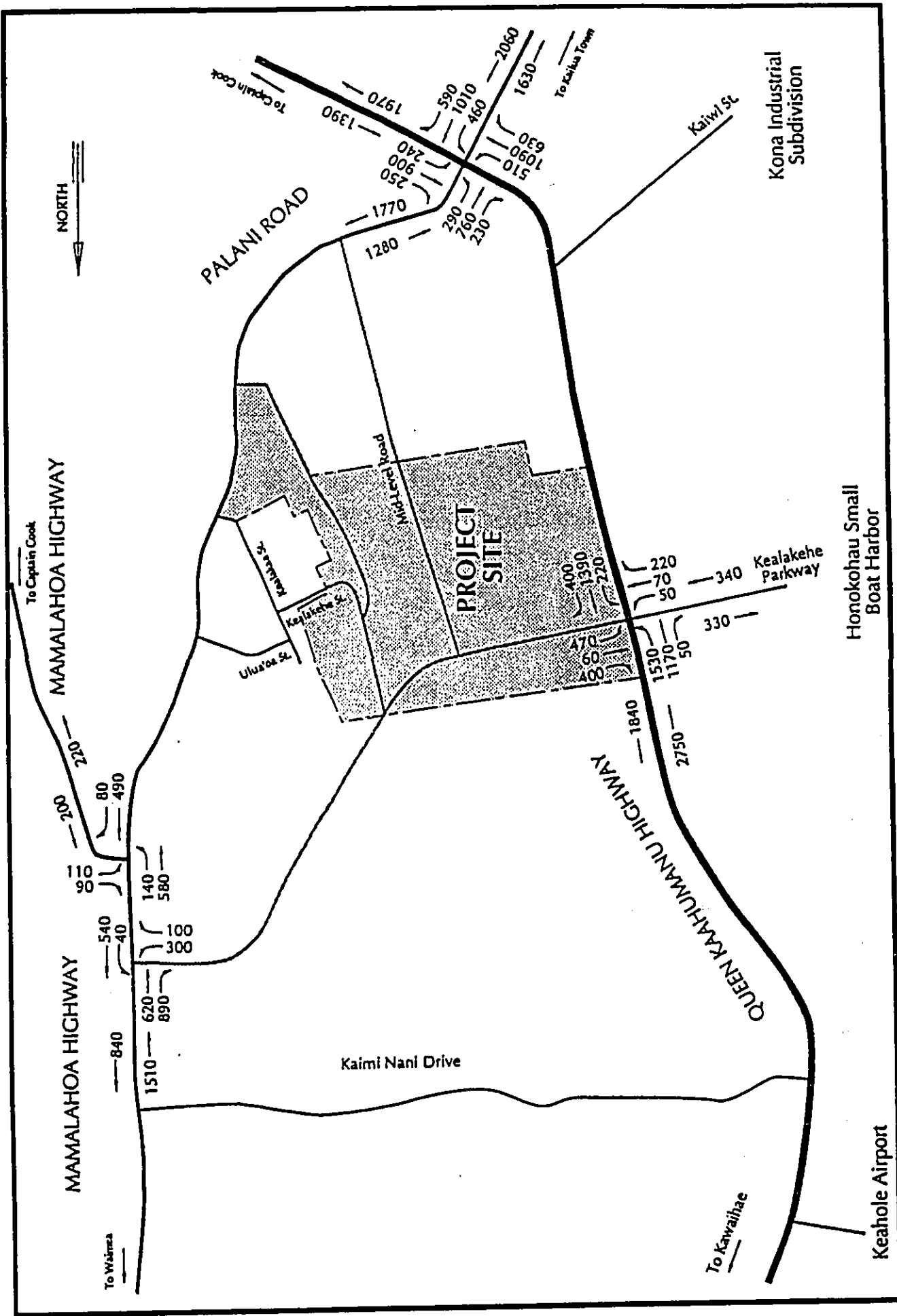


Figure 6-8
2010 AFTERNOON PEAK HOUR VOLUMES
WITH PROJECT

Source: PACIFIC PLANNING & ENGINEERING, INC.
TRAFFIC IMPACT ASSESSMENT REPORT
Date: JUNE 1990
Prepared by: BELT COLLINS & ASSOCIATES

**KEALAKEHE PLANNED COMMUNITY
ENVIRONMENTAL IMPACT STATEMENT**

TABLE 6-3: FORECAST TRAFFIC IMPACTS

Turning Movements	1990 Existing Traffic		2010 Without Project		2010 With Project		
	A.M.Peak	P.M.Peak	A.M.Peak	P.M.Peak	A.M.Peak	P.M.Peak	
<i>Queen Kaahumanu at Kealakehe Parkway Road</i>							
(Queen Kaahumanu Highway):							
Northbound	LT	92	100	200	100	220	220
	TH	447	505	2010	1280	1690	1390
	RT	N/A	N/A	N/A	N/A	500	400
Southbound	LT	N/A	N/A	N/A	N/A	930	1530
	TH	452	811	1350	2400	910	1170
	RT	56	75	100	70	50	50
(Kealakehe Parkway Road):							
Eastbound (harbor road)	LT	24	38	70	80	50	50
	TH	N/A	N/A	N/A	N/A	70	70
	RT	50	93	120	100	220	220
Westbound (project road)	LT	N/A	N/A	N/A	N/A	470	620
	HT	N/A	N/A	N/A	N/A	60	60
	RT	N/A	N/A	N/A	N/A	1010	400
<i>Queen Kaahumanu Highway at Palani Road</i>							
(Queen Kaahumanu Highway):							
Northbound	LT	139	189	310	240	230	240
	TH	398	230	1250	900	1370	900
	RT	196	168	320	250	610	250
Southbound	LT	69	186	150	550	70	510
	TH	200	428	820	1080	610	1090
	RT	220	501	390	610	290	630
(Palani Road):							
Eastbound	LT	250	326	550	460	670	460
	TH	186	491	510	1010	530	1010
	RT	98	352	210	500	210	590
Westbound	LT	343	178	510	290	610	290
	TH	485	300	1230	760	1640	760
	RT	232	80	290	230	100	230
<i>Palani Road at Mamalahoa Highway</i>							
(Palani Road):							
Northbound	TH	206	480	710	1245	500	640
	RT	62	71	40	95	80	80
Southbound	LT	51	38	95	15	140	140
	TH	504	265	1325	835	560	440
(Mamalahoa Highway):							
Westbound	LT	95	39	75	70	100	110
	RT	42	44	60	85	95	90
TOTAL TURNING MOVEMENTS:		4,897	5,988	12,200	13,255	14,595	14,640

N/A - Not Applicable

TABLE 6-4: FORECAST LEVELS OF SERVICE FOR 2010

<u>Intersection</u>		<u>2010 Without Project</u>		<u>2010 With Project</u>	
		<u>A.M.Peak</u>	<u>P.M.Peak</u>	<u>A.M.Peak</u>	<u>P.M.Peak</u>
<i>Queen Kaahumanu at Kealakehe Parkway Road</i>					
Queen Kaahumanu Highway:					
Northbound	LT	F	F	D	E
Southbound	LT	N/A	N/A	F	F
Kealakehe Parkway Road:					
Eastbound (harbor road)	LT	F	F	F	F
	TH	N/A	N/A	F	F
	RT	F	F	F	F
Westbound (project road)	LT	N/A	N/A	F	F
	HT	N/A	N/A	F	F
	RT	N/A	N/A	E	F
<i>Queen Kaahumanu Highway at Palani Road</i>					
Queen Kaahumanu Highway:					
Northbound		F	F	F	F
Southbound		E	F	F	F
Palani Road:					
Eastbound		F	F	F	F
Westbound		F	F	F	F
<i>Palani Road at Mamalahoa Highway</i>					
Palani Road:					
Northbound	LT	B	C	B	A
Mamalahoa Highway:					
Westbound	LT	F	F	F	F
	RT	B	D	B	A
<u>N/A - Not Applicable</u>					

TABLE 6-5: CRITICAL TRAFFIC VOLUMES & CAPACITY LEVELS

<u>Intersection</u>	<u>2010 Without Project</u>		<u>-----2010 With Project-----</u>			
	<u>Morning</u>	<u>Afternoon</u>	<u>Morning</u>	<u>% Change</u>	<u>Afternoon</u>	<u>% Change</u>
Queen Kaahumanu at Kealakehe Parkway Road:						
Critical Volume	3,080	2,650	3,160	+2.6%	3,610	+36%
Capacity Level	Over	Over	Over		Over	
Palani Road at Mamalahoa Highway:						
Critical Volume	1,400	1,330	850	-39%	740	-44%
Capacity Level	Near	Near	Under		Under	

1.3 Mitigation Measures

Highway capacity, intersection capacity, and level-of-service (LOS) were used to determine the needed improvements without and with the project. Highways were sized (number of lanes) using LOS D as the minimum acceptable LOS. Intersections were sized to operate under capacity when signalized. Unsignalized intersections were signalized if minor streets encountered extreme delays. At major intersections where signalization was deemed unacceptable, grade separated interchanges were considered.

The Kealakehe Planned Community, when completed in 2010, will have a major impact on Queen Kaahumanu Highway and Palani Road. However, a much greater impact will arise despite the project. Even without the project in 2010, Queen Kaahumanu Highway, Mamalahoa Highway, and Palani Road will be over their capacities to handle predicted traffic demand with drivers encountering intersection congestion and delays. Queen Kaahumanu Highway will need to be widened to four lanes between Palani Road and Keahole Airport. Palani Road will also need to be widened to four lanes, as well as Mamalahoa Highway between Palani Road and Kaimi Nani Drive.

The signalized intersection of Palani Road and Mamalahoa Highway will also be over capacity and will need to be either vastly widened or converted to a grade separated interchange. The intersection of Palani Road and Mamalahoa Highway will need to be signalized when warranted. The minor intersections along Palani Road that access the existing subdivision, such as Kealakaa Street, will also need to be signalized even without the project.

It is assumed that a four-lane, mauka-makai Kealakehe Parkway running between Queen

Kaahumanu Highway and Mamalahoa Highway would be constructed along with the project's development as a means of relieving projected traffic congestion along Palani Road. It would serve as the major access road to both Queen Kaahumanu Highway and Mamalahoa Highway for the Kealakehe community. Therefore, with the construction of Kealakehe Parkway, traffic along Palani Road will not be significantly affected by the project because of assumed driver choice of the routes' relative travel time.

Due to the impact of the traffic volumes of the proposed project, the following actions are deemed necessary to further mitigate adverse impacts upon the regional network:

- 1) A grade-separated interchange at the intersection of Queen Kaahumanu Highway and Kealakehe Parkway due to traffic demand and the requirement of the State Department of Transportation for non-interrupted flow along the highway.
- 2) A signalized intersection at Mamalahoa Highway and Kealakehe Parkway.
- 3) The Kealakehe Parkway extension between Queen Kaahumanu Highway and Mamalahoa Highway should be constructed as a four-lane roadway. Depending upon the number of intersections accessing the project, additional improvements such as the following may be necessary:
 - a. Signalize the intersections along Kealakehe Parkway when warranted; and
 - b. Provide auxiliary lanes (primarily left turn storage lanes) along Kealakehe Parkway and minor streets when warranted.

2 AIR TRANSPORTATION FACILITIES

2.1 Existing Conditions

Keahole Airport, owned and operated by the State Department of Transportation, is located approximately four and a half miles north of the project site. It provides air transportation service to the entire western half of the Big Island. In 1987, operations (arrivals or departures) at Keahole Airport totalled 67,497, down 13,970 operations from 1986. Forty-three percent of Keahole's 1987 operations were air carriers, twenty-six percent were air taxi operations (interisland carriers), sixteen percent were general aviation operations, and the remaining fifteen percent were military operations. In 1987, 815,185 passengers departed from Keahole, 224,391 more departures than from General Lyman field in Hilo. During the same period, 791,094 passengers arrived at Keahole, 179,224 more arrivals than Hilo. However, Keahole handled only 8,347 tons of cargo, as opposed to over 21,175 tons of cargo handled at General Lyman Field. Proposed development

in West Hawaii is projected to result in a significant increase in operations, passenger arrivals and departures and cargo handling at Keahole Airport. The State Department of Transportation is presently proposing to expand airport facilities, including extension of the runway, to meet projected increases in demand for airport services.

2.2 Probable Impacts

As previously discussed, full buildout at Kealahou will result in a population increase of up to 14,000 persons. This increase will generate greater demand for airport services, primarily relating to interisland air service and cargo operations. However, visitor arrivals and departures resulting from planned expansion of the resort industry in West Hawaii is expected to have a far more significant impact upon air operations. Thus, although the demand generated by Kealahou is not viewed as significant, it will have an impact on the cumulative increase in demand for airport services.

2.3 Mitigation Measures

Because improvements and expansion plans have already been proposed for Keahole Airport, no specific mitigation measures related to Kealahou are necessary. The State's West Hawaii Regional Plan identifies Kealahou as a major regional support community, and its implementation should therefore be accommodated in the Department of Transportation's Keahole master plan.

3 HARBORS

3.1 Existing Conditions

Three principal harbors provide service to the western side of the Big Island; Kawaihae Harbor, Honokohau Small Boat Harbor, and Kailua Kona Harbor. Kawaihae Harbor is the only State commercial harbor in West Hawaii and has a basin area of nearly 50 acres. It is located approximately 30 miles north of the Kealahou Planned Community project site. In 1986, Kawaihae Harbor handled a total of 451 vessels (excluding domestic fishing craft). Of the total, 173 (38%) were self-propelled vessels, and 95% of these were tugboats or towboats. In that same year, the harbor handled over 592,000 short tons of cargo.

The Honokohau Small Boat Harbor is located immediately makai of the project site. It is the only protected boat harbor in North Kona and contains a total of 162 slips. It is used primarily by private recreational boaters and commercial fishermen. Facilities at the harbor include boat launch

ramps and retrieval cranes, a boat repair yard, fueling dock, administration office, commercial and retail facilities, restrooms and parking lots. The Department of Transportation's 1970 master plan for the harbor proposed expansion of the facility to a total of 455 slips. A twenty acre industrial area is also proposed east of and adjacent to the harbor. It would include harbor-related light industrial activities.

Kailua-Kona's harbor serves as a recreational resource for visitor-related activities associated with Kailua Village. In addition to charter fishing boats, the harbor provides facilities for sunset dinner cruise boats, daytime tours, the Atlantis submarine tour service, parasails, and other ocean-oriented recreational activities. The harbor also provides off-shore docking for interisland cruise ships.

3.2 Probable Impacts

The proposed development will impact Kawaihae Harbor in two areas; increased cargo activity and increased recreational boating activity. Development of the Kealakehe community will require shipment of construction materials and equipment through the Kawaihae terminal. Projected increases in population will also generate increase demands for goods and services which will result in an increase in the volume of cargo handled at Kawaihae.

Development of the proposed residential community will result in greater activity at the Honokohau Small Boat Harbor. Specifically, the project will result in an increase of recreational boat activity at the harbor and greater demand for slips and boat launchings from Kealakehe residents who own recreational and/or commercial fishing boats. The commercial and retail facilities at the harbor will also experience an increase in activity.

Although recreational activities at Kailua Kona harbor are targeted primarily for visitors, the population increase associated with the Kealakehe community will result in increases in recreational activities by area residents. Increasing demand for services may, however, generate adverse impacts by increasing the volume of ocean-related activities which may result in greater competition for limited recreational space and activities.

3.3 Mitigation Measures

No adverse impacts are forecasted to result from the proposed development. Cargo handling at Kawaihae to meet increased demand for goods and services will result in new job opportunities at the harbor. The DOT's plans for harbor expansion at Honokohau will help to

address increased demand for boat-related services and facilities. Increased activities at Kailua Kona harbor may result in the need for more stringent regulation of recreational services, and in some cases, limitations on daily operations.

4. WATER SUPPLY

4.1 Existing Conditions

Hawaii County's Department of Water Supply (DWS) administers municipal water systems and infrastructure on the Big Island, including the North Kona area where the subject property is located. Existing potable water wells in the Kailua-Kona area include Kahalu'u Wells A, B, C, and D, located at 600 foot elevation, about one and a half miles inland from the coast just north of Keauhou. These wells have a safe yield capacity of 4.5 million gallons per day (mgd). The maximum yield of the aquifer has been calculated to be about 10 mgd. The project area is linked to the existing wells by a 16 inch transmission line along Queen Kaahumanu Highway and a 16 inch line extending east along Palani Road and diminishing to a 12 inch line just above the existing Kealakehe community. Three primary reservoirs and booster stations serve the project area; a 300,000 gallon reservoir and booster station at the 325 foot elevation on Palani Road, a 100,000 gallon reservoir and booster station at the 590 foot elevation on Palani Road, and a 50,000 gallon reservoir and booster station at the 935 foot elevation on Palani Road.

Hawaii County has proposed that the regional water system serving the project area as well as the Keahole to Kailua area be improved and has developed a Water Supply Plan to guide implementation. According to the County:

A series of wells is proposed to be drilled in the 1,500 to 1,800-foot water resource development zone, spaced approximately half a mile apart. Approximately 36 wells would be required to supply the maximum day demand with one well out of service. Wells will be tied into a 24-inch transmission line approximately 20.3 miles long bringing water to the junction of Palani Road and Mamalahoa Highway. Two booster pump stations will be required along the length of the transmission line. From the 1,500 to 1,600-foot level the water will flow by gravity from the transmission line through the looped distribution system to the lower reaches of the system. The distribution system will be divided into service zones with pressure reducing valves between zones to maintain a water pressure range of approximately 40 to 100 pounds per square inch...Nine 2.0 million gallons (sic) reinforced concrete reservoirs are required for the maximum day storage of 17.1 million gallons...Along the Belt Hawaii an existing booster pump station will be enlarged and a new booster station and reservoir are proposed to improve water pressures at the upper reaches of the water system. The existing water system along Palani Road from the junction of Hina Lani Drive to Kealakehe Drive will be reinforced with a 16-inch line. Flow in the existing system along Palani Road will be reversed with water flowing down to Kailua Village instead of pumping up Palani Road.

Existing booster pump stations along Palani Road will no longer be required and could be placed on standby. (Keahole to Kailua Draft Development Plan, September 1989, page 4-10)

The State's Department of Land and Natural Resources (DLNR) is proposing the development of a new potable water well in the vicinity of Kalaoa mauka of Mamalahoa Highway and has recently begun construction. The estimated production from this well is 700 gallons per minute (gpm). The well is intended to support state projects in the region. In addition, the DLNR, in coordination with the State's Department of Transportation (DOT) is proposing the development of a 1.0 million gallon (MG) reservoir at the 325-foot elevation within the Kealakehe project area. The reservoir will be located along the project's northern boundary and will be utilized to serve proposed expansion at the Honokohau Harbor. Originally proposed as a 0.5 MG facility, it has been upsized to provide additional capacity for the Kealakehe project.

4.2 Probable Impacts

Based upon the number of units to be developed, the proposed project will require approximately 4.75 mgd of potable water to satisfy residential and non-residential demand. The DWS has committed potable water for the initial phase of the proposed development in the form of water credits or "commitments" earned by the State based upon previous State financed water infrastructure in the area. With the understanding that one "commitment" is equal to the potable water demand generated by one residential unit (600 gallons per day), the DWS has allocated 660 "commitments" to the HFDC. Water "commitments" totaling 200 have been allocated to the existing La'ilani multi-family project, leaving approximately 460 "commitments" for the initial phase of development at Kealakehe. This is the equivalent of 276,000 gpd and will be sufficient for about 460 residential units, which is more than adequate for implementation of the project's first phase, Village 1.

The DWS has advised HFDC that development of a supply source to meet the demand of the Kealakehe project should be undertaken by the project developer and then dedicated to the DWS for long term maintenance and operation.

4.3 Mitigation Measures

Extensive water development will be required to adequately serve the Kealakehe Planned Community. This system would include the drilling of new wells, and the development of transmission lines and storage reservoirs. Treated effluent will be used for golf course irrigation as a means of reducing demand for potable water.

4.3.1 Water Source Development

The supply source for the development will be wells drilled above 1,600 feet mean sea level (MSL). This elevation has been determined through previous well drilling activities in the region to be the elevation above which potable quality water can be obtained. Wells below this elevation such as an existing QLT well at 40 feet MSL and a Kaloko well at 520 feet MSL produce brackish water with chlorides ranging from 3,400 to 700 milligrams per liter, respectively. Domestic drinking water supply wells at or above 1,600 feet MSL have been successfully developed by Huihui Ranch and the Nansay Corporation.

Ancient lava flows comprise the geologic formations throughout the project area. The nature of the lava rock allows rainfall percolation and ground water migration. Subsequently, the long term sustained yield from any area well is indefinite, provided that over pumping or siting another well in close proximity such that it withdraws water from the same subsurface source is avoided.

Well pumping rates and spacing are established by on-site field-testing and operational experience from other area wells. For the project area, a yield of 700 to 1000 gpm per well can be anticipated. The spacing between the wells should be from 1,200 to 1,500 linear feet.

Because all wells will be located mauka of the Department of Health's Underground Injection Control (UIC) line, they will be designed and constructed to prevent the possibility of groundwater contamination. Preventive measures should include a concrete pad and full grouting at each well to prevent seepage or floodwaters from migrating down the well shaft. In addition, all new wells will require approval of the State Director of Health.

4.3.2 Sizing and Demand Analysis

The basis for the determining the capacity of the project's water transmission system was the DWS' "Water Systems Standards", 1985. Area water demands were determined based on the number of planned housing units or land use area. The DWS' domestic consumption guideline for average daily demand and demand factors was used to determine pipeline flows to the various areas. Pipelines were aligned to conform to major area right-of-ways. Reservoirs were located immediately above or within the subject property's boundary.

Three reservoir elevations were considered in the analysis, based on the established DWS pressure zones:

TABLE 6-6: DEPARTMENT OF WATER SUPPLY PRESSURE ZONES

<u>Pressure Zone</u>	<u>Service Area</u>
325 foot elevation	0 to 225 feet
595 foot elevation	225 to 495 feet
935 foot elevation	495 to 835 feet

The above elevations are referenced to mean sea level. The 935-foot elevation reservoir is consistent with a proposed 1.0 (MG) facility that the County has proposed for location above Palani Road and north of Laimana Street. This facility will serve the existing La'ilani housing development as well as the Kealakehe project's first phase. A site for reservoirs at the 595-foot elevation has been identified in the project's land use plan, and is located just south of the proposed Archaeological Preserve. These reservoirs will be accessed from an extension of Kealakehe Street, through a short section of residential roadway. The site for a 325-foot elevation reservoir has been selected and is currently under design by the Department of Land and Natural Resources' Division of Water and Land Development (DOWALD). It is located near the northern project boundary just mauka of a proposed neighborhood commercial area.

Using the DWS criteria, the total project water demand was calculated and a summary is presented in Table 6-8. Although the Kealakehe property makai of Queen Kaahumanu Highway is not included in the proposed project, it was determined that regional infrastructure should be sized to accommodate future development in that area. Consequently, the Concept Feasibility Study prepared for the entire Kealakehe property was used as the basis for determining the makai area's potential water demands. The demands for the Honokohau Small Boat Harbor were provided by the DOT through DOWALD. From the overall project tabulation, the demand within each of the three pressure zones discussed above was calculated and the area water lines sized.

4.3.3 System Description

The specific location of proposed wells will be coordinated through DOWALD and DWS. The development of water infrastructure will be phased to coincide with the phased development of the 14 villages which constitute the Kealakehe project.

Based on the overall project demand at full buildout, a total production of 3,298 gallons per minute (gpm) will be required from wells serving the project. HFDC has contributed to source development with DWS for a portion of this demand (the 276,000 gallons discussed above), so the

remaining 4.47 MG will need to come from new supply wells. These wells are proposed to be located above the 1,600-foot elevation at sites yet to be determined.

At full development, a total storage of about 5.0 MG will be required for the project. This storage will be required as follows:

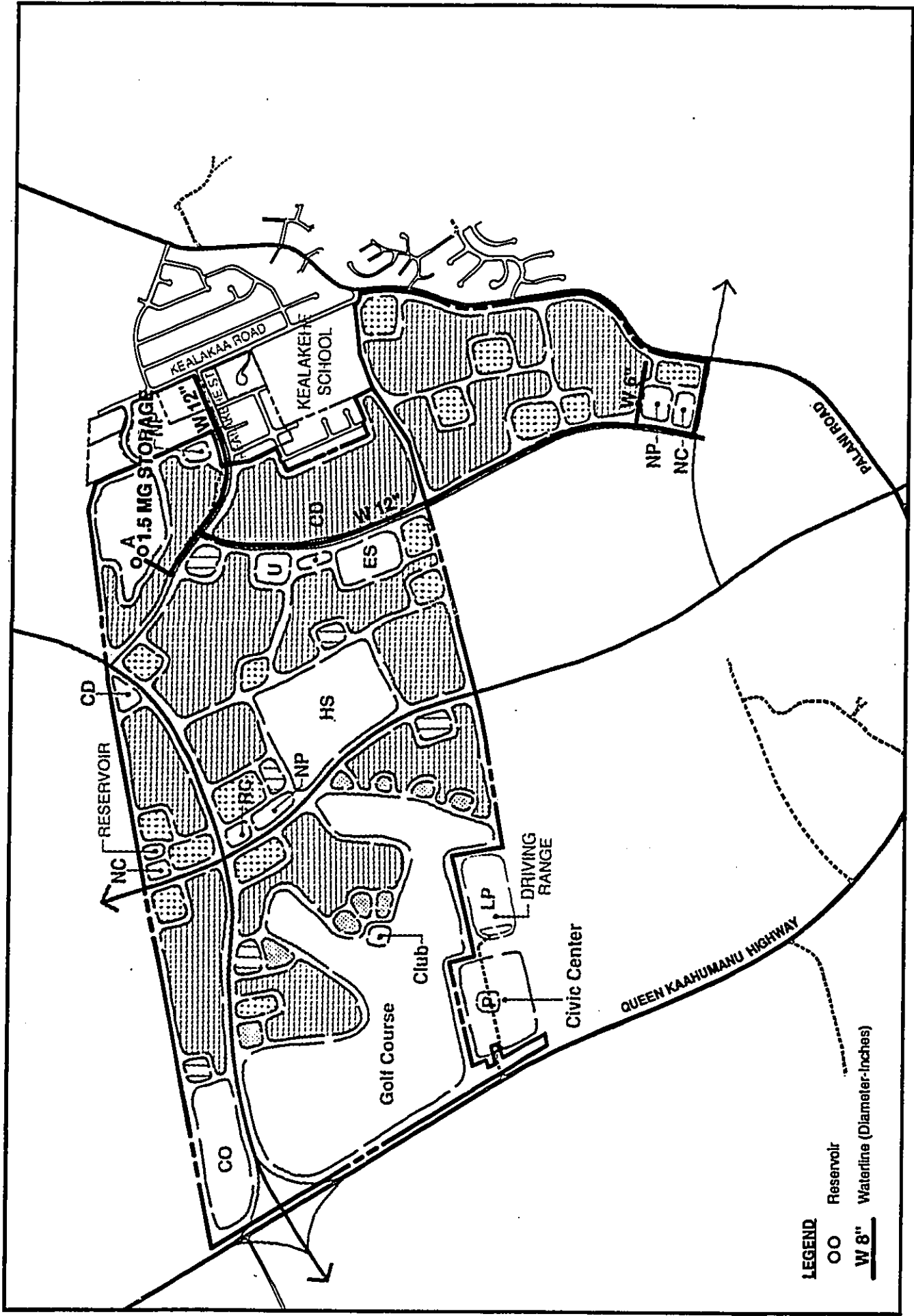
TABLE 6-7: POTABLE WATER STORAGE REQUIREMENTS

<u>Pressure Zone</u>	<u>Storage</u>
325 foot elevation	2.5 MG
595 foot elevation	1.5 MG
935 foot elevation	1.0 MG

There are no sites within the Kealakehe property at the 935-foot elevation. Therefore, HFDC will be coordinating with the DWS or other area developers to acquire the requisite storage within this pressure zone. The sites for the other zone reservoirs have been identified, as stated above.

Three separate water line systems are proposed based on the established pressure zones. The 935-foot elevation zone is indicated in Figure 6-9. This system will extend the 12-inch diameter transmission line from the new reservoir above Palani Road, from Kealakaa Street along the new Kealakehe Street extension to the 595-foot elevation reservoir site. A 12-inch branch main serving proposed housing areas to the south will be required, if interconnection with the existing system along Palani Road is not undertaken. If a looped system is installed within Villages 1, 12, 13, and 14, then it may be possible to down-size the branch main. The interconnection and final line sizing should be evaluated as part of the village subdivision water system design.

The 595-foot zone was also analyzed based on having a single supply line from the reservoir with no connection to other lines. Based on this consideration, a 24-inch transmission line will be required as indicated in Figure 6-10. Also because of the single supply line system, a 16-inch branch line to the southern housing areas will be required. As for the 935-foot system, should an interconnection with another supply system be undertaken, down-sizing of the lines is possible.



LEGEND
 OO Reservoir
 W 8" Waterline (Diameter-inches)

0 400 800 1600
 SCALE IN FEET



Prepared by: BELT COLLINS & ASSOCIATES
Date: JUNE 1990

Figure 6-9
PROPOSED WATER INFRASTRUCTURE PLAN
935' PRESSURE ZONE WATER SUPPLY SYSTEM

KEALAKEHE PLANNED COMMUNITY
ENVIRONMENTAL IMPACT STATEMENT

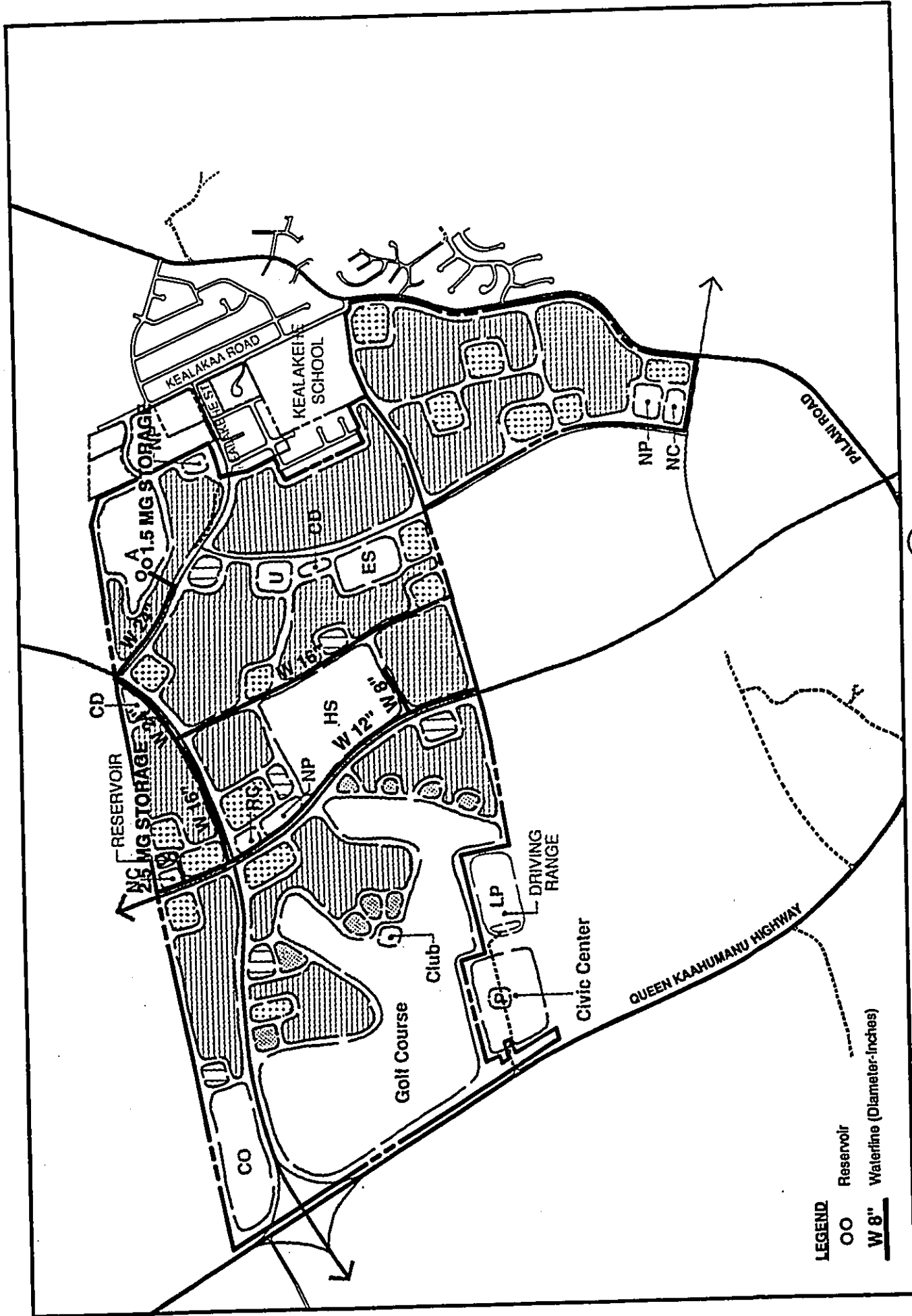


Figure 6-10
PROPOSED WATER INFRASTRUCTURE PLAN
595' PRESSURE ZONE WATER SUPPLY SYSTEM

0 400 800 1600
 SCALE IN FEET
 NORTH
 Prepared by: BELT COLLINS & ASSOCIATES
 Date: JUNE 1990

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TABLE 6-8: SUMMARY OF PROJECT WATER DEMAND

<u>Land Use</u>	<u>Pressure Zone</u>	<u>Total Daily Demand (gallons)</u>	<u>Average Daily Flow Rate (gal/min)</u>	<u>Maximum Day Demand (gallons)</u>	<u>Peak Hour Flow Rate (gal/min)</u>
Community Shopping Center(a)	325'	60,000	42	90,000	208
Neighborhood Commercial(a)	595'	9,000	6	13,500	31
Neighborhood Commercial(a)	595'	9,000	6	13,500	31
Civic Center(a)	325'	90,000	63	135,000	313
Recreation Center(a)	595'	9,000	6	13,500	31
High School(b)	595'	180,000	125	270,000	625
Elementary School(b)	935'	40,000	28	60,000	139
Church/Day Care Center(b)	935'	12,000	8	18,000	42
Church/Day Care Center(b)	595'	12,000	8	18,000	42
Neighborhood Park(b)	595'	16,000	11	24,000	56
Neighborhood Park(b)	595'	16,000	11	24,000	56
Neighborhood Park(b)	935'	16,000	11	24,000	56
Landfill Park(b)	325'	60,000	42	90,000	208
Mauka Golf Course Club House(a)	325'	9,000	6	13,500	31
Village 1(c)	935'	142,400	99	213,600	494
Village 2(c)	935'	75,200	52	112,800	261
Village 3(c)	935'	133,200	93	199,800	463
Village 3(c)	595'	66,800	46	100,200	232
Village 4(c)	935'	18,400	13	27,600	64
Village 4(c)	595'	151,200	105	226,800	525
Village 5(c)	595'	76,000	53	114,000	264
Village 6(c)	595'	96,800	67	145,200	336
Village 7(c)	595'	87,200	61	130,800	303
Village 8(c)	595'	41,600	29	62,400	144
Village 8(c)	325'	59,400	41	88,800	206
Village 9(c)	325'	123,200	86	184,800	428
Village 10(c)	595'	37,600	26	56,400	131
Village 10(c)	325'	75,200	52	112,800	261
Village 11(c)	595'	18,800	13	28,200	65
Village 11(c)	325'	50,800	35	76,200	176
Village 12(c)	935'	144,800	101	217,200	503
Village 13(c)	935'	14,400	10	21,600	50
Village 13(c)	595'	130,400	91	195,600	453
Village 14(c)	935'	24,000	17	36,000	83
Village 14(c)	595'	96,000	67	144,000	333
Makai Development(d)	325'	965,000	670	1,447,500	3,350

DEVELOPMENT TOTALS 3,166,200 2,199 4,749,300 10,994
MAXIMUM FIRE DEMAND 3000 GPM X 60 MIN/HR = 540,000 GALS

- (a) Average Daily Water Demand = 3000 gallons/acre
 - (b) Average Daily Water Demand = 4000 gallons/acre
 - (c) Average Daily Water Demand = 400 gallons/unit
 - (d) Infrastructure is sized to accommodate possible use of makai lands in the future
- Notes: Demands = DWS standards. Maximum Day = 1.5 x avg.day. Peak Hour = 5 x avg.day

From the branch line to Villages 3, 4, 5 and 6, the 24-inch transmission line can be decreased to a 16-inch diameter line. This line will tie to a 12-inch line at the mid-level road. The north branch will extend to the 325-foot reservoirs and will also serve the upper portions of Village 8. The southern branch will serve the remaining portions of the 595-foot zone development area, including the proposed high school.

The proposed system for the 325-foot zone is presented in Figure 6-11. The transmission main will extend along the mauka-makai road, with taps as required to serve adjacent developments. The main will decrease from 24- to 12-inches in diameter as it extends from the reservoir through the Kealakehe lands makai of the Queen Kaahumanu Highway to the southern property line of the makai parcel.

The down-sizing of the initial portions of the transmission lines from 24- to 16-inch diameter was discussed with the DWS relative to the Keahole to Kailua water system plan (referenced above). DWS has indicated that the proposed implementation schedule is in advance of any other area development and that, as such, water lines installed along the mauka-makai road will become the primary distribution lines for the region. Subsequently, the 24-inch line is to be installed to assure adequate supply during the initial stages of possible development of the makai parcel and to support the overall regional water distribution system.

All transmission lines must receive final approval from the County DWS before they can be constructed.

5. WASTEWATER AND DISPOSAL

5.1 Existing Conditions

Wastewater in the Kona region is presently disposed of utilizing two alternate methods, municipal/private sewage treatment plants and private cesspools. Kailua Village is presently served by a municipal wastewater treatment plant located in the Kona Industrial subdivision. This facility is a secondary, activated-sludge treatment plant with a design capacity of 1.0 mgd. Residential, commercial and industrial areas surrounding Kailua Village rely upon private cesspools or private treatment plants for wastewater disposal. The project site is not presently served by a wastewater collection system.

Hawaii County is currently undertaking a project to expand wastewater service in the Kailua-Kona region. A new municipal STP is presently being constructed makai of Queen Kaahumanu Highway on State owned land in the Kealakehe *ahupua'a* and is projected for

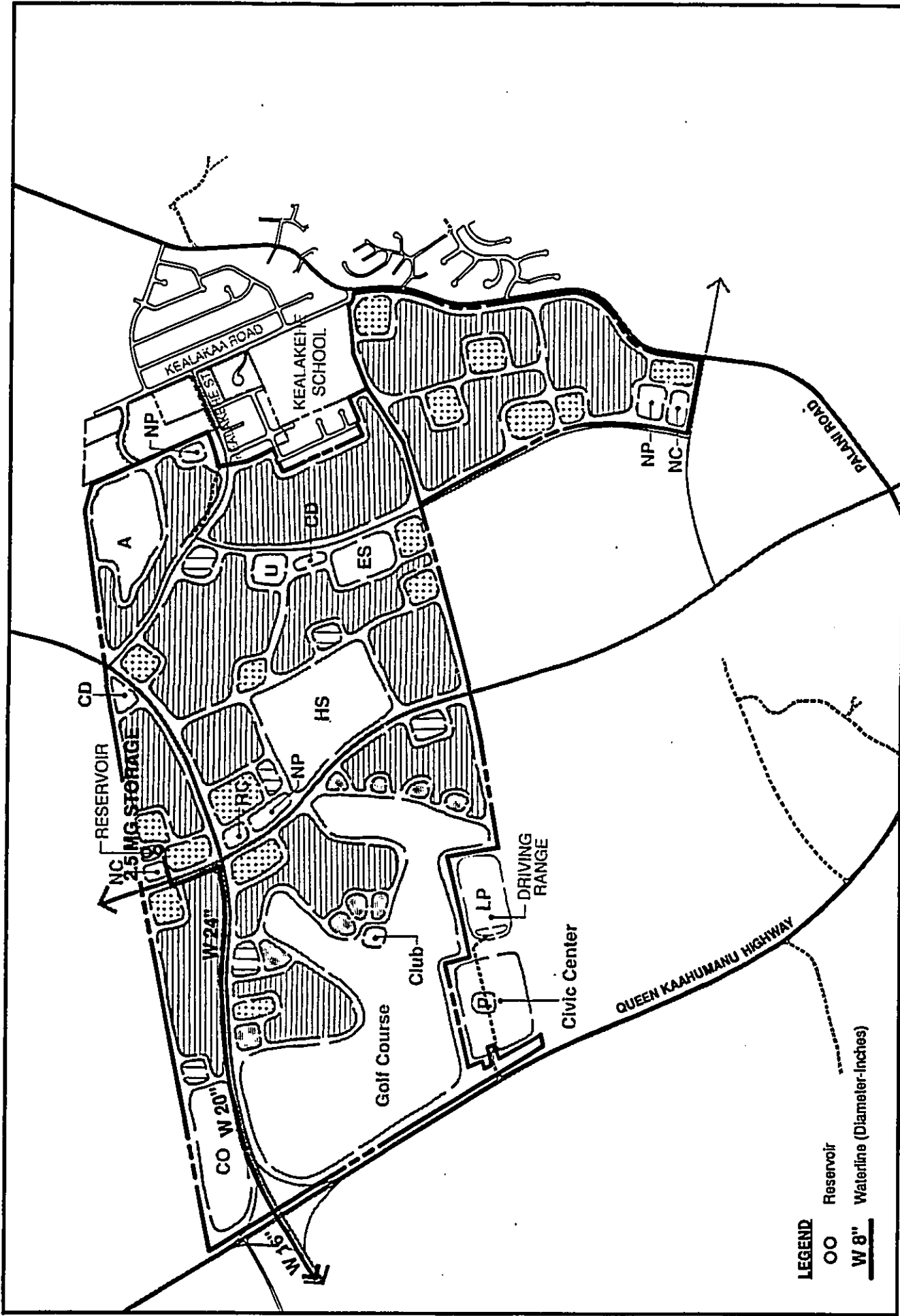


Figure 6-11
 PROPOSED WATER INFRASTRUCTURE PLAN
 325' PRESSURE ZONE WATER SUPPLY SYSTEM

**KEALAKEHE PLANNED COMMUNITY
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completion in February 1992. It's present design capacity is 2.89 mgd. Once the new facility is completed, the existing STP in the Kona Industrial subdivision will be closed. The new plant will occupy a land area of approximately 50 acres with an effluent disposal area of approximately 150 acres.

