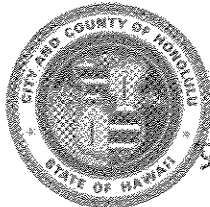


DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR



RECEIVED

91 MAY 17 P3 51

BENJAMIN B. LEE
CHIEF PLANNING OFFICER
ROLAND D. LIBBY, JR.
DEPUTY CHIEF PLANNING OFFICER

WM 4/91-1327

OFC. OF ENVIRONMENTAL
QUALITY CONTROL
May 14, 1991

Mr. Brian Choy, Acting Director
Office of Environmental Quality Control
Central Pacific Plaza
220 South King Street, 4th Floor
Honolulu, Hawaii 96813

Dear Mr. Choy:

Acceptance Notice for the Proposed
Makaiwa Hills Development
Ewa, Oahu--Folder No. 91/E-1
Final Environmental Impact Statement (Final EIS)

We are notifying you of our acceptance of the Final EIS for the proposed Makaiwa Hills Development, as satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes.

Pursuant to Section 11-200-23 (c), Chapter 200, Title 11 ("Environmental Impact Statement Rules") of the Administrative Rules, this acceptance notice should be published in the May 23, 1991 OEQC Bulletin.

We have attached our Acceptance Report of the Final EIS for the Makaiwa Hills development. Should you have any questions, please contact Bill Medeiros at 527-6089.

Sincerely,

A handwritten signature in black ink, appearing to read "Benjamin B. Lee", is written over the typed name and title.

BENJAMIN B. LEE
Chief Planning Officer

BBL:js

Attachment

cc: The Estate of James Campbell
William E. Wanket, Inc.

RECEIVED AS FOLLOWS

1991 - Oahu - FEIS - Makaiwa Vol. 1

FILE 0077

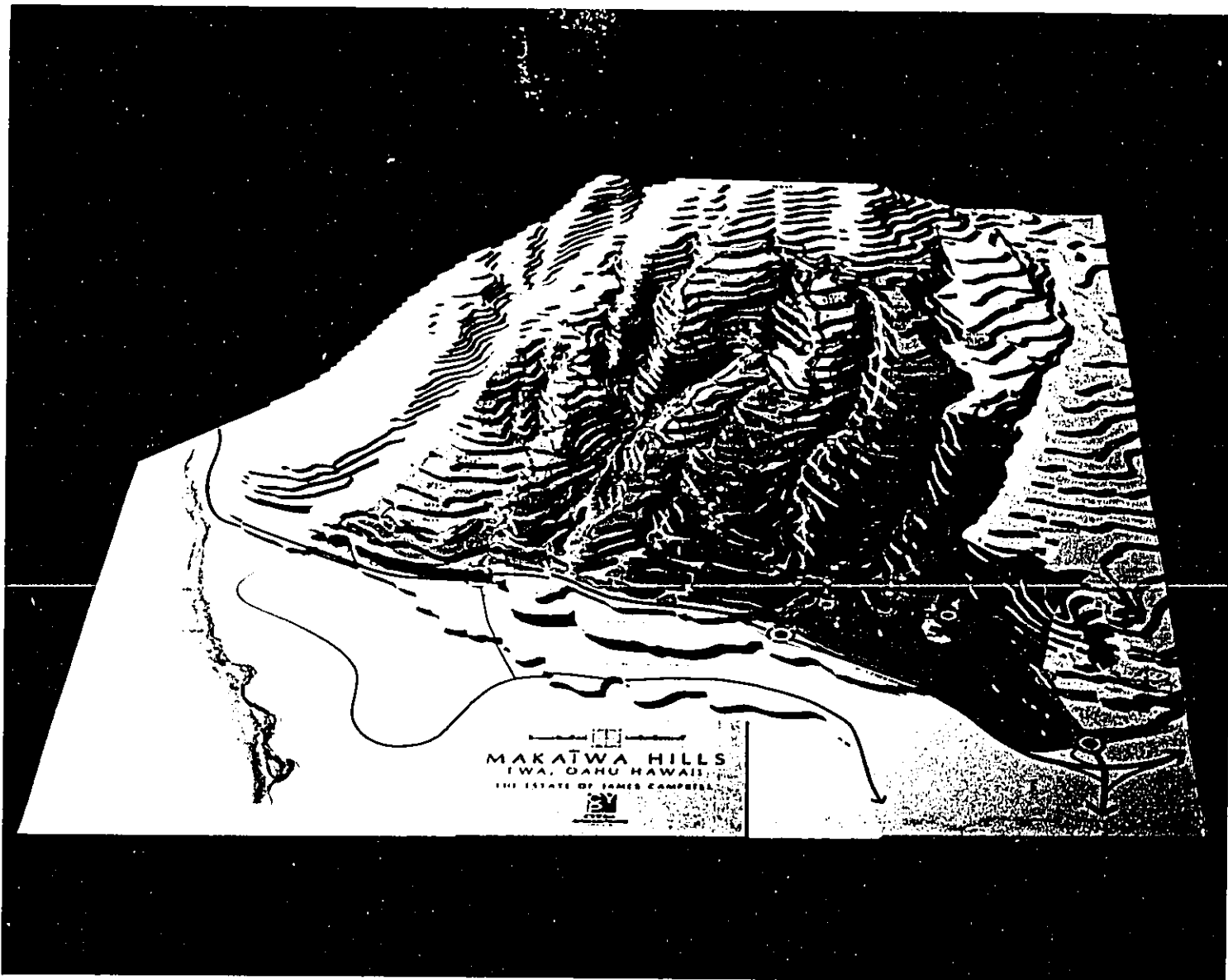
VOLUME I

FINAL
ENVIRONMENTAL IMPACT
STATEMENT

Makaiwa Hills

EWA, OAHU, HAWAII

prepared for: THE ESTATE OF JAMES CAMPBELL



prepared by: WILLIAM E. WANKET, INC.

FILE COPY

*Final
Environmental Impact Statement*

Makaiwa Hills

Ewa, Oahu, Hawaii


Volume I

Prepared For:
The Estate of James Campbell

For Submittal To:
Department of General Planning

Prepared By:
William E. Wanket, Inc.

Submitted pursuant to Chapter 343, Hawaii Revised
Statutes, Environmental Impact Statement Regulations



William E. Wanket, President
Pacific Tower, Suite 660
1001 Bishop Street
Honolulu, Hawaii 96813

April 1991

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- B. Makaiwa Hills Traffic Impact Assessment Report
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- L. Botanical Survey Makaiwa Hills Ewa District, Oahu**
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Robert Charles Lesser & Co.
- O. Makaiwa Hills Golf Alternative, A Market Assessment**
John Zapotocky

**MAKAIWA HILLS
ENVIRONMENTAL
IMPACT STATEMENT**

Summary

DEVELOPMENT PROFILE

Applicant: The Estate of James Campbell
828 Fort Street Mall
Suite 300
Honolulu, Hawaii 96813

EIS Consultant: William E. Wanket, Inc.
Pacific Tower, Suite 660
1001 Bishop Street
Honolulu, Hawaii 96813

Accepting Authority: Department of General Planning City and
County of Honolulu
Municipal Office Building
8th Floor
650 South King Street
Honolulu, Hawaii 96813

Proposed Action: Applicant requests the Department of General
Planning to process proposed changes to Ewa
Development Plan Land Use Map to designate
certain lands as Residential, Commercial and
Preservation.

Project Name: Makaiwa Hills

Project Location: In Ewa DP area on the Waianae Range, with Makakilo to the east, the City of Kapolei, and Barbers Point Harbor to the south.

TMK: 9-1-15: 5, 11, 17
9-1-16: Por 9
9-2-03: Por 2

Project Area: 1,915 acres (see *Figure 5*)

Existing Use: Grazing (See *Figure 7*)

Proposed Uses: Residential community with approximately 2,130 units and a regional shopping center. (See *Figure 5*)

NEED FOR EIS

An Application for a Development Plan Amendment and Environmental Assessment (DPEA) was submitted to the City and County of Honolulu, Department of General Planning in August 1990. The proposed action was subject to the provisions of the Environmental Impact Statement Law, Chapter 343, HRS [Section 343-5 (a)(6)] because the proposed DP Amendment involved a non-county initiated amendment to the City and County of Honolulu Development Plans and would result in designations other than agriculture and conservation.

The Department of General Planning ("accepting authority") determined that the proposed action may have a significant effect on the environment and on October 22, 1990, filed an Environmental Impact Statement Preparation Notice (EISPN) with the Office of Environmental Quality Control (OEQC). Notice of the determination was subsequently published in the October 23, 1990 OEQC Bulletin. *Chapter XIII* of this document lists the parties receiving a copy of the EISPN, as well as those who submitted comments. Response letters were sent to all commenting parties.

The *Draft Environmental Impact Statement* (DEIS) was prepared and submitted to OEQC and the City Department of General Planning in February 1991. Notice of the DEIS was initially published in the OEQC's Bulletin of February 23, 1991, with the deadline for comments established as April 9, 1991. All comments postmarked by that date have been included in the EIS. OEQC distributed the copies (60) and a total of 19 comment letters were received by the deadline. The Applicant has

responded to all such comments by the deadline. Contained in the Blue Section are OEQC's distribution list, comment letters received, and response letters sent.

This *Final Environmental Impact Statement* is being submitted in two volumes. *Volume II* contains the Technical Appendices. The FEIS was filed with the Office of Environmental Quality Control in April 1991.

PURPOSE OF EIS

The purpose of this Environmental Impact Statement (EIS) is to:

- (1) Describe the proposed DP Amendment to establish Makaiwa Hills as a planned community with approximately 2,130 residential units and a regional shopping center in Ewa, Oahu ("proposed action");
- (2) Disclose the probable environmental effects of the proposed development;
- (3) Describe measures proposed to minimize adverse effects, and
- (4) Discuss alternatives to the proposed development.

In appropriate sections, impacts resulting from the project as well as ambient development have been addressed to provide a view of regional, developing Second Urban Center requirements.

PLANNING PERSPECTIVE

The project area (called Makaiwa Hills) is part of Campbell Estate's Ewa Long Range Master Plan first developed in 1955. The principal development concept embraced by the master plan is to have Ewa develop as a self-contained balanced community providing a full range of urban services, housing, jobs, businesses and public facilities consistent with an urban center. A major goal of the plan is to balance growth in the residential population with growth in the regional economy so that future residents of Ewa will also have an opportunity to work within the Ewa area. This development concept has been supported by the policies of the General Plan since its adoption and has been implemented in various stages in the adoption of subsequent amendments to the development plan for the area.

Makaiwa Hills is a needed component to the successful implementation of the master plan that has as its nucleus, the City of Kapolei. It is

located to the west of Makakilo (a residential community), east of Waimanalo Gulch, and mauka of the emerging City of Kapolei and the developing Kapolei Business-Industrial Park. The entire area encompasses approximately 1,915 acres, rising in elevation from 50 feet mean sea level (MSL) at Farrington Highway to 1,300 feet at its northern boundary.

The site is presently undeveloped with a portion of the site leased for ranch lands. Most of the land is planned and zoned for agriculture, although only 6 percent is rated as Prime with the remaining lands unrated. Forty (40) acres are classified Urban and planned and zoned for residential and 103 acres are designated as Low Density Apartment on the Development Plan.

Makaiwa Hills is proposed for development as a residential community with a regional shopping center, necessary infrastructure systems, public services, and large areas devoted to open space and recreational amenities, including the possible addition in the future of a golf course on lands fronting Farrington Highway. If a golf course amenity is selected, a separate development plan amendment will be filed with the Department of General Planning. In terms of housing units, preliminary plans estimate the number to be 2,130.

Below is a summary of the land use designations being sought for the property in comparison with the current designations on the development plan:

	FROM	TO	NET CHANGE
Agriculture	1,772	0	-1,772
Low Density Apartment	103	0	-103
Residential	40	726	+686
Commercial	0	156	+156
Preservation	0	901	+901
School/Park/Fire Station	0	25	+25
Circulation/Roads	0	107	+107
TOTAL ACRES	1,915	1,915	0

Makaiwa Hills will provide opportunities for employment within the Kapolei area as well as further strengthen the secondary urban center area.

BENEFICIAL IMPACTS

General Plan/Development Plan

The proposed Makaiwa Hills project is a critical component to the successful implementation of the Secondary Urban Center. The project will provide additional residential choices for executives and others desiring to live near the SUC. Area residents will enjoy added employment opportunities and retail options.

Environmental

Physical characteristics of the land are generally favorable for the proposed land uses.

Flora/Fauna

No protected or endangered biota were found to inhabit the project area.

Socio-Economic

Business and residential opportunities will be created, thus encouraging the growth and diversification of Oahu's economic base.

Fiscal

Real property taxes can be expected to rise as the land will be developed to "higher" use. Increased revenues are expected from personal income taxes of employees, business income taxes, and general excise taxes. Favorable to the public, as projected revenues are expected to exceed public expenditures. Roll-back taxes will add substantially to County finances.

POTENTIAL ADVERSE IMPACTS

Agricultural Lands

Development will commit the site to urban uses resulting in an irretrievable loss of agricultural lands

Of the approximately 1,915 acres proposed for development, about 100 acres of the flatlands, along the H-1 Freeway in the southeast portion of the project area consist of good soils and favorable terrain for commercial crop production. These lands were once fallowed in the early 1980s because of difficult access problems after the H-1 Freeway was built, relatively low yields, rocky soils on much of the land, and the long

hauling distance to the mill. Subsequently (currently) this land was designated on the development plan for Low Density Apartment. The remaining lands are poorly suited for growing crops because the soils are rocky, the slopes are steep, and/or low cost water is not available. Decision Analysts Hawaii has prepared an Agricultural Impact Analysis for the project, and the results have been summarized in *Section IV B.* and *Appendix H, Volume II.*

Archaeological Resources

Land development may result in destruction of archaeological resources.

An archaeological inventory survey of the entire project area was conducted in 1990. The scope of this survey was consistent with the requirements of the State Historic Preservation Office for this level of archaeological study. A total of 34 archaeological sites were identified of which 18 are considered significant. Most of these are important for informational content and scientific value; however there are four (4) excellent examples of site types and one site, a series of petroglyphs, which has cultural value. Data recovery and preservation plans will be prepared to address, in detail, disposition of sites and mitigation of impact. These plans will be submitted to the State Historic Preservation Office for review and approval before they are implemented by the developer.

Cultural Surveys Hawaii has conducted an Archaeological Inventory Survey for the project. The results have been summarized in *Section III.F.*, and the full report can be found in *Appendix C., Volume II.* The Inventory Survey Report (Draft) has been reviewed by the State Historic Preservation Office (DLNR) and revised to address their concerns. Close coordination with the agency will be maintained.

Traffic

Clearing and construction work will result in temporary dust, noise, and some traffic disruption.

The developer and contractors will comply with local grading and subdivision and dust related ordinances and with pertinent regulations of the Department of Health.

Grading will be accomplished in phases, with only a limited number of acres barren at any one time, and will be coordinated with drainage improvements. Strict compliance with Chapter 23, Grading, Soil Erosion and Sediment Control of the revised Ordinances of Honolulu, 1978, as amended will be met. Noise regulations, and traffic control measures will be taken to meet State Department of Transportation requirements.

Pacific Planning and Engineering has prepared a Traffic Impact Assessment for the project, and the results have been summarized in *Section V. A*. The full report can be found in *Appendix B, Volume II*.

Engineering Concepts has prepared a Preliminary Engineering Report for the project, and the results are summarized in appropriate sections under *Chapter V*. The full report can be found in *Appendix A, Volume II*.

Services

Increased need for public services such as police, fire and school facilities.

An impact study prepared on State and County finances states the project will generate revenues exceeding expenditures. Furthermore, Campbell Estate will either dedicate or pay their fair share of providing elementary school facilities for the project area.

The residential component will generate an estimated 17 tons/day of refuse.

Private refuse collection companies will service the commercial area and it is expected that refuse from the residential area will be collected by the City and County refuse collection service. See Preliminary Engineering Report in appropriate sections under *Chapter V*. The full report can be found in *Appendix A, Volume II*.

Utilities

Increased need for utility services, including City supplied water and sewer.

Water, sewer, and drainage plans must be approved by appropriate public agencies.

Fauna

Land development may result in the decline of some species.

Abundant second growth habitat similar to the project site occurs throughout the lowlands of West Oahu. From the perspective of birds, there is nothing special or unique about the property.

Phillip L. Bruner has performed a Survey of the Avifauna and Feral Mammals at the project site, and the results are summarized in *Section III. E*. The full report can be found in *Appendix M, Volume II*.

Flora

Project site may have threatened and endangered plant species that may be impacted by the development.

The development is not expected to have any significant negative impacts to the botanical resources on the site. Char and Associates has conducted a Botanical Survey of the project site, and the results are summarized in *Section III. D*. The full report can be found in *Appendix L, Volume II*.

Noise

Increased noise levels on and off site are expected.

Various noise mitigation measures are available for the area proposed closest to Farrington Highway (the area most susceptible to noise from traffic). Darby and Associates has conducted an Environmental Noise Impact Assessment for the project, and the results are summarized in *Section III. G*. The full report can be found in *Appendix E, Volume II*.

Air Quality

The development of the site will result in impacts to existing air quality.

Project adherence to Federal and State regulations governing air quality will help to mitigate air quality impacts. Appropriate mitigative measures have been explored. J.W. Morrow has conducted an Air Quality Impact Study for the project, and the results are summarized in *Section III. I*. The full report can be found in *Appendix F, Volume II*.

HAZARDS

If the golf course is built, there is a potential for groundwater and air quality contamination through use of fertilizers and pesticides.

Only EPA approved chemicals will be used. The application of chemicals will be closely monitored in consultation with the State Department of Health, US Fish and Wildlife Services and other appropriate agencies. Appropriate mitigative measures have been explored. All requirements of the State Department of Health will be met. Charles L. Murdoch, Ph.D. and Richard E. Green, Ph.D. have conducted an Environmental Assessment of Fertilizer, Herbicide and Pesticide Use on a possible future golf course on the project site, and the results are summarized in *Section VII. C*. The full report can be found in *Appendix K, Volume II*.

Flooding/Earthquakes/Vulcanism:

No danger from volcanic activity is expected, as the last phases of the Koolau and Waianac volcanos occurred, reportedly, well over one million years ago. The probabilities for flooding and earthquakes are very low for the project area. The seismic risk classification for the entire island of Oahu is Zone 1 (Uniform Building Code). Zone 1 indicates that the island is subject to minor earthquake damage. The project area is designated Zone D on the Flood Insurance Rate Map (FIRM), an area of undetermined, but possible, flood hazards. To prevent flooding from the proposed project, drainage improvements are being planned which would serve the project area as well as nearby communities. Campbell Estate is currently planning to construct a major drainage channel as part of the proposed Kapolei Business-Industrial Park development. Design of this channel will accommodate peak storm runoff contributions from a portion of the proposed Makaiwa Hills development.

ALTERNATIVES CONSIDERED

In *Chapter VII*, three alternatives were considered to the proposed action: (1) No Action; (2) Development Plan; and (3) Land Use Variations. The first (no action) alternative assumed that the land would be developed in accordance with the existing zoning on the property, i.e., agriculture and residential. The second alternative considered development of the property under existing development plan designations, essentially for agriculture except for 40 acres of residential which would be developed for housing. The third alternative considered variations in land uses on a portion of the site proposed for development, including the possible addition of a golf course.

Evaluation of the alternatives indicated that (1) the site has limited potential for agricultural pursuits; (2) the site's characteristics are well suited for creating an attractive living environment; and (3) after exploring a range of land uses for the site, the proposed plan makes the highest and best use of the site, although a golf course component would make an attractive amenity and should remain an alternative for future consideration.

UNRESOLVED ISSUES

A. State Land Use Boundary

The majority of the project area is currently designated for agricultural use by the State Land Use Commission. An application for a boundary amendment will be filed with the Commission to have the site designated Urban. Until this petition is filed and the land use change to Urban is granted, the project site will remain classified as Agriculture (See *Figure 2*)

B. Development Plan Amendment

The project will require various land use amendments to the Ewa Development Plan. Such an application has been filed with the City Department of General Planning for consideration in the 1991 DP Annual Review. City Council is expected to make its decision on the amendments near the end of 1991.

C. Zone Change

Following approval of the development plan amendment, an application except for the lower preservation area will be filed with the City Department of Land Utilization for a change in zoning consistent with the designations on the development plan. This process is likely to take a year or more for a decision to be rendered by the City Council. As long as a golf course option is still under consideration by the applicant and a DP amendment for such use has not been approved, the applicant will not seek a zone change for the lower preservation area.

D. Regional Traffic

Regional traffic and the necessary improvements are unresolved issues at this time. Efforts are currently underway between Campbell Estate, Ewa region developers, and the State Department of Transportation to develop a Ewa Regional Transportation Master Plan that will identify needed roadway improvements, timing of the improvements, who should pay for the improvements and what their fair share should be. The Master Plan involves State and County transportation and planning agencies.

E. Archaeological

Based on findings and recommendations provided by Cultural Surveys Hawaii, the Applicant will, in consultation with the Historic Sites Office, State Department of Land and Natural Resources, undertake further archaeological work (surveying, testing, data recovery/mitigation, excavation etc.) relating to preservation and management plans eventually determined appropriate for the site. Data recovery and preservation plans will be submitted to DLNR for review and approval. Coordination with the agency will continue as the project proceeds through the planning process.

COMPATIBILITY WITH LAND USE PLANS AND POLICIES

A detailed discussion of the relationship of the proposed development to land use plans and policies is presented in *Chapter VI*. The proposed development is consistent with relevant public goals, objectives, policies, plans and controls, with the exception of the necessary approvals for a State Land Use Boundary Change, City and County of Honolulu Development Plan Amendment and zoning changes.

NECESSARY PERMITS AND APPROVALS

A number of permits and approvals must be obtained before development of the project area can begin. Major permits and approvals still outstanding include:

PERMIT/ APPROVAL	APPROVING AUTHORITY	STATUS
Land Use District Boundary Amendment	Land Use Commission	Petition to be filed following approval of DP Amendment
Development Plan Land Use Amendment	City Council	In process
Development Plan Public Facility Map Amendment	City Council	Application to be filed following approval of DP Amendment
Zone Change	City Council	Will be filed following approval of DP Amendment.
EIS	Department of General Planning	In process
Water Master Plan	Board of Water Supply	In process
Subdivision	Department of Land Utilization	Application to be filed following zone change
Grading/Drainage Wastewater	Department of Public Works	To be submitted during subdivision process
Building Permit	Building Department	To be submitted following zone change

I. PROJECT DESCRIPTION

A. Location And Size

The project area contains approximately 1,915 acres and is located on the slopes of the Waianae Range in Ewa, Oahu, Hawaii. The community of Makakilo is to the east, the City of Kapolei, and Barbers Point Harbor is to the south with preservation lands and unimproved hillside to the north. Camp Timberline (a privately operated facility) and several private residences are also located on leased lands north of the site. To the west is the City and County Waimanalo sanitary landfill.

B. Land Use Plan

The conceptual land use plan for Makaiwa Hills is illustrated in Figure 5, and summarized below:

LAND USE	ACRES (±)	PERCENT	UNITS
Residential	726	38	2,130
Commercial;	156	8	
Upper Preservation	721	38	
Lower Preservation	180	9	
Public Facilities (School/Park/Fire Station)	25	1	
Circulation	107	6	
	1,915	100	2,130

[Note: The plan is based on conceptual designs, which are subject to change. Figures, numbers, acreages and unit counts will be further refined as the project advances through the various permit approval stages. However, such refinements are not expected to affect the integrity of this EIS.]

Prior to preparation of the final design and layout of the development, coordination will be conducted with all appropriate government agencies. Final designs will incorporate the mitigative measures presented in this document, including the archaeological preservation plan and program to be submitted for review and approval to the Historic Preservation Office of the Department of Land and Natural Resources .

Conceptual Plan

Makaiwa Hills is a planned community consisting of approximately 1915 acres overlooking the Pacific Ocean and Ko Olina Resort. The community is planned as a mix of executive-type residential housing and commercial uses with dramatic views of the coast. The community is part of the larger Kapolei Master Planned Community encompassing approximately 32,000 acres.

The plan provides for a land use concept which protects the site's important natural resources, provides large continuous open space transition areas between adjacent neighborhoods, and proposes recreational uses for the community that may include a golf course amenity in the future. The open space provided by the project totals approximately 47 percent of the project area, establishing a dominating feature of the plan.

Residential

Preliminary plans call for the development of approximately 2,130 single family units. The plan establishes a hierarchy of ocean view residential products beginning with townhomes in the lowlands, near the commercial area, and gradually increasing to the larger residential lots as the development moves up the hillsides resulting in the location of the more sensitive, grade adaptive custom lots on the uplands and sloping sides of the ridges. The extensive open space network proposed is designed to establish smaller intimate residential areas, presenting the opportunity for neighborhoods with individual character and identity within the community.

In conjunction with and related to the housing component of the Makaiwa Hills project, the applicant is committed to the establishment of an affordable housing component that will serve to meet the needs of households earning below 140 percent of the median income. This commitment includes the provision of housing units and/or acceptable in-kind substitutes. Targeted income groups will include those households earning no more than 80 percent of the median income, households earning between 81 percent and 120 percent of the median income, and households earning between 121 percent and 140 percent of the median income. A variety of units are anticipated, including rentals and other special needs housing. Sites either on-site, off-site or in combination will be considered.

At this preliminary planning stage, however, we are unable to exactly define the components of the affordable housing program beyond the general description given above. The applicant is currently working with the City's Department of Housing and Community Development to meet all or substantially all of the Makaiwa Hills related needs through in-kind contributions towards the Ewa Villages project, the City's next master planned community. Through the legislative processes of seeking State Land Use Commission approval and City Council approval of a development plan amendment and a zone change, the applicant will work with the

various government bodies to detail the scope and timing of an affordable housing program.

Commercial

Approximately 156 acres have been set aside on the southeastern portion of the Makaiwa Hills property for development as a commercial regional mall. Presence of the regional mall is considered critical to creating an urban core or "second city" at Kapolei. The regional mall will act as a catalyst for further commercial development, establishing regional name recognition, adding to "critical mass" and providing focus to the emerging core.

Preservation

Approximately 47 percent of the project area is proposed for preservation, open-space, recreation-type uses. The open space areas are illustrated in Figure 5 as Lower Preservation (180 acres) and Upper Preservation (721 acres). The Upper Preservation areas are intended to remain essentially in its natural condition, although certain recreational-type activities such as nature or riding trails may extend into the gulches. Due to the topographic conditions and proximity to the highway, the Lower Preservation area may be particularly suited for active or semi-active recreational activity. In addition to a golf course option (under consideration but not part of this development plan amendment proposal), other recreation options may include a variety of outdoor recreation facilities such as community clubhouses, swimming pools, recreational courts, botanic or zoological gardens, equestrian center, or playfields.

Public Facilities

About 25 acres are planned for various public facilities required to serve the development (school, park, fire facilities). The applicant has committed to the State Department of Education that the Estate of James Campbell will either dedicate or pay their fair share of providing elementary school facilities for the project area. In addition, the applicant will work with the Office of Human Resources to ensure that child care needs of the project are met by development of such facilities by the private industry or by assisting the City in the provisions for such services. Coordination is being conducted with the Department of Parks and Recreation to select an appropriate site for the Development's community park (see Department of Parks and Recreation DEIS comment letter).

Circulation

About 6 percent of the project area will consist of needed collector roads to serve the development. In general the collector roads will require rights-of-way of 76 feet to 108 feet wide (minor roads 44 feet wide) to accommodate traffic in both directions. The roadways will be designed to meet City standards if they are dedicated to the City and County of Honolulu.

C. Infrastructure

The project site is presently undeveloped with only portions used as ranch lands for grazing, and therefore is not served by infrastructure systems associated with urban development. The following section provides summarized information on proposed infrastructure including roadways, water, wastewater, solid waste, drainage and power/communications systems. An Engineering Report by Engineering Concepts and a Traffic Assessment Report by Pacific Planning and Engineering address these systems. The findings, in summation, can be found in *Chapter V*; and the reports in their entirety are included as *Appendices A and B*.

1. DRAINAGE

There are no existing drainage improvements within the project site. Fifteen culverts of varying size are located adjacent to the site along Farrington Highway. The culverts convey runoff from the 3,662-acre watershed (including the project site) under the highway to downstream drainage facilities at Honokai Hale, Ko Olina Resort, and Campbell Industrial Park. Existing runoff quantities were calculated for the tributary area of each culvert based on rainfall duration of one hour, and rainfall intensities of 1.9 and 2.3 inches for the 10- and 50-year storms, respectively. Under existing conditions, peak runoff rates of 3,693 cfs (10-year) and 4,474 cfs (50-year) were calculated for the watershed. Corresponding runoff volumes of 236 acre-ft (10 year) and 288 acre-ft (50-year) were also calculated.

As a result of the proposed improvements, the rate of peak runoff and runoff volume are expected to increase by about 17 percent to 4,330 cfs (275 acre-ft) for the 10-year storm and 5,243 cfs (337 acre-ft) for the 50-year storm. The peak runoff rate for the 100-year storm) based on the City and County design curve will be used in the design of drainage improvements for drainage areas greater than 100 acres.

Impacts on developments downstream of the Makaiwa Hills site are not expected to be adverse. The makai developments will use the peak runoff criteria of the City and County of Honolulu, Department of Public Works. In general, the impact of increased runoff to the highway culverts can be mitigated by constructing detention basins to dampen peak runoff rates or additional culverts may be installed to increase the existing culvert capacity. Construction of additional culverts may result in short term impacts (traffic disturbances) which can be mitigated by limiting construction hours, implementing an approved traffic control plan, and coordinating other planned construction along the highway.

2. SOIL EROSION

The Universal Soil Loss Equation (USLE) is used to estimate long term annual soil losses from the project site before and after development. Under existing conditions, the existing soil erosion potential of the site is 44,800 tons/year.

The long term soil erosion potential is expected to decrease significantly after development due to reduction of erodible surfaces, reduction of length and slope of overland flow, and increase in landscaped areas. Based on the proposed residential/commercial development, the long term soil erosion potential for the site is estimated to be 6,100 tons/year decrease of 86 percent. Long term soil erosion potential is estimated to decrease another 10 percent to 5,500 tons/year if a golf course is constructed on previously undeveloped land in the future.

Calculations of short term soil erosion potential are based on grading of 80 acres/year over a ten year period. Short term soil erosion potential during construction is estimated to be 38,000 tons/year for the Makaiwa Hills development. Mitigating measures (e.g. grassing, limiting grading to no more than 15 consecutive acres, etc.) implemented during construction will reduce the estimated short term soil erosion potential by 17,800 tons per year or 48 percent.

3. WATER

The Board of Water Supply (BWS) system provides potable water service to the Ewa/Kapolei region. However, the BWS system does not serve the project site at present.

Water demand estimates for the project are separated into potable and nonpotable demand. The average daily potable water demand for the project is estimated to be 1.46 MGD (1.48 MGD with a golf course). The average daily nonpotable water demand for irrigation purposes is estimated to be 0.32 MGD (1.06 MGD with a golf course).

Based on a preliminary analysis, two distinct potable water distribution systems are proposed for the project due to the site topography. The eastern distribution system will require ten reservoirs and nine booster pumping stations for the five service zones. The western distribution system will require four reservoirs and four booster pumping stations for the four service zones. The proposed onsite potable water system will be designed in accordance with the BWS Water System Standards and is intended to be dedicated to the BWS for operation and maintenance.

The proposed project and other developments in the region will impact the existing BWS water system facilities. In an effort to reduce potable water consumption, a dual water system is proposed. Nonpotable water will be used for irrigation in areas other than residential land uses. The Estate of James Campbell is a member of the Ewa Plain Water Development Corporation. Water system requirements for Makaiwa Hills have been considered in regional water system planning.

4. WASTEWATER

There are no existing wastewater facilities within the project site at present. After development, the total average wastewater flow rate from Makaiwa Hills is estimated to be 1.285 MGD (1.305 MGD upon future development of the golf course). Wastewater generated by the development is expected to be of typical domestic composition.

Connection to the municipal sewer system for conveyance to the Honouliuli WWTP is recommended. The onsite collection system will include gravity sewers, force mains, and sewage pumping stations designed in accordance with City and County standards. A 21-inch off-site sewer will be required to convey wastewater from the project site to the existing Ko Olina interceptor. It is intended that the onsite collection system and 21-inch off-site sewer be dedicated to the City and County for operation and maintenance.

Capacity expansion of the Honouliuli WWTP is expected to precede development of Makaiwa Hills; thus wastewater flows from the project are not expected to create a negative impact on the WWTP capacity. A sewer connection application will be required by the City prior to authorizing connection to the municipal system. Inadequacies in the municipal collection and treatment system will be identified and participation in improving the municipal system will be required for approval. Proposed improvements include relief sewers for the Ko Olina and Makakilo interceptors. These sewers will be designed to accommodate wastewater flows from the Makaiwa Hills and other projects proposed in the region. Construction of the 21-inch off-site sewer may cause a temporary inconvenience to motorists along Farrington Highway. Implementation of an approved traffic control plan will mitigate this potential short term impact.

5. SOLID WASTE

Solid waste will be generated by the project site during construction and after development. Based on typical per capita generation rates, 17 tons/day is estimated to be generated from the residential areas within the site, requiring 24 truck trips per week for collection. It is anticipated that refuse from residential areas will be collected by the City and County, while private collection companies will service the commercial and future golf course developments.

Generation of municipal wastes will be a long term impact of development. Refuse from the proposed Makaiwa Hills development is not expected to have a significant impact on the Leeward Oahu solid waste disposal facilities. Combustible refuse will be disposed at the H-POWER waste energy recovery facility, with the remaining refuse to be land filled at the municipal Waimanalo Gulch landfill. Generation of construction wastes as a result of clearing and grubbing the site will be a short term impact. Most of these wastes will be combustible, and the contractor will be responsible for removal of the wastes from the site.

6. POWER AND COMMUNICATIONS

Under existing conditions, Hawaiian Electric Company (HECO) 138 kv and 46 kv transmission lines traverse the project site. The overhead transmission lines originate at the Kahe Power Plant. In addition, HECO is currently meeting with government

officials and the Estate of James Campbell to select and approve a route for a proposed 138 kv transmission line from the Waiiau Power Plant to the Campbell Industrial Park Substation. A portion of the route may cross the Makaiwa Hills site.

The estimated power requirement for the development is 6.5 MVA. Discussions between the Estate of James Campbell and HECO are ongoing. Mitigation of potential impacts to the HECO system due to Makaiwa Hills and other projects in the Ewa/Kapolei area are under consideration in the planning of new facilities.

7. GRADING

It is anticipated that grading within the project site will be limited to the ridges and plateau areas where slopes are less steep, favoring development. The grading concept for the residential lots will be to provide a level pad area for the home rather than leveling of the entire lot. The steep gulch areas will generally remain in a natural or undeveloped state. However, some grading in the gulches may be required to support bridges and roadways between ridges. An effort to balance the earthwork quantities of cut and fill is expected to minimize the cost of purchasing off-site borrow material and disposing excess excavated material at an off-site location. Grading operations will be in conformance with the applicable ordinances of the City and County of Honolulu.

8. ROADWAYS

Access to and from the project will be via the H-1 Freeway and Farrington Highway. Two grade separated connections to Farrington Highway will be constructed to provide access to the project. The third access to the project will be from the Palailai Interchange. A series of collector streets and minor streets will be constructed to serve the internal traffic demands. Off-site improvements will be determined by the ongoing Ewa Region Highway Master Plan. The purpose of the Master Plan is to forecast future traffic in the region, identify roadway improvements to accommodate forecasted traffic, and to determine the distribution of fair share costs to implement the required improvements for the Ewa region.

D. Timetable / Estimated Costs

It is estimated that the proposed Makaiwa Hills project could be fully completed by 2010, with various approval and permit processes preceding construction.

Development Plan Approval:	1992
Zoning Approval (LUC Approvals done concurrently with Zoning):	1993
Grading/Building Permits:	1995
Construction:	1996-2010

Project costs are estimated at approximately \$250 million on-site and \$25 million off-site.

E. Changes In Land Use Designations Required To Implement The Project

Amendments to the State Land Use District, Development Plan, and Zoning will be required.

1. State Land Use District

Existing: Agriculture, Urban

Proposed: Urban,

2. Development Plan

Existing: Agriculture, Residential, Low Density Apartment

Proposed: Residential, Commercial, Preservation plus necessary Public Facilities Map Amendments.

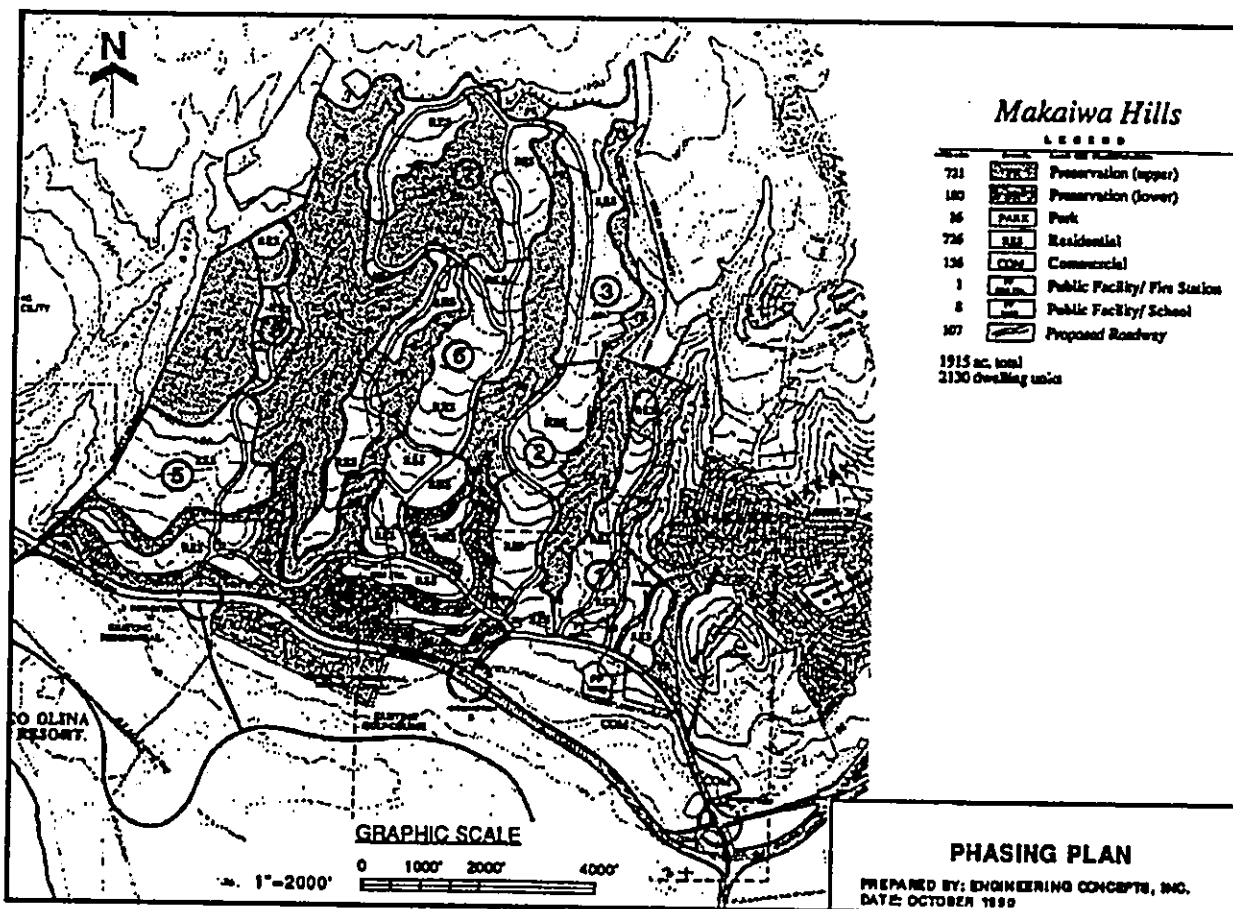
3. Zoning

Existing: AG-2 General Agricultural District; AG-1 Restricted Agricultural District, R-5 Residential District.

Proposed: P-2 General Preservation District, B-2 Community Business District. Proposed residential zoning will be provided as design and site planning progresses.

F. Phasing Plan

The project has been segregated into eight preliminary construction phases as shown in the map below. In general, the phases proceed from the eastern side of the site to the north and to the west. Approximate land uses within each phase are also provided.



PRELIMINARY CONSTRUCTION PHASING

PHASE	ACRES	LAND USE
1	63 acres 8 acres 16 acres	Residential School Park
2	92 acres 156 acres	Residential Commercial
3	100 acres	Residential
4	136 acres 1 acre 180 acres	Residential Fire Station Golf Course *
5	105 acres	Residential
6	122 acres	Residential
7	94 acres	Residential
8	14 acres	Residential

*Conversion of 180 acres of preservation land to a golf course may be undertaken in the future.

II. FEASIBILITY

(See *Appendices I and N*)

This chapter summarizes the market analysis prepared by Robert Charles Lesser & Company (*Appendix N*) for the residential and commercial components of the proposed project. In addition, information is presented on the possible impact on labor and employment resulting from the proposed project. For further discussion on the preceding subject refer to *Appendix I, Impact on Labor and Employment*, by Decision Analysts Hawaii, Inc.

Specific objectives of the residential / commercial market analysis were:

- Evaluate market and development trends that are affecting the development potential of residential and regional retail land uses at Makaiwa Hills.
- Prepare market demand-based absorption estimates for executive housing and a regional mall at Makaiwa Hills.
- Translate market findings into market positioning, land development, product programming and pricing strategy recommendations for the residential component of Makaiwa Hills.

Specific issues considered in this analysis included access, visibility, consistency with surrounding land uses, topography and the regional appeal of the Kapolei area.

For feasibility on the possible golf course, see *Chapter VII, Alternatives to the Proposed Action*, which contains an assessment prepared by John Zapotocky (*Appendix O*) and other information pertinent to the golf course as an alternate land use.

Market Analysis

The Estate of James Campbell is requesting an amendment to the Ewa Development Plan. The project site includes an estimated 1915 acres of which approximately 726 acres of land is being considered for residential use and approximately 156 acres of land for commercial use. As currently envisioned, Makaiwa Hills will accommodate some 2,130 residential units.

A. Existing Conditions

The City and County of Honolulu's General Plan has designated the Ewa area as the second urban center. At the present time several key elements of the Ewa Master Plan have been approved and development is taking place. Major infrastructure improvements have been made within the Ko Olina Resort area and construction of the first resort and residential units has commenced. New residential developments, including West Loch, Ewa Gentry, The Villages at Kapolei as well as the continuing Makakilo Development are providing a mix of new affordable and market housing units. Major employment centers, including the Barbers Point Harbor, the James Campbell Industrial Park, Barbers Point Naval Air Station and the proposed Kapolei Business Industrial Park are providing employment currently, with future opportunities for expansion. Office and commercial development of the Kapolei core has commenced with the ground breaking of the Kapolei Shopping Center and review of plans for approval of the Campbell office building.

B. Future Demand

1. DEMAND FOR RESIDENTIAL

The Market Feasibility Analysis (*Appendix N*) contains a *Residential Demand Analysis* (pp. 18-24, *Appendix N, Exhibit 12*) based on growth statistics (1990-2010) developed by the City and County of Honolulu, Department of General Planning. These statistics show continued strong growth in both population and households for the City and County of Honolulu. The Ewa and Central Oahu Development Plan areas, the primary market area for the Makaiwa Hills project, shows even greater percentage growth. Population and households are expected to grow in the primary market area by 108,885 and 54,885 respectively.

In the primary market area, the annual growth in households ranges from 1,580 in 1990 to 1,893 in 1995, to 2,354 in 2000, to 2,964 in 2005 and to 3,766 in 2010 (*Exhibit 12, Appendix N*). Thus percentage growth averages over 3 percent per year compared with county wide growth averaging less than 1.75% annually.

To determine the demand for the Makaiwa Hills project, the total demand for qualified homeowners and renters was estimated as follows:

For owner-occupied housing, four sources of demand were identified: new household growth, turnover of existing renter households, turnover (owner preference) of existing owner households, and seasonal population (second home buyers). In order to further segment the market potential, each of the demand sources was broken down into household income ranges corresponding to housing price ranges by affordability.

Demand for renter-occupied housing in Hawaii is primarily satisfied by housing units owned by investors and to a much smaller extent, by rental housing complexes. For renter-occupied housing, three sources of demand were identified: new household growth, turnover of existing renter households, and seasonal population (seasonal renters). Owner turnover was not a factor in renter-occupied demand as it is assumed that most existing homeowners will not opt for turnover into rental housing.

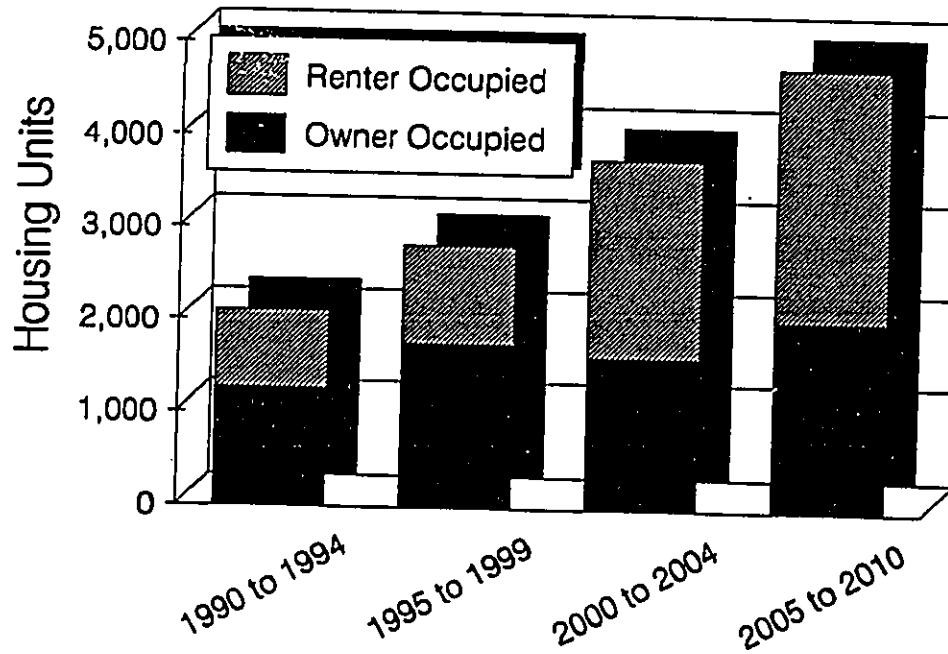
A series of assumptions were made relating to income distribution of homeowners and renters as well as the average down payments made by new home buyers based on past experience. Estimates of propensities to buy versus to rent were developed using information relating to residential resale and new residential building permits as well as 1980 census data. Second home demand, while not currently prevalent in the primary market area is expected to grow with the development of resort activities at Ko Olina and potentially at Ewa Marina.

Based on the above, the market study concluded a total demand for "executive home" products with the primary market area to be:

**PRIMARY MARKET AREA
AVERAGE ANNUAL DEMAND**

	HOUSING UNITS			
	1990 to 1994	1995 to 1999	2000 to 2004	2005 to 2010
Owner Occupied	1,269	1,765	1,633	2,039
Renter Occupied	833	1,056	2,147	2,742
TOTAL DEMAND	2,102	2,821	3,780	4,781

**PRIMARY MARKET AREA
AVERAGE ANNUAL DEMAND**



2. REGIONAL RETAIL DEMAND

Rapid growth in population and employment within the Kapolei region is expected to create opportunities for regional-serving retail development. Given its location along H-1 across from the emerging office center at the City of Kapolei, the proposed regional mall at Makaiwa Hills is expected to draw from a trade area which includes Waiānā, Wahiawa, and Ewa Tax Districts.

According to the Market Assessment, the total demand for retail space is approximately 1,200,000 square feet by the year 2010 with 600,000 square feet devoted to an upscale fashion mall and 600,000 square feet devoted to a regional shopping mall containing two department stores.

C. Absorption Of Acreage

1. RESIDENTIAL ABSORPTION

Of the total demand for "executive homes" presented in Paragraph B.1. above, the estimated capture / absorption rate of the Makaiwa Hills project was estimated by applying a 10% and 15% rate. While the Makaiwa Hills project contains only 5% of the primary market area units, its unique combination of executive housing, hillside location, and possible recreational amenity orientation is likely to provide the project with an advantage in capturing market demand. Based on the 10% to 15% estimate of market share, the project should have an annual demand ranging from a low of 120 units per year in the 1990 to 1994 time frame to 370 units per year in the 2005 to 2010 time frame. Eliminating the extremes, the market assessment estimates an annual unit absorption of 160 to 320 units per year. The demand analysis is conservative in that it does not provide for the reduction of the existing pent-up demand or recent sales data which reflects these overheated conditions.

**PRIMARY MARKET AREA
AVERAGE ANNUAL DEMAND
HOUSING UNITS**

	1990 to 1994	1995 to 1999	2000 to 2004	2005 to 2010
Owner Occupied Demand (\$370,000 plus)	819	1,165	1,276	1,230
Renter-Occupied Demand (\$1,000 plus per month)	390	492	854	1,219
Total Price Qualified Owner and Renter Demand	1,209	1,657	2,130	2,449
Makaiwa Hills Demand				
10% Capture	121-	66-	213-	245-
15% Capture	181	249	319	367

(Source: Appendix N, p. 23)

According to the market assessment, a diversified product mix, aggressively marketed with strong quality control would be absorbed within a 10-year period. This estimate is based on a "menu" of product alternatives for the Makaiwa Hills property and the assumption of stable growth assumptions. All prices assume fee simple ownership and are in 1990 dollars.

2. REGIONAL RETAIL ABSORPTION

A long-range perspective has been adopted in setting aside adequate acreage for commercial use. It is anticipated that the 1,200,000 square feet of commercial development expected by 2010 will utilize approximately 110 acres of the site, assuming a single-story development with at-grade parking (1,200,000 sq ft. / 43,560 = 27.54 acres / development density of 25% = 110.19 acres). The additional 46 acres available for commercial development is expected to serve the continuing residential expansion of the Ewa second urban center and environs as it continues to grow in the future. Potential improvements to the Palailai interchange may also account for a portion of this area.

2.1 Department Store Based Regional Mall

Annual department store sales within the market area are estimated to increase from \$104,000,000 in 1990 to \$237,000,000 in 2010. This increase is estimated based on an average \$426 (1990) expenditure per person annually for department store sales. It also assumes a 20% leakage to department stores outside the trade area. Based on an estimated \$250 per square foot annual sales rate, the Makaiwa Hills retail area could absorb 300,000 square feet of department stores by 2010. Using the average ratio of department store space to total space of Oahu's Ala Moana, indicates a 600,000 square foot regional mall could be supported at Makaiwa Hills.

2.2 High Fashion Mall

Support for a high fashion mall was determined by estimating department store sales for families with various income levels. Families earning over \$50,000 are assumed to be more likely to shop at such stores due to the higher pricing at the stores. Sales within the market area were estimated to increase from \$60,000,000 in 1990 to \$150,000,000 in 2010. Assuming \$350 per square foot in sales results in a demand for 310,000 square feet of high fashion department stores by the year 2000. Using

the same ratio of department store space to total space as used in the regional mall results in the absorption of approximately 600,000 square feet of space by the year 2000.

D. Employment

It is estimated that the Makaiwa Hills project could provide over 1,600 construction-related jobs during the construction phase. After the Makaiwa Hills project is completed, employment at full operation is projected to reach nearly 2,000 jobs. This projection includes 1,800 jobs associated with the regional mall, about 65 jobs generated by the golf course (if built), and over 100 jobs to maintain or refurbish the homes. Indirect employment supported by on-site commercial activities will number about 1,000 jobs. In addition, consumption expenditures by residents of the Makaiwa Hills project will support about 2,000 jobs. Also, State and County tax revenues derived from residents and businesses within the project will support over 500 government jobs. These indirect jobs will be located throughout Honolulu.

E. Labor Availability

It is anticipated that the construction workers will commute to the Makaiwa Hills site from throughout the island, as is the case with other construction projects on Oahu. Over time, however, an increasing number of construction workers are likely to come from the Ewa area, given the high level of on-going construction activity throughout Ewa and the increasing number of homes being built in the Ewa District. In addition, a large number of construction workers will commute from Waianae since this community has a disproportionately large number of construction workers.

It is expected that most of the employees who will hold jobs at Makaiwa Hills during its full-operation stage will be residents of communities in Ewa and Waianae areas, and to a lesser extent, of nearby communities in Central Oahu. In particular, it is anticipated that the new and growing communities in Ewa will house an additional 43,000 workers by the year 2010.

F. Relationship of Project to the Region

The primary employment benefit of the Makaiwa Hills project will result from the fact that the jobs are located near the City of Kapolei so that the project will contribute to State, County, and private plans to develop Ewa as a well-balanced "Second City" which pro-

vides not only homes, but also jobs and shopping opportunities. This contrasts with the alternative of developing Ewa primarily as a suburb from which residents commute to jobs outside the area. Thus, the jobs to be provided by the Makaiwa Hills project will result in less commuter traffic to downtown Honolulu than would otherwise be the case. In addition the Makaiwa Hills project will provide employment and income to residents of the Waianae district, which historically, has been an area of high unemployment and low incomes.

G. Summary of Need and Demand for the Project

The proposed Makaiwa Hills project targets one of the State's and Oahu's most pressing needs, the need to expand the housing inventory. The proposed 2,130 units of housing, while directed at the executive home market will assist in meeting total housing demand by expanding inventory. At the same time, the proposed Makaiwa Hills project assists in implementing the Ewa Master Plan which has been endorsed by both state and county government through their designation of the Ewa area as the second urban center. Approval of the Makaiwa Hills development would result in the availability of a wide variety of housing types within the Kapolei area. Incorporation of "executive housing" within the Ewa area will attract "decision makers" to the area which should assist in making employment projections for the area materialize.

Retail demand for the development will result from area projected increases in population.

III. PHYSICAL ENVIRONMENT ASSESSMENT

This Chapter focuses on the physical characteristics of the existing environment of the project site, identifies the probable impacts on the physical environment associated with the proposed development and where appropriate, presents mitigative measures to offset any adverse conditions on the environment.

In reviewing this Chapter the public is encouraged to refer to the following appendices which have been the major source for much of the information that follows:

APPENDIX	REPORT	PREPARER
A	Preliminary Engineering Report for the Proposed Makaiwa Hills	Engineering Concepts, Inc.
C	An Archaeological Inventory Survey for the Makaiwa Hills Project Site, Honouliuli, Ewa, Oahu	Cultural Surveys Hawaii
E	Environmental Noise Impact Assessment Makaiwa Hills, Ewa, Oahu	Darby & Assoc.
F	Air Quality Impact Reports Makaiwa Hills, Ewa, Oahu	J.W. Morrow
G	Visual Assessment	Michael S. Chu
H	Makaiwa Hills: Impact on Agriculture	Decision Analysts Hawaii, Inc.
L	Botanical Survey Makaiwa Hills Ewa District, Oahu	Char and Assoc.
M	Survey of the Avifauna and Feral Mammals at Makaiwa Hills, Ewa Oahu	Phillip L. Bruner

A. Topography / Geology
(See Appendix A)

The project site ranges in elevation from about 50 feet mean sea level (MSL) at Farrington Highway, to an elevation of about 1,300 feet at the northern boundary.

Three major gulches and three minor unnamed gulches transect the project site from north to south. The major gulches are Awanui Gulch, Palailai Gulch, and Makaiwa Gulch. Slopes as low as 2 percent exist in the southeastern corner of the site. Across the plateaus and ridges, slopes of about 10 percent are common. Slopes are steeper within the gulches, varying from 15 to 50 percent. Vegetation is mainly characterized by tall grasses with clumps of scattered brush or bushes and eroded patches of ground. Kiawe and koa-haole shrubs are found in the gulch areas.

Impacts

It is anticipated that grading within the project site will be limited to the ridges and plateau areas where slopes are less steep, favoring development. However, some grading in the gulches may be required to support bridges and roadways between ridges.

Mitigative Measures

An effort to balance the earthwork quantities of cut and fill is expected to minimize the cost of the purchasing off-site borrow material and disposing excess excavated material at off-site location.

Dust generation and soil erosion will be minimized by compliance with the city's grading ordinance (Chapter 23, Revised Ordinances of Honolulu). Standard measures to include dust control, temporary grassing, phasing of construction, etc. will be employed to minimize both visual and environmental impacts. See *Chapter V.F., Soil Erosion*, for additional discussion and mitigative measures. All requirements of Title 11, Chapter 26, Paragraph 35 (Rodents; demolishing of structure and clearing of vacant sites and vacant lots) will be strictly adhered to.

B. Climate
(See Appendix A)

The climate in the Ewa Plain region is relatively warm and dry. Tradewinds from the northeast occur much of the time, with occasional Kona winds. The normal temperature range for the region varies from the high 60's (degrees Fahrenheit) to the low 90's. Rainfall is light, with mean annual rainfall of about 20 inches near Farington Highway, and about 30 inches at the northern boundary.

C. Soil Characteristics
(See Appendix H)

Approximately 14 soil types exist on the project site as classified by the U.S. Department of Soil Conservation Service.

SOIL TYPES AND AGRICULTURAL USES	
EaB	Ewa silty clay loam, 0 to 3 percent
EwC	Ewa stony silty clay, 6 to 12 percent
HLMG	Helemano silty clay, 30 to 90 percent slopes
HxA	Honouliuli clay, 0 to 2 percent slopes
HxB	Honouliuli clay, 2 to 6 percent slopes
LPE	Lualualei extremely stony clay, 3 to 35 percent slopes
LvB	Lualualei stony clay, 2 to 6 percent slopes
MBL	Mahana-Badland complex
McC2	Mahana silty clay loam, 6 to 12 percent slopes, eroded
McD2	Mahana silty clay loam, 12 to 20 percent slopes, eroded
McE2	Mahana silty clay loam, 20 to 35 percent slopes, eroded
MuC	Molokai silty clay loam, 7 to 15 percent slopes
rRK	Rock land
rSY	Stony steep land

Of the approximately 1,915 acres proposed for development, about 6 percent of the land in the project area is rated as "prime" agricultural land, and the remaining lands are unrated.

For further discussion on agricultural capabilities and soil ratings please refer to *Chapter IV.B.* of this document and *Appendix H, Makaiwa Hills: Impact on Agriculture* (Decision Analysts Hawaii, Inc.)

Impact

The impacts of the project on soils would likely be erosion and indefinite loss of agricultural lands.

Erosion

Erosion could result from clearing, grubbing and future construction. After construction is completed, however, and landscaping and vegetative plantings have been replaced, it is expected that the level of erosion will decrease. See *Chapter V. F.* for discussion on soil erosion impacts and mitigative measures.

Loss of Agricultural Lands

Agricultural soils will be lost as a consequence of the proposed development. See *Section IV. B.* and *Appendix H* for discussion on diversified agriculture, grazing, and the agricultural policies of the State.

Mitigative Measures

Information from soils investigations will be used in developing future construction plans. These plans will be submitted to various public agencies for review and approval as part of the subdivision approval and building permit process.

The approximately 100 acres of flatlands along the H-1 Freeway which were once used for growing sugarcane are now a pasture for grazing less than two dozen cattle and horses. This operation will be reduced in area in favor of a nursery operation, and eventually will be eliminated when the Makaiwa Hills project is developed. Given the small scale of this operation and the availability of pasture and grazing lands elsewhere in the State (but not in the immediate area), mitigation measures for the loss of pasture lands are not recommended. For a complete discussion of the agricultural issues see *Chapter IV.B.* of this document and *Appendix H.*

D. Flora

(See Appendix L)

Field studies to assess the botanical resources on the project site were conducted by Char and Associates in October 1990. The primary objectives of the survey were to:

- Describe the major vegetation types;
- Inventory the flora; and
- Search for threatened and endangered plant species as well as sensitive native plant communities.

Prior to undertaking the field studies, a search was made of the pertinent literature to familiarize the principal investigator with other botanical and biological studies conducted in the general area. A recent aerial photograph and topographic maps were examined to determine vegetation cover types, terrain characteristics, access, boundaries and reference points. In addition, a reconnaissance survey was made several months earlier.

Existing Conditions

Three major vegetation types occur on the site; all are dominated by introduced or alien species. The *grassland / shrubland* vegetation type is found on the northern half of the site on the tops of more or less broad foothills. Vegetation consists of an open grassland with scattered shrubs. Guinea grass is the most abundant of the grasses although pili grass, pitted beard grass, and buffel grass may be co-dominant in places. Common shrubs in this vegetation type are koa-haole, lantana, and klu. Kiawe forest occurs on the rocky steeply sloping areas and in gulches. The forest varies from closed to open canopy, with Guinea grass abundant in the bottoms of gulches. On the rocky gulch slopes both Guinea grass and buffel grass are the dominant ground cover plants. The *buffel grass community* is found on the level portion bordering Farrington Highway which was once in sugar cane cultivation. This area is now largely overgrown with buffel grass and scattered clumps of shrubs as koa-haole, Christmas berry, and pluchea. A large part of the site is used for grazing cattle and horses. Areas with erosion damage are common on the upper sections of the site.

A total of 103 vascular plant species were found on the site. Of these, 91 (88.3%) are introduced or alien species and 12 (11.7%) are native. None of the plants found on the site are officially

listed, proposed, or candidate threatened and endangered species.

Impacts

The existing vegetation will be removed on the areas suitable for development. However, there is not expected to be any significant negative impacts to the botanical resources as the vegetation occurring in these area is dominated by introduced species. These species occur widely throughout the Hawaiian Islands in similar environmental habitats. Of the 12 native species found on the site, three are endemic, that is they occur only in the Hawaiian Islands; these three are kumu-niu (a fern), nehe, and pua-kala. All are found on the steep, rocky gulch slopes where no development is planned. In fact, large areas on the site will be retained in their open natural state because they are too rugged to be developed.

Mitigative Measures

There is little of botanical interest or concern on the site as it is dominated by introduced species. Portions of the site have also been heavily grazed. Of concern, is the loss of soil once the vegetation cover is removed. It is recommended that landscaping be initiated as soon as possible to prevent increased soil erosion. For a complete list of vascular plant species inventoried during the field studies see *Appendix L*.

E. Fauna

(See Appendix M)

An Avifaunal and Feral Mammal Survey was conducted (Phillip L. Bruner, Assistant Professor of Biology, BYU-H) on the project site in July and August 1990. The objectives of the survey were to:

- Document what bird and mammal species occur on property or may likely occur given the range of habitats available.
- Provide some baseline data on the relative abundance of each species.
- Supplement these findings with published and / or unpublished data.

- Evaluate the possible changes that might occur in bird and mammal populations following the proposed development of the property.
- Determine if any special or unique habitats important to birds and mammals occur on the property and if necessary suggest some possible ways these areas may be protected.

Existing Conditions

No endemic land birds were recorded during the course of the field survey. The only likely endemic species which might occasionally forage in the area is the Short-eared Owl or Pueo (*Asto flammeus sanwicensis*). Pueo are diurnal and can be found in upland forest as well as lowland grasslands and fields. The State of Hawaii Department of Land and Natural Resources, Division of Forestry and Wildlife lists the Pueo as endangered on Oahu.

No resident indigenous birds or seabirds were recorded nor would be expected at this site given the types of habitat available.

Seabirds typically nest on offshore islands which are free from disturbance by dogs, cats, mongooses and rats. No seabirds were found during the survey and it is unlikely any would nest at this site due to the presence of predators. Char and Whistler (1986) report seeing a White-tailed Tropic bird (*Phaethon lepturus*) flying over the makai section of the property.

No migratory shorebirds were recorded during the survey. Given the time of year it is unlikely that any would be found since the spring migration had already taken place in late April and they do not return until August. The Pacific Golden Plover (*Pluvialis fulva*) and Ruddy Turnstone (*Arenaria interpres*) are common migrants which can be found on lawns and fields as well as along the intertidal zone. It is likely that both of these species occur on this property during the "winter" (August-April). Johnson et al. (1981) and Bruner (1983) have shown plover are extremely site-faithful on their wintering grounds and many establish foraging territories which they vigorously defend.

A total of 16 species of exotic birds were found during the field survey. The most abundant species were Zebra Dove (*Geopelia striata*), Red-vented Bulbul (*Pycnonotus cafer*), Nutmeg Mannikin (*Lonchura punctulata*) Common Waxbill

(*Estrilda astrild*) and Red Avadavat (*Amandava amandava*). Exotic species not recorded on the survey but which could potentially occur at this locality include: Ring-necked Pheasant (*Phasianus colchicus*), Japanese Bush-warbler (*Cettia diphone*), Chestnut Mannikin (*Lonchura malacca*), Java Sparrow (*Padda oryzivora*), Eurasian Skylark (*Alauda arvensis*), Gray Francolin (*Francolinus pondicerianus*) and Barn Owl (*Tyto alba*) (Pratt et al. 1987; Burner 1988b, 1990a, 1990b; Hawaii Audubon Society 1989).

The only feral mammals observed during the survey were cats and the Small Indian Mongoose (*Herpestes auropunctatus*). No rats or mice were recorded, but they undoubtedly do occur on the property. Domestic cattle were found grazing over most sections of the property.

Impacts

The proposed development will result in the creation of a more diversified range of habitats. These changes may result in some species becoming more common while others may decline in abundance. Species which could become more common include: Pacific Golden Plover, House Sparrow (*Passer domesticus*), Common Myna (*Acridotheres tristis*) and Japanese White-eye (*Zosterops japonicus*). These species which should decline in numbers as the present habitats are altered are: Erckel's Francolin (*Francolinus erckelli*), Red Avadavat, Common Waxbill and Nutmeg Mannikin.

Mitigative Measures

From the perspective of birds, there is nothing special or unique about this property. Abundant second growth habitat of this sort occurs throughout the lowlands of West Oahu. For a list of exotic birds and their relative abundance on the site, see *Appendix M, Table 1*.

F. Archaeological / Historic

(See Appendix C)

An archaeological inventory survey was performed for the entire project area by Cultural Surveys Hawaii (CSH) in 1990 and included the following tasks:

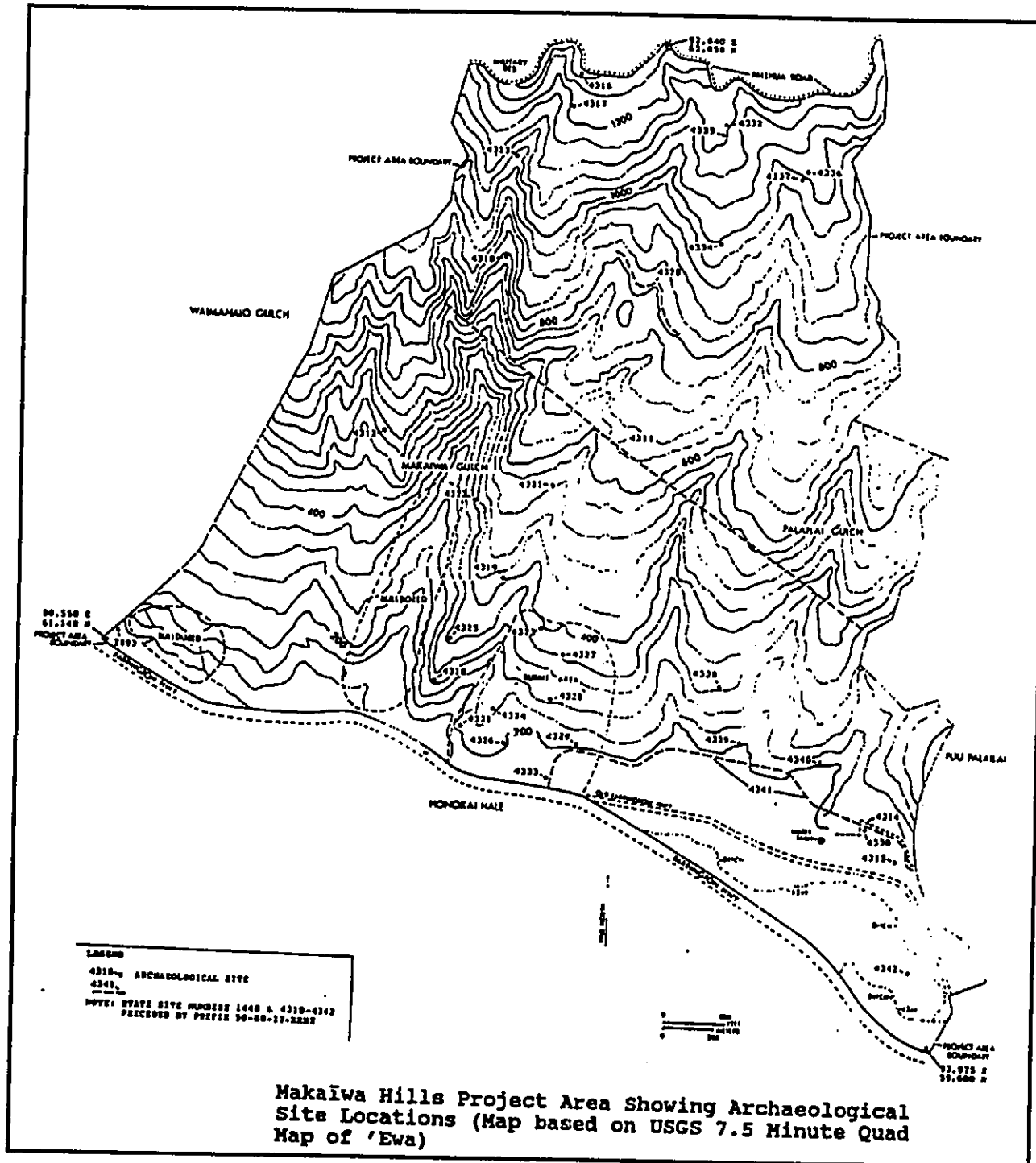
- A field survey of the entire acreage involving 125 man days of survey sweeps for the purpose of locating all archaeological sites.
- Documentation of these sites including scale maps, verbal descriptions, and photographs.
- Limited subsurface testing to determine depth of deposit and to estimate cultural content.
- Evaluation of sites for significance according to National Register Criteria.
- Preparation of a report to include all site documentation, significance evaluations and survey results in the context of the region.

This report has been completed with a draft submitted to the Historic Preservation Office (DLNR). Review comments from DLNR have been received, and the report as presented in Appendix C, Volume II incorporates changes and additions addressing DLNR review comments.

Impact

During the field work, 34 sites were located, including habitation structures (permanent and temporary), agricultural features (terrace and mounds), rock shelters, a possible rock shelter quarry, petroglyphs, ahu(s) and various other structures associated with sugarcane cultivation attributable to the Ewa Plantation Company.

Eighteen of the 34 recorded sites are considered "likely to yield information important to prehistory and history." Of these, 18 sites, four are also evaluated as excellent examples of site types. The consultant recommends that these four sites be considered for preservation pending results of subsurface testing.



Two features of Site 50-80-12-2893 (rock shelters, petroglyphs/permanent habitation) are within the southwest corner of the project area. Feature 1 is a rock shelter with a terraced activity area. Feature 2 is a petroglyph concentration of approximately 50 figures. All other components of the site are outside the project area and are believed to have been impacted by construction of the Ko Oline Interchange Road. The site, the subject of previous research, is located along the base of a large

outcrop ledge above Farrington Highway. According to the preliminary site plan (Figure 5), the site is in an area designated as Preservation (lower). The consultant and DLNR recommend this site for preservation. This is believed to be the largest complex of petroglyphs on the island of Oahu and is a highly significant cultural site. Treatment of this site will be addressed in a detailed preservation plan submitted for review and approval by DLNR. Plans should include systematic recording of the figures taking latex casts and interpretative treatment.

Impact on the other significant sites will be mitigated according to detailed data recovery and preservation plans which will consider relative information of significance and preservation value in relation to impact on specific site areas as development plans proceed.

Of the 34 sites, sixteen, including structures associated with the Ewa Plantation Company, historic cattle walls and various other amorphous and disturbed mounds and ahu(s), are considered to be no longer significant and are not recommended for further work.

The table and map provided on the following pages are taken from Appendix C and summarize the survey findings and CSH significance evaluation (C=site excellent example of a site type; D=site may be likely to yield information important in prehistory or history; NLS=No Longer Significant; P=possible preservation: pending data recovery results).

Mitigative Measures

To implement CSH's findings and recommendations, the Applicant will, in consultation with the Historic Sites Office, State Department of Land and Natural Resources, undertake further archaeological work (surveying, testing, data recovery/mitigation, excavation etc.) relating to appropriate preservation and management plans for the site. Data recovery and preservation plans will be submitted to DLNR for review

Table 1
Site Summary With Recommendations and Significance

CSH Site #	State Site # (50-80-12)	Description / Function	Significance	Recommendations
-	2893	Rockshelters; petroglyphs/Perm. habitation	C,D,E	Preserve
2	4310	Enclosure/Historic hunting shelter	NLS	None
3	4311	Wall/Cattle wall	NLS	None
4	4312	C-Shape enclosure/Temporary habitation	D	Data Recovery
5	4313	Terrace/Agricultural	D	Data Recovery
6	4314	Wall/Associated w/sugarcane cultivation	NLS	None
7	4315	Terrace/Associated w/sugarcane cultivation	NLS	None
8	4316	Wall-alignment/Poss.cattle wall	NLS	None
9	4317	Circular enclosure; platform/Recurrent habitation	D	Data Recovery
11	4318	Circular enclosure/Temp. habitation-shelter	D	Data Recovery
12	4319	Rockshelter w/interior terrace/Perm. hab.	C,D	Data Recovery, P+
13	4320	Retaining wall/Historic road	NLS	None
15	4321	Rockshelter w/interior terrace/habitation	C,D	Data Recovery, P+
16	4322	Rockshelter w/interior ahu/Quarry	D	Data Recovery, P+
17	4323	Ahu/Marker	NLS	None
18	4324	Mound; ahu/Agricultural	D	Data Recovery
19	4325	C-Shape enclosure; ahu/Temp. Habitation	D	Data Recovery
21	4326	Enclosure/Temporary habitation	D	Data Recovery
22	4327	Ahu/Marker	NLS	None
23	4328	Rockshelter complex (3)/Permanent habitation	D	Data Recovery, P+
24	4329	Enclosure/Modem	NLS	None
25	4330	Platform/associated w/sugarcane cultivation	NLS	None
26	4331	L-Shape enclosure/Temp. habitation	D	Data Recovery
27	4332	Circular enclosure/Temp. habitation	D	Data Recovery
29	4333	Wall Segment & bulldozed pile/Sugarcane cult.	NLS	None
30	4334	Circular enclosure/Temporary habitation	D	Data Recovery
31	4335	Mound/Disturbed clearing mound	NLS	None
32	4336	Rectangular enclosure/Recurrent habitation	D	Data Recovery
33	4337	Circular enclosure/Temp. habitation	D	Data Recovery
34	4338	Rockshelter complex/Permanent habitation	C,D	Data Recovery
35	4339	Platform/Associated w/sugarcane cultivation	NLS	None
36	4340	Circular enclosure/Sugarcane cult. pumphouse	NLS	None
37	4341	Ditch/Sugarcane irrigation	NLS	None
38	4342	Circular Structure/Sugarcane cult. reservoir	NLS	None

Key: C Site is an excellent example of a site type
D Site may be likely to yield information important in prehistory or history
NLS No longer significant
P+ Possible preservation: Pending data recovery results.

NOTE: Recurrent habitation means periodic or seasonal re-use of a site for the same general purpose

and approval. The final site design layout will reflect the approved preservation plan and will include adequate buffer zones around preserved sites. Also, should the possibility arise of encountering unknown archaeological features during construction activities, work will be suspended for an inspection by the monitoring archaeologists or appropriate experts and an evaluation will be made to determine additional mitigative measures. Should significant findings be made, the State Historic Preservation Office will be immediately notified.

G. Noise

(See Appendix E)

Field noise measurements and analyses were conducted by Darby & Associates to assess the potential noise impact of the proposed project.

Impact

Existing and future noise sources which may affect the proposed project site and its surroundings include:

- Aircraft noise from operations associated with Naval Air Station Barbers Point (NASBP) and Honolulu International Airport (HIA).
- Traffic noise
- Sugar cane activities (closest existing canefield is at least 1,000 feet makai of Farrington Highway from the nearest proposed homes)
- Construction noise
- Commercial Regional Mall (proposed)
- Golf course activities (if built)

Apart from locations near Farrington Highway, most of the site is currently exposed to relatively low noise levels with existing daytime background (L90) levels of typically 40 dBA or less. In addition, most of the site is also subjected to overall noise exposure levels of less than Ldn 55, a clearly acceptable noise environment for residential, recreational and commercial purposes.

All but a small area near the mauka / Diamond Head corner of the site is exposed to a Day-Night Average Sound Level (Ldn)

due to aircraft noise of less than 55 dBA. Thus, aircraft noise exposure is in clear compliance with the State Department of Transportation's Ldn 60 residential area limit.

Some of the proposed residential areas near Farrington Highway will, however, be exposed to existing and future Ldn's of higher than the Department of Housing & Urban Development's 65 dBA limit for conventional construction.

Mitigative Measures

Various noise mitigation measures, particularly for the residential areas proposed closest to Farrington Highway include providing sound barriers next to the freeway (such as walls or landscaped earth berms, which must be high enough to clearly block line-of-sight to the freeway traffic), and appropriate building orientation and design, such as:

- (1) Avoiding the use of multi-story homes in these areas, and orienting the buildings so that bedroom windows do not directly face Farrington Highway.
- (2) Restricting the use of jalousie windows to non-critical areas, such as bathrooms, laundries, etc.
- (3) Air-conditioning noise-sensitive areas, such as bedrooms, so that windows may be kept closed for noise reduction purposes.
- (4) Providing additional sound absorptive treatment in bedrooms (carpets with padding, louvered closet doors, etc.) to reduce reverberant sound buildup.

The commercial regional mall should be in compliance with appropriate Department of Health and LUO property limits and within the development itself, provided that the appropriate noise control measures are incorporated in the design. Noise control measures could include the following:

- (1) Partial or complete acoustical enclosures for supermarket refrigeration equipment.
- (2) Sound attenuators on building and garage exhaust fans.
- (3) Inlet and discharge silencers on cooling towers.

- (4) Acoustical louvers or silencers at mechanical and electrical equipment room air intake and discharge openings.
- (5) Appropriate vibration isolation mounts; mechanical and electrical equipment room wall, floor and ceiling constructions; acoustical linings etc.

If a golf course is built, the design of the facilities will include noise mitigation measures in the planning of the location and orientation of the air-conditioning equipment, exhaust fans, etc., in order to satisfy local noise regulations.

Additional, project-generated traffic on Farrington Highway and other nearby roads should not cause any significant environmental noise impact. Noise due to construction of the project is expected to be short-term.

H. View Assessment

(See Appendix G)

A View Assessment was prepared by Michael S. Chu, Land Architect (1990). The purpose of the assessment was to identify potential visual impacts caused by the development on exist visual resources In the area. The assessment was based on site inspections of the site as well as a review of existing public policies and objectives regarding public scenic resources as seen from important public roadways and from other public viewing points such as parks and schools.

The view assessment focused primarily on the broad visual implications of the proposed project, since the plans at this stage did not contain specific site details such as building locations and other design features. As the project plans become more detailed (such as during the rezoning stage), further investigation into potential view impacts may be appropriate.

The assessment found that the visual character of the Ewa District, traditionally noted for its rural/agricultural character, has been significantly altered over the past few years. A newly emerging visual character consisting of new structures and urban development, roadways and ornamental landscape treatments is steadily replacing many agricultural or undeveloped acres. This shift in visual character is most apparent within the low lying Ewa Plain and along the highway. The mauka side of the highway, containing Makakilo residential community, the Waimanalo Gulch landfill and

the Ko Olina overpass also contribute to the changing character of the region. Based on existing DP land use policies, further changes are likely to continue in the area

The assessment found that the inherent visual attributes/resources of the Ewa District consist of the overall expansiveness of open space and the continuous public views as seen from the highway. Although the visual character is in transitions, these views overlooking vast portions of the low lying Ewa Plain (makai) and the foothills (mauka) have remained basically intact.

Photos of the site and surrounding areas are illustrated on *Figures 11, 12 and 13.*

In examining the urban design policies of the district, the report found that except for recommended building heights and brief statements regarding visual/scenic resources, the urban design considerations of the Ewa DP Special Provisions contained minimal guidance with regards to the desired visual character or treatment of visual resources outside of designated Special Areas. Although open and essentially undeveloped, the project site has not been identified in government documents as an important open space. Also, it is not accessible to the public and is only viewed by passing motorists, where the main view attraction is makai of the highway.

Impact

Short-Term Impacts

- Site grading and construction activities could create temporary, short-term adverse impacts. These impacts will be substantially minimized by developing the project into phases which will be incrementally constructed over the course of several years. Conversely, the duration of impacts will occur over a longer period of time. Strict compliance with State and City controls relating to development will help mitigate the impacts.

Long-Term Impacts

- The open, undeveloped character of the site will change to an urban environment.
- The 726 acres of residential land use within the foothills may affect the character of the highway and mauka views.

- The proposed commercial land use will be visible from the highway.
- The proposed residential land uses infrastructure and construction of bridges between the gulches may affect the natural landscape and character of the foothills.
- Combustion gases may be visible and may impinge upon the project site from the existing Hawaiian Electric Company (HECO) Kahe Generating Station. The occurrence of exhaust emissions is not a visual impact resulting from the project, but instead could impact project residents in visual proximity to the emissions. Although details are unknown at this time, HECO has expressed that their plans may involve additional and possibly higher stacks and increased emissions.

Mitigative Measures

Adverse visual effects of the proposed Makaiwa Hills project may be mitigated and in certain instances, may enhance the environment through desirable planning / design features contained in the proposed land use plan. These features and considerations are as follows:

- Open Space — Approximately 47% of the project site will remain in open space by way of a Preservation land use designation. It will constitute a major amenity and recreational resource not otherwise available under present conditions.
- Bridges — Construction of roadway bridges within the gulches may require special design consideration to minimize adverse impacts upon the natural character of the gulches.
- Residential Set Backs — The proposed Residential land uses do not abut the highway but are instead set back approximately 300+ feet and will be buffered and landscaped with a 180-acre Preservation zone.
- Commercial — the proposed commercial area is highly visible from the highway. Commercial development may seek to minimize potential impacts through appropriate site layout and building design.

- Overhead Utilities — Coordination with HECO could be conducted to determine lines that can be relocated underground.
- Lower Preservation — Left in its natural condition, the Lower Preservation area will insure continuous open space along a major segment of the highway; however may be an oddity in comparison to the changing character of the district.
- Lower Preservation, Golf Course Option — Under the golf course scenario, the assessment recommends that landscape treatment along the edge of the highway avoid the creation of a visual buffer or "corridor". With view penetration into the Preservation / golf course area, it is conceivable that the quality of the views from the highway will be enhanced and will unify the visual character of the roadway with other recently improved segments.
- Kahe Generation Station — According to HECO, (see HECO EISPN letter, December 17, 1990) air quality standards for existing stack gas pollutants are within the Federal and State air quality standards, and any future additions to the Kahe Station will comply with applicable environmental regulations in effect at that time. Although plant expansion details are unavailable at this time, disclosure will be made to prospective purchasers and residents of the Makaiwa Hills project of the possible impact of the HECO's nearby station.

I. Air Quality (See *Appendix F*)

An air quality assessment for the proposed development was conducted by J.W. Morrow, Environmental Management Consultant. The study includes impacts associated with mobile source impacts, pesticide use, and construction activities. *Tables 1 through 11 of Appendix F* provide information on air sampling and monitoring data and estimates of downwind pesticide concentrations. *Figures 1 through 13 of Appendix G* include site photos and graphs depicting existing site conditions and air quality samplings conducted at Kamchameha Highway and Marconi Road. Air quality impact was evaluated for existing (1990) and future (2010) conditions.

While there is no air monitoring station in the project area, air quality is believed to be in compliance with State and Federal standards due to the essentially undeveloped nature of the area. Microscale analysis indicates that the 1-hour "worst case" concentration estimates at the proposed Intersections "A" and "B" along Farrington Highway and along the H-1 Freeway east of the Palilai Interchange indicate compliance with Federal and State 1-hour CO standards under both current and projected peak traffic conditions. The results are summarized in *Figures 10, 11, and 12 of Appendix F*.

Impact

During the construction phase, there will be short-term air quality impacts associated with site preparation (fugitive dust) and movement of construction vehicles (exhaust gases and particulates). Heavy construction vehicle traffic on nearby roadways can also reduce roadway capacity.

Off-site short-term impacts associated with construction include the operation of asphalt concrete and concrete batch plants to provide the material for road building and foundations. Those plants will emit pollutants while they are producing products for the proposed project.

The primary long-term impact of the project will be associated with the motor vehicle traffic generated by it. An air quality impact analysis based on cumulative traffic volumes indicated that while there will be increase in carbon monoxide levels along the Farrington Highway - H-1 Freeway corridor with or without the project, state and federal air quality standards will continue to be met.

The project will also cause an increase in electrical demand which in turn will result in greater emissions from power plants. The project will also generate solid waste which will likely be burned at the newly opened resource recovery facility, H-POWER, resulting in pollutant emissions with the residues then transported to the nearby Waimanalo Gulch Landfill.

It should also be noted that some project residents themselves may experience the air pollution impacts associated with increased electrical and solid waste generation since the Kahe Generating Station and Waimanalo Gulch Sanitary Landfill are located adjacent to the project site. HECO expects to make generation additions in the future (see HECO EISPN letter, December 17, 1990). They have indicated that permit

applications for future unit additions will comply with applicable environmental regulations in effect at that time.

If a golf course is eventually added in the future, pesticide use associated with its maintenance will have a potential for air quality impact if the pesticides are improperly applied (see also *Chapter VII* for a discussion on air quality impacts associated with pesticide use and *Appendix K*).

Mitigative Measures

For the construction phase fugitive dust can be mitigated by frequent watering of exposed soil areas and the soonest possible landscaping and roadway paving to minimize the length of time of soil exposure. Construction vehicle exhaust are primarily controlled by proper maintenance of vehicle engines to ensure efficient operation. The impact on Farrington Highway can be reduced by minimizing construction vehicle movement during peak traffic hours.

Plants producing material off-site for use during the construction phase must have Department of Health permits to operate and must have demonstrated their ability to meet Federal and State air quality standards in order to receive those permits; thus, the production of materials for the Makaiwa Hills project can be considered as part of their normal operation and thus in compliance with air pollution control rules.

In the long-term, a variety of mitigation measures can be implemented for the impacts associated with vehicle emissions. These include carpooling, development and use of public transit, limited parking facilities, development of in-home or near-home employment opportunities. Electrical emission increases can be reduced by design and practices which reduce electrical demand. The State Department of Business, Economic Development and Tourism has suggested a list of such measures (see DBEDT Letter, *Chapter XIII*). In addition, future residents of Makaiwa Hills should be advised prior to purchase that their property may be impacted by emissions from the Kahe Generating Station during periods of northwesterly winds even though the plant will be in full compliance with state and federal air pollution control rules. Furthermore, they should be advised that visible emissions occur during routine maintenance and that stacks, transmission lines, and other appurtenant facilities may be visible from their property. Finally, they should be advised that due to future population growth, the plant may be expanded to meet the increased electrical demand of that population.

IV. SOCIO-ECONOMIC ASSESSMENT

This chapter addresses the impact of the project on the community environment, its impact on agriculture, and the effects on State and County finances. Where appropriate, mitigative measures are proposed. In reviewing this Chapter, the public is encouraged to refer to the following reports in the Appendices listed below, which have been the major source for much of the information that follows:

APPENDIX	REPORT	PREPARER
D	Social Impact Assessment of Makaiwa Hills	Earthplan
H	Impact on Agriculture	Decision Analysts Hawaii, Inc.
J	Impact on State and County Finances	Decision Analysts Hawaii, Inc.

A. Social Impact Assessment

References made to Tables, Figures and Sections are contained in *Appendix D*.

1. INTRODUCTION AND BACKGROUND

Earthplan prepared a social impact assessment for the Environmental Impact Statement on Makaiwa Hills, with assistance from independent contractor Michael P. Mays. This social impact assessment provides a profile of the existing community to establish the social context in which project impacts may occur. This baseline data is extended by identifying the community's possible future scenario independent of the proposed project. Community issues and concerns are identified, based on community interviews and historical trends to date. In terms of social impacts, this report identifies the likely impacts of the project in terms of (1) population; (2) regional character; (3) nearby uses; (4) on-site uses and (5) public services and facilities.

Following are excerpts from the assessment:

2. PROFILE OF THE EXISTING COMMUNITY

2.1 Existing Communities In The Study Area

The Study Area for this report is the Ewa Development Plan area. The communities nearest Makaiwa Hills are as follows:

The existing communities makai of the project site are *Honokai Hale and Nanakai Gardens*, two contiguous residential communities. Developed between the mid-1960s and early 1970s, these communities include 290 residential units. Located east of the project site Gulch is *Makakilo*, a 23-year old residential community offering mid-priced, single family and multi-family housing, and support public and commercial facilities.

Ko Olina Phase 1 is located between Farrington Highway, Honokai Hale / Nanakai Gardens and the ocean. The development program includes 5,200 residential units and 4,000 visitor units. Already completed is an 18-hole golf course and currently under construction are (1) a 500-slip marina, (2) four newly-created sandy beaches, (3) a Hawaiian cultural center, (4) two shopping centers and (5) restaurants.

2.2 Employment

Figures 1 and 2 present estimates of jobs in the Ewa region in 1985. *Figure 1* shows that military jobs were the largest category of employment, with about 39 percent of the total 11,121 Ewa region jobs. *Figure 2* confirms this by showing that almost half of Ewa's jobs were located at the Naval Air Station, Barbers Point. The area from Ewa Villages to Honokai Hale contained over one-fifth of Ewa's total jobs; almost half of Ewa's industrial jobs are in this area, with the presence of the Campbell Industrial Park. Makakilo, a predominantly residential community, contained only three percent of Ewa's total jobs.

2.3 Population And Housing

Between 1980 and 1989, Oahu's population grew about ten percent, from 762,564 in 1980 to 841,600 persons in 1989. Most of the island's 282,330 dwelling units in 1989 were used for residential purposes; only about three percent of these were resort condominium units. In 1980,

approximately 52 percent of the islandwide residential units were single-family residences; this share decreased slightly to 49.6 percent in 1989.

Population growth in the Ewa region was proportionally smaller than the Oahu population increase. *Figure 3* shows that the Ewa region grew from 36,324 persons in 1980 to 39,338 persons in 1989, for an eight percent population increase. Most of the 1980s growth occurred between 1985 and 1989. In terms of average annual growth rates, the Ewa region experienced strong growth in the 1970s, remained virtually stable between 1980 and 1985, and started to grow again between 1985 to 1989, as indicated in *Table 1*.

Figure 4 illustrates the growth patterns of the separate communities. In the 1970s, most of Ewa's growth occurred in Ewa Beach, where the population almost tripled during that decade and remained around 12,300 persons thereafter. Makakilo's population more than doubled between 1970 and 1989 for a recent population of about 10,000 persons. Growth in the Ewa to Honokai Hale / Nanakai Gardens region has been slow but steady since 1970; since 1985, however, growth has been accelerating due to the addition of Ewa Gentry units.