The State Department of Health has recently announced that no new cesspools will be allowed to be developed mauka of its UIC Line and on lands with elevation of less than 100 feet above mean sea level. In these areas, septic tanks and leach fields will be required for any new construction that is not tied into a municipal or private treatment system.

5.2 Probable Impacts

The average daily wastewater flow generated by the proposed development is projected at 1.86 mgd. This figure includes 1.186 mgd generated from the residential components of the project and 0.672 mgd generated by proposed non-residential uses. Design peak flow is calculated to be 9.627 mgd.

The proposed project will utilize the new Kealakehe STP for wastewater disposal. Expansion of the plant's capacity to accommodate the Kealakehe Planned Community was considered in the planning for the new facility. However, the first phase of construction does not include the Kealakehe Planned Community as a source of wastewater. Design capacity of the STP must be increased about 2.0 mgd to service the proposed development. This expansion would require an additional 10 acres of land for the STP facility and an appropriate increase in size of the leaching area (effluent disposal area). Expansion of the facility is anticipated to constitute phase two of STP construction. Utilization of the Kealakehe STP as the means of disposal for the proposed development's wastewater will result in no significant adverse impacts.

The proposed golf course has been sited at Kealakehe to serve as an effluent disposal area for the STP. The 195-acre golf course is of sufficient size to accommodate the first phase of the STP (2.8 mgd), as well as the eventual 2.0 mgd expansion of the plant necessitated by the proposed development of the Kealakehe Planned Community. Environmental impacts of the County's STP are the subject of a separate environmental impact statement which has been prepared by DPW. A supplement to that document is presently being prepared by DPW to address the environmental issues concerning the effluent disposal area.

5.3 Mitigation Measures

Because no significant adverse impacts have been identified, no mitigation measures are warranted. The potential impact of the project upon the area's existing wastewater system will be addressed through a collection and transmission system to be constructed as part of the project. This system is depicted in Figure 6-12. It includes 12-inch gravity mains serving Villages 1-7, and 11, as well as the proposed elementary and high schools, linked to a 21-inch gravity trunk line extending along the length of the projects southern property boundary and across Queen Kaahumanu Highway to the Kealakehe STP. Villages 8-11 are served by 12-inch and 8-inch gravity mains flowing to a main trunk sewer along the southern property boundary. A sewage pump station discharging via an 8-inch force main to the 21-inch trunk line will be required to serve the community shopping center at the northwest corner of the project area. Villages 12-14 will be served by 12-inch force mains linked to a sewage pump station near Palani Road which will utilize an 8-inch force main to pump the wastewater north to the 21-inch gravity trunk line.

6. STORM DRAINAGE

6.1 Existing Conditions

As previously discussed, the project site is characterized by a predominance of lava that is either barren or covered with a thin layer of soil. The porous character of the lava results in relatively rapid percolation of rainwater. This condition, coupled with semi-arid climate of North Kona results in the fact that there are no established drainage ways on the subject property. Nor is there any evidence of streams or flooding. Because the property is vacant and undeveloped, there are presently no drainage structures on site.

6.2 Probable Impacts


Development of the subject property with residential and non-residential uses will alter the character of surface runoff from the area. The presence of paved roadways, sidewalks, rooftops, parking lots and other impermeable surfaces will all contribute to an increase in surface runoff. The overall volume of rainwater percolating through the porous lava into the underground water table will therefore be reduced due to a decrease in permeable surface area. However, drywells utilized to capture storm runoff will redirect the runoff into the water table.

Because of the increased presence of automobiles utilizing the regional arterial, collector and secondary roadways proposed for development in the project, an increase in petrochemicals in surface runoff is expected. Therefore, it is possible that these pollutants could make their way into



VI-34

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 NORTH
 SCALE IN FEET
 0 400 800 1600
 Prepared by: BELT COLLINS & ASSOCIATES
 Date: JUNE 1980

**Figure 6-12
WASTEWATER MASTER PLAN**

the underground water table. However, it is expected that most pollutants will be filtered by percolation through the porous underlayers of lava before reaching the water table, which is brackish and not suitable for potable use.

6.3 Mitigation Measures

Due to the hilly terrain and porous nature of the volcanic soils throughout the island, storm water drainage is typically handled by sheet runoff flow to the ocean or by drywells. The proposed method of storm water disposal for the project is by drywells. Project drywells are proposed for construction within road right-of-ways. Residential lots will be designed to direct storm runoff to streets. Grease and oil traps will be located at designated points. The contents of traps will be handled and disposed of in accordance with EPA rules and procedures.

Design and use of drywells within the project area will be based upon DPW policies, guidelines and design specifications, and the State Department of Health's UIC regulations. The Hawaii County Code contains provisions regarding protection of receiving waters and prevention of hazards. The DPW's Storm Drainage Standards addresses pipe networks and culvert design.

The DPW policy is to allow 6 cubic feet per second of storm water discharge per drywell. Drywells are to be constructed are to be 5 feet in diameter with a depth of 20 feet. Based on these guidelines, the project's typical drywell is considered to be an injection well and will require a UIC permit from the Department of Health. County application for drywell permits will be undertaken at the time of design for each village or phase of the project. The actual siting of drywells will be determined at the design stage. The design engineer will prepare the permit application and submit the requisite test report to the Department of Health to obtain the necessary permit. Following construction, the permit will be transferred to the County or the State, based on the ultimate determination of roadway jurisdiction. Thus, all applicable State and County standards will be followed.

7. SOLID WASTE COLLECTION AND DISPOSAL

7.1 Existing Conditions

Solid waste disposal for West Hawaii is presently handled at the Kealakehe Landfill and Transfer Station, located on approximately 15 acres of land adjacent to the proposed project area. The landfill is rapidly nearing capacity and is proposed for closure sometime in 1992, according to Hawaii County. A new 177-acre sanitary landfill site has been proposed by the County for location at Puu Wa'awa'a in North Kona, approximately 15 miles north of Kealakehe. The new

landfill is designed to accommodate initial solid waste volumes of 46,300 tons per year, and more as the population of West Hawaii increases. However, it is possible that challenges to this site may prevent its use as a landfill. If this is the case, the County will initiate a new site selection process.

Over the past several years, underground fires at the existing landfill have continued to be a source of nuisance for the surrounding area. The new County police substation located immediately makai of the landfill has experienced numerous instances of strong odors and fumes. Residents of the existing Kealakehe community have complained of odors and fumes. As recently as May 2, 1990, a large surface fire at the landfill resulted in the evacuation of Kealakehe Intermediate and Elementary schools. The County has proposed to close the landfill and has contracted to have it mined and removed to the new landfill site. This action would probably result in the extinguishing of the underground fires, removal of the threat of surface fires, and the elimination of fumes and odors.

7.2 Probable Impacts

Development of the proposed planned community will generate a substantial increase in solid waste. Using the County's refuse generation rate of 6.0 pounds per capita per day, it is projected that at buildout, the planned community will generate between 54,000 pounds and 84,000 pounds of refuse per day. This is equivalent to 27 to 42 tons per day, 9,800 to 15,300 tons per year, or approximately 21 to 33% of the new landfill's initial capacity. Because occupancy of the initial phase of Kealakehe homes is not anticipated until early 1992, the project is not expected to create an adverse impact upon solid waste disposal conditions and its implementation should coincide with the County's plans for the opening of a new landfill.

7.3 Mitigation Measures

The County of Hawaii DPW has indicated that a trash transfer station would be required to serve the immediate vicinity including the Kealakehe Planned Community. This transfer station would require a minimum of five acres and could be developed in the vicinity of the present site used for this activity, or it could be located at some other area within the project site. The County has indicated that it prefers a location within the Kealakehe project area. No further mitigation measures are necessary due to the lack of adverse impacts.

However, the timely closing of the existing landfill will have a significant effect upon the proposed residential community. Development of homes in the general vicinity of the landfill may be constrained by continuing problems with fumes and odors, and the potential threat of fire.

Therefore, phasing of the proposed community has been designed to allow the development of the most mauka villages first, with villages closer to the landfill area being developed after the landfill has been closed and/or removed.

Should development of a new landfill site be delayed beyond the occupancy of the first phase of residential development, solid waste generated by the project will be transported by truck from the transfer station to a landfill in East Hawaii. The expense of this operation would ultimately be borne by the new Kealakehe Community residents.

A waste reduction program such as composting and recycling of construction wastes will be considered in an effort to mitigate the impacts of the proposed project upon solid waste generation.

8. ELECTRICAL POWER AND COMMUNICATIONS

8.1 Existing Conditions

The Hawaii Electric Light Company (HELCO) provides and maintains electrical power for the island of Hawaii. HELCO's available generating capability is approximately 150 megawatts (MW) with a present peak demand of about 130 MW. The utility has forecast the need to generate an additional 200 MW of power on the Big Island by the year 2007. Sources of this additional energy may include geothermal power.

HELCO presently maintains a 69 KV(1000 volts = 1KV) transmission line along the mauka side of Queen Kaahumanu Highway and a 1.5 million volt amperes (MVA) substation on County property adjacent to the existing police substation at Kealakehe which is presently serving the Honokohau Small Boat Harbor and the light industrial uses and police substation located in its immediate vicinity.

The property owner of a parcel abutting the northwestern boundary of the Kealakehe parcel has proposed the creation of a 300 foot long utility easement across the northwestern corner of Kealakehe to allow the extension of a 12 KV line into his property.

Hawaiian Telephone provides telephone service to the North Kona area. Cable television is provided in the area by a private company serving the Kailua and Waimea areas.

8.2 Probable Impacts

The proposed development at build out will generate a demand for approximately 14,350 kva, which is equal to 10,762 Kilowatts or 10.76 MW. This will result in the need for the development of two new 10 MVA/12 KV substation transformers and a new region-serving 69 KV transmission line to serve the proposed community. Major transmission lines will be located along primary arterial roadways and will require necessary governmental approvals or private easements.

The Hawaiian Telephone Company would serve the planned community through its existing system. Expansion of the system will be required.

8.3 Mitigation Measures

All electrical systems serving the property will be in compliance with the standards of the Hawaii Electric Light Company and the County of Hawaii. Underground utility lines shall be provided wherever practical. In an effort to minimize future demand for fossil-fuel based electrical power, design guidelines for the project will encourage the implementation of energy conservation measures. Infrastructure allowing the provision of natural gas to the project may be included.

9. POLICE AND FIRE PROTECTION SYSTEMS

9.1 Existing Conditions

Police protection for the Big Island is provided by the Hawaii County Police Department. A new police substation at Kealakehe is the center for operations in the North Kona district. The substation is located on a five acre parcel of County owned land makai of the Kealakehe Landfill.

Fire protection and rescue services are provided by the Hawaii County Fire Department. The Kailua-Kona fire station is located on Palani Road just mauka of its intersection with Queen Kaahumanu Highway, approximately two miles from the project site.

9.2 Probable Impacts

Development of the proposed project will significantly increase demand for police and fire protection services. The addition of up to 14,000 new residents and about 4,100 new homes over a twenty year or more period will require the expansion of existing services.

9.3 Mitigation Measures

A 30-acre Civic Center is included in the proposed project's master plan. This center is envisioned to be located on the 30-acre parcel of land adjacent to the project area, which is owned by the County of Hawaii and presently occupied by the police substation, transfer station, AmFac distribution center and West Hawaii animal shelter. Provision of a fire station and expansion of the existing police station at this site would provide the Kealakehe community with immediate response to emergencies.

Since the preparation of the project master plan, the County of Hawaii has proposed an alternate location for the Civic Center. The May, 1990 revision of the Draft Keahole to Kailua Development Plan depicts a 100-acre Civic Center located on the State's Kealakehe land makai of the project area. It is unclear at this time where the Civic Center may be ultimately located, however, it is likely that it will be located in the general vicinity of the planned community.

10. HEALTH CARE FACILITIES

10.1 Existing Conditions

The Kailua-Kona region is served by the Kona hospital, a "full-service" health care facility operated by the State of Hawaii and located in Kealahou. The hospital provides a variety of services including surgical, special care, O.B, emergency and long-term care units. It has a total of 75 licensed beds. According to hospital staff, the facility is presently operating "at capacity". Emergency ambulance services are located at the Kailua-Kona fire station. Response times for a health emergency would include dispatch of the vehicle from the Kailua station to the emergency site followed by a 10-15 minute "sprint" to Kona Hospital in Kealahou.

10.2 Probable Impacts

The development of a 4,100 unit residential community will have a significant impact upon the existing health care service system. Because the Kona Hospital is presently operating at capacity, any significant increase in population in the region would likely impact the hospital's level of service.

10.3 Mitigation Measures

Although no health care facility is proposed in the Kealakehe community master plan, due to the projected growth of the region, the development of a new regional health facility has been a

topic of recent discussion. A West Hawaii Regional Hospital Task Force, made up of private business leaders, issued a report in early 1990 indicating a preference for a new hospital to be located in the vicinity of Kailua-Kona and Keahole Airport. The construction of a regional hospital in that area would greatly benefit the proposed Kealakehe community as well as the community-at-large.

11. SCHOOLS AND EDUCATIONAL FACILITIES

11.1 Existing Conditions

The State Department of Education operates a total of eleven schools in the West Hawaii region. Those servicing the immediate project area include Konawaena Elementary, Intermediate, and High Schools, and the Kealakehe Elementary and Intermediate Schools. The total enrollment of these facilities in the 1988-89 school year was about 3,700 students. In addition to the public schools, private educational opportunities are available at the Hawaii Preparatory Academy and Parker School, both in Waimea, about 45 miles north of the project site.

11.2 Probable Impacts

In view of the present growth projected for West Hawaii without the proposed project, the Department of Education forecasts the need for a new West Hawaii High School in about 10 years. However, due to overcrowding at the existing elementary schools, a new elementary school is needed immediately.

The development of the proposed project would result in significant impacts to the public education system in West Hawaii. The Department of Education indicates that at build out the project would generate approximately 900 elementary students and approximately 1,700 high school students.

11.3 Mitigation Measures

The proposed project includes a 45-acre site for a new public high school and a 10-acre site for a new elementary school. The sites proposed in the Kealakehe master plan have received preliminary approval from the facilities management branch of the DOE. Development of the high school and elementary schools would likely occur within the first phase of the project with the schools tentatively planned for opening in 1994 or 1995. The proposed schools will include a full range of support services including administrative buildings, libraries, recreational fields and playcourts, and dining rooms.

12. RECREATIONAL FACILITIES

12.1 Existing Conditions

In general, recreational facilities in the Kailua-Kona region are considered by many residents to be inadequate for the needs of the growing population. Of particular concern is the lack of playgrounds and the need for a regional sports center.

Public recreational facilities presently serving the project region include the Old Kona Airport State Park, Pahoehe Beach Park, White Sands Beach Park, Kahaluu Beach Park, and the recreational facilities at Konawaena and Kealakehe Schools. In addition, construction of a new County gymnasium at the Old Kona Airport is scheduled to begin in mid-1990, along with expansion of the park's facilities to include tennis courts and a swimming pool.

12.2 Probable Impacts

The development of a 4,100 unit residential community will have significant impacts upon the existing recreational facilities in the region. Residents of the project will generate demand for a full range of recreational opportunities including parks, playgrounds, playing fields and sports facilities for such activities as tennis and golf.

12.3 Mitigation Measures

The proposed project includes three four-acre neighborhood parks as well as over thirty acres of passive, open-space. In addition, the project area includes a 195-acre public golf course to be developed by Hawaii County.

CHAPTER VII

CHAPTER VII
**RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS,
POLICIES, AND CONTROLS FOR THE AFFECTED AREA**

1. HAWAII STATE PLANS AND CONTROLS

All lands in the State have been placed in one of four land use districts (Urban, Agriculture, Conservation, or Rural) by the State Land Use Commission (SLUC). State Land Use District Boundary Reviews are undertaken by the State Land Use Commission to update its Land Use District Maps. Besides this SLUC-initiated review, provisions for applicant-initiated amendments to the district boundaries have been established in Section 205-4 of the Hawaii Revised Statutes (HRS), and further promulgated in the State Land Use Commission: Rules of Practice and Procedure and District Regulations (12-21-75 as amended).

1.1 Existing and Proposed District Boundaries

The existing State Land Use District boundaries are shown in Figure 4-5. The proposed project area contains three State Land Use District classifications. Within the State owned property: approximately 360 acres consisting of an area extending from Queen Kaahumanu Highway to a point about 4,000 feet inland are designated Conservation, General subzone; approximately 100 acres extending makai from the existing community are designated Urban; and, approximately 350 acres in the central portion of the property between the Urban and Conservation areas are designated Agriculture.

The project area also includes a 150 acre area presently owned by the Queen Liliuokalani Trust. As shown in Figure 4-5, this property is divided between two State Land Use District designations; a 90 acre area designated Urban, and a 60 acre area designated Agriculture.

The HFDC will request amendments to the State Land Use District boundaries to change the Conservation and Agriculture designations to an Urban designation. Figure 7-1 shows the proposed District boundary amendments. This environmental impact statement is being prepared to accompany the HFDC's Petition for Boundary Reclassification.

1.2 Requirements for Boundary Amendments

Section 205-17, Hawaii Revised Statutes (HRS), establishes the following decision making criteria for reclassification of District boundaries by the State Land Use Commission:

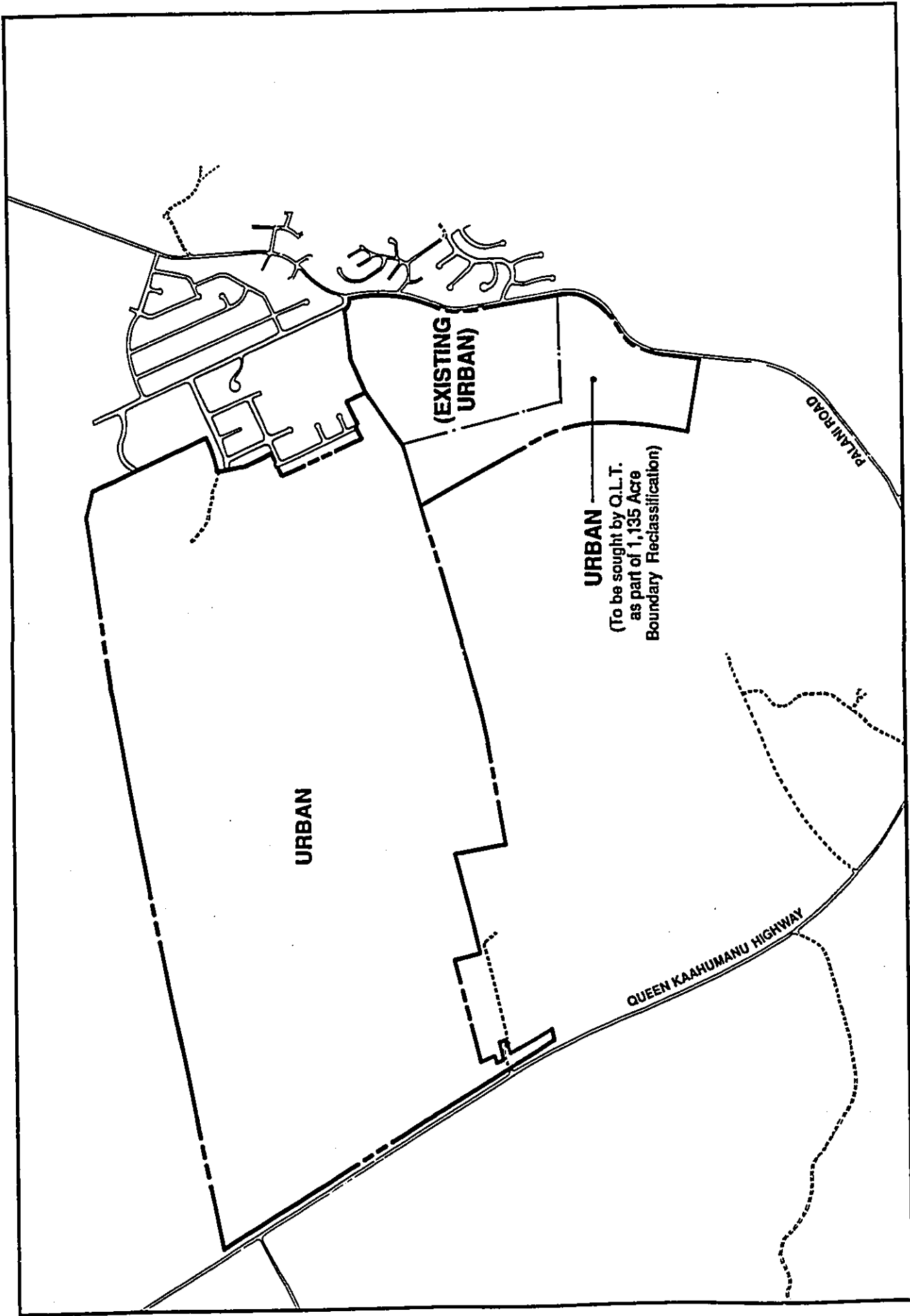


Figure 7-1
PROPOSED STATE LAND USE

0 400 800 1600
SCALE IN FEET
Prepared by: BELT COLLINS & ASSOCIATES
Date: JUNE 1990



**KEALAKEHE PLANNED COMMUNITY
ENVIRONMENTAL IMPACT STATEMENT**

- (1) The extent to which the proposed reclassification conforms to the applicable goals, objectives, and policies of the Hawaii state plan and related to the applicable priority guidelines of the Hawaii state plan and the adopted functional plans;
- (2) The extent to which the proposed reclassification conforms to the applicable district standards; and
- (3) The impact of the proposed reclassification on the following areas of state concern:
 - (A) Preservation or maintenance of important natural systems or habitats;
 - (B) Maintenance of valued cultural, historical, or natural resources;
 - (C) Maintenance of other natural resources relevant to Hawaii's economy, including but not limited to, agricultural resources;
 - (D) Commitment of state funds and resources;
 - (E) Provision for employment opportunities and economic development; and
 - (F) Provision for housing opportunities for all income groups, and gap groups.

The subject matters of these criteria are addressed in the following sections in this chapter and also in Chapter IV regarding probable impacts on the environment. Based upon these discussions, the proposed project meets the criteria contained in Section 205-17, HRS.

The SLUC District Regulations require that the application for a boundary amendment show that it is "reasonable, not violative of Section 205-2 and consistent with the Interim Statewide Land use Guideline Policies." The reasons for the requested changes in the State Land Use District Boundaries are discussed in Chapter II, Sections 3, 4 and 8, of this document. The consistency of the proposed district designation with Section 205-2, HRS and with the Interim Statewide Land use Guideline Policies are discussed in the following sections. A discussion of how the proposed revisions meet the special requirements for petitions for urban classification then follows.

1.2.1 Section 205-2, Hawaii Revised Statutes

The proposed amendments to the State Land Use District boundaries are consistent with the basic standards for determining boundaries that are set forth in Section 205-2, HRS. Relevant standards from this section are presented below and followed by a discussion of the proposed designations' consistency with each standard. Note that numbers have been added for ease of reference.

Agricultural District

"Agriculture districts shall include activities or uses as characterized by the

1. cultivation of crops, orchards, forage, and forestry;
2. farming activities or uses related to animal husbandry, aquaculture, game and fish propagation;
3. aquaculture, which means the production of aquatic plant and animal life for food and fiber within ponds and other bodies of water;
4. wind generated energy production for public, private and commercial use;
5. services and uses accessory to the above activities including but not limited to living quarters or dwellings, mills, storage facilities, processing facilities, and roadside stands for the sale of products grown on the premises;
6. wind machines and wind farms;
7. agricultural parks;
8. open area recreational facilities, including golf courses and golf driving ranges, provided that they are not located within agricultural district lands with soil classified by the land study bureau's detailed land classification as overall (master) productivity rating class A or B;
9. These districts may include areas which are not used for, or which are not suited to, agricultural and ancillary activities by reason of topography, soils, and other related characteristics."

Discussion: An examination of the proposed Agricultural to Urban redesignation in reference to each of the above-listed points follows.

1. The Agricultural District land that is proposed for Urban is not suitable for the cultivation of crops, orchards, forage, or forestry. The land is classified E by the land study bureau detailed land classification system and is characterized as bare and almost bare a'a and pahoehoe lava.
2. The land is largely unsuited for farming activities due to its virtual lack of top soil.
3. Due to its distance from the shoreline, the area is not appropriate for the development or operation of aquaculture activities.
4. The land under consideration is located on the leeward side of the island and is not exposed to trade winds of sufficient strength to justify development of wind generate energy production facilities.
5. Due to the relative unsuitability of the subject property for the above mentioned agricultural activities, consideration of services and uses accessory to those activities is irrelevant.
6. As discussed above, the land is not suitable for the cultivation of crops, orchards, forage, or forestry. Consequently, it is not suitable for the development of agricultural parks.
7. Reserving the property solely for open space recreational activities would not fulfill the goals and objectives of the HFDC in relation to the proposed project. However, the proposed development project does include open area recreational activities such as a public golf course and neighborhood parks as part of its master planned residential community.

8. The Agricultural District land under consideration for the Urban District is largely unsuited for agricultural development. However the topography, soils, and other characteristics of the property do not preclude its use for residential development. In fact, the property's location and proximity to Kailua, its upland elevations and panoramic views, and topography all render it particularly appropriate for residential use.

Conservation District

"Conservation districts shall include areas necessary for

1. protecting watersheds and water sources;
2. preserving scenic and historic areas;
3. providing park lands, wilderness, and beach reserves;
4. conserving endemic plants, fish and wildlife;
5. preventing floods and soil erosion;
6. forestry;
7. open space areas whose existing openness, natural condition, or present state of use, if retained would enhance the present or potential value of abutting or surrounding communities, or would maintain or enhance the conservation of natural or scenic resources;
8. areas of value for recreational purposes;
9. other related activities;
10. and other permitted uses not detrimental to a multiple use conservation concept."

Discussion: An examination of the proposed Conservation to Urban redesignation in reference to each of the above-listed points follows.

1. The Conservation District land that is proposed for Urban is not a watershed or water source area that needs to be protected and is designated as a General subzone.
2. The land slopes up from Queen Kaahumanu Highway to roughly the 700 foot elevation. It has good scenic qualities, especially at the higher elevations. Scenic views will be preserved whenever possible as they are a valuable asset to the proposed residential development. The residential character of the project with low-rise structures which will not significantly detract from existing views. Archaeological surveys and testing have been performed in the proposed project area. Based upon study findings discussed in Chapter 4, significant historic sites will undergo further study and data collection, or will be preserved and integrated into the overall development plan. As areas are prepared for development, the Historic Sites Office of the Department of Land and Natural Resources and the Hawaii County Planning Department will be consulted regarding the necessity for additional archaeological work.
3. The Conservation District land proposed for Urban is neither a wilderness nor beach reserve area. It is adjacent to the Kealakehe Landfill. The land uses proposed for this area do not include a park.
4. Portions of the Conservation District area will be set aside for the preservation of the Uhi Uhi tree, a federally designated endangered species which has been identified on site. Specifically, two trees have identified in the Conservation District and a half acre buffer area is proposed for each tree.

5. Converting the Conservation District to Urban will not cause floods or soil erosion. There are no known drainageways or basins on the subject property. The area is largely devoid of soil. Landscaping will ensure that erosion does not occur.
6. The Conservation District land under consideration is relatively barren pahoehoe and a'a. It is not a forested area.
7. Retaining the area in open space would not enhance its value or the value of properties surrounding it. The natural scenic qualities of the land will be preserved whenever possible and integrated into the proposed development.
8. Approximately half of the Conservation District land proposed for Urban District is to be developed as a public golf course by the County of Hawaii and, therefore, will be used for recreational purposes. However, to provide the greatest flexibility for planning, design and operation of the golf course, a boundary redesignation from Conservation to Urban will be sought.
9. The land under consideration is suitable for residential uses and related activities.
10. The residential, public facility and commercial uses proposed for this land are not permitted uses in a Conservation District. The requested change from Conservation District to Urban District will not be detrimental to a multiple use conservation concept.

1.3 Hawaii State Plan

The Hawaii State Plan (Office of the Governor, Office of State Planning, 1989) consists of a series of broad goals, objectives and policies which are to serve as the guidelines for the growth and development of the State. The Plan is divided into three parts; Part I (Overall Theme, Goals, Objectives and Policies), Part II (Planning, Coordination and Implementation), and Part III (Priority Guidelines). Part II pertains to the administrative structure and implementation process for the State Plan. Because Part II is not relevant to the proposed action, it is not included in this analysis. Discussed below are the specific goals, objectives, policies, and priority actions contained in Part I and Part III of the State Plan which are thought to be most directly related to the proposed project.

1.3.1 Part I. Overall Theme, Goals, Objectives and Policies

The Hawaii State Plan lists three "Overall Themes": (1) Individual and family self-sufficiency; (2) Social and economic mobility; and (3) Community or social well being. These themes are considered to be "basic functions of society" and goals towards which government must strive. To guarantee the elements of choice and mobility embodied in the three themes, three goals are presented in the Plan:

SEC. 226-4 State goals. In order to guarantee, for present and future generations, those elements of choice and mobility that insure that individuals and groups may approach their desired levels of self-reliance and self-determination, it shall be the goals of the State to achieve:

- (1) A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii's present and future generations.
- (2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.
- (3) Physical, social, economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life.

Discussion: The HFDC's proposed Kealahou Planned Community fully supports the three goals. The development of the proposed land use activities on the Kealahou property is intended to accommodate a portion of the population growth projected for the West Hawaii region. Development of the property for up to 4,200 housing units, 60% of which will be affordable, will greatly benefit individuals and families on the Island of Hawaii. A well-planned residential community with a full range of support services and facilities will enhance the physical, social and economic well being of its residents.

SEC. 226-5 Objective and policies for population.

Objective: It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter.

- Policies:
- (2) Encourage an increase in economic activities and employment opportunities on the Neighbor Islands consistent with community needs and desires.
 - (3) Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.
 - (7) Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.

Discussion: The proposed project will provide residential, commercial, recreational, and civic land uses for the Kailua area. Construction of the project will be phased to meet the present and future housing demand as it arises. Infrastructure, including water, will be provided to ensure the new development is fully serviced. Development of the residential community over a period of twenty or more years will ensure steady employment in the construction trades.

SEC. 226-6 Objectives and policies for the economy--in general.

- Objectives:**
- (1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people.
 - (2) A steadily growing and diversified economic base that is not overly dependent on a few industries.
- Policies:**
- (6) Strive to achieve a level of construction activity responsive to, and consistent with, State growth objectives.
 - (8) Encourage labor-intensive activities that are economically satisfying and which offer opportunities for upward mobility.
 - (9) Foster greater cooperation and coordination between the public and private sectors in developing Hawaii's employment and economic growth opportunities.
 - (10) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.
 - (14) Promote and protect intangible resources in Hawaii, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.

Discussion: The proposed land use will contribute to the economy in two important ways. First, it will provide stability in the construction trades, and second it facilitate economic development by providing housing opportunities for workers. Implementation of the proposed project in accordance with State and County plans will facilitate a high level of cooperation with government agencies. Design of the residential components of the project will strive to protect the scenic beauty and cultural and historic resources of the area.

SEC. 226-11 Objectives and policies for the physical environment--land-based, shoreline, and marine resources.

- Objectives:**
- (1) Prudent use of Hawaii's land-based, shoreline, and marine resources.
 - (2) Effective protection of Hawaii's unique and fragile environmental resources.
- Policies:**
- (2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.
 - (3) Take into account the physical attributes of areas when planning and designing activities and facilities.
 - (4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.

- (6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawaii.
- (8) Pursue compatible relationships among activities, facilities, and natural resources.
- (9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.

Discussion: The proposed project is situated mauka of the Queen Kaahumanu Highway and does not include any shoreline areas. The project area slopes up from about 50 feet to the 700 foot elevation, approximately two miles inland. The project will be designed in a manner which will maximize view planes of the ocean and Hualalai mountain while preserving view corridors. Development of the various project elements will be sensitive to existing environmental conditions. An endangered plant species, the uhi uhi tree, identified on the project site will be preserved through the establishment of half acre buffer areas around each individual plant and a five acre preserve for a cluster of eight trees in the mauka portion of the property. Endemic plants will be encouraged for use as landscape material wherever practicable. The project will be phased to correspond to future demand for homes at market levels ranging from assisted rental units to market homes with golf course frontage. The subject property will be developed in a prudent manner consistent with the master plan resulting in orderly and timely development of infrastructure. Public open space areas devoted to passive recreational activities will be provided within the phased development.

SEC. 226-12 Objective and policies for the physical environment--scenic, natural beauty, and historic resources.

Objective: Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawaii's scenic assets, natural beauty, and multi-cultural/historical resources.

- Policies:**
- (1) Promote the preservation and restoration of significant natural and historic resources.
 - (2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities.
 - (3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.
 - (5) Encourage the design of developments and activities that complement the natural beauty of the islands.

Discussion: One hundred and five historic sites, many consisting of multiple features, have been identified on the subject property. A detailed archaeological study of these sites has been

conducted and treatment ranging from data collection to preservation has been recommended, depending upon the cultural and scientific value of individual sites. A 27 acre area containing a large complex of sites in the northeastern corner of the project area has been recommended to be set aside as an Archaeological Preserve. Management of the Preserve will be consistent with procedures established by the State Historic Sites Office and accepted archaeological procedures. Sites recommended for preservation outside of the Preserve will be managed in the same manner. Scenic views of the ocean and Hualalai mountain will be preserved wherever possible. The residential character of the proposed project will ensure the preservation of views, vistas, and the area's overall scenic beauty. Views of the subject property from Queen Kaahumanu Highway will be preserved. Views from the existing Kealakehe community will be improved by the replacement of dense thickets of Kiawe and Haole Koa with landscaped areas. The County golf course will create a large open space area which will significantly contribute to preserving coastal views from the subject property.

SEC. 226-13 Objectives and policies for the physical environment--land, air, and water quality.

- Objective:** (1) Maintenance and pursuit of improved quality in Hawaii's land, air, and water resources.
- Policies:** (2) Promote the proper management of Hawaii's land and water resources.
- (3) Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.
- (4) Encourage actions to maintain or improve aural and air quality levels, to enhance the health and well-being of Hawaii's people.
- (5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.
- (6) Encourage design and construction practices that enhance the physical qualities of Hawaii's communities.
- (7) Encourage urban developments in close proximity to existing services and facilities.

Discussion: The proposed project is located near North Kona's primary urban area and will be designed in a manner consistent with the desired character of the existing residential communities. Development of the project will ensure that threats to life and property from erosion and flooding are minimized through the engineering of drainageways to accommodate surface runoff. No portion of the property is located within a tsunami inundation zone. With regard to seismic activity, buildings will be constructed according to accepted engineering methods to minimize the

potential damage from earthquakes. The last historical eruption of Hualalai occurred in 1801 resulting in a lava flow which reached the sea in the Keahole area. The potential for lava inundation of the project area is considered to be slight. Nevertheless, evacuation routes will be incorporated into the overall project design. While air quality will be impacted to some degree by the conversion of vacant agricultural and conservation land to more active uses, State and Federal air quality standards will be observed. The creation of an efficient transportation network will help to minimize the impact of automobile emissions upon air quality. There are no surface waters on the proposed project site. Impact upon ground waters will be minimized by adherence to accepted construction techniques and standards. No industrial activities are proposed for the development. Consequently, noxious activities which might impact air and ground water quality are not expected to occur. Use of the property will be managed through the timely phasing of project elements in a manner that is compatible and beneficial to the environment as well as existing neighboring communities and the area's future population.

SEC. 226-14 Objective and policies for facility systems--in general.

Objective: Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.

- Policies:**
- (1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with State and County plans.
 - (2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.

Discussion: The key element of the proposed project is the design and implementation of facility systems which provide for the orderly and timely development of the project without placing undue strain on existing infrastructure. In fact, the roadway network included in the design proposal is specifically intended to assist in relieving existing traffic congestion on Palani Road and accommodating increased levels of traffic along Queen Kaahumanu Highway.

SEC. 226-15 Objectives and policies for facility systems--solid and liquid wastes.

- Objectives:**
- (1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.
 - (2) Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility and other areas.
- Policy:**
- (1) Encourage the adequate development of sewerage facilities that complement planned growth.

Discussion: As a precursor to development in the Kailua region, the County of Hawaii is presently constructing the Kealakehe Sewage Treatment Plant makai of the Queen Kaahumanu Highway on state owned property near Honokohau Harbor. Discussions have been held with the County to ensure that expansion plans for the facility will include the Kealakehe Planned Community. With regard to solid waste, the County of Hawaii is presently proposing the development of a new landfill to serve the Kailua area at Pu'uanahulu in North Kona. The County has also proposed the closing of the Kealakehe landfill adjacent to the project site, including the removal of metals and recyclable materials from the landfill. Solid and liquid waste generated by the proposed project will be accommodated by these proposed facilities.

SEC. 226-16 Objective and policies for facility systems--water.

Objective: Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.

Policy: (1) Coordinate development of land use activities with existing and potential water supply.

Discussion: The master plan for the proposed project includes the phased development of potable water wells to serve the project area. Water wells will be developed in conjunction with capital improvement projects undertaken by the State's Department of Land and Natural Resources. Development of water resources will be fully coordinated with State and County agencies.

SEC. 226-17 Objectives and policies for facility systems--transportation.

Objective: (1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.

Policies: (6) Encourage transportation systems that serve to accommodate present and future development needs of communities.

(10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawaii's natural environment.

Discussion: Specific transportation elements included in the project master plan are the provision of a 300 foot setback along Queen Kaahumanu Highway, development of a new mauka-makai roadway linking the Queen Kaahumanu Highway to Kealakehe Street, a grade-separated intersection at Queen Kaahumanu Highway, and a mid-level roadway across the project site. Also included within the proposed development are a series of pedestrian walkways within Village areas and linking project elements thereby providing an alternative to vehicular transportation.

SEC.226-18 Objectives and policies for facility systems--energy/telecommunications.

Objective: (2) Increased energy self-sufficiency.

Policy: (3) Promote prudent use of power and fuel supplies through conservation measures including education and energy-efficient practices and technologies.

Discussion: The proposed project is intended to utilize the latest advancements in energy-efficient construction practices and alternate energy development technologies to facilitate the prudent use of power and fuel supplies. Conservation methods including the use of shade trees to help shelter homes as a method of reducing reliance upon air-conditioning will be utilized wherever practicable. Design guidelines will be developed for the entire project and will include measures to promote energy conservation, such as the proper siting of structures.

SEC.226-19 Objectives and policies for socio-cultural advancement--housing.

Objectives: (1) Greater opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, livable homes located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals.

(2) The orderly development of residential areas sensitive to community needs and other land uses.

Policies: (1) Effectively accommodate the housing needs of Hawaii's people.

(2) Stimulate and promote feasible approaches that increase housing choices for low-income, moderate-income, and gap-group households.