Table 2 indicates that, in 1989, the Ewa region contained 10,192 housing units. About 60 percent are single-family units, while only 17 percent are multi-family units. Approximately 23 percent of Ewa's housing units are in military housing. Compared to the islandwide household size of 2.9 persons in 1989, Ewa had an average of 3.8 persons per household.

2.4 OTHER POPULATION CHARACTERISTICS

Compared to islandwide proportions, Ewa had the following characteristics in 1980 (*Table 3*):

- slightly younger than the rest of the island, with a median age of 25.6 (Oahu: 28 years);
- significantly higher proportions of Caucasians and Filipinos, a moderately higher proportion of Hawaiians, and fewer Japanese and Chinese people.

- fewer people born in Hawaii and more people born in other parts of the United States;
- slightly less educated, with 12.4 percent completing four-year college (Oahu: 21.7 percent)
- lower mean family income.

2.5 PROFILE OF COMMUNITIES NEAREST THE PROJECT SITE

The communities nearest the project site are Honokai Hale / Nanakai Gardens, and Makakilo. Because of the proximity and potential for interaction with Makaiwa Hills, these communities are further described. Note that Honokai Hale / Nanakai Gardens area is included with Ewa Villages in the census district and traffic assessment zones; thus, the Ewa-to-Honokai Hale area includes these communities in this discussion.

Population and Housing — Based on an average household size of 4.1 persons, about 1,200 persons resided in Honokai Hale / Nanakai Gardens in 1989. An estimated 9,928 persons lived in Makakilo. Hence, approximately 11,100 people lived near the project site in 1989. Makakilo is expected to continue growing.

Employment — The Ewa-to-Honokai Hale area contained one-fifth of Ewa's total jobs. Because of its strong residential character, Makakilo accounted for only two percent of Ewa's total jobs.

Social and Economic Characteristics — With a median age of 33.1 years, Ewa-to-Honokai Hale was the oldest community in Ewa. The median age of Makakilo was similar to the regional median. Of all of these communities, Makakilo tended to resemble the regional ethnic breakdown and had similarly large proportions of Caucasians and Filipinos. The Ewa-to-Honokai Hale area had the lowest proportion of Caucasians, and a high proportion of Filipinos. Makakilo and Ewa-to-Honokai Hale had higher proportions of Hawaii-born residents.

Compared to the islandwide residents, Ewa communities had proportionally fewer people completing a four-year college, although Makakilo's share was higher than the regional average.

3. POLICIES AND PROPOSALS WHICH WILL AFFECT THE COMMUNITY'S FUTURE

The baseline data provided in *Section 2* was expanded with an analysis of public policies and other major public and private developments. As shown in *Table 4*, Ewa is targeted to accommodate 12 to 13.3 percent of the total islandwide population. These proportions translate to a range of 119,940 to 132,934 persons in Ewa. The 2010 target population means that Ewa's population is anticipated to increase over three times the 1989 population. Given such public policies, as well as proposed developments in the Ewa region, a likely scenario for the Ewa region without Makaiwa Hills is as follows:

- (1) Significant Increase In Residential Population — *Table 5* presents an estimated Ewa population of 131,400 persons by the year 2010.
- (2) Significant Increase In Employment — Public policies call for establishing job centers in Ewa which will ideally redirect traffic activity away from the Primary Urban Center. Market study projections indicate that job opportunities within the planning region are projected to increase about 600 percent over a twenty year period.
- (3) Establishment Of City-Related Mixed Uses And Secondary Urban Center In "Western" Ewa — Kapolei City, Ko Olina Phase 1 and the James Campbell Industrial Park, all situated in the western half of the Ewa Development Plan area, are major employment generators — which essentially create the city-like environment in the "secondary urban center," as defined by the City and County of Honolulu General Plan. This urban environment would complement and support nearby residential communities which include the Kapolei Villages, Kapolei Knolls, Makakilo, and Honokai Hale / Nanakai Gardens.
- (4) Intensification Of Residential Uses In Eastern Ewa — The City and County of Honolulu General Plan designates the eastern half of Ewa, generally the area along Fort Weaver Road, as Ewa's urban-fringe and this area is intended primarily for residences.

- (5) Retention Of Military Uses — The NASBP and the IPP Military Family Housing will likely continue their operations.
- (6) Land Banking In Eastern Ewa — The State is working towards reserving over 2,000 acres in eastern Ewa for future uses.

4. PRELIMINARY COMMUNITY ISSUES ON MAKAIWA HILLS

4.1 Community Issues Independent Of The Proposed Project

The types of issues addressed by a Neighborhood Board often reflect values and concerns of the constituent population. This study examined the minutes of the Ewa Neighborhood Board No. 23 over a three-year period. Generally, this Board dealt with two areas of community issues:

- (1) Problems Typically Associated With Stable, Active And Predominantly Residential Communities — These included controlling and minimizing crime, improving the quality and facilities in the public education system, improving roadway infrastructure and circulation, monitoring and improving recreational facilities, and improving the delivery of ambulance, police and fire protection services. As a whole, the Board maintained an ongoing working relationship with the Ewa Beach, Makakilo and Honokai Hale Community Associations. This Neighborhood Board also worked closely with public officials in advocating community improvements.
- (2) Potential Effects Of Proposed Developments — This Neighborhood Board is somewhat unique among the other neighborhood boards in that Ewa is a community in constant transition. New communities and development proposals were discussed at virtually every meeting during this two-year period. Generally, this Neighborhood Board tended to support these developments, providing that (1) the proposal is consistent with the Kapolei Master Plan of The Estate of James Campbell and (2) the proposal addresses the necessary infrastructure and public service requirements.

Major issues and concerns within the last year included (1) gang violence; (2) transportation and traffic; (3) height changes; and (4) concern over some proposals, including potential heavy industrial use at the proposed Kapolei Business-Industrial Park and noise and light impacts of a proposed Ko Oline Tennis Center. Further, even though the Board supported the existing and temporary Hawaii Raceway Park, members encouraged that a permanent site be found outside the Ewa region.

The Estate of James Campbell assembled the Community Advisory Committee on the Secondary Urban Center which provides community input into the Estate's planning process. In 1987, a series of community workshops were held to define community issues and needs for community services and facilities. Although the information may be dated, it nevertheless provides a good indication of the community's desires and expectations of their future community.

Participants envisioned an array of governmental services, ranging from a fully-operational police station in the Ewa (Kapolei) Town Center to a secondary City Hall providing a full range of services and auxiliary state offices. They wanted to see developers set aside relatively level and "expandable" sites for all schools and advocated moving West Oahu College to Ewa. Further, there was a desire for active recreation and cultural facilities at the planned Kapolei Regional Park and a central library and museum adjacent to the Kapolei Regional Park.

4.2 Community Issues on Makaiwa Hills

Earthplan conducted interviews with 32 community residents and organization leaders to supplement information from printed sources of material regarding community needs and values, and to identify community issues and concerns relative to Makaiwa Hills. No attempt was made to assess the extent or "quantity" of project support or opposition.

As of this writing, project presentations have been made to community associations near the project site, but not to the Ewa Neighborhood Board. The Development Plan/Environmental Assessment for the project or Summary Sheet were mailed to some of those interviewed,

including those who were officers in community organizations and those who own property adjacent to the project site.

This identification of issues is preliminary. As the study progresses, and as more people learn about specific aspects of Makaiwa Hills, the issues may change to reflect greater awareness of the project and changing community values.

Except for reactions to the project's housing component, there were no extremes in opinion to either development in Ewa or the Makaiwa Hills project. The proposed project generated neither overwhelming support nor strong opposition; instead Makaiwa Hills stimulated discussion primarily about Ewa development and secondarily about people's concerns regarding the site and project components.

The following summarizes reactions and opinions shared in the interview process:

1. **Moderation of Support / Acceptance of Ewa Development.**

Ewa organizations, and presumably the constituents they represent, have historically supported the development of a second city. This support continues, but informants are exhibiting slightly more caution about growth than previously found in other studies.

Most of those interviewed felt that Ewa development is generally good, but stressed that public facilities and services must keep pace with this development. Some expressed resignation at an inevitable future of an urban environment; they neither liked or disliked what was to come. A few felt overwhelmed by the pace of change; two people indicated that they planned to leave in a few years because of the increased population.

The effect of Ewa development on property values was a concern. Although some appreciated higher property values, others feared that older residents would be unable to keep up with increased property taxes.

2. **Predominance of Regional Issues**

Most of the issues raised by those interviewed concerned the effects of Makaiwa Hills on the region, rather than on the immediate environs. Almost all of those interviewed wanted developers and public officials to make sure that regional infrastructure systems are improved at the same pace as development. Some stressed that they did not necessarily hold private developers responsible for the infrastructure. Rather, they felt that the public sector, having advocated the second city concept, should be spearheading efforts to improve facilities. Further, informants were concerned that, even though much planning is going into the development of Kapolei, infrastructure improvement may end up being reactionary rather than pro-active.

Well-planned adequate infrastructure systems were desired by most:

- Informants questioned the adequacy of the existing water supply; some urged desalination while a few did not want to see valuable water used to keep golf courses green.
- The capacity of Honouliuli Sewage Treatment Plant was a concern of many, and they wanted to see secondary treatment established before major growth occurs.
- Traffic was the most frequent issue, and many felt that growth is already taking its toll. Wider roads and fixed transit were recommended.
- People were also concerned about whether the existing and planned public schools were adequate to meet the increased demand resulting from the project.

The other regional issue was housing. Most of those interviewed did not object to upscale and executive housing. They suspected that there is a market for such housing and that the project would only be built if it were an economically-feasible venture. There was also a feeling that the more affluent residents would help Ewa's economy and "round out" the social char-

acteristics of the Ewa region. Those who had no objection to upscale housing generally did not mind locating the project's affordable requirements off-site.

Others wanted to see a more mixed community. They felt that there should not be any kind of exclusivity in Ewa. To them, the affordable units should be on-site, and that there should be more multi-family units.

3. Site Specific and Non-Housing Project Components.

The site specific issues were raised by residents of Honokai Hale / Nanakai Gardens and Makakilo, as well as by other users near the project site. Ewa Beach and Ewa Villages residents tended to deal with region-wide issues.

Residents and users makai of the project site were very concerned that the development of the project site may cause drainage problems for the lower areas. These informants also expressed apprehension that construction impacts of dust and noise would directly impact them because of prevailing tradewinds. Makakilo residents were not worried about construction.

Honokai Hale / Nanakai Gardens residents remembered that the on-site Makaiwa Gulch was previously proposed for a landfill. They felt that Makaiwa Hills is a much better alternative.

People who lived or operated an activity mauka of the project site were concerned about how the project might decrease their isolation.

The only reaction regarding the commercial component was favorable; nearby residents wanted the convenience of a new regional shopping center. A possible golf course received mixed reactions. Some felt it would improve the project site's frontage along Farrington Highway; others either did not see a need for the golf course or felt that it was a waste of water. There was also concern that the on-site school may end up being "exclusive" because of the upscale nature of the project.

5. POTENTIAL SOCIAL IMPACTS OF MAKAIWA HILLS

5.1 Population Impact

Table 7 shows that Makaiwa Hills will increase the Ewa region population by an estimated 6,400 persons. When compared to the potential population allowed by current Development Plan designations, the project-related population is expected to be less than that already accommodated. It is estimated that the 103 acres designated Low Density Apartment and the 40 acres designated Residential, net an estimated 25 percent for roadways, infrastructure and common areas, would accommodate approximately 2,678 units. Based on an average household size of 3.03 persons, current Development Plan designations could allow a population of 8,100 persons, which is over 1,600 persons more than what the proposed Makaiwa Hills would generate.

It is estimated that, with the projects already appropriately designated on the Ewa Development Plan Land Use Map, the 2010 Ewa population is projected to reach 131,400. With the Makaiwa Hills project, the estimated Ewa population for 2010 would decrease by about 1,600 persons to 129,800 persons. Makaiwa Hills is therefore within the 2010 population guidelines set forth by the City and County of Honolulu General Plan.

Recommended Mitigation — No mitigation is required, since the project is within population guidelines.

5.2 Impacts On The Regional Character Of The Area

Probable Changes Without Makaiwa Hills.

Current proposals for residential development in Ewa could accommodate a population two to three times that of the current Ewa population. In the vicinity of the project site, the City of Kapolei is intended to be the nucleus of the secondary urban center. The existing community will therefore have been undergoing a gradual adaptation to this major influx of new people by the time Makaiwa Hills begins implementation.

Independent changes which may have begun as the project is implemented are as follows:

- Population And Cultural Diversification — When the project begins implementation, the residential profile of the Ewa area will have begun to gradually reflect more of a cross-section of the islandwide community. Though many of the Ewa developments will offer affordable housing, many of the new residents will be part of the market housing segment and will therefore have incomes above the current median income level for the Ewa area. It is also expected that, given the diversity in housing types, Ewa's household sizes will decrease to resemble those in Central Oahu and East Honolulu. Age and ethnic mixes are likely to be more in line with Oahu proportions. With these changes will come cultural diversity.
- Disruption Of The Slow-Paced Lifestyle — The initial impact of impending change is an alteration in the current slow-paced lifestyle which characterizes the residential communities of the Ewa region.
- Competition For And Increase In Public Facilities And Services — Concurrent with the influx of new residents will be competition for public facilities, such as parks, and increased usage of public services, including police and fire protection. New public facilities and expanded public services are needed to keep pace with the population increase.
- Shift In Employment Patterns And Increased Job Competition — As Makaiwa Hills is developed, the Ewa region will be experiencing an increased diversity in types of employment. Many current Ewa residents who are working outside Ewa will have jobs closer to home. Ewa's new residents will also be competing for the same jobs.
- Introduction Of Visitor Industry To The Ewa Region — Ewa residents will have begun to adapt to having a resort community at Ko Olina in their region.

Potential Project Impacts on the Regional Character.

- Consistency With Growth Policies — Part of the Campbell long-range master plan for Ewa, Makaiwa Hills is the last planned community to begin efforts

in seeking land use approvals. Other planned communities either have secured their State and Development Plan approvals, or have had their initial phases approved. The proposed project is an integral part of public and private efforts to establish a secondary urban center in Kapolei. Makaiwa Hills addresses the island's housing need and will provide economic opportunities and employment at the proposed regional shopping mall.

Recommended Mitigation: No mitigation is recommended, since the project is consistent with public policies regarding growth in the secondary urban center.

- Addition of Another Hillside Development — Ewa's landscape changes every day as construction machinery clears the land and replaces a portion of the plain's vastness with homes, streets, landscaped greenery and hotels. The mountains are also changing as Makakilo extends its community to the east and west. Makaiwa Hills will join Makakilo as another hillside community, thus transforming the predominant open space character of the mountains into an extension of the makai urban environment.

Makaiwa Hills is not expected to adversely affect the regional character. The project is not a high-density community, nor will it be continuous rows of houses forming a hillside grid. Rather, the proposed project is envisioned as pockets of well-designed townhouses and single-family homes punctuated by gulches and ravines. As pointed out earlier, almost a half of the project site is proposed for Preservation designation. Further, it is noted that, because of the site's topography, much of the upper portion of the project site will not be visible from makai communities or the freeway.

Recommended Mitigation: As long as the site's topography is incorporated into design and the project site does not undergo extensive grading and filling, it is expected that Makaiwa Hills would provide an attractive backdrop to the urbanized makai landscape. Hence, no mitigation other than sensitive planning is required.

- **An Upscale Community** — The project is part of an overall private and public effort to attract, house and employ people in the upper income range. In the overall housing scheme for Ewa, Makaiwa Hills would provide housing choices for executives working at Kapolei City, thereby adding to locational and economic choices in the high-end housing market. Hence, Makaiwa Hills functions as an integral part of the Second City concept.

Whether or not Makaiwa Hills contributes to or causes social conflict because of its upscale nature is unknown at this time. The acceptance of Makaiwa Hills depends on the community attitudes prevalent during and subsequent to project implementation. There is a potential for acceptance if the community is socially and economically integrated at the time of project implementation. There needs to be a wide range and locational mixing of housing types. Community organizations should be easily accessible for residents and there should be no apparent exclusionary groups, facilities or areas. People feel comfortable with socio-economic diversity if they believe they have physical, legal and some economic access to most facilities. They need to believe that they have — or can attain — the same ability as others to compete for jobs and public services.

Recommended Mitigation: Public officials and private developers need to monitor the social development of the Ewa region, as well as the market for the proposed project. If conditions at the time of implementation signal potential disharmony or social conflict, then effort is needed to work with the future Ewa community to mitigate anticipated problems.

5.3 Impacts On The Nearby Uses

Overview of Existing Uses

North or mauka of the Makaiwa Hills project site are three separate activities, two of which occur on lands owned by the Estate of James Campbell. Camp Timberline sits on ten acres of Estate property above Makaiwa Hills. Owned by

the St. Andrews Priory School, Camp Timberline is a mountain retreat. The Palohua Solar Observatory is one of the sole network of six facilities throughout the world which maintain a 24-hour watch of solar activity. The only networked facility in Hawaii, the Palohua Solar Observatory has an optical telescope and a series of radio telescopes. The observatory is located on approximately five acres owned and operated by the U.S. Air Force. The Estate maintains 17 "campsite leases" above the camp and observatory. The ten-year leases were initiated in the 1940s and cover areas ranging from .16 to 15.8 acres. The twenty houses situated here are used as second homes and primary residences.

Makai of the project site are the residential communities, Honokai Hale and Nanakai Gardens. Further makai of the project is Ko Olina. These were previously described.

Located east of the project site Gulch is Makakilo, a 23-year old residential community which was previously described in this report. The privately-owned and -operated Palailai Sanitary Landfill is located near the lower portions of the project site; the landfill is closed and is being monitored. Eventually, this area may be converted into a park.

The Waimanalo Gulch Landfill is in the gulch just west of the Makaiwa Hills project site. The public landfill accepts both ash from HPOWER, which is mono-filled, or stored in a separate area, and non-combustible waste from all over Oahu. According to the private operator under contract with the City, the landfill has a 14-year remaining life, after which the land can be transformed into a park.

Further west is the Kahe facility which by letter (see HECO EISPN comment letter, December 17, 1991) HECO advises may be expanded sometime in the future. Expansion may possibly include higher stacks and visible emissions during periods of northwesterly winds. According to HECO, air quality standards for existing stack gas pollutants are within the Federal and State air quality standards, and any future additions to the Kahe Station will comply with applicable environmental regulations in effect at that time.

Impacts on Nearby Residential Uses.

- Honokai Hale / Nanakai Gardens — Given the other changes in the area, such as the Ko Olina Resort and the City of Kapolei, this community is likely to undergo physical and social changes. As property values increase, residents of these communities may take financial advantage of this appreciation for home improvements, or may choose to sell their units at these higher prices. For those with fixed incomes, increased property taxes may be a hardship. An obvious change in the community will be larger units, as people add home improvements. Unless the relatively small lots are consolidated, it is unlikely that much physical change will occur beyond that.

With Makaiwa Hills, Honokai Hale / Nanakai Gardens will be sandwiched by a makai upscale resort residential community and a mauka residential community characterized by executive homes. The project will therefore add to the situation of increased property values and corresponding property tax increases. The proposed project will also alter the mountain backdrop by transforming the predominant open space character into an extension of the makai urban environment.

Makaiwa Hills may have drainage impacts on the communities located makai of Farrington Highway, and in the interviews conducted for this study, Honokai Hale / Nanakai Gardens residents expressed apprehensions about surface runoff. Possible short-term impacts on Honokai Hale / Nanakai Gardens residents may arise from construction activities. Dust and noise may adversely affect makai neighbors, particularly because of the prevailing tradewinds.

Recommended Mitigation — There is no mitigation which can be undertaken by Makaiwa Hills to change the property value increase occurring in Honokai Hale / Nanakai Gardens. This is an impact which is already occurring due to the Ko Olina and Kapolei developments; this trend would continue even if Makaiwa Hills were not built.

Makaiwa Hills is not expected to adversely affect views of the mountain as seen by Honokai Hale / Nanakai Gardens residents; no mitigation is required. It is assumed that the engineering studies conducted in this Environmental Impact Statement process will recommend measures to avoid drainage impact.

The residents of Honokai Hale / Nanakai Gardens have been experiencing the effects of construction for many years, with the construction of the Barbers Point Deep Draft Harbor, Ko Olina and freeway improvements. It is recommended that the developer of Makaiwa Hills meet with the residents to see what kinds of additional measures might be necessary to ensure minimal or no impact.

- Makakilo — Unlike Honokai Hale / Nanakai Gardens, Makakilo's changes will be driven by both external and internal forces. The external forces which will change Makakilo are related to all of the development activities occurring makai of the freeway. The internal force for change is the master plan for Makakilo, as directed by Finance Realty. Both external and internal changes are already occurring.

The likely trend of increased property values, to which Makaiwa Hills will contribute, is the same for Makakilo as for Honokai Hale / Nanakai Gardens. The project is expected to have minimal construction impacts on Makakilo residents because of prevailing tradewinds. The proposed regional shopping center would be conveniently located for Makakilo residents.

Recommended Mitigation — As with Honokai Hale / Nanakai Gardens, there is no mitigation which can be undertaken by Makaiwa Hills to change the property value increase occurring in Makakilo. No mitigation is necessary to mitigate visual impacts. Because no or minimal construction impacts are expected to affect Makakilo residents nearest the project site, no mitigation is recommended except for strict adherence to public regulations governing such activities.

Impacts on Ko Olina

The two phases of Ko Olina, as well as other developments in Kapolei, include commercial uses. While the Makaiwa Hills shopping center may be yet another amenity for Ko Olina guests and residents, it would also introduce another competitive element.

The proposed project will also alter the mountain backdrop by transforming the predominant open space character of the mountains into an extension of the makai urban environment. Makaiwa Hills is not expected to have a negative impact on views, however, because Ko Olina has a distinct ocean orientation.

Recommended Mitigation — Because Makaiwa Hills would not necessarily have a negative impact on Ko Olina's commercial uses, no mitigation is required. It is noted that the Makaiwa Hills shopping center will not be the only competitor to the commercial uses of Ko Olina. Within Ko Olina, there will be separate commercial areas in its Phases 1 and 2 which may compete with each other. The Kapolei Business-Industrial Park also has a commercial component, as does the City of Kapolei. The project is not expected to negatively affect mauka views from Ko Olina and no mitigation is recommended.

Impacts on Other Uses

- Camp Timberline, Palehua Solar Observatory and "Campsite" Leases — These three uses are located mauka of the project site and all share a need or desire for isolation.

The potential decrease in isolation for Camp Timberline would not necessarily hurt their operations. First, campers would not see rows of houses, but large homes separated by open space. Second, the project would not displace camp activity. Finally, although isolation is desirable, it is not imperative and the camp could continue its operation.

The Palehua Solar Observatory and other similar facilities depend on isolation because of (1) the need for security and (2) the equipment's sensitivity to nearby radio waves, noise and dust. In discussions with the detachment commander for this

facility, three possible project impacts were identified. First, there are possible short term construction-related impacts, including noise and dust, which may interfere with the operations of radio and optical telescopes. Second, a long-term impact is potential radio interference of nearby machinery. Third, on-site security may need to be increased because of the proximity to more people.

A desirable aspect of the "campsite" leases is the isolation. Residents and those who occasionally use their on-site second homes are drawn to the this mountain because, within minutes of urban Honolulu, they enjoy seclusion and scenic panorama amidst natural beauty. It is believed that Makaiwa Hills would have minimal impact on these sites because of the distance between the proposed project and these facilities.

Recommended Mitigation — Seclusion is part of Camp Timberline's selling point. To retain Camp Timberline's isolation, the Estate of James Campbell should establish a buffer of forested land between the camp and the uppermost houses. This would provide privacy to both project residents and campers.

The Air Force has been added to the list of consulted parties for the Environmental Impact Statement. (See addenda, *Appendix D* for more information on camp site leases.)

Minimal or no project impact is expected for the Estate campsite leases and thus no mitigation is required.

- **Waimanalo Gulch Landfill** — Makaiwa Hills is not expected to impact landfill operations. Rather, the sanitary landfill may produce occasional short-term discomforts for nearby residents, such as bad smells resulting from large quantities of organic material during Kona winds. The landfill would not cause long-term visual impacts, since exposed portions are covered at the end of each day. Because of the safety precautions undertaken by the private operator, such as lining to prevent gas escape, the landfill

in not expected to threaten the health or well-being of nearby residents. A long-term benefit is the potential use of the covered landfill as a park, which would not occur until the 14-year life expectancy is completed.

Recommended Mitigation — A possible mitigation to offset some of the short term impacts is project phasing. The areas nearest the landfill could be left as one of the last to develop, and construction could coincide with landfill closure.

- **Kahe Generation Station** - Makaiwa Hills is not expected to impact the Generation Station, however the Kahe Station may produce combustion gases that may be visible and may impinge upon the project site. HECO has indicated by letter (see HECO EISPN letter, December 17, 1991) that future plans may include plant expansion with possibly higher stacks, but that any addition would comply with existing State and Federal environmental laws.

Recommended Mitigation — The applicant has been notified by letter that HECO has intentions to expand their Kahe facility. Although specific plans are unknown at this time, HECO has recommended that prospective purchasers be made aware of this intention. The applicant agrees with this need for disclosure (see section on Air Quality for disclosure).

5.4 Impacts On On-Site Uses

Impacts on Existing Uses

The Estate maintains two separate grazing leases at the Makaiwa Hills project site. First, on approximately 100 acres of flatlands along the H-1 Freeway, less than two dozen cattle and horses are grazed in a single-person operation under a month-to-month tenancy.

Second, the Estate is currently negotiating new 15-year leases with former sublessees of Tongg Ranch and the operation is expected to continue as Palehua Ranch. Palehua Ranch will comprise three parcels, the largest of which will be operated as Rocker G. Livestock Company. Of the company's 3,800 leased acres, 1,800 are part of the

Makaiwa Hills project site. Rocker G. Livestock Company grazes about 200 mother cows and their calves on the ranch. Additional income is derived by allowing 400 to 500 head of cattle from other ranches to graze on its land from about December through May. The nine part-time jobs generated by the company's operation are equivalent to two full-time jobs.

Makaiwa Hills will not impact the 100-acre single-person operation, which will be phased out in favor of the planned nursery operations (see "Possible Interim Uses").

The proposed project will remove about 1,800 acres from the grazing operation of Rocker G. Livestock Company. Although this will not require a reduction in the number of its own herd, the project will cause the elimination of temporary grazing of cattle from other ranches. No employment changes are expected.

Recommended Mitigation — No project-generated mitigation is needed for the 100-acre single-person operation, since no project impacts are anticipated.

Although Makaiwa Hills will not effect a reduction on Rocker G. Livestock Company's employees or its herd, the project will cause a permanent reduction in acreage available to other ranches for grazing, as well as an undetermined loss in revenues. This impact is irreversible, and no mitigation can offset project impacts. Impacts on Possible Interim Uses. Before Makaiwa Hills is developed, the Estate of James Campbell plans to develop two nurseries on the project site. On a portion of the flatlands now used for the single-person grazing operation, a nursery will be a grow-out area for ornamental trees to be used for Ewa projects. A few acres in the southeast corner of the project site will be part of another 20-acre nursery.

K. P. Harvest, a private company, is proposing to conduct flight testing of a helium motorized spherical dirigible, the "Skywalker" on 50 acres between the 300 to 500-foot elevation from the Estate; only 10,000 square feet would be used with the remaining land serving as a safety buffer. Company officials are currently in discussion with the FAA to see if this testing would interfere with existing flight patterns.

Recommended Mitigation — The phase-out of these nurseries are planned by the Estate and the project itself is not the cause of termination. The project would not impact the Skywalker® testing since the project is short-term; no mitigation is necessary.

B. Agricultural Impact
(See Appendix H)

Approximately 100 acres of the subject property were once cultivated in sugarcane by Oahu Sugar Co., Ltd. on fields located on the flatlands in the southeast portion of the project along the H-1 Freeway. These 100 acres of the flatlands consist of good soils and favorable terrain for crop productions. However, the fields were fallowed in the early 1980s, primarily because of difficult access problems after the H-1 Freeway was built, but also because of relatively low yields, rocky soils on much of the land, and the long hauling distance to the mill.

The remaining lands are poorly suited for growing crops because the soils are rocky, the slopes are steep, and / or low-cost water is not available.

The affected acreage consists of 14 soil types:

EaB	Ewa silty clay loam, 0 to 3 percent
EwC	Ewa stony silty clay, 6 to 12 percent
HLMG	Helemano silty clay, 30 to 90 percent slopes
HxA	Honouliuli clay, 0 to 2 percent slopes
HxB	Honouliuli clay, 2 to 6 percent slopes
LPE	Lualualei extremely stony clay, 3 to 35 percent slopes.
LvB	Lualualei stony clay, 2 to 6 percent slopes
MBL	Mahana-Badland complex
McC2	Mahana silty clay loam, 6 to 12 percent slopes, eroded
McD2	Mahana silty clay loam, 12 to 20 percent slopes, eroded
McE2	Mahana silty clay loam, 20 to 35 percent slopes, eroded
MuC	Molokai silty clay loam, 7 to 15 percent slopes
rRK	Rock land
rSY	Stony steep land

Table 2 shows the approximate acreage for each soil type, possible agricultural uses and two soil ratings (SCS and LESA).

**Table 2
MAKAIWA HILLS:
SOIL TYPES, AGRICULTURAL USES, AND LESA AND SCS
RATINGS**

Soil Type	Acreage	Percent	Agricultural Uses	SCS Rating ¹	LESA Rating
EaB	17	0.9	Sugarcane, truck crops, and pasture	Ile	85
EwC	5	0.3	Pasture	IIle	77
HLMC	157	8.2	Pasture	VIIe	n.r.
HxA	28	1.5	Sugarcane, truck crops, and pasture	I	87
HxB	35	1.8	Sugarcane, truck crops, and pasture	Ile	85
LPE	160	8.4	Pasture	VIIe	18
LvB	20	1.0	Sugarcane, truck crops, and pasture	IIle	68
MBL	57	3.0	Pasture	IVe/VIIe	24
McC2	36	1.9	Sugarcane, pineapple, and pasture	IIle	67
McD2	3	0.2	Sugarcane, pineapple, and pasture	IVe	64
McE2	15	0.8	Pineapple and pasture	VIe	53
MuC	14	0.7	Sugarcane, pineapple, and pasture	IIle	81
rRK	49	2.5	Pasture	VIIe	n.r.
rSY	1,317	68.8	None	VIIe	n.r.
Former Reservoir	2	0.1			
TOTAL	1,915	100.0			

n.r.: not rated.

1. Assuming all soils are irrigated except HLMG, LPE, MBL, rRK and rRS which are not irrigated.

Sources: U.S. Department of Agriculture, Soil Conservation Service, *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*, August 1972.

State of Hawaii Land Evaluation and Site Assessment Commission, *A Report on the State of Hawaii Land Evaluation and Site Assessment System*, Legislative Reference Bureau, February 1986.

The soils within the project area have been rated in terms of four classification systems commonly used in Hawaii:

(1) Land Capability Grouping,

- (2) Agricultural Lands of Importance to the State of Hawaii (ALISH),
- (3) Overall Productivity Rating, and
- (4) Proposed Land Evaluation and Site Assessment.

Of the approximately 1,915 acres proposed for development, about 6 percent of the land in the project area is rated as "prime" agricultural land, and remaining land is unrated.

LSB	A (0.4 percent)
	B (5.2 percent)
	C (0.5 percent)
	D (12.6 percent)
	E (81.2 percent)
SCS	VIIs (79.7 percent)
	VIIe (8.2 percent)
	VIe (0.8 percent)
	IVe / VIIe (3 percent)
	IVe (2 percent)
	IIIe (3.9 percent)
	IIe (2.7 percent)
I (1.5 percent)	

The Land Evaluation and Site Assessment (LESA) Commission developed a rating system to synthesize these various classification systems for agricultural suitability. If the LESA classification approach were applied to the project site, about 8 percent of the designated lands would be termed "important agricultural lands" (IAL), which would include all lands having a LESA rating of 66 or higher, out of a possible total of 100. These soil rating systems suggest that approximately 6 to 8 percent of the project site is comprised of good quality soils.

For further discussion on the agricultural suitability, please refer to *Appendix H, Makatwa Hills: Impact on Agriculture* (Decision Analysts Hawaii, Inc.)

1. IMPACT ON EXISTING AND PLANNED AGRICULTURAL OPERATIONS

1.1 Grazing Operations in the Foothills

With the exception of the flatlands, the remainder of the project site is part of a of a 3,800-acre ranch operated as Rocker G. Livestock. The company grazes about 200 mother cows and their calves on the ranch. The small size of this year-round operation reflects the low carrying capacity of the land which is due to low rainfall, rocky soils, and the presence of gulches and very steep slopes on much of the land. The ranch derives additional income (approximately \$10,000 to \$14,000) by allowing 400 to 500 head of cattle from off-island ranches to graze on its ranchland from about December through May, with the number of cattle and the duration of grazing depending on rainfall and the resulting growth of grass. Employment provided by the Rocker G. Livestock Company consists of 9 part-time jobs which are the equivalent of 2 full-time jobs.

At full development of the Makaiwa Hills project around the year 2010, about 1,800 acres will be removed from the grazing operation of the Rocker G. Livestock Company, with no replacement lands available in the immediate area. This removal of land from the ranch will not require a reduction in the number of its own herd which the company grazes on the property. However, it is expected that this reduction of grazing acreage will eliminate the temporary grazing of cattle from other ranches, thereby reducing revenues and profits to the company. Alternatives for these other ranches are to (1) graze their cattle on their own ranches for a longer period (if possible) before sending them to the Oahu feed lot, (2) send their cattle to other ranches that have excess carrying capacity, and / or (3) send their cattle to the feed lot at a younger age. Employment provided by the Rocker G. Livestock Company is expected to remain unchanged.

1.2 Pasture Operations on the Flatlands

The approximately 100 acres of flatlands along the H-1 Freeway which were once used for growing sugarcane are now a pasture for grazing less than two dozen cattle and horses. This operation will be reduced in favor of a nursery

operation, and eventually will be eliminated when the Makaiwa Hills project is developed.

Given the small scale of this operation and the availability of pasture and grazing lands else-where in the State (but not in the immediate area), mitigation measures for the loss of pasture lands are not recommended.

1.3 Planned Nursery on the Flatlands

On a portion of the flatlands now used for grazing, Campbell Estate plans to develop a nursery which will be a grow-out area for ornamental trees destined for its projects in Ewa. This will be an interim endeavor which will expand gradually at the expense of the pasture operations, and continue in operation until the property is developed. The nursery is expected to provide about 15 to 20 jobs at peak operation.

A second nursery is planned by Campbell Estate on about 20 acres of lands, a few acres of which will lie within the southeast corner of the project site. This nursery will also provide plants and trees for the Estate's projects in Ewa, and will be an interim endeavor until the property is developed. This second nursery is expected to provide about 20 jobs at peak operation.

After the nurseries are closed, other nurseries in Hawaii will supply the demand for plants and trees. Nurseries require relatively little land, and generally are economically healthy. Consequently, the proposed development is not expected to adversely affect the growth of the nursery industry, and mitigating measures are not recommended.

2. IMPACT ON THE GROWTH OF DIVERSIFIED AGRICULTURE

The development of Makaiwa Hills constitutes a commitment to urban use of about 100 acres of agricultural land suitable for growing crops. However, this commitment will not limit the growth of diversified agriculture Statewide since ample agricultural lands have been and continue to be freed from plantation agriculture. Since 1968, about 90,000 acres of Hawaii's agricultural land have been freed from sugar and pineapple production. In addition, the plantations have announced plans to withdraw an additional 27,500 acres from sugar and pineapple production.

This past and scheduled release of land from plantation agriculture is enormous. For comparison, the total amount of land remaining in plantation agriculture on Oahu (two sugar plantations and two pineapple plantations) amounts to about 37,000 acres. For truck crops, less than 7,000 acres are required throughout the State to supply the entire Hawaii market.

As the above indicates, the limiting factor to the growth of diversified agriculture is not the land supply, but rather the market demand for those crops that can be grown profitably in Hawaii. Affecting about 100 acres of good agricultural land, the proposed Makaiwa Hills project involves far too little land to affect this conclusion, and will therefore not affect adversely the Statewide growth of diversified agriculture. Mitigating measures are not recommended.

3. GROUND MAINTENANCE

At full development, the Makaiwa Hills project will provide over 70 jobs involved with ground maintenance throughout the project, including a golf course (if built), yards, and other landscaped areas. These will be outdoor jobs similar to certain jobs in the agriculture industry, and which require similar skills and training.

4. CONSISTENCY WITH STATE AND COUNTY PLANS

Since the Makaiwa Hills project will not affect any sugar or pineapple operations, it will not conflict with the thrust of the plantation-agriculture portions of the Hawaii State Plan, the State Agriculture Functional Plan, and the General Plan of the City and County of Honolulu. This thrust in all three plans calls for preserving the economic viability of plantation agriculture.

To a limited extent — particularly with respect to the small local impact on the cattle industry but not on the Statewide impact on the cattle industry, nor on the Statewide impact on diversified agriculture, nor on the addition of a significant number of grounds-maintenance jobs — the proposed project conflicts with the thrust of the diversified-agriculture portion of the State and County plans. This thrust calls for promoting the growth of diversified agriculture and for assuring the availability of an adequate supply of agriculturally suitable lands and water.

In addition, a portion of the project will be potentially inconsistent with the lower-level State agricultural guidelines which call

for Agricultural Lands of Importance to be protected from development. However, this portion of the project which causes the conflict is consistent with the County Development Plan which designates urban development of the approximately 100 acres of good agricultural land. Furthermore, this plan is consistent with the broader State and County policy of directing housing and commercial development to Ewa — a policy which requires the urban development of agricultural land.

It should be noted that the State Department of Agriculture has advocated the development of homes in the foothills of the Waianae rather than on the high-quality agricultural lands on the plains below. Makaiwa Hills is consistent with this position.

C. Impact on State and County Finances

(See Appendix J)

The impact of the proposed Makaiwa Hills development on State of Hawaii and City and County of Honolulu finances was prepared by Decision Analysts Hawaii, Inc. The values expressed are in 1990 dollars. The study has been attached as *Appendix J* and is summarized below:

Impact

The proposed Makaiwa Hills project will provide about 2,130 up-scale single-family homes and town-houses in a premium location for the executive, professional, retiree, and second-home markets. In addition, 600,000 square feet or more of commercial space will be provided in a regional mall which will serve residents in Ewa and other nearby areas. The development will also include considerable open space, an elementary school, and may include a golf course. In addition, the developer will provide park, road, water, drainage, and sewer improvements.

State and County revenues which will be derived from this project are expected to be substantial, and sufficient to accommodate the project. The revenues are expected to be sufficient to: (1) finance police station, fire station, wastewater treatment, and school improvements; (2) provide the same level of per-unit services as are provided currently to island residents; and (3) serve additional community needs with remaining net revenues.

Roll back taxes to the County because of withdrawing the land from agricultures will be about \$3.1 million, which is nearly the same as the estimated \$3.2 million in County improvements

required to support the project. At project completion, County revenues derived from the Makaiwa Hills project are projected to be \$12.6 million per year, while expenditures to support the project are expected to be \$4.4 million (including debt service on police-station, fire station, and wastewater treatment improvements), for a net of \$8.2 million per year. This compares with less than \$20,000 per year currently derived from property taxes on the property. All dollar amounts are expressed in 1990 dollars.

For the State, revenues generated by construction activity are estimated to reach \$84.4 million. This sum exceeds the \$8.5 million projected expenditure by the State for required improvements. Upon completion of the project, State revenues derived from the Makaiwa Hills project are projected to be about \$33.8 million per year, and expenditures required to support the project are estimated to be about \$11.1 million per year (including debt service on school improvements), for a net income to the State of about \$22.7 million per year. Currently, the State derives negligible tax revenues from activities on the property. See *Table 3* for a summary of Makaiwa Hills, Impact on State and County Finances: Summary

Table 3
MAKAIWA HILLS, IMPACT ON STATE
AND COUNTY FINANCES: SUMMARY
 [In 1990 dollars]

Item	Amount
COUNTY, Full Development:	
Rollback Taxes	\$ 3.1 million
Full Development:	
Revenues	12.6 million per year
Expenditures:	
Debt Service	0.3 million per year
Services	4.1 million per year
Total County Expenditures	4.4 million per year
Net County Revenues	8.2 million per year
STATE:	
Taxes on Construction Activity	84.4 million
Full Development:	
Revenues	33.8 million per year
Expenditures:	
Debt Service	0.8 million per year
Services	10.4 million per year
Total State Expenditures	11.1 million per year
Net State Revenues	22.7 million per year
STATE AND COUNTY, Full Development:	
Revenues	46.4 million per year
Expenditures	15.5 million per year
Net State and County Revenues	\$30.9 million per year

Mitigative Measures — The Makaiwa Hills project will strengthen State and County finances by providing substantial net income. In view of this finding, mitigating measures are not recommended.

V. PUBLIC SERVICES AND FACILITIES ASSESSMENT

This Chapter describes the public services and facilities in the area; its adequacies with respect to serving the needs of the proposed development; the need for improvements; and the necessary mitigative measures to ameliorate or reduce any adverse impacts.

In reviewing this Chapter, please refer to the following Appendices, which have been the major source of much of the information that follows:

APPENDIX	REPORT	PREPARER
A	Preliminary Engineering for the Proposed Makaiwa Hills Development, Ewa, Oahu, Hawaii	Engineering Concepts, Inc.
B	Makaiwa Hills Traffic Impact Assessment Report	Pacific Planning & Engineering, Inc.
D	Social Impact Assessment of Makaiwa Hills	Earthplan

A. Transportation / Traffic
(See Appendix B)

A traffic impact study to identify and assess future traffic impacts caused by the proposed Makaiwa Hills Residential-Commercial Project was undertaken by Pacific Planning & Engineering, Inc. (PPE). The report identifies and evaluates the probable impacts of traffic generated by the proposed development in the year 2010 when the project is expected to be completed and fully occupied.

Analysis was conducted to determine the relative impact of the proposed project on the local road-way system. The following highway facilities were studied:

- Segments of the H-1 Freeway and Farrington Highway in the vicinity of the project.
- Existing ramps at the Palailai Interchange impacted by the project.

- Proposed ramps at Farrington Highway and project Access "A".
- Proposed ramps at Farrington Highway and project Access "B".

The following assumptions and information were used to forecast morning and afternoon peak hour traffic volumes for the year 2010:

- The 2005 forecasts from HALI 2005 Island-Wide Study for Oahu.
- Forecasts for the year 2010 were derived from the 2005 forecasts using a modified Fratar Method. The State M-K forecasts of 2010 land use were used as the base for forecasting.
- Traffic from the Ko Olina Resort and Kapolei Business-Industrial Park developments were forecast based on their traffic studies.
- Peak hour traffic from other proposed developments in the Ewa area were estimated using standard trip generation, distribution, and assignment procedures.
- The proposed Kapolei Parkway and North-South Road as shown in *Figure 3* would be completed by 2010.

The Report assesses the impact on the freeway and the interchanges by determining the level-of-service (LOS) for existing, 2010 forecast without the project, and 2010 forecast with the project traffic conditions.

Impact

The proposed Makaiwa Hills project will impact traffic conditions on Farrington Highway and H-1 Freeway when completed in 2010.

Even without the project, the H-1 Freeway and Farrington Highway will operate at LOS D or LOS E in 2010 due to islandwide growth as well as the development of the Ewa region. Practically all of the secondary urban center will be developed by 2010. Thus, the traffic growth due to other developments in the area will be substantial. The Palailai Interchange will experience LOS D to F at the study ramps due to extensive development in the area, which includes Ko Olina, Kapolei City, Barbers Point Harbor, and Kapolei Business-Industrial Park.

With the project in 2010, traffic volumes and delays will increase. The LOS along Farrington Highway and H-1 Freeway will worsen at certain segments from LOS D to LOS E. the LOS for ramps at the Palailai Inter-change will also worsen.

Mitigative Measures — In order to accommodate the projected traffic even without the project, some or all of the following types of improvements may be necessary:

- Major improvements to the Palailai Interchange, such as additional ramps.
- Relocation or deletion of the connection of Farrington Highway to Kalaeloa Boulevard.
- Increased capacity of Farrington Highway.
- Increased capacity of H-1 Freeway.

The Palailai Interchange will need major modifications to allow the ramps to operate at LOS D and the Farrington Highway-Kalaeloa Boulevard intersection to operate under capacity.

The preliminary configurations for Interchanges "A" and "B", shown in *Figure 7 of Appendix B*, pg. 8, will require changes to allow the interchanges to operate at LOS D or better. The LOS for Interchange "A" will operate at LOS D or better, except for the Honolulu bound on-ramp which will operate at LOS F. Analysis of an at-grade left turn from Farrington Highway into the project site indicated that it will operate at LOS F. A ramp for this movement would operate at LOS B.

The Waianae bound off-ramp and Honolulu on-ramp of Interchange "B" will operate at LOS E and LOS F, respectively. The other ramps will operate at LOS D or better.

The ongoing Ewa Region Highway Master Plan will determine roadway needs along Farrington Highway, H-1 Freeway, and the Palailai Interchange. Due to the major developments planned for the Ewa region, the State Department of Transportation has formed a Working Group which includes various State and City and County of Honolulu agencies and major developers of the Ewa region. It is recommended that improvements to Farrington Highway, H-1 Freeway, and Palailai Interchange, including rights-of-way, be identified and implemented under the Master Plan. In addition, the con-

figuration of Interchanges "A" and "B" be determined after completion of the Master Plan because:

- The Estate of James Campbell is participating in the Ewa Region Highway Master Plan and funding improvements to the highway system that are attributable to its projects; and,
- Substantial improvements would be required in 2010 for developments other than Makaiwa Hills.
- The layout of Interchanges "A" and "B" will depend on the improvements identified for Farrington Highway and access routes to the Ko Olina Resort.

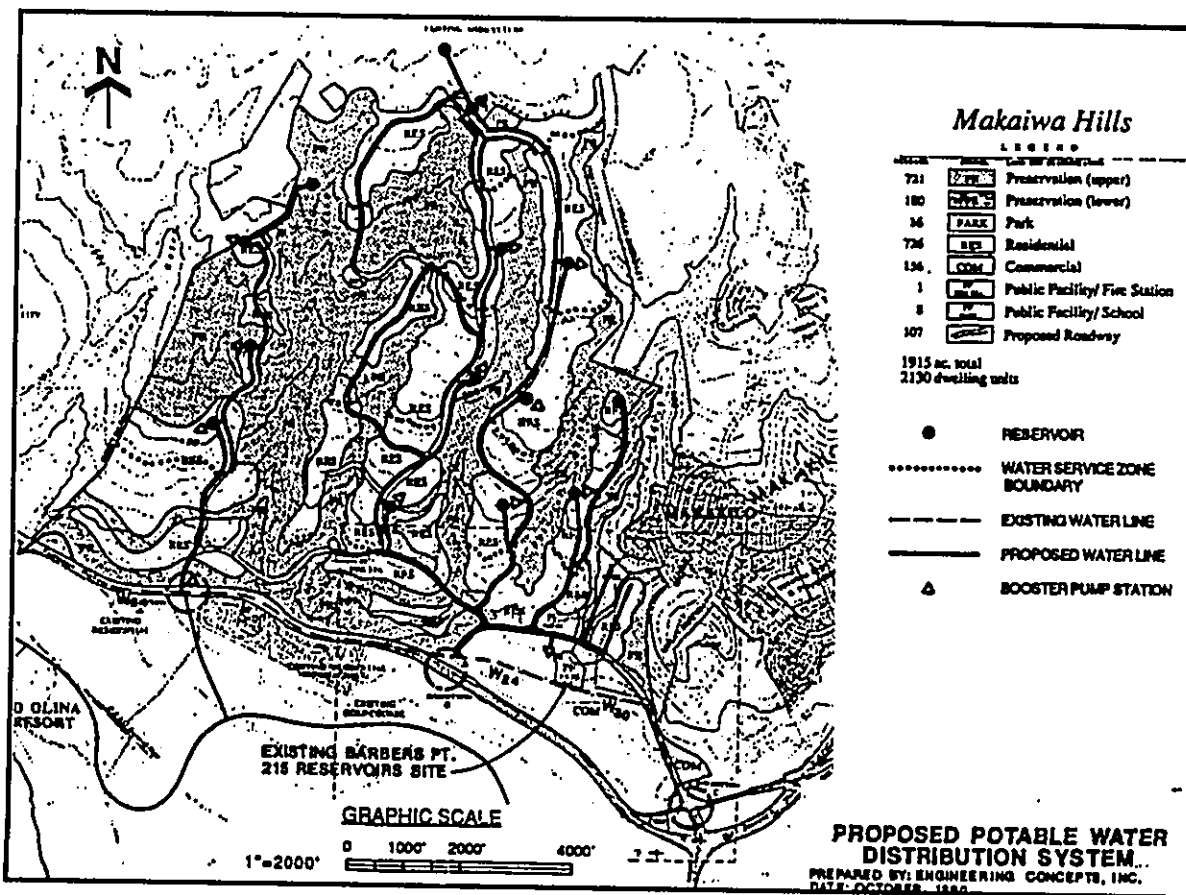
B. Water

(See Appendix A)

The Board of Water Supply (BWS) system provides potable water service to the Ewa / Kapolei region. Wells located in Waipahu, in the vicinity of the Kunia Interchange, are the water source for the system. These wells include the Hoaeae Wells, Kunia Wells I, and Waipahu Wells. Transmission of water from the wells to Ewa / Kapolei is via 30-inch transmission main along Farrington Highway. The transmission main extends to the 3.0 MG, 4.0 MG and 5.0 MG Barbers Point 215 Reservoirs, located at the southeastern corner of the project site. Transmission of potable water continues west along Farrington Highway to Nanakuli via 24-inch transmission main and booster pumps located at the Barbers Point Reservoirs site. The proposed potable water system for the project area is provided below on page 86.

The BWS water system does not currently serve the project site. The private residences located north of the project site utilize private water catchment systems.

The Estate of James Campbell is a member of the Ewa Plain Water Development Corporation, which was established to assess the water system requirements and coordinate improvements for all developments in the Ewa Plain. Belt Collins and Associates has identified infrastructure required to serve Ewa Plain developments in the Ewa Water Master Plan (revised 1987). The document is currently being updated. Water system requirements for the proposed Makaiwa Hills development will be included in the revised document.

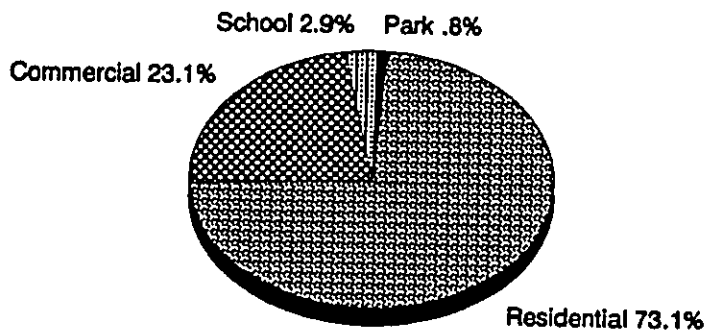


Impact

Water demand estimates for the project are based on BWS Water System Design Criteria for the various land uses:

**Table 4
POTABLE WATER DEMAND**

Land Use	No. of Units	GPD / Unit	Average Daily Demand (gpd)
Residential	2,160 homes	500	1,065,000
Commercial	156 acres	2160	337,000
School	1,000 students	42	42,000
Park	16 acres	720	12,000
			1,456,000
			1.46 MGD

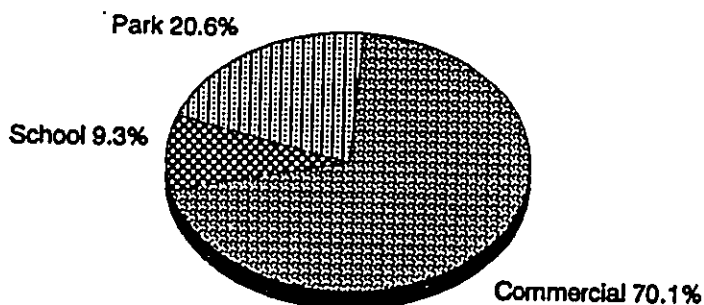


Based on an average daily demand of 1.46 MGD, a maximum daily demand of 2.19 MGD is expected. The corresponding peak hour demand will be 4.38 MGD.

(Should a golf course be developed in the future, the associated increase in potable water demand is estimated to be 20,000 gpd. The total average daily potable water demand from the project site including an 18-hole golf course will be 1.48 MGD.), with a maximum daily demand of 2.22 MGD and peak hour demand of 4.44 MGD.

**Table 5
NONPOTABLE WATER DEMAND**

Land Use	No. of Units	GPD / Unit	Average Daily Demand (gpd)
Commercial	156 acres	1,440	225,000
School	1,000 students	30	30,000
Park	16 acres	4,080	66,000
			321,000
			0.32 MGD



(Should a golf course be developed in the future, the associated increase in nonpotable water demand will be 735,000 gpd. This calculation is based on 180 acres irrigated at a rate of 4,080 gpd / acre. The total average daily nonpotable water demand from the project site including an 18-hole golf course will be 1.06 MGD.)

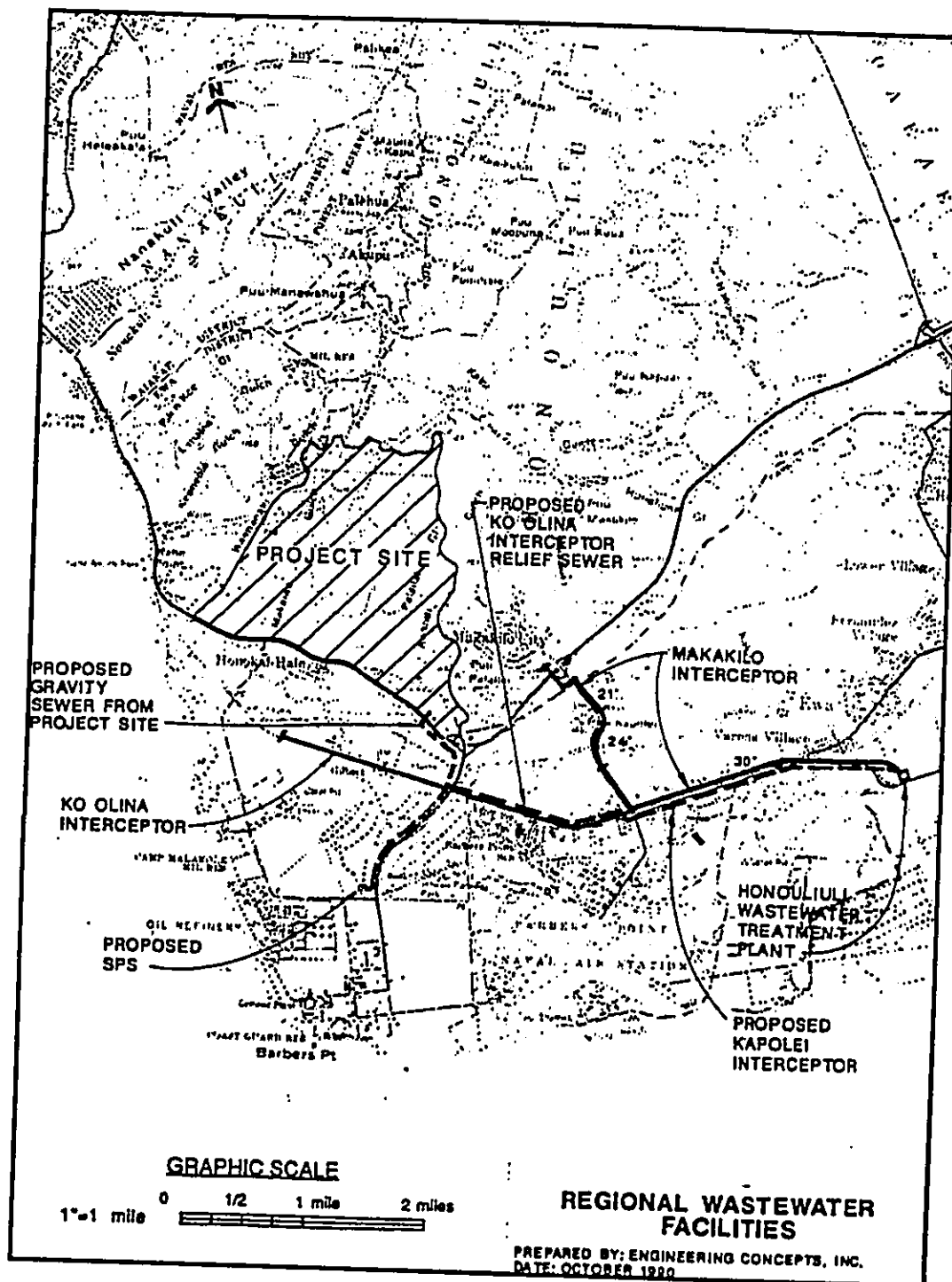
Mitigative Measures — Based on a preliminary analysis, two distinct potable water distribution systems are proposed for the project due to the site topography. The eastern distribution system will require ten reservoirs and nine booster pumping stations for the five service zones. The western distribution system will require four reservoirs and four booster pumping stations for the four service zones. The proposed onsite potable water system will be designed in accordance with the BWS Water System Standards and is intended to be dedicated to the BWS for operation and maintenance.

The proposed project and other developments in the region will impact the existing BWS water system facilities. In an effort to reduce potable water consumption, a dual water system is proposed. Nonpotable water will be used for irrigation in areas other than residential land uses. The Estate of James Campbell is a member of the Ewa Plain Water Development Corporation. Water system requirements for Makaiwa Hills have been considered in regional water system planning.

C. Wastewater
(See *Appendix A*)

Developments in the Ewa / Kapolei region use individual wastewater systems (septic tanks, cesspools) or are served by the City and County collection system with wastewater treatment at Honouliuli Wastewater Treatment Plant (WWTP).

The Honouliuli WWTP is located approximately four miles east of the project site. The WWTP presently operates as a primary treatment facility with design capacity of 25 million gallons per day (MGD). Although the WWTP is not operating at full capacity, the remaining treatment capacity has been committed to other developments. An expansion of the plant to 38 MGD is being designed and is tentatively scheduled for completion by 1994. The development of Makaiwa Hills is not anticipated to precede completion of the Honouliuli WWTP expansion. The regional wastewater collection system, including proposed improvements is illustrated below on page 89.



Projected Wastewater Flows

The estimated average wastewater design flow is based on estimated water use calculations and the City and County Sewer Standards. Contributions expected from the proposed facilities within the project are listed below:

**Table 6
Wastewater Flow Rates**

	AVERAGE WASTEWATER FLOW RATE (GPD)	
Residential (2130 units)	682,000	
Commercial	500,000	
School	25,000	
Infiltration	78,000	
		1,285,000
Golf Course*		20,000
TOTAL		1,305,000

For planning purposes, the total average wastewater flow rate for the project is 1.285 MGD. If the lower preservation area is developed into a golf course in the future, the total average wastewater flow rate will be 1.305 MGD. Wastewater generated at the project site is expected to be of typical domestic composition.

Impact

Wastewater impacts related to the proposed development may include the following:

- Traffic Disturbance On Farrington Highway - Construction of the 21-inch off-site sewer across Farrington Highway may cause a temporary inconvenience to motorists.
- Increased Burden On The City And County Wastewater Collection And Treatment Facilities — Under existing conditions, the additional 1.3 MGD average wastewater flow from the project site may have a significant affect on the capacity of the Honouliuli WWTP. However, the proposed Makaiwa Hills development is not expected to preceed the planned capacity expansion of Honouliuli WWTP.

According to DWM connection to Honouliuli is not guaranteed, even with the expansion of the treatment plant. An application for sewer connection will be filed with DWM for review. Wastewater requirements will continue to be coordinated with DWM.

* - Possible future development

The existing wastewater collection system will also be affected by the estimated flows from the project site. The existing Ko Olina interceptor will not have available capacity for future wastewater flows from Makaiwa Hills. A relief-sewer will be designed to convey wastewater from Makaiwa Hills and Kapolei Business-Industrial Park to the Makakilo interceptor / Kapolei interceptor at Fort Barrette Road.

The Makakilo interceptor will not have available capacity to accommodate wastewater generated from the proposed Makaiwa Hills and other developments.

Construction of the Kapolei Interceptor sewer will be necessary to accommodate the additional flows conveyed by the Ko Olina Interceptor and relief sewers.

Mitigative Measures — Connection to the municipal sewer system for conveyance to the Honouliuli WWTP is recommended. The onsite collection system will include gravity sewers, force mains, and sewage pumping stations designed in accordance with City and County standards. A 21-inch off-site sewer will be required to convey wastewater from the project site to the existing Ko Olina interceptor. It is intended that the onsite collection system and 21-inch off-site sewer be dedicated to the City and County for operation and maintenance.

Capacity expansion of the Honouliuli WWTP is expected to precede development of the project; thus wastewater flows from the project are not expected to create a negative impact on the WWTP capacity. A sewer connection application will be required by the City prior to authorizing connection to the municipal system. Inadequacies in the municipal collection and treatment system will be identified and participation in improving the municipal system will be required for approval.

Proposed improvements include relief sewers for the Ko Olina and Makakilo interceptors. These sewers will be designed to accommodate wastewater flows from the Makaiwa Hills and other projects proposed in the region.

Implementation of an approved traffic control plan will mitigate any potential short term impact to motorists during the construction of the 21-inch off-site sewer.

D. Solid Waste and Disposal

(See Appendix A)

A refuse collection service does not presently serve the project site. Currently, the site is undeveloped and does not generate solid wastes.

Short-Term Impact

The proposed project will generate solid waste during construction and after development. The construction wastes will be made up primarily of vegetation, rocks, and debris resulting from clearing the site prior to construction. Most of these wastes will be combustible.

Mitigative Measures

Generation of construction wastes due to clearing of the site will be a short-term impact. The contractor will be required to remove all debris from the project site to mitigate the environmental impact.

Long-Term Impact

The typical range of per capita solid waste generation from a municipal source (residential and commercial) is 2.0 to 5.0 pounds per capita per day (lb/capita/day).

Solid waste generation from the residential areas was estimated to be 17 tons/day based on an average per capita generation rate of 4.0 lb/capita/day. The solid waste composition is expected to be typical for a municipal source.

It is estimated that residential refuse collection from the site will necessitate 24 truck trips per week. The number of truck trips is based on a manually loaded, 20 cubic yard compactor truck capable of achieving a typical compaction density of 500 pounds per cubic yard.

Mitigative Measures

It is anticipated that refuse generated by the proposed Makaiwa Hills residential development will be collected by the City and County refuse collection service. The City and County is currently operating a landfill site in Waimanalo Gulch and the H-POWER waste energy recovery facility on the leeward side of Oahu. Landfill capacity on the leeward side of Oahu is not a

problem at present since most of the combustible refuse is disposed at the H-POWER facility. Refuse from the proposed Makaiwa Hills development is not expected to have a significant impact on the leeward Oahu solid waste disposal facilities.

E. Drainage

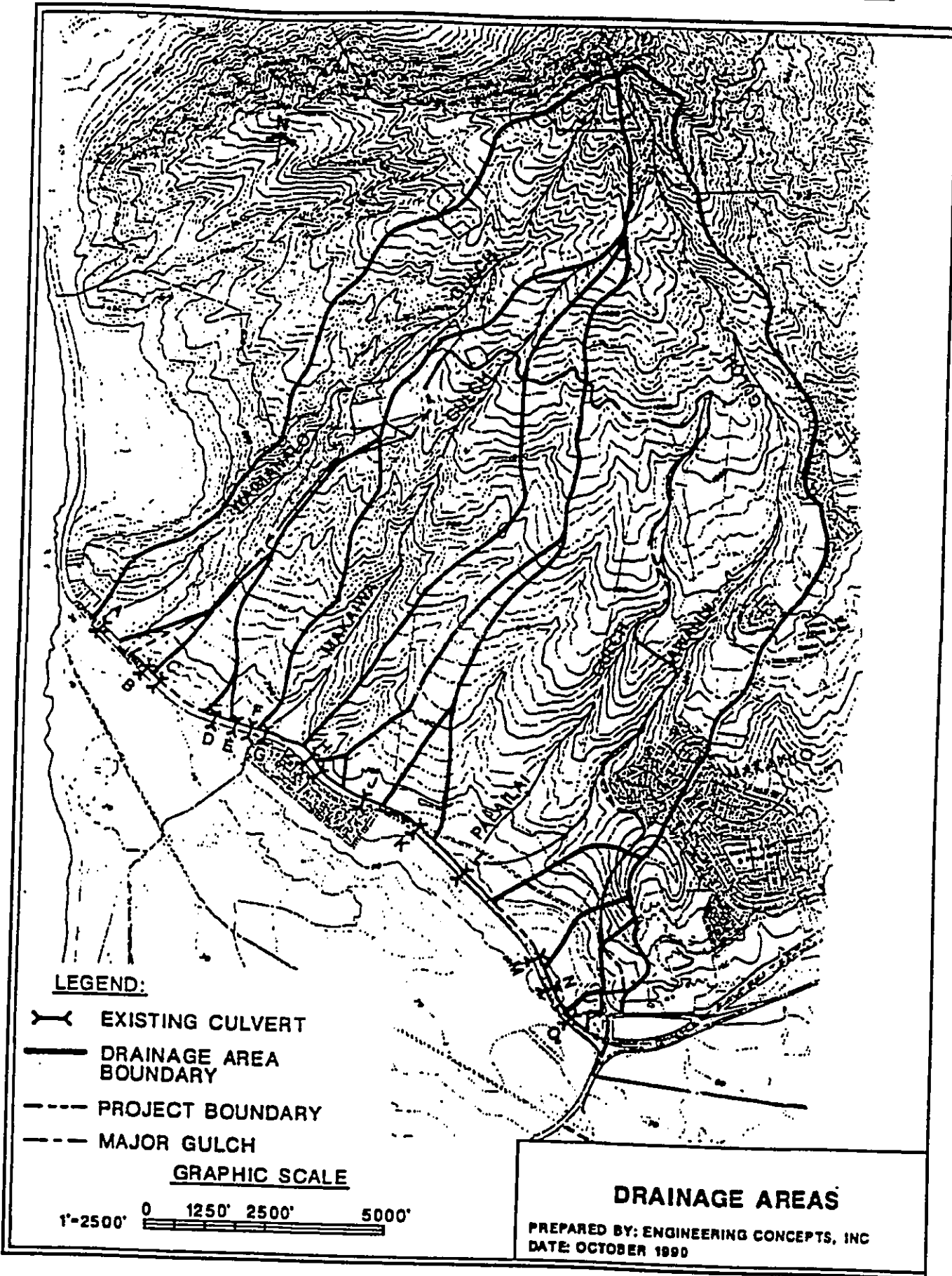
(See Appendix A)

The project site occupies 1,915 acres of a 3,662-acre watershed. The watershed extends from Makakilo City to the east, to the western ridge forming Waimanalo Gulch to the west. The northern watershed boundary extends over 16,000 feet mauka of Farrington Highway to the crest of the Waianae mountain range. Watershed elevations range from about 50 feet along Farrington Highway to about 2,300 feet at the northern boundary.

Flood Hazard

The project site is designated Zone D in the Flood Insurance Rate Map, indicating areas in which flood hazards are undetermined.

There are no existing drainage improvements within the project site. However, approximately 15 culverts are located adjacent to the project site, conveying storm runoff from the site and mauka areas under Farrington Highway. See Map below. The culverts convey runoff from the 3,662-acre watershed (including the project site) under the highway to downstream drainage facilities at Honokai Hale, Ko Olina Resort, and Campbell Industrial Park. Existing runoff quantities were calculated for the tributary area of each culvert based on a rainfall duration of one hour, and rainfall intensities of 1.9 and 2.3 inches for the 10- and 50- year storms respectively. Under existing conditions, peak runoff rates of 3,693 cfs (10-year) and 4,474 cfs (50-year) were calculated for the watershed. Corresponding runoff volumes of 236 acre-ft (10 year) and 288 acre-ft (50-year) were also calculated.



Impacts

As a result of the proposed improvements, the rate of peak runoff and runoff volume are expected to increase by about 17 percent to 4,330 cfs (275 acre-ft) for the 10-year storm and 5,243 cfs (337 acre-ft) for the 50-year storm. The peak runoff rate for the 100-year storm based on the City and County design curve will be used in the design of drainage improvements for drainage areas greater than 100 acres.

Mitigative Measures

Impacts on developments downstream of the Makaiwa Hills site are not expected to be adverse. The makai developments will use the peak runoff criteria of the City and County of Honolulu, Department of Public Works. In general, the impact of increased runoff to the highway culverts can be mitigated by constructing detention basins to dampen peak runoff rates or additional culverts may be installed to increase the existing culvert capacity. Construction of additional culverts may result in short term impacts (traffic disturbances) which can be mitigated by limiting construction hours, implementing an approved traffic control plan, and coordinating other planned construction along the highway.

F. Soil Erosion

(See Appendix A)

The Universal Soil Loss Equation (USLE) is used to estimate long term annual soil losses from the project site before and after development. Under existing conditions, the existing soil erosion potential of the site is 44,800 tons/year.

Short Term Impacts

Calculations of short term soil erosion potential are based on grading of 80 acres/year over a 15 year period. Short term soil erosion during construction is estimated to be 38,000 tons/year for the Makaiwa Hills development.

Long Term Impacts

The long term soil erosion potential is expected to decrease significantly after development due to reduction of erodible surfaces, reduction of length and slope of overland flow, and increase in landscaped areas. Based on the proposed residen-

tial/commercial development, the long term soil erosion potential for the site is estimated to be 6,100 tons/year — a decrease of 86 percent. Long term soil erosion potential is estimated to decrease another 10 percent to 5,500 tons/year if a golf course is constructed on previously undeveloped land in the future.

Mitigative Measures

Mitigating measures (e.g. grassing, limiting grading to no more than 15 consecutive areas, etc.) implemented during construction will reduce the estimated short term soil erosion potential by 17,800 tons per year or 48 percent. For the long term, soil erosion is estimated to decrease with development.

G. Power and Communications

(See Appendix A)

Under existing conditions, Hawaiian Electric Company (HECO) 138 kv and 46 kv transmission lines traverse the project site. The overhead transmission lines originate at the Kahe Power Plant. In addition, HECO is currently meeting with government officials and the Estate of James Campbell to select and approve a route for a proposed 138 kv transmission line from the Waiiau Power Plant to the Campbell Industrial Park Substation. A portion of the route may cross the Makaiwa Hills site.

Impacts

The estimated power requirement for the development is 6.5 MVA. Electrical power requirements for residential units may be conservatively estimated at 5 KVA per unit.

Mitigative Measures

Mitigation of potential impacts to the HECO system due to Makaiwa Hills and other projects in the Ewa / Kapolei area are under consideration in the planning of new facilities. Hawaiian Electric has indicated that it has plans for future expansion of its Kahe facility to increase its power generation capabilities. It is also anticipated that the development will consider implementation of energy efficiency design guidelines as recommended by the Energy Division of the State of Hawaii Department of Business, Economic Development and Tourism, in an effort to minimize energy consumption.

H. Police Protection

(See Appendix D)

As part of District III, the Ewa region is in Beats 325 (the project site, Honokai Hale/Nanakai Gardens and Makakilo), 326 (Ewa Villages, Honouliuli and Naval Air Station Barbers Point (NASBP) and 327 (James Campbell Industrial Park, Ewa Beach and IPP Military Family Housing). An additional beat, 325A, was recently included. District III, which extends from Red Hill to Kaena Point and Kipapa Ridge, is handled by the Pearl City Police Station.

Currently, there are three shifts of one police officer dispatched to each of the four beats in a 24-hour period; hence twelve beat officers operate in Ewa within a 24-hour period.

In terms of short-term plans, the Police is requesting funds for two officers per shift. Long-term plans include adding a new full-service station in Kapolei, with the establishment of Ewa and the Waianae Coast as a new district. District III would then cover the area from Red Hill to Kunia Road, and the new district would extend from Kunia Road to Kaena Point. If this occurs, the Kapolei station would be the headquarters for five beats in Ewa and eight beats along the Waianae Coast. In addition, two substations are proposed by the Police Department. One would be located in Ko Olina, near a proposed fire station. The other would be located near the proposed relocation of the Ewa Beach Fire Station at Ewa Marina.

Impact

Makaiwa Hills will increase the demand for police services in Ewa. The project demand is, however, part of the cumulative need anticipated by public officials. Police have, however, projected the future demand for services, based on the Ewa Master Plan, and have proposed facilities and increased staffing to meet this demand. Makaiwa Hills has been a part of the Ewa Master Plan and is within the anticipated population count (see *Appendix D, Section 5.1*).

Mitigative Measures

As part of the Ewa Master Plan, Makaiwa Hills has been included in programs to upgrade police facilities and increase police officers. No additional mitigation beyond those already planned is necessary at this time.

I. Fire Protection
(See Appendix D)

The project site is currently being serviced by the Makakilo Fire Station, which is an engine company staffed by five fire fighters per shift. Back-up service is provided by the Ewa Beach (engine company), Nanakuli (engine and tanker company, Ewa Beach (engine company) and the Waipahu (engine and ladder company) Fire Stations.

Two new fire stations are planned for the immediate vicinity of the project site. Budget requests have been submitted for facilities at Ko Olina and the Kapolei Business-Industrial Park. The Ko Olina Phase 1 facility would be an engine and ladder company, with twelve fire fighters per shift. The Kapolei Business-Industrial Park fire station is envisioned as a future battalion headquarters with an engine and ladder company; 15 fire fighters would serve each shift. Other new facilities being planned for the Ewa area include the relocation of the Ewa Beach Fire Station to the Ewa Marina project, and a fire station at Ewa Villages. No time frame has been determined for these.

Impact

The project will increase the area's population over a larger area than currently planned, and will increase the need for protection services.

Mitigative Measures

The project includes a one acre site for a new fire station. Further discussion with Fire Department officials is needed to determine the exact site and scale of the new facility, as well as staffing requirements.

Makaiwa Hills could reduce the site's current potential for brush fires by introducing landscaped areas which would be watered and maintained throughout the year.

J. Educational Facilities
(See Appendix D)

The schools in the vicinity of Makaiwa Hills are Makakilo Elementary, Ilima Intermediate and Campbell High Schools. School officials predicted that these schools will be operating well beyond capacity

at the time the project is constructed. Hence, the proposed on-site school is necessary to serve students living in Makaiwa Hills.

Impact

Makaiwa Hills is estimated to generate approximately 200 to 250 elementary school-aged children, 85 to 100 intermediate school students, and 125 to 150 high school aged students. These Department of Education estimates assume that the majority of homes will be for executives, retirees, professionals, and second home buyers.

Mitigative Measures

The proposed school at Makaiwa Hills will mitigate project impacts on existing and off-site school facilities. Further, as suggested by the State Department of Education, the developer will donate the land or their fair share of cost for classrooms to accommodate the enrollment growth.

K. Child Care
(Appendix D)

As Kapolei develops, the need for child care services within the region will increase as more and more people live and work in the Second City. Three sites in the area already have been committed for child care purposes. First, West Loch has a 5.3 acre site for a park-and-ride facility with a 30,000 square foot child care center. This is scheduled for implementation in Phase 2. Second Ko Olina has one acre for child care and other public facilities. Third, Royal Kunia, which is just outside Ewa in Central Oahu, has similar provisions in its master plan. Three potential child care center also are being explored in Kapolei. One site is located in the City of Kapolei, with the other two in Kapolei Villages.

Impact

Makaiwa Hills will increase the regional demand for child care services because of the (1) increase in residential population and (2) employment generated by the proposed regional shopping center. Currently, there is no rule of thumb in projecting child care needs and requirements for specific development proposals have been determined on a case-by-case basis.

Mitigative Measures

The extent of the increase in demand for child care services generated by Makaiwa Hills is unknown at this time. Also undetermined is the degree to which proposed child care centers may meet this requirement.

The consultant recommends that a site for a child care facility should be included in the Makaiwa Hills project and, as with sites for other public facilities, the site could be dedicated to the City and County of Honolulu or privately operated.

L. Medical and Emergency Facilities

(See Appendix D)

Three hospitals are within reasonable travelling distance of the project site. The Kaiser Foundation Health Plan has a central hospital in Moanalua. The Pali Momi Medical Center is located near the Pearl Ridge Shopping Center, and the Saint Francis Hospital-West is located in the Ewa Plains. In addition, the area contains numerous medical clinics and doctors' offices.

Emergency services are provided by City ambulances located in Aiea. Further the Waipahu Fire Station contains an ambulance unit which serves Pearl City, Waipahu, Ewa Beach, Makakilo and parts of Waianae. Also eight-hour service is provided to the Makakilo Fire Station by the Waipahu unit. Twenty-four hour ambulance service at the Makakilo Fire Station is currently in the planning stage. All of the new fire stations in *Appendix D, Section 5.3.2.* will have an extra stall for ambulances if deemed necessary in the future. A .5 acre site adjacent to the new fire station in Kapolei Business-Industrial Park will provide regional ambulance service.

Impact

The proposed project is expected to be adequately served by the existing and additional medical facilities.

Mitigative Measures

No mitigation is needed at this time.

M. Recreation

Parks nearest the project site are those which serve Honokai Hale/Nanakai Gardens and Makakilo. These include:

- Kamokila Park, a 5.8 acre community park located just east of Honokai Hale/Nanakai Gardens;
- Makakilo Community Park, an 8.5 acre park located in the upper part of Makakilo; and
- Mauka Lani Neighborhood Park (4.4 acres) and Makakilo Playground (4 acres), both of which are located near elementary schools serving the Makakilo community.

Impact

Makaiwa Hills is not expected to impact existing or planned parks of other communities. To serve its residential community, the project includes 16 acres for park use and will contain hundred of acres of preservation land, some of which may be usable for passive recreation.

Mitigative Measures

No mitigation regarding existing and proposed off-site parks is necessary since no impact is expected. Final site selection of the proposed Makaiwa Hills 16-acre park is being coordinated with the City Department of Parks and Recreation.

VI. RELATIONSHIP TO LAND USE POLICIES AND REGULATIONS

This chapter analyzes the relationship of the project with existing public plans, policies and controls of the State of Hawaii and the City and County of Honolulu.

A. Federal

No Federal policies or regulations are expected to be directly impacted by the development of the proposed project. Throughout the EIS process, however, coordination will be maintained with appropriate Federal agencies.

B. State

1. HAWAII STATE PLAN

The Hawaii State Plan (Chapter 226, Hawaii Revised Statutes, as amended) consists of a series of broad goals, objectives and policies which act as guidelines for the growth and development of the State. The overall theme of the Plan (Sec. 226-3, HRS) is:

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

The Plan details objectives and policies in various areas such as population, the economy, physical environment, facility systems, socio-cultural advancement and fiscal management.

In this section, the proposed project is analyzed with respect to relevant State Plan goals, objectives and policies. The State's goals address a strong viable economy characterized by stability, diversity and growth; a physical environment characterized by beauty, cleanliness, quiet, stable natural systems, and physical, social, and economic well-being for individuals and families in Hawaii [Sec. 226-4, HRS].

POPULATION

Sec. 226-5 Objectives and Policies for Population.

- (a) It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this Chapter.
- (b)(1) Manage population growth statewide in a manner that provides increased opportunities for Hawaii's people to pursue their physical, social, and economic aspirations while recognizing the unique needs of each county.
- (b)(3) Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.

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

- (a)(3) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.

Comment — The project site is located in the Ewa Development Plan area which includes Census Tracts 83 through 86.02. The Ewa region population grew from 36,324 persons in 1980 to 39,338 persons in 1989, for an eight percent increase. The City and County of Honolulu General Plan encourages the development within the secondary urban center at Kapolei and the Ewa and the Ewa and Central Oahu urban-fringe and rural areas.

Ewa is targeted to accommodate 12 to 13.3 percent of the total islandwide population. Based on State Series M-K projections of Oahu for 2010, Ewa's share of the population could range between 119,940 to 132,934 persons. The project will provide approximately 2130 dwelling units and a regional shopping center that should provide a substantial employment generator for the increased population expected in Ewa. The project offers job opportunities in the "second city" and supports current population distribution policies.

Adequate support facilities are available or will be provided through the development of the project. Other public expenditures for services and infrastructure will be offset by increased tax revenues generated through property taxes, general excises and other forms of taxation.

Economy — General

Sec. 226-6 Objectives and Policies for the Economy

- (a)(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people.
- (a)(2) A steadily growing and diversified economic base that is not overly dependent on a few industries.
- (b)(3) Seek broader outlets for new or expanded Hawaii business investment.
- (b)(4) Expand existing markets and penetrate new markets for Hawaii's products and services.
- (b)(6) Strive to achieve a level of construction activity responsive to, and consistent with, state growth objectives.
- (b)(10) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.
- (b)(16) Foster a business climate in Hawaii — including attitudes, tax and regulatory policies, and financial and technical assistance programs — that is conducive to the expansion of existing enterprises and the creation and attraction of new business and industry.

Comment: The provision of a regional shopping area on approximately 156 acres (with approximately 600,000 sq. ft. of commercial space) will greatly assist in providing job opportunities for the developing communities in Ewa, Central, and Leeward Oahu. Regional malls act as a catalyst for further commercial development and other employment. A broad choice of jobs will result from the proposed project. Long-term employment estimated at the commercial area is three workers per 1,000 sq. ft. or approximately 1,800 jobs associated with the mall; about 65 jobs generated by the golf course (if built); and over 100 jobs to maintain and refurbish the homes (estimated at one per 20 homes).

The shopping center is expected to provide broader markets and create new markets for products and services. The employment base for the area population is very limited. The project will be of benefit to an area with employment needs. In

addition, the project will foster a favorable business climate for the area and Hawaii and promote the State as an attractive market for investment activities that benefit Hawaii's people.

Agriculture

Sec. 226-7 Objectives and Policies for the Economy — Agriculture.

- (a)(1) Continued viability in Hawaii's sugar and pineapple industries.
- (a)(2) Continued growth and development of diversified agriculture throughout the state.
- (b)(6) Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.

Sec. 226-103. Economic priority guidelines.

- (c)(1) Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries.

Comment — The economic viability of the sugar and pineapple industries and the growth of diversified agriculture are the main thrusts of the above objectives and policies. To address these issues as they pertain to the proposed project, an agricultural analysis was conducted by Decision Analysts Hawaii, Inc. According to the analysis, the project is not expected to affect any sugar or pineapple operations or conflict with the thrust of the plantation-agriculture portions of the Hawaii State Plan. The report also notes that the State Department of Agriculture has advocated the development of homes in the foot hills of the Waianae Mountains rather than on the high-quality agricultural lands on the plains below. Makaiwa Hills is consistent with this position.

However, most of the 1,915 acres are unsuited for growing crops because the soils are rocky, the slopes are steep, and / or water is not available. About 100 acres of the flatlands near the freeway were once planted in sugarcane, but were fallowed in the early 1980s because of difficult access problems after the H-1 Freeway was built, relatively low yields, rocky soils on much of the land, and the long hauling distance to the mill. Currently the project lands are used for grazing cattle and a few horses.

Physical Environment

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

- (b)(3) Take into account the physical attributes of areas with planning and designing activities and facilities.

**Sec. 226-13 Objectives and Policies for the Physical Environment
— Land, Air, and Water Quality.**

- (b)(4) Encourage actions to maintain or improve aural and air quality to enhance the health and well being of Hawaii's people.

- (b)(7) Encourage urban developments in close proximity to existing services and facilities.

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

- (b)(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 lifestyle.

- (b)(9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.

Comment — An air quality assessment and a noise impact assessment have been conducted for the project (*Appendices F. and E.*) Where impacts, if any, are identified, mitigative measures are presented. Topography, climate, wind direction, and views, and other physical attributes will be considered during final site planning and design of structures. Design and construction of Makaiwa Hills will provide sensitive land use interface to adjacent and surrounding land uses. An extensive open space network is proposed that stresses the preservation of the site's natural ravines and hillside areas.

Approximately 100 acres in the project's lower flatlands are identified as Agricultural Lands of Importance. These lands, however, are designated for Urban development in the County Development Plan. Development of the area is consistent with

the State policy of directing housing and commercial development to Ewa.

Facilities

Sec. 226-14 Objective and Policies for Facility Systems — in General.

- (b)(3) Ensure that required facility systems can be supported within resource capacities and at a reasonable cost to the user.

Sec. 226-15 Objectives and Policies for Facility Systems — Solid and Liquid Wastes.

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

Sec. 226-17 Objectives and Policies for Facility Systems — Transportation.

- (b)(3) Encourage a reasonable distribution of financial responsibilities for transportation among participating governmental and private parties.
- (b)(10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawaii's natural environment.

Sec. 226-18 Objectives and Policies for Facility Systems — Energy / Telecommunications.

- (b)(4) Ensure that the development or expansion of power systems and sources adequately consider environmental, public health, and safety concerns, and resource limitations.
- (c)(3) Promote prudent use of power and fuel supplies through conservation measures including education and energy-efficient practices and technologies.

Comment — The Estate of James Campbell is participating in the Ewa Region Highway Master Plan and funding improvements to the highway system that are attributable to its projects. The Estate is also a member of the Ewa Plain Water Development Corporation. The planning and design effort of the Makaiwa Hills project will be coordinated with appropriate federal, state, and county agencies regarding utilities and energy conservation and statewide transportation objectives. On-site

transportation systems to include roadway design, bus shelters, parking and other physical elements will be designed to accommodate pedestrian, visual, and community considerations. Covenants, Conditions and Restrictions (CC&Rs) are intended to be developed for the property that will include energy efficiency design guidelines, which will consider those energy-efficient guidelines developed by the State Department of Business, Economic Development & Tourism, Energy Division. The guidelines to be developed will be forwarded to the State for review and input. See additional discussion under State Functional Plans, Energy.

Housing

Sec. 226-19 Objectives and Policies for Socio-Cultural Advancement — Housing

- (a)(2) The orderly development of residential areas sensitive to community needs and other land areas.
- (b)(3) Increase home ownership and rental opportunities choices in terms of quality, location, cost, density, style and size of housing.
- (b)(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.

Comment — The approximately 2130 units planned for the proposed Makaiwa Hills development will provide a much needed executive housing location for the Kapolei master-planned community. The availability of executive housing at a premium location is considered critical to attracting "decision-makers" to Kapolei, and ultimately to the successful development of the "Second Urban Center" at Kapolei.

The preliminary plan provides for a land use concept which protects the site's important natural resources, and provides large continuous open space transition areas between adjacent neighborhoods. The applicant is committed to the establishment of an affordable housing program in conjunction with and related to the housing component of the Makaiwa Hills project. This commitment includes the provision of housing units and/or acceptable in-kind substitutes. Targeted income groups will include those households earning between 81 percent and 120 percent of the median income, and households earning between

121 and 140 percent of the median income. A variety of units are anticipated, including rentals and other special needs housing. Sites either on-site, off-site or in combination will be considered.

Education

Sec. 226-21 Objective and Policies for socio-cultural advancement — education.

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

- (b)(6) Assist individuals, especially those experiencing critical employment problems or barriers, or undergoing employment transitions, by providing appropriate employment training programs and other related educational opportunities.

Comment — The Estate of James Campbell is a member of the West Oahu Employment Corporation (WOEC) and is assisting in the funding of that organization. In cooperation with other organizations, the WOEC is helping to improve the qualifications of residents for a variety of employment opportunities, ranging from entry-level positions to management positions.

An 8-acre site for an elementary school has been included on the project's preliminary site plan. Final site selection will be coordinated with the Department of Education.

2. STATE FUNCTIONAL PLANS

The Hawaii State Plan directs the appropriate State agencies to prepare functional plans for their respective program areas. The plans set forth policies, statewide guidelines and priorities within a specific field of activity and serve as the primary implementing vehicle of the Hawaii State Plan. Following is a discussion of the applicable functional plans impacted by the proposed project.

AGRICULTURE

The State Agriculture Functional Plan focuses on the (1) continued viability in Hawaii's sugar and pineapple industries, and (2) continued growth and development of diversified agriculture throughout the State.

A discussion of the impact of the proposed development on agriculture is contained in *Section IV. B.* and *Appendix H.* Of the estimated 1,915 acres proposed for development, approximately 1,875 acres are designated in the State Agricultural District. About 100 acres of the project site consist of good soils. These acres, once planted in sugar cane, were fallowed in the early 1980s because of difficult access problems after the H-1 was built, and also because of relatively low yields, rocky soils on much of the land, and the long hauling distance to the mill. The remaining lands are poorly suited for growing crops because the soils are rocky, the slopes are steep, and / or low-cost water is not available. The project is not expected to (1) limit the growth of diversified agriculture, (2) affect the availability of the State's pasture and grazing lands, or impact the viability of the sugar cane or pineapple operations.

HEALTH

The State Health Plan (1989) focuses on public health programs under the jurisdiction of the State Department of Health. Three hospitals are within traveling distance of the project site, and the area contains numerous medical clinics and doctors' offices.

As Kapolei City progresses, additional medical facilities will be required to serve the increased population. The proposed project is expected to be adequately served by the existing and additional medical facilities.

Environmental matters of the State Health Plan have been addressed in the sections of this report relating to use of chemicals, noise impacts, air quality, and the adequacy of public facilities and services. Where adverse impacts have been identified, appropriate mitigative measures have been proposed.

HOUSING

The State Housing Functional Plan is maintained by the State Housing Finance and Development Corporation, an agency administrative attached to the State Department of Budget and Finance. The objectives of the plan primarily focuses on the orderly development of housing and increased opportunities for Hawaii's people to secure adequate and affordable housing.

The Applicant is committed to the establishment of an affordable housing component.

HISTORIC PRESERVATION

The State Historic Preservation Functional Plan is prepared and maintained by the State Department of Land and Natural Resources (DLNR). Procedures for development include preparing an archaeological survey, preserving sites considered of value, and coordination of salvaging and preservation with the State Historic Sites Office. An archaeological survey of the proposed site has been conducted and is presented in *Section III. F.* and *Appendix C.*

RECREATION

The State Recreation Plan is prepared by the Department of Land and Natural Resources. The Plan presents programs and projects directed toward meeting the out-door recreational needs of Hawaii's residents and visitors.

The proposed project includes a 16-acre public park. An 18-hole golf course may be considered for future development in the area identified as Lower Preservation (see *Figure 5*).

TRANSPORTATION

The general intent of the Transportation Plan is to provide for an integrated multi-modal transportation system which serves statewide needs and promotes the efficient, economical and safe movement of people and goods; and is consistent with planned growth objectives throughout the state.

The Estate of James Campbell is participating in the Ewa Region Highway Master Plan and funding improvements to the highways that are attributable to its projects.

A Traffic Assessment was performed for the project and is presented in *Section V.A* and *Appendix B.*

ENERGY

The State Energy Function Plan is prepared and maintained by the Energy Division of the State Department of Business, Economic Development and Tourism. The purpose of the plan is to further define and implement objectives of the State Plan which include the provisions of dependable, efficient and economic statewide energy systems capable of supporting the needs of the people, and increased energy self-sufficiency.

The State's Energy Functional Plan has three major strategies to achieve the objectives and policies of the State Plan. Of these three, the one most pertinent to this project is the one intended to "Reduce the state's dependency on petroleum by actively demonstrating, developing and coordinating alternate and renewable energy resources and energy conservation and efficiency resources.

The Functional Plan itself presents objectives, policies and actions in order to implement the stated strategies. Objective A to "moderate the growth in energy demand through conservation and energy efficiency" has two subordinate policies pertinent to this project: (1) Policy A(1) to promote and stimulate greater energy efficiency and conservation in non-transportation sectors and (2) Policy A(2) to promote and stimulate greater energy efficiency and conservation in the transportation sector.