(3) Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.

(5) Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.

(7) Foster a variety of lifestyles traditional to Hawaii through the design and maintenance of neighborhoods that reflect the cultures and values of the community.

Discussion: Approximately 4,200 housing units will be provided in the Housing Finance and Development Corporation's proposed Kealakehe Planned Community. The project is intended to provide affordable housing opportunities to meet existing and projected demand in West Hawaii. Included in the project are a wide range of housing unit types and for sale and rent, including multi-family unit rentals, affordable and market priced single family units and affordable and market priced multi-family units. Income groups to be served by the project include persons and

families earning 80% or less than the area's median income (assisted rentals), 80% to 120% median income (affordable homes), 120% to 140% of the median income (gap group/market priced), and 140% and above (market priced). Housing opportunities will be provided for the elderly, handicapped, single-parent families and other special need groups. The community will be developed in phases in the form of villages of approximately 300 units each. The overall design and location of the villages as well as the units within them take into account their physical setting and access to public services and facilities. In addition to residential development, the project will also include commercial areas, parks and public facilities such as schools, churches, day care centers, and a community recreation center.

SEC. 226-20 Objectives and policies for socio-cultural advancement--health.

Objectives: (2) Maintenance of sanitary and environmentally healthful conditions in Hawaii's communities.

Discussion: Phasing of the proposed development takes into account the potential impact of the Kealakehe landfill located near the project site. It is understood that the County of Hawaii intends to close the landfill and relocate its contents to a new site, away from residential development. Development of the Kealakehe Community will be phased from the mauka area down to the highway. The villages nearest the landfill are not intended to be developed during the time that the mining of the land fill will occur (with the next 10 years). With regard the disposal of liquid waste, the entire project will be connected to the Kealakehe Sewage Treatment Plant presently under construction. The project will therefore not require cesspools or septic tanks. Effluent from the STP will be used to irrigate the golf course. This is a common practice in a number of resort and residential areas around the State of Hawaii and across the continent United States and does not constitute a health hazard. Treatment of the sewage effluent removes virtually all harmful contaminants rendering the effluent safe for use in irrigation. Percolation of the effluent through the soil provides an additional level of purification, thereby ensuring that ground waters will not be contaminated.

SEC. 226-21 Objectives and policies for socio-cultural advancement--education

Objective: Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.

Policy: (2) Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.

Discussion: The proposed project includes within its residential community, an elementary and high school which will help to fulfill the need for new public schools in West Hawaii.

SEC. 226-23 Objective and policies for socio-cultural advancement--leisure.

Objective: Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.

- Policies:**
- (2) Provide a wide range of activities and facilities to fulfill the cultural, artistic, and recreational needs of all diverse and special groups effectively and efficiently.
 - (4) Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.
 - (6) Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs.
 - (8) Increase opportunities for appreciation and participation in the creative arts, including the literary, theatrical, visual, musical, folk, and traditional art forms.

Discussion: The Archaeological Preserve, the public golf course, and a variety of parks and open spaces included in the proposed development contribute to the goals and objectives of providing recreational and leisure activities to the existing and growing population of the area.

SEC. 226-25 Objective and policies for socio-cultural advancement--culture.

Objective: Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawaii's people.

- Policy:**
- (1) Foster increased knowledge and understanding of Hawaii's ethnic and cultural heritages and the history of Hawaii.

Discussion: Preservation of historic and archaeological sites within the subject property will provide a direct means of communicating to existing and future residents of the area, the cultural traditions and customs of the area's Hawaiian population.

SEC. 226-26 Objective and policies for socio-cultural advancement--public safety.

Objective: Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the following objectives:

- (1) Assurance of public safety and adequate protection of life and property for all people.

Discussion: Included in the project's master plan is a 30-acre Civic Center which will contain a variety of public services and facilities including a police sub-station and a fire station. These facilities in close proximity to the proposed project will help to ensure public safety.

1.3.2. Part III. Priority Guidelines

The purpose of this part of the State Plan is to establish overall priority guidelines to address areas of statewide concern. Section 226-102 of the Plan notes that the State shall strive to improve the quality of life for Hawaii's present and future population through the pursuit of desirable courses of action in five major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, and quality education. The priority guidelines applicable to the proposed project are discussed below.

SEC. 226-103 Economic priority guidelines.

- (e) Priority guidelines for water use and development:
 - (1) Maintain and improve water conservation programs to reduce the overall water consumption rate.
- (f) Priority guidelines for energy use and development:
 - (2) Initiate, maintain, and improve energy conservation programs aimed at reducing energy waste and increasing public awareness of the need to conserve energy.

Discussion: The conservation of natural resources, especially water, is an important concern to the proposed development. While new water resources will be developed to support the projected growth in the region, the conservation of those resources is vital to long-term growth and stability. For this reason, the proposed project will seek to aid in the attainment of the water conservation guidelines. Energy conservation is equally important. Construction and design techniques can be utilized to ensure that new buildings are energy-efficient.

SEC. 226-104 Population growth and land resources priority guidelines.

- (a) Priority guidelines to effect desired statewide growth and distribution:
 - (1) Encourage planning and resource management to insure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawaii's people.

(3) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.

(4) Encourage major State and Federal investments and services to promote economic development and private investment to the neighbor islands, as appropriate.

(b) Priority guidelines for regional growth distribution and land resource utilization:

(1) Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.

(2) Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.

(9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.

(12) Utilize Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.

Discussion: The proposed project is situated upon marginal agricultural land, near an existing urban area. The development of this land to support projected population growth in the region is consistent with population related priority guidelines. The development of infrastructure to support the proposed project, especially new transportation systems, sewage and solid waste disposal facilities, and water systems will ensure that the proposed development is implemented in an orderly and timely manner with adequate infrastructural capacities. The prudent investment of government funds in these facilities, especially in the area of waste disposal and transportation will help to alleviate current deficiencies. Finally, the proposed property is intended to be developed in a manner that is sensitive to the environment and protect valuable resources including archaeological sites and endemic plants. In this manner, the project will aid in the attainment of the above population related guidelines.

SEC. 226-106 Affordable housing. Priority guidelines for the provision of affordable housing:

(1) Seek to use marginal or non-essential agricultural land and public land to meet housing needs of low and moderate-income and gap-group households.

- (2) Encourage the use of alternative construction and development methods as a means of reducing production costs.
- (4) Create incentives for development which would increase home ownership and rental opportunities for Hawaii's low and moderate-income households, gap-group households, and residents with special needs.
- (6) Encourage public and private sector cooperation in the development of rental housing alternatives.
- (8) Give higher priority to the provision of quality housing that is affordable to Hawaii's residents.

Discussion: The proposed project is being developed on public land of which nearly half is non-essential agricultural (with the remainder being Conservation and Urban land). The project is specifically intended to help meet the demand for affordable housing among low, moderate and gap-group households. Development of market housing within the project, and especially along the golf course fairways provides a means of generating higher sales prices, which will in turn generate increased income for the provision of affordable housing. Development of commercial land uses within the project accomplishes similar goals while also helping to reduce regional traffic and improving the quality of life in the proposed community. The promotion of affordable housing by the State provides a catalyst for the development of for-sale and rental housing in the private sector.

1.4 State Functional Plans

The Hawaii State Plan sets forth in Section 2 that functional plans shall include "the policies, programs and projects designed to implement the objectives of a specific field of activity when such activity or program is proposed, administered, or funded by any agency of the State". The twelve functional plans were examined to determine the relationship of the proposed project to each of their administrative areas of responsibility.

1.4.1 State Agricultural Functional Plan (1985)

The entire project area consists of barren or nearly barren a'a and pahoehoe lava flows. Although approximately 350 acres are designated as Agricultural land by the State Land Use Commission, the general classification of these lands by the Land Study Bureau is E, indicating little intrinsic value as productive agricultural lands. Historically, portions of the property have been leased to the neighboring Palani Ranch for cattle grazing. Because these lands are not presently utilized for agricultural activities, the objectives, policies and implementing actions of the Agricultural Functional Plan are not relevant to the proposed project.

1.4.2 State Conservation Functional Plan (1984)

There are several objectives and policies in the State Conservation Functional Plan which pertain to the proposed project. These are identified below and followed by a discussion of how the proposed may assist in their implementation.

Objective: Effective protection and prudent use of Hawaii's unique, fragile, and significant environmental and natural resources.

Policy: (A1) Exercise an overall conservation ethic in the use of Hawaii's resources by protecting, preserving, and conserving the critical and significant natural resources of the State of Hawaii and controlling use of hazardous areas.

Objective: Effective protection and management of open space, watersheds, and natural areas.

Policy: (C3) Protect and manage the lands with historic or natural resources value.

Objective: Promote sound management and development of Hawaii land and marine resources for potential economic benefit.

Discussion: Phased development of the proposed project will ensure that development will occur in an orderly and timely manner with a minimal amount of negative impact upon the environment. Culturally significant historic and archaeological resources identified on the subject property will be preserved. The development of the property for residential and related uses will be done in a manner that promotes environmental awareness and protection.

1.4.3 State Educational Functional Plan (1989)

The State Education Functional Plan reflects the Department of Education's strategies to address the goals, policies and priority guidelines of the Hawaii State Plan and the goals of the State Board of Education. All of the actions are to be undertaken by the State Department of Education. The specific objectives and policies of the functional plan are not directly applicable to the proposed development.

1.4.4 State Higher Educational Functional Plan (1984)

There are no objectives, policies or implementing actions in this functional plan that are directly applicable to the proposed project.

1.4.5 State Employment Functional Plan (1989)

The State Employment Function Plan contains objectives, policies and implementing actions directed four major areas: Education and Preparation Services for Employment; Job Placement; Quality of Work Life; and Employment Planning Information and Employment Coordination. The proposed project will provide new employment opportunities primarily in the construction trades to the existing and future residents of the West Hawaii region which will, in turn, have a direct impact upon improving the quality of life in the region. However, there is no direct involvement by the HFDC in labor or employment practices associated with the project. It is intended that development rights for each village component included in the master plan will be awarded to a private developer who will be responsible for actual construction. For this reason, although the proposed project will foster opportunities for increased employment and supports the intention of the plan, the specific provisions of the functional plan are not directly applicable.

1.4.6 State Energy Functional Plan (1984)

The State Energy Functional Plan's objective to promote energy efficiency through land use and support facility systems planning relates directly to the overall master planning of the proposed project as well as its implementation. The project will be master planned to promote energy efficiency through the general siting of facilities to maximize access and minimize energy consumption. While specific building designs are not included in the master plan, the proposed project will adhere to energy conservation standards whenever possible. Specific elements of energy conservation such as the utilization of solar energy in building design for the purposes of water heating and air conditioning will be encouraged wherever practicable.

1.4.7 State Health Functional Plan (1989)

The State Health Functional Plan includes objectives and policies that relate directly to the proposed development. These are presented below followed by a discussion how the project will support their implementation.

- Objective: To prevent degradation and enhance the quality of Hawaii's air, land and water.
- Policy: (A1) Prevent and control the pollution of air, water and land through long-range planning, environmental impact assessments, interagency coordination, programs, regulations, and financial assistance to local governments.
- Objective: Minimize the threat to public health from insanitary conditions by ensuring that facilities are built and maintained so that products and services are provided in a

healthful manner.

Discussion: The proposed project intends to comply with all applicable Department of Health rules and regulations as well as those established by Hawaii County. Environmental impacts on air quality are fully addressed within this EIS document. Drainage and runoff from the project, both during construction and long-term maintenance of planned facilities will be minimized to ensure the protection of ground water quality and offshore ocean water quality. Infrastructure intended to accommodate the sewage and solid waste generated by the project will be master planned to ensure its timely development and minimize environmental impacts.

1.4.8 State Historic Preservation Functional Plan (1984)

Objectives, policies and implementing actions in the Historic Preservation Functional Plan are intended for implementation by the Department of Land and Natural Resources and affiliated State agencies. The project area has been extensively surveyed and a description of identified historic and archaeological sites is included in this EIS document. Recommendations are included for the disposition of the sites, including preservation of those sites identified as significant for cultural, scientific or educational value. Implementation of the proposed project will include the preparation of an Historic Sites Mitigation Plan to ensure conformance with all applicable state, county and federal regulations concerning historic sites.

1.4.9 State Housing Functional Plan (1989)

The Housing Functional Plan includes objectives, policies and implementing actions which are applicable to the proposed project. These are presented below followed by a discussion of how the proposed project will assist in their implementation.

Objective: Homeownership for at least sixty percent, or roughly 248,500 households by the year 2000.

- Policies:**
- (A1) Direct Federal, State and county resources and efforts toward the development of affordable for-sale housing units.
 - (A2) Encourage increased private sector participation in the development of affordable for-sale housing units.
 - (A3) Ensure that (1) housing projects and (2) projects which impact housing provide a fair share/adequate amount of affordable homeownership opportunities.
 - (A4) Assist first time homebuyers in purchasing a home.

(A5) Use alternative approaches in providing affordable housing for sale.

Discussion: As one of the lead agencies designated to implement the objectives and policies of the Housing Functional Plan, the HFDC is committed to providing affordable housing opportunities throughout the State. The Kealakehe project is intended to provide over 4,000 new housing units, 60% of which will be affordable. Specific programs within HFDC are intended to provide first time home buyers with financing to enable them to enter the housing market. The HFDC's ability to provide affordable housing is based upon policies of attracting private developers to participate in housing development, and helping to offset the cost of affordable housing development by encouraging the development and sale of market prices units and the sale of commercial land situated to benefit the residential community.

Objective: Sufficient amount of affordable rental housing units by the year 2000 so as to increase the State's rental vacancy rate to at least 3%.

- Policies:**
- (B1) Direct State, county and federal resources toward the financing and development of rental housing projects.
 - (B2) Encourage increased private sector participation in the development of affordable rental housing.
 - (B4) Fully utilize rental subsidy programs funded by the Federal, State or county governments.

Discussion: Twenty percent of the planned units in the Kealakehe project are targeted as affordable rental units. The project master plan proposes the inclusion of rental units in many of the fourteen planned villages. This ensures that the rental units will be fully integrated into the community and that they will be developed in a timely manner as integral components of each village. The HFDC's programs for rental subsidies will be available to occupants of these rental units.

Objective: Increased development of rental housing units for the elderly and other special need groups to afford them an equal access to housing.

- Policies:**
- (C1) Effectively use public resources to provide rental housing projects for elderly and handicapped persons.
 - (C7) Integrate special needs housing in new and existing neighborhoods.

Discussion: Housing units for the elderly, handicapped and special needs groups will be included in the proposed project.

Objective: Acquire and designate lands suitable for housing development in sufficient amount to locate the deficit in housing units by the year 2000.

- Policies:**
- (E1) Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, employment and other concerns of existing communities and surrounding areas.
 - (E2) Wherever practical, develop affordable housing projects on public lands.
 - (E3) Wherever feasible, acquire privately owned lands that are suitable for housing development.

Discussion: The development of the proposed project on State owned land at Kealakehe is intended to maximize the use of public lands. The proposed purchase of adjacent land owned by the Queen Liliuokalani Trust is intended to offset the State land to be transferred to the County for the development of the golf course/effluent disposal area.

1.4.10 State Human Services Functional Plan (1989)

Objectives and policies of the Human Services Functional Plan are directed specifically to administration and implementation by State agencies including the Department of Human Services, the Department of Health, the Department of Education, the Department of Labor and Industrial Relations, and the State Office of Children and Youth and Executive Office on Aging. The functional plan does not relate directly to the proposed project.

1.4.11 State Recreation Functional Plan (1984)

A number of objectives and policies of the Recreation Functional Plan are applicable to the proposed project. These are presented below and followed by a discussion of how the project will assist in their implementation.

- Objective:** Achieve a pattern of land and water resource usage which is compatible with community values, physical resources, recreation potential, and recreation uses which support comprehensive public land use policies.
- Policies:**
- (A2) Ensure that intended uses for a site respect community values and are compatible with the area's physical resources and recreation potential.
 - (A3) Emphasize the scenic and open space qualities of physical resources and recreational areas.

Discussion: Included in the proposed project are public parks and a public golf course. These facilities, together with a community recreation center will enhance the proposed community by providing valued open space areas as well as recreation opportunities. These facilities will be fully integrated into the development in a manner that is sensitive to the area's physical character.

Objective: Establish a system of maintaining natural and cultural resources for present and future generations, and of managing recreation and other uses in accordance with sound conservation practices.

Policy: (B1) Exercise an overall conservation ethic in the use of Hawaii's resources.

Discussion: The proposed project will include open space areas, an Historic Preserve, and public parks. Natural and cultural resources within the project area will be maintained and managed in accordance with sound conservation practices.

1.4.12 State Tourism Functional Plan (1984)

The objectives and policies of the Tourism Functional Plan do not directly relate to the proposed development.

1.4.13 State Transportation Functional Plan (1984)

The objectives and policies of the Transportation Functional Plan relate primarily to the administration and implementation of transportation policy by the State Department of Transportation. For this reason, the functional plan does not directly relate to the proposed project. However, because transportation is a crucial element of the proposed project, a variety of mitigation measures are recommended to assist in reducing the project's impacts upon existing and future traffic conditions in the area, including the development of a new mauka-makai roadway to help relieve traffic on Palani Road. Master planning of the proposed project is being undertaken by the HFDC. At the master planning stage, the HFDC is working closely with the State Department of Transportation to ensure that transportation systems proposed for inclusion in the project are consistent and supportive of the DOT's agency objectives and policies.

1.4.14 State Water Resources Development Functional Plan (1984)

Objectives and policies of the Water Resources Development Functional Plan are directed primarily to State and County agencies responsible for the management of water resources and are not directly applicable to the proposed project. The proposed project includes the development of water resources to serve the planned development. Implementation of water infrastructure will be done in cooperation with the appropriate State and County agencies.

1.5 Coastal Zone Management Act (Chapter 205-A, HRS)

The objectives of the Hawaii Coastal Zone Management (CZM) Program, as set forth in

Chapter 205A, Hawaii Revised Statutes, include protection and maintenance of valuable coastal resources. The proposed project does not directly impact the coastal area, in that, it is located on the mauka side of Queen Kaahumanu highway, nearly a mile from the shoreline. Likewise, no portion of the proposed project is located within the Special Management Area.

1.6 West Hawaii Regional Plan

Published in November, 1989 by the Office of State Planning, the West Hawaii Regional Plan "addresses critical topical issues which require State attention in order to most effectively meet the region's present and emerging needs". The plan identifies the subject property as contained within a subregional planning area and outlines a strategy to "concentrate future regional urbanization in designated Subregional Planning Areas and provide for their planning and future development in a manner which optimizes or mitigates subregional problems, issues and opportunities". The plan contains a number of goals which establish a "vision" for West Hawaii. Table 7-1 summarizes the relationship between these goals and the proposed project.

2. HAWAII COUNTY PLANS AND CONTROLS

2.1 Hawaii County General Plan

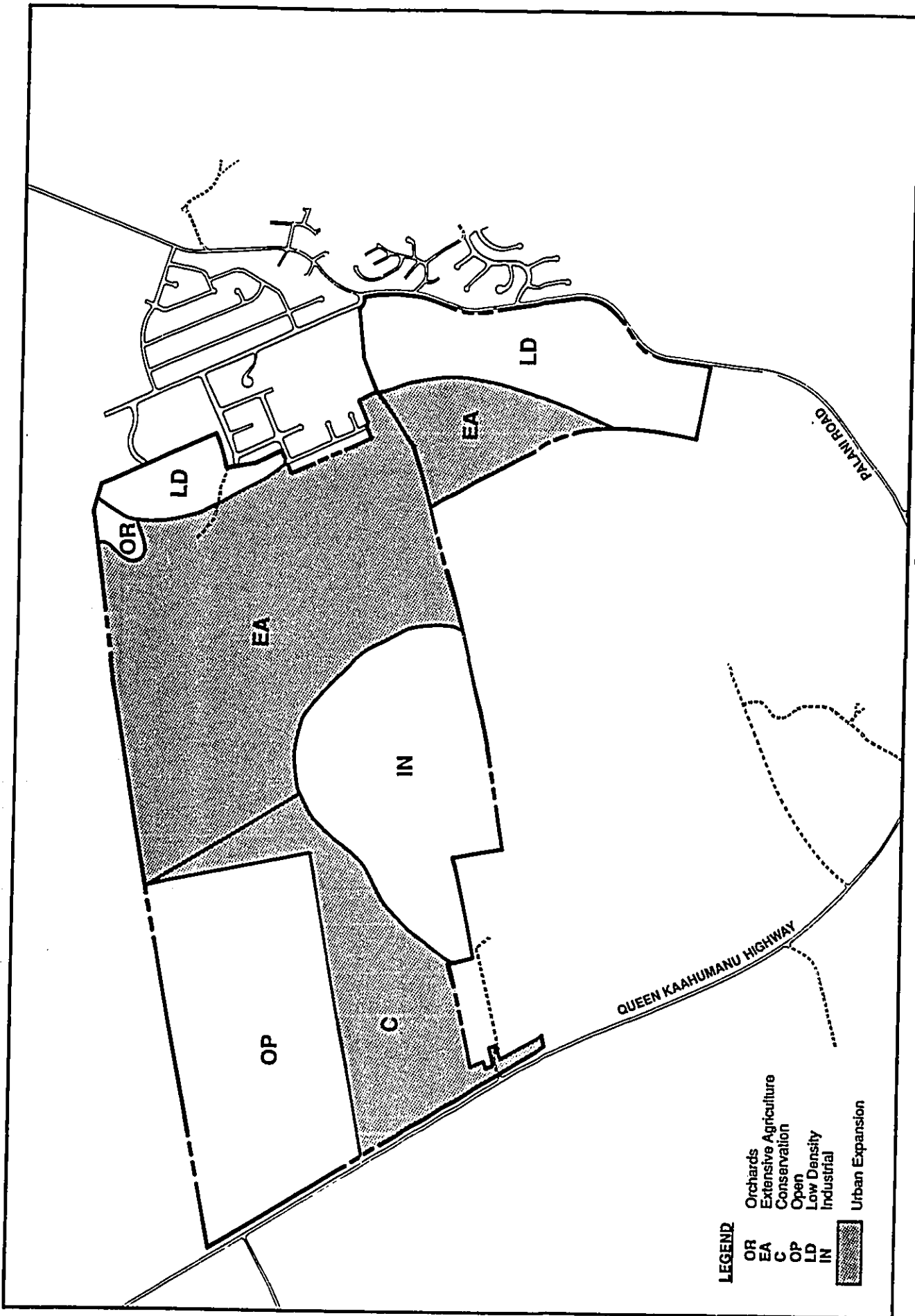
The Hawaii County General Plan is the policy document for the long-range comprehensive development of the island of Hawaii. The General Plan provides direction for balanced growth of the County. The Plan contains goal, policies, and standards concerning twelve functional areas as well as a series of land use maps referred to as General Plan Land Use Pattern Allocation Guide (LUPAG) Maps. The recently revised LUPAG map designations for the subject property identify it generally as Alternate Urban Expansion with a portion near the existing Kealakehe community designated for low density development, a portion in the northeastern corner identified as Orchard, a portion near the existing land fill designated for industrial uses, and a portion of the northwestern corner of the project area designated as open area (see Figure 7-2). The proposed project is generally consistent with the County General Plan. The proposed project is also consistent with the policies of the General Plan.

2.2 Hawaii County Zoning

The project area includes four zoning classifications: the area presently classified as Urban District by the State Land Use Commission is zoned RS-10, RS-15 and Open as depicted in Figure 7-3. The area presently classified as Conservation District and Agriculture District is zoned Open with a small portion zoned A-1a.

TABLE 7-1: RELATIONSHIP TO WEST HAWAII REGIONAL PLAN

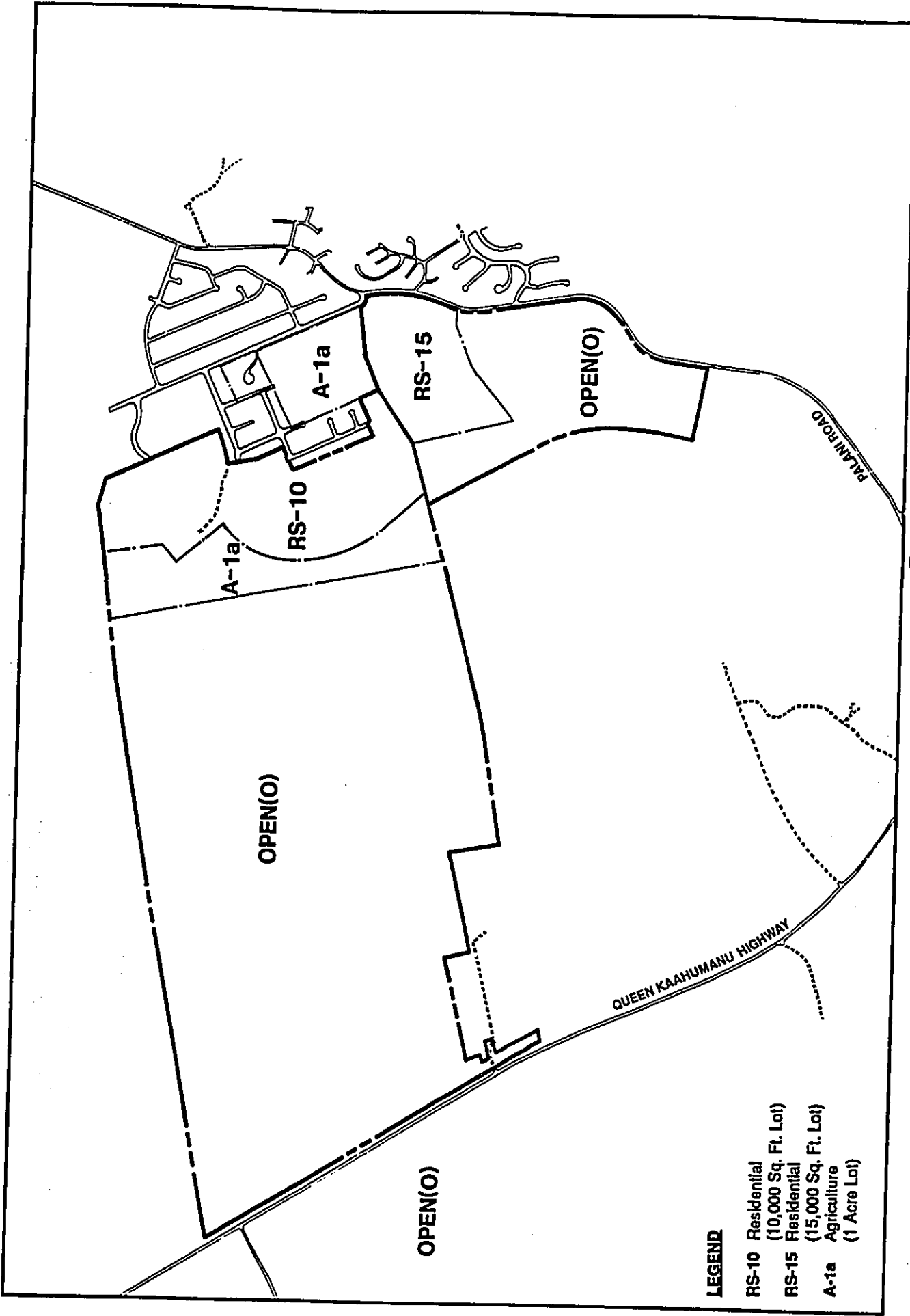
<u>Goal:</u>	<u>Applicable</u>	<u>Supportive</u>
Plan and maximize benefits for Hawaii's people.	Yes	Yes
Optimize the use of State owned lands.	Yes	Yes
Promote a diversified economic base which maximizes job choice and opportunities.		Yes
Ensure access to and adequacy of health, education, job-training, and human service programs.		Yes
Ensure provision and adequacy of affordable housing.	Yes	Yes
Minimize adverse impact of new development on local lifestyles, historic and cultural resources and community values.	Yes	Yes
Provide a wide range of outdoor recreational activities.	Yes	Yes
Protect scenic areas, natural landmarks, open space and viewsheds.	Yes	Yes
Ensure that existing and proposed developments can be adequately accommodated.	Yes	Yes
Support urban developments that maintain the unique character of the West Hawaii region.	Yes	Yes
Protect State investments at the Natural Energy Laboratory of Hawaii, the Hawaii Ocean Science and Technology Park, Keahole Airport, and the Mauna Kea observatories.		Yes
Ensure that new development does not adversely impact:		
agricultural resource activities	Yes	Yes
aquacultural resource activities	No	
the quality of the aquifer	Yes	Yes
the quality of nearshore waters	No	
the quality of offshore and deep ocean waters	No	
the quality of the air	Yes	Yes
the watersheds	Yes	Yes
Ensure that the servicing of resort development does not result in unnecessary in-migration.		Yes
Ensure the clustering of resorts in order to minimize public service costs.	No	
Promote quality and diversity in future resort developments.	No	
Develop only within infrastructure capacities and constraints.	Yes	Yes
Maintain the diversity of the region's natural and cultural assets.	Yes	Yes
Maintain the diversity and character of existing communities	Yes	Yes
Ensure that development does not lead to deterioration in the quality of life.	Yes	Yes
Maintain opportunities for community participation during plan implementation.	Yes	Yes



0 400 800 1600
 SCALE IN FEET
 NORTH
 Prepared by: BELT COLLINS & ASSOCIATES
 Date: JUNE 1990

**KEALAKEHE PLANNED COMMUNITY
 ENVIRONMENTAL IMPACT STATEMENT**

Figure 7-2
 COUNTY GENERAL PLAN (1989)



**KEALAKEHE PLANNED COMMUNITY
ENVIRONMENTAL IMPACT STATEMENT**

Figure 7-3
HAWAII COUNTY ZONING

2.3 Hawaii County Special Management Area

The project is not located within the special management area.

2.4 Kona Regional Plan

The Kona Regional Plan is intended to serve as a guide for land use decisions by the public and private sectors rather than a regulatory document. To that end, it documents existing constraints as well as setting forth recommendations and growth policies. Since the original publication of the document in 1982, substantial growth and development has occurred in the Kona region necessitating updates to the plan. The County's present endeavor, the Draft Keahole to Kailua Development Plan, discussed below, represents the next logical step in the planning process to guide development in the Kona area. To that extent, the Kona Regional Plan is somewhat outdated. Nevertheless, it remains as a relevant guide for growth in the area.

The proposed project is consistent with the Regional Plan's policies and recommendations concerning infrastructure, residential and commercial development.

2.5 Draft Keahole to Kailua Development Plan

The Hawaii County Planning Department has developed a draft development plan to address future development in the area from Keahole Airport to Kailua. The plan was approved by the County Planning Commission on July 5, 1990, and has been transmitted to the County Council for review and adoption.

The HFDC supports the intent and concept of the Keahole to Kailua Development Plan (K-K Plan). However, the present draft contains some elements that conflict with the proposed project. As currently drafted, the K-K Plan is largely a land use plan with an emphasis upon the siting of major region-serving land use elements and infrastructure. As the K-K Plan moves through the planning process it will continue to be refined. A discussion of the relationship between the proposed project and the draft plan (Figure 7-4) is therefore confined at this time to the compatibility between elements of the two plans.

Regional Center: The K-K Plan depicts a 100-acre Civic and Business Center located within the State owned Kealahou property makai of Queen Kaahumanu Highway. In presentations to the Planning Commission by the County Planning Department, the location has been justified on the basis of the appropriateness of locating public uses on public property. In earlier drafts of the

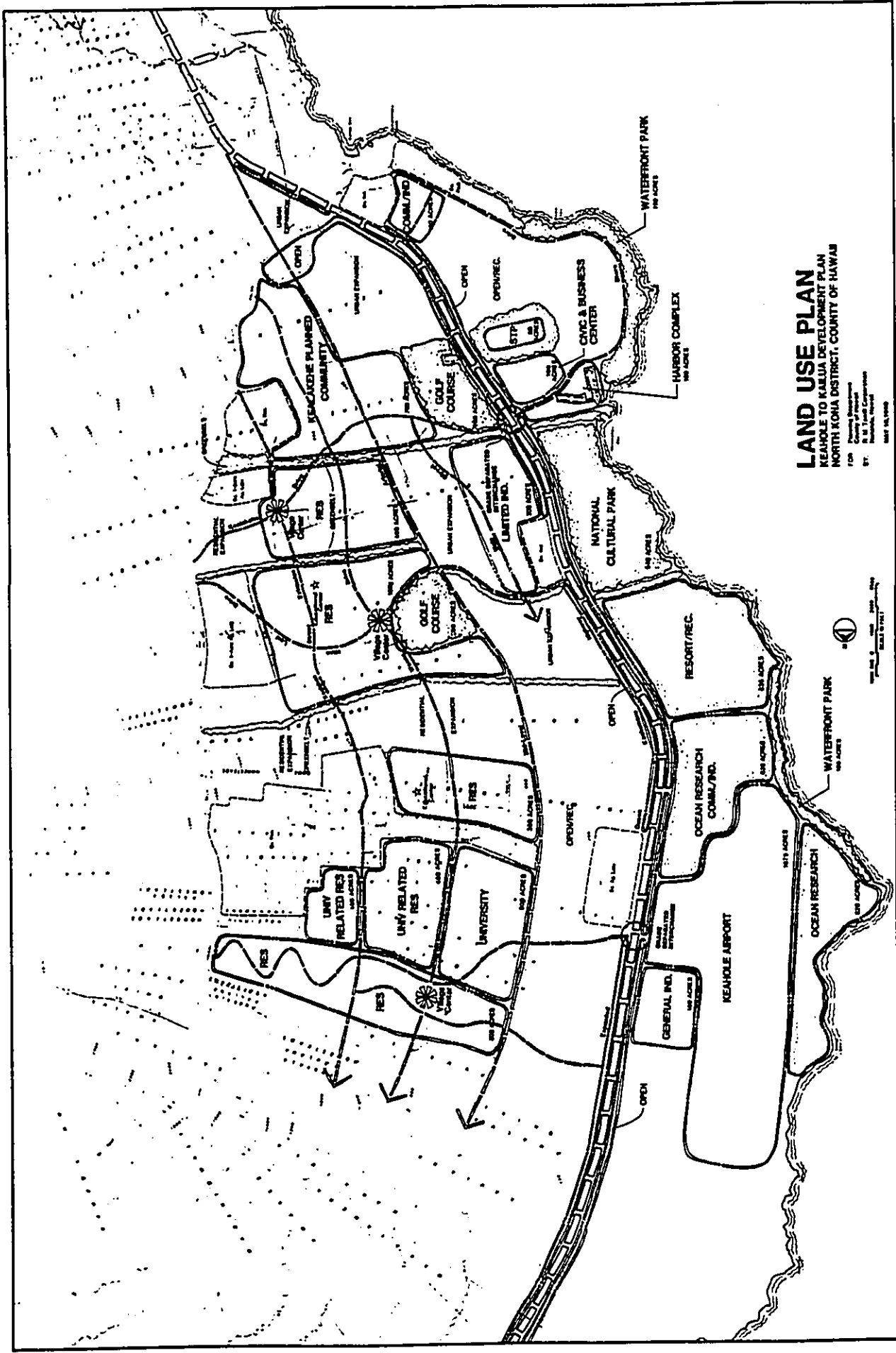


Figure 7-4

DRAFT KEAHOE TO KAILUA DEVELOPMENT PLAN

Prepared by: BELT COLLINS & ASSOCIATES
 Date: JUNE 1980

KEALAKEHE PLANNED COMMUNITY ENVIRONMENTAL IMPACT STATEMENT

plan, the Civic and Business Center was shown as a larger Regional Center mauka of the highway.

Discussion: The proposed project includes a 30 acre Civic Center located in the vicinity of the County police substation on County property. This location was selected in response to the County's desire to expand public facilities around the police station and was consistent with earlier drafts of the K-K Plan. At this time it is assumed that the County intends to retain the police station at its present location. Whether the surrounding area will be developed with additional public uses is unknown. However, for planning purposes it is appropriate to include the Civic Center in the location shown in the Kealakehe Master Plan in order to maximize development options and ensure adequate sizing of infrastructure.

Residential Development: The K-K Plan depicts residential land uses for the entire project area mauka of the proposed golf course and designates it as the Kealakehe Planned Community.

Discussion: The Kealakehe Master Plan is generally consistent with the K-K Plan. However, the Kealakehe Planned Community does not include that portion of land owned by the Queen Liliuokalani Trust and situated between the County's Mid-Level Arterial and Waena Drive as depicted on the K-K Plan map.

Public Golf Course: The K-K Plan includes a public golf course situated mauka of the Queen Kaahumanu Highway on land included in the project area.

Discussion: The location of the golf course is consistent with the Kealakehe Master Plan.

Kealakehe Drive and Grade Separated Interchange: The K-K Plan depicts a mauka-makai roadway along the northern portion of the project area and a grade separated interchange on Queen Kaahumanu Highway at the intersection of Kealakehe Parkway.

Discussion: The Kealakehe Master Plan is consistent with the K-K Plan. Although the alignment of the roadway and interchange differ slightly between the two plans, they are generally consistent.

Mid level Arterial: The K-K Plan proposes a mid-level arterial roadway paralleling Queen Kaahumanu Highway and crossing the HFDC project area. As proposed, this roadway consists of 120 foot right of way to be developed as a major arterial roadway.

Discussion: The HFDC supports the mid-level roadway concept and has included it in the project Master Plan.

Queen Kaahumanu Setback: The K-K Plan proposes expansion of the existing highway to 4-6 lanes by establishing a 300 foot right-of-way to accommodate the proposed construction.

Discussion: The HFDC supports the expansion of the Queen Kaahumanu Highway and has included a similar setback in its Concept Plan.

Main Street: The K-K Plan proposes the location of a Main Street beginning at Kealakehe Parkway (Kealakehe Drive) and extending north.

Discussion: It is believed that the Main Street proposal is largely conceptual in nature. The HFDC is proposing a detailed internal roadway system with the project area as part of its Master Plan. The Main Street concept can be adapted to fit within the Master Plan.

In general, the HFDC supports the remaining elements of the plan, including the proposed location of recreational, educational and industrial uses. However, there is concern about how the various elements in the County plan will be funded.

2.6 Kailua Village Design Plan

The 1988 Kailua Village Design (KVD) Plan does not include the proposed project area. However, it is expected that the plan's jurisdiction will be expanded to include the proposed project should it be approved. To that end, the proposed project concept has been reviewed and has been found to be consistent with the intent of the KVD plan.

3. STATE ENVIRONMENTAL IMPACT STATEMENT REQUIREMENTS

3.1 Chapter 343, HRS

Section 343-5(b) of Chapter 343, HRS (revised) states that "the applicability of chapter 343, Hawaii Revised Statutes, to specific agency proposed actions is conditioned by the agency's proposed use of state or county lands or funds. Therefore when an agency proposes to implement an action to use state or county lands or funds, it shall be subject to the provisions of chapter 343, Hawaii Revised Statutes..." Accordingly, this Environmental Impact Statement for the proposed project has been prepared and is submitted pursuant to the provisions of Chapter 343.

Upon acceptance of this EIS and approval of the requested State Land Use Boundary Petition and subsequent state and county permitting requests, the proposed project would conform with relevant state and county land use regulations, as well as other appropriate regulations.

CHAPTER VIII

CHAPTER VIII
CONTEXTUAL ISSUES

1. **RELATIONSHIP BETWEEN SHORT-TERM USES AND
MAINTENANCE OF LONG-TERM PRODUCTIVITY**

As discussed in previous sections of this document, the Kealakehe property is a large, vacant parcel of land characterized by barren lava flows with pockets of vegetation ranging from sparse grasses to dense thickets of shrubs and undergrowth. Its principal use historically has been for cattle grazing and habitation. As an environmental resource, the value of the land may be defined generally by its open space character and visual attributes. Its environmental value is further enhanced, however, by the fact that the land supports a species of environmentally endangered plant, the uhi uhi, as well as archaeological sites. The endangered status of the uhi uhi is believed to result from a number of factors, including the destruction from grazing animals, range fires that have destroyed large tracts of virgin land, and competition from exotic plants.

Long term use of the property for the purpose of providing affordable housing has been demonstrated in this document to be a critical economic and social issue for the West Hawaii region. The benefits of developing the property for residential use include the productive use of the property to benefit current and future residents of the West Hawaii region, the economic opportunities that will result from its development, and an increase in public lands uses and activities including new schools and recreational areas. The fact that the property is adjacent to existing residential areas and infrastructure increases its value as a potential residential site. Its elevation, cooler climate, and views also render the land an attractive locale for a residential community.

Retention of the property in open space to preserve its scenic value is not considered to be a viable long-term productive use in the face of a critical need for housing and the proximity of the land to an existing urban area. This is especially true when considering the proposed use of the property. Residential development will have a negligible impact upon the lands scenic qualities due to the low-rise character of the proposed development.

Preservation of the property in open space to protect the uhi uhi may not, in itself, accomplish that goal. Despite a possible restriction on cattle grazing, the endangered plants would continue to be exposed to the threat of range fire and competition from exotic plant species. Thus, preservation would have to be accompanied by an aggressive management plan to protect and propagate the species.

Potential short-term uses of the property are limited to the continued grazing of the land. In terms of its environmental value, the continued use of the property for grazing is unacceptable due to its historical impact upon the uhi uhi. Other short term uses of the property, such as a passive recreational area or large archaeological preserve would involve disruption of its existing character due to the need to clear some of the vegetation and develop supportive infrastructure such as roadways, parking areas, or pedestrian paths.

Clearly, there is an opportunity to meet both needs; preservation of the property's environmental resources and productive long-term use of it for social and economic benefits. The preservation of the endangered species in their natural habitat and the preservation of significant archaeological sites is not incompatible with the proposed residential use. Sensitive urban design will ensure that environmental resources are preserved. Development of the property will generate income which can be used to finance the management of environmentally sensitive resources.

2. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Development of the property for residential and residential-related uses would result in the irreversible and irretrievable commitment of certain natural and fiscal resources. Resource commitments include the land, potable water, the capital, the construction materials and the labor and energy needed to implement the project. These commitments should be weighed against the projected socio-economic benefits resulting from the proposed project as opposed to the preservation of the property as vacant open space.

The development of affordable housing, as demonstrated in this document, will require a significant commitment of governmental resources, including project financing and the labor necessary to administer its development. This commitment must be weighed against the project's contribution to tax revenues and its provision of new socio-economic and recreational amenities for the greater West Hawaii region.

3. OFFSETTING CONSIDERATIONS OF GOVERNMENTAL POLICIES

The proposed project has been thoroughly evaluated in terms of the existing system of land use policies, plans, goals, objectives, and controls at the state and county levels of government, and has been demonstrated to be generally consistent with numerous elements of this elaborate regulatory system. Nevertheless, by its very nature, there are inherent conflicts and contradictions within the system itself, and these cannot be avoided. Preservation of open space and the protection of the state's agricultural industry must be resolved in the face of the state's need to

respond to the demands of a growing population and economy. Protection of air quality and minimizing noise impacts cannot be easily resolved in the face of transportation facility improvements.

The proposed project addresses these critical issues by providing socio-economic benefits for the existing and future residents of West Hawaii while effectively mitigating adverse environmental and social impacts. The project has been demonstrated to be generally consistent with the Hawaii State Plan and Functional Plans, the Hawaii County General Plan, the County's Draft Keahole to Kailua Development Plan, and various community plans, goals, objectives and policies concerning the future growth of the West Hawaii region.

4. UNRESOLVED ISSUES

The West Hawaii region is presently the focus of considerable attention by county and state governmental agencies. Existing and proposed resort development along the South Kohala coast and in Keauhou will result in a significant expansion of the region's population and economy. To that end, both the State and County have engaged in the development of regional plans to guide future development. While the State's effort, the West Hawaii Regional Plan, has been completed, the County's Draft Keahole to Kailua Development Plan is presently in its third revision at the writing of this document. In addition to these efforts, major private landowners in the region including the Queen Liliuokalani Trust, Palani Ranch and Lanihau Corporation, and the Nansay Corporation are all proposing the eventual development of their vast land holdings.

The cumulative result of these efforts is an uncertainty at this time about the interrelationship of these plans and their collective impact upon such basic issues as the timing or phasing of regional infrastructure development and the location and phasing of major growth-inducing public and private facilities such as a new landfill, a regional hospital, a university campus, a regional sports center and regional roadways.

Thus, while state, county and private landowner plans are presently unresolved, the public review process of their various plans provides an adequate forum for the discussion and evaluation of the inherent issues. The publication of this environmental impact statement will contribute to the resolution of presently unresolved issues.

CHAPTER IX

CHAPTER IX
PARTIES CONSULTED AND THOSE WHO PARTICIPATED
IN THE PREPARATION OF THE EIS

1. **CONSULTED PARTIES**

The notice of availability of the Environmental Assessment and EIS Preparation Notice for the Kealakehe Planned Community was published in the OEOC Bulletin by the Office of Environmental Quality Control on February 23, 1990. The agencies, organizations and individuals listed below were sent copies of the Environmental Assessment (EA) and were asked to comment on the project. Everyone believed to have an interest in the project or requested consulted party status was included in the mailing. Those who responded with substantive comments are marked with an asterisk (*) and copies of the correspondence with them are reproduced in Chapter VIII. Those who responded that they had no comments are marked with a dot (•). Their response letters are not presented in this document.

Federal Agencies

- Soil Conservation Service, U.S. Department of Agriculture
- Fish and Wildlife Service, U.S. Department of the Interior
- * National Park Service, U.S. Department of the Interior
- Geological Survey, Water Resources Division, U.S. Department of the Interior

State Agencies

- * Department of Accounting and General Services
- * Department of Agriculture
- Department of Business and Economic Development
- Department of Budget and Finance
- * Department of Education
- Department of Hawaiian Home Lands
- * Department of Health
- * Department of Land and Natural Resources
- * Department of Transportation
- * Office of Environmental Quality Control
- Office of Hawaiian Affairs
- Office of State Planning
- * Environmental Center, University of Hawaii at Manoa
- * Water Resources Research Center, University of Hawaii at Manoa

State Legislators

Senator Andrew Levin
Senator Malama Solomon
Representative Harvey S. Tajiri
Representative Dwight Takamine
Representative Mike O'Kieffe

Senator Richard M. Matsuura
Representative Jerry L. Chang
• Representative Wayne Metcalf
Representative Virginia Isbell

Hawaii County Agencies

Civil Defense Agency
Department of Parks and Recreations
Department of Research and Development
• Hawaii Redevelopment Agency
Office of Housing and Community Development

* Fire Department
* Department of Public Works
* Department of Water Supply
* Police Department
* Planning Department

Hawaii County Elected Officials

Mayor Bernard Akana
Councilman Takashi Domingo
Councilwoman Lorraine Inouye
Councilman Robert Makuakane
Councilman Spenser Schutte

Councilman Russel Kokubun
* Councilwoman Helene Hale
Councilwoman Merle Lai
Councilman Harry Ruddle
Councilman Stephen Yamashiro

Public Utilities

Hawaiian Telephone Company
* Hawaii Electric Light Company, Inc.
The Gas Company, Hawaii Division

Community Organizations

Alu Like, Inc.
American Lung Association
Big Island Business Council
Hawaii Audubon Society
* Hawaii Conference Foundation
Hawaii Hotel Association, Big Island Chapter
Hawaii Island Board of Realtors
Hawaii Island Chamber of Commerce
Hawaii Island Economic Development Board
Hawaii Island Portuguese Chamber of Commerce
* Hawaii Leeward Planning Conference
Hawaii Visitor's Bureau, Big Island Chapter
Kona-Kohala Chamber of Commerce
Life of the Land, Big Island Chapter
Moku Loa Group, Sierra Club
Na Ala Hele
Native Hawaiian Legal Corporation
Sierra Club Legal Defense Fund

2. ORGANIZATIONS AND INDIVIDUALS WHO ASSISTED
IN THE PREPARATION OF THIS EIS

This Environmental Impact Statement was prepared for the States' Housing Finance and Development Corporation by Belt Collins and Associates with input provided by subconsultants. The following were involved:

Belt Collins and Associates

Thomas Papandrew	-	Principal in Charge
Lee William Sichter	-	Project Planner/Author of EIS
Paul Hirota	-	Civil Engineering
Cheryl Palesh	-	Civil Engineering
Aniko Kurczinak	-	Planner
Thomas Nance	-	Hydrologist
Ken Hamilton	-	Printing Coordinator
Audrey Chun	-	Graphic Designer

Subconsultants

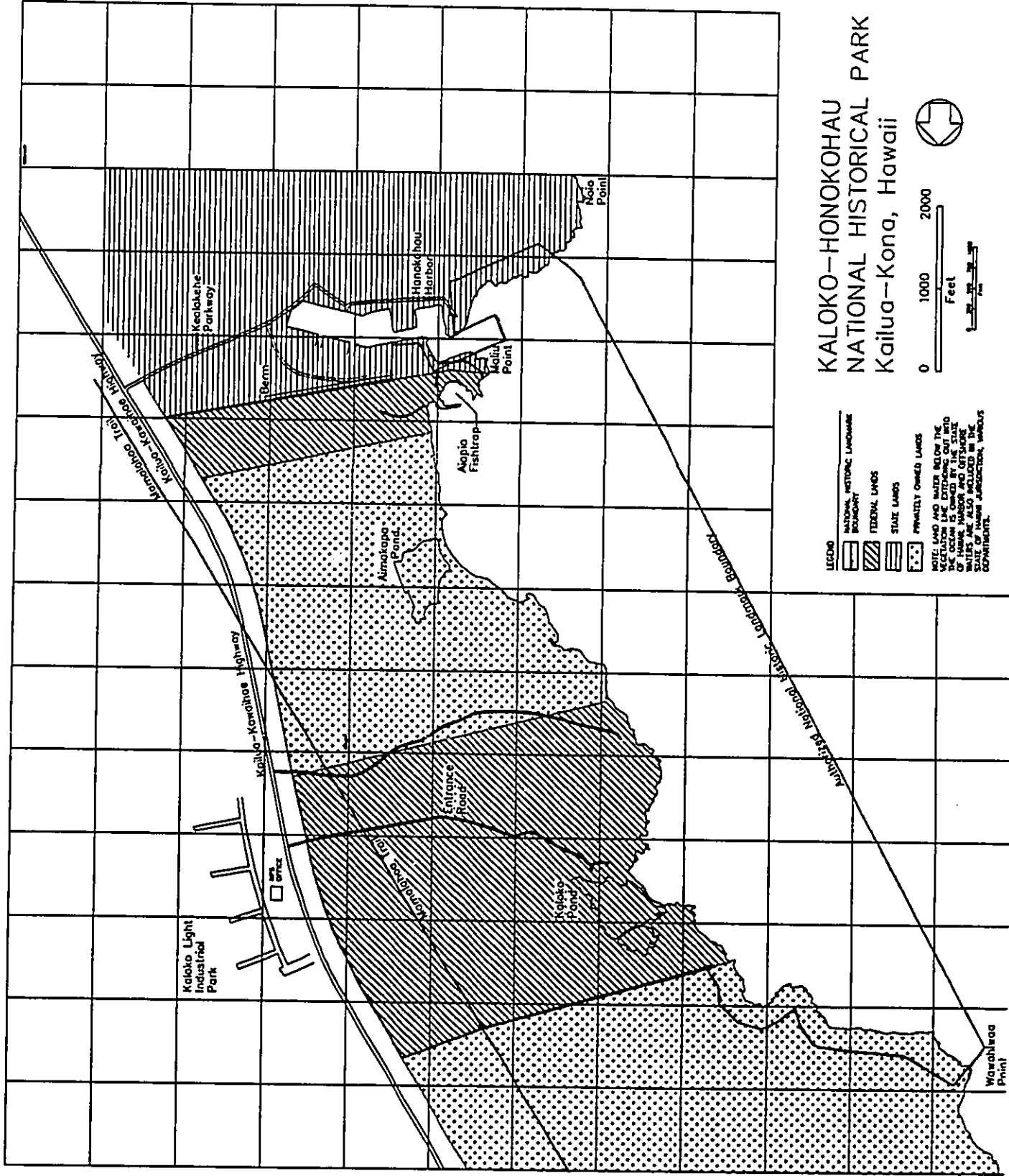
Archaeology	-	Paul H. Rosendahl, Ph.D. Inc.
Noise Impacts	-	Y. Ebisu & Associates
Flora	-	Char & Associates
Fauna	-	Phillip L. Bruner
Air Quality	-	Barry Neal,
Fiscal Impacts	-	Ernst & Young
Market Analysis	-	KPMG Peat Marwick
Traffic	-	Pacific Planning & Engineering, Inc.
Social Impact	-	Community Resources, Inc.
Electrical	-	Ron Ho & Associates
Topographic Survey	-	Towill Shigeoka
Urban Design Guidelines	-	Yamasato, Fujiwara, Aoki & Associates
Wastewater Impact Analysis	-	R.M. Towill Corporation

CHAPTER X

CHAPTER X

**COMMENTS AND RESPONSES RECEIVED DURING
THE EIS PREPARATION NOTICE PERIOD**

The agencies and individuals listed in Chapter IX were all sent copies of the Environmental Assessment (EA) and a transmittal letter requesting comments. Those agencies and individuals responding with substantive comments are identified in Chapter IX. Their comment letters and our responses are presented in this chapter. Those agencies and individuals who responded with no substantive comments are identified in Chapter IX. For sake of brevity, their "no comment" letters are not included in this chapter



**KALO-KOHOKOHOU
NATIONAL HISTORICAL PARK**
Kailua-Kona, Hawaii



- LEGEND**
- NATIONAL HISTORIC LANDMARK
 - FEDERAL LANDS
 - STATE LANDS
 - PRIVATELY OWNED LANDS
- NOTE:** LAND AND WATER BELOW THE VEGETATION LINE DITCHING OUT INTO THE OCEAN IS OWNED BY THE STATE OF HAWAII. PRIVATELY OWNED WATERS ARE ALSO INDICATED BY THE STATE OF HAWAII JURISDICTION, VARIOUS DEPARTMENTS.

**BELT COLLINS
& ASSOCIATES**

Engineering • Planning
Landscape Architecture

680 Ala Moana Blvd., Suite 200, Honolulu, Hawaii 96813

Phone: 808 521-5361, Telex: BELTH 7430474, Fax: 808 538-7819
Hawaii • Singapore • Australia • Hong Kong • Saipan

May 30, 1990
841.0101/90-660

Mr. Bryan Harry
Director, Pacific Area
National Park Service
United States Department of the Interior
300 Ala Moana Blvd., Room 6305
Box 50165
Honolulu, Hawaii 96850

Dear Mr. Harry:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for your letter of March 5, 1990 concerning the above project. The regional map will be corrected to show the authorized boundaries of the Kaloko-Honokohau National Historical Park. The ownership map will be corrected to show the correct boundaries for the park as well as federal ownership of the 60-acre Honokohau second parcel. The impacts of the proposed project upon the park will be fully addressed in the Draft Environmental Impact Statement.

We will provide you with a copy of the DEIS for your review and comment.

Very truly yours,


Lee William Sichter

cc: HFDC

JOHN WAIHEE
GOVERNOR



RECEIVED
MAR 23 1990

BELT, COLLINS & ASSOCIATES

RUSSEL S. NAGATA
COMPTROLLER

JAMES H. YASUDA
DEPUTY COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
DIVISION OF PUBLIC WORKS

LETTER NO. (P)1238.0

P. O. BOX 119, HONOLULU, HAWAII 96810

MAR 22 1990

Mr. Lee William Sichter
Senior Planner
Belt Collins & Associates
680 Ala Moana Boulevard, Suite 200
Honolulu, Hawaii 96813

Dear Mr. Sichter:

Subject: Kealakehe Planned Community
Environmental Assessment

This is in response to your March 2, 1990 transmittal of the subject matter.

DAGS wishes to be a consulted party for the subject project. Our concerns, which we would like to see addressed in the Draft EIS, are as follows:

1. The HFDC Kealakehe plan appears to conflict with Hawaii County's Kailua to Keahole Development Plan because HFDC's golf course and some residential areas are shown at approximately the location of Hawaii County's regional center. Since the County's plan was developed in consultation with the State Planning Office and other State agencies, information should be provided on how this conflict will be resolved.
2. The proposed civic center should not be located close to the County's landfill because of the problems the Police Station is encountering. Perhaps the landfill should be used as part of the golf course.
3. The DAGS proposed West Hawaii civic center which will generate vehicular traffic should be part of the regional center and should be located close to a major intersection with Queen Kaahumanu Highway for convenient vehicular access.

4. The latest estimated civic center land requirements are as follows:

State Civic Center

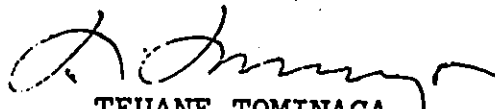
	<u>Acres</u>
State Office Buildings	5.5
Public Library	1.5
Health Center	1.5
Detention Center	3.5
Judiciary Complex	2.5
Senior Citizens Center	1.5
	<u>16.0</u>
50% Expansion	<u>8.0</u>

24.0 Acres

5. The first two facilities being programmed for the civic center in the next few years are the Judiciary Complex and the Detention Center.

We appreciate this opportunity to identify key issues for the EIS. Should there be any questions, please have your staff contact Mr. Cedric Takamoto of the Planning Branch at 548-7192.

Very truly yours,


TEUANE TOMINAGA
State Public Works Engineer

CT:em

cc: Mr. Harold Masumoto
Mr. Joseph Conant

**BELT COLLINS
& ASSOCIATES**

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May 30, 1990
841.0101/90-679

Mr. Teuane Tominaga
State Public Works Engineer
Division of Public Works
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawaii 96810

Dear Mr. Tominaga:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for your letter of March 22, 1990 concerning the above project. Following are responses to your concerns.

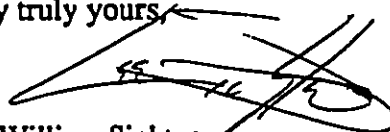
On March 1, 1990, the Hawaii County Planning Department presented a revision of the Keahole to Kailua Development Plan to the County Planning Commission. The revised plan includes the proposed golf course and depicts the regional center as situated between the golf course and the mid-level roadway. At that meeting the HFDC testified before the Commission that it did not support the location of the regional center on the Kealakehe property. The HFDC is working closely with the County of Hawaii and the Office of State Planning to resolve any differences pertaining to the County's draft development plan.

Although the landfill is presently the source of noxious odors, it is not expected to present a significant problem for the proposed Civic Center. The County proposes to close it shortly and has issued a contract for the removal of recyclable materials. This will result in the eventual elimination of the landfill as a source of air pollution and ultimately its relocation to a new site. The phasing of the proposed project corresponds with the landfill closure. Once the landfill has been relocated, the area is proposed for inclusion in the proposed golf course as a driving range. The landfill issue will be addressed in the Draft EIS.

The matter of traffic impacts and the location of the Civic Center in proximity of a major intersection with Queen Kaahumanu Highway as well as its size will be addressed in the Draft EIS.

We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment.

Very truly yours,



Lee William Sichter

cc: HFDC

JOHN WAIHEE
GOVERNOR



RECEIVED

APR 2 1990

YUKIO KITAGAWA
CHAIRPERSON, BOARD OF AGRICULTURE
SUZANNE D. PETERSON
DEPUTY TO THE CHAIRPERSON

BELT, COLLINS & ASSOCIATES

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814-2512

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

March 30, 1990

Mr. Lee William Sichter
Senior Planner
Belt Collins and Associates
680 Ala Moana Boulevard
Suite 200
Honolulu, Hawaii 96813

Dear Mr. Sichter:

Subject: Environmental Assessment (EA)
Kealakehe Planned Community
Housing Finance and Development Corporation
TMK: 7-4-08: pors. 17, 43
7-4-19: por. 43
Kealakehe, North Kona, Hawaii
Area: approximately 990 acres

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

According to the EA, the applicant plans to construct up to 5,000 housing units on the subject site which has approximately equal areas in the Conservation and Agricultural Districts.

Reference to the Soil Conservation Service Soil Survey is correct. The portion of the project site within the Agricultural District has a small section (less than 50 acres) of lands classified "Other Important" according to the Agricultural Lands of Importance to the State of Hawaii (ALISH) system. The remainder of the project site is not classified according to the ALISH system.

The 990-acre property has Land Study Bureau Overall Productivity ratings of "C," "D," and "E." By this method of classification, the mauka (Agricultural District) half of the project site has fair to good productivity potential for grazing, while the makai (Conservation District) half has very marginal agricultural potential. The "C"-rated area which is situated in the northeastern corner of the site has fair to good productivity potential for orchard and grazing uses. The



Mr. Lee William Sichter
March 30, 1990
Page -2-

easternmost edge of the site borders the northernmost extent of the "coffee belt" which follows along the Mamalahoa Highway.

Except for the use of the site for grazing by Palani Ranch, we are not aware of any other agricultural uses on the site. What is meant by the statement in the EA that "... the use of the property for agricultural uses, especially the expansion of livestock operations may be incompatible with existing and proposed uses of neighboring properties" (EA, page 39)? Grazing on unimproved pasture is about the lowest intensity livestock use.

Thank you for the opportunity to comment.

Sincerely,

Yukio Kitagawa
YUKIO KITAGAWA
Chairperson, Board of Agriculture

c: Office of Environmental Quality Control
Office of State Planning (attention: Land Use Division)

**BELT COLLINS
& ASSOCIATES**

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Hawaii • Singapore • Australia • Hong Kong • Saipan

May 30, 1990
841.0101/90-1160

Mr. Yukio Kitagawa, Chairperson
Board of Agriculture
State of Hawaii
1428 South King Street
Honolulu, Hawaii 96814-2512

Dear Mr. Kitagawa:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for your letter of March 30, 1990 concerning the above project. The statement in the EA that the use of the property for expansion of livestock operations may be incompatible with existing and proposed uses of neighboring properties was made in recognition of the fact that residential development is often viewed as being incompatible with livestock grazing largely due to odors and associated pests such as flies.

We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment.

Very truly yours,



Lee William Sichter

cc: HFDC

JOHN WAIHEE
GOVERNOR

RECEIVED

APR 5 1990

CHARLES T. TOGUCHI
SUPERINTENDENT



BELT, COLLINS & ASSOCIATES

STATE OF HAWAII
DEPARTMENT OF EDUCATION

P. O. BOX 2380
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

March 27, 1990

Mr. Lee William Sichter
Senior Planner
Belt, Collins, and Associates
630 Ala Moana Boulevard - 2nd Floor
Honolulu, Hawaii 96813

Dear Mr. Sichter:

SUBJECT: Environmental Assessment
Kealakehe Planned Community
Kealakehe, North Kona, Hawaii

Our review of the subject Environmental Assessment indicates that it may have the following enrollment impact on our area schools based on the planned 5,000 residential units:

<u>SCHOOL</u>	<u>GRADES</u>	<u>PROJECTED STUDENTS</u>
Kealakehe Elementary	K-5	950 - 1050
Kealakehe Intermediate	6-8	400 - 450
Konawaena High	9-12	425 - 475

The schools listed will be assigned to initially accommodate the students from the subject development. A new elementary school and a new high school in the subject development are proposed to accommodate future enrollment increases.

All schools are operating above capacity. The Department of Education cannot assure the availability of classrooms and will require legislative appropriations to accommodate the anticipated student enrollment growth.

The Department of Education has the following additional comments to make:

- 1) We concur with the size of the elementary school of at least 10 acres and the high school site of a minimum of 30 acres if the slope of the land is within established criteria.

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

Mr. Lee William Sichter

-2-

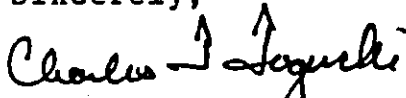
March 27, 1990

- 2) It is recommended that the elementary school site be relocated to an area in the early phases of development of the project. The location should not be near the land fill park.
- 3) Page 36 indicates, "Sites for two elementary schools and a high school are planned, as well as parks and related facilities." However, only one elementary site is shown on the preferred concept map. A second elementary site will be required in the Kealakehe area if additional housing develops.
- 4) To assure the timely completion of a new elementary school, the infrastructure must be available when school construction commences. Continued cooperation between the Department of Education and the Hawaii Housing Finance and Development Corporation is required to plan and develop all new schools in the area.
- 5) We anticipate the school sites to be set aside to the Department of Education without cost by Executive Order.

Should there be any questions, please call the Facilities Branch at 737-4743.

Thank you for the opportunity to comment.

Sincerely,



Charles T. Toguchi
Superintendent

CTT:jl

cc: E. Imai
A. Garson

BCA
BELT COLLINS
& ASSOCIATES

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Landscape Architecture

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May 30, 1990
841.0101/90-1158

Mr. Charles T. Toguchi, Superintendent
Department of Education
State of Hawaii
P.O. Box 2360
Honolulu, Hawaii 96804

Dear Mr. Toguchi:

Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice

Thank you for your letter of March 27, 1990 concerning the above project. As a result of your comments regarding the location of the proposed elementary school, we have shifted the site so that it may be included in an earlier phase of development. We agree that a second elementary school may be necessary in the Kealakehe area if additional housing is developed. We also agree that infrastructure must be available when school construction commences and will continue to work with your department to ensure its timely completion. Finally, it is anticipated that the school sites will be set aside by Executive Order.

Recent discussions between the DOE and the HFDC have established the development of the high school as the top priority. To this end, the HFDC will be coordinating its efforts with the DOE.

We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment.

Very truly yours,


Lee William Sichter

cc: HFDC

JOHN WAIHEE
GOVERNOR OF HAWAII



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

June 14, 1990

RECEIVED
JUN 18 1990

BELT, COLLINS & ASSOCIATES

JOHN C. LEWIN, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EPHSD
060

Mr. Lee William Sichter, Senior Planner
Belt Collins & Associates
680 Ala Moana Blvd., Suite 200
Honolulu, Hawaii 96813

Dear Mr. Sichter:

Subject: Environmental Assessment for Kealakehe Planned Community
Kailua-Kona, Hawaii
TMK: 7-4-08: por. 17, 43 and 7-4-19: por. 43
(Housing Finance and Development Corporation)

Thank you for the opportunity to review and comment on the subject document. We have examined the assessment and have the following comments:

Drinking Water

1. The Assessment does not indicate the estimated demand for potable water. However, it does state that new wells, transmission lines and storage reservoirs will be required.
2. Because each new well will serve 25 or more individuals at least 60 days per year or have a minimum of 15 service connections, the use of each well as a source of drinking water will require compliance with the Department's Administrative Rules, Title 11, Chapter 20, "Potable Water Systems."
3. Section 11-20-29 of Chapter 20 requires that all new sources of potable water serving a public water system be approved by the Director of Health prior to their use. such an approval is based primarily upon the submission of a satisfactory engineering report which addresses the requirements set in Section 11-20-29.
4. Section 11-20-30 of Chapter 20 requires that new or substantially modified distribution systems for public water systems be approved by the Director. However, if the water system is under the jurisdiction of the County of Hawaii the Department of Water Supply will be responsible for the review and approval of the plans.

5. The upper portion of the proposed project site is situated above the Department's Underground Injection Control (UIC) line. Land area located above the UIC line are generally considered to contain underground sources of drinking water. These areas should therefore be protected against all sources of groundwater contamination. It is essential that any proposed well in the this area be designed and constructed to prevent the possibility of groundwater contamination. For example, each well should have a concrete pad and full grouting to prevent seepage or floodwaters from migrating down the well shaft.
6. A public golf course is planned for the project. There are many golf course related activities which might contribute to groundwater contamination. Some of the activities of concern include:
 - a. Application of biocides and fertilizers
 - b. Storage of fuel for vehicles
 - c. Maintenance of vehicles and equipment (cleaning, refueling, lubrication, etc.)

If any of these activities are planned, mitigative measures to insure that groundwater contamination will not occur must be addressed.

7. The Eight (8) Conditions Applicable To This New Golf Course Development (see attached) should apply to this project. A monitoring system should be installed throughout the golf course, especially in areas downgradient of effluent irrigation and, if any, areas above perennial streams. The type of monitoring system to be used should be tailored to fit site conditions. The monitoring system may consist of monitoring wells, lysimeters, vadose zone monitoring instruments or a combination of the different methods. The design and siting of the monitoring system should be reviewed by the Department of Health.
8. The assessment states that the public golf course will be developed in the sewage treatment plant's effluent disposal area. The potable water systems in this area must be carefully designed and operated to prevent cross-connections and backflow conditions with any non-potable systems.

Wastewater Disposal

We have reviewed the subject assessment and find that the issue of wastewater disposal has not been adequately addressed. The report has sufficiently discussed current conditions and future expansion of Kealakeha Sewage Treatment Plant (STP); however, it fails to properly address what type of temporary sewer system will be used for the subject project prior to connecting to the county sewer system.

LEE WILLIAM SICHTER

-3-

June 14, 1990

The State Department of Health would like to restate its position on the above matter. No individual wastewater systems will be allowed. A centralized wastewater system (treatment and disposal) meeting the requirement of Subchapter 2 of Chapter 11-62 must be constructed.


BRUCE S. ANDERSON, PH.D.

Attachment

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STATE OF HAWAII
DEPARTMENT OF HEALTH

April, 1990 (Version 3)

EIGHT (8) CONDITIONS APPLICABLE TO THIS NEW GOLF COURSE DEVELOPMENT

1. The owner/developer and all subsequent owners shall establish a groundwater monitoring plan and system which shall be presented to the State Department of Health for its approval. The groundwater monitoring plan and system shall minimally describe the following components:
 - a. A monitoring system tailored to fit site conditions and circumstances. The system shall include, and not be limited to, the use of monitoring wells, lysimeters and vadose zone monitoring technologies. If monitoring wells are used, the monitoring wells shall generally extend 10 to 15 feet below the water table.
 - b. A routine groundwater monitoring schedule of at least once every six (6) months and more frequently, as required by the State Department of Health, in the event that the monitoring data indicates a need for more frequent monitoring.
 - c. A list of compounds which shall be tested for as agreed to by the State Department of Health. This list may include, but not be limited to the following: total dissolved solids; chlorides; PH; nitrogen; phosphorus; or any other compounds associated with fertilizers, biocides or effluent irrigation.
2. Baseline groundwater/vadose zone water data shall be established as described in this paragraph. Once the monitoring system and list of compounds to be monitored for have been determined and approved by the State Department of Health, the owner/developer shall contract with an independent third-party professional (approved by the State Department of Health) to establish the baseline groundwater/vadose zone water quality and report the findings to the State Department of Health. Testing of the analyses of the groundwater shall be done by a certified laboratory.
3. If the data from the monitoring system indicate the presence of the measured compound and/or the increased level of such compound, the State Department of Health can require the owner/developer or subsequent owner to take immediate mitigating action to stop the cause of the contamination. Subsequently, the developer/owner or subsequent owner shall mitigate any adverse effects caused by the contamination.

4. Owner/developer shall provide sewage disposal by means of connection to the public sewer system; or by means of a wastewater treatment works providing treatment to a secondary level with chlorination. Effluent from this wastewater treatment works may be used for golf course irrigation, subject to Condition #3. The entire system shall be approved by the State Department of Health in conformance with Administrative Rules Title 11, Chapter 62, Wastewater Treatment Systems, effective December 10, 1988.

5. If a wastewater treatment works with effluent reuse becomes the choice of wastewater disposal, then the owner/developer and all subsequent owners shall develop and adhere to a Wastewater Reuse Plan which shall address as a minimum, the following items:
 - a. Management Responsibility. The managers of the irrigation system using reclaiming wastewater shall be aware of the possible hazards and shall evaluate their system for public health, safety, and efficiency. They must recognize that contact with the reclaimed wastewater from treated domestic sewage poses potential exposure to pathogenic organisms which commonly cause infectious diseases (bacteria, viruses, protozoa, and helminths or worms).

 - b. General Recommendations
 - 1) Irrigated areas should be no closer than 500 feet from potable water wells and reservoirs.
 - 2) Irrigated areas should be no closer than 200 feet from any private residence.
 - 3) Application rates should be controlled to minimize ponding. Excess irrigation tailwater in the reclaimed wastewater irrigation area shall be contained and properly disposed. An assessment should be made of the acceptable time and rate of application based on factors such as type of vegetation, soil, topography, climate and seasonal variations.
 - 4) Effluent holding/mixing ponds shall be designed to prevent the infiltration of the wastewater into the subsurface. The holding/mixing ponds shall be made impervious.
 - 5) Irrigation shall be scheduled such that the public is not in the vicinity and the soil is sufficiently dry to accept the irrigation water.
 - 6) Permanent fencing or barriers shall be erected around polishing or holding ponds to prevent public entry or stray feral and tame animals from gaining access to the ponds.

- 7) Adequate irrigation records shall be maintained. Records should include dates when the fields are irrigated, rate of application, total application and climatic conditions. Records should also include any operational problems, diversions to emergency storage or safe disposal and corrective or preventive action taken.
 - 8) The holding/mixing ponds shall be periodically monitored for the purpose of detecting leakage into the subsurface. If leakage is detected, corrective action shall be immediately taken.
- c. Adequate Notice. Appropriate means of notification shall be provided to inform the employees and public that reclaimed wastewater is being used for irrigation on the site.
- 1) Posting of conspicuous signs with sufficient letter size for clear visibility with proper wording should be distributed around the use areas.
 - 2) Signs shall be securely fastened. Periodic surveillance shall be conducted to assure permanent posting at all times. Immediate replacements shall be made when necessitated by deterioration, vandalism or misuse.
- d. Adequate Employee Education. Employees or users should be cautioned and warned of the potential health hazards associated with the ingestion of reclaimed wastewater being used at the site.
- 1) Employees should be warned that the ingestion of reclaimed wastewater is unsafe.
 - 2) Employees should be protected from direct contact of the reclaimed wastewater. If necessary, protective clothing should be provided.
 - 3) Employees should be informed of the following:
 - The irrigation water is unsafe for drinking or washing.
 - Avoid contact of the water or soil with any open cuts or wounds.
 - Avoid touching the mouth, nose, ear or eyes with soiled hands, clothes or any other contaminated objects.
 - Be aware that inanimate objects such as clothes or tools can transport pathogenic organisms.
 - Always wear shoes or boots to protect feet from the pathogenic organisms in the soil or irrigation water.

6. Releases from underground storage tanks (USTs) used to store petroleum products for fueling golf carts, maintenance vehicles, and emergency power generators pose potential risks to groundwater.

Should the owner/developer/operator plan to install USTs that contain petroleum or other regulated substances, the owner/developer/operator must comply with the federal UST technical and financial responsibility requirements set forth in Title 40 of the Code of Federal Regulations Part 280. These federal rules require, among other things, owners and operators of USTs to meet specific requirements in the detection, release response and corrective action. Also, the owner/developer/operator must comply with all State UST rules and regulations pursuant to Chapter 342-L 'Underground Storage Tanks' of the Hawaii Revised Statutes.

In consideration of the above-mentioned remarks, the Department of Health recommends that the owner/developer/operator implement facility plan alternatives that exclude the installation and operation of UST systems (e.g., the preferential use of electric golf carts, use of above-ground storage of fuel oil for emergency power generators, etc.), or, if USTs are utilized, that secondary containment be considered.

7. Buildings designated to house the fertilizer and biocides shall be bermed to a height sufficient to contain a catastrophic leak of all fluid containers. It is also recommended that the floor of this room be made waterproof so that all leaks can be contained within the structure for cleanup.
8. A golf course maintenance plan and program will be established based on "Best Management Practices (BMP)" in regards to utilization of fertilizers and biocides as well as the irrigation schedule. BMP's will be revised as an ongoing measure. The golf course maintenance plan will be reviewed by the State Department of Health prior to implementation.

If there are any questions regarding the eight (8) conditions mentioned here, please contact Mr. James K. Ikeda at 543-8304. We ask you cooperation in the protection of Hawaii's valuable groundwater resource.

June 20, 1990
841.0101/90-1281

Bruce S. Anderson, Ph.D
Deputy Director of Health
Department of Health
State of Hawaii
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Dr. Anderson:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for your letter of June 14, 1990 concerning the above project. Following are responses to your comments in the order in which they were presented in your letter.

Drinking Water

1. The Environmental Impact Statement (EIS) will include estimates of the project's demand for potable water and a description of the transmission infrastructure that will be required to service the proposed project.
2. We agree that each new well will require compliance with the Department's Administrative Rules, Title 11, Chapter 120, "Potable Water Systems".
3. The Housing Finance and Development Corporation is presently developing alternatives with the Department of Land and Natural Resources and the County's Department of Water Supply. Therefore, it is unclear at this time precisely which agency will be developing the necessary water wells for the project, or whether it will be a joint development effort. Thus, while we agree that approval from the Health Department will be necessary, we can not determine at this time which agency will be seeking said approval.
4. Same as #3.
5. We concur.
6. The public golf course planned for the project will be under the jurisdiction of the County of Hawaii, to whom the land will be transferred by Executive Order of the Governor. The HFDC will not be involved in the operation of the golf course. Therefore, while the HFDC agrees with your concerns, it will not have jurisdiction over the operation of the golf course or the mitigation measures that may be implemented. We respectfully recommend that your concerns be directed to the County of Hawaii.
7. The eight conditions applicable to golf course development will become the responsibility of the County of Hawaii, as landowner, and/or its designated golf course operator. We respectfully recommend that your concerns be directed to the County of Hawaii.

8. The Kealakehe Sewage Treatment Plant and the effluent disposal area are being designed and constructed by the County of Hawaii and its consultant, R. M. Towill Corporation. The HFDC has no jurisdiction over this matter. We respectfully recommend that your concerns be directed to the County of Hawaii.

Wastewater Disposal

A complete discussion of the proposed project's wastewater disposal system, including any temporary system implemented, will be included in the EIS.

We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment. Thank you for participating in the review process.

Very truly yours,



Lee William Sichter

cc: HFDC

JOHN WAIHEE
GOVERNOR OF HAWAII



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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

P. O. BOX 621
HONOLULU, HAWAII 96809

REF:OCEA-CT

APR 30 1990

File: 90-550
Doc.: 7964E

Mr. Lee William Sichter, Senior Planner
Belt Collins & Associates
680 Ala Moana Blvd.
Suite 200
Honolulu, Hawaii 96813

Dear Mr. Sichter:

Subject: Environmental Assessment for Kealakehe Planned
Community
Kealakehe, North Kona, Hawaii

Thank you for giving our Department the opportunity to comment on this matter. We have reviewed the materials you submitted and have the following comments.

The Uhi uhi (Mezoneuron kavaiense) is protected by federal and state endangered species laws. We would expect the draft EIS to address all possible mitigation measures for the protection of the nineteen (19) adult uhi uhi's within the proposed project.

Furthermore, the "taking" of individual trees is not an allowable mitigation measure. At a very minimum, the landscape planning for the "Kealakehe Planned Community" should incorporate all the endangered plant species into a protective environment that will be beneficial to the endangered plants and as an enhancement to the proposed development for the area.

Additionally, the Environmental Assessment should address the water needs of the development.

Finally, our Historic Preservation Program (HPP) is in the process of reviewing the historic preservation concerns under Chapter 6E, HRS, historic preservation compliance requirements. Thus, at this time HPP will not comment on the Environmental Assessment.

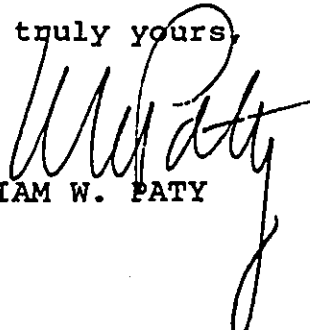
Mr. Lee William Sichter

- 2 -

File: 90-550

If you have any questions, please call me or Cathy Tilton at our Office of Conservation and Environmental Affairs at 548-7837.

Very truly yours,


WILLIAM W. PATY

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& ASSOCIATES**

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May 30, 1990
841.0101/90-1166

Mr. William Paty, Chairperson
Board of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for your letter of April 30, 1990 concerning the above project. The Draft Environmental Impact Statement for the project will address all possible mitigation measures for the protection of all nineteen adult uhi uhi trees identified on the project site. The State Attorney General's Office has recently issued a recommendation that no federally endangered plant species can be moved or relocated. Thus, we have no intention of moving any of the uhi uhi trees, nor are we considering their relocation as a mitigation measure, unless the State law is specifically amended to permit relocation.

The water needs of the project will be fully addressed in the Draft EIS.

Finally, we have submitted our archaeological inventory survey for the project to your office and are presently awaiting its review and comment. The inventory survey will be included in the Draft EIS.

We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment.

Very truly yours,


Lee William Sichter

cc: HFDC



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APR 18 1990

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DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION

869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

April 17, 1990

IN REPLY REFER TO:

HWY-PS
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___	Dall, J.
___	Fitzgerald, J.
___	Healy, T.
___	Koike, E.
___	Kunlycke, E.
___	Moses, A.
___	Van Horn, R.
I	Sichter, L.
___	Goody, J.
___	Putka, J.
___	Philo, K.
___	Laughrey, S.
___	Matta, R.
___	Oruma, G.
___	Smithson, K.
___	Syechi, K.
___	Library
___	Job No. 2

Mr. Lee William Sichter
Senior Planner
Belt Collins and Associates
680 Ala Moana Boulevard, Suite 200
Honolulu, Hawaii 96813

Dear Mr. Sichter:

Environmental Assessment (EA)
Kealakehe Planned Community
Kealakehe, North Kona, Hawaii

Thank you for your letter of March 2, 1990, requesting our review of the subject EA.