The two principal areas in which this project impacts energy consumption are electrical demand and motor vehicle use, both of which require use of petroleum products.

Electrical Generation

Based on an average HECO residential customer's consumption of 600 kilowatt hours /month (kwhr/mo), an annual electrical demand of 15.5 million kilowatt hours is estimated for the project. Lacking any details at this time on the electrical demand of commercial and public facilities, it is assumed that those facilities will have an equivalent total demand, thereby giving a grand total of 31 million kwhr/yr, which would require firing of some 50,000 barrels of fuel oil.

Currently, most of Oahu's electrical energy is generated at Hawaiian Electric Company's (HECO) Kahe Generating Station located within a mile of the project site. This is currently a six-unit, approximately 650-megawatt facility firing low-sulfur fuel oil. A seventh 150-megawatt unit was proposed by HECO, but two out-of-state companies proposed and are now building an oil-fired gas turbine and coal-fired power plant at Campbell Industrial Park to sell power to the utility. However, HECO has advised by letter that they intend to add generation at Kahe in the future.

Mitigation

Energy efficiency guidelines will be developed in consultation with the State Department of Business, Economic Development

and Tourism's Energy Division as part of the Covenants, Conditions and Restrictions (CC&Rs) that will be established for the development of the property. In preparing the CC&Rs, close attention will be given to the energy guidelines developed by the State for its housing projects.

The refuse generated by the residents of the 2,130 new homes as well as the commercial establishments and public facilities in the project will require disposal. With the recent opening of the City's new resource recovery facility (HPOWER) at Campbell Industrial Park, most refuse will be preprocessed and burned. Since the facility is equipped with a steam generator, burning of the refuse will generate electricity thereby offsetting to a small extent the energy demand placed on the Kahe power plant.

Motor Vehicle Use

The following measures would help reduce private automobile use and thus gasoline consumption thereby demonstrating consistency with the State energy policy:

- additional highway improvements to increase capacity
- development and use of a mass transit system
- increased bus service to the project area
- provision of "park & ride" facilities
- encouragement of car-pooling
- limited parking facilities to encourage use of public transportation
- development of employment opportunities near Makaiwa Hills
- implementation of an inspection/maintenance (I/M) program to reduce individual motor vehicle emissions

While many of these measures would have to be initiated by government, the project developer can encourage such initiatives as well as implement those measures which are within his own capability.

WATER RESOURCES

The plan's objectives generally are the development and regulation of water resources to meet different land uses as well as the preservation of water-related recreational and ecological, and aesthetic values and the quality of water resources.

The Estate of James Campbell is a member of the Ewa Plain Water Development Corporation. Water system requirements for Makaiwa Hills have been considered in regional water system planning. The proposed onsite potable water system will be designed in accordance with the BWS Water System Standards and is anticipated to be dedicated to the BWS for operation and maintenance. A water master plan will be prepared and submitted to BWS for their review and approval. (See *Section V.B.* and *Appendix A* for further discussion.)

3. STATE LAND USE CLASSIFICATION

All lands in the State have been classified in one of four land use districts: Urban, Rural, Agricultural, and Conservation by the State Land Use Commission, pursuant to Chapter 205, HRS. Approximately 1875 acres are classified in the State Agricultural District, with the remaining 40 acres in the Urban District. A State Land Use Boundary Change will be required.

4. COASTAL ZONE MANAGEMENT

The objectives and policies of the Hawaii Coastal Zone Management (CZM) Program are included in the Shoreline Protection Act of 1975 (Chapter 205A-2), Hawaii Revised Statutes. The project site is not located within the Special Management Area (SMA).

Compliance with the relevant objectives of the Hawaii CZM PROGRAM (205A-2, HRS) are outlined below:

- (b)(5) Economic Uses - The proposed development includes a regional shopping mall that will provide opportunities for new and expanding businesses. The development will also stimulate economic activity through a multiplier effect. The development of the Makaiwa Hills project is expected to have a positive impact on the area's economy.
- (b)(6) Coastal Hazards - Due to its inland location, the development is not subject to inundation by coastal storm waves or

tsunami. A drainage plan will be prepared and coordinated with the Department of Public Works.

C. City

1. GENERAL PLAN

The proposed Ewa Development Plan Land Use Map Amendment relates to the Objectives and Policies of the City and County's General Plan (amended) as follows:

Population

OBJECTIVE C: To establish a pattern of population distribution that will allow the people of Oahu to live and work in harmony.

Policy 2: Encourage development within the secondary urban center at Kapolei and the Ewa and Central Oahu urban-fringe areas to relieve development pressures in the remaining urban-fringe and rural areas and to meet housing needs not readily provided in the primary urban center.

Comment — The General Plan (as amended) has provided by Resolution No. 88-404, CD-1, FD-1, for population growth in the Ewa / Secondary Urban Center area by increasing upper limits of population distribution in the area. The General Plan further encourages the development within the secondary urban center at Kapolei to relieve developmental pressures in urban Honolulu. A major consideration in public policy is to redirect traffic currently flowing into Honolulu proper by providing alternative employment centers and residences outside of the existing urban core. The requested changes from Agriculture to Residential, Commercial, and Preservation are consistent with public policies and the concept of growth in the Secondary Urban Center.

Economic Activity

OBJECTIVE A: To promote employment opportunities that will enable all the people of Oahu to attain a decent standard of living.

Policy 1: Encourage the growth and diversification of Oahu's economic base.

- Policy 2: Encourage the development of small businesses and larger industries which will contribute to the economic and social well-being of Oahu residents.
- OBJECTIVE G: To bring about orderly economic growth on Oahu.
- Policy 1: Direct major economic activity to the primary and secondary urban centers.
- Policy 2: Permit the moderate growth of business centers in the urban-fringe areas.

Comment — In addition to construction jobs, the commercial component of the project is expected to serve and provide employment and business development opportunities for the regional population. After the Makaiwa Hills project is completed, employment at full operation is projected to reach nearly 2,000 jobs. This project includes 1,800 jobs associated with the regional mall, about 65 jobs generated by the golf course (if built), and over 100 jobs to maintain or refurbish the homes (see *Appendix I* for further discussion on Employment).

Natural Environment

- OBJECTIVE B: To preserve and enhance the natural monuments and scenic view of Oahu for the benefit of both residents and visitors.
- Policy 2: Protect Oahu's scenic views, especially those seen from highly developed and heavily travelled areas.

Comment — A View Assessment for the project has been prepared, with findings, impacts, and conclusions presented. The assessment concludes that adverse visual effects of the proposed Makaiwa Hills project may be mitigated and in certain instances, may enhance the environment through desirable planning / design features contained in the proposed land use plan (see *Appendix G* for the View Assessment Report).

Housing

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

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

Policy 3: Encourage residential development near employment centers.

Comment — The proposed Makaiwa Hills development will include a variety of single-family dwellings, lots, and townhomes designed to appeal to executives, retirees, and second homebuyers employed at or attracted to the Secondary Urban Center. The project area will include a 16-acre park site. Recreational amenities will be considered as options for the 180 acres designated on the Site Plan (Figure 5) as Lower Preservation. These recreational amenities could include, among others, facilities for tennis, hiking, equestrian activities and possibly a golf course.

Employment opportunities will be created by the proposed regional shopping center.

In conjunction with and related to the housing component of the Makaiwa Hills project, the applicant is committed to the establishment of an affordable housing component that will serve to meet the needs of households earning below 140 percent of the median income. This commitment includes the provision of housing units and/or acceptable in-kind substitutes. Targeted income groups will include those households earning no more than 80 percent of the median income, households earning between 81 percent and 120 percent of the median income, and households earning between 121 percent and 140 percent of the median income. A variety of units are anticipated, including rentals and other special needs housing. Sites either on-site, off-site or in combination will be considered.

Transportation and Utilities

OBJECTIVE A: To create a transportation system which will enable people and goods to move safely, efficiently, and at a reasonable cost; serve all people, including the poor, the elderly, and the physically handicapped; and offer a variety of attractive and convenient modes of travel.

Policy 10: Discourage the inefficient use of private automobiles, especially in congested corridors and during peak hours.

OBJECTIVE C: To maintain a high level of service for all utilities.

Policy 5: Require the installation of underground utilities wherever feasible.

Comment — A major consideration in public policy is to redirect traffic currently flowing into Honolulu proper by providing alternative employment centers and residences outside of the existing urban core. The Makaiwa Hills project will provide the opportunity for a substantial number of individuals employed at the Secondary Urban Center to live close to their work sites. In addition, the regional shopping mall will provide employment for area residents who may now be commuting to work areas outside the region. The project, thus, will help to alleviate peak hour congestion.

The possibility of relocating the HECO overhead transmission lines underground, within the right-of-way of the proposed development roads, is under consideration.

Physical Development and Urban Design

OBJECTIVE A: To coordinate changes in the physical environment of Oahu to ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located.

Policy 4: Require new developments to provide or pay the cost of all essential community services, including roads, utilities, schools, parks, and emergency facilities that are intended to directly serve the development.

Policy 6: Encourage the clustering of developments to reduce the cost of providing utilities and other public services.

Policy 7: Locate new industries and new commercial areas so that they will be well-related to their markets and suppliers, and to residential areas and transportation facilities.

Policy 8: Locate community facilities on sites that will be convenient to the people they are intended to serve.

Comments — Makaiwa Hills will be designed to create a community where parks, recreation facilities, commercial services, and jobs are available and located conveniently to serve the

residents of the proposed development. All land use components, including the transportation network, will be designed to ensure proper land use relationship with the area and adjacent communities.

Culture and Recreation

OBJECTIVE D: To provide a wide range of recreational facilities and services that are readily available to all residents of Oahu.

Policy 9: Require all new developments to provide their residents with adequate recreation space.

Policy 10: Encourage the private provision of recreation and leisure time facilities and services.

Comment — Land for a 16-acre park will be dedicated to the City. Final site selection and park configuration will be coordinated with the appropriate agencies. In addition proposed recreational amenities are discussed in *Chapter VII*.

2. DEVELOPMENT PLAN FOR EWA

Common Provisions - Section 4, General Urban Design Principles And Controls

This section of the DP Ordinance discusses the importance of Public Views, and provisions of Open Space and Landscaping.

Comment — The proposed project will be generously landscaped. Large areas of continuous natural open space will be maintained by the preservation of the site's natural ravines and portions of the hillside areas. Residents within the project will be afforded panoramic views of the ocean, Diamond Head and surrounding areas.

Special Provisions - Section 1 Area Description

This Section of the DP Ordinance for Ewa recognizes the intent to provide development in the Ewa area with the following statements: "Relevant general plan policies for Ewa encourage the development of a secondary urban center in order to relieve development pressures in the urban fringe and rural areas." "It is the intent of the Ewa Development Plan to provide a guide for orderly and coordinated public and private development in a manner that is consistent with general plan provisions." "A new

secondary urban center shall be developed in the West-Beach Makakilo area in order to accommodate most of the expected influx of population in the area between 1985 and 2005."

Land Use Map

The project site is designated Agriculture, Residential, and Low Density on the Ewa Development Plan Map (*Figure 3*).

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VII. ALTERNATIVES TO THE PROPOSED ACTION

The purpose of this Chapter is to develop, describe, and consider alternatives to the proposed development. Three alternatives were

➤ **NO ACTION**

This alternative assumed the development of the land in accordance with the current zoning on the property, which is agriculture and 40 acres of residential.

➤ **DEVELOPMENT PLAN**

This alternative assumed the development of the land in accordance with the current land use designations on the property, which are agriculture, residential and low density apartment.

➤ **LAND USE VARIATIONS**

This alternative explores various uses for the area shown on the proposed plan as Lower Preservation.

Of the alternatives considered, an option under alternative 3 (golf course) appeared to offer a recreational amenity that could enhance the living environment of the proposed residential community and, therefore, remains an alternative for future application. As such, the discussion on this option includes the findings of various consultant studies on the feasibility of a golf course and the impacts and mitigation measures associated with such a development, including the application of fertilizers and pesticides.

A. NO ACTION ALTERNATIVE

Under the "No-Action" Alternative, approximately 1,875 acres of land would remain in agriculture, while about 40 acres which are zoned "Residential" would be developed to provide about 360 homes. The number of homes is based on 75 percent of the land being used for homes at 12 homes per acre, with the remainder of the land used for roads, landscaping and other improvements.

Impact on Agriculture

Approximately 100 acres of the flatlands near the H-1 Freeway have sufficiently good soil conditions to allow crop production. Since these lands were once cultivated in sugarcane, this is a potential crop. However, the reasons that these fields were fallowed in the

early 1980's still apply; access is very difficult because of the freeway, the soils are rocky, and the hauling distance to the mill is long.

Grazing operations would continue in the foothills of the property and on much of the flatlands. However, on a portion of the flatlands, Campbell Estate plans to develop a nursery which will be a grow-out area for ornamental trees destined for its projects in Ewa. In addition, the Estate plans to develop a second nursery on about 20 acres of land, a few acres of which will lie in the southeast corner of the project site. This nursery will also provide plants and trees for the Estate's projects in Ewa.

Impact on Employment.

The grazing operations that would continue would provide less than three full-time equivalent jobs. The two new nurseries would provide 40 jobs at peak operation.

Expenditures by an estimated 1,100 residents would support nearly 300 jobs. This estimate is based on an average family income of \$75,000 per year, with 60 percent of the income being spent on consumption, and one job generated per \$60,000 of consumption expenditures.

Annual tax revenues of about \$4.1 million (estimated below) would support about 50 State and County government jobs. This assumes that one-half of the tax revenues are spent on salaries at an average government salary of \$40,000 per job, including benefits.

The employment generated under this "No-Action" Alternative amounts to less than 7 percent of this jobs which would be generated by the proposed Makaiwa Hills project.

Impact on Government Revenues and Expenditures

At full development, County revenues under this "No-Action" Alternative would be about \$1 million per year, with about \$600,000 of this amount being derived from property taxes. This estimate is based on the assumptions that the homes would have an estimated average value of \$350,000; the homeowners would be entitled to a \$20,000 home exemption; and the effective tax rate would be \$4.85 per \$1,000 of assessed value. The remaining \$400,000 per year derives from a variety of sources, with revenues estimated at \$372 per resident. The County expenditures required to support residents living in the project would amount to about \$700,000 per year, most of which would be for services estimated at \$635 per resident. Debt service on the fair-share of improvements required to

support the project - including a police station, a fire station, and expansion on the Honouliuli Wastewater Treatment Plan - would amount to less than \$30,000 per year. The resulting net revenues to the County would be about \$300,000 per year.

For the State, taxes on construction activity would generate approximately \$4.9 million. This figure is based on construction costs estimated at 70 percent of the value of the homes; an effective excise tax of 5.5 percent with pyramiding; and a conveyance tax of 0.05 percent on the total value of the homes.

At full development, State tax revenues would be about \$3.1 million per year from excise taxes on consumption expenditures, income taxes, and other taxes related to population. This figure is based on an average family income of \$75,000 per year, 60 percent of which would be spent on consumption; an effective excise tax of 5.5 percent, with pyramiding; an average income tax of 6.1 percent; and other revenues estimated at \$494 per resident. State expenditures to support the project would be about \$1.9 million per year, including \$1.8 million per year for services which are estimated at \$1,607 per resident, and debt service of \$100,000 per year for school improvements. Net revenues to the State would amount to \$1.2 million per year.

In combination, the State and County would net an estimated \$1.5 million per year under this "No-Action" Alternative. This compares with a net of over \$30 million in revenues per year if the proposed Makaiwa Hills project is developed as planned.

Additional Considerations

Under this alternative, the land would probably remain essentially undeveloped. The rural-character would remain and any adverse or beneficial impacts created by the proposed project would not be generated. If the project was not implemented at this time, it is probable that the land would remain in its present condition until other alternatives, more profitable to the owners, surfaced.

B. DEVELOPMENT PLAN

Under the "Development Plan" Alternative, approximately 143 acres would be developed, and 1,772 acres would remain in agriculture. Of the developed land, about 40 acres are zoned "Residential;" this land would be developed to provide about 360 single-family homes (based on 12 homes per acre, with 75 percent of the land being used for homes and 25 percent of the land being used for roads,

landscaping and other improvements). An additional 103 acres are designated as "Low-density Apartment" in the Development Plan; this land would be developed (with zoning approval) to provide approximately 2,320 condominiums (based on 30 homes per acre and 75 percent of the land being used for homes). In total, about 2,680 homes would be provided.

Impact on Agriculture

Except for the 40 acres designated as "Residential," grazing operations would continue in the foothills of the property, resulting in a negligible effect on the current operations of Rocker G. Livestock Company.

On the flatlands, grazing operations would eventually be discontinued since this is the area designated as "Low-density Apartment." However, until the property is developed, these lands can be used for agricultural operations as planned by Campbell Estate. These temporary operations include (1) a nursery on a portion of the flatlands as a growout area for ornamental trees destined for the Estate's projects in Ewa; (2) a second nursery, a portion of which will use a few acres in the southeast corner of the project site to grow plants and trees for the Estate's projects in Ewa; and (3) grazing operations on the remainder of the flatlands.

Impacts on Employment

The grazing operations that would continue would provide less than three full-time equivalent jobs. The two new nurseries would provide 40 jobs at peak operation.

Expenditures by an estimated 6,900 residents would support about 1,500 jobs. This estimate is based on average incomes of \$75,000 per year for families in single-family homes and \$55,000 per year for families in condominiums, 60 percent of the income being spent on consumption, and one job generated per \$60,000 of consumption expenditures.

Annual tax revenues of about \$23.1 million (estimated below) would support nearly 300 State and County government jobs. This assumes that one-half of the tax revenues are spent on salaries at an average government salary of \$40,000 per job, including benefits.

The employment generated under this "Development Plan" Alternative amounts to about one-third of the jobs which would be generated by the proposed Makaiwa Hills project.

Impact on Government Revenues and Expenditures

At full development, County revenues under this "Development Plan" Alternative would be about \$5.2 million per year, with about \$2.6 million per year being derived from property taxes. The property revenues are based on the assumptions that single-family homes would have an estimated average value of \$350,000; condominiums would have an average value of \$200,000; the homeowners would be entitled to a \$20,000 home exemption; and the effective tax rate would be \$4.85 per \$1,000 of assessed value. The remaining \$2.6 million per year derives from a variety of sources, with revenues estimated at \$372 per resident. The County expenditures required to support residents living in the project would amount to about \$4.6 million per year, most of which would be for services estimated at \$635 per resident. Debt service on the fair-share of improvements required to support the project - including a police station, a fire station, and expansion of the Honouliuli Wastewater Treatment Plan - would amount to about \$200,000 per year. The resulting net revenues to the County would amount to about \$600,000 per year.

For the State, taxes on construction activity would generate approximately \$23 million. This figure is based on construction costs estimated at 70 percent of the value of the homes; an effective excise tax of 5.5 percent, with pyramiding; and a conveyance tax of 0.05 percent on the total value of the homes.

At full development, State tax revenues would be about \$17.9 million per year from excise taxes in consumption expenditures, income taxes, and other taxes related to population. This figure is based on an average income of \$75,000 per year for families in single-family homes, an average income of \$55,000 per year for families in condominiums, 60 percent of which would be spent on consumption; an effective excise tax of 5.5 percent, with pyramiding; an average income tax of 6.1 percent; and other revenues estimated at \$494 per resident. State expenditures to support the project would be about \$12 million per year, including \$11.1 million per year for services which are estimated at \$1,607 per resident, and debt service of \$1 million per year for school improvements. Net revenues to the State would amount to \$5.9 million per year.

In combination, the State and County would net an estimated \$6.5 million per year under this "Development Plan" Alternative. This compares with a net of over \$30 million in revenues per year if the proposed Makaiwa Hills project is developed as planned.

Additional Considerations

Under this alternative, most of the land would probably remain in its present condition, except maybe for the development of the low density designated apartment area. However, given the preferred apartment locations near Kapolei City, it is unlikely that apartment development will occur in this area within the near future. Also, development under this alternative would severely limit housing choices, and the ability to attract "decision-makers" to live in Kapolei, thereby achieving a housing balance that is critical to the successful development of the "second urban center" at Kapolei.

C. LAND USE VARIATIONS

This alternative considered different land use components for the lower elevations of the site near the highway, which are currently shown on the proposed amendment map as Lower Preservation. The variations include development of this area for more residential; more commercial; for industrial; and/or for golf course development.

Except for the golf course option, the residential, commercial and industrial options, while offering more units and employment opportunities, would not be compatible with the surrounding environmental conditions nor would it be consistent with the overall planning of the second urban center at Kapolei. Due to its proximity to the highway, development of more residential in this area would subject the residents to noise exposure levels in excess of an acceptable noise environment. More commercial development (in addition to the planned development of the area could undermine the already planned Kapolei Business-Industrial Park which was planned to serve the industrial and business service needs for the second urban center.

From a planning and environmental point of view, open space, particularly uses devoted to open space, such as golf course, would be the best use of the land, given its location near the highway and the amenities it would offer the adjoining residential community. In evaluating the recreational potential of the land for a golf course, studies were conducted to determine its feasibility; its impact on the environment; and the mitigative measures available to offset potential adverse consequences. Although the findings of these studies (summarized below) support golf course use, the decision to incorporate such a proposal option remains undecided at this time. If, in the future, the golf course option is selected, a separate devel-

opment plan amendment will be filed with the Department of General Planning.

FEASIBILITY

John Zapotocky has prepared a Market Assessment for a possible future golf course development in the Lower Preservation area of the amendment, and the results are summarized below. The full report can be found in *Appendix O*.

Market Analysis

One of the more attractive features of the golf course option is the possibility of readily accessible recreational facilities. These amenities include a tennis and swim club and an 18-hole, daily fee, championship golf course with a clubhouse, parking lot, and maintenance facilities. Demand for golf at Makaiwa should be assured due to the following factors:

- Location within the high golf growth Ewa area.
- The target market for the homes within the Makaiwa Residential Community is likely to attract buyers whose demographic profile matches that of high frequency golfers.
- The location of the development adjacent to the Ko Olina Resort Residential Community.
- High degree of visibility from the H-1 Freeway.
- Topography that allows for ocean views.

Existing Conditions

Nationally, the outlook for golf participation through the year 2000 is very positive. This optimism is based on the following: expected higher incomes, an aging population; early retirement, and more leisures and flex time (flexible working hours), among other factors. According to recent studies by the National Golf Foundation, there were some 24.7 million golfers in 1989, up about 8% per annum from 17.5 million golfers in 1985. If similar trends continue, it is estimated that there may be between 30-40 million U.S.-resident golfers by the year 2000. This projected growth, when analyzed from the point of view of the need for additional golf courses, shows potential demand for between

1,400 to 7,900 golf courses by the year 2000, assuming only 0% and 3% rates of growth in participation.

The prospects for increased golf participation in the State of Hawaii echo, and in some cases, amplifies, those of the national trends. The growth of golf participation in the State is tied to the growth of the resident population and tourism, as well as the annual growth in the participation of golf within each group.

A survey, conducted within the past two years by the Consultant, showed that approximately 1.5 million rounds were played on Oahu's 19 non-military golf courses in 1988. Of these rounds, approximately 1.24 million or 79% were played by residents and .27 million or 21% were played by visitors. Based on this information, the average annual rounds played in 1988 by Oahu's average resident (non-military) and visitor population was 1.81 and 3.58 rounds respectively. Using the 1988 figures and the projected growth rates for resident and visitor population, as projected by State planners, alternative demand scenarios were generated by incorporating growth rates of 0%, 2%, and 5%. Use of these assumptions indicated a demand on Oahu for additional golf course of three, eight and 18, respectively.

Future Demand for Courses

Characteristics which describe Oahu's unmet golf demand include: courses which operate at maximum or over capacity; escalating green fees, and a telephone lottery system for municipal course starting times.

There are currently (December 1990) 5 golf courses under construction on Oahu with an additional 35 courses in various stages of planning. However, based on a number of considerations, including the ability to achieve needed governmental approvals, the physical constraints of the sites under consideration, the ability of potential developers to obtain financing and the economics of development in an environment of potential oversupply, estimates are that less than half or about 20 of these planned courses could be developed by the year 2000.

Estimated Existing Shortfall of Golf Courses in Hawaii

By summarizing the future demand and supply of Oahu golf courses, it is estimated that a shortfall exists of between 3 and 12 courses by the year 2000 with a mid-range estimate of 7.5 courses. This assumes an existing shortfall ranging from 5 to 14 courses, additional demand by the year 2000 ranging from 3 to

18 courses and an estimated supply ranging from 5 to 20 courses.

Target Market and Absorption Rate

The Ewa, Central Oahu and Waianae Development Plan areas are expected to account for the bulk of the residential development and visitor plant expansion through the year 2010. Growth in golf demand from the residential and visitor population in the Primary Urban Center (PUC) and any growth in golf demand from the PUC will have to be met outside of the PUC. Given their convenient location and excellent transportation infrastructure, the Ewa and Central Oahu areas are likely to attract the bulk of the increased golf demand from the PUC. The Consultant estimates that the Ewa, Central Oahu, and Waianae DP areas could attract 75% to 80% of the islandwide growth in golf demand through the year 2000.

The Consultant estimates that the Makaiwa Residential Community is likely to supply 21,000 rounds annually at buildout. This is based on the community's likely demographic makeup which increases its likelihood of attracting high frequency golfers. In addition, other resident play is estimated at approximately 16,600 rounds annually composed primarily of play from the local network of public-links golf clubs. Resort demand has been estimated at approximately 33,400 rounds based on overflow demand from the Ko Olina Resort Residential Community.

The golf course alternative being considered for Makaiwa Hills is strongly supported from the standpoint of the existing and future demand for golf courses on Oahu. Development of a golf course at Makaiwa will enhance the residential product being proposed by providing additional recreational opportunities as well as aesthetic benefits to the surrounding residential development. Thus from a market standpoint, the golf course alternative should be adopted.

IMPACT OF CHEMICALS

A study of the environmental impact of fertilizer, herbicide, and pesticides use on the Lower Preservation site was prepared by Charles L. Murdoch, Ph.D. and Richard E. Green, Ph.D. in September 1990. The results of their study are summarized below. The full report can be found in *Appendix K*.

The assessment focuses principally on the potential for applied chemicals to move in surface runoff and to groundwater. Key elements of the analysis are:

- Calculation of quantities of applied chemicals (pesticides and fertilizer nutrients) which are likely to be used throughout the year.
- Compilation of soil, geologic and climatic information which will aid in the assessment of chemical movement.
- Estimation of water balance from rainfall, irrigation and evapotranspiration.
- Compilation of pesticide properties which may be of environmental significance.
- Computation of the Attenuation Factor for pesticides used on golf courses, using properties, in order to estimate the likelihood of chemical movement to groundwater.

In addition the potential for pesticide transport in the air and potential for negative impact on birds in the area are addressed briefly in the report and summarized below. The toxicity and environmental behavior of pesticides which are likely to be used are considered in the analysis, as are soil, topographic and climatic factors which may impact on fertilizer and pesticide movement. Following are tables on the fertilizer use rates for the different golf course areas and a typical pesticide program for an 18-hole golf course in Hawaii. Because nitrogen is applied in larger quantities and also because it is the only fertilizer element likely to cause contamination of ground or surface waters, only nitrogen application rates are given.

Type Of Turf	Area (acres)	Fertilizer Amount (lb. N / 1000 sq. ft.)	Application Frequency	Total annual Application (tons N)
Greens	3	0.5	2 weeks	0.85
Tees	3	1.0	3 weeks	1.15
Fairways	50	1.5	8 weeks	10.00
Roughs	30	1.0	3 months	2.60
Total	86			14.60

**Approximate Pesticide Use For
An 18-Hole Golf Course In Hawaii**

Turfgrass Area	Area (Acres)	Chemical	Frequency	Rate / Application	Annual Total
I. Herbicides					
A. Greens	3	MSMA	6 times / year	2 lb. ai./acre	36 lb. ai
		bensulide	2 times/year	12 lb ai/acre	72 lb. ai
B. Tees	3	MSMA	6 times/year	2 lb. ai./acre	36 lb. ai
		Trimec	3 times/year	1 pint/acre	9 pints
C. Fairways	50	bensulide	2 times/year	12 lb. ai./acre	72 lb. ai
		MSMA	6 times/year	2 lb. ai./acre	600 lb. ai
		Trimec	3 times/year	1 pint/acre	19 gallons
D. Perimeter areas	20	metribuzin	2 times/year	0.75 lb. ai./acre	75 lb. ai.
		glyphosate	3 times/year	1.5 lb ai./acre	90 lb. ai.
II. Insecticides					
A. Greens	3	chlorpyrifos	As needed	1 lb. ai./acre	Approx. 18 lb. ai.
B. Tees	3	chlorpyrifos	As needed	1 lb. ai. acre	Approx. 18 lb. ai.
C. Fairways	Spot treat-ments	chlorpyrifos	As needed	1 lb. ai./acre	Approx. 50 lb. ai.
III. Fungicides					
A Greens	3	metalaxyl	As needed	1.3 lb. ai./acre	Approx. 25 lb. ai.
		chlorothalonil	As needed	8 lb. ai./acre	Approx. 72 lb. ai.
B. Tees	3	metalaxyl	As needed	1.3 lb. ai./acre	Approx. 25 lb. ai.
		chlorothalonil	As needed	8 lb. ai./acre	Approx. 72 lb. ai.
C. Fairways	Spot treat-ments	chlorothalonil	As needed	8 lb. ai./acre	Approx. 250 lb. ai.

About 85% of the area is Stony Steep Land in which about 50% to 90% of the surface consists of boulders and stones deposited by water and gravity on the side of slopes of drainage ways. The remaining 15% is Lualualei extremely stony clay with slopes of approximately 3% to 35%. This soil is principally in lower elevation areas of the site, but also extends up draws and around lower slopes of hills. Both land types have a Capability Classification of VIIs, indicating severe limitations for agricultural use due to stoniness and/or undesirable texture.

The Makaiwa Hills area, situated on the leeward coast of Oahu, is relatively arid. Mean annual rainfall is approximately 20 to 30 inches and varies from about 4.2 inches in January to about 0.3 inches in July. Mean pan evaporation is approximately 95 inches annually and varies from almost 10 inches in July and August to about 6 inches in December and January. There is an evaporation deficit of approximately 70 inches annually and there are no months when rainfall equals pan evaporation. Thus with careful irrigation, recharge of groundwater will be minimal.

Impacts

Groundwater and Runoff

Considering the limited use of pesticides which have the potential to leach below the root zone and the high HAL for nitrate, significant contamination of the aquifer by chemical use on a golf course seems unlikely. However, this site is dominated by shallow, rocky soils which provide less retardation of pesticide leaching than normal agricultural soils. Thus the shallow-soil areas of the golf course will require importation of soil to provide adequate protection against pesticide leaching. One foot of soil having at least 1% organic carbon should be adequate when proper management is exercised in both irrigation and chemical use. Thus if sufficient topsoil is provided and proper management is exercised in both irrigation and chemical use, no adverse effect of fertilizers and pesticides on groundwater is anticipated.

Although the areas with slopes exceeding 10% are likely to produce runoff from major winter storms, the runoff produced from treated golf course areas will be a small fraction of the total runoff reaching major drainage channels. Thus possible contamination of runoff waters by nitrate and pesticides from treated areas will be mitigated by dilution with runoff waters from higher elevations outside the golf course. The existence of 10 separate, defined drainage areas which terminate at Farrington Highway suggests that the runoff is highly dispersed along the highway, in addition to the dilution from off-site runoff. These factors suggest no adverse impact of chemical use on the receiving shoreline waters south of Kahe Point. Careful management of irrigation and chemicals during the winter months will further reduce the likelihood of any adverse effect of agricultural chemicals on runoff waters.

Migratory Birds and Endangered Hawaiian Waterbirds

The chemicals applied in golf course management pose little hazard for birds or wildlife. Fertilizers are relatively non-toxic unless ingested in large amounts. With the exception of Chloropyrifos, the pesticides are of low toxicity to birds. Chloropyrifos has a low solubility in water, is highly sorbed, and degrades rapidly; thus its use does not threaten either water quality or birds.

Air Quality

There will be no significant impact on air quality from application of pesticides in golf course management provided that appropriate application techniques are used. The spray equipment used in golf course maintenance is ground-operated. Nozzle heights are typically less than two feet. Low spray pressures and coarse nozzle openings result in relatively large droplet sizes which are not highly subject to drift.

Mitigative Measures

Irrigation management is critical to the conclusions reached above. For this reason a weather station including a rain gauge and a U.S. Weather Bureau Class A evaporation pan will be used to measure evaporation and rainfall. Irrigation amounts and scheduling can then be determined from water use rates of the turfgrass. Alternately, a computer controlled irrigation system with weather sensing instruments will be used to automatically compute water use rates and determine irrigation amounts and schedules.

Where grading is necessary, topsoil will be stockpiled and replaced over the areas to which chemicals will be applied. Areas having little or no soil will be covered with imported soil about one foot deep; the soil will have an organic content exceeding 1%.

Judicious use of fertilizers and pesticides, especially in the early establishment of turf, is followed, since pesticides and nitrogen will be more likely to move before an extensive root system and thatch layer are developed. Special care in pesticide application will be monitored during the winter months when runoff-producing storms are likely. An IPM approach to pest management will be used to reduce the amount of pesticide applied.

Only slow-release nitrogen fertilizers will be used during the rainy season (November through February). During drier periods, when evaporation greatly exceeds rainfall, application of small amounts of soluble fertilizer through the irrigation system (fertigation) may be used in conjunction with carefully controlled irrigation amounts so that leaching does not occur.

Although significant movement of applied chemicals in either leachate or runoff is not anticipated, a modest monitoring program of groundwater in wells down-gradient from the golf course is appropriate. Since fertilizer nitrogen is applied in the

largest amounts and nitrate nitrogen derived from this source is the most mobile and persistent chemical used in golf course management, it would be the most logical chemical for which to test initially.

Also, close coordination and consultation with appropriate government agencies will be developed to ensure that the mitigative measures to be employed resolve the concerns and meet the standards of the respective agencies, including the 8 conditions applicable to golf course developments established by the State Department of Health.

PHYSICAL ENVIRONMENT ASSESSMENT

Flora

Development of the Lower Preservation area as a golf course has been studied as to its impact on botanical resources (Char and Associates). There would be no impact on any endangered or threatened species (see *Chapter II D* and *Appendix L*).

Fauna

From the perspective of birds there is nothing special or unique about the property (Bruner, *Appendix M*). Regarding the effects of pesticides, please refer to discussion above on "Migratory Birds and Endangered Waterbirds". Appropriate mitigative actions are available to offset an adverse impacts.

Archaeological/Historic

Chapter III F summarizes the archaeological inventory survey conducted for the entire property, including the area being considered for a future golf course. All the recommendations of the consultant (Cultural Surveys Hawaii) will be strictly followed.

PUBLIC SERVICES AND FACILITIES

A complete discussion of public services and facility requirements, impacts, and mitigative measures is found in *Chapter V* of this document and *Appendix A*. Preliminary requirements for the possible golf course are summarized below:

Water (Potable)

Should a golf course be developed in the future, the associated potable demand is estimated at 20,000 gpd. The total average daily potable water demand for the entire development of the

property (including the golf course) would be 1.48 MGD, with a maximum daily demand of 2.22 MGD and peak hours demand of 4.44 MGD.

Water (Nonpotable)

The associated nonpotable water demand for the golf course is estimated at 735,000 gpd. This calculation is based on 180 acres irrigated at a rate of 4,080 gpd/acre. The total average daily non-potable water demand from the entire development (with a golf course) will be 1.06 MGD.

Wastewater

If the Lower Preservation area is developed into a golf course in the future, the total average wastewater flow rate will be 1.305 MGD, approximately 20,000 gpd higher than without a golf course.

Soil Erosion

If a golf course is constructed, it is estimated that the long term soil erosion will decrease by approximately 10 percent to 5,500 tons/year versus the potential 6,100 tons/year without the course.

GOVERNMENT POLICIES

A golf course development would meet many of the objectives and policies of the Hawaii State Plan and Functional Plans, as well as the Honolulu General Plan. These relationship would be discussed in an application to amend the development in the Lower Preservation area. Also, the City Council and the City Administration are currently exploring changes in the procedures and requirements of a community benefit assessment. In applying for a golf course amendment, the applicant will comply with these changes.

VIII. UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

Based on the previous impact assessments, there are some adverse environmental impacts associated with the construction and operation of the Makaiwa Hills Project that are unavoidable. Mitigative measures, however, have been presented that will minimize these impacts.

During construction, soils will be disturbed resulting in temporary loss of vegetation, increases in soil erosion, and a decline in feral mammal and fauna populations (due to habitat disturbance). Noise levels will increase and the visual character of the area will be altered as a result of the presence and operation of construction activity and equipment. In addition, construction vehicle activity will increase automotive pollutant concentrations on the site as well as along access roadways serving the site. Construction of buildings will also contribute to increased fugitive dust.

Following construction, the development will prevent the potential use of the land for agricultural purposes. Traffic volumes will increase, water resources will be used, and demand on public services and facilities will increase. Certain archaeological resources, in consultation with the Historic Section of DLNR, may be altered.

IX. RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY.

The short-term uses are associated with the process of urbanization. Physical actions required to establish and develop the project include grubbing, clearing, installing infrastructure, constructing buildings and developing necessary support facilities. The long-term enhancement is related to the project's contribution to society, the economy, and the general well-being of its residents.

Short-Term

Construction-related activities will create noise, increase air pollution, disrupt traffic circulation and generate dust for various construction vehicles and equipment. During grading operations, the existing vegetation cover will be lost and surface soils will be subject to erosion. Construction activities will result in short-term adverse impacts to the environment. However, completion of the project, in accordance with local standards, provide sufficient mitigation measures to reduce and essentially eliminate those temporary conditions. Nevertheless, increased traffic, concentrations of CO and ambient noise levels will increase upon completion of the project.

Jobs will be created during the construction period. This will result in a short-term positive impact on employment within the area. A large number of construction workers are expected to commute from Waianae since this community has a disproportionately large number of construction workers.

Long-Term

The urbanization of the land forecloses the land's future option for agriculture. This urbanization, however, supports existing growth policies of the General Plan of the City and County of Honolulu that calls for development of a Secondary Urban Center. Makaiwa Hills will provide residential opportunities for executives, second-home buyers, retirees, and professionals who desire to work or live in the area. In long term, Makaiwa Hills is considered a critical component in the success of the Secondary Urban Center concept.

X. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Development of the project area will urbanize approximately 1,915 acres of the Ewa hills, irreversibly committing the site to urban uses resulting in an irretrievable loss of agricultural lands.

Building material necessary to construct the project will be irretrievably committed. There would be only limited salvage value.

Human resources, time and energy expended to construct, maintain, and service the project would be irretrievable. Infrastructure and service consumption factors are generally irreversible.

State and local governments would have a long-term public, financial commitment to support facilities, services and programs such as fire, police, utilities, solid and liquid waste disposal, and social and health care services.

Environmental resources will be changed and/or committed. Water resources will be tapped, used and returned in polluted form to the environment. Air masses will change and become polluted with dust and vehicular exhaust emissions. Ecological balance will be modified somewhat as a result of construction. The developer must control erosion and create new drainage patterns with man-made structures and landscaping. All structures placed on the site will result in a loss of views, vistas and existing open space.

Urbanization of the land will be an important commitment to the economic growth and viability of the Secondary Urban Center by producing new opportunities for employment for the Ewa region residents. Development of the land in accordance with the amendment will essentially foreclose land use options (except for recreational amenities), although allow sufficient flexibility to respond to changing public needs and market conditions.

**XI. INTERESTS AND GOVERNMENTAL POLICY
CONSIDERATIONS THOUGHT TO OFFSET THE ADVERSE
ENVIRONMENTAL EFFECTS OF THE PROPOSED
PROJECT**

The proposed project was determined to be the best alternative for the site. The negative impacts generated by the proposed project are small when compared to the positive impacts of the project.

The commercial component of the Makaiwa Hills project will have a significant influence on employment in the Ewa area. Jobs will be created in the construction industry during the development phases, and long-term employment will occur as the regional shopping mall develops.

The proposed project also complements and supports the objectives sought by government and by the surrounding community. At full development, for the State, net revenues are estimated at \$22.7 million per year, with county net revenues at approximately \$8.2 million per year.

Both State and City policies encourage directing growth to the secondary urban center. Both State and City have participated in this growth objective by using its resources to develop residential communities in the area. Development of the Makaiwa Hills regional shopping mall and the residential area will provide a diversification of job and dwelling opportunities for these people and others who desire to become residents of the area.

XII. LIST OF CONSULTANTS INVOLVED IN PREPARATION OF EIS

This report was prepared for The Estate of James Campbell by William E. Wanket, Inc. The following identifies the consultants involved in the preparation and their respective contributions. A resume follows each consultants report.

FIRM	TASK	INDIVIDUAL
William E. Wanket, Inc.	Primary Author / Consultants Coordinator	William E. Wanket
Phillip L. Bruner	Survey of Avifauna and Feral Mammals	Phillip L. Bruner
Char and Associates	Botanical Survey	Winona P. Char
Michael S. Chu, Land Architect	View Assessment / Graphics	Michael S. Chu
Cultural Surveys Hawaii, Inc.	Archaeological Survey	Hallett Hammatt
CYP, Inc.	Land Plan	John P. Tully
Darby & Associates	Noise Impact	Ron Darby
Decision Analysts Hawaii, Inc	Agricultural Impact Fiscal Impact	Bruce Plasch
Earthplan	Social Impact	Berna Cabacungan
Engineering Concepts, Inc.	Engineering Studies	Craig Arakaki
Robert Charles Lesser & Co.	Market Assessment	Gadi Kaufman
Charles L. Murdoch Richard E. Green	Assessment of Fertilizer and Pesticide Use	Charles L. Murdoch Richard E. Green
Jim W. Morrow	Air Quality Assessment	Jim W. Morrow
Lani T. Nedbalek	Consultant	Lani T. Nedbalek
Pacific Planing & Engineering, Inc.	Traffic Impact	Conrad Higashionna
McCarter Computer Services	Typing	Les McCarter
Best	Printing	Ralph Hee

**XIII. CONSULTED PARTIES AND COMMENTS RECEIVED
DURING THE PREPARATION OF THE DRAFT EIS**

The notice of availability of the EIS Preparation Notice (EISPN) was officially published in the Office of Environmental Quality Control (OEQC) Bulletin on October 23, 1990. Below is a list of those receiving a copy of the EISPN which includes a telephone request by the Palchua Solar Observatory. Comment letters received are indicated with a * sign. Response letters have been sent to all parties commenting.

FEDERAL AGENCIES;

- * U.S. Department of the Army, U.S. Army Engineer District,
Honolulu
- * U.S. Department of the Navy, Naval Base, Pearl Harbor
- * U.S. Department of Agriculture, Soil Conservation Services
- * U.S. Department of Interior, Fish and Wildlife Services
- Department of Transportation, Federal Aviation Administration,
Airports District Office
- Palchua Solar Observatory, Det 5, 4WW

STATE AGENCIES

- * Department of Accounting & General Services
- * Department of Agriculture
- * Department of Budget and Finance, Housing Finance and
Development Corporation
- * Department of Business and Economic Development, Energy
Division
- * Department of Education
- Department of Health
- * Department of Land and Natural Resources
- * Department of Land and Natural Resources, Historic Preservation
Office

Department of Land and Natural Resources, Division of Land Management

* Department of Transportation

* Land Use Commission

Office of Environmental Quality Control

Office of Hawaiian Affairs

* Office of State Planning

Oahu Metropolitan Planning Organization

University of Hawaii, Environmental Center

CITY AND COUNTY OF HONOLULU

* Board of Water Supply

Department of General Planning

* Department of Housing and Community Development

* Department of Parks and Recreation

* Department of Transportation Services

* Honolulu Fire Department

* Honolulu Police Department

* Department of Public Works

* Office of Human Resources

PUBLIC UTILITIES/COMMUNITY ORGANIZATIONS

* Hawaiian Telephone Company

* Hawaiian Electric Company

Ewa Neighborhood Board No. 23

* Ewa Beach Community Association

Honokai Hale/Nanakai Gardens Community Association

Friends for Ewa

Makakilo Community Association

West Beach Estates

The Honorable John Desoto, District Councilman

The Honorable Mike Crozier, State Senator, District 23

The Honorable Anelle Amaral, State Representative, District 47

The Honorable Paul T. Oshiro, State Representative, District 46
Hawaii's

Thousand Friends

Land Use Research Foundation

League of Women Voters

Outdoor Circle

XIV. COMMENTS RECEIVED DURING THE PREPARATION OF THE FINAL EIS

Sixty (60) copies of the Draft Environmental Impact Statement (DEIS) were delivered to the Office of Environmental Quality (OEQC) on February 20, 1991. Notice of the DEIS was published in the February 23, 1991 issue of the OEQC Bulletin, with April 9, 1991 provided as the deadline for comments. OEQC distributed copies of the DEIS to interested public agencies, organizations and individuals (see OEQC Distribution List in the following Blue section) per Section 11-200-21 of the Environmental Impact Statement Rules. In addition, one copy was provided to the U.S. Air Force Palchua Solar Observatory and two copies of the DEIS were delivered to the City and County of Honolulu Department of General Planning, the "accepting agency."

Following is a list of persons, organizations and public agencies that have commented on the DEIS (19 total). Comments received by the OEQC-published deadline have been included in the EIS. Response letter were sent to all commenting parties.

LIST OF PERSONS, ORGANIZATIONS AND PUBLIC AGENCIES COMMENTING ON THE DEIS

FEDERAL

Department of the Air Force

Department of the Army

Department of the Navy

STATE OF HAWAII

Department of Agriculture

Department of Business, Economic Development and Tourism

Department of Defense

Department of Health

Department of Land and Natural Resources
Office of Environmental Quality Control
State Public Works Engineer
University of Hawaii, Environmental Center

CITY AND COUNTY OF HONOLULU

Building Department
Department of Human Resources
Department of Land Utilization
Department of Parks and Recreation
Department of Public Works
Fire Department
Police Department

OTHERS

Hawaiian Electric Company, Inc.