We have the following comments:

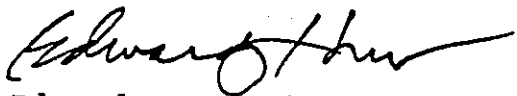
1. We want you to be aware of our plans to have Queen Kaahumanu Highway serve as a high-speed, limited-access, 4-lane divided freeway facility with frontage roads for that region.
2. Access to the freeway will be allowed only at designated interchange locations. All other roadways will have to access onto a system of frontage roads on both sides of the freeway which will carry local traffic to these interchanges. In this area, we have determined the location of two of these interchanges, one at the Kealakehe Parkway and the other at the Keahole Airport.
3. A Traffic Impact Analysis Report (TIAR) must be submitted for our review and approval. The TIAR shall identify all short-term and long-term improvements needed to mitigate future traffic congestion.

Mr. Lee William Sichter
Page 2
April 17, 1990

HWY-PS 2.1389

4. All utilities within the Queen Kaahumanu Highway rights-of-way shall be underground and placed outside the edge of pavement at a location approved by the Highways Division. The required future rights-of-way (ROW) width of the highway is 300 feet and extends up to Palani Road. The developer shall dedicate a wide-enough strip of land fronting Queen Kaahumanu Highway to give us a 300-foot wide right-of-way. At the interchange at Kealakehe Parkway, we need a wider right-of-way.
5. This project should be coordinated with other developments in the immediate area. Details of the Keahole Airport Interchange should be coordinated with our Airports Division.
6. Any work within the State highway right-of-way (ROW) will require a permit and submittal of construction plans for our approval. The cost for required roadway related work within the 300-foot ROW width, including the widening of the highway to four lanes and the new interchange, shall be borne by the developer.

Very truly yours,



Edward Y. Hirata
Director of Transportation

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& ASSOCIATES**

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May 30, 1990
841.0101/90-1165

Mr. Edward Hirata
Director of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Dear Mr. Hirata:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for your letter of April 17, 1990 concerning the above project. We understand that Queen Kaahumanu is intended to serve as a high-speed limited access, 4-lane divided freeway with frontage roads. This is consistent with our planning efforts to date. We are also planning the location of an interchange at the intersection of Kealakehe Parkway (our mauka-makai roadway) and Queen Kaahumanu Highway, and are presently coordinating our design work with your office.

A complete traffic impact analysis is presently being prepared for the proposed project and will be included in the Draft Environmental Impact Statement.

All utilities proposed within the Queen Kaahumanu Highway right-of-way will be coordinated with your department. We are presently including in our plan a set back for the highway and the proposed interchange which will address your concerns.

The Kealakehe Planned Community is being coordinated with other developments in the area, including those proposed by the Queen Liliuokalani Trust, Palani Ranch, Robert McClean, and the State Department of Transportation's Harbors Division. We have no direct or indirect impact upon the planning and design of the Keahole Airport Interchange.

Finally, all work within State owned rights-of-way will be coordinated with your department and all appropriate permits obtained prior to commencement of construction. With regard to the cost of the improvements, we are confident that an agreement as to the cost of the improvements to be borne by the proposed project can be reached in a timely manner. To this end, a meeting between the DOT and the HFDC was held on April 5, 1990 at the Office of State Planning, to discuss among other things highway improvements and participation in costs.

We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment.

Very truly yours,


Lee William Sichter

cc: HFDC

JOHN WAIHEE
GOVERNOR

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1-11-90



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MAR 26 1990

COLLINS & ASSOCIATES

FDCC 3005 11-2-93

Suspense L-4-9-

1	EXECUTIVE DIRECTOR
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FILE 90 DEC 15 3

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
465 SOUTH KING STREET, ROOM 104
HONOLULU, HAWAII 96813

March 19, 1990

Honorable Joseph Conant, Executive Director
Housing Finance and Development Corporation
7 Waterfront Plaza, Suite 300
500 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Conant:

Re: Kealakehe Planned Community

The Office of Environmental Quality Control has reviewed the Environmental Assessment for the Kealakehe Planned Community and have the following comments.

General Comments

The detailed master plan mentioned on page 6 should be included with the draft environmental impact statement in order to understand the layout of the project, planned mitigation measures, and possible impacts.

Traffic

A map of the proposed roadways and intersections should be included with overlays to show their relationship to existing resources such as the endangered uhi uhi and archaeological sites. Widths of roadways should be to scale. Will parking be provided along the roadways in front of residences or with driveways and carports? Will bicycle paths, sidewalks, and crosswalks across roadways for schoolchildren be provided? Will commuter bus service be available to mitigate traffic impacts?

Flora

We would like to note that guava, Christmas berry, lantana, and guinea grass are not native plants as stated on page 25. A complete botanical survey should be done for the draft EIS. Since a substantial percentage of the known population of the endangered mesoneuron kawaiense (uhi uhi) are found on the development site, a recovery plan should be done in conjunction with the U.S. Fish

SUSPENSE
DEVELOPMENT COPY

and Wildlife Service in accordance with the Federal Endangered Species Act and the alignment and scope of the project should be adjusted appropriately.

Fauna

The faunal survey cited on page 25 should be included with the draft EIS.

Archaeology

A complete report should be included in the draft EIS with mitigation measures.

Soils

Where will topsoil come from? Will grass be planted around the residences and schools? If so, how will this affect water usage? What soil stabilization and erosion control measures will be used? A conservation plan should be completed in consultation with the U.S. Soil and Conservation Service prior to grading work and earthmoving.

Potable Water

What water conservation measures will the project use? We suggest the use of low volume toilets and shower heads. The projected need in gallons per day for the project should be estimated. Water credits does not equate into water capacity. What are the expected impacts to existing water supplies and overall water development? Where will new wells be developed? Will agricultural users be impacted?

Noise

What noise impacts will occur to the project from the proposed Honokohau Industrial Park and existing quarrying operations?

Air Quality

Air quality modeling and sampling should be included in the draft EIS. Vog, the burning landfill, increasing traffic, and the inversion layer have combined to impact air quality. School children at Kealakehe School up-slope and policemen stationed near the landfill suffer from eye and respiratory problems now. The burning landfill situation should be resolved to protect residents of this proposed residential community from chronic health problems. The contractor hired by the County to mine the landfill has failed to meet his obligations. We believe that a plan to put out the fires should therefore be included in the draft EIS as a

proposed mitigative measure.

Energy

We suggest that energy conservation measures should be explored and evaluated in the draft EIS. Solar architecture, solar water or heat pump water heaters, and low pressure sodium roadway lighting could be employed. Fluorescent fixtures could be used instead of incandescent fixtures wherever possible. Light colored roofing materials and shrubbery or shade trees provided to reduce the need for air conditioning. Homes should be oriented to take advantage of prevailing breezes and to increase solar water efficiency.

The total energy use for the project should be calculated and its impact on energy production discussed in the draft EIS. Will new power generation be needed? Where will new generating plants be located? What impact will they have on regional air quality? Are existing powerlines and substations sized sufficiently to accommodate the increased load? Will underground lines be put in to protect scenic views?

Socio-economic

The EIS should contain a socio-economic analysis to address questions of the following nature. Where are the new residents expected to come from? Will they have special needs? Will training have to be provided to workers to fill available jobs? Are sufficient hospital, medical care, and other health care facilities available to handle the increase in population that would result from this project?

Sewage

Will the State pay for the expansion of the new STP facility to meet the additional needs required for this project? The sequential batch reactor design of the County's facility is modular and can be expanded very quickly to meet the additional needs of this project without putting in a separate temporary system that might not be compatible later. The State should coordinate with the County of Hawaii Public Works Department to avoid unnecessary costs and delays. Maps showing the locations of the golf courses and proposed leach field design should be included in the draft EIS. Plans should include buffer areas near residences and appropriate spray head design to minimize aerosols. Ultraviolet disinfection of the treated effluent is suggested to kill pathogens and avoid chlorine by products. A clay soil barrier should be considered for placement under the golf courses to minimize transport of nutrients through the highly permeable bedrock. A plume model for the leach field and pan evaporation rates for the site should be included in the draft EIS.

Solid Waste

We suggest that a recycling plan should be done for the project and incorporated into the design of the transfer station. The draft EIS should address visual and odor impacts from the transfer station with appropriate mitigative measures. The transfer station should be fenced to prevent litter problems.

Fire Protection

The draft EIS should discuss whether fire hydrants will be used and whether sufficient pressure can be provided. Fountain grass on the project site should be removed or otherwise controlled to prevent impacts to homes and the endangered uhi uhi tree preserve.

Thank you for the opportunity to make comments on this environmental assessment.

Please contact Steve Holmes, staff planner, if you have any questions.

Sincerely,



Marvin T. Miura, Ph.D., Director
Office of Environmental Quality Control

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& ASSOCIATES**

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May 30, 1990
841.0101/90-1156

Marvin T. Miura, Ph.D, Director
Office of Environmental Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Dr. Miura:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for your letter of March 19, 1990 concerning the above project.

General Comments

A detailed master plan of the proposed project will be included in the Draft Environmental Impact Statement (DEIS).

Traffic

Maps of the proposed roadways and major intersections will be included in the DEIS. Analysis of traffic impacts will include a discussion of roadway and parking standards. Concerns about street parking, bicycle paths, sidewalks and crosswalks will be addressed. While the provision of bus service to the residential areas would help to mitigate traffic impacts, its implementation lies under the jurisdiction of the County of Hawaii.

Flora

Corrections to the classification of guava, Christmas berry, lantana, and guinea grass will be made in the DEIS. A complete botanical survey will be included in the DEIS. The U.S. Fish and Wildlife Service has been notified of the existence of Uhi Uhi trees on the subject property. The Hawaii County Public Works Department has requested a biology opinion from the FWS.

Fauna

A complete faunal survey will be included in the DEIS.

Archaeology

A complete archaeological inventory survey will be included in the DEIS.

Soils

The source of topsoil and landscaping plans for the project will be discussed in the DEIS, along with soil stabilization and erosion control measures. Grading and earthmoving for the project will be conducted in a manner consistent with all pertinent regulations and requirements.

Potable Water

Provision of potable water to the proposed project will be fully addressed in the DEIS. Projected demand and conservation measures will also be discussed.

Noise

A noise impact analysis will be included in the DEIS.

Air Quality

An air quality analysis will be included in the DEIS. The closure and mining of the landfill falls under the jurisdiction of the County of Hawaii. Mining the landfill and removing its contents to a new site will likely solve the problem of underground fires. Given the permit processing time and development schedule for the project, the HFDC believes that occupancy of the first phase of the project should coincide with the County's actions to resolve the matter of underground fires.

Energy

Energy sources, project use and conservation measures will be addressed in the DEIS.

Socio-economic

The DEIS will include a socioeconomic impact analysis.

Sewage

The necessary expansion of the Kealakehe Sewage Treatment Plant to meet the needs of the planned community will be addressed in the DEIS. The design of the golf course as an effluent disposal area will be generally addressed. However, the actual planning and construction of the golf course/effluent disposal area will be conducted by the County of Hawaii. Although the golf course area is included in the proposed project, the land is to be transferred by Executive Order from the State to the County. Therefore, the HFDC is not in a position to discuss or evaluate the specific design of the facility.

Solid Waste

The County of Hawaii's Department of Public Works is responsible for the operation and day to day maintenance of the existing Kealakehe transfer station. While its current location is appropriate given its proximity to a landfill and relative isolation from residential development, a new alternative location may be appropriate once the area around it is developed for residential and other urban uses. The matter of the transfer station will be addressed in the DEIS.

Fire Protection

Fire hydrants will be utilized for the proposed development and will be discussed in the DEIS. The matter of controlling fountain grass will be discussed in the DEIS.

We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment.

Very truly yours,


Lee William Sichter

cc: HFDC

RECEIVED
H.F.D.C.
MAR 12 3 51 AM '90



RECEIVED
MAR 14 1990

BELT, COLLINS & ASSOCIATES

University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

March 9, 1990
RP:0122

Mr. Joseph K. Conant ✓
Housing Finance and Development Corporation
Department of Budget and Finance
Seven Waterfront Plaza, Suite 300
500 Ala Moana Boulevard
Honolulu, Hawaii 96813

Dear Mr. Conant:

Environmental Impact Statement (EIS) Preparation Notice
Kealakehe Planned Community
Kealakehe, Kailua-Kona, Hawaii

The Environmental Center has no comments on the EIS Preparation Notice, but please refer to our previous comments dated February 6, 1990 on the Environmental Assessment for the Kealakake House Lots III portion of this planned community project. We hope those comments will be helpful and we look forward to reviewing the Draft EIS.

Yours truly,

John T. Harrison
Environmental Coordinator

Enclosure

cc: OEQC
L. Stephen Lau
Carolyn Cook

HFDC 3005 (10/88)

Suspense

File	Info	Copy	Act	Int
EXECUTIVE DIRECTOR				
ADMINISTRATIVE SERVICES				
PERSONNEL				
PURCHASING				
HOUSING DEVELOPMENT				
DEVELOPMENT SUPPORT				
SALES AND COUNSELING				
HOUSING FINANCE				
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DEVELOPMENT COPY

A Unit of Water Resources Research Center

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& ASSOCIATES**

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May 30, 1990
841.0101/90-653

Mr. John T. Harrison, Environmental Coordinator
Environmental Center, University of Hawaii at Manoa
Crawford 317, 2550 Campus Road
Honolulu, Hawaii 96822

Dear Mr. Harrison:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for letter of March 9, 1990 commenting on the above project. Your letter included reference to your previous communication (February 6, 1990) which addressed the Housing Finance and Development Corporation's Negative Declaration for a portion of the above project. On February 23, 1990, the Negative Declaration was withdrawn. Nevertheless, your comments are pertinent and timely. Allow me to update you on the status of our studies to date.

With regard to your archaeological concerns, an Archaeological Inventory Survey has been completed for the entire project area and submitted to the Department of Land and Natural Resources's Historic Sites Office. On February 26, 1990, the Historic Sites Office responded to the submittal with the comment, "we believe that this survey has adequately covered the project area...(and) that sufficient information has been gathered to evaluate the significance of the sites... We further agree with the significance evaluations offered." The entire inventory survey will be included in the Draft Environmental Impact Statement (DEIS), together with a general mitigation plan.

Concerning the proposed 300-foot corridor for a region serving mauka-makai roadway, a traffic analysis for the entire project is presently being conducted and will be included in the DEIS together with mitigation measures to address environmental impacts generated by the roadway.

With regard to the endangered Uhi Uhi trees, both the DLNR and the Federal Fish and Wildlife Service are currently reviewing the botanical survey conducted for the project, together with the project proposal, in an effort to determine appropriate mitigation measures to address impacts to the trees by residential development, including the construction and operation of the proposed roadway. The DLNR has already indicated that the trees must be preserved *in situ*. We have proposed the designation of a 5 acre preserve to protect a cluster of eight trees in the mauka portion of the project site. Additional mitigation measures for these and the remaining eleven individual trees scattered throughout the project site will be included in the DEIS along with the botanical survey.

Finally, a complete socioeconomic analysis has been prepared for the project and will also be included in the DEIS. We will provide you with a copy of the DEIS for your review.

Very truly yours,


Lee William Sichter

cc: HFDC

RECEIVED

APR 2 1990

Bernard K. Akana

Mayor

Thomas J. Bello

Fire Chief

Edward Bumatay

Deputy Fire Chief



Fire Department

BELT, COLLINS & ASSOCIATES

466 Kinoole Street • Hilo, Hawaii 96720 • (808) 935-2978

March 30, 1990

Mr. Lee William Sichter
Senior Planner
Belt Collins & Associates
680 Ala Moana Boulevard, Suite 200
Honolulu, Hawaii 96813

Dear Mr. Sichter:

Subject: Environmental Assessment for
Kealakehe Planned Community

The Hawaii County Fire Department's primary concern in regards to the Kealakehe Planned Community would be the proposed 5,000 housing units.

The nearest fire protection facility is the Kailua Fire Station. It provides fire, rescue and emergency medical services for approximately 7,313 housing units (1980 census) with an average annual response to 3,573 emergencies. The nearest medical facility is located in Kealakekua, Kona (Kona Hospital).

The fire rescue unit at Kailua Fire Station will be relocated to a new fire facility in Keauhou upon completion in 1993.

Fire service consideration for the Kealakehe Planned Community should include a complete fire station facility with a full complement for station manning which includes one fire apparatus with a minimum staffing of 15 firemen. For emergency medical services, one medic unit and a minimum of 7 medic personnel.

We will be glad to work with you in the planning of the facility if one is considered.

Very truly yours,


THOMAS J. BELLO
FIRE CHIEF

TJB/mo



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& ASSOCIATES**

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680 Ala Moana Blvd. Suite 200 Honolulu, Hawaii 96813

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May 30, 1990
841.0101/90-1159

Mr. Thomas J. Bello, Chief
Hawaii County Fire Department
466 Kinoole Street
Hilo, Hawaii 96720

Dear Chief Bello:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for your letter of March 30, 1990 concerning the above project. Included in the project is a 30 acre Civic Center which would serve as an appropriate location for a new fire station to serve the proposed development.

We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment.

Very truly yours,


Lee William Sichter

cc: HFDC

Ltr to Lee William Sichter
Belt, Collins & Associates
Page 2
April 20, 1990

A traffic impact assessment report should be done to determine the impact on existing streets.

LANDFILL

Our Puuanahulu landfill is projected to be in operation by August 1991. The development should consider that the Kealakehe landfill emits fumes that may last for a very long time. An indication of this is that the EPA requires a 30-year monitoring and maintenance period. In order to use the landfill, the refuse would probably have to be dug up and removed.

for *David Murekomi*
ROBERT K. YANABU, Division Chief
Engineering Division

DHM:sah

cc: DPW Traffic Division
Planning Department
Office of Housing & Community Development

May 30, 1990
841.0101/90-1164

Mr. Robert K. Yanabu, Division Chief
Engineering Division
Department of Public Works
County of Hawaii
25 Aupuni Street, Room 202
Hilo, Hawaii 96720

Dear Mr. Yanabu:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for your letter of April 20, 1990 concerning the above project. It is our present understanding that since your letter, the County of Hawaii has eliminated the Queen Kaahumanu Bypass from its Keahole to Kailua Draft Development Plan. The current plan for the Kealakehe Planned Community is consistent with this modification and depicts the mid-level roadway as a secondary arterial which will eventually tie into the mid-level roadway configuration planned by the Queen Liliuokalani Trust across its property.

The HFDC is committed to the construction of the mauka-makai roadway and Belt Collins and Associates are presently working on detailed roadway design plans. The location of the mauka-makai roadway was determined by a Task Force appointed by Governor Waihee and consisting of Harold Matsumoto of the Office of State Planning; Ed Hirata, Director of the Department of Transportation, Joseph Conant, Executive Director of HFDC, Scott Leithead of the County's Office of Housing and Community Development, Duane Kanuha, County Planning Director, Councilman Russell Kokubun and Councilman Harry Ruddle. For all intents and purposes, the location of the roadway should be considered fixed.

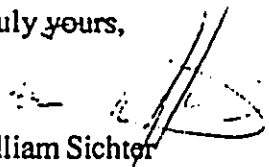
Access to the both the elementary and high school proposed in the plan will be provided. HFDC has been advised that the high school is the Department of Education's highest priority and should be implemented as soon as practicable.

A complete traffic impact analysis is presently being prepared for the proposed project and will be included in the Draft Environmental Impact Statement.

With regard to the landfill, one of the reasons contributing to the decision of the Housing Finance and Development Corporation (HFDC) to develop affordable housing at Kealakehe was an understanding that the County would soon be closing the Kealakehe landfill, relocating it to a new site at Puuanahulu, and mining the Kealakehe landfill as a means of recovering recyclable material and extinguishing the fires. It is believed that this timely action will greatly reduce, if not eliminate, the source of the odor problem. Thus, the HFDC feels that odor problems related to the landfill are the responsibility of the operator, in this case the County of Hawaii, and that mitigation measures to address the problem will be undertaken in a timely manner.

We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment.

Very truly yours,


Lee William Sichter

cc: HFDC





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MAR 12 1990

BELT, COLLINS & ASSOCIATES
DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 96720
TELEPHONE (808) 969-1421 • FAX (808) 969-6996

March 8, 1990

Belt Collins & Associates
680 Ala Moana Boulevard, Suite 200
Honolulu, HI 96813

ENVIRONMENTAL ASSESSMENT
KEALAKEHE PLANNED COMMUNITY

Thank you for giving us the opportunity to comment on the environmental assessment.

Water will be available upon completion of the off-site water system improvements being coordinated by the Department of Water Supply and State's Housing Finance and Development Corporation.

William Sewake
H. William Sewake
Manager

CS

... Water brings progress...

**BELT COLLINS
& ASSOCIATES**

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May 30, 1990
841.0101/90-657

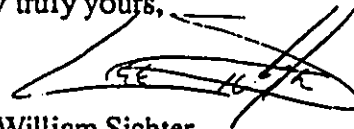
Mr. H. William Sewake, Manager
Department of Water Supply
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Sewake:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for your letter of March 8, 1990 concerning the above project. We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment.

Very truly yours,



Lee William Sichter

cc: HFDC



RECEIVED
MAR 29 1990

Bernard K. Akana
Mayor
Victor V. Vierra
Chief of Police
Francis C. DeMoraes
Deputy Chief of Police

Police Department BELT, COLLINS & ASSOCIATES

349 Kapiolani Street • Hilo, Hawaii 96720-3998 • (808) 961-2244 • FAX (808) 961-2702

March 27, 1990

Mr. Lee William Sichter
Senior Planner
Belt Collins & Associates
680 Ala Moana Blvd., Suite 200
Honolulu, Hawaii 96813

Subject: Environmental Assessment
Kealakehe Planned Community
Kealakehe, N. Kona, Hawaii

Dear Mr. Sichter:

The above subject matter has been reviewed and the following recommendations are noted for your consideration:


1. Present roadways should be widened and improved in design before the start of construction as they are inadequate for traffic. They are unable to take on further burden without serious consequences.
 - a. Queen Kaahumanu Highway widened to four lanes from Hualalai Road intersection to 1/4 mile beyond Keahole Airport in the northerly direction.
 - b. An overpass for through traffic on Queen Kaahumanu Highway at the Honokohau Small Boat Harbor entrance with entry, exit, and turn lanes for entry into the project. Side roads under the overpass should have traffic lights to control traffic entry/exit onto Queen Kaahumanu Highway.
 - c. The widening of Palani Road from two lanes to four lanes from the main entry of the project to Kealakehe School (Kealakaa) intersection. Traffic signals at Kealakaa and the other two entries into the project area on Palani Road with left turn, acceleration and deceleration lanes provided at each intersection.
 - d. Traffic signals are presently needed at the police station, sewage treatment/Queen Kaahumanu intersection.

Mr. Lee William Sichter
Page 2
March 27, 1990

- e. Police equipment, manpower, and civilian support personnel will have to be addressed from the start of this project rather than after the fact, so that overtime can be minimized, morale kept high, adequate services provided, injuries kept low, vicarious liability suits and other lengthy court litigation kept at a minimum. Without this, the present support to the police provided by this community will diminish.

Thank you for the opportunity to comment.

Sincerely,


VICTOR V. VERRA
CHIEF OF POLICE

lli

cc: Major Henry Silva

**BELT COLLINS
& ASSOCIATES**

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May 30, 1990
841.0101/90-1161

Mr. Victor V. Vierra
Chief of Police
County of Hawaii
349 Kapiolani Street
Hilo, Hawaii 96720-3998

Dear Chief Vierra:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for your letter of March 27, 1990 concerning the above project. Following are responses to your specific comments:

Widening of Roadways

While we agree that the proposed project will have an impact on existing roadways, we do not agree that widening roadways before the start of construction is the only solution. A full traffic impact study, together with recommendations for mitigating the impacts of the project will be included in the Draft Environmental Impact Statement.

Queen Kaahumanu Highway

The HFDC agrees that the highway will eventually need to be widened, and is prepared to dedicated up to 300 feet of additional right-of-way for this purpose. The construction of additional lanes should be timed with the phased development of the proposed project.

Overpass at Queen Kaahumanu Highway at the Small Boat Harbor

The HFDC is committed to the development of a new mauka-makai roadway through the subject property and the construction of a grade-separated intersection at its intersection with Queen Kaahumanu Highway. However, discussions with the State Department of Transportation has indicated that the development of the interchange should be done in conjunction with the phased development of the project. Initially, stacking lanes at the existing intersection will be sufficient to accommodate increases in traffic brought on by the project's first phase. Eventually, frontage roads (side roads) will be necessary to improve traffic flow on Queen Kaahumanu. We are advised by the State DOT that traffic lights will not be allowed on the highway due to the DOT's intent to preserve the highway as a high-speed corridor.

Palani Road Widening

We agree that a traffic signal will be needed at the Kealakaa Street intersection and are advised that the HFDC will provide one as part of the major roadway construction. The provision of acceleration and deceleration lanes will depend upon the timely acquisition of additional right-of-way on Palani Road by the County of Hawaii from the Queen Liliuokalani Trust.

At this time, only one additional entry is planned at Palani Road; about 4,200 feet makai of the

Kealakea Street intersection. Because the residential development adjacent to this intersection is planned as the very last phase of the project (Villages 13 and 14), we do not expect the need for intersection improvements within the next 10-15 years. However, upon implementation of the last phase of development appropriate improvements to the intersection will be made.

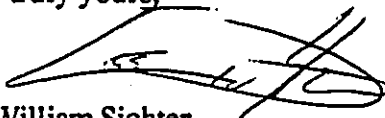
The third entry to the project to which you refer is the mid-level roadway proposed by the County of Hawaii and reflected on the Kealakehe Planned Community Plan. It is our understanding that the portion of the mid-level roadway intersecting with Palani Road is intended to be constructed as part of the Queen Liliuokalani Trust's development master plan. However, we are unaware of the Trust's development schedule and have not been advised whether the Trust or the County will make the appropriate improvements to the mid-level roadway intersection at Palani Road.

Traffic Signals at Queen Kaahumanu

As discussed above, we are advised by the State DOT that traffic signals will not be allowed on the highway.

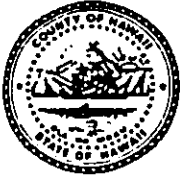
We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment.

Very truly yours,



Lee William Sichter

cc: HFDC



Planning Department

25 Aupuni Street, Rm. 109 • Hilo, Hawaii 96720 • (808) 961-8288

Bernard K. Akana
Mayor

Duane Kanuha
Director

William L. Moore
Deputy Director

March 23, 1990

Dr. Marvin T. Miura, Director
Office of Environmental Quality Control
465 South King Street
Kekuanaoa Building, #104
Honolulu, HI 96813

Dear Dr. Miura:

Comments - EISPN Kealakehe Planned Community

We have reviewed the EISPN for the subject project and provide the following comments:

GENERAL

1. The EIS should identify the accepting authority.
2. The EIS should include discussion on the relationship of the proposed action to State and County land use plans, policies and guidelines.
3. The EIS should include all reports of surveys (flora, fauna, archaeology, etc.) conducted for the project, including any mitigation plans.
4. The EIS should include any unresolved issues.

PROJECT DESCRIPTION

5. A conceptual map of the planned community should be included in the EIS. A clearer map of Figure 4 - Land Ownership should be used.
6. It has been our understanding that the master plan will include over-sizing infrastructure through and for the subject property to provide adequate capacity to urbanize the Kealakehe lands below the Queen Kaahumanu Highway. This should be so stated if it is to be part of the master plan.

7. The golf course has been relocated into the area above the Queen Kaahumanu Highway in Kealakehe at the request of the State. This use should be acknowledged since it is within the boundaries of the Kealakehe Planned Community.

LAND USE PLANS

8. The updated County of Hawaii General Plan Land Use Pattern Allocation Guide (LUPAG) Map designates the area as Low Density Urban, Industrial and Urban Expansion. Portions of the project area are also zoned Unplanned by the County. The EIS should reflect these designations.
9. The EIS should address the draft Keahole to Kailua Development Plan which is now under review and discussion with the County Planning Commission for its recommendation to the County Council for adoption as ordinance. This plan should be acknowledged, and any differences between the draft plan and the Kealakehe Planned Community plans should be identified.

ENVIRONMENTAL DESCRIPTION/MITIGATION MEASURES

10. There are conflicting statements of Hualalai's volcanic history on Page 22(EA) and Page 6 & 7(EISPN) which the EIS needs to clarify and include documents to support the statements.
11. The EIS should describe the soil classification in further detail.
12. A clearer discussion on introduced vegetation and native vegetation needs to be made. The EIS should include a list of plants likely to be utilized for landscaping.
13. Should any lava tubes be encountered during planning/design and/or construction, as mitigation measures, the Historic Sites Division of the DLNR should be contacted.
14. Due to recent problems from the Kealakehe landfill at the Police Station, the State Department of Health should be contacted for any available results on air quality concerns, and such description should be included in the EIS.

15. A detailed discussion on the water demand for potable water and non-potable water (if any for landscaping) needs to be included in the EIS. The definition of "credit" needs to be further clarified.
16. The EIS should address noise quality during construction and include any mitigation measures. There are no noise regulations applicable to this project which are intended to minimize impact on surrounding developed areas as described on Page 35.
17. The temporary sewer system should be described in the EIS.

TRANSPORTATION

18. The County General Plan does not provide specific right-of-way dimensions as attributed on Page 17.
19. The State Department of Transportation has indicated to us that all access off the Queen Kaahumanu Highway will be via frontage roads except for interchanges at Keahole Airport and at the Kealakehe access road. This should be included in the EIS.
20. The Keahole to Kailua Development Plan draft indicates other north-south roads which run through Kealakehe, including "Main Street" and "Waena Drive" and an extension of Kealakaa Street. These roadway proposals should be included in the analysis of traffic and circulation impacts of the proposed project.

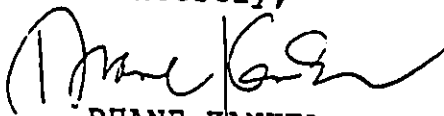
ALTERNATIVES

21. The land use plan shown in the Keahole to Kailua Development Plan should be discussed and analyzed as an alternative to the proposed Kealakehe land use concept. Since this is a State owned property, the range of uses should extend beyond the immediate interest of the HFDC and should include all feasible development, including the land use pattern proposed in the Keahole to Kailua Development Plan.

Dr. Marvin T. Miura, Director
March 23, 1990
Page 4

Thank you for the opportunity to review and comment on the EISPN
for the proposed Kealakehe Planned Community.

Sincerely,



DUANE KANUHA
Planning Director

AK:syw

cc: Mr. Carleton Ching, HFDC
Honorable Bernard K. Akana, Mayor

**BELT COLLINS
& ASSOCIATES**

Engineering • Planning
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May 30, 1990
841.0101/90-1167

Mr. Duane Kanuha, Planning Director
Hawaii County
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Kanuha:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for your letter of March 23, 1990 concerning the above project. The Draft Environmental Impact Statement will include all those components required by Chapter 343, Hawaii Revised Statutes, including identification of the accepting authority, relationship to State and County plans and policies, all subconsultant reports and mitigation plans, and a discussion of unresolved issues.

A conceptual map of the project configuration will be included in the Draft EIS.

Infrastructure for the proposed project will be oversized to accommodate development makai of the Queen Kaahumanu Highway, although such development is not part of the present project. This is being done to minimize the future costs of infrastructure development.

The HFDC has provided the Hawaii County Department of Public Works a layout of the proposed golf course to be located within the project. The golf course will serve as an effluent disposal area for the County sewage Treatment Plant presently under construction makai of the Queen Kaahumanu Highway.

The Draft EIS will reflect the present State and County land use designations affecting the proposed project area. It will also discuss the Draft Keahole to Kailua Development Plan.

The statements contained in the project's Environmental Assessment (EA) and Environmental Impact Statement Preparation Notice (EISPN) are not in conflict as suggested in your letter. The EA states that the project site consists of lavas from Hualalai from 3 to 5 thousand years old. The EISPN states that the last eruption of Hualalai occurred in 1801. The resultant lava flow, however, does not cross the subject property.

The Draft EIS will discuss the project's soil classifications and vegetation in greater detail. A list of plants likely to be used for landscaping is included in the Flora Survey for the project which will be included in the Draft EIS.

Construction of the project will be conducted according to all appropriate standards of practice. This includes the notification of the Historic Sites Division of the DLNR, should any lava tubes or archaeological features previously unknown be encountered.

An Air Quality study of the proposed project is presently being conducted and will be included in the Draft EIS.

A detailed discussion of the project's water demand and current water commitments or "credits" will be included in the Draft EIS.

A study of noise impacts is presently being conducted and will be included in the Draft EIS. Temporary and permanent sewer systems will also be discussed.

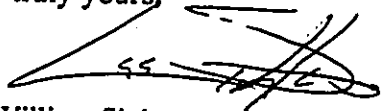
With regard to the matter of right-of-way dimensions discussed in the General Plan, at the time the EA was published, the County's Revised General Plan included a proposed revision reflecting the State DOT's request for additional right-of-way at Queen Kaahumanu Highway. Since the EA publication, the Revised General Plan has been adopted by the County Council. We have contacted your office to request a copy of the Revised Plan but have been told that its publication date is unknown. At this time we are unclear revision concerning additional right-of-way for the Queen Kaahumanu Highway was included in the Final Revised General Plan as adopted by the Council. We will attempt to resolve this matter in the Draft EIS.

The traffic circulation plan for the proposed project will be fully coordinated with the State DOT and will be discussed in the Draft EIS. Major roadways and land uses included in the most current Keahole to Kailua Draft Development Plan will be discussed in the Draft EIS.

Finally, alternatives to the HFDC proposal will be included in the DEIS.

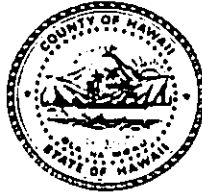
We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment.

Very truly yours,


Lee William Sichter

cc: HFDC

HELENE H. HALE
Councilwoman



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MAR 8 1990

BELT, COLLINS & ASSOCIATES

COUNTY COUNCIL

County of Hawaii
Hawaii County Building
25 Aupuni Street
Hilo, Hawaii 96720

March 7, 1990

Lee William Sichter, Senior Planner
Belt Collins And Associates
680 Ala Moana Blvd., Suite 200
Honolulu, HI 96813

Dear Mr. Sichter

Thank you for providing me with the Environmental Assessment Kealakehe Planned Community Kealakehe, North Kona, Hawaii project being planned for the state. I hope your EIS addresses adequately the impact on Palani Road during construction; also the impact of the landfill on air quality.

Alternatives could be, no housing constructed until a mauka makai connector road is built starting at Queen Kaahumanu Highway. No housing constructed until the Kailua landfill odor problem are solved or the site moved.

Yours truly,

Helene H. Hale
Councilwoman

**BELT COLLINS
& ASSOCIATES**

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680 Ala Moana Blvd., Suite 200, Honolulu, Hawaii 96813

Phone: 808-521-5361, Telex: BELTH 7430474 Fax: 808-538-7819
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May 30, 1990
841.0101/90-659

The Honorable Helene H. Hale
Councilwoman
County Council
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Councilwoman Hale:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

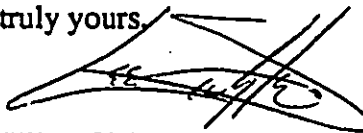
Thank you for your letter of March 9, 1990 concerning the above project. The Draft Environmental Impact Statement (DEIS) will address the impact of the project upon Palani Road and will include recommendations to mitigate significant impacts to the roadway.

With regard to the Kealakehe landfill, one of the reasons contributing to the decision of the Housing Finance and Development Corporation (HFDC) to develop affordable housing at Kealakehe was an understanding that the County would soon be closing the Kealakehe landfill, relocating it to a new site at Puuanahulu, and mining the Kealakehe landfill as a means of recovering recyclable material and extinguishing the fires. It is believed that this timely action will greatly reduce, if not eliminate, the source of the odor problem. Thus, the HFDC feels that odor problems related to the landfill are the responsibility of the operator, in this case the County of Hawaii, and that mitigation measures to address the problem will be undertaken in a timely manner.

Please be advised that the HFDC is attempting to construct the mauka-makai connector road simultaneously with the development of the first residential phase. It is hoped that completion of the two projects will coincide. Subsequent development will also be phased in a manner that will forestall residential development in the immediate vicinity of the landfill. Development is intended to begin adjacent to the existing Kealakehe community and move downslope at the rate of approximately 250 units per year. At this rate, residential development in proximity of the landfill should not occur until well after its closure. In addition, the landfill area will be buffered by the proposed golf course as a further means of mitigating the short-term impacts of land fill closure.

We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment.

Very truly yours,



Lee William Sichter

cc: HFDC

HAWAII CONFERENCE FOUNDATION

Telephone 537-9516 • 15 Cragside Place • Honolulu, Hawaii 96817

RECEIVED
MAR 26 1990

BELT, COLLINS & ASSOCIATES

March 23, 1990

Mr. Lee William Sichter
Belt Collins & Associates
680 Ala Moana Blvd., Suite 200
Honolulu, Hawaii 96813

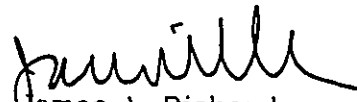
Dear Mr. Sichter:

Thank you for sending along the Environmental Assessment for the Kealakehe Planned Community.

From what I can discern, it does not appear that the project will abut any of our church land. The only readily apparent impact that attendees at our local Lailua-Kona churches might sustain could be a greater crowding of the highways, particularly Palani Road.

Thank you for including us in your request for comments.

Very truly yours,


James A. Richards
Executive Secretary

JAR:st

This Foundation is the property management arm of the Hawaii Conference of the United Church of Christ, continuing the first Christian work started in Hawaii in 1820.

**BELT COLLINS
& ASSOCIATES**

Engineering • Planning
Landscape Architecture

680 Ala Moana Blvd., Suite 200, Honolulu, Hawaii 96813

Phone: (808) 521-5361, Telex: BELTH 7430474, Fax: (808) 538-7819
Hawaii • Singapore • Australia • Hong Kong • Saipan

May 30, 1990
841.0101/90-1157

Mr. James A. Richards, Executive Secretary
Hawaii Conference Foundation
15 Craigsid Place
Honolulu, Hawaii 96817

Dear Mr. Richards:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for your letter of March 23, 1990 concerning the above project. As proposed, the project will include a new mauka-makai roadway which will help to relieve traffic from Palani Road.

We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment.

Very truly yours,


Lee William Sichter

cc: HFDC

RECEIVED

APR 6 1990

CUST
H-W/G



BELT, COLLINS & ASSOCIATES

April 5, 1990

Belt Collins & Associates
680 Ala Moana Boulevard, Suite 200
Honolulu, Hawaii 96813

Attention: Mr. Lee Sichter

Gentlemen:

Subject: Environmental Assessment
Kealakehe Planned Community
North Kona, Hawaii

Mr. J. F. _____
Mr. R. _____
Mr. T. _____
Mr. J. C. _____
Mr. T. _____
Mr. R. _____
Mr. D. _____
Mr. G. _____
Mr. E. _____
Mr. M. _____
Mr. M. _____
Mr. D. _____
Mr. P. _____
Mr. L. _____
L. Sichter

Thank you for the opportunity to review the subject Environmental Assessment. The project is in the Kailua-Keahole Development plan proposed by the County of Hawaii Planning Department. Our comments were provided to Duane Kanuha, copy attached, which are relative to the overall project.

The estimated 21,000 KVA demand load for the community will have a major impact on HELCO's system. This load will require new 69KV transmission line(s) from Keahole-Kailua and a major substation. The 12KV distribution systems along Palani Road and Queen Kaahumanu Highway are inadequate to accommodate the load.

HELCO requires that the developer make a contribution for the electrical work:

- A. Off-Site Electrical Work:
 - Participate with other developers in defraying the cost of a new 69KV transmission line and provide a corridor with utility easements from Keahole to Kailua.
- B. On-Site Electrical Work:
 - 1. Pay for two (2) 10MVA/12KV substation transformer minimum required to serve the project.
 - 2. Dedicate a substation lot in fee to HELCO.
 - 3. Provide an access road to the substation lot from Palani Road or Queen Kaahumanu Highway constructed in accordance with the State Highway Standards.
 - 4. Contribute to the cost of the new 69KV transmission line drop, substation and 12KV distribution system.

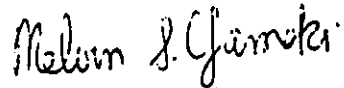
Belt Collins & Associates
April 5, 1990
Page 2

The developer is requested to pay 10% of the project's rough cost estimate 18 months in advance of the projects requirement date for engineering work. This is to allow HELCO sufficient lead time to obtain PUC approval before ordering long lead items and upgrading the off-site facilities to accommodate the new load. Plans showing service locations, estimated KVA load and roadways are required for this work.

We encourage that energy conservation features suitable to reduce peak demand be considered in the planned community. For example, fluorescent lighting should be used in buildings and sodium lighting for parking lots and roadways. Our Administration Department is prepared to assist you in providing rate analysis and other recommendations regarding the heating and cooling needs of the planned community. Contact Tom Goya, Director of Customer and Consumer Service Administration Department at 969-0131.

If there are any questions on this, please call me at 969-0323.

Very truly yours,



Melvin S. Yamaki
Electrical Engineer
Planning Division

MSY:ts

Enclosures

cc: C. Nagata
H. Kamigaki
T. Goya



BELT COLLINS
& ASSOCIATES

Engineering • Planning
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680 Ala Moana Blvd., Suite 200, Honolulu, Hawaii 96813

Phone: (808) 521-5361, Telex: BELTH 7430474, Fax: (808) 538-7819
Hawaii • Singapore • Australia • Hong Kong • Saipan

May 30, 1990
841.0101/90-1163

Mr. Melvin S. Yamaki
Planning Division
Hawaii Electric Light Company, Inc.
P.O. Box 1027
Hilo, Hawaii 96721-1027

Dear Mr. Yamaki:

**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for your letter of April 5, 1990 concerning the above project. We understand that the proposed project will require a new region-serving 69KV transmission line offsite, as well as two 10MVA/12KV substation transformers. HELCO will also require a substation lot dedicated in fee with appropriate access but has not indicated whether it should be located within the project area. Once the master plan for the proposed project has been finalized, representatives of the HFDC will meet with your staff to determine an appropriate location for the substation. The Draft Environmental Impact Statement will include a discussion of energy conservation measures to be utilized in the proposed project.

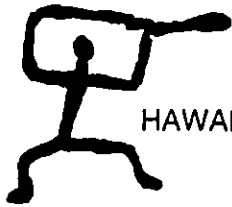
We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment.

Very truly yours,


Lee William Sichter

cc: HFDC

BANK OF HAWAII
B.P. BISHOP ESTATE
CABLEVISION
CAPT. COOK INVESTMENT CO.
DH REALTY
EASLEY CORP.
FIRST HAWAIIAN BANK
GENTRY PACIFIC LIMITED
HALE KEA FARMS
HAWAII ELECTRIC LIGHT CO.
HAWAII LAND MANAGEMENT, INC.
HOLUALOA MANAGEMENT
HUEHUE RANCH
KAMEHAMEHA INVESTMENT CORP
KAHUA RANCH
KAUPULEHU DEV. INC.
KEALAKEKUA RANCH, LTD.
KEHENA BEACH, INC.
KOHALA RANCH



RECEIVED

MAR 20 1990

BELT, COLLINS & ASSOCIATES

HAWAII LEEWARD PLANNING CONFERENCE

P.O. BOX 635 • KAILUA-KONA, HAWAII 96745-0635

LANIKAU PARTNERS, L.P.
LILIOUKALANI TRUST
LYLE ANDERSON
MAC FARMS OF HAWAII, INC.
MARYL DEV., INC.
MAUNA KEA PROPERTIES
MAUNA LANI RESORT, INC.
ORCHARD-MARINE
PALIKA RANCH
PARKER RANCH
PUAKEA BAY RANCH
QUEEN'S HEALTH SYSTEMS
R.M. JITCHAKU ENTERPRISES
R.M. TOWILL CO.
REALTY INVESTMENT
SIGNAL HAWAII, INC.
TAIYO HAWAII CO., LTD.
WAIKOLOA LAND COMPANY
WEST HAWAII CONCRETE

March 19, 1990

Lee William Sichter
Senior Planner, Belt Collins & Associates
680 Ala Moana Blvd., Suite 200
Honolulu, HI 96813

Dear Mr. Sichter:

I have reviewed the Environmental Assessment for the Kealakekua Planned Community. In preparing the EIS the major environmental problem in Kealakekua is the sanitary landfill and its on going fire. Major consideration must be given to this issue.

Thank you for this opportunity to comment. Please keep me informed.

Sincerely,

H. Peter L'Orange
President

HPL:sjs

May 30, 1990
841.0101/90-652

Mr. Peter L'Orange
Hawaii Leeward Planning Conference
P.O. Box 635
Kailua Kona, Hawaii 96745-0635

Dear Mr. L'Orange:

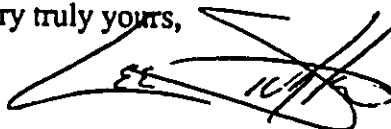
**Kealakehe Planned Community
Environmental Assessment and EIS Preparation Notice**

Thank you for letter of March 19, 1990 commenting on the above project. We agree that the sanitary landfill at Kealakehe is a major environmental problem. The proposed project takes this into account. Development implementation will be phased in a manner that will forestall residential development in the immediate vicinity of the landfill. Development is intended to begin adjacent to the existing Kealakehe community and move downslope at the rate of approximately 250 units per year. At this rate, residential development in proximity of the landfill should not occur until well after its closure. In addition, the landfill area will be buffered by the proposed golf course as a further means of mitigating the short-term impacts of land fill closure.

One of the reasons contributing to the decision of the Housing Finance and Development Corporation (HFDC) to develop affordable housing at Kealakehe was an understanding that the County would soon be closing the Kealakehe landfill, relocating it to a new site at Puuanahulu, and mining the Kealakehe landfill as a means of recovering recyclable material and extinguishing the fires. It is believed that this timely action will greatly reduce, if not eliminate, the source of the odor problem. Thus, the HFDC feels that odor problems related to the landfill are the responsibility of the operator, in this case the County of Hawaii, and that mitigation measures to address the problem will be undertaken in a timely manner.

We will provide you with a copy of the Draft Environmental Impact Statement for your review and comment. Thank you for participating in the review process.

Very truly yours,



Lee William Sichter

cc: HFDC

CHAPTER XI

CHAPTER XI REFERENCES

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- PHRI. *Archaeological Inventory Survey Kealakehe Planned Community Project Area: Lands of Kealakehe and Keahuolu, North Kona District, Island of Hawaii*. Hilo.
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CHAPTER XII

CHAPTER XII
COMMENTS RECEIVED DURING
THE DRAFT EIS COMMENT PERIOD AND RESPONSES

CONSULTED PARTIES

An announcement of the availability of the Draft Environmental Impact Statement (DEIS) for the proposed Kealakehe Planned Community was published in the OEOC Bulletin by the Office of Environmental Quality Control on July 23, 1990. The agencies, organizations, and individuals listed below were sent copies of the DEIS with a request for their comments on the project. Those believed to have an interest in the project or who requested consulted party status were mailed a copy of the report. Parties that replied are marked with an asterisk (*), and these letters are reproduced, along with responses to them, in the following pages.

Federal Agencies

- * Soil Conservation Service, U.S. Department of Agriculture
- Fish and Wildlife Service, U.S. Department of the Interior
- National Park Service, U.S. Department of the Interior
- Geological Survey, Water Resources Division, U.S. Department of the Interior
- Regional Division, United States Environmental Protection Agency, Region IX
- * Facilities Engineer, U.S. Army
- * Facilities Engineer, U.S. Navy
- U.S. Coast Guard

State Agencies

- * Department of Accounting and General Services
- * Department of Agriculture
- * Department of Business and Economic Development
- Department of Business and Economic Development, Library
- Department of Budget and Finance
- * Department of Defense
- Department of Education
- Department of Hawaiian Home Lands
- Department of Health
- * Department of Land and Natural Resources
- Department of Land and Natural Resources, State Historic Preservation Officer
- Department of Transportation
- Office of Environmental Quality Control
- * Office of Hawaiian Affairs
- Office of State Planning
- * Environmental Center, University of Hawaii at Manoa
- Water Resources Research Center, University of Hawaii at Manoa

University of Hawaii at Hilo
State Archives
State Energy Office

State Legislators

Senator Andrew Levin
Senator Malama Solomon
Representative Harvey S. Tajiri
Representative Dwight Takamine
Representative Mike O'Kieffe

Senator Richard M. Matsuura
Representative Jerry L. Chang
Representative Wayne Metcalf
* Representative Virginia Isbell

Hawaii County Agencies

Civil Defense Agency
* Department of Parks and Recreations
Department of Research and Development
Hawaii Redevelopment Agency
* Office of Housing and Community Development

Fire Department
* Department of Public Works
* Department of Water Supply
* Police Department (officers)
* Planning Department

Hawaii County Elected Officials

Mayor Larry Tanimoto
Councilman Takashi Domingo
Councilwoman Lorraine Inouye
Councilman Robert Makuakane
Councilman Spenser Schutte

Councilman Russel Kokubun
Councilwoman Helene Hale
Councilwoman Merle Lai
Councilman Harry Ruddle
Councilman Stephen Yamashiro

Public Utilities

Hawaiian Telephone Company
* Hawaii Electric Light Company, Inc.
The Gas Company, Hawaii Division

Community Organizations

Alu Like, Inc.
American Lung Association
Big Island Business Council
Hawaii Audubon Society
Hawaii Conference Foundation
Hawaii Hotel Association, Big Island Chapter
Hawaii Island Board of Realtors
Hawaii Island Chamber of Commerce
Hawaii Island Economic Development Board
Hawaii Island Portuguese Chamber of Commerce
* Hawaii Leeward Planning Conference
Hawaii Visitor's Bureau, Big Island Chapter
Kona-Kohala Chamber of Commerce
Life of the Land, Big Island Chapter
Moku Loa Group, Sierra Club

Na Ala Hele
Native Hawaiian Legal Corporation
Sierra Club Legal Defense Fund

LIBRARIES

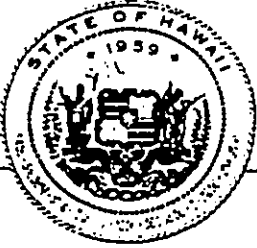
University of Hawaii Library, Hawaiian Collection
Legislative Reference Bureau
Kaimuki Regional Library
Kaneohe Regional Library
Pearl City Regional Library
Hilo Regional Library
Wailuku Regional Library
Lihue Regional Library
Holualoa Library
Honokaa Library
Kailua-Kona Library

MEDIA

Honolulu Advertiser
Sun Press
Hawaii Tribune Herald
West Hawaii Today

The following individuals submitted comments based upon an informational meeting held at the Kealakehe Police Station on September 4, 1990.

- * John Dawrs
- * Daniel J. Minan
- * Mellaney L. Bean
- * Sherri Kunitomo
- * Mrs. Jamie Takimoto
- * Blane S. Takamine
- * Wendy Butterworth (included petition with 69 names supporting Ms. Butterworth's comments)
- * State of Hawaii Organization of Police Officers



DEPARTMENT OF BUSINESS
AND ECONOMIC DEVELOPMENT

RECEIVED
AUG 8 1990

JOHN WAIHEE
GOVERNOR
ROGER A. ULVELING
DIRECTOR
BARBARA KIM STANTON
DEPUTY DIRECTOR
LESLIE S. MATSUBARA
DEPUTY DIRECTOR

ENERGY DIVISION, 335 MERCHANT ST., RM 110, HONOLULU, HAWAII 96813 FAX: (808) 531-5243 ENERGY HOTLINE: (808) 548-4080

August 1, 1990

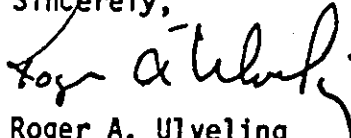
The Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental
Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Governor Waihee:

Subject: Kealakehe Planned Community, Draft Environmental Impact
Statement (DEIS)

We have reviewed the above DEIS and found it to contain a very complete treatment of energy impacts, with the exception of the fact that it does not mention the possibility of geothermal-produced electricity as a source of energy for the project. Given the fact that considerable activity is underway to develop geothermal power on the Island of Hawaii, it should be mentioned as a likely source of electricity for the project.

Sincerely,



Roger A. Ulveling

RAU/PE:dkl
cc: Housing Finance & Development Corporation
Beit Collins and Associates

Effective July 1, 1990, the department name has been changed to
Department of Business, Economic Development & Tourism

BCA

BELT COLLINS
& ASSOCIATES

Engineering • Planning
Landscape Architecture

600 Ala Moana Blvd., Suite 210, Honolulu, Hawaii 96813
Phone: (808) 521-5361, Telex: BELH117430474, Fax: (808) 521-5361
Hawaii • Singapore • Australia • Hong Kong • Saitama

September 12, 1990
841.0101/1898

Mr. Roger Ulveling, Director
Department of Business, Economic Development and Tourism
State of Hawaii
Energy Division
335 Merchant Street, Room 110
Honolulu, Hawaii 96813

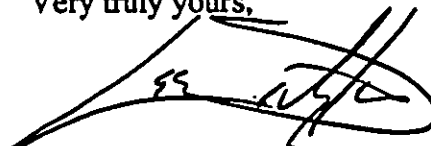
Dear Mr. Ulveling:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments concerning the above project. A discussion of the proposed project's energy impacts is presented in Section 8 of Chapter 6 in the EIS. This discussion focuses on the projected demand for electrical power. It was assumed in the EIS that the future supply of electrical energy on the Big Island may be derived from a number of resources including fossil fuels, biomass, wind energy, geothermal and perhaps even OTEC. The decision to develop these various alternate resources and their implementation timeframe will be based upon a number of economic, social and political factors which are beyond the control of the proposed project. Thus, the extent of probable energy impacts was defined in terms of the project's ability to influence levels of demand for energy within the property boundaries rather than sources of supply beyond the scope of the proposed development.

The text within Section 8.1 of Chapter 6 of the document has been amended to include your recommendation. Thank you for your comments.

Very truly yours,



Lee William Sichter

JOHN WAIHEE
GOVERNOR OF HAWAII



RECEIVED
AUG 6 1990

BELT COLLINS & ASSOCIATES

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

KEITH W. AHUE
MANABU TAGOMORI
RUSSELL N. FUKUMOTO

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PROGRAM
AQUATIC RESOURCES
CONSERVATION AND
ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

P. O. BOX 621
HONOLULU, HAWAII 96809

REF:OCEA:JN

FILE NO.: HA-7/9/90-2371
DOCUMENT NO.: 8728E

AUG 2 1990

Mr. Lee Sichter
Belt Collins and Associates
680 Ala Moana Blvd.
Suite 200
Honolulu, Hawaii 96813

Dear Mr. Sichter:

This letter is to acknowledge our receipt of your Draft Environmental Impact Statement (EIS) for Kealakehe Planned Community located at North Kona, Hawaii. In conjunction with the Office of Environmental Quality Control (OEQC), we will be distributing the document in accordance with Chapter 343 HRS and its implementing Administrative Rules; Title 11, Chapter 200, such that the public may have an opportunity to comment on it.

May we request that you maintain close contact with OEQC, such that you will be aware of the proper procedures to be followed in this process.

Should you have any questions, please feel free to contact our Office of Conservation and Environmental Affairs staff at 548-7837.

Very truly yours,

WILLIAM W. PATY

BCA
BELT COLLINS
& ASSOCIATES

Engineering • Planning
Landscape Architecture

680 Ala Moana Blvd., Suite 200, Honolulu, Hawaii 96813

Phone: (808) 521-5361, Telex: BELTH 7-430474, Fax: (808) 538-7819
Hawaii • Singapore • Australia • Hong Kong • Saipan

September 12, 1990
841.0101/1898

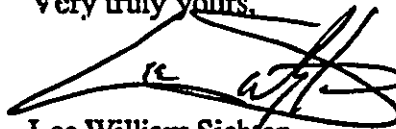
Mr. William W. Paty, Chairman
Board of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

Kealakehe Planned Community
Draft Environmental Impact Statement

Thank you for your comments concerning the above project. We have had numerous discussions to date with staff of the Office of Environmental Quality Control to ensure compliance with Administrative Rules; Title 11, Chapter 200 and provide for public review of the DEIS.

Very truly yours,



Lee William Sichter

RECEIVED
AUG 6 1990

BELT, COLLINS & ASSOCIATES

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3549 DIANES WALK ROAD, HONOLULU, HAWAII 96848

August 2, 1990

Engineering Office

Governor, State of Hawaii
c/o OEQC
465 South King Street, Rm 104
Honolulu, Hawaii 96813

Dear Governor Waihee:

Kealahou Planned Community with Appendix (DEIS)
Kealahou, North Kona, Hawaii

Thank you for providing us the opportunity to review the above subject project.

We have no comments to offer at this time regarding this project.

Sincerely,

Jerry M. Matsuda
Lieutenant Colonel
Hawaii Air National Guard
Contracting and Engineering Officer

cc: State of Hawaii-Housing
Finance & Development Corp.
✓ Belt Collins and Associates
OEQC w/EIS

**BELT COLLINS
& ASSOCIATES**

Engineering • Planning
Landscape Architecture

170 W. Mokuia Blvd. Suite 201 Honolulu, Hawaii 96813

Phone: (808) 521-5101 Telex: 856114 741-474 Fax: (808) 521-0219
Chicago • San Francisco • Austin • Los Angeles • Seattle

September 12, 1990
841.0101/1898

Lieutenant Colonel Jerry M. Matsuda
Contracting and Engineering Officer
Hawaii Air National Guard
State of Hawaii
3949 Diamond Head Road
Honolulu, Hawaii 96816-4495

Dear Lt. Colonel Matsuda:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for taking the time to review the above project. Should you require any additional information, please feel free to contact me.

Very truly yours,



Lee William Sichter



RECEIVED
JUL 25 1990

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

BELT, COLLINS & ASSOCIATES

IN REPLY REFER TO

5090
Ser 00F2/2545
23 JUL 1990

Marvin T. Miura, Ph.D.
Office of Environmental Quality Control
465 S. King St., Room 104
Honolulu, Hawaii 96813

Dear Dr. Miura:

KEALAKEHE PLANNED COMMUNITY

The Draft Environmental Impact Statement (DEIS) for Kealakehe Planned Community, Kealakehe, North Kona, Hawaii, has been reviewed, and we have no comments to offer. Since we have no further use for the DEIS, it is being returned to your office.

Thank you for the opportunity to review the draft.

Sincerely,

D. Mash
Lieutenant, CEC, U.S. Navy
Civil Engineer
by direction of
the Commander

Encl
(1) DEIS

Copy to: (w/o encl)
Housing Finance & Dev. Corp.
Belt Collins and Associates



**BELT COLLINS
& ASSOCIATES**

Engineering • Planning
Landscape Architecture

1000 Ala Moana Blvd., Suite 200, Honolulu, Hawaii 96813
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September 12, 1990
841.0101/1898

Captain B.J. Nash
Base Civil Engineer
Department of the Navy
Naval Base Pearl Harbor
Box 110
Pearl Harbor, Hawaii 96860-5020

Dear Captain Nash:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for taking the time to review the above project. Should you require any additional information, please feel free to contact me.

Very truly yours,


Lee William Sichter

RECEIVED
JUL 20 1990

BELT, COLLINS & ASSOCIATES

(P)1587.0

JUL 27 1990

The Honorable John Waihee
Governor
State of Hawaii
c/o Office of Environmental
Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Governor Waihee:

Subject: Kealakehe Planned Community
Draft EIS

This is in response to the recent Office of Environmental
Quality Control's request for comments on the subject document.

Our comments are as follows:

1. North Kona Civic Center. The Department of Accounting and General Services is planning to develop a civic center in the North Kona area. The following are our concerns regarding the impact of the Housing Finance and Development Corporation's (HFDC) Kealakehe Plan on this civic center:
 - a. The land requirement has been revised to 30 acres from the 24 acres reported to Belt Collins and Associates on March 22, 1990. Further, the County's needs are not included in the 30 acres. The civic center site shown in the HFDC plan is only 20 acres.
 - b. The 20-acre site is adjacent to the County landfill. This would create the potential for pollution problems such as the existing police station is encountering.
 - c. Considerable vehicular traffic will be generated by the civic center. The 20-acre site would not have as convenient a vehicular access as one closer to a major traffic intersection.

- d. The 20-acre site is relatively isolated from existing and proposed business and commercial areas. The civic center should ideally be in close proximity to such areas.
2. Hawaii County Kailua to Keahole Development Plan. The EIS may want to address the difference between HFDC's plan and the County's Development Plan in the siting of the business and civic center areas.

We appreciate this opportunity to identify key EIS issues. Should there be any questions, please have your staff contact Mr. Cedric Takamoto of the Public Works Division at 548-7192.

Respectfully,


RUSSEL S. NAGATA
State Comptroller

TCT:jk
cc: Housing and Finance Development Corporation
✓ Belt Collins and Associates

**BELT COLLINS
& ASSOCIATES**

Engineering • Planning
Landscape Architecture

660 Ma Moana Blvd., Suite 210, Honolulu, Hawaii 96813
Phone: (808) 521-5161 Telex: BELHCH 7439474 Fax: (808) 521-5171
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September 12, 1990
841.0101/1898

Mr. Russel S. Nagata, State Comptroller
Department of Accounting and General Services
State of Hawaii
1151 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Nagata:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments concerning the above project. Following are responses to your comments in the order they were presented in your letter.

- 1a. In order to maximize the use of the Kealakehe property for the development of affordable housing to fulfill the HFDC's mission, non-residential-related land uses within the project area have been minimized wherever possible. Thus, it was determined during the formulation of the master plan that the Civic Center requested by the County and the community would best be located on County land.

Technically, the Civic Center is not part of the Kealakehe Planned Community. It is depicted on the project map as a future land use as a result of comments received from the County and the Kailua-Kona community.

- 1b. The County of Hawaii is responsible for the closing of the Kealakehe Landfill which has been delayed due to challenges to the County's new proposed landfill site. We are anticipating the County will resolve this problem and that potential pollution problems can be averted by its timely closing.
- 1c. The Civic Center depicted in the Kealakehe master plan represents approximately one half of a total Civic Center project area. On August 23, 1990, the Liliuokalani Trust published a Draft Environmental Impact Statement concerning the proposed development of its property adjacent to Kealakehe as an urban expansion area to serve the entire West Hawaii region. A 30-acre Civic and Cultural Center is included in the Trust's plan and abuts the County owned property. Thus, the adjoining projects include an area totalling approximately 60 acres for a Civic Center, which will be sufficient to address the long-term development and expansion of such a facility. The entire facility will be accessible by major roadways included in the Trust's plans. The Civic Center is recognized as a transitional land use between the office and commercial land uses proposed on the Trust's land to the south and the public golf course to be developed by the County to the north. Locating a Civic Center closer to the Kealekehe intersection would be inappropriate because it would be relatively isolated from the existing Kailua community and the Trust's proposed urban expansion area.
- 1d. As discussed above, the proposed Civic Center is actually contained within a major urban expansion area for the West Hawaii region. The 20-acre commercial area planned for the

Kealakehe Community is not envisioned as a regional shopping center, but rather as a commercial mall to serve the Kealakehe community. Thus, locating a Civic Center at this location or adjacent to it is not viewed as an appropriate or compatible use. In addition, the development of a Civic Center on State-owned land would reduce the amount of land available for the development of affordable housing which is contrary to the mission of the HFDC. While it might be argued that the proposed commercial center also reduces the amount of available residential land, it should be understood that the commercial area is intended to serve the residential area and income from its development can help to offset the cost of residential development. A Civic Center is a public facility which will provide no direct income.

2. Section 2.5 of Chapter VII specifically addresses the differences between the Kealakehe plan and the draft Keahole to Kailua Development Plan (K-K Plan). The fact that the K-K plan is presently in draft form and will be probably the subject of further revisions is also discussed in Section 4 of Chapter VIII and is identified as an unresolved issue.

Thank you for taking the time to review the above project. Should you have any questions or comments about the project or the matters discussed above, please feel free to contact me.

Very truly yours,



Lee William Sichter

UNITED STATES
DEPARTMENT OF
AGRICULTURE

SOIL
CONSERVATION
SERVICE

P. O. BOX 50004
HONOLULU, HAWAII
96850

RECEIVED

AUG 21 1990

BELT, COLLINS & ASSOCIA

August 20, 1990

The Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental Quality Control
465 S. King Street, Rm. 104
Honolulu, Hawaii 96813

Dear Governor Waihee:

Subject: Draft Environmental Impact Statement (DEIS) w/ Appendix -
Kealakehe Planned Community, Kealakehe, N. Kona, Hawaii

We have no comments to offer at this time; we would appreciate the
opportunity to review the final EIS.

Sincerely,



WARREN M. LEE
State Conservationist

cc:

Housing Finance and Development Corporation, State of Hawaii, 7 Waterfront
Plaza, Suite 300, 500 Ala Moana Boulevard, Honolulu, Hawaii 96813

Belt Collins and Associates, 680 Ala Moana Blvd., Suite 200,
Honolulu, Hawaii 96813

Office of Environmental Quality Control, 465 S. King Street, Rm. 104,
Honolulu, Hawaii 96813

PC

**BELT COLLINS
& ASSOCIATES**

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660 Ala Moana Blvd., Suite 2100, Honolulu, Hawaii 96813

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September 12, 1990
841.0101/1898

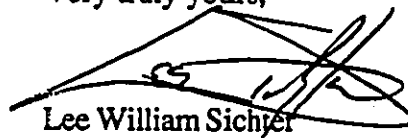
Mr. Warren M. Lee
State Conservationist
Soil Conservation Service
United States Department of Agriculture
Box 50004
Honolulu, Hawaii 96850

Dear Mr. Lee:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for taking the time to review the above project. Should you require any additional information, please feel free to contact me.

Very truly yours,



Lee William Sichter

BANK OF HAWAII
B P BISHOP ESTATE
CABLEVISION
CAPT COOK INVESTMENT CO
DM REALTY
EASLEY CORP
FIRST HAWAIIAN BANK
GENTRY PACIFIC LIMITED
HALE KEA FARMS
HAWAII ELECTRIC LIGHT CO
HAWAII LAND MANAGEMENT, INC
HOLUALOA MANAGEMENT
HUEHUE RANCH
KAMEHAMEHA INVESTMENT CORP
KAHUA RANCH
KAUPULEHU DEV INC
KEALAKEKUA RANCH, LTD
KEHENA BEACH, INC
KOHALA RANCH



HAWAII LEEWARD PLANNING CONFERENCE

P O BOX 635 • KAILUA-KONA HAWAII 96745-0635

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SEP 4 1990

BELT, COLLINS & ASSOCIATES

LANIHAU PARTNERS LP
LILIUOKALANI TRUST
LYLE ANDERSON
MAC FARMS OF HAWAII INC
MARYL DEV INC
MAUNA KEA PROPERTIES
MAUNA LANI RESORT INC
ORCHARD-MARINE
PALIKA RANCH
PARKER RANCH
PUAKEA BAY RANCH
QUEEN S HEALTH SYSTEMS
RM JITCHAKU ENTERPRISES
RM TOWILL CO
REALTY INVESTMENT
SIGNAL HAWAII INC
TAIYO HAWAII CO LTD
WAIKOLOA LAND COMPANY
WEST HAWAII CONCRETE

August 30, 1990

Office of Environmental Quality Control
465 South King Street
Kekuanaoa Building, #104
Honolulu, HI 96813

Dear Sirs:

We have reviewed the draft of the Environmental Impact Statement for the Kealakehe Planned Community. We do not feel that our concern over the resolution of the landfill problem is adequately addressed.

In the document it is stated that the landfill will be moved by the County and we concur that this will have to be done. We are concerned, however, that because of the conflicts between the State, County Administration and a private land owner, that the relocation of the landfill will not take place in a timely fashion. The development of the Kealakehe Planned Community cannot move forward without the relocation of the landfill.

Should you care to discuss this in more detail, please contact me at 329-2334.

Sincerely,

H. Peter L'Orange
President

HPL/mg,

cc: Lee W. Sichter, ✓
Belt Collins & Assoc.

Joseph Conant
Housing Finance & Development Corp.

BELT COLLINS
& ASSOCIATES

Engineering • Planning
Landscape Architecture

1001 Ala Moana Blvd., Suite 210, Honolulu, Hawaii 96813
Phone: (808) 521-1131, Telex: 981111 73 00474, Fax: (808) 521-1131
Chicago • San Francisco • Australia • Hong Kong • London

September 12, 1990
841.0101/1898

Mr. H. Peter L'Orange
Hawaii Leeward Planning Conference
P.O.Box 635
Kailua-Kona, Hawaii 96745-0635

Dear Mr. L'Orange:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project. As stated near the bottom of page II-20 of the DEIS, "It is recognized that the ultimate disposition of the landfill will determine the actual use and phasing of new construction on the property." While this comment pertains specifically to the disposition of the proposed Civic Center, the text in section 7.3 of Chapter VI on page VI-36 addresses residential development at Kealakehe:

"...the timely closing of the existing landfill will have a significant effect upon the proposed residential community. Development of homes in the general vicinity of the landfill may be constrained by continuing problems with fumes and odors, and the potential threat of fire. Therefore, phasing of the proposed community has been designed to allow for development of the most mauka villages first, with villages closer to the landfill area being developed after the landfill has been closed and/or removed."

In view of the critical need for affordable housing in West Hawaii, we do not believe it is appropriate to halt the development of the proposed project until the landfill is relocated as you suggest. In order to ensure that homes are available for occupancy within the next 20 months, we must proceed now with the planning and engineering for the project.

The HFDC undertook the proposed project with the understanding that the County of Hawaii would soon be closing the landfill and opening a new landfill facility in West Hawaii. The Kealakehe landfill was not considered to be a permanent constraint on development. The landfill is a temporary use of the County property and does not constitute an irreversible alteration of the land. Therefore, for purposes of long-range planning, it is appropriate to continue with development plans for the proposed project.

As discussed in the consultant's report on Air Quality, the Environmental Protection Agency has determined that the landfill is not toxic. However, in view of the concerns over the landfill, the HFDC supports its closure by May, 1992.

Very truly yours,


Lee William Sichter



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96858-5440

RECEIVED

SFO : 1990

BELT, COLLINS & ASSOCIATE

REPLY TO
ATTENTION OF:

August 31, 1990

Planning Division

Dr. Marvin T. Miura, Director
Office of Environmental Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Dr. Miura:

We have reviewed the two-volume Draft Environmental Impact Statement for the proposed Kealakehe Planned Community, Kealakehe, North Kona, Hawaii. The following comments are offered:

a. A Department of the Army permit is not required.

b. According to the Flood Insurance Rate Map (Panel 692) dated September 16, 1988, and the Map Index sheet dated July 16, 1990, the property is in Zone X, areas determined to be outside of the 500-year flood plain as designated by the Federal Emergency Management Agency.

Sincerely,

Kisuk Cheung
Director of Engineering

Copies Furnished:

State of Hawaii Housing Finance and
Development Corporation
7 Waterfront Plaza, Suite 300
500 Ala Moana Boulevard
Honolulu, Hawaii 96813

✓ Belt Collins and Associates
680 Ala Moana Boulevard, Suite 200
Honolulu, Hawaii 96813

BELT COLLINS
& ASSOCIATES

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September 12, 1990
841.0101/1898


Mr. Kisuk Cheung
Director of Engineering
Department of the Army
U.S. Army Engineer District, Honolulu
Building 230
Fort Shafter, Hawaii 96858-5440

Dear Mr. Cheung:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for taking the time to review the above project. Should you require any additional information, please feel free to contact me.

Very truly yours,



Lee William Sichter

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SEP 6 1990

BELT, COLLINS & ASSOCIATES

74-5221 Queen Kaahumanu Hwy.
Kailua-Kona, HI 96740

September 5, 1990

Mr. Lee William Sichter
Senior Planner
Belt Collins & Associates
680 Ala Moana Blvd., Suite 200
Honolulu, HI 96813

SUBJECT: Kealakehe Planned Development

Dear Mr. Sichter:

Thank you for your presentation at the Kealakehe Police Station on September 4, 1990.

The layout of your plan is excellent. The only problem is the timetable. My suggestion is that step 1 be the construction of the mauka/makai road (problem solver).

Step 2 should be limited to the relocation of the Kailua Landfill. It is important that the step should be completed prior to any residential construction. Any form of building construction has a large amount of waste product and this should not be added to the Kailua Landfill (problem solver).

Step 3 should be limited to completion of the sewage treatment plant and golf course. We don't need another house in the area until we have a adequate means of sewage disposal (problem solver).

Step 4, only after completion of steps 1 thru 3 should residential construction begin.

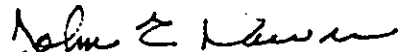
I think it's very important that the State of Hawaii look at its affordable housing project and school construction as an improvement to the Kona District. If housing or school construction precedes the moving of the landfill or the completion of the sewage treatment plant and golf course, the State will become part of the problem, not the solution.

I have attached copies of pages from your Environmental Assessment and have made notes on the copies relative to problem areas.

Mr. Lee William Sichter
Page 2

Your consideration of my opinion will be greatly appreciated.

Sincerely,



John E. Dawrs
Kona resident and Police Officer

Attachment

cc: Honorable Governor John Waihee



**Environmental Assessment
for**

KEALAKEHE PLANNED COMMUNITY


Kailua Kona, Hawaii

Prepared for

**STATE OF HAWAII
HOUSING FINANCE AND DEVELOPMENT CORPORATION**

**by
Belt Collins & Associates**

February 14, 1990



and the *alupua'a* of Honokohau to the north, and Queen Kaahumanu Highway and the makai lands of Kealakehe to the west.

Existing uses on the property include the County of Hawaii Kealakehe landfill and the County Police Substation. The landfill located at the southwestern corner of the project site presently includes two facilities: a rubbish dump which occupies about 15 acres of land, and a solid waste transfer station. Total acreage for the landfill is about 30 acres. The County plans to close the landfill and relocate it to another site in West Hawaii at Puuanahulu. However, it is unclear at this time what the timetable for closing and relocating will be. Relocation will include mining the site for usable heavy metals and salvageable materials. Over a period of time the site would be reclaimed for use by the community. Once the landfill is closed and properly reclaimed, it could be used as open space or a park facility.

Adjacent uses to the project area include a quarry operation to the north on property owned by Robert McClean, and a number of housing projects to the east and mauka of the project site including Kealakehe House Lots Increments I and II; Kealakehe Public Housing; Jack Hall Memorial Housing; Kaimalino Multi-Family Units; La'ilani Multi-Family Rental Housing project, and the Queen Liliuokalani Village south of Palani Road. The subject property is presently vacant and is leased to the Palani Ranch for the grazing of cattle.

1.6 POTENTIAL IMPACTS, MITIGATION MEASURES & ALTERNATIVES

1.6.1 Land Use Impacts

Development of the subject property as a master planned residential community will impact the physical character of the land. The vacant land will be transformed through the development of a variety of urban-related uses including residential units; public facilities and infrastructure; schools; and neighborhood and regional serving recreational uses.

1.6.2 Mitigating Measures

The entire project will be developed according to a detailed master plan. Phasing of the project in a manner consistent with the master plan will ensure that impacts upon the land are minimized through the proper siting and timing of infrastructure development and the landscaping.

1.6.3 Traffic Conditions

Traffic volumes will increase for the area. The development of a residential community of up to 5,000 units will result in a significant expansion of the Kailua-Kona area population and a

consisting of a minimum of 1,044 component features have been identified within the project area. Among the sites, 32 consist of single components and the rest consist of two to one hundred and twenty components. The total number of features may be further distributed among eight general functional categories; agriculture (793 features), habitation (21 features), transportation (20 features), markers (32 features), agricultural/habitation (153 features), land division (10 features), possible burial (8 features), and possible ceremonial (5).

The distribution and density of features within the project area indicate that the area was used primarily for relatively intense dry land agriculture. Agriculture complexes are most numerous in the upper portions of the area, at elevations of 500 feet or greater. The most common agricultural features are pahoehoe excavations and rock mounds. These two formal types comprise 66% of all agricultural features, and 57.4% of all identified features. It is likely that additional pahoehoe excavations and mounds are present within the project area. The location of archaeological sites is presented in Figures 11 and 12.

3.1.9 Air Quality - Please tell it like it is !!!

constant

Due to the relative lack of development, air quality in the project area might be expected to be good. However, the Kealakehe landfill located at the southern corner of the project site is a periodic source of noxious odors. County officials have indicated that the landfill will soon be closed and the rubbish mined and removed to a new location offsite. This process is projected to require up to ten years. Once the mining of the rubbish begins, and underground fires which have been smoldering are exposed to air, the volume of emissions from the landfill may actually increase during the short term due to periodic flare-ups.

will

On a regional scale, air quality has been impacted in recent years by the continuing eruptive activity associated with the Puu O'o vent on the southeast slope of Kilauea volcano. Particulate emissions in the Kailua-Kona area are most evident during periods of light trade winds.

What about toxic fumes?

3.1.10 Noise

Fixed source noise is the principal form of noise at the subject property and is directly related to activities at the Kealakehe Landfill. Traffic noise is associated with Queen Kaahumanu Highway.

3.1.11 Natural Hazards

The subject property may be potentially impacted by two forms of natural hazards;

3.1.14 Sewer

There is no public sewage collection system currently serving the project site. Sewage is presently disposed of in private individual disposal units such as cesspools at the existing developments on the project site (County Police Substation and Landfill). The County is currently undertaking a project to expand the existing sewerage system in Kailua-Kona. This involves the construction of a new sewage treatment plant (STP) makai of Queen Kaahumanu Highway on State owned land in the Kealakehe *ahupua'a*. The proposal includes closing of the existing STP in the Kona Industrial Subdivision once the new plant is completed. The current plans call for construction to commence in February of 1989. The initial plant would occupy a land area of approximately 50 acres with an effluent disposal area of approximately 150 acres. Expansion of the plant's capacity to accommodate the Kealakehe Planned Community is presently being reviewed. Such an expansion would require an increase of 2.0 million gallons of sewage per day over the current design capacity of 2.8mgd. This expansion would require an additional 10 acres of land for the STP facility and an appropriate increase in size of the leaching area (effluent disposal area). The effluent disposal area needed to serve the STP as presently designed is situated within the makai portion of the proposed project and will be developed as a public golf course.

NO CONSTRUCTION UNTIL EXPANSION IS COMPLETED.

The initial phase of development will be serviced by a temporary sewer system which will be eventually integrated into the entire project-serving system once the new treatment plant is operable.

3.1.15 Solid Waste

The County of Hawaii Department of Public Works has indicated that a trash transfer station would be required to serve the immediate vicinity including the Kealakehe Planned Community. This transfer station would require a minimum of five acres and could be developed in the vicinity of the present site used for this activity, or it could be located at some other area within the project site. The County has indicated that it prefers a location within the Kealakehe project area.

3.2 SOCIOECONOMIC ENVIRONMENT

3.2.1 Population and Development

Primary economic activities on the island of Hawaii include the visitor industry, sugar, diversified agriculture and the emerging new industries of research and technology. In the near future, economic and demographic growth in West Hawaii is expected to be led principally by visitor-related developments. It is estimated that between 1988 and 2005, about 12,500 new

CHAPTER 9
PARTIES TO BE CONSULTED IN THE PREPARATION OF AN EIS

The following governmental agencies and community organizations will be consulted during preparation of the Environmental Impact Statement:

State of Hawaii

Department of Health
Department of Land and Natural Resources
Department of Labor and Industrial Relations
Department of Business and Economic Development
Hawaii Housing Authority
Department of Transportation
Department of Human Services
Department of Education
Office of State Planning

County of Hawaii

Public Works Department
Office of Housing and Community Development
Police Department
Department of Water Supply
Planning Department
Fire Department
Department of Parks and Recreation

Federal Government

Department of Housing and Urban Development
Department of the Interior, Fish and Wildlife Service
National Park Service

Public Utilities

Hawaiian Telephone
Hilo Electric Light Company

Community Organizations

Kona Chamber of Commerce
Leeward Planning Conference
Board of Realtors

Representatives of Kailua Kona Communities

Elected Officials

(1.) Why wasn't the Kona Traffic Safety Committee consulted?

Why didn't you talk to the police officers

**BELT COLLINS
& ASSOCIATES**

Engineering • Planning
Landscape Architecture

650 Ala Moana Blvd., Suite 2000, Honolulu, Hawaii 96813
Phone: (808) 521-3101 Telex: 0621197400 BELL HAWAII
Hawaii • San Diego • Austin • Dallas • New York • Seattle

September 12, 1990
841.0101/1898

Mr. John E. Dawrs
74-5221 Queen Kaahumanu Highway
Kailua-Kona, Hawaii 96740

Dear Mr. Dawrs:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project. Following are responses to your comments in the order they are presented in your letter.