Reproduced on the following pages (*Green Section*) is the EISPN, followed by the comments received and the letters prepared in response.

EISPN

*Development Plan Application
and
Environmental Assessment*

Makaiwa Hills
Ewa, Oahu, Hawaii

Applicant:
The Estate of James Campbell

Agent:
William E. Wanket, Inc.

Tax Map Key:
9-1-15: 5, 11, 17
9-1-16: Portion 9
9-2-03: Portion 2

September 1990

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- 6. Existing Zoning Map**

MAPS LISTED HERE HAVE BEEN INCORPORATED INTO THE FINAL EIS.

SUMMARY SHEETS

DGP Ref No:

NB Area: Ewa #23

Acreage: ±1915

TMK: 9-1-15: 5, 11, 17

9-1-16: Por 9

9-2-03: Por 2

EWA

**Development Plan Land Use
Amendment Being Considered**

AMENDMENT/PROJECT INFORMATION:

AMENDMENT REQUEST: Designate certain land in Ewa Agriculture to Residential, Commercial, Preservation and Public Facilities.

LANDOWNER: The Estate of James Campbell
828 Fort Street Mall
Suite 300
Honolulu, Hawaii 96813

REQUESTED BY: Owner

AGENT: William E. Wanket, Inc.
Pacific Tower, Suite 660
1001 Bishop Street
Honolulu, Hawaii 96813

LOCATION: In Ewa, with Makakilo to the east, the City of Kapolei and Barbers Point Harbor to the south, unimproved hillside and agriculture and preservation to the north.

*Makaiwa Hills
Summary Sheets*

BASIS FOR REQUEST: To develop a premium location for the development of executive-type housing that will serve to strengthen the desirability of the City of Kapolei as a place to live near employment, that will further its long term economic viability and fulfillment of the General Plan.

TYPE OF PROJECT: Residential community plus support facilities and amenities and a regional shopping center. Approximately 50% of the property will remain in open space, with the lower portion along Farrington Highway and extending mauka into the gulches being under future consideration for a possible golf course development.

IMPACT ON PROVISION ON HOUSING: Approximately 2,130 dwelling units are anticipated.

EXISTING CONDITIONS:

LAND USES: The area is currently being used to graze cattle and horses.

STRUCTURES: None.

ALISH: The land area is not classified under the ALISH System, except for about 100 acres along Farrington Highway nearest Makakilo, of which most of it is classified Prime with a small portion Other Important.

SOIL FEATURES: Much of the soils in the 1,915 acres are rocky. The USDA Soil Conservation Survey classifies the soils in the project area as stony, clay or loam (See *Chapter I.B.5.* for a list of soil types.)

POSSIBLE CONSTRAINTS: None identified at this time.

PRESENT PLAN/ZONING DESIGNATIONS:

STATE LAND USE: Agriculture (±1875 acres)/Urban (±40 acres) (See *Figure 2*).

DP LAND USE MAP: Agriculture (±1772 acres), Residential (±40 acres), Low Density Apartment (±103 acres) (See *Figure 3*).

DP PUBLIC FACILITIES MAP: See *Figure 4*.

DP SPECIAL PROVISIONS: None

ZONING: AG-2, General Agricultural District (±1779 acres), AG-1, Restricted Agricultural District (±96 acres), and R-5 Residential District (±40 acres). (See *Figure 6*).

APPLICATION

**Development Plan
Amendment
Environmental Assessment**

INTRODUCTION

SCOPE OF LAND USE AMENDMENT

The application for an Ewa Development Plan Land Use Amendment involves approximately 1,915 acres on the slopes of the Waianae Mountain Range, west of Makakilo in Ewa, Oahu (See *Figure 1*).

The proposed planned community, known as Makaiwa Hills, will consist of approximately 2,130 residential units on approximately 726 acres, and a regional shopping center on approximately 156 acres. Public facilities and amenities are expected to include an elementary school, fire station, park and other recreational uses.

Large areas of continuous natural open space will be maintained by the preservation of the site's natural ravines and portions of the hillside areas. The open space areas are illustrated on the Land Use Plan (*Figure 5*) as Lower Preservation and Upper Preservation. The Upper Preservation areas are intended to remain in its natural condition, while the Lower Preservation areas may in the future be considered for development of a golf course. However, at this time all the specifics of such a proposal have not been determined. Although this amendment proposal does not include a golf course component, the Environmental Impact Statement that will be prepared will discuss the environmental impacts associated with this alternative land use. If a golf course amenity is selected, a separate

Makaiwa Hills
Development Plan Application and Environmental Assessment

Development Plan Amendment Application for such a use will be filed with the Department of General Planning.

In summary, the 1,915 acre development redesignates the site as follows:

	FROM	TO	NET CHANGE
Agriculture	1,772	0	-1772
Low Density Apartment	103	0	- 103
Residential	40	726	+ 686
Commercial	0	156	+ 156
Preservation	0	901	+ 901
School/Park/Fire Station	0	25	+ 25
Circulation/Roads	0	107	+ 107
TOTAL ACRES	1,915	1,915	0

COMPLIANCE WITH CHAPTER 343 HRS.

Because the project is an amendment to the Development Plan for Ewa, it is subject to the provisions of the Environmental Impact Statement Law Rules according to Title 11, Chapter 200, Subchapter 5, Section 11-200-6(b) (2)(A). Based on the scope of the project, it is likely that the amendment proposal will have significant impacts on the environment that will require the preparation of an Environmental Impact Statement. Accordingly, this Development Plan Amendment/Environmental Assessment Report has been prepared with the understanding that an EIS will be required for the project.

COMPLIANCE WITH DEPARTMENT OF GENERAL PLANNING APPLICATION GUIDELINES FOR DP AMENDMENTS.

The discussion that follows addresses the information requirements requested by the Department of General Planning for filing of a Development Plan Amendment.

Makaiwa Hills
Development Plan Application and Environmental Assessment

I. BACKGROUND

A. Essential Information

APPLICANT	The Estate of James Campbell c/o David Rae 828 Fort Street Mall Suite 300 Honolulu, Hawaii 96813 (808) 544-3117
AGENT:	William E. Wanket, Inc. Pacific Tower Suite 660 1001 Bishop Street Honolulu, Hawaii 96813 (808) 533-4937
LAND OWNER:	Same as Applicant
REQUEST:	Redesignate land from Agriculture to Residential, Commercial, and Preservation on the Ewa Development Plan Land Use Map.
AREA:	1,915 Acres
LOCATION:	In Ewa on the Waianae Range, with Makakilo to the east, the City of Kapele, and Barbers Point Harbor to the south, unimproved hillside and City and County landfill to the south, and agricultural and preservation to the north. Camp Timberline (a privately operated facility) and several private residences are also located on leased lands north of the site.
TAX MAP KEY:	9-1-15: 5, 11, 17 9-1-16: Por 9 9-2-03: Por 2

Makaiwa Hills
Development Plan Application and Environmental Assessment

EXISTING USES: The project site is currently undeveloped. A portion of the site is leased as grazing lands for cattle and horses.

STATE LAND USES: Agriculture (±1875 acres)/Urban (±40 acres) (See *Figure 2*).

DP DESIGNATION:

Land Use Map: Agriculture (±1772 acres), Residential (±40 acres), Low Density Apartment (±103 acres) (See *Figure 3*).

Public Facilities Map: See *Figure 4*.

ZONING: AG-2, General Agricultural District, (±1779 acres), AG-1, Restricted Agricultural District (±96 acres), and R-5, Residential District (±40 acres). (See *Figure 6*.)

B. Description of Property

1. Property Boundary:

The site, part of Land Court Application 1069, Honouliuli, Ewa, Oahu, Hawaii, includes Lots J, 78-B, 79, 2681, 4022-A-2, 4023, 4024, 4045, 4046 portions of 309-A, 4022-A-1, 4027, and 4050. A portion of the old Farrington Highway is also in the site.

2. Topography:

The project site ranges in elevation from approximately 50 feet mean sea level (MSL) at Farrington Highway, to an elevation of about 1300 feet MSL at the northern boundary. Three major gulches and three minor unnamed gulches transect the project site from north to south. The major gulches are Awanui Gulch, Palailai Gulch, and Makaiwa Gulch.

Makaiwa Hills
Development Plan Application and Environmental Assessment

3. Existing Uses:

Much of the project site is currently being used for grazing of cattle and horses by Tongg Ranch.

4. Slope:

The project site has an average slope of 2 percent to 50 percent.

5. Soils:

According to the Soil Survey by the U.S. Department of Agriculture, Soil Conservation Service, the major soil types are as follows:

- Stony steep land (rsy)
- Lualualei extremely stony clay (LPE)
- Helemano silty clay (HLMG)
- Honouliuli clay (HxA, HxB)
- Mahana-Badland complex (MBL)
- Mahana silty clay loam (McC2, McD2, McE2)
- Lualualei stony clay (LvB)
- Ewa silty clay loam (EaB)
- Molokai silty clay loam (MuC)
- Ewa stony silty clay (EwC)
- Rock land (rRK)

6. Location Map:

See Figure 1.

Makaiwa Hills
Development Plan Application and Environmental Assessment

7. Topo Map:

See *Figure 3*. The project maps have been prepared using topographic maps as the base.

8. Project Plan.

See *Figure 5*.

Makaiwa Hills consists of the following land use components:

LAND USE	ACRES (±)	PERCENT	UNITS
Residential	726	38%	2,130
Commercial	156	8%	
Upper Preservation	721	38%	
Lower Preservation	180	9%	
Public Facilities (School/Park/Fire Station)	25	1%	
Circulation	107	6%	
TOTAL	1,915	100%	2,130

II. DEVELOPMENT PROPOSAL

A. Applicant's Proposed Use of the Property

Makaiwa Hills is a planned community consisting of approximately 1915 acres overlooking the Pacific Ocean and Ko Olina Resort. The community is planned for the development of a mix of executive residential housing and commercial uses with dramatic views of the coast. The community is part of the larger Kapolei Master Planned Community encompassing approximately 32,000 acres.

The plan provides for a land use concept which protects the site's important natural resources, provides large continuous open space transition areas between adjacent neighborhoods, and establishes recreational uses for the community that may include a golf course amenity in the future. The open space provided by the project totals approximately 47 percent of the project area, establishing a dominating feature of the plan.

The plan establishes a hierarchy of ocean view residential products beginning with townhomes in the lowlands, near the commercial area, and gradually increasing to the larger residential lots as the development moves up the hillsides resulting in the location of the more sensitive, grade adaptive custom lots on the uplands and sloping sides of the ridges. The extensive open space network proposed is designed to establish smaller intimate residential areas, presenting the opportunity for neighborhoods with individual character and identity within the community.

In the lower easternmost portion of the project site, a 156-acre regional shopping center is proposed that will serve as a transition into the urban core of Kapolei City.

B. Development Timetable

The project requires the following major land use approvals:

1. Development Plan Amendment
2. Land Use Boundary Change to Urban
3. Zone Change

Makaiwa Hills
Development Plan Application and Environmental Assessment

These approvals are expected to take approximately five years.

C. Approximate Cost

On-site and off-site construction costs have been determined at approximately \$250 million and \$25 million respectively.

III. NEED FOR PROPOSED DEVELOPMENT

A. Public Problems or Needs

There currently exists significant levels of pent-up demand for housing of all prices. These pent-up demand conditions are the result of the historical gap between new housing production and household growth statistics, averaging some 1,000 units per year during the 1980s alone.

Since 1970, the Ewa Plan area has experienced average growth of 1,600 to 1,800 households annually. Projections indicate 1,900 new households annually from 1990 to 1995, increasing in each subsequent five-year period to 3,800 new households annually from 2005 to 2010. From 1990 to 2010, the Ewa Plan area is expected to capture 54% of total population growth on Oahu.

A significant factor in the Ewa area's growth is the creation of Kapolei City Center, the designated "second city" on Oahu, which will include office, retail and business space. Creation of a new "urban core" in Kapolei will enhance the attractiveness of the area for new household growth and will aid in attracting executive home buyers, currently a small or missing segment of the market. Employment centers and retail services typically attract executive buyers to a local area. Makaiwa Hills is expected to provide a much-needed executive housing location for the Kapolei master-planned community. The availability of executive housing at a premium location is considered critical to attracting "decision-makers" to Kapolei, and ultimately to the successful development of the "Second Urban Center" at Kapolei.

Approximately 156 acres have been set aside on the southeastern portion of the Makaiwa Hills property for development as a commercial regional mall. The dramatic rise in population and employment projected to occur in the Ewa region between 1990 and 2010 is expected to create opportunities to capture a portion of the regional-serving retail market. Presence of a regional mall is considered critical to creating an urban core of "Second City" at Kapolei. Regional malls act as a catalyst for further commercial development, establishing regional name recognition, adding to "critical mass" and providing focus to the emerging core.

Makaiwa Hills

Development Plan Application and Environmental Assessment

A housing and commercial market analysis will be performed and its findings will be made part of the Environmental Impact Statement that will be prepared.

B. Intended Market

Makaiwa Hills is intended to be developed as a residential community attracting executives, professionals, retirees and second home buyers as its primary target markets. The development is planned for a variety of residential products, consisting of custom lots, semi-custom homes, single-family detached homes and townhomes. Affordable housing requirements are expected to be satisfied by development of these units either on-site or off-site closer to the urban center of Kapolei City or a combination. Affordable housing requirements will be determined in consultation with the Department of Housing and Community Development as the project proceeds through the various planning approval processes.

C. Designated Use Versus Proposed Use

Most of the property is designated Agriculture on the Ewa Development Plan Land Use Map, except for about 140 acres, the majority of which is designated Low Density Apartments. In terms of the State Land Use Classification, all of the land, except for about 40 acres in Urban, is State Agriculture. However, with respect to the Agricultural Lands of Importance to the State of Hawaii (ALISH) classification system, only about 100 acres are considered Prime. These same 100 acres, nevertheless, are designated Low Density Apartment on the Ewa Development Plan. Furthermore, the remainder of the site is considered unsuited for growing crops because the soils are rocky, the slopes are steep, and/or water is not available. Currently, the project lands are used for grazing cattle and a few horses.

The development of Makaiwa Hills is not expected to have negative impacts on the agricultural industry nor on the agricultural policies of the State of Hawaii. An Agricultural Impact Analysis will be performed and included in the preparation of the EIS.

The Ewa Development Plan Public Facilities Map shows a new road connection to Makakilo, water reservoirs and a park (site undetermined and beyond 6-years). Park amenities will be included in the development, and the Makaiwa Hills project will provide a new

Makaiwa Hills
Development Plan Application and Environmental Assessment

road to Makakilo, as well as incorporate the water reservoirs in its development

IV. RELATIONSHIP TO LAND USE POLICIES AND REGULATIONS

A. FEDERAL

No federal plans or programs are expected to be impacted directly by the development of the proposed project. Through the EIS process, coordination will be maintained with appropriate Federal agencies.

B. STATE

1. Hawaii State Plan

The Hawaii State Plans consist of a series of broad goals, objectives and policies which act as guidelines for the growth and development of the State. The overall theme of the Plan is:

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

Specifically, the Plan details objectives and policies in the various areas such as population, the economy, physical environment, facility systems, socio-cultural advancement and fiscal management. The Makaiwa Hills project appears to be consistent with many of the goals and policies of the Hawaii State Plan. A full discussion of its compliance will be incorporated into the EIS that will be prepared.

2. State Functional Plans

The Hawaii State Plan directs the appropriate State agencies to prepare Functional Plans. These plans serve as the primary implementing vehicle for the goals, objectives and policies of the Hawaii State Plan. The Functional Plans cover the following areas:

- | | | |
|--|---|--|
| <input type="checkbox"/> Agriculture | <input type="checkbox"/> Transportation | <input type="checkbox"/> Health |
| <input type="checkbox"/> Energy | <input type="checkbox"/> Housing | <input type="checkbox"/> Water Resources |
| <input type="checkbox"/> Historic Preservation | <input type="checkbox"/> Education | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Employment | <input type="checkbox"/> Tourism | <input type="checkbox"/> Human Services |
| | <input type="checkbox"/> Conservation | |

Makaiwa Hills' conformance with the Functional Plans will be discussed in the preparation of the EIS that will be prepared.

3. State Land Use Classification

Approximately 1,875 acres are classified in the State Agricultural District, with the remaining 40 acres in the Urban District. A State Land Use Boundary Change will be required.

4. Coastal Zone Management

Makaiwa Hills property is not designated as a special management area for which a permit is required pursuant to HRS, Chapter 205-A. However, the site is within an area controlled Coastal Zone Management Area and is, therefore, subject to HRS Chapter 205-A's objectives and policies. Makaiwa Hills' compliance with these objectives and policies will be discussed in the preparation of the EIS.

C. CITY AND COUNTY

1. General Plan

The General Plan lists eleven (11) areas of concern: Population, Economic Activity, Natural Environment, Housing, Transportation and Utilities, Energy, Physical Development and Urban Design, Public Safety, Health and Education, Culture and Recreation, and Government Operations and Fiscal Management. These areas of concern, as it may be impacted by the

development of Makaiwa Hills, will be addressed in the preparation of the EIS.

One of the key provisions of the General Plan is the encouragement of development within the secondary urban center at Kapolei. As part of the greater master plan of Kapolei, Makaiwa Hills will provide housing opportunities to nearby employment centers existing and planned within Kapolei City, as well as a commercial center to meet the regional shopping needs of its residents.

The General Plan indicates that the Ewa area should accommodate between 12% and 13.3% of the Oahu population by the year 2010. These percentages translate into a population range of 119,000 to 132,900 persons based on the current State Department of Business and Economic Development's Year 2010 population estimate of 999,500. According to information from the Department of General Planning, Ewa's present capacity is 131,900. The General Plan population guidelines for Ewa, however, are not expected to increase beyond the guidelines with the development of Makaiwa Hills, since the amendment proposal essentially redistributes the residential units already allocated on portions of the site.

2. Ewa Development Plan

Currently, the subject property is designated Agriculture, Residential, and Low Density Apartment. A small portion is shown as Public Facility.

The Ewa Development Plan Special Provisions calls for a new secondary urban center to be developed in the West Beach-Makakilo area (subsequently amended in the GP to Kapolei) in order to accommodate most of the expected influx of population into the area. It further calls for the distinct identities of the existing communities to be protected and enhanced.

The Makaiwa Hills project is expected to provide a much needed executive housing location for the Kapolei master-planned community, taking advantage of the site's mountainous topography and excellent views of the Pacific Ocean. The housing development, together with the needed regional

commercial area, will be critical to the successful development of the "Second Urban Center" at Kapolei.

The project is supportive of the objectives in providing sensitive land use interface to adjacent and surrounding land uses. The residential hillside community of Makakilo is located immediately east of the site. Generous areas of open space will separate the developments. To the northeast of the project, a transition is established into the urban core of Kapolei City by locating the proposed regional commercial use in the lower easternmost portion of the project site directly adjacent to Kapolei City. Located to the south of the project is the Ko Olina Resort. The resort interfaces the project with residential and open space uses, and maybe a golf course. To the northwest lies the Nakakuli forest reserve area, buffered by natural open uses and the larger lot custom estate homes, this natural resource will be preserved and protected for future enjoyment.

The Ewa DP Special Provisions also require consideration of open space, public views, and other design elements, and it also establishes height and density controls. An extensive open space network is proposed that stresses the preservation of the site's natural ravines and hillside areas. Residents will be afforded sweeping views of the ocean, open space elements and the emerging City of Kapolei and the Ko Olina Resort area. Other design elements will be incorporated into the plan that will ensure that the development meets the urban design principles and controls of the Ewa DP.

3. Zoning

The project site is zoned AG-1 Agriculture (± 96 acres), AG-2 General Agriculture (± 1779 acres) and R-5 Residential (± 40 acres). Zoning for the Makaiwa Hills development will reflect the land uses on the plan. A zone change request will be filed at the appropriate time.

V. IMPACTS

A. DEMOGRAPHIC IMPACTS

1. Residential Population

The project site is located in the Ewa Development Plan area, which extends from Kahe Point to the West Loch of Pearl Harbor and from the slopes of the Waianae mountain range to the coastline. This area encompasses Census Tracts 83 through 86.02 and is hereby referred to as the Ewa Region.

In 1980, approximately 35,695 people lived in the Ewa Region. By 1988, the regional population grew to over 38,000 people, an eight percent increase.

Some of this growth occurred near the project site. The Makakilo Community grew by almost 1,500 people due to new housing units. The Ewa to Honokai Hale region also experienced a large increase in population, and most of this approximate 1,200-person increase occurred in the Ewa Gentry community. The other Ewa communities remained relatively stable.

The City and County of Honolulu General Plan encourages the development within the secondary urban center at Kapolei and the Ewa and Central Oahu urban-fringe and rural areas.

Consistent with this policy is the General Plan's residential population distribution for the year 2010. Ewa is targeted to accommodate 12 to 13.3 percent of the total islandwide population. Based on the State Department of Business and Economic Development Series M-K population projections, these proportions translate to a range of 119,940 to 132,934 persons for the Ewa region.

The social impact assessment will evaluate the population impacts of the proposed Makaiwa Hills project in terms of (1) relationship with public policy and (2) population impacts relative to other proposed Ewa projects.

2. Visitor Population

The project is not expected to increase or affect the visitor population.

3. Character Or Culture Of The Neighborhood

The project site is located near two existing residential communities:

- Honokai Hale and Nanakai Gardens are two contiguous and older communities located makai of Farrington Highway. An estimated 2,000 people reside in those communities, which are expected to remain stable in the Ewa Development Plan.
- Located east of the project site, Makakilo is a 23-year old residential community which is still undergoing development. The community grew from 8,000 people in 1980 to almost 9,500 people in 1988.

In total, an estimated 11,500 people currently live near Makaiwa Hills. The Ewa region, including lands near the project site, is destined for major changes. The focal point for the Ewa region development is the City of Kapolei which is to provide an urban nucleus for the "second city." Changes nearest the project site include Ko Olina Resort, the expansion of the Makakilo residential community and the proposed Kapolei Business-Industrial Park.

Without the Makaiwa Hills project, changes which will occur in the area include a major increase in residential population, the introduction of significant levels of employment and the establishment of resort facilities.

The proposed project will convert approximately 1915 acres of vacant land into a planned community, complete with a wide variety of housing, public facilities and amenities. Makaiwa Hills will therefore substantially contribute to the change in the character of the area. The social impact assessment will evaluate the potential project-related changes in the context of other proposed and likely development projects.

4. Displacement

Portions of the area are currently being leased by the Tongg Ranch for horse and cattle grazing. Previously, lands near Farington Highway were once planted in sugarcane, but were fallowed in the early 1980s. The project lands are vacant of structures.

The proposed Makaiwa Hills development would remove the lands from grazing operations. The specific and cumulative impacts of the project on the cattle industry will be addressed in the Environmental Impact Statement.

5. Other Social Impacts

The Social Impact Assessment that will be included in the EIS will also identify issues, or preliminary community reactions, to the Makaiwa Hills and other social impacts as it relates to Makaiwa Hills.

B. ECONOMIC IMPACTS

1. Economic Growth

Approval of the proposed development will foster economic growth in the State of Hawaii and in the City and County of Honolulu in the following manner:

a. Short Term

Development of the Makaiwa Hills project will provide employment within the construction industry and revenues for construction companies. Other service-related jobs will be created in the planning, development, administrative, marketing and sales.

b. Long Term

The proposed development includes a regional shopping mall that will provide opportunities for new and expanding businesses. The development will also stimulate economic activity through a multiplier effect. The development of the Makaiwa Hills project is expected to have a positive impact on the area's economy.

2. Employment

a. Short Term

Short term employment will be limited to the construction employment generated by the development of Makaiwa Hills project. Site development costs have been estimated at \$250 million on site and \$25 million off-site.

b. Long Term

Long term employment for the site has been estimated for the commercial area at 3 workers per 1,000 square feet.

Currently the existing grazing operations on the project site generate few jobs. The employment analysis (EIS) will address the number and types of jobs which would be generated by the project, and the availability of labor within the region.

Possible mitigating measures to be explored include programs to qualify residents who live in the Ewa area and nearby communities for jobs which will be created by activities within the Makaiwa project.

3. Government Revenues - Taxes

Currently, the grazing operations on the project site generate minimal revenues to the State and to the County, while requiring few support services.

The major issue to be addressed under the fiscal impact analysis (EIS) is whether or not the proposed residential and commercial development would result in a net increase in revenues to the State and the County, or whether government-financed support facilities and services would cause a financial drain to Hawaii government.

This will require estimates of tax and other revenues which would be generated by the project, less government expenditures. Revenues estimates would include rollback, property, excise, income, and other taxes and revenues sources, while expenditures estimates would include debt service for supporting capital improvements, and expenditures for police protection, fire protection, education, and other services.

Measures to mitigate fiscal impacts are not anticipated.

4. Location Vis A Vis Intended Market

The Makaiwa Hills property is well-suited for the development of a quality residential area given its hillside location, mountainous topography, and open space amenities. Its location in proximity to the "Second City" at Kapolei will enhance its desirability as a place to live near employment. Its development is expected to meet an identified target niche, and ensure that a broad range of housing opportunities, affordable, mid-priced, and upper-end, are available within the larger Kapolei community.

The southeast portion of the subject property has been appropriately set aside for development as a regional mall. This portion of the property enjoys excellent visibility and freeway access from H-1. The development of the regional mall will provide a further catalyst for attracting regional-serving office and other employment activities to an emerging core location.

C. HOUSING IMPACTS

Approximately 103 acres of the Makaiwa Hills property is currently designated on the Ewa DP for Low Density Apartment, and another 40 acres is DP designated and zoned for Residential. These lands are proposed to be redesignated to Commercial, with the residential capacities used to develop the housing component of the Makaiwa Hills development. Provisions for affordable housing are intended to be provided either on-site or off-site closer to existing and planned employment centers within Kapolei City or a combination.

D. PUBLIC SERVICES

1. Access And Transportation

a. Existing Conditions

The existing road system consists mainly of off-site arterial highways. The site is undeveloped. Farrington Highway is located along the southern boundary of the project site. It is presently a four-lane divided highway with left turn storage lanes at the intersection serving Honokai Hale.

There are two intersections with Laaloa and Waiomea Streets with Farrington in the area adjacent to the project site.

The H-1 Freeway is a six-lane divided highway with a capacity of approximately 6000 vehicles per hour (vph) in each direction under ideal conditions. With the roadway curvature, approximate percentage of trucks and buses, and other mitigating conditions, the capacity of H-1 in the general area is about 5050 vph in each direction at level-of-service D and average speed of 50 miles per hour.

Palailai Interchange provides access to H-1, Farrington Highway, and Kalaeloa Boulevard. Ramps provide access for traffic for heading southbound from H-1 and eastbound from Kalaeloa. Farrington provides on and off movement access for other traffic.

The Ko Olina Interchange is a partial interchange, providing movements headed to or from Ko Olina resort area.

A proposal to realign Farrington Highway near the northern boundary of Kapolei City to provide more direct access onto Kapolei Boulevard was granted conceptual approval by State Department of Transportation (DOT) and City and County of Honolulu Department of Transportation Services (DTS).

b. **Impacts and Mitigation**

Probable traffic impacts will result from the additional or new traffic generated by the project. This traffic will use the existing road network including new roads and/or intersections to access the major arterial roads.

The traffic impact assessment (EIS) will forecast traffic from the project when fully occupied added to a forecast of ambient traffic for the forecast year. Traffic flow quality changes at adjacent major intersections and ramps will be analyzed to determine the impact level of the project compared to the Level of Service (LOS) without the project. The analysis will assess total traffic flow quality for the forecast year.

Project generated traffic impacts could be relatively significant at specific access locations, requiring remedial actions. For example, intersection approaches may need additional lanes or longer turn lanes depending on the traffic served. Access to Farrington Highway may require design to State DOT standards and final approval for access connections. The traffic impact assessment (EIS) will consider the following mitigative measures:

- 1) Intersection approach widening
- 2) Turn lane lengthening and widening
- 3) Striping changes
- 4) Freeway ramp lengthening and striping
- 5) New freeway ramps
- 6) Traffic signal installation
- 7) Additional ramp lanes

2. Water

a. Existing Conditions

The Board of Water Supply (BWS) system provides potable water service to the Ewa/Kapolei region. Wells located in Waipahu, in the vicinity of the Kunia Interchange, are the water source for the system. These wells include the Hoacac Wells, Kunia Wells I and II, and Waipahu Wells. Transmission of water from the wells to Ewa/Kapolei is via a 30-inch transmission along Farrington Highway. The transmission main extends to the 4.0 MG and 5.0 MG Barber's Point 215 Reservoirs, located at the southeastern corner of the project site. Transmission of potable water continues west along Farrington Highway to Nanakuli via 24-inch transmission main and the aid of booster pumps located at the Barber's Point Reservoirs site.

The Estate of James Campbell is a member of the Ewa Plain Water Development Corporation, which was established to assess the water system requirements and coordinate improvements for all developments in the Ewa Plain. Belt

Collins and Associates has identified infrastructure required to serve Ewa Plain developments in the Ewa Water Master Plan (revised 1987). The document is currently being updated. Water system requirements for the proposed Makaiwa Hills development will be included in the revised document.

b. **Modifications After Development**

The proposed Makaiwa Hills development is expected to create additional water demands on the BWS system. Potable water demands will include service to the proposed residential developments, and nonirrigation needs of the areas proposed for commercial and the possible future golf course development.

It is intended that a private, nonpotable water system will be developed to meet the irrigation water demands of the non-residential areas. Sources of nonpotable water are currently under investigation.

A preliminary hydraulic analysis has been conducted for the proposed Makaiwa Hills development based on available data for the existing BWS system in the vicinity of the site. Preliminary indications suggest that due to site topography, two independent water distribution systems would be required to service the proposed development. Water service zones within each distribution system were based on the existing Makakilo system service zones, site topography, and the BWS Water System Standards.

The proposed eastern water distribution system, adjacent to Makakilo will serve approximately 612 acres and provide approximately 80 percent of the water demand required for the project. Draw off from the BWS system is proposed at the Barber's Point Reservoirs, provided that the additional storage and transmission facilities proposed in the Ewa Water Master Plan are built. Onsite requirements include site reservoirs and five booster pumping stations for the five service zones of the proposed eastern water distribution system.

The proposed western water distribution system, adjacent to Waimanalo Gulch, will service the proposed residential development to be located on a single ridge line

(approximately 134 acres). Connection to the BWS system is proposed at the 24-inch transmission main along Farrington Highway which fronts the project site. Four reservoirs and five booster pumping stations will be required onsite for the six service zones of the proposed western water distribution system.

c. **Impacts and Mitigation**

An analysis of the possible project impacts and mitigative measures will be presented in the Preliminary Engineering Report (EIS). Makaiwa Hills is one of the proposed developments in the Ewa/Kapolei area which will impact the existing regional water system by increasing the demand for potable water.

In an effort to reduce the potable water requirements of the project, a dual water system is proposed.

Nonpotable water is planned for use to irrigate the non-residential areas.

A well field is in the process of being developed in upper Honouliuli that will satisfy some of the potable water requirements for proposed developments in the Ewa/Kapolei area. Currently, five wells have been developed with a sixth to be completed shortly. Approximately 6.7 million gallons of potable water will be supplied by these six wells.

Additional sources of potable water are being investigated to meet the demands of the developments in the Ewa/Kapolei region.

The proposed development will also impact the existing potable water storage and transmission facilities. The Ewa Water Master Plan indicates that a parallel main in Farrington Highway from the Honouliuli booster station near the Kunia Interchange to Makakilo will eventually be required. The Master Plan also identifies other improvements such as storage tanks and additional pump requirements which will eventually be required. Implementation of the improvements will be governed by development schedules of the proposed projects in the Ewa/Kapolei region

and will be coordinated by the Ewa Plain Water Development Corporation.

The proposed onsite potable water system (including reservoirs, booster pumps, and distribution mains) will be designed in accordance with BWS Water System Standards and will be dedicated to the BWS for operation and maintenance.

3. Wastewater

a. Existing Conditions

Developments in the Ewa/Kapolei region use individual wastewater systems (septic tanks, cesspools) or are served by the City and County collection system with wastewater treatment at Honouliuli Waste Water Treatment Plant (WWTP).

The Honouliuli WWTP is located approximately 3.5 miles east of the project site. The WWTP presently operates as a primary treatment facility with design capacity of 25 million gallons per day (MGD). Although the WWTP is not operating at full capacity, the remaining treatment capacity has been committed to other developments. An expansion of the plant to 38 MGD is being designed and is tentatively scheduled for completion by 1994. It is not anticipated that development of Makaiwa Hills will precede completion of the Honouliuli WWTP expansion.

The closest municipal sewer in the vicinity of the project site is the Ko Olina interceptor located south of the project along the O. R & L. railroad-right-of-way. The Ko Olina interceptor is a force main/gravity sewer extending from the Ko Olina Resort along the railroad right-of-way to Fort Barrette Road. At Fort Barrette Road, the Ko Olina interceptor connects to the Makakilo interceptor, a 30-inch sewer which extends from Makakilo along Fort Barrette Road and Renton Road to the Honouliuli WWTP on Geiger Road. The connection between the Ko Olina interceptor and Makakilo interceptor is temporary, and takes advantage of excess capacity in the Makakilo interceptor.

b. Modifications After Development

Wastewater will be generated from residential areas, commercial areas, and the possible future golf course clubhouse within the proposed Makaiwa Hills development. Wastewater from these sources should be of typical domestic composition.

It is proposed that wastewater from the project site be ultimately conveyed to the Honouliuli WWTP for treatment. Onsite wastewater pumping stations may be necessary to service the golf course clubhouse and isolated residential areas. Preliminary analysis of the proposed sewer system for the project indicates that a connection to the municipal system can be achieved by a single 18-inch gravity sewer from the project site.

c. Impacts and Mitigation

The Preliminary Engineering Report (EIS) will present a discussion on the project generated impacts and proposed mitigative measures. A relief sewer parallel to the Ko Olina interceptor, between Kalaeloa Boulevard and Fort Barrette Road, is proposed to provide additional capacity to accommodate wastewater flows from Makaiwa Hills.

Expansion of other portions of the wastewater collection may be necessary due to development of Makaiwa Hills and other projects within the Ewa/Kapolei region. The Kapolei interceptor sewer is currently being designed to convey wastewater generated by the proposed Ewa/Kapolei developments, including Makaiwa Hills, to Honouliuli WWTP. The Kapolei interceptor will parallel the Makakilo interceptor between Fort Barrette Road and the Honouliuli WWTP.

4. Drainage

a. Existing Conditions

The project site is designated Zone D in the Flood Insurance Rate Map, indicating areas in which flood hazards are undetermined. There are no existing drainage improvements within the project site. A number of culverts are located adjacent to the project site, conveying storm

runoff from the site and mauka areas under Farrington Highway.

The area south of the project site includes an existing residential subdivision and several developments which are currently under construction or being planned for future construction:

Honokai Hale. Honokai Hale is a single-family residential community on the southern side of Farrington Highway opposite the project site.

Ko Olina. Ko Olina is a resort development along the coast, located downstream of Honokai Hale and the project site. The Ko Olina Golf Course has been completed. Other phases of the resort development are currently under construction.

Kapolei Business-Industrial Park. Kapolei Business-Industrial Park is a proposed expansion of the existing James Campbell Industrial Park, to be located downstream of the project site, south of the Ko Olina Resort.

b. **Modifications After Development**

After development, modifications are expected to affect: (1) the quantity of storm runoff, (2) the rate of peak runoff, and (3) onsite runoff patterns.

The quantity of storm runoff generated from the project site is expected to increase after development of Makaiwa Hills. This increase in runoff quantity is attributed to the increase in impervious surfaces throughout the development.

An increase in the rate of peak runoff is also attributed to the increase in impervious surfaces after development.

Onsite runoff patterns in the areas proposed for development may be altered slightly from their existing conditions due to alignment of the proposed roads and culverts.

c. **Impacts and Mitigation**

The Preliminary Engineering Report (EIS) will contain a section on project related impacts and proposed mitigative measures. In general, however, consideration has been given to future development of the Makaiwa Hills site in planning of downstream drainage facilities. Impacts on developments downstream of the Makaiwa Hills site are not expected to be adverse.

Preliminary hydrologic calculations of storm runoff from the developed Makaiwa Hills site were performed to assess the capacity of drainage structures in Honokai Hale. Based on preliminary analysis the drainage system for Honokai Hale appears adequate to handle the peak storm runoff expected from the future Makaiwa Hills development.

Community Planning, Inc. prepared a hydrologic study for the Ko Olina development. The storm drain system for Ko Olina has been planned to accommodate increases in the peak storm runoff generated from a portion of the proposed Makaiwa Hills development.

Campbell Estate is currently planning to construct a major drainage channel as part of the Kapele Business-Industrial Park development. Design of this channel will accommodate peak storm runoff contributions from a portion of the proposed Makaiwa Hills development.

The Farrington Highway culverts will be analyzed to determine the effect of the proposed Makaiwa Hills development on culvert capacity.

5. Soil Erosion

a. **Existing Conditions**

The U.S. Department of Agriculture, Soil Conservation Service uses the Universal Soil Loss Equation (USLE) to estimate long term annual soil losses from sheet and rill erosion. The equation is used to estimate erosion of forest land, farm fields, construction sites, and other areas. Soil losses can be estimated for a present condition or for future conditions.

The Makaiwa Hills site is divided into subareas for calculating soil erosion potential. These subareas represent sites that vary in soils erosion potential characteristics such as terrain and drainage network.

b. **Modifications After Development**

Based on the USLE, the long term soil erosion potential of the entire Makaiwa Hills site should decrease after development. This decrease in soil erosion will be due to the reduction of erodible surfaces (increase in buildings and paved areas); reduction of length and slope of overland flow due to site grading and construction of the storm drain system; and increase in landscaped areas (reduction of bare ground).

c. **Impacts and Mitigation**

Construction will involve land disturbing activities that result in soil erosion. These land disturbing activities include removal of existing vegetation (clearing and grubbing), leveling, removing and replacing soil. Soil erosion potential will increase during the construction phase due to these activities. Mitigation measures can be implemented during construction to reduce this short term soil erosion. Methods to reduce soil erosion include limiting grading to no more than 15 consecutive acres at a time and seeding the area. Grading and Erosion Control Plans will be prepared in compliance with Chapter 23, Revised Ordinances of Honolulu.

6. Solid Waste

a. **Existing Conditions**

A refuse collection service does not presently serve the project site.

b. **Modifications After Development**

It is anticipated that refuse generated by the proposed Makaiwa Hills residential development will be collected by the City and County refuse collection service. Refuse from non-residential areas will be serviced by private refuse collection companies.

c. **Impacts and Mitigation**

The proposed development will be a new generator of solid waste. The City and County of Honolulu is currently operating a landfill site in Waimanalo Gulch and the H-POWER waste energy recovery facility on the leeward side of Oahu. Landfill capacity on the leeward side of Oahu is not a problem at present since most of the combustible refuse is disposed at the H-POWER facility. The H-POWER facility is eventually expected to accommodate most of Oahu's solid waste. Refuse from the proposed Makaiwa Hills development is not expected to have a significant impact on the leeward Oahu solid waste disposal facilities. Recycling programs will be prepared for the project.

7. Power And Communications

a. **Existing Conditions**

Hawaiian Electric Company (HECO) maintains two parallel 100-foot wide easements crossing the northwest portion of the project site in a northwest-southeast direction. The easements serve overhead transmission lines originating from the Kahe Power Plant.

b. **Modifications After Development**

It is anticipated that HECO and Hawaiian Telephone Company (HTCO) will provide the necessary electrical and telephone service to the project site. Specific requirements will be discussed with these agencies.

The possibility of relocating the HECO overhead transmission lines underground, within the right-of-way of the proposed development roads, will also be discussed.

c. **Impacts and Mitigation**

The proposed Makaiwa Hills development will place additional demands on the utility systems.

8. Schools

It is anticipated that Makaiwa Hills will require one elementary school on the site. Coordination of final site selection will be conducted with the State Department of Education.

9. Parks

A 16-acre park will be dedicated to the City and County of Honolulu for operation and maintenance. Final site selection and park configuration will be coordinated with the City and County Department of Parks and Recreation. Further, The social impact assessment (EIS) will address the increased demand for recreational sites and facilities generated by Makaiwa Hills and identify project impacts and explore ways to mitigate these impacts.

10. Child Care

The residential population generated by Makaiwa Hills will increase the regional child care demands. The social impact assessment (EIS) will identify project impacts and explore ways to mitigate these impacts.

11. Police

The project site is in District III of the Honolulu Police Department. Extending from Red Point to Kaena Point and Kipapa Ridge, this district is handled by personnel at the Pearl City Police Station. Long term plans of the Police Department are designed to accommodate the expected increase in service population. The social impact assessment will assess the project's impact on police protection services and facilities.

12. Fire

The nearest fire station is a single engine company in Makakilo; backup for the general vicinity is provided by nearby fire stations in Waipahu, Ewa Beach and Nanakuli. Long term plans of the Fire Department are being formulated to prepare for the anticipated increased demand for fire protection services. The social impact assessment will assess the project's impact on fire protection services.

13. Medical And Emergency Services

The residential population generated by Makaiwa Hills will increase the regional demand for medical and emergency services. The social impact assessment will identify project impacts and explore ways to mitigate these impacts.

14. List Of Agencies Consulted

STATE OF HAWAII

Department of Education
Department of Land and Natural Resources
State Land Use Commission

CITY AND COUNTY OF HONOLULU

Department of Parks and Recreation
Department of General Planning

E. ENVIRONMENTAL IMPACTS

1. Noise

a. Existing Conditions

Ambient noise measurements were made at the project site on July 13, 1990. Noise levels were recorded over 10-minute sampling periods at locations A through E using a Larson Davis Laboratories Model 700 Sound Level Meter. The measurement locations are described below:

- A. Between Waimanalo Gulch and Makaiwa Gulch, about 300 feet from the site of the former missile facility.
- B. Near the mauka/Diamond Head corner of the site, about 600 feet from Palchua Road.
- C. About 100 feet from Farrington Highway, close to the intersection of the new and old Farrington Highways.
- D. Near the Board of Water Supply facility, about 1,000 feet from Farrington Highway.

- E. Just mauka of the large water storage tanks, about 1,500 feet from Farrington Highway.

Weather conditions during the measurements were partly overcast, with temperatures near 90 and tradewinds at 10 to 20 mph.

The noise measurement results, in terms of the Equivalent Continuous Noise Level (Leq), the minimum noise level (Lmin), the levels exceeded for 90%, 50%, 10% and 1% of the time (L90, L50, L10 and L1, respectively), and the maximum noise level (Lmax), are presented in *Table 1*. These statistical levels are commonly used descriptors of environmental noise; for example, the L1 level describes the nearest maximum noise, while L90 is a good measure of the background noise level. Leq is an "energy weighted" average noise level.

Apart from those areas near Farrington Highway, most of the site is currently exposed to relatively low noise levels. At locations A, B and E, for example, the existing daytime background (L90) noise levels were 40 dBA or less, typical of rural or semi-rural areas. Wind was usually the dominant noise source although aircraft movements and distant traffic were at time audible (particularly at locations closer to Farrington Highway).

For planning purposes, noise exposure levels at a site are often assessed in terms of the Day-Night Average Sound Level (Ldn), which is essentially the Leq measured over a 24-hour period (after adding 10 dBA to the noise levels recorded between 10 pm and 7 am, to account for people's higher sensitivity to noise at night). Based on the aircraft noise contours (see map) which show the majority of the site to be subjected to an aircraft noise exposure of less than 55 Ldn, and the short-term noise measurements results presented in *Table 1*, it is estimated that most of the site is currently exposed to an overall Ldn of 50dB or less, a clearly acceptable noise environment for residential, recreational and commercial purposes.

Further noise measurements, including 24-hour readings at selected locations, will be taken during the EIS preparation

Makaiwa Hills

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stage to assist in quantifying existing and projected noise exposure levels at locations near Farrington Highway.

b. **Impacts and Mitigation**

The only significant noise impact on the proposed Makaiwa Hills development is expected to be that from road traffic, especially in areas close to Farrington Highway traffic. Noise from traffic on new roads within the proposed development will be assessed once the traffic data are available.

Although none of the following is expected to cause any significant, long-term noise impacts, they will be addressed during the EIS process:

- Construction activities
- Project-generated traffic (on existing roads)
- Sugar cane operations
- Possible conflicts between commercial and residential land use areas.

In addition, compliance with City and State noise regulations will be addressed.

Table 1

**Noise Data Recorded at Five Locations at the
 Site of the Proposed Makaiwa Hills Development
 on Friday, July 13, 1990**

Location	Time	Measured Noise Levels - dBA							Dominant Noise Sources
		Leq	Lmin	L90	L50	L50	L1	Lmax	
A	11:50-12 noon	47	37	39	45	51	54	56	Wind, distant helicopter movements, distant aircraft
B	12:46-12:56 pm	48	38	40	45	52	58	59	Wind, one light aircraft movement, distant helicopter movements
C	1:40-1:50 pm	62	44	54	59	66	72	76	Traffic on Farrington Hwy.
D	2:30-2:40 pm	51	42	46	50	54	57	62	Distant traffic, wind, aircraft movements, birds, distant helicopter movements.
E	2:30-2:40 pm	43	37	39	41	45	53	58	Wind, aircraft

2. Air Quality

a. Existing Air Quality

The project site itself lacks any manmade air pollution sources other than occasional motor vehicle activity. It is, however, bordered by Farrington Highway and not too distant from Campbell Industrial Park in the south and Kahe Power Generating Station to the west. The recently opened Waimanalo Gulch Sanitary Landfill is also on the west side of the project site.