1. Construction of the mauka-makai roadway (your Step 1) is proposed as the very first component of development in the project.
2. We agree that relocation of the landfill (your Step 2) is important to the long-term success of the project. Construction of the first increment of homes at the project will require approximately 20 months. We are anticipating the County will close the landfill before the first increment of homes are completed and that landfill operations will be relocated to a new site.
3. Completion of the the sewage treatment plant (your Step 4) is presently projected for October 1991. While the actual development of the golf course will not be completed by then, use of the area for effluent disposal will be necessary to operate the plant. Thus, it is anticipated that the sewage treatment plant will be operational by the time the first phase of residential development at Kealakehe is completed.
4. We disagree that residential construction should not begin until Steps 1 through 3 are completed. Residential construction for the first increment of homes should begin as soon as the land use permitting process has been completed and all necessary approvals have been received. As demonstrated in the discussion above, roadway construction, sewage treatment plant construction, and landfill closure can all occur while the first homes are being built. By the time the first homes are ready for occupancy, the mauka-makai road through Kealakehe should be completed, the sewage treatment plant operational, and the landfill closed. If construction of the first increment of homes were delayed until Steps 1 through 3 are completed, approximately two years will have been lost before home construction could even begin. Demand for affordable housing is steadily increasing in West Hawaii. We feel that it is, therefore, appropriate to time residential construction with the other activities discussed here so that homes can be occupied as soon as practical.
5. School construction is scheduled for completion between 1992 and 1994. Other construction activities should be completed by then.
6. We agree that the landfill is source of constant noxious odors for the police station located next to it.
7. We are unable to determine with any degree of certainty what the consequences of mining

the landfill for recyclable materials and extinguishing the ground fires will be. Therefore, while we believe that the volume of emissions may increase, we can not make a definitive statement that they will increase. The actual process utilized for the mining and extinguishing will determine the volume of emissions. However, it must be recognized that mining the landfill is not the only available alternative. A comprehensive closure plan could be an effective solution to the landfill problem. Once dumping activity at the landfill is terminated, the mound could be vented to neutralize a build-up of landfill gas and mitigate the possibility of spontaneous combustion, covered with approximately three feet topsoil, and a monitoring program implemented to minimize the potential for flare-ups.

8. There is no evidence that the fumes from the landfill are toxic. As discussed on page 26 of the Air Quality Impact Analysis conducted for the project (see DEIS appendix), "...fumes from the facility may be a public nuisance but they do not pose a threat to public health."
9. Police officers were contacted during the course of preparing the Draft EIS.
10. The Kona Traffic Safety Committee was not consulted. We were unaware of this committee's existence at the time the EIS was prepared.

Very truly yours,



Lee William Sichter

K K S U V S U
SEP 7 1990

Larry S. Tanimoto
Mayor

Bruce C. McClure
Chief Engineer

Richard H. Nishimura
Deputy Chief Engineer



Department of Public Works

BELT, COLLINS & ASSOCIATES

25 Aupuni Street, Rm. 202 • Hilo, Hawaii 96720 • (808) 961-8321 • Fax (808) 969-7138

September 5, 1990

HONORABLE JOHN WAIHEE
GOVERNOR STATE OF HAWAII
C/O OFFICE OF ENVIRONMENTAL QUALITY CONTROL
465 SOUTH KING ST ROOM 104
HONOLULU HI 96813

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT
KEALAKEHE PLANNED COMMUNITY

Thank you for the opportunity to review the subject document. Our comments are as follows:

SOLID WASTE

1. Contract to mine landfill has been terminated.
2. Depending upon processing time of the landfill, the County may not be able to move operations until 1992. Should this happen there will be severe impacts on solid waste operations.
3. The 27-42 tons per day generation rate will have severe impacts on transfer station operations. We estimate our refuse trailers are hauling approximately 12 tons of refuse. At the estimated generation rate this will amount to 2.25-3.5 trailer loads per day. Because of the distance between the landfill and the transfer station, this will in all likelihood require 2 new employees and a truck tractor.

It is felt that this development, coupled with the new landfill, will probably require the development of a new regional type transfer station similar to the transfer station found in Honolulu.

4. Because of the space limitation at the Kealakehe Landfill and the uncertainty in the development of the new West Hawaii Landfill, construction and occupancy must coincide with the opening of the landfill. If this is not possible, alternate means of disposing all wastes, including construction wastes, must be considered.
5. A waste reduction program such as composting and recycling of construction wastes should be considered.

TRAFFIC

1. The proposed Kealakehe Parkway Road, Mid-level Road, and Waena Drive should be coordinated with the County Planning Department to ensure compliance with their long-range plans.

2. The existing grades for the Kealakehe Parkway Road should be studied (especially on the mauka slopes) so that the roadway grades will be in compliance with County and State standards for arterial roadways.
3. The source of funding for the improvements and mitigating measures recommended by this report has not been addressed. For improvements and mitigating measures to be implemented when required, commitments on funding must be identified and agreed upon by the developers and agencies involved. The County may not have funding to do the improvements required on County roadways. Will the developers pay for or contribute to the roadway and intersection improvements?
4. As different phases of the development are implemented, updates on Traffic Impact Studies may be required.
5. Construct traffic signals at the Kealakehe Street-Palani Road intersection.
6. We do not agree with the assumption that with the construction of the Kealakehe Parkway, the traffic along Palani Road will not be significantly affected. The route to Kailua on the Palani Road will have a much shorter travel time. Palani Road should be improved. The intersection with the Queen Kaahumanu Highway should also be improved. At least that portion of Palani Road along this project should be widened to the general plan width and improved with curbs, gutters and sidewalks.
7. We agree that the final alignment of the Kealakehe Parkway cannot be determined until further study is made but before the proposed road is adopted as a given in the traffic analysis, the preliminary alignment should be more thoroughly studied. It should be studied until a determination is made that the alignment is feasible and buildable. The intersection at Mamalahoa Highway will be between two closely spaced major intersections. This area has severe topographical constraints.

David M. Muraloni

for ROBERT K. YANABU, Division Chief
Engineering Division

DHM:sah

cc: Solid Waste Division
Traffic Division
Engineering Division
Planning Department
Housing Finance and Development Corporation
Belt Collins and Associates

September 12, 1990
841.0101/1898

Mr. Robert Yanabu, Division Chief
Engineering Division
Department of Public Works
County of Hawaii
25 Aupuni Street, Room 202
Hilo, Hawaii 96720

Dear Mr. Yanabu:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project. Following are responses to your comments in the order they appear in your letter.

SOLID WASTE

1. We acknowledge that the contract to mine the landfill has been terminated by the County.
2. We acknowledge that the County may not be able to move operations from the existing landfill until 1992. This is not viewed as a problem for the proposed development because we do not anticipate the first increment of homes to be completed until mid 1992 (approximately 20 months after land use permit approvals are received).
3. The figures presented on page VI-36 pertaining to volumes of solid waste generated by the proposed project are calculated for full build out, which is projected to occur in approximately 20 years. As discussed in the market report for the project, it is anticipated that the market will absorb about 250 units a year. Therefore, new employees and equipment to meet the ultimate demand will not be necessary in the immediate future.

There is adequate room in the vicinity of the existing transfer station on the County property adjacent to Kealakehe for its conversion to a regional-type transfer station.

4. We have revised the EIS to address your concerns as well as those of the County Planning Department concerning the timing of construction and occupancy of the proposed project with availability of a new landfill. Page VI-35 now states that the proposed closure for the existing landfill may be sometime in 1992. Page VI-36 now includes a statement that should the alternate landfill site not be available to the County, a site selection process for a new landfill area will be initiated. Finally, page VI-37 has been amended to include the following statement:

“Should development of a new landfill site be delayed beyond the occupancy of the first phase of residential development, solid waste generated by the project will be transported by truck from the

transfer station to a landfill in East Hawaii. The expense of this operation would ultimately be borne by the new Kealakehe Community residents."

5. We agree that a waste reduction program should be considered and have included reference to it in Section 7.3 (mitigation measures) of Chapter VI.

TRAFFIC

1. The region-serving roadways within the project area will be coordinated with the County Planning Department.
2. Engineering studies for the Kealakehe Parkway are presently being conducted to ensure that roadway grades will be in compliance with government standards for arterial roadways.
3. The cost of development for the Mid-Level Roadway, Waena Drive, and the Kealakehe Parkway within the Kealakehe project area will be borne by project developers. The intersection of Kealakehe Parkway and Queen Kaahumanu Highway will be funded by the proposed project.
4. We agree that the development of subsequent phases of the project may require updates to the Traffic Impact Study.
5. Traffic signals at the Kealakehe Street-Palani Road intersection will be constructed and funded by the project as warranted.
6. We respectfully differ with your views of required improvements for Palani Road. We believe that the key to improving traffic conditions in the Kailua-Kona area is to provide immediate relief to Palani Road in the form of alternative routes. Palani Road is presently operating near capacity. Traffic conditions will exceed capacity in the year 2010 even without the proposed project, as discussed in the EIS on pages VI-10 and 11.

Palani Road cannot be effectively improved until relief routes are available so that traffic can be diverted from this over crowded roadway. The development of a new mauka-makai road through the Kealakehe property will provide the Kailua-Kona area with an alternative to Palani Road. Although the Palani Route is a shorter distance, traffic conditions along it during peak hours slow travel time to a point where we believe Kealakehe Parkway will present an attractive alternative to commuters. Therefore, in view of the substantial investment in regional infrastructure being undertaken by the Kealakehe project in the form of a new mauka-makai roadway, we believe it inappropriate to expect the project to also contribute to Palani Road improvements.

As discussed in the Table 6-3 of the EIS, total turning movements (a measure of traffic conditions) will increase from 5,988 to 13,255 during the peak hour without the Kealakehe project. That is equal to an increase of over 120%. With the project, turning movements will increase just over 140% or 20% more than conditions without the project. In other words, the Kealakehe project will be responsible for about one seventh of the total traffic volume in the year 2010.

7. The alignment of the Parkway as shown in the EIS is part of a concept plan. The feasibility of this road has already been determined. The exact alignment of the roadway is presently being finalized along with a detailed engineering analysis that is necessary before

construction can begin. Because it is a concept plan, the specific alignment may change as a result of slope constraints. However, the concept of linking Mamalaohoa Highway with Queen Kaahumanu Highway will not alter.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Lee William Sichter', written over a horizontal line.

Lee William Sichter



Planning Department

25 Aupuni Street, Rm. 109 • Hilo, Hawaii 96720 • (808) 961-8288

LARRY S. TANIKOTO

Mayor

Duane Kanuha
Director

William L. Moore
Deputy Director

September 6, 1990

Mr. Joseph K. Conant
Executive Director
Housing Finance Development Corporation
Seven Waterfront Plaza, Ste 300
500 Ala Moana Boulevard
Honolulu, HI 96813

Dear Mr. Conant:

Kealakehe Planned Community Draft Environmental Impact Statement

Thank you for the opportunity to comment on the draft EIS for the Kealakehe Planned Community. After a review of the document, we offer the following comments for your consideration:

- 1) The fiscal impact analysis should be elaborated on in the document or in an appendix. The material presented in the report does not provide sufficient backup in terms of the assumptions used to reach the conclusions stated.

For an appropriate review of the fiscal impact, the respective State and County revenues and costs should be separated rather than shown as combined into one statement.

The entirety of County operating costs should also be listed, including costs for General Government, Highways, Recreation, Pensions, etc. Further, the capital costs to the County should likewise be listed, rather than only operating expenses.

Please review the projected \$73.9 million in real property taxes; this number seems very high. By comparison, the projected 1990-91 real property tax collections for the entire island are \$57.9 million.

- 2) The Kealakehe Master Plan shows a Civic Center located on 30 acres of land but does not address the appropriateness of this nor environmental considerations that should be addressed in an EIS. For example, the letter from the Department of Accounting and General Services raises physical issues such as odors and vehicular access which were not addressed in the response. If the Master Plan proposes such uses, it should discuss these factors in the EIS.

Mr. Joseph K. Conant
September 6, 1990
Page 2

- 3) The commitment to the mauka-makai road is not specific as to the timing of the mauka connection to the Mamalahoa Highway. The EIS states, "The third phase will link the Parkway to Mamalahoa Highway at some future date." (page II-23)

It would be possible then to have three-fourths of the Kealahou Planned Community developed without a complete mauka-makai connection. This "intermediate" situation should be subjected to a traffic analysis, as it could start in the near future and persist for several years.

- 4) The EIS needs to be updated as to the handling of solid waste disposal. The EIS notes that "The landfill is rapidly nearing capacity and is proposed for closure sometime in 1991, according to Hawaii County. A new 177 acre sanitary landfill site has been proposed by the County for location at Puu Wa'awa'a in North Kona, approximately 15 miles north of Kealahou." (page VI-35) However, it now appears that this site may not be available to the county.

The EIS goes on to state, "Development of the proposed planned community will generate a substantial increase in solid waste. Using the County's refuse generation rate of 6.0 pounds per capita per day, it is projected that at buildout, the planned community will generate between 54,000 pounds and 84,000 pounds of refuse per day. This is equivalent to 27 to 42 tons per day, 9,800 to 15,300 tons per year, or approximately 21 to 33% of the new landfill's initial capacity. Because occupancy of the initial phase of Kealahou homes is not anticipated until early 1992, the project is not expected to create an adverse impact upon solid waste conditions and its implementation should coincide with the County's plans for the opening of a new landfill." (page VI-36) It is very likely that the new landfill will not be available by early 1992. The EIS should address appropriate mitigating measures.

Thank you for the opportunity to comment on the draft EIS. If you should have any questions concerning these comments, please do not hesitate to contact us again.

Sincerely,


DUANE KANUHA
Planning Director

KK:aeb

September 12, 1990
841.0101/1898

Mr. Duane Kanuha, Director
Planning Department
County of Hawaii
25 Aupuni Street, Room 210
Hilo, Hawaii 96720

Dear Mr. Kanuha:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project. Following are responses to your comments in the order they appear in your letter.

1. The fiscal impact analysis has been revised to address your concerns.
2. The Civic Center was included in the Draft EIS in response to the County's original plans for a Regional Center on the lower portion of the subject property, as depicted in the Keahole to Kailua Draft Development Plan (K to K Plan, September 1989). It was recognized at that time that the existence of the Kealakehe Police Station on the County-owned property adjacent to the Kealakehe parcel established a reasonable justification for the siting of a Civic Center which was to include State and County office buildings as described on page 3-6 of the K to K Plan.

The County owned parcel upon which the Civic Center would be located is not included in the area addressed by the EIS. Therefore, an analysis of environmental considerations pertaining to the County property or the appropriateness of the County's plans was not viewed as necessary in the project EIS. As discussed on page II-20 of the EIS, the ultimate disposition of the landfill by the County will determine the actual use and phasing of new construction on the property. The EIS assumes that the landfill will be closed in the immediate future and that the landfill area will be eventually utilized as an open space park. Similarly, the EIS assumed that the County's plans for additional government offices on the site around the existing police station will eventually be implemented.

Neither the EIS nor the master plan advocate the development of a Civic Center on the County property. Rather, these documents simply reflect County plans. The discussion of the relationship between the Kealakehe Plan and the County's K to K Plan on page VII-31 of the DEIS clarifies this. The DEIS states,

"The proposed project includes a 30 acre Civic Center located in the vicinity of the County police substation on County property. This location was selected in response to the County's desire to expand public facilities around the police station and was consistent with earlier drafts of the K-K Plan. At this time it is assumed that the County intends to retain the police station at its present location. Whether the surrounding area will be developed with additional public uses is unknown. However, for planning purposes it is appropriate to include the Civic Center in the location shown

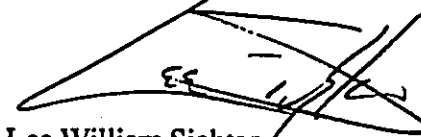
in the Kealakehe Master Plan in order to maximize development options and ensure adequate sizing of infrastructure."

It is further assumed that the development of a Civic Center by the County would follow the initial phase of development at Kealakehe and would be the subject of its own environmental impact statement, since it will utilize County property and County funds. Once the County's plans have been clarified, the HFDC will be able to comment on their relationship to the Kealakehe Planned Community.

3. It is our understanding the the State Department of Transportation has already received funds for preliminary planning and engineering for the mauka connection of the Parkway to Mamalahoa Highway. Development of the entire roadway as an alternative route to Palani Road is a matter of considerable urgency and every effort is being made to implement the project in a timely manner. We do not agree that an "intermediate" situation will persist for "several years". Therefore, we do not believe that an additional traffic analysis is necessary.
4. We have updated the EIS in accordance with your comments. Page VI-35 now states that the proposed closure for the existing landfill may be sometime in 1992. Page VI-36 now includes a statement that should the alternate landfill site not be available to the County, a site selection process for a new landfill area will be initiated. Finally, page VI-37 has been amended to include the following statement:

"Should development of a new landfill site be delayed beyond the occupancy of the first phase of residential development, solid waste generated by the project will be transported by truck from the transfer station to a landfill in East Hawaii. The expense of this operation would ultimately be borne by the new Kealakehe Community residents."

Very truly yours,



Lee William Sichter



Department of Parks and Recreation

25 Aupuni Street, Rm. 210 • Hilo, Hawaii 96720 • (808) 961-8311

Larry S. Tanimoto
Mayor

George Yoshida
Director

Juliette M. Tulang
Deputy Director

September 6, 1990

Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental Quality Control
465 So. King Street, Room 104
Honolulu, Hawaii 96813

Subject: Kealakehe Planned Community, North Kona, Hawaii
Draft Environmental Impact Statement

Dear Governor Waihee:

The following comments are offered for your consideration:

- 1) The proposed 1,254 multi-family and 2,904 single family units would generate a population of 2,633 and 8,944 persons respectively. Based on a desired 5 acres of park per 1,000 population, approximately 57.9 acres of park is needed.
- 2) The development of community parks (4-8 acres in size) should be considered as an alternative to neighborhood parks (4 acres in size)

For your information, proposals for development and operation of the Kona municipal golf course will be received on September 28, 1990.

Thank you for the opportunity to review the subject document.

Sincerely,


George Yoshida
Director

cc: Larry S. Tanimoto, Mayor
State of Hawaii - HFDC
Belt Collins & Assoc. *file* 538-7819

BCA

BELT COLLINS
& ASSOCIATES

Engineering • Planning
Landscape Architecture

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Phone: (808) 521-5101 Telex: BELTH 7410474 Fax: (808) 521-5100
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September 12, 1990
841.0101/1898

Mr. George Yoshida, Director
Department of Parks and Recreation
County of Hawaii
25 Aupuni Street, Room 210
Hilo, Hawaii 96720

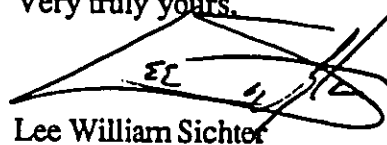
Dear Mr. Yoshida:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project. As presented in the Draft EIS, the proposed development contains three neighborhood parks totaling 12 acres, a 27 acre archaeological preserve, and a 5 acre plant preserve as well as a 3 acre recreation center. This is a total of 47 acres of active and passive recreation area. In addition, the plan includes a 195 acre public golf course. Once the Kealakehe landfill is closed and the site is restored, it is proposed that the area could be utilized as a 15 acre park area. Thus, it is felt that the overall plan includes adequate park area for the proposed development.

We appreciate your concern about the availability of community parks from 4 to 8 acres in size. The HFDC will consider expansion of the neighborhood parks located near the proposed high school and Palani Road.

Very truly yours,


Lee William Sichtel



RECEIVED
SEP 10 1990

COPY

BELT, COLLINS & ASSOCIATES

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII

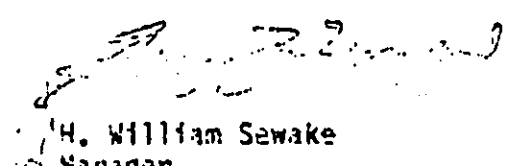
25 AUPUNI STREET • HILO, HAWAII 96720
TELEPHONE (808) 969-1421 • FAX (808) 969-6996

September 7, 1990

Honorable John Waihee, Governor
State of Hawaii
c/o Office of Environmental Quality Control
465 South King Street, Room 104
Honolulu, HI 96813

ENVIRONMENTAL IMPACT STATEMENT
KEALAKEHE PLANNED COMMUNITY

Thank you for giving us the opportunity to comment on the Draft Environmental Impact Statement. The engineering report adequately covers our concerns. The development of sources and the improvement of existing transmission facilities are needed before water may be available to each phase of the development of Kealakeha.


H. William Sewake
Manager

LCS

cc - State Housing Finance & Development Corporation
Belt Collins and Associates

... *Water brings progress...*

PCA

**BELT COLLINS
& ASSOCIATES**

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100 Ma Moana Blvd., Suite 200, Honolulu, Hawaii 96813
Phone: (808) 521-5101 Telex: BELTH 740474 Fax: (808) 521-5119
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September 12, 1990
841.0101/1898

Mr. William Sewake, Manager
Department of Water Supply
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Sewake:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project. We concur that development of sources and the improvement of existing transmission facilities are needed before water may be available to each phase of the development of Kealakehe.

Very truly yours,


Lee William Sichter



University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

September 7, 1990
RE: 0559

Governor, State of Hawaii
c/o Office of Environmental Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Sir:

Environmental Impact Statement (EIS)
Kealakehe Planned Community
Kealakehe, Kailua-Kona, Hawaii'i

The above referenced document describes impacts associated with a 960 acre project on the western slope of Mt. Hualalai composed of 4,158 housing units (60 percent of which are priced in the affordable category) as well as the following features: a 195 acre golf course (proposed for transfer to the County of Hawaii'i for use as an effluent disposal area for a nearby County sewage treatment plant); 3 parks; an archaeological preserve; a nature preserve for 8 of 19 endangered uhi uhi trees on the project site; an elementary school and high school; 2 church/day care sites; and 3 separate commercial areas.

Our review was prepared with the assistance of Michael Graves, Anthropology; and Robert Irwin, Environmental Center. Due to an incorrect deadline date printed on the transmittal memo that accompanied our copies of the Draft EIS, we were not able to get comments from all of our reviewers in time for the true deadline which was recently called to our attention. We regret this mishap, but will forward further comments as they become available to us.

Archaeology

Our reviewers, noting that the general quality of individual site reporting, assessment, and recommendations was good, nevertheless take substantial objection to the lack of cumulative impact assessment both in the discussion in the main body of the Draft EIS and in the appended archaeological inventory survey. Nowhere is the significance of all or a

a part of the University of Hawaii System

AN EQUAL OPPORTUNITY EMPLOYER

Mr. Joseph Conant
September 7, 1990
Page 2

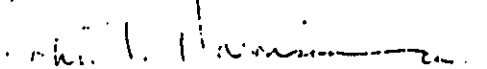
portion of the sites assessed. This is necessary since the project area is large enough to include many components of an entire settlement system (e.g., habitation, burial, agricultural, and ceremonial structures). Thus, not only should the sites be evaluated in isolation from each other, but groups of sites also should be assessed by the same set of criteria. Not doing so may result in a skewing of the array and distribution of sites to be preserved. In other words, the current approach (with its narrow focus on individual site assessment) may preserve scattered and individually appropriate sites at the cost of groups of sites which were formerly socially and behaviorally linked.

Three questions about the criteria used to assign significance were raised by our reviewers:

- (1) Why are only ceremonial and burial features of cultural value to Hawaiians? Where has it been established that Hawaiians attached no value to habitation or agricultural features?
- (2) How has it been determined that, where sites are only significant for their information content, it is preferable to retrieve information immediately? The conclusion is drawn that this is the preference of the archaeological community. This conclusion is unwarranted. Furthermore, there is good reason to preserve a sample of sites which are significant for their information value for data recovery in the future when archaeological means for recovering and documenting data will have improved. Preserving these sites will also allow time for disagreements on site specific significance criteria to be resolved as knowledge of specific archaeological regions increases and is subjected to consideration by the archaeological community at large.
- (3) Why were domains, which were identified in the archaeological inventory, not considered with the significance criteria for individual sites? The criteria for contextualizing sites within archaeological and historical research domains have been developed in some detail at the federal level.

We thank you for the opportunity to have reviewed this document and look forward to your response to our comments.

Yours truly,



John T. Harrison, Ph.D.
Environmental Coordinator

cc: Housing Finance
& Development Corp.
Belt Collins & Assoc. ✓
Roger Fujioka
Michael Graves
Robert Irwin

BCA

BELT COLLINS
& ASSOCIATES

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Landscape Architecture

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September 12, 1990
841.0101/1898

Mr. John T. Harrison, Ph.D.
Environmental Coordinator
Environmental Center
University of Hawaii at Manoa
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

Dear Mr. Harrison:

Kealakehe Planned Community
Draft Environmental Impact Statement

Thank you for your comments on the above project. We have seriously considered your comments and have asked our consulting archaeologist, Paul H. Rosendahl, to review them. Dr. Rosendahl subsequently discussed your comments with Mr. Ross Cordy of the State's Historic Preservation Program. As a result of these discussions, we cannot agree with your objection about the lack of cumulative impact assessment.

Dr. Rosendahl is a very well qualified archaeologist who has extensive experience in the field and has conducted numerous studies that have been accepted by the State's Historic Preservation Program. Dr. Rosendahl's study was submitted to the State for approval in early 1990.

The Department of Land and Natural Resources-Historic Preservation Program/State Historic Preservation Office (DLNR-HPP/SHPO) has reviewed the archaeologist's report as contained in the environmental impact statement. The DLNR-HPP/SHPO has found the study to be adequate and has found that it meets the requirements of Chapter 6E Historic Preservation (Hawaii Revised Statutes). Further, they have concurred with the site significance assessments and with the recommended general mitigation plans.

Dr. Rosendahl and Mr. Cordy both recommend that if the Environmental Center wishes any clarification of these findings or the process by which they were reached, that the inquiry be directed to the Historic Preservation Program. As a participant in the process, the HFDC would also like to be made a party to these discussions.

Very truly yours,


Lee William Sichter



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS

1600 KAPIOLANI BLVD., SUITE 1500

HONOLULU, HAWAII 96814

(808) 548-8960

(808) 946-2642

September 7, 1990
HAND DELIVERED

The Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Governor Waihee:

Re: Kealakehe Planned Community With Appendix (DEIS)

Thank you for the opportunity to review the above-referenced draft environmental statement. The Office of Hawaiian Affairs has the following concerns and comments.

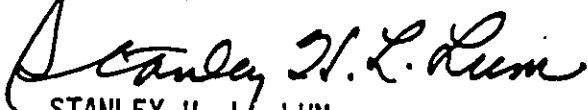
1. The report makes no comment of the fact that the property on which the proposed project will be located is 5(b) ceded land. The Office of Hawaiian Affairs and Department of Hawaiian Homes Lands entitlements from the ceded lands are currently the subject of discussions between this office and members of your staff. Our specific concerns are known in this area and are only noted here.
2. We commend the plan for preserving and incorporating many of the archaeological features found on the property into the plan. However, a monitoring and explicit management system must be planned to insure against future possible harm or desecration.
3. The plan to establish an escrow fund for long-term preservation of endangered and candidate endangered species through propagation is an excellent idea. However, we strongly disagree with any plan which would allow relocation of an endangered or candidate endangered species on the basis that such species is protected and/or preserved by propagation in a "nursery" setting. When an endangered species, whether plant or animal is removed from its natural surrounding we loose knowledge, understanding and meaning. We strongly caution against creating a "zoo" like atmosphere where endangered plants can be propagated, thus allowing those found in natural settings to be moved and potentially killed.

The Honorable John Waihee
September 7, 1990
Page 2

All of the endangered trees in this project area should remain in place since the report indicates that the number of trees is small and can be accommodated in the design. An adequate buffer zone should also be provided. In addition, the report indicates that Uhi uhi trees have not previously been found at this elevation, making them not only endangered but unique.

Thank you again for the opportunity to comment on this project. We have no other comments at this time.

Sincerely



STANLEY H. L. LUM
Deputy Administrator

cc: State of Hawaii - Housing Finance & Development Corporation
Belt Collins and Associates

BCA

BELT COLLINS
& ASSOCIATES

Engineering • Planning
Landscape Architecture

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Phone: (808) 321-3300 Telex: BELTBN 74 0474 Fax: (808) 321-7014
Hawaii • Singapore • Australia • Hong Kong • S. Korea

September 12, 1990
841.0101/1898

Mr. Stanley H.L. Lum
Deputy Administrator
Office of Hawaiian Affairs
State of Hawaii
1600 Kapiolani Boulevard
Suite 1500
Honolulu, Hawaii 96814

Dear Mr. Lum:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project. Following are responses to your comments in the order they appear in your letter.

1. The Kealakehe portion of the proposed project is 5(b) ceded land. Pages IV-28 and IV-29 of the EIS text have been revised to include a statement to this effect.
2. A monitoring program and management system for those archaeological sites to be preserved will be addressed in an Historic Sites Mitigation Plan which is required by the State's Historic Sites Office.
3. As discussed on page IV-23 of the EIS, Hawaii state law does not permit the relocation of endangered plants. Thus, the endangered plants identified within the project area cannot be moved or relocated unless the law is amended to explicitly permit it.

Very truly yours,



Lee William Sichter



SHOPO

STATE OF HAWAII ORGANIZATION OF POLICE OFFICERS

RECEIVED

SEP 7 1990

BELT, COLLINS & ASSOCIATES

September 6, 1990

Mr. Lee Sichter, Senior Planner
Belt Collins & Associates
680 Ala Moana Blvd., Suite 200
Honolulu, HI 96813

Dear Mr. Sichter:

The State of Hawaii Organization of Police Officers (SHOPO) would like to go on record with our concerns of the Kona Dump and its impact on the health and welfare of our members who must work at the adjacent Kona Police Station. Our records indicate that this has been an on-going problem since the Kona Police Station opened its doors in 1988.

As an organization, we have filed an official complaint with the Department of Labor (Division of Safety and Health), expressed our concerns about the safety and health of our members with the Chief of Police and at County Council hearings, and have discussed these matters with State Legislators. At several County hearings, we have heard discussions about stopping the dumping at this particular site and problems with attempts to cover and bury the existing garbage. Nothing seems to be sufficient to resolve the problems with noxious fumes and underground fires. Our members continue to complain about the stench and fires of the neighboring dump.

We understand that you are doing a study for the State of Hawaii on the possibilities of developing affordable housing projects within the near vicinity. Have you reached any conclusions as to whether the Kona Dump can be properly covered and what you foresee as a feasible time frame for the physical covering of the site or its possible relocation? With your knowledge of the area and the problems, is it reasonable to request that the County of Hawaii relocate the Kona Police Station to another temporary location until the Kona Dump site is properly handled?

We would appreciate your opinion on these matters as we continue to voice our concerns on the problems our Officers face with their daily working conditions at the Kona Police Station. We realize that this is a very complex problem but would appreciate any information you could give us which would help us persuade the County to resolve this problem as expeditiously as possible.

Thank you for your attention to these matters. Should you have any questions or need information contained in our files, we would be happy to share them with you.

Very truly yours,

John E. Woo
JOHN E. WOO
President

GVA jmo

cc: Paul Silva, Hawaii Chapter Chairman; Representative Virginia Isbell

1717 Hoe Street, Honolulu, HI 96819 Telephone: 847-4676

A.P. - Organized for Police Officers Only

**BELT COLLINS
& ASSOCIATES**

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Hawaii • California • Washington • New York • Florida • Texas • Illinois

September 12, 1990
841.0101/1898

Mr. John E. Woo, President
State of Hawaii Organization of Police Officers
1717 Hoe Street
Honolulu, Hawaii 96819

Dear Mr. Woo:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your inquiry about the above project. The proposed project consists of approximately 4,158 residential units to be developed on property just north of the Kealakehe Landfill and the County Police Station. The Housing Finance and Development Corporation was originally advised by the County of Hawaii that the landfill would be closed in 1991. Planning for the residential project has proceeded based upon this assumption. Within the past two weeks, the County has revised its projected date of landfill closure to sometime in 1992.

Because the landfill is located on County property and is under the jurisdiction of the County of Hawaii, an analysis of how and when it should be closed was not conducted as part of our planning efforts for the Kealakehe project. However, we are aware that landfills can be successfully closed and converted to usable land areas and have indicated in our plan that the landfill site should be considered for eventual development as an open-space park area and that the adjacent land, including the police station, be developed as a Civic Center for the West Hawaii region.

A detailed Air Quality analysis was conducted for our project and it concluded the following:

"Potential impacts on the project from landfill emissions will be lessened but may not be eliminated with the closure of the landfill. Recurring subsurface fires could continue to persist even after landfill operations cease. The analysis of potential impacts on the project from emissions emanating from the Kailua Landfill suggests that further study of this problem is warranted before drawing any definite conclusions."

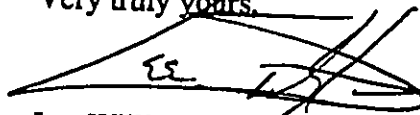
Although relocating the Police Station to a temporary location until the landfill site is "properly handled" is a matter of County policy and is clearly beyond the jurisdiction of the State's Housing Finance and Development Corporation, it is a reasonable action given the officers' concern over the landfill. However, we continue to support the development of a Civic Center in the area of the police station once the landfill has been closed.

We are unable to determine with any degree of certainty what the consequences of mining the landfill for recyclable materials and extinguishing the ground fires will be. Therefore, while we believe that the volume of emissions may actually increase, we can not make a definitive statement that they will increase. The actual process utilized for the mining and extinguishing will determine the volume of emissions. However, it must be recognized that mining the landfill is not the only available alternative. A comprehensive closure plan could be an effective solution to the landfill problem. Once dumping activity at the landfill is terminated, the mound could be vented to

neutralize a build-up of landfill gas and mitigate the possibility of spontaneous combustion, covered with approximately three feet topsoil, and a monitoring program implemented to minimize the potential for flare-ups.

Thus, a determination as to whether the Police Station should be temporarily located should be based upon a finding that the existing situation is unacceptable and will further deteriorate. Relocation may be a good idea, however, its costs and benefits must be weighed very carefully. The County is clearly in the best position to make such a determination.

Very truly yours,

A handwritten signature in black ink, appearing to read "Lee", is written over a horizontal line. The signature is somewhat stylized and includes a large loop at the end.

Lee William Sichtler

RECEIVED

SEP 7 1990

BELT, COLLINS & ASSOCIATES

P.O. Box 2075
Kailua Kona, Hawaii 96745 .

September 6, 1990

Mr. Lee William SICHTER
Senior Planner
Belt Collins & Associates
680 Ala Moana Blvd., Suite 200

SUBJECT: Kealakehe Planned Development

Dear Mr. SICHTER:

As a resident of Kona I am of the opinion that there should be no construction started on the Kealakehe Planned Community Project. Until the problems with Kailua Landfill have been completely resolved. This should include the mining of the (DUMP).

Your consideration of my opinion will be greatly appreciated.


Daniel J. MINAN

**Environmental Assessment
for**

KEALAKEHE PLANNED COMMUNITY

Kailua Kona, Hawaii

Prepared for

**STATE OF HAWAII
HOUSING FINANCE AND DEVELOPMENT CORPORATION**

**by
Belt Collins & Associates**

February 14, 1990

CHAPTER 9
PARTIES TO BE CONSULTED IN THE PREPARATION OF AN EIS

The following governmental agencies and community organizations will be consulted during preparation of the Environmental Impact Statement:

State of Hawaii

Department of Health	Department of Transportation
Department of Land and Natural Resources	Department of Human Services
Department of Labor and Industrial Relations	Department of Education
Department of Business and Economic Development	Office of State Planning
Hawaii Housing Authority	

County of Hawaii

Public Works Department	Planning Department
Office of Housing and Community Development	Fire Department
Police Department	Department of Parks and Recreation
Department of Water Supply	

Federal Government

Department of Housing and Urban Development
Department of the Interior, Fish and Wildlife Service
National Park Service

Public Utilities

Hawaiian Telephone
Hilo Electric Light Company

Community Organizations

Kona Chamber of Commerce	Representatives of Kailua Kona Communities
Leeward Planning Conference	
Board of Realtors	

Elected Officials

WERE ANY PUBLIC HEARINGS HELD ?

consisting of a minimum of 1,044 component features have been identified within the project area. Among the sites, 32 consist of single components and the rest consist of two to one hundred and twenty components. The total number of features may be further distributed among eight general functional categories; agriculture (793 features), habitation (21 features), transportation (20 features), markers (32 features), agricultural/habitation (153 features), land division (10 features), possible burial (8 features), and possible ceremonial (5).

The distribution and density of features within the project area indicate that the area was used primarily for relatively intense dry land agriculture. Agriculture complexes are most numerous in the upper portions of the area, at elevations of 500 feet or greater. The most common agricultural features are pahoehoe excavations and rock mounds. These two formal types comprise 66% of all agricultural features, and 57.4% of all identified features. It is likely that additional pahoehoe excavations and mounds are present within the project area. The location of archaeological sites is presented in Figures 11 and 12.

3.1.9 Air Quality

Due to the relative lack of development, air quality in the project area might be expected to be good. However, the Kealakehe landfill located at the southern corner of the project site is a periodic source of noxious odors. County officials have indicated that the landfill will soon be closed and the rubbish mined and removed to a new location offsite. This process is projected to require up to ten years. Once the mining of the rubbish begins, and underground fires which have been smoldering are exposed to air, the volume of emissions from the landfill may actually increase during the short term due to periodic flare-ups.

*ANY ADDITIONAL CONST.
AT THIS TIME WILL ONLY CREATE MORE PROBLEMS*

On a regional scale, air quality has been impacted in recent years by the continuing eruptive activity associated with the Puu O'o vent on the southeast slope of Kilauea volcano. Particulate emissions in the Kailua-Kona area are most evident during periods of light trade winds.

3.1.10 Noise

Fixed source noise is the principal form of noise at the subject property and is directly related to activities at the Kealakehe Landfill. Traffic noise is associated with Queen Kaahumanu Highway.

3.1.11 Natural Hazards

The subject property may be potentially impacted by two forms of natural hazards;

and the *ahupua'a* of Honokohau to the north, and Queen Kaahumanu Highway and the makai lands of Kealakehe to the west.

Existing uses on the property include the County of Hawaii Kealakehe landfill and the County Police Substation. The landfill located at the southwestern corner of the project site presently includes two facilities: a rubbish dump which occupies about 15 acres of land, and a solid waste transfer station. Total acreage for the landfill is about 30 acres. The County plans to close the landfill and relocate it to another site in West Hawaii at Puuanahulu. However, it is unclear at this time what the timetable for closing and relocating will be. Relocation will include mining the site for usable heavy metals and salvageable materials. Over a period of time the site would be reclaimed for use by the community. Once the landfill is closed and properly reclaimed, it could be used as open space or a park facility.

LET'S GET THE LANDFILL CLOSED & RECLAIMED BEFORE ANY ADDITIONAL CONSTRUCTION

Adjacent uses to the project area include a quarry operation to the north on property owned by Robert McClean, and a number of housing projects to the east and mauka of the project site including Kealakehe House Lots Increments I and II; Kealakehe Public Housing; Jack Hall Memorial Housing; Kaimalino Multi-Family Units; La'ilani Multi-Family Rental Housing project, and the Queen Liliuokalani Village south of Palani Road. The subject property is presently vacant and is leased to the Palani Ranch for the grazing of cattle.

1.6 POTENTIAL IMPACTS, MITIGATION MEASURES & ALTERNATIVES

1.6.1 Land Use Impacts

Development of the subject property as a master planned residential community will impact the physical character of the land. The vacant land will be transformed through the development of a variety of urban-related uses including residential units; public facilities and infrastructure; schools; and neighborhood and regional serving recreational uses.

1.6.2 Mitigating Measures

The entire project will be developed according to a detailed master plan. Phasing of the project in a manner consistent with the master plan will ensure that impacts upon the land are minimized through the proper siting and timing of infrastructure development and the landscaping.

1.6.3 Traffic Conditions

Traffic volumes will increase for the area. The development of a residential community of up to 5,000 units will result in a significant expansion of the Kailua-Kona area population and a

September 12, 1990
841.0101/1898

Mr. Daniel J. Minan
P.O. Box 2075
Kailua-Kona, Hawaii 96745

Dear Mr. Minan:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project. In view of the critical need for affordable housing in West Hawaii, we do not believe it is appropriate to halt the development of the proposed project until the landfill is closed and mined as you suggest. In order to ensure that homes are available for occupancy within the next 20 months, we must proceed now with the planning and engineering for the project.

The Housing Finance and Development Corporation undertook the proposed project with the understanding that the County of Hawaii would soon be closing the landfill and opening a new landfill facility in West Hawaii. The Kealakehe landfill was not considered to be a permanent constraint on development. The landfill is a temporary use of the County property and does not constitute an irreversible alteration of the land. Therefore, for purposes of long-range planning, it is appropriate to continue with development plans for the proposed project.