The Campbell Industrial Park has a variety of existing stationary air pollution sources which emit the major regulated pollutants:

- sulfur dioxide (SO₂)

- nitrogen dioxide (NO₂)
- particulate matter (PM)
- carbon monoxide (CO)
- volatile organic compounds (VOC)

In addition, the EPA's Toxic Release Inventory (TRI) for 1987 indicated that facilities at the park also emit lesser quantities of a variety of organic and inorganic compounds into the air.

Three new major potential air pollution sources are planned for the park in the near future. The City's H-POWER resource recovery facility has already begun operation and a large gas turbine and a coal-fired power plant were recently permitted for construction.

Motor vehicle activity in the area is currently relatively light. In the future, this source category will grow significantly due to buildout of the Ko Olina Resort, expansion of the industrial park and Barbers Point Harbor, and the City's intent to make the Ewa area the next urban center.

Other mobile sources include ship traffic at the Barbers Point Harbor and aircraft activity at the Barbers Point Naval Air Station.

Despite these manmade activities, air quality at the site appears to be quite good and in compliance with federal and state ambient air quality standards.

Even with this variety of industrial, resort, residential and military activity in the area, air quality is currently in compliance with both state and federal ambient air quality standards based on the most recent State Department of Health monitoring data from its Barbers Point monitoring station. At the project site itself, some three miles north of the DOH station, air quality is likely to be even better. Air quality monitoring equipment for the Kapolei area is being purchased by the Estate for operation by the State Department of Health

b. Local Meteorology and Terrain Effects

On an annual basis prevailing northeasterly trade winds tend to keep maximum annual pollutant concentrations near the shoreline or over the water in the industrial park area. On a daily basis, however, the nearshore location causes a land-seabreeze regime to predominate resulting in pollutant plumes being carried inland during the day and offshore at night. Kona (southerly) winds during the winter months also carry plumes inland. Since the project is generally located on high terrain, it could at times experience plume impingement from tall smoke stacks and, thus higher pollutant concentrations. Low annual rainfall reduces the washout of particulates and soluble gases and increases the potential for fugitive dust.

c. Impacts and Mitigation

The principle air quality impact of a residential project such as this is its ability to generate motor vehicle activity on the street and highways which serve the area. The project will also create additional electrical demand which is likely to be met by the burning of fossil fuels at a nearby power station. Solid waste generated by its residents will most likely be burned at the H-POWER facility.

Should a golf course be developed in the future, it will involve pesticide spraying which at times given the windy conditions in the high terrain may result in some drift.

There will be short-term construction impacts as the sites are developed and new sources are constructed. This will involve fugitive dust, vehicles, generators, etc. There will also be offsite impacts due to production of concrete and asphalt for the site.

The air quality impact assessment (EIS) will present possible mitigation measures as follows:

Motor Vehicle Activity:

- > Car pooling
- > Public transit (buses)

- Employment close to home
- Street/road design to minimize delays/queuing

Electrical Generation

- Energy efficient building designs
- Use of solar water heating
- Use of heat pumps
- Discourage air conditioning

Solid Waste Disposal

- Voluntary/mandatory recycling
- Composting of organic matter

Pesticide Use At Golf Course

- Full compliance with label use instructions
- Integrated pest control measures
- Minimize pesticide use
- Use of non-chemical pest control measures
- Use of low-toxicity/nonpersistent chemicals

Construction Impacts

- Compliance with state/county dust control requirements
- Covers for open trucks transporting dusty materials
- Frequent watering of exposed soil areas
- Soonest possible landscaping of exposed soil areas
- Concrete and asphalt plants in compliance with DOH permits

3. Compatibility With Surrounding Environment

View Assessment

A regional view assessment will be prepared and included in the EIS. The assessment will consist of: (1) an inventory of all applicable land use policies and objectives pertaining to visual resources; (2) an inventory and on-site investigation of resource locations and their qualitative/quantitative values; (3) assessment of proposed land uses relative to identified policies and objectives, and specific resources; and (4) identification of probable impacts and potential mitigative measures which may be applicable.

The view assessment will focus primarily on impacts from public viewing points. It will take into account both on-site and off-site conditions and will emphasize the viewing experience as seen from public roadways, parks and other frequented public facilities. The assessment will take into account the topographic conditions, existing vegetation and natural land forms of the site and its surrounding areas.

4. Historic And Archaeological Resources

a. Traditional Land Use and Previous Archaeology

No Polynesian sites are known to exist within the project area and few are expected. According to John Papa I'i, trails passed to the north, south, east and west of the project area. Handy and Handy (1972) make no reference to agriculture in the area and little traditional agriculture was undertaken in such areas with less than 25" of rainfall a year. The nearest archaeological sites mentioned in *Sites of O'ahu* or *Archaeology of O'ahu* are at Pu'u Kapolei and Pu'u Ku'ua, both a mile (1.6 km) or more from the project area. Archaeology at West Beach (Davis et al., 1986) appears to decrease considerably with distance from the coast. Site 2893 (Ibid., 72), with its petroglyphs, rock shelters, and platform features located on the mauka side of Farrington Highway at the mouth of Waimanalo Gulch, just west of the project area appears to be a highly localized feature. Particular attention will be given to the

southwest portion of the project area which is adjacent to this unique site.

b. **Ground Conditions**

The conditions for archaeological survey are quite good. The general aridity and the pasturing of cattle within the project area allows for good visibility of the ground surface.

c. **Proposed Investigations**

A complete ground survey of the entire 1915-acre project area for the purpose of site inventory will be conducted. Particular attention will be paid to gulches and the SW corner of the project area where archaeological sites are most likely to be encountered. All sites would be located, described, and mapped with evaluation of function, inter-relationships, and significance. Documentation will include photographs and scale-drawings of selected sites and complexes. All sites will be assigned State site numbers.

Research on historic and archaeological background including search of historic maps, written records, Land Court Awards, and Native Testimony will be conducted. This research will focus on the specific area with general background on the *ahupua'a* and district.

Preparation of a survey report will include the following:

- A topographic map of the survey area showing all archaeological sites and site areas.
- Description of all archaeological sites with selected photographs, scale drawings, and discussions of function.
- Historical and archaeological background sections summarizing prehistoric and historic land use as they relate to the archaeological features.
- A summary of site categories, their significance in an archaeological and historic context.

- Recommendations based on all information generated in the form of an archaeological management plan which will specify what steps should be taken to mitigate impact of development on archaeological resources - such as data recovery (excavation) and preservation of specific areas. This plan will be developed in consultation with the landowner and the State and County agencies.

d. Impact and Mitigation

Few archaeological sites are thought to exist within the project area. Agricultural sites have been documented in a similar area mauka of Kahe Power Plant (Hammatt & Shideler, 1989) and if similar sites are encountered mitigation of impacts will be necessary. It may well prove possible to leave any such sites or to incorporate them to enhance landscaping of the development. If destruction of any sites is desired for development, Cultural Surveys Hawaii will work out a data recovery plan in coordination with the State Historic Preservation Office, DLNR.

While there is no indication whatsoever of a burial ground within the project area, it is not uncommon that within such a large parcel that burials would be identified. One isolated burial (1446) was identified in the study about 1 km from the project area. In such event, Cultural Surveys Hawaii will coordinate with the State Historic Preservation Office, with the O'ahu Burial Council regarding treatment of the sites.

It would seem that within such a large parcel that any archaeological resources would be easily accommodated within development plans and that archaeology will prove to be of little or no impediment to development plans.

5. Natural Features

a. Water Resources

N/A

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b. Flood Plan Management

FIRM Zone Designation "D".

c. Wetlands Protection

N/A

d. Coastland Zone Management

The site is not within the Special Management Area (SMA) and will not adversely impact any of the Coastal Zone Management (CZM) program objectives and policies.

e. Unique Natural Features

The site contains large areas of continuous natural ravines with stony and silty clay as the base soil.

f. Vegetation and Animal Life

(1) Flora

(a) Existing Conditions

Vegetation on the Makaiwa hillsides consists of grassland with scattered trees and shrubs. Eroded areas with sparse vegetation cover are also frequently found. This portion of the project site is presently used for grazing cattle. Guinea grass (*Panicum maximum*) forms the most abundant plant cover, although on rocky outcrops Natal redtop grass (*Rhynchelytrum repens*) may be locally common. Scattered through the grassland are shrubs of koa-haole (*Leucaena leucocephala*), klu (*Acacia farnesiana*), Christmas berry (*Schinus terebinthifolius*), lantana (*Lantana camara*), and 'uhaloa (*Waltheria indica*), although on the uppermost limits of the property a few trees of Java plum (*Syzygium cumini*), silk oak (*Grevillea robusta*), and an Eucalyptus species are found.

Gulch areas support dense thickets of kiawe trees, from 12 to 20 feet tall. In some places, koa-haole shrubs form a subcanopy layer. Buffel

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grass (*Cenchrus ciliaris*) and Guinea grass are the common ground cover plants in gulch areas.

The level portion of the project site, bordering Farrington Highway, was used at one time for sugar cane cultivation. It is now overgrown with buffel grass and scattered patches of koa-haole. The old reservoir and network of concrete-lined irrigation ditches can still be seen on the site.

(b) Impacts and Mitigation

There may be some remnant native lowland species on the steep gulch slopes and rocky outcroppings, out of the reach of cattle. The field studies to be prepared for the Environmental Impact Statement will focus on these areas. However, there appears to be little of botanical interest or significance on the majority of the property as the vegetation appears to have been disturbed for a long period of time and is dominated by introduced or alien plant species such as kiawe, koa-haole, Guinea grass, and buffel grass.

Of concern, is the removal of vegetation cover during construction activities which may result in an increase in soil erosion through wind and rain. It will be recommended that disturbed areas be landscaped as soon as possible to prevent soil loss.

(2) Fauna

(a) Existing Conditions

A bird and mammal field survey of the project site was conducted to evaluate possible changes that might occur in the bird and mammal populations following the proposed development of the property. No endemic land birds were recorded during the course of the field survey. The only likely endemic species which might occasionally forage in the area is the Short-eared Owl or Puco (*Asio flammeus sandwichensis*). Puco are diurnal and can be found in upland forests as well

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as lowland grasslands and fields. The State of Hawaii Department of Land and Natural Resources, Division of Forestry and Wildlife lists the Puco as endangered on Oahu. Puco are protected in the Estate's Honouliuli Preserve.

No resident indigenous birds were recorded nor would any be expected at this site given the types of habitat available.

Seabirds typically nest on offshore islands which are free from disturbance by dogs, cats, mongooses and rats. No seabirds were found during the survey and it is unlikely any would nest at this site due to the presence of predators. Char and Whistler (1986) report seeing a White-tailed Tropicbird (*Phaethon lepturus*) flying over the makai section of the property.

No mitigatory shorebirds were recorded during the survey. Given the time of year it is unlikely any would be found since the spring migration had already taken place in late April and they do not return until August. The Pacific Golden Plover (*Pluvialis fulva*) and Ruddy Turnstone (*Arenaria interpres*) are common migrants which can be found on lawns and fields as well as along the intertidal zone. It is likely that both of these species occur on this property during the "winter" (August-April). Johnson et al. (1981) and Bruner (1983) have shown plover are extremely site-faithful on their wintering grounds and many establish foraging territories which they vigorously defend.

A total of 16 species of exotic birds were found during the field survey. The most abundant species were Zebra Dove (*Geopelia striata*), Red-vented Bulbul (*Pycnonotus cafer*), Nutmeg Mannikin (*Lonchura punctulata*) Common Waxbill (*Estrilda astrild*), and Red Avadavat (*Amandava amandava*). Exotic species not recorded on the actual survey but which potentially could occur at this locality include: Ring-necked Pheasant

(*Phasianus colchicus*), Japanese Bush-warbler (*Cettia diphone*), Chestnut Mannikin (*Lonchura malacca*), Java Sparrow (*Padda oryzivora*), Eurasian Skylark (*Alauda arvensis*), Gray Francolin (*Francolinus pondicerianus*) and Barn Owl (*Tyto alba*) (Pratt et al. 1987; Bruner 1988b, 1990a, 1990b; Hawaii Audubon Society 1989).

The only feral mammals observed during the survey were cats and the Small Indian Mongoose (*Herpestes auropunctatus*). No rats or mice were recorded but they undoubtedly do occur on the property. Domestic cattle were found grazing over most sections of the property.

(b) Impacts and Mitigation

From the perspective of birds, there is nothing special or unique about this property. Abundant second growth habitat of this sort occurs throughout the lowlands of West Oahu.

The proposed development will result in the creation of a more diversified range of habitats. These changes may result in some species becoming more common while others may decline in abundance. Species which could become more common include: Pacific Golden Plover, House Sparrow (*Passer domesticus*), Common Myna (*Acridotheres tristis*) and Japanese White-eye (*Zosterops japonicus*). Those species which should decline in numbers as the present habitats are altered are: Erckel's Francolin (*Francolinus erckelli*), Red Avadavat, Common Waxbill and Nutmeg Mannikin.

g. Agricultural Lands

The majority of the site is classified Agricultural land under the State Land Use District Regulations. Most of the 1,915 acres of the project area, however, are unsuited for growing crops because the soils are rocky, the slopes are steep, and/or water is not available. However, about 100 acres of the flatlands near the freeway have good soils, (currently DPed for Low Density Apartment) and brackish water is

available. These lands were once planted in sugarcane, but were fallowed in the early 1980s. Currently, the project lands are used for grazing cattle and a few horses.

The proposed Makaiwa development would remove the above mentioned lands from grazing operations. The specific and the cumulative impacts of the project on the cattle industry will be addressed in the Draft Environmental Impact Assessment.

The project would also eliminate the possibility of using the affected lands for diversified agriculture. Consequently; another issued to be addressed is the impact of the project on the potential growth of diversified agriculture.

Measures to mitigate agriculture impacts are not anticipated.

h. Open Space

A significant portion of the site will remain as open space. An assessment of the visual impacts from the public roadways, parks and other frequented public facilities will be conducted.

6. Hazards

a. Nuisances and site safety

A safety zone established for the former Nike Missile Site is no longer pertinent as the site has been abandoned.

b. Thermal Explosives

N/A

c. Airport Clear Zone (APZ)

N/A

d. Chemicals

A future golf course may be located in the area shown on the proposed Makaiwa Hills plan as Lower Preservation. This area represents about 180 acres.

(1) Existing Conditions

The 180 acres is principally unimproved pasture land, vegetated essentially with poor quality grasses and shrubs. It is likely that the area is not fertilized. Pesticides would not be applied, except for foliar application or herbicides to woody species; the amounts applied would be negligible in relation to pesticide applications on cultivated crops or well-managed turf.

(2) Impacts and Mitigation

The principal impacts to be addressed are those associated with movement of agricultural chemicals from treated turf areas to groundwater and surface waters. Supplementary information on the potential impact on air quality and wild life (birds) will also be provided.

Chemical movement from the site of application can be mitigated by: (a) selection of appropriate chemicals, (b) stockpiling of topsoil during grading and subsequent replacement of topsoil, (c) importation of topsoil to areas that will be treated but which have inadequate topsoil initially, (d) careful irrigation management to minimize water loss by deep percolation or by runoff, (e) containment of runoff from normal rainfall events.

F. Alternatives Considered

Much of the property is unsuited for agricultural pursuits because of poor soils, ravines and steep conditions. The Draft EIS will contain a section on Alternatives to the proposed development, including the possible development of a golf course in the area shown on the proposed plan as Lower Preservation.

G. Proposed Mitigative Measures

Mitigative measures, where appropriate, will be included in the studies conducted during the preparation of the EIS.

H. Summary

The proposed Makaiwa Hills project is considered to be a critical component in the successful development of the Secondary Urban Center and the emerging Kapolei City community. The project will provide premium housing and create a prestigious planned community with a large commercial area, an elementary school, recreation, and other locational amenities. The project will further enhance the economic viability of the area.

I. Determination

Based on the scope of the project and the anticipated impacts, it is likely that a determination will be made by the Department of General Planning that the proposed amendment will require the preparation of an EIS. The Department of General Planning will be the Accepting Authority.

VI. NOTIFICATION REQUIREMENTS

A. The following parties have been furnished with a copy of the Summary Sheet and a map of the proposed amendment:

1. The Honorable John Desoto
District Councilman
Honolulu Hale
Honolulu, Hawaii 96813
2. State Senator Mike Crozier
District 23
State Capitol
Room 204
Honolulu, Hawaii 96813
3. State Representative Annelie Amaral
District 47
State Capitol
Room 325
Honolulu, Hawaii 96813
4. State Representative Paul T. Oshiro
District 46
State Capitol
Room 329
Honolulu, Hawaii 96813
5. Ewa Neighborhood Board #23
92-783 Laaloa Place
Ewa Beach HI 96707
6. Ewa Beach Community Association
Charles Beamer, President
P.O. Box 2003
Ewa Beach HI 96706
7. Honokai Hale/Nanakai Gardens Community Association
92-783 Laaloa Place
Ewa Beach HI 96707

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8. Makakilo Community Association
Chair Roy Wickmaranta
92-755 Makakilo Drive #50
Ewa Beach HI 96707

9. Tongg Ranch
169 South Kukui Street
Honolulu, Hawaii 96813

10. Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840-0001

11. West Beach Estates
1585 Kapiolani Boulevard
Suite 1430
Honolulu, Hawaii 96814

12. Mr. Wellington Loh
30659 Rue Valois
Palos Verdes Estate CA 90274

13. Mr. and Mrs. Henry Klein
1366 Pueo Street
Honolulu, Hawaii 96816

14. Resident
92-854 Kohupono Street
Ewa Beach HI 96707

15. Mr. & Mrs. Carlton Reed
92-856 Kohupono Street
Ewa Beach HI 96707

16. Mr. Wayne C. Aoki
P.O. Box 5902
Fort Hood TX 76544

17. Resident
95-852 Kohupono Street
Ewa Beach HI 96707

18. Mr. & Mrs. Francisco Palting
92-848 Kohupono Street
Ewa Beach HI 96707

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19. Mr. Charles Kuahine Sr.
92-846 Kohupono Street
Ewa Beach HI 96706
20. Mr. & Mrs. Roy C. Crosby
92-836 Kohupono Street
Ewa Beach HI 96707
21. Mr. & Mrs. James Clark
92-838 Kohupono Street
Ewa Beach HI 96706
22. Mr. & Mrs. Earl Mizumoto
98-842 Kohupono Street
Ewa Beach HI 96707
23. Mr. & Mrs. Reynold Ito
98-2064 Kipikua Street
Aiea HI 96701
24. Resident
92-842 Kohupono Street
Ewa Beach HI 96706
25. Mr. Lawrence A. Moody Jr.
92-830 Kohupono Street
Ewa Beach HI 96707
26. Mr. & Mrs. Carl Robertson
86-120 Pokai Bay Street
Waianae HI 96792
27. Resident 92-828
Kohupono Street
Ewa Beach HI 96707
28. Mr. Ronald T. Nishimoto
92-630 Nohona Street
Ewa Beach HI 96706
29. Mr. & Mrs. Manuel Contemplo
92-782 Wainohia Street
Ewa Beach HI 96706

30. Mr. & Mrs. Dwight Smeigh
92-784 Wainohia Street
Ewa Beach HI 96707

31. Mr. & Mrs. Francis Cummings
92-786 Wainohia Street
Ewa Beach HI 96706

32. Mr. & Mrs. Merle Stacy
92-790 Wainohia Street
Ewa Beach HI 96706

33. Mr. & Mrs. Peter Akim
92-794 Wainohia Street
Ewa Beach HI 96706

B. Certification

Ordinance 84-111 states:

No application for Development Plan Land Use Map amendment shall be accepted for processing unless the applicant notifies, by mail, all owners, lessees, sub-lessees and residents of the affected property and of each abutting parcel.

I hereby certify that I have complied with the notification requirements of Ordinance 84-111.



WILLIAM E. WANKET
Agent for
THE ESTATE OF JAMES
CAMPBELL

VII. LIST OF CONSULTANTS INVOLVED IN PREPARATION OF DP/EA

This report was prepared for The Estate of James Campbell by William E. Wanket, Inc. The following identifies the consultants involved in the preparation and their respective contributions. These consultants will also participate in the preparation of the EIS.

FIRM	TASK	INDIVIDUAL
William E. Wanket Inc.	Primary Author/Consultants Coordinator	William E. Wanket
Phillip L. Bruner	Survey of Avifauna and Feral Mammals	Phillip L. Bruner
Char and Associates	Botanical Survey	Winona P. Char
Michael S. Chu, Land Architect	View Assessment/Graphics	Michael S. Chu
Cultural Surveys Hawaii Inc.	Archaeological Survey	Hallett Hammatt David Shideler
CYP, Inc.	Preliminary Land Use Map	John P. Tully
Darby & Associates	Noise Impact	Ron Darby
Decision Analysts Hawaii, Inc.	Agricultural Impact Fiscal/Employment Impact	Bruce Plasch
Earthplan	Social Impact	Berna Cabacungan
Engineering Concepts, Inc.	Engineering Studies	Craig Arakaki
Robert Charles Lesser & Co.	Market Assessment	Gadi Kaufman
Charles L. Murdoch, Richard E. Green	Assessment of Fertilizer and Pesticide Use	Charles L. Murdoch,
		Richard E. Green
Lani T. Nedbalek	Consultant	Lani T. Nedbalek
Pacific Planning & Engineering, Inc.	Traffic Impact	Conrad Higashionna
John Zapotocky	Golf Course	John Zapotocky
McCarter Computer Services	Typing	Ann McCarter
Best	Printing	Ralph Hee

**VIII. PROPOSED NOTIFICATION LIST FOR THE EIS
PREPARATION NOTICE (EISPN)**

This project will most likely require preparation of an EIS. Thus, this document will probably serve as the EISPN. Listed below is a proposed list of parties to be consulted during the EIS process, subject to revision and approval.

FEDERAL AGENCIES

U.S. Department of the Army, U.S. Army Engineer District,
Honolulu

U.S. Department of the Navy, Naval Base, Pearl Harbor

U.S. Department of Agriculture, Soil Conservation Services

U.S. Department of Interior, Fish and Wildlife Services

Department of Transportation, Federal Aviation
Administration, Airports District Office

STATE AGENCIES

Department of Accounting & General Services

Division of Public Works

Department of Agriculture

Department of Business and Economic Development

Department of Education

Department of Health

Department of Land and Natural Resources

Department of Land and Natural Resources, Historic
Preservation Office

Department of Land and Natural Resources, Division of Land
Management

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State Land Use Commission
Office of Environmental Quality Control
Office of Hawaiian Affairs
Office of State Planning
Oahu Metropolitan Planning Organization
Department of Transportation
Department of Budget and Finance, Housing, Finance and
Development Corporation
University of Hawaii, Environmental Center

CITY AND COUNTY OF HONOLULU

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

**PUBLIC UTILITIES/COMMUNITY
ORGANIZATIONS/OTHERS**

Hawaiian Telephone Company
Hawaiian Electric Company

Makaiwa Hills
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Ewa Neighborhood Board No. 23
Ewa Beach Community Association
Honokai Hale/Nanakai Gardens Community Association
Friends for Ewa
Makakilo Community Association
West Beach Estates
The Honorable John Desoto, District Councilman
The Honorable Mike Crozier, State Senator,
District 23
The Honorable Annelle Amaral, State Representative,
District 47
The Honorable Paul T. Oshiro, State Representative,
District 46
Hawaii's Thousand Friends
Land Use Research Foundation
League of Women Voters
Outdoor Circle

**EISPN COMMENT
LETTERS &
RESPONSES**



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96858-5440

November 21, 1990

REPLY TO
ATTENTION OF:
Planning Division

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

We have reviewed the Environmental Impact Statement Preparation Notice, including the Development Plan Application and Environmental Assessment (EA), for the proposed Makaiwa Hills project, Ewa, Oahu. The following comments are offered:

a. A Department of the Army permit would be required for the placement of fill material within the various gulches. File No. P091-024 has been assigned to this project. Should you have any questions about permit requirements, please contact Operations Division at 438-9258 and refer to the file number.

b. The Flood Insurance Rate Map zone designation cited on page 42 of the EA is correct.

Sincerely,

A handwritten signature in cursive script, appearing to read "C. Cheung", is positioned above the typed name.

Kisuk Cheung
Director of Engineering

WILLIAM
E.
WANKET
INC.

December 14, 1990

Mr. Kisuk Cheung
Director of Engineering
U.S. Army Engineer District, Honolulu
Building 230
Ft. Shafter, Hawaii 96858-5440

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received**

Dear Mr. Cheung:

Thank you very much for reviewing the above-referenced EISPN and for your letter of November 21, 1990 stating that the Flood Insurance Rate Map zone designation cited is correct. Information, in response to your comments, is provided below:

Department of the Army permit for placement of fill material.

Placement of fill within the gulches is not anticipated other than to accommodate roadway crossings. Permit requirements will be coordinated with the Department as plans for the development progresses.

We will continue to coordinate our project with you to ensure further opportunity for review and comments.

Sincerely,


WILLIAM E. WANKET

Public Trust
State Land
1001 Bishop Street
Honolulu, HI 96813
Phone
(808) 541-4000
(808) 541-4100



DEPARTMENT OF THE NAVY

COMMANDER
NAVAL BASE PEARL HARBOR
BOX 110
PEARL HARBOR, HAWAII 96860-5020

IN REPLY REFER TO:

11000
Ser OOF(232)/3930
21 NOV 1990

Mr. William E. Wanket
President
William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE
(EISPN) FOR THE PROPOSED MAKIAWA HILLS DEVELOPMENT

As requested by your letter of October 17, 1990, we have reviewed the subject EISPN and offer the following comments to assist you in the preparation of the Environmental Impact Statement.

The proposed Makiawa Hills development may impact several facilities which are utilized by Navy activities located along the leeward coast of Oahu. These include Naval Air Station Barbers Point, military housing at Iroquois Point, and Naval Magazine facilities at West Loch, Waikele and Lualuelei. The EIS should address:

Traffic impact on the H-1 Freeway. The freeway is used for access to facilities and transport of materials and ordnance.

Water use and impact on sources. The proposed project will be drawing on limited resources shared by the Navy.

Wastewater treatment and impact of discharge into the ocean. Existing flows to the Honouliuli wastewater treatment plant is near the plant capacity and the requirement for secondary treatment for ocean discharge has not been resolved.

Increased stormwater and pollutants entering the ocean. Recreational use of our beaches may be affected by increased turbidity and reduced water quality.

Noise environment at the project caused by air operations at Naval Air Station Barbers Point. Noise generated by aircraft operating from NAS Barbers Point may be audible at the proposed development.

The EIS should also address cumulative impacts from all approved projects in the leeward area as well as those created by the proposed development.

Subj: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE (EISPN) FOR THE
PROPOSED MAKIAWA HILLS DEVELOPMENT

Thank you for the opportunity to comment on the subject EISPN. Should you
have any questions, the Navy's point of contact is Mr. Bill Liu, telephone
471-3324.

Sincerely,



W. K. LIU
Sergeant Bone Civil Engineer
By direction of
the Commander

WILLIAM
E.
WANKET
INC.

December 14, 1990

Mr. W.K. Liu
Assistant Base Civil Engineer
Naval Base Pearl Harbor
Box 110
Pearl Harbor, Hawaii 96860-5020

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received**

Dear Mr. Liu:

Thank you for taking the time to review the above-referenced EISPN and for your letter of 21 November 1990. Information, in response to your comments, is provided below:

Comment #1: The traffic impact report will address the traffic impact of the subject project on adjacent ramps and a portion of the H-1 Freeway.

Comment #2: As a member of the Ewa Plain Water Development Corporation, the Estate is participating in the development of additional water sources for the Ewa area. The Estate is also investigating and pursuing additional water sources independently, as evidenced by their participation in the pilot desalinization plant currently under construction. The Estate is also planning for the implementation of a dual water system which will decrease the demand on the potable water sources.

Comment #3: Plans for the expansion of the Honouliuli treatment plant are well under way although there are still a number of unresolved issues, including those related to effluent discharge. It is anticipated that expansion of the treatment plant and the resolution of the issues will be completed prior to development of the project.

Comment # 4: A drainage and soil erosion analysis has been prepared for the EIS. The analyses indicates that although stormwater runoff

William E. Wanket
President
William E. Wanket, Inc.
1000 Kalia Road
Honolulu, Hawaii 96813
Phone: (808) 941-1111
Telex: 981111 WANKET

is expected to increase, the soil erosion from the project site is expected to decrease after development of the project. Consequently, concentrations of sediment in storm runoff is expected to be lower than that under existing conditions. This reduction in erosion potential is a result of increased impervious surfaces, more maintained landscaped areas, and implementation of underground drainage systems.

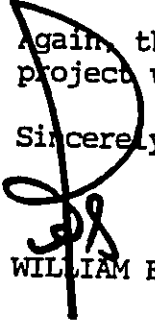
Comment #5: Investigations by acoustical consultants, Darby & Associates, have confirmed that most of the site is exposed to relatively little noise from aircraft operations associated with Naval Air Station Barbers Point (NASBP) and Honolulu International Airport (HIA). Predictably, the highest aircraft noise levels were recorded near the southeastern corner of the site, because of its proximity to the HIA flight arrival tracks and to one of the NASBP "touch-and-go" tracks.

The proposed residential areas will be subjected to Day-Night Average Sound Levels (Ldn's) of less than 55 dBA due to aircraft noise, i.e., in clear compliance with the State Department of Transportation's Ldn 60 residential area limit. Although at times audible, aircraft noise should not significantly impact the proposed residential areas.

Comment #6: The studies being prepared for the EIS will consider, where appropriate, cumulative impacts from projects approved for the leeward area. The Noise Impact Evaluation will consider the cumulative noise impact of future traffic (including that generated by the subject project and by other projects in the leeward area). The traffic study will take into account other planned land uses. Thus, cumulative effects will be considered independent of the project's effect. In addition, the Kapolei Highway Master Plan is currently underway to address the cumulative highway need in the Ewa Region.

Again, thank you for your comments. We will continue to coordinate our project with you to ensure further opportunity for review and comments.

Sincerely,


WILLIAM E. WANKET

UNITED STATES
DEPARTMENT OF
AGRICULTURE

SOIL
CONSERVATION
SERVICE

P. O. BOX 50004
HONOLULU, HAWAII
96850

November 26, 1990

William E. Wanket, Inc.
William E. Wanket, President
Pacific Tower 660
1001 Bishop Street
Honolulu, HI 96813

Dear Mr. Wanket:

Subject: Environmental Impact Statement Preparation Notice (EISPN) -
Proposed Makaiwa Hills, Ewa, Oahu, HI

We have no comments to offer at this time; however, we would appreciate the opportunity to review the draft EIS.

Sincerely,

 ACTING

WARREN M. LEE
State Conservationist

WILLIAM
E.
WANKET
INC.

President

November 29, 1990

Mr. Warren M. Lee
State Conservationist
United States Department of Agriculture
Soil Conservation Service
P.O. Box 50004
Honolulu, Hawaii 96850

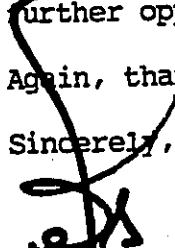
RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received

Dear Mr. Lee

Thank you for reviewing the above-referenced EISPN and for your letter of November 26, 1990. Although you have no comments to offer at this time, we will continue to coordinate our project with you to ensure further opportunity for review and comment.

Again, thank you for your letter.

Sincerely,


WILLIAM E. WANKET

Pacific Tower
Suite 400
1101 Bishop Street
Honolulu, Hawaii 96813



United States Department of the Interior

**FISH AND WILDLIFE SERVICE
PACIFIC ISLANDS OFFICE**

P.O. BOX 50187
HONOLULU, HAWAII 96850

NOV - 8 1990

William E. Wanket, Inc.
William E. Wanket, President
Pacific Tower 600
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

Re: Environmental Impact Statement Preparation Notice for Makaiwa Hills

Due to current staff limitations, the Pacific Islands Office, Fish and Wildlife Enhancement cannot devote the time to adequately evaluate potential impacts to important fish and wildlife resources from the proposed project. Please understand that this notification does not represent the Fish and Wildlife Service's approval of the proposed activity. We may review future actions related to this project should workload constraints be alleviated, or if significant adverse impacts to trustee fish and wildlife resources are identified.

Sincerely yours,

Ernest Kosaka
Field Office Supervisor
Fish and Wildlife Enhancement

WILLIAM
E.
WANKET
INC.

Land Use Consultant

November 10, 1990

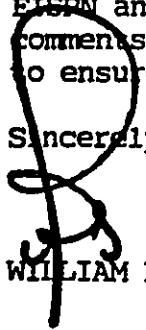
Mr. Ernest Kosaka
Field Office Supervisor
Fish and Wildlife Enhancement
Fish and Wildlife Service
Pacific Islands Office
P.O. Box 50167
Honolulu, Hawaii 96850

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received**

Dear Mr. Kosaka:

Thank you very much for taking the time to review the above-referenced EISPN and for your letter of November 8, 1990. Although you have no comments at this time, we will continue to coordinate our project with you to ensure opportunity for your further review.

Sincerely,


WILLIAM E. WANKET

Pacific Tower
Suite 450
1001 Bishop Street
Honolulu, Hawaii

JOHN WAIHEE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P. O. BOX 119, HONOLULU, HAWAII 96810

RUSSEL S. NAGATA
COMPTROLLER

JAMES H. YASUDA
DEPUTY COMPTROLLER

LETTER NO. (P)1883.0

OCT 26 1980

Mr. William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

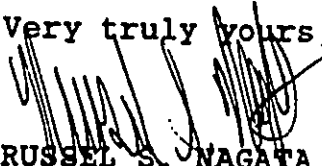
Dear Mr. Wanket:

Subject: Makaiwa Hills
Environmental Assessment

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

Should there be any questions, please contact Mr. Ralph Yukumoto of the Planning Branch at 548-7192.

Very truly yours,


RUSSEL S. NAGATA
State Comptroller

WILLIAM
E.
WANKET
INC.

Land Use Consultant

November 2, 1990


Mr. Russel S. Nagata
State Comptroller
Department of Accounting and General
Services
P.O. Box 119
Honolulu, Hawaii 96810

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received**

Dear Mr. Nagata:

Thank you very much for taking the time to review the above-referenced EISPN and for your letter of October 30, 1990. Although you have no comments at this time, we will continue to coordinate our project with you to ensure that you have the opportunity for further review and comments.

Sincerely,


WILLIAM E. WANKET

Pacific Tower
Suite 560
1001 Bishop Street
Honolulu, HI 96810

Phone
(808) 521-1111

JOHN WAIHEE
GOVERNOR



State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814-2512

YUKIO KITAGAWA
CHAIRPERSON, BOARD OF AGRICULTURE

SUZANNE D. PETERSON
DEPUTY TO THE CHAIRPERSON

FAX: 548-6100

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

November 7, 1990

Mr. William E. Wanket
William E. Wanket, Inc.
Pacific Tower 600
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. *Bill* Wanket:

Subject: Environmental Impact Statement Preparation Notice
(EISPN) for Makaiwa Hills Planned Community
TMK: 9-1-15: 5, 11, 17
9-1-16: 9
9-2-03: 2 Honouliuli, Oahu
Area: approximately 1,915 acres

The Department of Agriculture would like to be a consulted party to the subject proposal. Please send all pertinent correspondence and documents to:

Mr. Yukio Kitagawa, Chairperson
Board of Agriculture
Department of Agriculture
P. O. Box 22159
Honolulu, Hawaii 96823-2159

Thank you.

Sincerely,

A handwritten signature in cursive script that reads "Paul".

PAUL J. SCHWIND, Ph.D.
Administrator, Planning and
Development Office

c: Department of General Planning, City and County of Honolulu
Office of Environmental Quality Control



WILLIAM
E.
WANKET
INC.

Land Use Consultant

November 10, 1990

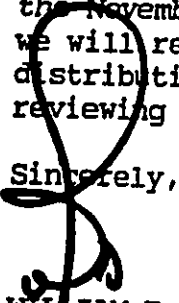
Mr. Yukio Kitagawa
Chairperson
Board of Agriculture
Department of Agriculture
P.O. Box 22159
Honolulu, Hawaii 96823-2159

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received**

Dear Mr. Kitagawa:

Thank you very much for reviewing the above-referenced EISPN and for the November 7, 1990 letter from your office. By copy of this letter we will request that the Department of Agriculture be placed on the OEQC distribution list for the project's DEIS and FEIS. Again, thank you for reviewing the EISPN.

Sincerely,


WILLIAM E. WANKET

cc: OEQC

Pacific Tower
Suite 400
1001 Bishop Street
Honolulu, Hawaii 96813

JOHN WAIHEE
GOVERNOR



JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
SEVEN WATERFRONT PLAZA, SUITE 300
500 ALA MOANA BOULEVARD
HONOLULU, HAWAII 96813
FAX (808) 543-6841

IN REPLY REFER TO:

90:PLNG/5411 jt

November 14, 1990

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, HI 96813

Dear Mr. Wanket:

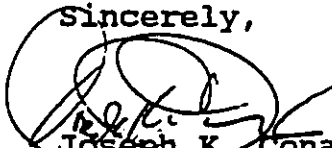
Re: Environmental Impact Statement Preparation Notice
(EISPN) for the Proposed Makaiwa Hills, Ewa, Oahu

Thank you for the opportunity to provide comments on the subject EISPN.

Reference is made to Policy A(3) of the State Housing Functional Plan which seeks to ensure that housing projects provide a fair share of affordable homeownership opportunities. Implementing Action A(3)(a) looks to the State Land Use Commission and County land use decision making bodies to "impose realistic and fair housing conditions on projects seeking land use redesignations, general or development plan amendments, rezoning, SMA permits and building permits."

More information on the affordable housing component of the proposed project should be provided in the draft EIS. For example, the number of affordable units to be provided; the targeted income groups; location of units; and the proposed development timetable for the affordable units.

Sincerely,


Joseph K. Conant
Executive Director

JT:eks

WILLIAM
E.
WANKET
INC.

Land Use Consultants

January 14, 1991

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

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for the Proposed Makaiwa Hills Project - Response to
Comments Received**

Dear Mr. Conant:

Thank you for taking the time to review the above-referenced EISPN and for your letter of November 14, 1990. Regarding your comments concerning the provisions for an affordable housing component, we offer the following response.

In conjunction with and related to the housing component of the Makaiwa Hills project, the applicant is committed to the establishment of an affordable housing component that will serve to meet the needs of households earning below 140 percent of the median income. This commitment includes the provision of housing units and/or acceptable in-kind substitutes. Targeted income groups will include those households earning no more than 80 percent of the median income, households earning between 81 percent and 120 percent of the median income, and households earning between 121 percent and 140 percent of the median income. A variety of units are anticipated, including rentals and other special needs housing. Sites either on-site, off-site or in combination will be considered.

At this preliminary planning stage, however, we are unable to exactly define the components of the affordable housing program beyond the general description given above. The applicant is currently working with the City's Department of Housing and Community Development to meet all or substantially all of the Makaiwa Hills related needs through in-kind contributions towards the Ewa Villages project, the City's next master-planned community. Through

Pacific Tower
Suite 620
1001 Bishop Street
Honolulu, HI 96813
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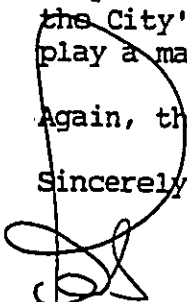
-Page 2-

Mr. Joseph K. Conant
Housing Finance and Development Corporation

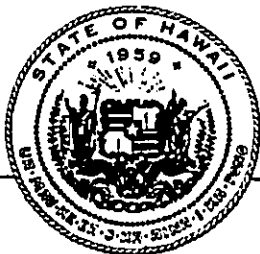
the legislative processes of seeking State Land Use Commission approval and City Council approval of a development plan amendment and a zone change, the applicant will work with the various government bodies to detail the scope and timing of an affordable housing program. Your agency, as well as the City's Department of Housing and Community Development, is expected to play a major role in this regards.

Again, thank you for your comments.

Sincerely,



WILLIAM E. WANKET



DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM

ENERGY DIVISION, 335 MERCHANT ST., RM. 110, HONOLULU, HAWAII 96813 PHONE: (808) 548-4080 FAX: (808) 531-5243

JOHN WAIHEE
GOVERNOR
ROGER A. ULVELING
DIRECTOR
BARBARA KIM STANTON
DEPUTY DIRECTOR
LESLIE S. MATSUBARA
DEPUTY DIRECTOR

90:876e

November 21, 1990

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

Subject: Environmental Impact Statement Preparation
Notice (EISPN) for Makaiwa Hills

The Energy Division has received the above EISPN and has the following comments:

We note that the Environmental Impact Statement (EIS) will examine the relationship between the proposed Makaiwa Hills project and the Hawaii State Plan and the State Energy Functional Plan. We hope that the EIS will contain a full discussion of the project's energy impacts and its consistency with the applicable provisions of those plans.

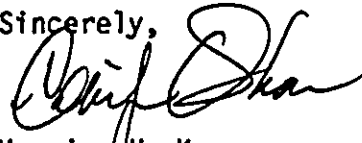
We note also that the EIS's air quality impact assessment will address the impact of additional electrical demand and the use of mitigation measures such as energy efficient building designs, solar water systems, heat pumps, and the discouragement of air conditioning. The assessment should explain in detail what the additional electrical demand will be, as well as the energy conservation design/technologies and renewable energy sources that will be used to help meet the project's energy requirements.

Finally, the Energy Division would like to see language in the EIS that commits the project applicant to the design and construction of an energy-efficient community. We are enclosing for your early consideration (1) energy efficiency design guidelines which the Energy Division prepared for the Housing Finance and Development Corporation (HFDC) and which were included in HFDC's request for proposals for villages two and three of the Villages of Kapolei, and (2) calculations by our consultant, Peter Flachsbarth, showing the positive impacts that the installation of solar water heaters and heat pumps would have on home buyers at Kapolei.

Mr. William E. Wanket
Page 2
November 21, 1990

Thank you for this opportunity to comment. I hope these comments will be useful to you.

Sincerely,


for Maurice H. Kaya
Energy Program Administrator

MHK/PE:do
Enclosures

DESIGN GUIDELINES - ADDENDUM NO. 1

ENERGY EFFICIENCY DESIGN GUIDELINES

To minimize the life cycle energy use and life cycle cost of the project while maintaining the project development objectives of cost effectiveness, health, safety, security and aesthetics, the following guidelines should be considered and, where applicable, incorporated into the project plans.

- 1.0 **Site Planning and Landscaping**
- 1.1 Orient streets to provide an east/west orientation for the long dimension of the houses to minimize heat gains in the morning and afternoon.
- 1.2 Incorporate pedestrian walkways and bikeways to encourage walking and bicycling between home, school, parks and commercial areas.
- 1.3 Select and place landscape materials on the site to provide shading to minimize heat gains in the morning and afternoon.
- 1.4 Minimize exterior paved surfaces that are not shaded by trees, awnings, trellises, roofing or house.
- 1.5 Provide for enclosed yard areas where clotheslines could be utilized.
- 1.6 Incorporate drip irrigation where appropriate, and automate irrigation system to conserve water.
- 1.7 Select drought-tolerant landscape materials where appropriate to reduce the need for water and energy consumption associated with landscape maintenance.
- 2.0 **Building Design**
- 2.1 Use operable windows to allow cross ventilation in every room, and orient openings toward prevailing winds.
- 2.2 Utilize eaves (minimum 30"), louvers, trellises, or shade screen to shade windows, especially on west, south and east sides.
- 2.3 Ventilate attic with devices such as louvers at or near the roof ridge to reduce attic heat buildup and resultant heat transfer to living areas.
- 2.4 Install a radiant barrier (reflective foil-faced kraft paper material or similar product) in the attic to reduce heat gain into the house attic. Typically installed at the underside of the

roof rafters or the top side of the ceiling joists per manufacturer's recommendations.

- 2.5 Use light colored finishes on roof and wall to reflect sunlight.
- 3.0 Mechanical Equipment and Systems
 - 3.1 Consider use of heat pump waterheaters.
 - 3.2 Consider use of solar waterheater or provide for future installation by pre-plumbing and running power and control wiring.
 - 3.3 Utilize the most efficient refrigerators, clothes dryers, and dishwashers.
 - 3.4 Install ceiling fans or provide for future installation.
 - 3.5 Use time switches to cut off electricity when not needed to high-usage applications or equipment such as electric waterheater.
 - 3.6 Install fluorescent lights with high efficiency ballasts.
 - 3.7 Use low water consumption waterclosets.
 - 3.8 Install flow restrictors on showers and other water uses which can have high flow rates.

IMPACTS OF H. B. 3299 ON HOME BUYERS

by
Peter G. Flachsbart, Ph.D.

June 23, 1990

H.B. 3299 allows homeowners to take a 35% (up to \$1,750) tax credit for installation of a solar hot water system and a 20% (up to \$400) tax credit for installation of a heat pump. This report summarizes the financial impacts that this legislation could have on home buyers. Impacts are shown for a family of four that buys a home at Kumu Iki Village in Kapolei. These homes, which will have gas water heaters and ranges, are used as the baseline case for home prices, qualifying incomes and energy consumption (i.e., 445 kwh/mo. and 25.6 therms/mo.). Table I shows the financial impacts if Kumu Iki buyers install energy-saving equipment. Table II shows the impacts if all-electric appliances are provided in a future Kapolei increment.

Methodology

At Kumu Iki Village, a family of four would consume 585 kwh/mo. if their home had a heat pump and 485 kwh/mo. if it had a solar system. To accommodate the energy improvements, electric water heaters would replace the gas units. The range would consume 3.4 therms/mo. if it was gas and 55 kwh/mo. if electric. The family would pay 8.34¢/kwh and \$1.20/therm plus the \$6/mo. service charges. Utility rates would increase an average 4%/year. The family would need an 80 gal tank for either the heat pump or solar system, and the combined solar panels would be 48 square feet. Installed cost would be \$2,000 for the heat pump and \$4,000 for the solar system.