As discussed in the consultant's report on Air Quality, the Environmental Protection Agency has determined that the landfill is not toxic. However, in view of the concerns over the landfill, the HFDC supports its closure by May, 1992. Construction of the first increment of homes at the project will require approximately 20 months. We are anticipating the County will close the landfill before the first increment of homes are completed and that landfill operations will be relocated to a new site. If construction of the first increment of homes were delayed until the landfill is closed and mined, two or more years will have been lost before home construction could even begin. Demand for affordable housing is steadily increasing in West Hawaii. We feel that it is, therefore, appropriate to time residential construction with the landfill closing so that homes can be occupied as soon as practical.

No public hearings have been held in conjunction with the Kealakehe project.

Very truly yours,


Lee William Sichter

September 7, 1990

Mr. Lee William Sichter
Senior Planner
Belt Collins & Associates
680 Ala Moana Blvd., Suite 200
Honolulu, Hawaii 96813

Subject: Kealakehe Planned Community

Dear Mr. Sichter:

This letter is in response to the development proposed for the Kealakehe area located near the Kailua-Kona Landfill. I am an employee of the Hawaii County Police Department and I am not a police officer, but a civilian employee.

I am most grateful for having a brand new police station, but I must say that it is totally ridiculous to be situated right next to this dump and put up with this smell and unhealthy atmosphere. I am more fortunate than the other clerical staff, because my job does not have me sit at my desk all day making it impossible to leave this place. Thank God I still have work at the old station which allows me to leave once and awhile. But what about the people that can't leave and have to be here all the time like the secretaries and the dispatchers?

I am an Evidence Custodian. I not only store murder weapons, and drugs for court, but I also store personal belongings from victims of thefts, burglaries, and yes traffic fatalities. Do you know what it's like to give directions to the police station to the parents of their deceased children in order to pick up their belongings? Half of the time, these people are from the mainland and the nearest landmark "is" the dump. Needless to say, the already sensitive situation is made more uncomfortable by the present stench and unsightliness of the landfill across the street.

My point is, the people that work in this station aren't the only ones to have to tolerate these surroundings, but the local people, the tourists, and the public in general. Therefore, I can't see constructing anything new in this area including the sewage plant until the landfill is closed and cleaned up. As a planner you appear to have a job that requires foresight in order to create what you do. You gather facts and work from what you create. Well I'm the person that lives and works here and speaks from doing and living. I am not a thought on a piece of paper that someone else may have to live with.

Mr. Lee William Sichter
Page 2
September 7, 1990

Wouldn't progressing be the resolve of the present problems such as the landfill before you go around constructing new things? I wouldn't get a new dress and put it on my 9 month old daughter if I knew she was wearing a diaper with "dump" in it. I'd clean it up first!

Respectfully,

Mellaney L. Bean

Mellaney L. Bean
Evidence Custodian

September 12, 1990
841.0101/1898

Ms. Mellaney L. Bean
P.O.Box 1797
Kealahou, Hawaii 96750

Dear Ms. Bean:

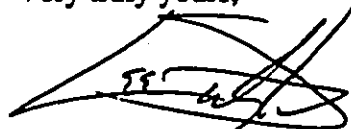
**Kealahou Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project. In view of the critical need for affordable housing in West Hawaii, we do not believe it is appropriate to halt the development of the proposed project until the landfill is closed. In order to ensure that homes are available for occupancy within the next 20 months, we must proceed now with the planning and engineering for the project.

The Housing Finance and Development Corporation undertook the proposed project with the understanding that the County of Hawaii would soon be closing the landfill and opening a new landfill facility in West Hawaii. The Kealahou landfill was not considered to be a permanent constraint on development. The landfill is a temporary use of the County property and does not constitute an irreversible alteration of the land. Therefore, for purposes of long-range planning, it is appropriate to continue with development plans for the proposed project.

The HFDC supports the landfill's closure by May, 1992. Construction of the first increment of homes at the project will require approximately 20 months. We are anticipating the County will close the landfill before the first increment of homes are completed and that landfill operations will be relocated to a new site. If construction of the first increment of homes were delayed until the landfill is closed, two or more years will have been lost before home construction could even begin. Demand for affordable housing is steadily increasing in West Hawaii. We feel that it is, therefore, appropriate to time residential construction with the landfill closing so that homes can be occupied as soon as practical.

Very truly yours,



Lee William Sjenter

P.O. Box 1994
Kealahou, HI 96750

September 6, 1990

Mr. Lee William Sichter
Senior Planner
Belt Collins & Associates
680 Ala Moana Blvd., Suite 200
Honolulu, HI 96813

Dear Mr. Sichter:

I am a resident of Kona and an employee of the Hawaii County Police Department, Kona Police Station, which is located next to the Kailua Landfill.

I think that before there is any further development in the Kealahou area, the problems involving the Kailua Landfill should be dealt with first. There are too many existing problems and further development in the Kealahou area, or any other area, would only add to the problems.

Thank you for your consideration in this matter.

Sincerely,

Sherri Kunitomo
Sherri Kunitomo

BCA
BELT COLLINS
& ASSOCIATES

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September 12, 1990
841.0101/1898

Ms. Sherri Kunimoto
P.O.Box 1994
Kealahou, Hawaii 96750

Dear Ms. Kunimoto:

**Kealahou Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project. In view of the critical need for affordable housing in West Hawaii, we do not believe it is appropriate to halt the development of the proposed project until the landfill is closed. In order to ensure that homes are available for occupancy within the next 20 months, we must proceed now with the planning and engineering for the project.

The Housing Finance and Development Corporation undertook the proposed project with the understanding that the County of Hawaii would soon be closing the landfill and opening a new landfill facility in West Hawaii. The Kealahou landfill was not considered to be a permanent constraint on development. The landfill is a temporary use of the County property and does not constitute an irreversible alteration of the land. Therefore, for purposes of long-range planning, it is appropriate to continue with development plans for the proposed project.

The HFDC supports the landfill's closure by May, 1992. Construction of the first increment of homes at the project will require approximately 20 months. We are anticipating the County will close the landfill before the first increment of homes are completed and that landfill operations will be relocated to a new site. If construction of the first increment of homes were delayed until the landfill is closed, two or more years will have been lost before home construction could even begin. Demand for affordable housing is steadily increasing in West Hawaii. We feel that it is, therefore, appropriate to time residential construction with the landfill closing so that homes can be occupied as soon as practical.

Very truly yours,



Lee William Sichter

P.O. Box 97
Captain Cook, HI 96704
September 6, 1990

Mr. Lee W. Sichter
Belt Collins & Associates
680 Ala Moana Blvd., Suite 200
Honolulu, Hawaii 96813

Dear Mr. Sichter:

Thank you for coming to the Kona Police Station to meet with several employees of the Hawaii Police Department.

Many of us at the meeting had no idea of the reality of anyone considering developing the land near the landfill prior to its removal so soon. The plans for the development took some of us by surprise.

I feel that the noxious fumes emanating from the landfill is a major concern to us as well as the residents of your project.

It's obvious that the removal of the landfill is taking longer than anticipated. Meanwhile, the residents as well as those of us that work near the landfill must breathe these noxious fumes on a daily basis. Our building have been equipped with special airfilters in the airconditioner system as well as other devices helps a little to bear the fumes, but not by much. We're praying that the fumes from the landfill won't have a long term effect on our health on all of us that reside or work in the area.

Please reconsider the adverse effects that should the construction/completion of the proposed project begin prior to the removal and mining of the landfill, more serious health related problems could occur to the residents of your project. We understand that it will take several years before the problems of the landfill can be resolved.

I realize that the solution to the landfill problem is not in the interest of your company. Any advice you can render as far as other avenues we could pursue will be greatly appreciated.

Thank you for your time.

Sincerely,


Mrs. Jamie Takimoto

xc: Rep. Virginia Isbell

September 12, 1990
841.0101/1898

Mrs. Jamie Takimoto
P.O.Box 97
Captain Cook, Hawaii 96704

Dear Mrs. Takimoto:

**Kealakehe Planned Community
Draft Environmental Impact Statement**


Thank you for your comments on the above project. In view of the critical need for affordable housing in West Hawaii, we do not believe it is appropriate to halt the development of the proposed project until the landfill is closed. In order to ensure that homes are available for occupancy within the next 20 months, we must proceed now with the planning and engineering for the project.

The Housing Finance and Development Corporation undertook the proposed project with the understanding that the County of Hawaii would soon be closing the landfill and opening a new landfill facility in West Hawaii. The Kealakehe landfill was not considered to be a permanent constraint on development. The landfill is a temporary use of the County property and does not constitute an irreversible alteration of the land. Therefore, for purposes of long-range planning, it is appropriate to continue with development plans for the proposed project.

The HFDC supports the landfill's closure by May, 1992. Construction of the first increment of homes at the project will require approximately 20 months. We are anticipating the County will close the landfill before the first increment of homes are completed and that landfill operations will be relocated to a new site. If construction of the first increment of homes were delayed until the landfill is closed, two or more years will have been lost before home construction could even begin. Demand for affordable housing is steadily increasing in West Hawaii. We feel that it is, therefore, appropriate to time residential construction with the landfill closing so that homes can be occupied as soon as practical.

We expect that the closing of the landfill would eliminate any potential health hazards. Landfill sites have been successfully closed and converted to other uses in jurisdictions on the mainland. We are not aware of any health hazards posed by a landfill that has been properly closed.

Very truly yours,



Lee William Sichter

Mr. Lee William Sichter
Senior Planner
Belt Collins and Associates
680 Ala Moana Blvd Suite 200
Honolulu, Hawaii 96813

September 6, 1990

Dear Mr. Sichter,

As a resident of the Kealakehe area and employee at the Hawaii County Police Station at Kealakehe, I would first like to express my appreciation for taking the time to meet with us in Kona.

There are several concerns that I would like to have addressed in regards to the proposed Kealakehe Development. The concerns are directly related to the Kealakehe Landfill problem that has plagued the Police personnel since occupying the new facility in October of 1988. These problems that we have been experiencing could affect the Kealakehe Development.

The Kealakehe Landfill has had the problem of the underground fire for years. Periodically it has flared to the surface and caused the closing of the Police facility and nearby Kealakehe School. My concern is that the proposed development of the Kealakehe area would be closer to the landfill than the Kealakehe school, thereby placing it in the range of the landfill problem.

My second concern is the stench and noxious fumes from the landfill has plagued the Police Personnel and would further affect the project area.

A third concern is in regards to hazardous wastes that may be buried in the landfill. Although we have been told that air quality checks found no evidence of toxic fumes or materials being emitted from the landfill, no one knows what is buried in the site. Although nothing has been detected as yet, what is burning today can be something totally different from what will be burning tomorrow. There could be anything in the landfill including petroleum products, pesticides, other chemicals and even the possibility of asbestos.

The fourth concern is the plan to mine the landfill in order to put the "fire" out. During this process the fumes and stench could be many times worse than what we now experience. This concern is also an issue with the third concern, the fact that hazardous wastes and toxic materials may be contained in the landfill and the mining could cause a serious health problem over a wide area.

The fifth concern is that continued development projects produce additional garbage which further adds to the current landfill problem of its capacity nearing its maximum. The County of Hawaii is further expanding the landfill by extending it in the makai direction which may soon affect us even more than now.

In line with concern number five, the County has not been able to resolve the dump problem. The planned replacement landfill site at Puuanahulu has been delayed and argued for such a time period that the earliest possible date of it being readied for use is 1992, and even that date seems unrealistic. I feel that development is necessary but we need to address the concerns and problems that are caused by the development which in this case is the Kealakehe Landfill.

To summarize the five concerns that I have listed can be listed as follows:

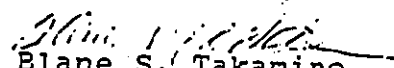
1. The Kealakehe Landfill is within the range of the Kealakehe Development and problems from the landfill will affect the deveopment area.
2. The stench, noxious fumes, and possible hazardous and toxic materials may also affect the development area.
3. The big question is "WHAT IS BURIED IN THE KEALAKEHE LANDFILL". Questions raised by this thought are: Are there toxic and hazardous materials in the landfill??
4. The continuous underground fire presents a problem with the only solution being to mine the dump and put out the fires. A big question here which relates to concerns 2 and 3, is "WHAT IS GOING TO HAPPEN DURING THE MINING". It is expected that the stench and fumes will greatly increase during this time. The Kealakehe Development would be in the range of being affected.
5. More development only creates more garbage and further aggravates the situation with the Kealakehe Landfill. With the landfill being a maximum capacity, and further expanding the landfill and further affecting the area and personnel working in the area. The infrastructure needs to be looked at including landfills with more development.

Mr Lee William Sichter
Page No. 3

I would like to again express my appreciation for your time to meet with us and explaining the entire process.

I fully agree that the Kealakehe Development of affordable housing is a much needed project for the Kona area, but we need to take a serious look at the current problems which will affect the Kealakehe Development.

SINCERELY YOURS


Elane S. Takamine
P.O. Box 4093
Kailua-Kona, Hawaii
PH: 326-4204

cc
Governor John Waihee

BCA

BELT COLLINS
& ASSOCIATES

Engineering • Planning
Landscape Architecture

660 Ma Moana Blvd., Suite 200, Honolulu, Hawaii 96814

Phone: (808) 521-7361, Telex: BELT4474, Fax: (808) 521-7619
Hawaii • Singapore • Australia • Hong Kong • Saigon

September 12, 1990
841.0101/1898

Detective Sergeant Blane S. Takamine
P.O. Box 4093
Kailua-Kona, Hawaii 96745

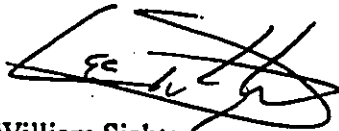
Dear Detective Sergeant Takamine:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project. Following are responses to your concerns in the order they are presented in your letter.

1. A comprehensive closure plan could be an effective solution to the landfill problem. Once dumping activity at the landfill is terminated, the mound could be vented to neutralize a build-up of landfill gas and mitigate the possibility of spontaneous combustion, covered with approximately three feet topsoil, and a monitoring program implemented to minimize the potential for flare-ups.
2. A comprehensive closure plan that is properly implemented should help to greatly reduce the noxious odors from the landfill.
3. The matter of toxic wastes is an issue of considerable concern. However, there is no evidence to suggest that the fumes emanating from the landfill are toxic. The monitoring program discussed above would certainly help public health officials determine the existence of toxic emissions from the landfill after it is closed.
4. The Housing Finance and Development Corporation advocates the closure of the landfill by 1992. We are concerned that mining may result in an increase of emissions, and therefore, support a comprehensive closure plan as suggested above.
5. The opening of a new landfill is an important issue for the proposed project. Should the County be unable to develop a new landfill site by the time the first increment of homes in the Kealakehe project are available for occupancy, solid waste from the project would most likely have to be trucked to landfills in East Hawaii at the expense of the new Kealakehe residents.

Very truly yours,



Lee William Sichter

September 05, 1990

Mr. Lee William Sichter
Senior Planner
Belt Collins & Associates
680 Ala Moana Blvd., Suite 200
Honolulu, Hawaii 96813

Subject: Kealakehe Planned Community

Dear Mr. Sichter:

This letter is in regards to the Kailua-Kona Landfill located in the Kealakehe Area. We as residents of Kona, as well as employees of the Hawaii County Police Department, wish to express our concerns on the future development of the Kealakehe District.

The Landfill has been an overwhelming problem for years now. Everyone knows how awful the smell is from a rubbish dump. Having to work next door to it makes us experts on this topic. Whenever there is a fire at the dump, it poses hazardous conditions to it's surroundings. Depending on the wind direction, the vehicles on the main highway are affected and the housing development as well as Kealakehe School are also affected. Whether or not there are toxic fumes is still a major question. Every construction site in Kona disposes their waste at this landfill. There has been complaints by the residents of Kealakehe about the smell even when the dump is not on fire.

The promises and proposals are very misleading. Giving everyone hope that the problem will be solved. What is the real truth and why is it taking so long? Major projects can be planned and built in no time so why is the time span so long on this one?

It is also degrading to our Political System when we have to give directions to anyone telling them that the Main Police Station is next to the dump and it will also be near the Sewage Treatment Plant in the near future. On top of that, they plan to build a Civic Center. I always thought of County and State buildings as prestigious.

More Development in this area will only cause more problems. Unless the dump is moved and mined before the Proposals become a reality, there will be massive amounts of garbage to be added to the now existing overload.

PAGE 2

Also, the people that move into this area will be prone to health problems everytime the dump gives off fumes or catches on fire.

Thank you for your time.

Wendy Butterworth
Wendy BUTTERWORTH








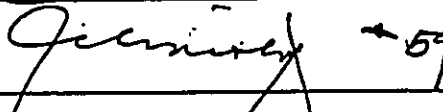


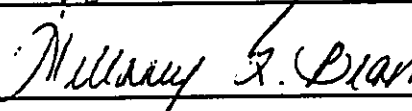
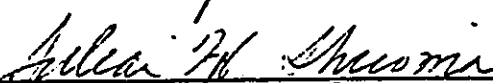
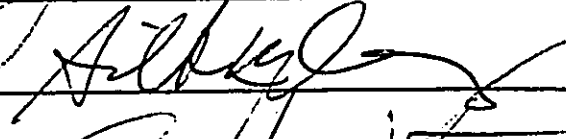
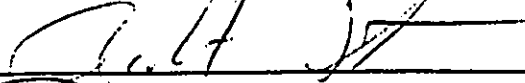
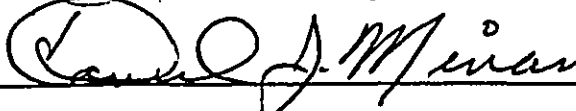
cc: John Waihee, Governor, State of Hawaii
Larry Tanimoto, Mayor, County of Hawaii
Virginia Isbell, House of Representatives

see attached:

This attached letter are names of employees of the Hawaii County Police Department who share the same viewpoints that are noted in my letter. Please take into consideration that each name has as much to say and are as concerned as I am.

PRINT

SIGN

1. Kenneth N. Uyeden #46 
2. SAM KAWANOBU 
3. Jamie Takimoto 
4. ERNEST SALDUA 
5. Blane Takamine 
6. Raymond W. Correa 
7. Calvin M Oshara 
8. LIONEL C LINCOLN, JR 
9. Sherri Kunitomo 
10. Pancho Domingo 
11. Mellaney L. Bean 
12. JULIAN H. SHIKOMA 
13. GILBERT M. GASPAR JR #283 
14. Robert Foster #274 
15. DANIEL J. MINAN 

PRINT

SIGN

- 16. Perry H. KEALUHA Perry H. Kealoha SS. No.
- 17. Whitney D. JENKINS Whitney D. Jenkins
- 18. ~~Joseph K. Hing~~ Joseph K. Hing
- 19. Jamie M. Kawauchi Jamie M. Kawauchi 575-54-7297
- 20. Errol M. Ishimine Errol M. Ishimine
- 21. Daryl K. Picadury Daryl K. Picadury 575-62-572
- 22. John E. DAWKINS JOHN E. DAWKINS 576-48-4231
- 23. Guy Kanino GUY KANINO 575 84 0619
- 24. David A. Kawauchi DAVID A. KAWAUCHI 575-52-0280
- 25. LOIS KAWAMOTO Lois Kawamoto
- 26. Rudy EMBERTATE Rudy Embertate
- 27. DON WATSON Don Watson 553-82-9045
- 28. Charles KELIPIO Charles Kelipio 549-02-5191
- 29. Row PAUL Row Paul 576-90-9843
- 30. Kehu Frita Kehu Frita 515-72-4466

PRINT

SIGN

31. Gregorio ANTOLIN Jr Gregorio Antolin Jr
32. Michael M. Adams [Signature]
33. LINDA K. HIRAI Linda K. Hira
34. H. J. Sil H. J. Silva
35. Patrick MENINO Jr. Patrick Menino Jr.
36. BH Ballesteros [Signature]
37. Sharm Kennelly Sharm Kennelly
38. Kenneth BUGADO Jr. Kenneth Bugado Jr
39. Kelley K. MATSUMOTO Kelley K. Matsumoto
40. Kelly K. KAAUMOANA Kelly K. Kaaumoana
41. Leroy D. VICTORINO Leroy D. Victorino
42. Mark OHATA Mark Ohata
43. Wayne T. MITSUNAGA Wayne T. Mitsunaga
44. M. A. SPALDING M. A. Spalding
45. ROBERT P. HICKCOX Robert P. Hickcox

PRINT

SIGN

46. Charles N. Adams
47. Belinda L. KAHINA Belinda L. Kahina
48. Jim Fenick Jim Fenick
49. Wayne YOUNG Wayne K. Young
50. DOROTHY V. KENNEL Dorothy V. Kennell
51. Thomas Huxcox Thomas D. Huxcox
52. GREGORY K. TRINIDAD Gregory K. Trinidad
53. WALTER ALLMON Walter Allmon 513

This attached letter are names of residents of the Hawaii County
 ... who share the same viewpoints that are noted
 in my letter. Please take into consideration that each name
 has as much to say and are as concerned as I am.

PRINT

SIGN

1. Kathleen Becker
 HARRIET P. BROWN
 Kathleen Becker
 73-1082 Ahukawa RK 96740
2. Janet Brown
 LUANNE S. TREVENA
 76-6220 Lehua Rd. Kailua-Kona, HI 96740
 Janet Brown
3. Luanna Trevena
 SUSAN McCOURT
 P.O. 8228 Kealahou, HI
4. Susan McCourt
 SUSAN McCOURT
 PO Box 2447 Kailua-Kona HI 96740
 Susan McCourt
5. Deborah A. Wiley
 LORELEI T. MCGUIRE
 PO Box 228 Kealahou HI 96750
 Deborah A. Wiley
6. Lorelei T. McGuire
 VALERIE M. KOE
 P.O. Box 1306 Kealahou HI 96750
 Lorelei T. McGuire
7. Valerie M. Koe
 P.O. Box 799 Honouliuli HI 96726
 Valerie M. Koe
8. RONALD M. IWAZ
 PO Box 1665 KEALAKEKUA HI 96750
 R. M. Iwaz
9. Jeffrey W. Cumes
 P.O. 1323 Kealahou HI 96750
 Jeffrey W. Cumes
10. Alva Sachs
 74-946 LANIA PL. Kailua HI 96740
 Alva Sachs
11. Cathy R. Lewis
 P.O. Box 1993 Kealahou, HI 96750
 Cathy R. Lewis
12. Sharon Ikeda
 P.O. Box 1160, Kealahou 96750
 Sharon Ikeda
13. JOSEPHINE L. PA
 JOSEPHINE L. R.
 P.O. Box 359 Kealahou, HI 96750
14. S Seaman
 HYAKU MACHISAKI
 P.O. Box 290840 HI-12 96739
 S. Seaman
15. Warren E. Rapozo
 WARREN E. RAPOZO (Police Officer)
 Warren E. Rapozo 76-6277 Plumaria Rd., Kailua-Kona HI

BCA

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& ASSOCIATES

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Hawaii • Singapore • Australia • Hong Kong • Japan

September 12, 1990
841.0101/1898

Ms. Wendy Butterworth
c/o Kona Police Department
74-5221 Queen Kaahumanu Highway
Kailua-Kona, Hawaii 96740

Dear Ms. Butterworth:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project and for the petition you enclosed with your letter. In view of the critical need for affordable housing in West Hawaii, we do not believe it is appropriate to halt the development of the proposed project until the landfill is closed. In order to ensure that homes are available for occupancy within the next 20 months, we must proceed now with the planning and engineering for the project.

The Housing Finance and Development Corporation undertook the proposed project with the understanding that the County of Hawaii would soon be closing the landfill and opening a new landfill facility in West Hawaii. The Kealakehe landfill was not considered to be a permanent constraint on development. The landfill is a temporary use of the County property and does not constitute an irreversible alteration of the land. Therefore, for purposes of long-range planning, it is appropriate to continue with development plans for the proposed project.

The HFDC supports the landfill's closure by May, 1992. Construction of the first increment of homes at the project will require approximately 20 months. We are anticipating the County will close the landfill before the first increment of homes are completed and that landfill operations will be relocated to a new site. If construction of the first increment of homes were delayed until the landfill is closed, two or more years will have been lost before home construction could even begin. Demand for affordable housing is steadily increasing in West Hawaii. We feel that it is, therefore, appropriate to time residential construction with the landfill closing so that homes can be occupied as soon as practical.

We expect that the closing of the landfill would eliminate any potential health hazards. Landfill sites have been successfully closed and converted to other uses in jurisdictions on the mainland. We are not aware of any health hazards posed by a landfill that has been properly closed.

We are unable to comment on why the closing of the landfill has taken as long as it has.

Very truly yours,



Lee William Sichter



September 7, 1990

ENV
H-W/G
RECEIVED
SEP 10 1990

BELT, COLLINS & ASSOCIATES

Housing Finance and Development Corporation
State of Hawaii
7 Waterfront Plaza, Suite 300
500 Ala Moana Boulevard
Honolulu, Hawaii 96813

Gentlemen:

Subject: Draft Environmental Impact Statement
Kealakehe Planned Community

Thank you for allowing us the opportunity to review the draft Environmental Impact Statement (EIS) for the subject project. Our comments are as follows:

1. A power factor of 58% was used in the report to convert 14,350 KVA to 8,285 kilowatts. This power factor seems low and we question the validity of using such a figure. Please provide backup as to why this power conversion factor was utilized.
2. The development will require offsite electrical improvements to service the anticipated load. Installation of a 69KV transmission line from the Keahole Switching Station will be required together with a substation capable of serving the proposed community.
3. It should be emphasized that the routing of the transmission line along roadways will be subject to obtaining necessary governmental approvals or private easements.

Should you have any questions regarding our comments, please do not hesitate to contact us.

Sincerely,

For Clyde H. Nagata, Manager
Engineering Department

CHN:DK:ts

cc: Mr. Lee William Sichter, Belt Collins and Associates
D. Kiyosaki
M. Yamaki

An HEI Company

BCA
BELT COLLINS
& ASSOCIATES

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Hawaii • Singapore • Australia • Hong Kong • Saigon

September 12, 1990
841.0101/1898

Mr. Clyde H. Nagata, Manager
Engineering Department
Hawaii Electric Light Company, Inc.
P.O. Box 1027
Hilo, Hawaii 96721-1027

Dear Mr. Nagata:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project. We agree that the power factor of 58% is a conservative figure used for converting KVA to KW. As a result of a discussion with Donna Kayosaki of your staff, we have revised the document to reflect a power factor of 75%. Page VI-38 of the DEIS has been amended to reflect a revised figure of 10,762 Kilowatts or 10.76 Megawatts, based upon the new power factor.

You are correct that the development will require offsite electrical improvements to service the anticipated load including a 69 KV transmission line from the Keahole Switching Station and a substation capable of serving the proposed community. Page VI-38 of the EIS affirms this. Finally, the same page has been amended to emphasize that the routing of the transmission line along roadways will be subject to obtaining the necessary governmental approvals or private easements.

Very truly yours,



Lee William Sichter



Office of Housing
and Community Development

50 Wailuku Drive • Hilo, Hawaii 96720 • (808) 961-8379 • Fax (808) 935-4735

Larry S. Tanimoto

Mayor

A. Scott Leithead
Housing Administrator

FILE COPY

September 11, 1990

SEP 11 1990

Mr. Joseph K. Conant
Executive Director
Housing Finance and Development Corporation
Seven Waterfront Plaza, Suite 300
500 Ala Moana Blvd.
Honolulu, HI 96813

SUBJECT: Draft Environmental Impact Statement (EIS)
Kealakehe Planned Community

Thank you for this opportunity to comment on the draft EIS for the Kealakehe Planned Community. After a review of the document, we have the following comments to offer for your consideration:

1. The discussion regarding residential uses on page II-16 requires clarification. The description of affordable and market units does not appear to be consistent with the "lower cost housing" definition contained in HFDC Rules, Chapter 15-73A.

Another example of this appears in Table 2-2, Land Use Summary, which describe market units being in the 120% - 140% category. A precise description of the affordable housing target groups would be helpful.

2. The proposed development phasing and recommended annual production rates presented in Table 5-6 appears to ignore the tremendous pent-up demand reflected in Table 5-5. In addition, the pent-up demand figures should be increasing since affordable housing production continues to lag behind demand. By the time the production of affordable units actually gets under way, the production rates, particularly during the first five-year time frame, should be increased substantially. Based on the foregoing, the overall developmental time frame could be shortened considerably.

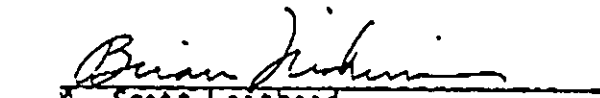


EQUAL HOUSING OPPORTUNITY

Letter to Joseph K. Conant
Page 2
September 11, 1990

3. We share the concerns expressed by the Planning Department and Public Works regarding the traffic and solid waste issues. These issues have been at the forefront of community concerns and need to be addressed.

Thank you for the opportunity to comment on the draft EIS. Should you have any questions concerning these comments, please do not hesitate to contact us.


A. Scott Leithead
Administrator

September 12, 1990
841.0101/1898

Mr. Scott Leithead, Administrator
Office of Housing and Community Development
50 Wailuku Drive
Hilo, Hawaii 96720

Dear Mr. Leithead:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project. Following are responses to your comments in the order they appear in your letter.

1. An administrative decision was made by the Housing Finance and Development Corporation to focus housing development at Kealakehe for the affordable housing target group consisting of individuals and families with income of 120% of median income and below. HFDC regulations permit the definition of the target group to be extended up to the 140% income level. However, the HFDC feels that because of the greater need for affordable housing among the lower income group in Kailua-Kona, the downward revision of its target group is justified.

We believe the clarification you requested is presented on pages II-9 and II-10 of the EIS.

2. Recommended unit production for the Kealakehe project is based on a number of factors, including demand for various housing products, financial resources available to the HFDC, and investment risk. The County's position that substantial pentup demand exists in the West Hawaii region is understood. However this does not necessarily mean that Kealakehe production levels should be increased, for the following reason: Kealakehe is not intended to satisfy all housing need in the region. We recognize that additional action to meet affordable housing needs at other locations will be required of HFDC, OHCD and private developers, among others.

In short, we are pleased to receive OHCD's concurrence that sufficient demand could emerge for the Kealakehe project. HFDC would also be in a position to accelerate production levels in the event of strong consumer response to Kealakehe, if financial resources are available.

3. We have addressed the concerns of the Planning Department and Public Works Department regarding the traffic and solid waste issues and have revised the EIS to reflect our comments where necessary.

Very truly yours,


Lee William Sickter

Speaker
DANIEL J. KIHANO
Vice Speaker
EMILIO S. ALCON
Minority Leader
TOM OKAMURA
Minority Floor Leader
PETER K. APO

HOUSE OF REPRESENTATIVES
THE FIFTEENTH LEGISLATURE

STATE OF HAWAII
STATE CAPITOL
HONOLULU, HAWAII 96813
September 4, 1990



DISTRICT REPRESENTATIVES

1st - HERRY L. CHANG
2nd - HARVEY S. TAURI
3rd - WAYNE METCALF
4th - DWIGHT Y. TAKAMINI
5th - VIRGINIA ISHELL
6th - MIKE O'KIEFFE
7th - MARK J. ANDREWS
8th - HERBERT T. HONDA
9th - JOSEPH M. SOUKI
10th - ROZ BAKER
11th - DANIEL J. KIHANO
12th - SAMUEL S. H. LEE
13th - ROBERT BUNDA
14th - JOSEPH P. LEONG
15th - REB BELLINGER
16th - TERRANCE W. H. TOM
17th - MARSHALL K. IGE
18th - WHITNEY T. ANDERSON
19th - ED BYBEE
20th - CAM CAVASSO
21st - DAVID STIGMAIER
22nd - FRED HIRAYAMA
23rd - BARBARA MARUMOTO
24th - FRED HEMMINGS, JR.
25th - CALVIN K. Y. SAY
26th - LES HARA, JR.
27th - BRIAN T. TANIGUCHI
28th - JAMES T. SHON
29th - DAVID M. HAGINO
30th - JOAN HAYES
31st - CAROL FUKUNAGA
32nd - MAZIE HIRONO
33rd - ROD FAM
34th - MIKE LUC
35th - KENNETH T. HIRAKI
36th - DWIGHT L. YOSHIMURA
37th - DENNIS A. ARAKAKI
38th - EMILIO S. ALCON
39th - ROMY M. CACHOLA
40th - KAREN K. HORITA
41st - TOM OKAMURA
42nd - CLARICE Y. HASHIMOTO
43rd - DAVID Y. IGE
44th - NOBORU YONAMINE
45th - JULIE DULDLAO
46th - PAUL I. OSHIRO
47th - ANSELLE C. AMARAL
48th - HENRY HAALILIO PETERS
49th - PETER K. APO
50th - EZRA R. KANOHO
51st - BERTHA C. KAWAKAMI

-Minority Leader
- Minority Floor Leader

Lee W. Sichter
Belt Collins & Associates
680 Ala Moana Blvd., Suite 200
Honolulu, Hi. 96813

Re: Kealakehe Planned Community DEIS

Dear Mr. Sichter:

Thank you for this opportunity to comment on the Draft EIS for the Kealakehe Planned Community. I do have several concerns as follows:

1) Landfill - The landfill has toxic substances which have been dumped over the years from batteries to paints to poison residues (left over from households and farmers). The fact that no toxic gasses were evident during EPA tests does not preclude the knowledge that when underground fires hit these toxins they will emit toxic gasses.

The Police Department has 24-hour employees who are well aware of the odors and sickening side effects from landfill gasses. Some employees have been assigned elsewhere because of illness.

Whether the landfill takes two or ten years to remove, the toxins which have leached into the ground will still be there. What is their effect? Would it not be better to place the Civic Center more toward the north and put the golf course in its place? Golfers move around; civic center employees stay in place for hours. Also, the STP just below the proposed civic center makes it less than ideal should there be a malfunction of the STP.

Until the landfill is recycled, the police building should be considered for only day-time employees such as state offices (DLNR, DOA, DOH, etc.) In the meantime the police should be accommodated at a different site. This could be a tradeoff with the state constructing a temporary police headquarters to the north. The most logical place would be mauka of Honokohau Harbor near the entrance, makai of the Queen Kaahumanu Highway.

September 4, 1990

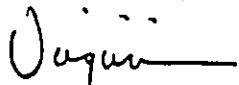
2) STP - Is the STP going to be able to accomodate the Kealakehe Development? If it has to be enlarged, shouldn't this be done now while the construction of the STP is under-way?

The leechfield for the STP appears to be the "public" golf course mauka. Doesn't it make more sense for the golf course to be around the STP rather than pump the affluent uphill?

3) Roadway - The new roadway appears to have no connection to Mamalahoa Highway in the near future. If the entire road is not part of this masterplan, then very little pressure is taken off Palani Road. The road, in its entirety, should be planned for in concert with the planned community and high school.

I hope these suggestions will be of help to you in developing the final plans for the Kealakehe Development.

Yours very truly,



Virginia Isbell
Representative - Kona

evr

September 12, 1990
841.0101/1898

Honorable Virginia Isbell
Representative - 5th District
State Capitol
Honolulu, Hawaii 96813

Dear Representative Isbell:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

Thank you for your comments on the above project and for the opportunity to meet with you to discuss the project on September 4th. Following are responses to your comments in the order they appear in your letter.

1. We appreciate your concerns about the landfill and its potential impact upon the proposed Civic Center. The proposed Civic Center is envisioned as being located immediately makai of the landfill, in the area presently occupied by the police station, and the AmFac distribution center and the West Hawaii Humane Society. As depicted in the project's Concept Plan on page II-14 of the EIS, the site of the landfill is proposed to remain in open space and is designated as a "landfill park".

Concerning the leeching of toxins from the landfill and their long-range impact, we believe that this matter must be addressed by the County at the time it proposes any new development on the site. The entire County parcel is presently designated as Conservation District by the State Land Use Commission. The landfill, the police station, and other uses at the site were approved subject to Conservation District Use Permits. Should the County propose redevelopment of the site, it must either seek a new permit or petition the State Land Use Commission to amend the land use designation from Conservation to Urban. Either one of these actions will require detailed study of the proposed use and may result in the need for a full environmental impact statement to be prepared. We believe that the issue of leeching and related environmental concerns such as toxicity would be addressed as part of that undertaking. Because the County property is not part of the Kealakehe Planned Community, and the proposed Civic Center is simply a designation for the site consistent with the original draft of the Keahole to Kailua Draft Development Plan, environmental studies for the future development of the landfill site were not deemed necessary for the project at hand.

The Kealakehe STP is just under a mile downslope from the landfill. We do not believe that a malfunction at the STP would impact the landfill.

We agree that a temporary relocation of the County police station may be appropriate if the landfill is recycled. However, the decision to relocate the police station and the choice of a new site rests with the County of Hawaii rather than the State. The site you recommend for relocation is presently being proposed for development by the Harbors Division of the State Department of Transportation as a light industrial support area for Honokohau Harbor. The County should contact the

Harbors Division if it identifies that site as the preferred location for a temporary police station.

2. The STP is not presently designed to accommodate the Kealakehe Planned Community. However, it is intended that the STP will be expanded to service the new development. Once the project receives Land Use Commission approval, planning and engineering for the necessary expansion can begin. It would be premature to commit resources to the expansion until the project is actually given the signal to move forward.

The County has already designated the golf course area as the effluent disposal area and is presently seeking a developer for the project. It was determined over two years ago that the effluent disposal area would be located mauka of the Queen Kaahumanu highway. Locating a golf course around the STP might, in fact, constrain future expansion of the facility beyond its present boundaries, should it be deemed necessary.

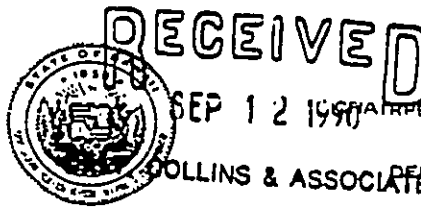
- 3) The entire mauka-makai roadway is being planned for implementation. That portion of the roadway located on State land is being undertaken as a first phase. In the meantime, the State Department of Transportation has already received funds from the State Legislature to begin planning and engineering to link the roadway to Mamalahoa Highway.

Very truly yours,



Lee William Sichter

JOHN WAIHEE
GOVERNOR



YUKIO KITAGAWA
CHAIRPERSON, BOARD OF AGRICULTURE

SUZANNE D. PETERSON
DEPUTY TO THE CHAIRPERSON

BELT COLLINS & ASSOCIATES

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814-2512

FAX: 548-6100

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

September 7, 1990

To: Office of Environmental Quality Control

From: Yukio Kitagawa, Chairperson *YK*
Board of Agriculture

Subject: Draft Environmental Impact Statement (DEIS) for
Kealakehe Planned Community
Housing and Finance Development Corporation
TMK: 7-4-08: pors. 17, 43
7-4-19: por. 43
Kealakehe, North Kona, Hawaii
Area: approximately 990 acres

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

The reference to the Agricultural Lands of Importance to the State of Hawaii (ALISH) should be corrected to indicate that the classified portion of the project site within the Agricultural District is called "Other Important" agricultural land and not "Important Agricultural Land."

Regarding the importation of supplemental soil from other sites to the project site (DEIS, page IV-9), every effort should be made to mine soil from non-agricultural sites and where its removal will not result in erosion or increased likelihood of flooding.

Thank you for the opportunity to comment.

c: HFDC
Belt Collins and Associates ✓



September 12, 1990
841.0101/90-1898

Mr. Yukio Kitagawa, Chairperson
Board of Agriculture
State of Hawaii
1428 South King Street
Honolulu, Hawaii 96814-2512

Dear Mr. Kitagawa:

**Kealakehe Planned Community
Draft Environmental Impact Statement**

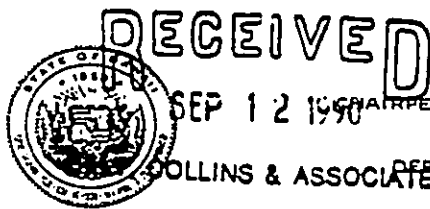
Thank you for your comments on the above project. The reference to Agricultural Lands of Importance to the State of Hawaii (ALISH) has been corrected in response to your comment. Your comment concerning the source of imported soil is noted. Every effort will be made to mine soil from non-agricultural sites and to minimize erosion or potential flooding.

Very truly yours,



Lee William Sichter

JOHN WAIHEE
GOVERNOR



YUKIO KITAGAWA
CHAIRPERSON, BOARD OF AGRICULTURE

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BCA
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& ASSOCIATES

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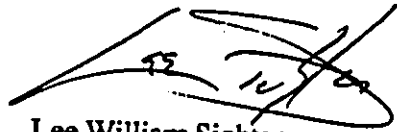
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