Affordable housing (\$89,000-\$120,000) would require FHA/Hula flae financing; mid-level market homes (\$179,000-\$217,000) would use FHA financing, and upper-level market homes (≥ \$226,000) would use conventional financing. All home buyers would use a 30-year, fixed rate mortgage. However, buyers who invest in solar hot water

systems and who use FHA financing are eligible for more favorable qualifying ratios. Conventional mortgage underwriters may credit borrowers for their reduced utility bills when calculating the borrower's qualifying income. The underwriter treats the reduced utility bill as a compensating factor that enhances borrowing ability. Since most of the higher mortgage payment is interest, it can be claimed as an itemized deduction on the home owner's income tax returns. Assuming a fixed interest rate on the mortgage, the increase in the mortgage payment for energy equipment will remain level over time, while the utility bill savings may increase if utility rates increase.

The attached tables show the net total savings for the buyer's pocketbook if the home is held either two or five years. The net total savings for the pocketbook equal:

(the tax credit with interest + cumulative savings on utility bills)
- (increase in down payment + sum of increased mortgage payments).

Findings

Home buyers who install energy equipment would face a change in qualifying annual incomes, from a decrease of \$983 to an increase of \$1,307, and all would make higher down payments (\$119-\$896) to finance the energy improvements. Further, the amortized cost of the energy improvement would result in higher monthly mortgage payments (\$15.02-\$33.53), which would be offset by the savings on monthly utility bills (\$14.96-\$30.02).

Net total savings for the pocketbook vary from \$95-\$1,404 for property held two years and from \$455-\$1,973 for property held five years. Variation is due to the type of mortgage financing, the buyer's income tax bracket, how long the property is held, and whether a home has gas appliances or is all-electric. Net savings were found to be greater for: solar systems over heat pumps, all-electric homes over those with gas appliances, and homes owned five instead of two years. Affordable homes have the greatest net savings for the pocketbook.

TABLE I. FINANCIAL IMPACTS OF OPTIONAL ENERGY EQUIPMENT ON KAPOLEI HOME BUYERS
(Assumes home will be equipped with electric water heater and gas range.)

Heat Pump

Average home price (\$1,000) ^a	Qualifying gross annual income w/o equipment	Change in qualifying income w/ equipment	Percentage change in qualifying income	Property Held Two Years				Property Held Five Years				
				Value of tax credit with interest ^b	Cumulative savings on utility bills ^c	Increase in down payment	Sum of increased mortgage payments ^d	Net total savings for pocketbook ^e	Value of tax credit with interest ^b	Cumulative savings on utility bills ^c	Increase in down payment	Sum of increased mortgage payments ^d
\$96	\$32,038	\$678	2.1%	\$424	\$373	\$119	\$295	\$383	\$485	\$992	\$738	\$620
\$102	\$33,073	\$678	2.0%	\$424	\$373	\$119	\$295	\$383	\$485	\$992	\$738	\$620
\$109	\$36,447	\$678	1.9%	\$424	\$373	\$119	\$295	\$383	\$485	\$992	\$738	\$620
\$118	\$39,499	\$678	1.7%	\$424	\$373	\$119	\$295	\$383	\$485	\$992	\$738	\$620
\$120	\$40,198	\$679	1.7%	\$424	\$373	\$119	\$295	\$383	\$485	\$992	\$738	\$620
\$189	\$65,565	\$694	1.1%	\$420	\$373	\$254	\$244	\$295	\$470	\$992	\$738	\$620
\$208	\$65,543	\$621	0.9%	\$420	\$373	\$448	\$250	\$95	\$470	\$992	\$624	\$584
\$235	\$76,010	\$653	0.9%	\$420	\$373	\$432	\$227	\$134	\$470	\$992	\$559	\$455
\$248	\$80,295	\$653	0.8%	\$420	\$373	\$432	\$227	\$134	\$470	\$992	\$567	\$463
\$265	\$85,724	\$653	0.8%	\$420	\$373	\$432	\$227	\$134	\$470	\$992	\$567	\$463
\$279	\$90,528	\$653	0.7%	\$420	\$373	\$432	\$227	\$134	\$470	\$992	\$567	\$463

Solar System

Average home price (\$1,000) ^a	Qualifying gross annual income w/o equipment	Change in qualifying income w/ equipment	Percentage change in qualifying income	Property Held Two Years				Property Held Five Years				
				Value of tax credit with interest ^b	Cumulative savings on utility bills ^c	Increase in down payment	Sum of increased mortgage payments ^d	Net total savings for pocketbook ^e	Value of tax credit with interest ^b	Cumulative savings on utility bills ^c	Increase in down payment	Sum of increased mortgage payments ^d
\$96	\$32,038	\$243	0.8%	\$1,483	\$581	\$238	\$590	\$1,236	\$1,696	\$1,545	\$1,475	\$1,528
\$102	\$34,073	\$175	0.5%	\$1,483	\$581	\$238	\$590	\$1,236	\$1,696	\$1,545	\$1,475	\$1,528
\$109	\$36,477	\$96	0.3%	\$1,483	\$581	\$238	\$590	\$1,236	\$1,696	\$1,545	\$1,475	\$1,528
\$118	\$39,499	(\$5)	0.0%	\$1,483	\$581	\$238	\$590	\$1,236	\$1,696	\$1,545	\$1,475	\$1,528
\$120	\$40,198	(\$28)	-0.1%	\$1,483	\$581	\$238	\$590	\$1,236	\$1,696	\$1,545	\$1,475	\$1,528
\$189	\$65,565	(\$894)	-1.3%	\$1,469	\$581	\$508	\$499	\$1,043	\$1,645	\$1,545	\$1,475	\$1,528
\$208	\$65,543	(\$983)	-1.5%	\$1,469	\$581	\$896	\$447	\$707	\$1,645	\$1,545	\$1,247	\$1,434
\$235	\$76,010	\$1,307	1.7%	\$1,469	\$581	\$864	\$454	\$732	\$1,645	\$1,545	\$1,117	\$1,176
\$248	\$80,295	\$1,307	1.6%	\$1,469	\$581	\$864	\$454	\$732	\$1,645	\$1,545	\$1,134	\$1,191
\$265	\$85,724	\$1,307	1.5%	\$1,469	\$581	\$864	\$454	\$732	\$1,645	\$1,545	\$1,134	\$1,191
\$279	\$90,528	\$1,307	1.4%	\$1,469	\$581	\$864	\$454	\$732	\$1,645	\$1,545	\$1,134	\$1,191

Note: a. Prices represent Kumu Iki at Villages of Kapolei.
 b. Assumes: tax credit is received 6 months after purchase of home; tax credit earns interest at 5.75 percent per year compounded monthly; and income taxes are paid on interest.
 c. Assumes energy equipment is sized for family of four and utility rates will increase an average 4 percent per year.
 d. Increased mortgage payments for energy improvement have been offset for the mortgage interest deduction on income tax returns.
 e. Net total savings = (value of tax credit with interest + cumulative savings on utility bills) - (increase in down payment + sum of increased mortgage payments).

TABLE II. FINANCIAL IMPACTS OF OPTIONAL ENERGY EQUIPMENT ON KAPOLEI HOME BUYERS
(Assumes home will be equipped with all-electric appliances.)

Heat Pump

Average home price (\$1,000) ^a	Qualifying gross annual income w/o equipment	Change in qualifying income w/ equipment	Percentage change in qualifying income	Property Held Two Years				Property Held Five Years				
				Value of tax credit with interest ^b	Cumulative savings on utility bills ^c	Increase in down payment	Sum of increased mortgage payments ^d	Net total savings for pocketbook ^e	Value of tax credit with interest ^b	Cumulative savings on utility bills ^c	Increase in down payment	Sum of increased mortgage payments ^d
\$96	\$32,038	\$678	2.1%	\$424	\$541	\$119	\$295	\$51	\$1,437	\$119	\$738	\$1,065
\$102	\$34,073	\$678	2.0%	\$424	\$541	\$119	\$295	\$51	\$1,437	\$119	\$738	\$1,065
\$109	\$36,447	\$678	1.9%	\$424	\$541	\$119	\$295	\$51	\$1,437	\$119	\$738	\$1,065
\$118	\$39,499	\$678	1.7%	\$424	\$541	\$119	\$295	\$51	\$1,437	\$119	\$738	\$1,065
\$120	\$40,198	\$679	1.7%	\$424	\$541	\$119	\$295	\$51	\$1,437	\$119	\$738	\$1,065
\$189	\$65,565	\$694	1.1%	\$420	\$541	\$254	\$244	\$462	\$1,437	\$254	\$624	\$1,030
\$208	\$65,543	\$621	0.9%	\$420	\$541	\$448	\$250	\$263	\$1,437	\$448	\$559	\$901
\$235	\$76,010	\$653	0.9%	\$420	\$541	\$432	\$227	\$302	\$1,437	\$432	\$567	\$908
\$248	\$80,295	\$653	0.8%	\$420	\$541	\$432	\$227	\$302	\$1,437	\$432	\$567	\$908
\$265	\$85,724	\$653	0.8%	\$420	\$541	\$432	\$227	\$302	\$1,437	\$432	\$567	\$908
\$279	\$90,528	\$653	0.7%	\$420	\$541	\$432	\$227	\$302	\$1,437	\$432	\$567	\$908

Solar System

Average home price (\$1,000) ^a	Qualifying gross annual income w/o equipment	Change in qualifying income w/ equipment	Percentage change in qualifying income	Property Held Two Years				Property Held Five Years				
				Value of tax credit with interest ^b	Cumulative savings on utility bills ^c	Increase in down payment	Sum of increased mortgage payments ^d	Net total savings for pocketbook ^e	Value of tax credit with interest ^b	Cumulative savings on utility bills ^c	Increase in down payment	Sum of increased mortgage payments ^d
\$96	\$32,038	\$243	0.8%	\$1,483	\$749	\$238	\$590	\$1,404	\$1,990	\$238	\$1,475	\$1,973
\$102	\$34,073	\$175	0.5%	\$1,483	\$749	\$238	\$590	\$1,404	\$1,990	\$238	\$1,475	\$1,973
\$109	\$36,447	\$96	0.3%	\$1,483	\$749	\$238	\$590	\$1,404	\$1,990	\$238	\$1,475	\$1,973
\$118	\$39,499	(\$5)	0.0%	\$1,483	\$749	\$238	\$590	\$1,404	\$1,990	\$238	\$1,475	\$1,973
\$120	\$40,198	(\$28)	-0.1%	\$1,483	\$749	\$238	\$590	\$1,404	\$1,990	\$238	\$1,475	\$1,973
\$189	\$65,565	(\$894)	-1.3%	\$1,469	\$749	\$508	\$499	\$1,211	\$1,990	\$508	\$1,247	\$1,880
\$208	\$65,543	(\$983)	-1.5%	\$1,469	\$749	\$896	\$447	\$875	\$1,990	\$896	\$1,117	\$1,622
\$235	\$76,010	\$1,307	1.7%	\$1,469	\$749	\$864	\$454	\$900	\$1,990	\$864	\$1,134	\$1,637
\$248	\$80,295	\$1,307	1.6%	\$1,469	\$749	\$864	\$454	\$900	\$1,990	\$864	\$1,134	\$1,637
\$265	\$85,724	\$1,307	1.5%	\$1,469	\$749	\$864	\$454	\$900	\$1,990	\$864	\$1,134	\$1,637
\$279	\$90,528	\$1,307	1.4%	\$1,469	\$749	\$864	\$454	\$900	\$1,990	\$864	\$1,134	\$1,637

Note: a. Prices represent Kumu Iki at Villages of Kapolei.

b. Assumes: tax credit is received 8 months after purchase of home; tax credit earns interest at 5.75 percent per year compounded monthly; and income taxes are paid on interest.

c. Assumes energy equipment is sized for family of four and utility rates will increase an average 4 percent per year.

d. Increased mortgage payments for the energy improvement have been offset for the mortgage interest deduction on income tax returns.

e. Net total savings = (value of tax credit with interest + cumulative savings on utility bills) - (increase in down payment + sum of increased mortgage payments).

WILLIAM
E.
WANKET
INC.

Land Use Consultant

January 21, 1991

Mr. Maurice H. Kaya
Energy Program Administrator
Department of Business, Economic
Development & Tourism
Energy Division
335 Merchant Street, Room 110
Honolulu, Hawaii 96813

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Development - Response to
Comments Received**

Dear Mr. Kaya:

Thank you for reviewing the above-referenced EISPN and for your letter of November 21, 1990. In response to your comments, the following information is provided.

1. Energy Impacts

As stated in the EISPN (pp. 12-13), it is our intent to fully address the project's energy impacts and its consistency with the State's energy policies as delineated in the Hawaii State Plan and the State Energy Functional Plan.

2. Air Quality Impacts

As stated in the EISPN (p. 37), the air quality impact analysis will address the air pollutant emissions resulting from electrical generation. In order to accomplish this, it will be necessary to estimate the project's electrical demand. Mitigation measures, i.e., conservation, design/technologies and renewable resources, to reduce this demand and thereby the pollutant emissions will be presented.

Pacific Tower
Suite 450
1001 Bishop Street
Honolulu, HI 96813
Tel: 535-1111
Fax: 535-1112

-Page 2-
Department of Business, Economic
Development & Tourism

3. Energy-Efficiency Guidelines

Covenants, Conditions, and Restrictions (CC&Rs) are intended to be developed for the property that will include energy efficiency design guidelines. In this respect, we appreciate very much receiving a copy of the State's Energy Efficiency Design Guidelines developed for the Villages of Kapolei and the study by Peter Flachsbart showing the positive impact of solar water heaters and heat pumps. This information will be very helpful as we prepare energy efficiency guidelines for Makaiwa Hills, which will be shared with your office for review and input.

Again, thank you for your comments.

Sincerely,



WILLIAM E. WANKET

JOHN WAIHEE
GOVERNOR



CHARLES T. TOGUCHI
SUPERINTENDENT

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P. O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

November 9, 1990

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower, Suite 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

Subject: Environmental Impact Statement Preparation
Notice, Makaiwa Hills, Ewa, Oahu, Hawaii

Our review of the EIS preparation notice indicates that the proposed project may have the following enrollment impact on the following schools:

<u>Schools</u>	<u>Grades</u>	<u>Projected Enrollment</u>
Makakilo Elementary	K-6	200-250
Ilima Intermediate	7-8	85-100
Campbell High School	9-12	125-150

The projections are based on a total of 2,130 residential units at full buildout projected in the year 2009. The projections also assume the majority of the homes to be for executives, retirees, professionals, or second home buyers.

The Department of Education concurs with Section V.B.8. that one elementary school is required on the site. We request that the school site be 8-12 acres and preferably located next to a park. The final site selection should be coordinated with the Facilities Branch of the Department. The developer will be requested to donate the land for the school or pay a fair share of the costs to build additional classrooms to accommodate the enrollment growth.

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

Mr. William E. Wanket

-2-

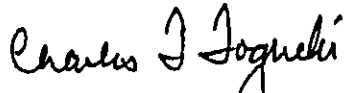
November 9, 1990

It is projected that the aforementioned schools will be operating well beyond capacity at the time the project is constructed. The Department anticipates construction of new schools in the Kapolei Village area and will probably serve the project residents during an interim period.

Please have the developer keep us informed of updated development timetables and the involvement in the location of the proposed school.

If there are any questions, please call the Facilities Branch at 737-4743.

Sincerely,



Charles T. Tsuchi
Superintendent

CTT:jl

cc: E. Imai
L. Chung

WILLIAM
E.
WANKET
INC.

Land Use Consultant

November 22, 1990

Mr. Charles T. Toguchi
Superintendent
Department of Education
P.O. Box 2360
Honolulu, Hawaii 96804

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received**

Dear Mr. Toguchi:

Thank you for reviewing the above-referenced EISPN and for the information provided in your letter of November 9, 1990.

According to DOE policies, the Estate of James Campbell will either dedicate or pay their fair share of providing elementary school facilities for the project area. Following a June 8, 1990 meeting with representatives of your Department, an 8-acre school site was included on the preliminary Makaiwa Hills site plan. Final site selection and other matters regarding the school facilities will be coordinated with the Department of Education.

We will continue to coordinate our project with you to ensure additional opportunity for comment and review.

Sincerely,


WILLIAM E. WANKET

Pacific Tower
Suite 450
1001 Bishop Street
Honolulu, HI 96813

LU2/91.0802

JOHN WAIHEE
GOVERNOR OF HAWAII



09 10 11

JOHN C. LEWIN, M.D.
DIRECTOR OF HEALTH

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

February 4, 1991

In reply, please refer to:
EPHSD

91-1-005

To: Donald A. Clegg, Director
Department of Land Utilization
City and County of Honolulu

From: Director of Health

Subject: Development Plan Application/Environmental Assessment (DPA/EA)
Proposed Makaiwa Hills (residential, commercial and preservation)
Ewa, Oahu, Hawaii
TMK: 9-1-15: 5, 11, 17
TMK: 9-1-16: Portion 9
TMK: 9-2-03: Portion 2

We have reviewed the material on the subject project submitted by your office.
The following comments are offered:

Wastewater Disposal

1. The subject project is in a proposed critical wastewater disposal area as determined by the Oahu Wastewater Advisory Committee.
2. At this time, the details of wastewater treatment and disposal from the site are incomplete. It has been determined that the area is within the County's Sewer service area.
3. Section 11-6206(b) of the Department of Health's (DOH's) wastewater rules requires that projects within sewer areas connect to the public sewers. As this project is within a municipal sewer service area, connection to the sewer is required.
4. At this time, the Honouliuli Wastewater Treatment Plant does not have adequate capacity to handle additional flows from the project. Due to this situation, the developer must coordinate the construction of the project with any expansion plans for the treatment system. No on-site or individual wastewater systems will be allowed for this project. Therefore, we recommend that the development of the subject project not be approved until wastewater is adequately addressed.

Drinking Water

1. As new sources of potable water are developed, it will be necessary to comply with the Department's Administrative Rules, Title 11, Chapter 20, "Potable Water Systems." Section 11-20-29 of Chapter 20 requires that all

DONALD A. CLEGG

-2-

February 4, 1991

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.

2. 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 City and County of Honolulu, the Board of Water Supply will be responsible for the review and approval of the plans.
3. The proposed development is situated above the Department's Underground Injection Control (UIC) line. Land areas 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.
4. The DPA/EA does not discuss the ultimate disposal method for surface water runoff. If drywells are to be used for this purpose, they would be classified as injection wells. All injection wells must comply with the Department's Administrative Rules, Title 11, Chapter 23, "Underground Injection Control." Chapter 23 requires UIC permits for the construction and operation of all injection wells.
5. The DPA/EA notes that a private, non-potable water systems will be developed for the irrigation of non-residential areas. The potable and non-potable water systems must be carefully designed and operated to prevent cross-connections and backflow conditions. The two systems must be clearly labeled and physically separated by air gaps or reduced pressure principle backflow preventers to avoid contaminating the potable water supply.
6. The standard golf course conditions (attached) should apply to this project (Page 23 of the DPA/EA mentions the possible development of a golf course).

Vector Control

The project is in an area conducive to rodent breeding.

All requirements of Title 11, Chapter 26, paragraph 35, (Rodents; demolishing of structure and clearing of vacant sites and vacant lots) must be strictly adhered to.


 JOHN C. LEWIN, M.D.
 Director of Health

Attachments



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.

-4-

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.

WILLIAM
E.
MANNET

February 14, 1991

Mr. John C. Lewin, M.D.
Director
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received

Dear Mr. Lewin:

Thank you for taking the time to review the above-referenced EISPN and for the information contained in your letter of February 4, 1991. In response to your comments, the following is provided:

Wastewater Disposal

1. No comment necessary.
2. The Draft EIS will contain a section on the project's estimated wastewater flows, proposed modifications to accommodate these flows, wastewater related project impacts, and mitigative measures to offset impacts.
3. Project wastewater requirements will be coordinated with the Division of Wastewater Management. In addition, an application for sewer connection will be filed for review and approval with the Division.
4. No onsite or individual wastewater systems will be developed with the Makaiwa Hills Project. The proposed method of wastewater treatment and disposal is conveyance to the Honouliuli Wastewater Treatment Plan (WWTP) via City and County sewers. Expansion of Honouliuli WWTP is expected to precede development of Makaiwa Hills. The developer will coordinate construction of the project with the expansion plans proposed by the City. The application for Development Plan Amendment is the first step in the approval process for this project. Updates on the treatment plant capacity and expansion status will be addressed in future approval requests.

WILLIAM
E.
MANNET

Drinking Water

1., 2., 3. Coordination will be conducted with applicable agencies during the development of the project's water system. In addition, the developer will comply with all State and City and County rules and regulations regarding design and construction of systems and protection of groundwater sources.

4. Dry wells or injection wells will not be used for surface water runoff disposal. The proposed onsite drainage system will convey runoff to the makai project boundary at Farrington Highway. Culverts crossing the highway will convey runoff to downstream developments with ultimate disposal at the ocean. The storm drain system for Ko Olina has been planned to accommodate runoff from Makaiwa Hills. The proposed Kapolei Business-Industrial Park has also included contributions from Makaiwa Hills in planning and design of drainage structures. A Draft EIS for the Campbell Drainage Channel (Supplemental to the Kapolei Business-Industrial Park FEIS) is currently in preparation.

5. Development of non-potable water systems for Makaiwa Hills will comply with rules established for safeguarding against contamination of the potable water supply.

6. If a golf course is built, the developer will comply with the eight conditions applicable to new golf course development.

Vector Control

All requirements of Title 11, Chapter 26, Paragraph 35 (Rodents; demolishing of structures and clearing of vacant sites and vacant lots) will be complied with.

Sincerely,



WILLIAM E. WANKET

JOHN WAIHEE
GOVERNOR OF HAWAII



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

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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HISTORIC PRESERVATION
PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

REF:OCEA:JN

File No.: 91-183
Doc. No.: 9377E

DEC -5 1990

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

Subject: Development Plan Application and Environmental
Assessment-Makaiwa Hills, Ewa, Oahu, Hawaii TMK:
9-1-15: 5, 11, 17; 9-1-16: Por 9; 9-2-03: Por 2.

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.

Cultural Surveys Hawaii, archaeological consultant, is presently completing their inventory survey report for review. Historic sites were found, but we are unaware of their exact nature and have yet to evaluate their significance. Thus, we will not be able to comment on the Development Plan Application and Environmental Assessment until we receive their report and review it.

In regards to "View Assessments" on page 39, it is unclear whether public view points will be incorporated for on-site vantage points.

This subdivision development, plans to receive water developed from the Pearl Harbor Water Management Area. The applicant should address water demand, sources and water commitments received from the Commission on Water Resource Management.

We will have further comments when the EIS is completed.

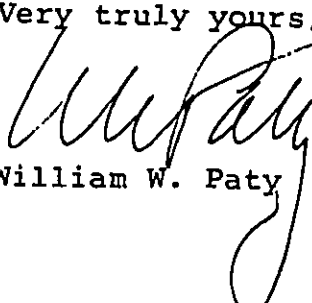
Mr. William Wanket

-2-

Doc. No.: 9377E

Thank you again for your cooperation in this matter. Please feel free to call me or Bob Johnson of our Office of Conservation and Environmental Affairs, at 548-7837, if you have questions.

Very truly yours,


William W. Paty

cc: HPP, DWALD, DOFAW

WILLIAM
E.
WANKET
INC.

December 27, 1990

Mr. William W. Paty
Chairperson
Board of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received

Dear Mr. Paty:

Thank you for reviewing the above-referenced EISPN and for your letter of December 5, 1990. Information in response to your comments is provided below:

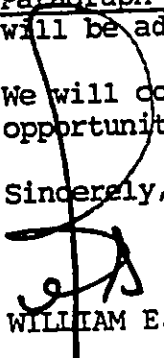
Paragraph #1: Cultural Surveys Hawaii has completed a survey of the property and their report will be incorporated in the DEIS. Historic sites were found and mitigative measures were recommended. We look forward to your comments on the survey during the public review stage of the DEIS.

Paragraph #2: In examining the relationship to existing policies and objectives, the view assessment prepared for the Draft EIS points out that "(public) access to the Makaiwa Hills roadway system would...result in the establishment of many new high quality viewing points which are not currently available to the public." In addition to the roadway system, other public viewing points may occur at the proposed park and school site. However, public scenic lookouts for viewing purposes have not been located and designed at this preliminary planning stage but may be considered in future iterations of the site plan as more detailed engineering and planning studies are undertaken.

Paragraph #3: A discussion on water demands, source, and water commitment will be addressed in the EIS.

We will continue to coordinate our project with you to ensure further opportunity for review and comments.

Sincerely,


WILLIAM E. WANKET

William E. Wanket
1000 Kalia Road
Honolulu, Hawaii 96813

November 20, 1990

MEMORANDUM

TO: Roger C. Evans, OCEA

FROM: Don Hibbard, Director, Historic Preservation Program *DH*

SUBJECT: City & County of Honolulu -- Development Plan
Application & Environmental Assessment for the Makaiwa
Hills Project (Wanket) File No.: 91-183
Makaiwa, Honouliuli, 'Ewa, O'ahu
TMK: 9-1-15: 05, 11, 17; 9-1-16: por 9; 9-2-03: por 2

HISTORIC PRESERVATION DIVISION CONCERNS:

Cultural Surveys Hawaii, archaeological consultant, is presently completing their inventory survey report for review. Historic sites were found, but we are unaware of their exact nature and have yet to evaluate their significance. Thus, we will not be able to comment on the Development Plan Application and Environmental Assessment until we receive their report and review it..

cc: William Wanket, Inc.
The Estate of James Campbell

WILLIAM
E.
WANKET
INC.

Land Use Consultant

December 15, 1990

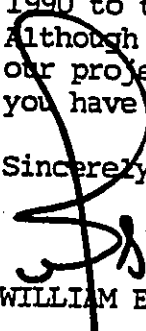
Mr. Don Hibbard
Director
Historic Preservation Program
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received**

Dear Mr. Hibbard:

Thank you very much for the copy of your memorandum dated November 20, 1990 to the Office of Conservation and Environmental Affairs (OCEA). Although you have no comments at this time, we will continue to coordinate our project with the Department of Land and Natural Resources to ensure that you have the opportunity for review and comments.

Sincerely,


WILLIAM E. WANKET

Pacific Tower
Suite 650
1001 Bishop Street
Honolulu, HI 96813
Phone: 535-1111
Fax: 535-1111

JOHN WAIHEE
GOVERNOR



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

November 7, 1990

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO:

HWY-PS
2.4456

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

Development Plan Application and
Environmental Assessment for Makaiwa Hills

Thank you for your letter of October 17, 1990, requesting our review of the subject project.

We have the following comments:

1. We will require the applicant to submit a comprehensive Traffic Impact Analysis Report (TIAR) defining the roadway requirements, potential traffic problems and mitigating measures to correct/minimize any facility deficiencies. The report should analyze all affected intersections/interchanges along Farrington Highway and H-1 Freeway. The TIAR should be included as part of the EIS.
2. We will also require the applicant to submit plans for required improvements to our State facilities or any construction work within our highway rights-of-way for our review and approval. All costs incurred for the construction of required improvements shall be borne by the developer.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Edward Y. Hirata".
Edward Y. Hirata
Director of Transportation

WILLIAM
E.
WANKET
INC.

Land Use Consultant

December 14, 1990

Mr. Edward Y. Hirata
Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received**

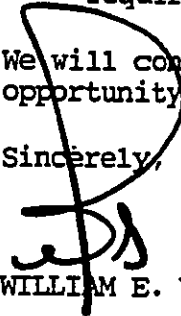
Dear Mr. Hirata:

Thank you for reviewing the above-referenced EISPN and for your letter of November 7, 1990. Information, in response to your comments, is provided below:

1. A traffic impact report will be submitted defining traffic problems and mitigative measures to correct/minimize any facility deficiencies. The report will analyze the projects' access to Farrington Highway and the H-1 Freeway, including the Palailai Interchange and two proposed project access connections to Farrington Highway. Regional impacts will be addressed in the Ewa Region Highway Master Plan, in which the developer of Makaiwa Hills project (The Estate of James Campbell) has committed to participate.
2. The Applicant will submit, for review and approval, any plans for required improvements to State facilities or construction work within highway rights-of-way. Costs incurred for the construction of required improvements will be borne by the developer.

We will continue to coordinate our project with you to give you further opportunity for review and comments.

Sincerely,


WILLIAM E. WANKET

Pacific Tower
Suite 620
1001 Bishop Street
Honolulu, HI 96813
Phone
808 533-4107

JOHN WAHIEE
GOVERNOR



ESTHER UEDA
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT, AND TOURISM
LAND USE COMMISSION
Room 104, Old Federal Building
335 Merchant Street
Honolulu, Hawaii 96813
Telephone: 548-4611

October 23, 1990

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

Subject: EISPN For Makaiwa Hills, Ewa, Oahu

We have no comments to offer on the subject EISPN except to confirm that the subject project site is within the State Land Use Agricultural and Urban District.

Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in cursive script, appearing to read "Esther Ueda".

ESTHER UEDA
Executive Officer

EU:to

WILLIAM
E.
WANKET
INC.

Land Use Consultant

October 26, 1990

Ms. Esther Ueda
Executive Officer
Land Use Commission
Old Federal Building, Room 104
335 Merchant Street
Honolulu, Hawaii 96813

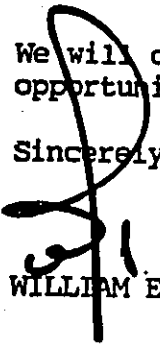
**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received**

Dear Ms. Ueda:

Thank you for taking the time to review the above-referenced EISPN and for your letter of October 23, 1990 confirming that the subject property site is within the State Land Use Agricultural and Urban District.

We will continue to coordinate our project with you to provide additional opportunity for review and comment.

Sincerely,


WILLIAM E. WANKET

Pacific Tower
Suite 560
1001 Bishop Street
Honolulu, HI 96813



OFFICE OF STATE PLANNING

Office of the Governor

STATE CAPITOL, HONOLULU, HAWAII 96813 TELEPHONE (808) 548-5893

JOHN WAIHEE, Governor

November 21, 1990

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

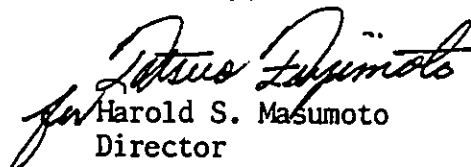
Subject: Environmental Impact Statement Preparation Notice (EISPN)
for the Proposed Makaiwa Hills Development,
Ewa, Oahu, Hawaii

It is our understanding that the Estate of James Campbell is proposing an executive-type housing development on approximately 1,915 acres of hillside to the west of Makakilo. Approximately 2,130 dwelling units are proposed with future consideration for a golf course along Farrington Highway and extending mauka into the gulches. The Environmental Assessment states that approximately 1,875 acres are within the State Agricultural District and approximately 40 acres are within the State Urban District.

The Draft Environmental Impact Statement (DEIS) should thoroughly discuss the provision of affordable housing and a community benefit package associated with the golf course proposal. The DEIS should also address the impacts of the proposed development on existing and future public services and facilities.

Thank you for the opportunity to comment.

Sincerely,


Harold S. Masumoto
Director

cc: Land Use Commission
Housing Finance and Development Corporation

WILLIAM
E.
WANKET
INC.

January 14, 1991

Land Use Consultant

Mr. Harold S. Masumoto
Director
Office of State Planning
State Capitol
Honolulu, Hawaii 96813

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for the Proposed Makaiwa Hills Development - Response to
Comments Received**

Dear Mr. Masumoto:

Thank you for taking the time to review the above-referenced EISPN and for your letter of November 21, 1990. In response to your comments, the following information is provided.

1. Affordable Housing

In conjunction with and related to the housing component of the Makaiwa Hills project, the applicant is committed to the establishment of an affordable housing component that will serve to meet the needs of households earning below 140 percent of the median income. This commitment includes the provision of housing units and/or acceptable in-kind substitutes. Targeted income groups will include those households earning no more than 80 percent of the median income, households earning between 81 percent and 120 percent of the median income, and households earning between 121 percent and 140 percent of the median income. A variety of units are anticipated, including rentals and other special needs housing. Sites either on-site, off-site or in combination will be considered.

At this preliminary planning stage, however, we are unable to exactly define the components of the affordable housing program beyond the general description given above. The applicant is currently working with the City's Department of Housing and Community Development to meet all or substantially all of the Makaiwa Hills related needs through in-kind contributions towards the Ewa Villages project, the City's next master-planned community. Through the legislative processes of seeking State

Pacific Tower
Suite 660
1001 Bishop Street
Honolulu, HI 96813
Page
1/14/91

-Page 2-

Mr. Harold Masumoto
Office of State Planning

Land Use Commission approval and City Council approval of a development plan amendment and a zone change, the applicant will work with the various government bodies to detail the scope and timing of an affordable housing program. Your agency, as well as the State's Housing Finance and Development Corporation and the City's Department of Housing and Community Development, is expected to play a major role in this regards.

2. Future Golf Course

The 1991 Ewa Development Plan Amendment proposal for Makaiwa Hills filed with the City's Department of General Planning does not include a golf course component, reference page 1, Development Plan Amendment Environmental Assessment, Scope of Land Use Amendment [EISPN]. The golf course referred to in the EISPN is a future land use consideration still under advisement for the area designated on the Makaiwa Hills site plan as Lower Preservation. Although the DEIS will cover the environmental impacts associated with this alternative land use, a separate development plan amendment application will be filed with the Department of General Planning should a golf course amenity eventually be selected by the Applicant. At such time, the Applicant will comply with all golf course provisions, including a community benefits package, that may be established through the legislative process. In this regards, we note that the City Council has under consideration Bill 129 which deals with procedures for private golf course applications.

3. Existing and Future Public Services and Facilities

The DEIS will address the impacts associated with the Makaiwa Hills proposal on existing and future public services and facilities.

Again, thank you very much for your comments.

Sincerely,


WILLIAM E. WANKET

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU

630 SOUTH BERETANIA STREET

HONOLULU, HAWAII 96843



November 15, 1990

FRANK F. FASI, Mayor

DONNA B. GOTH, Chairman
SISTER M. DAVILYN AH CHICK, O.S.F.

Vice Chairman

SAM CALLEJO

EDWARD Y. HIRATA

WALTER O. WATSON, JR.

MAURICE H. YAMASATO

KAZU HAYASHIDA

Manager and Chief Engineer

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

Subject: Development Plan Amendment and Environmental Impact Statement
Preparation Notice (EISPN) for the Makaiwa Hills Development at Ewa,
Oahu, TMK: 9-1-15: 5, 11, 17; 9-1-16: Por. 9; and 9-2-03: Por. 2

Thank you for the opportunity to review and comment on the proposed Makaiwa Hills development.

We have the following comments to offer:

1. A water master plan and hydraulic analysis of the proposed water system for the development should be submitted for our review and approval. The master plan should show the proposed source(s), storage, transmission mains, and distribution mains.
2. The EIS should provide specific information, such as well numbers and permitted uses for the development, on the sources (Honouliuli sources or any other) that will be providing potable water to meet the development's estimated needs.
3. If the development will be utilizing off-site water facilities constructed and developed by the Ewa Plains Water Development Corporation, then the overall Ewa Water Master Plan should be revised to include the Makaiwa Hills project and resubmitted for reapproval.
4. Page 22: Only the Hoaeae, Kunia I, and Waipahu well stations serve the Ewa/Kapolei region. Kunia Wells II does not. Also, there is a 3.0 million gallon (MG) reservoir at the Barbers Point 215 site in addition to the 4.0 MG and 5.0 MG reservoirs.



Mr. William E. Wanket
Page 2
November 15, 1990

5. Page 24: The project's western water distribution system may have to be connected to a main other than the existing 24-inch transmission main on Farrington Highway if it is determined that the proposed connection will cause a reduction in flow to Nanakuli.

In addition, the document should correctly state that the future parallel main on Farrington Highway will run from the Honouliuli booster station to the Barbers Point reservoirs and not Makakilo.

If you have any questions, please contact Bert Kuioka at 527-6138.

Very truly yours,

FOR KAZU HAYASHIDA
Manager and Chief Engineer

WILLIAM
E.
WANKET
INC.

November 14, 1990

Land Use Consultants

Mr. Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96843

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for the Proposed Makaiwa Hills Project - Response to Comments
Received**

Dear Mr. Hayashida:

Thank you very much for reviewing the above-referenced EISPN and for your letter of November 15, 1990. In response to your comments, the following information is provided:

1. A water master plan and hydraulic analysis of the proposed water system for the development will be prepared and submitted for review and approval.
2. As a member of the Ewa Plains Water Development Corporation, The Estate of James Campbell has received or is expected to receive allocations from water sources developed by the corporation (Honouliuli Wells). In addition, the Estate is investigating other sources of water such as desalinization. These allocations are intended to be used for Campbell Estate projects in general and will be distributed as the demand arises. The specific source of potable water for this project is not identified at this time. More specifics will be developed as planning for this project progresses.
3. The Ewa Water Master Plan is currently under revision. Water system requirements for the proposed Makaiwa Hills development will be included in the revised document which will be resubmitted for review and reapproval.

Pacific Tower
Suite 660
1001 Bishop Street
Honolulu, HI 96813

Phone: (808) 521-1111
Fax: (808) 521-1112

-Page 2-
Board of Water Supply

4. The EIS will be corrected to state that Hoaeae, Kunia 1, and Waipahu well stations serve the Ewa/Kapolei region. In addition, the EIS will be corrected to identify three reservoirs at the Barbers Point 215 site: one each of 3.0, 4.0, and 5.0 MG capacity.
5. [1st Para] The development's proposed western water distribution system connection to the existing 24-inch transmission main along Farrington Highway will be evaluated in the water master plan and hydraulic analysis for the project.

[2nd Para] The EIS will be revised to state that the future parallel main on Farrington Highway will extend from the Honouliuli booster station to the Barbers Point reservoirs.

Again, thank you for your comments.

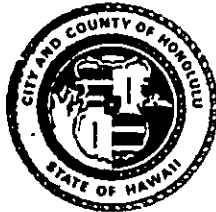
Sincerely,



WILLIAM E. WANKET

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

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



FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Gail M. Kalto
DEPUTY DIRECTOR

November 26, 1990

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

Subject: Development Plan Application
and Environmental Impact Statement Preparation Notice
Makaiwa Hills
Ewa, Oahu, Hawaii

Thank you for the opportunity to review the subject EISPN.

We recommend that the EIS include a description of the types of residential units to be developed, their estimated price ranges and the income levels of the households for which the units will be targeted. The applicant should be aware that the Department generally recommends the following affordable housing requirement:

- 10% of the total units developed shall be set aside for households earning no more than 80% of the median income for the City and County of Honolulu; and
- 20% of the total units developed shall be set aside for households earning between 81% and 120% of the median income; or
- The developer shall provide an in-kind substitute acceptable to the Department.

Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in cursive script, appearing to read "M. N. Scarfone".

MICHAEL N. SCARFONE
Director

WILLIAM
E.
WANKET
INC.

January 17, 1991

Land Use Consultant

Mr. Michael N. Scarfone
Director
Department of Housing and Community
Development
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Development - Response to
Comments Received

Dear Mr. Scarfone:

Thank you for taking the time to review the above-referenced EISPN and for your letter of November 26, 1990. In response to your comments, the following information is provided.

The DEIS will include a market study by Lesser and Company that describes the types of residential units to be developed, their estimated price ranges and the income levels of the household for which the units will be targeted.

With regards to your stated affordable housing requirements, the applicant is committed to the establishment of an affordable housing program in conjunction with and related to the housing component of the Makaiwa Hills project. This commitment includes the provision of housing units and/or acceptable in-kind substitutes. Targeted income groups will include those households earning no more than 80 percent of the median income, households earning between 81 percent and 120 percent of the median income, and households earning between 121 and 140 percent of the median income. A variety of units are anticipated, including rentals and other special needs housing. Sites either on-site, off-site or in combination will be considered.

At this preliminary planning stage, however, we are unable to define exactly the components of the affordable housing program beyond the general description given above. The applicant is currently working with the City's Department of Housing and Community Development to meet all or substantially all of the Makaiwa Hills related needs through in-kind contributions towards the Ewa Villages project, the City's next master-planned

Pacific Tower
Suite 660
1001 Bishop Street
Honolulu HI 96813
Phone:
1-808-532-1117

-Page 2-

Department of Housing and Community
Development

community. Through the legislative processes of seeking State Land Use Commission approval and City Council approval of a development plan amendment and a zone change, the applicant will work with the various government bodies to detail the scope and timing of affordable housing. Your agency, as well as appropriate State agencies, is expected to play a major role in this regards.

Again, thank you for your comments.

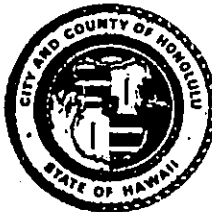
Sincerely,



WILLIAM E. WANKET

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813



FRANK F. FASI
MAYOR

WALTER M. OZAWA
DIRECTOR

ALVIN K. C. AU
DEPUTY DIRECTOR

November 7, 1990

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

Subject: Environmental Impact Statement Preparation Notice
(EISPN) - Makaiwa Hills, Ewa, Oahu
TMK: 9-1-15: 05, 11, 17; 9-1-16; 09; 9-2-03: 02

We have reviewed the EISPN for the proposed Makaiwa Hills project and make the following comments and recommendations:

The 16-acre park site proposed in this EISPN is unacceptable. The Makaiwa Hills project is a substantial residential development that dictates the need for a community park to meet the active recreational needs of its future residents. The proposed park site does not meet the City's park standards for a community park because the topography inhibits development of active recreational areas to accommodate playing fields, courts and a recreation building. Additionally, the proposed park site is not centrally located for adequate access by the majority of future community residents. We recommend the developer discuss the proposed park with my staff to insure its siting and design meet City standards, and that the EIS address the park and recreation concerns.

We appreciate the opportunity to review and comment on the EISPN.

Should you have any questions, please contact Jason Yuen of our Advance Planning Branch at extension 6315.

Sincerely,

A handwritten signature in black ink, appearing to read "Alvin K. C. Au".

ALVIN K. C. AU, Acting Director

AKCA:jf

cc: Campbell Estate
Dept. of Land Utilization

WILLIAM
E.
WANKET
INC.

Land Use Consultant

November 10, 1990

Mr. Alvin K. C. Au
Acting Director
Department of Parks and Recreation
Municipal Building
650 South King Street
Honolulu, Hawaii 96813

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received**

Dear Mr. Au:

Thank you very much for taking the time to review the above-referenced EISPN and for your letter of November 7, 1990. We appreciate your comments and will meet with you to discuss them. We will continue to coordinate our project with you to ensure the opportunity for further review and additional comments.

Sincerely,

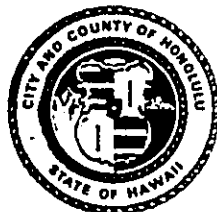

WILLIAM E. WANKET

Pacific Tower
Suite 660
1001 Bishop Street
Honolulu, HI 96813

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR



JOSEPH M. MAGALDI, JR.
DIRECTOR

TE-5949
PL90.1.343

December 5, 1990

Mr. William E. Wanket, President
William E. Wanket Inc.
Pacific Tower, Suite 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:


Subject: Makaiwa Hills, EIS Preparation Notice
TMK: 9-1-15: 5, 11, 17; 9-1-16: Por. 9

This is in response to your letter dated October 17, 1990
requesting our comments on the subject development.

We understand that a traffic study will be prepared as part of
the Environmental Impact Statement process. In addition to the
mitigative measures presently being proposed, a roadway master
plan of the internal street system should also be prepared. The
plan should establish right-of-way and lane widths for the major
roadways within this development. The ultimate ownership of
these streets should also be specified.

If you have any questions, please contact Mel Hirayama of my
staff at 523-4119.

Sincerely,


JOSEPH M. MAGALDI, JR.
Director

WILLIAM
E.
WANKET
INC.

Land Use Consultant

December 28, 1990

Mr. Joseph M. Magaldi, Jr.
Director
Department of Transportation Services
Honolulu Municipal Building
650 South King Street
Honolulu, Hawaii 96813

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received**

Dear Mr. Magaldi:

Thank you for reviewing the above-referenced EISPN and for your letter of December 5, 1990. In response to your comments, the following information is provided:

The roadway layout shown in the traffic study shows the general location of the collector roads for the project. The alignment of the smaller access roads has not been set at this time. In general, the collector roads will require rights-of-way 76 feet to 108 feet wide and minor roads 44 feet wide to accommodate traffic in both directions. A master plan for the internal roads will be prepared as planning for the project progresses which will establish the right-of-way and lane widths for the major roadways within the development. When completed, a copy will be sent to the Department of Transportation Services for approval.

At this time, there is no determination as to the ultimate ownership of the internal roads. However, they will be designed to meet City standards if they are dedicated to the City and County of Honolulu.

We will continue to coordinate our project with you to ensure further opportunity for review and comments.

Sincerely,

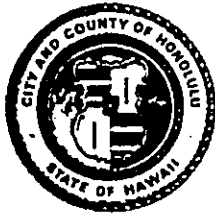

WILLIAM E. WANKET

Pacific Tower
Suite 660
1001 Bishop Street
Honolulu, HI 96813
Phone
808-533-1137

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU

1455 SOUTH BERETANIA STREET, ROOM 305
HONOLULU, HAWAII 96814

FRANK F. FASI
MAYOR



LIONEL E. CAMARA
FIRE CHIEF

DONALD S.M. CHANG
DEPUTY FIRE CHIEF

November 14, 1990

William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

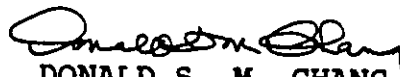
Gentlemen:

SUBJECT: PROPOSED MAKAIWA HILLS

We have reviewed the subject material provided and have no additional comments.

Should you have any questions, please contact Captain August Range of our Fire Prevention Bureau at 943-3165.

Very truly yours,


DONALD S. M. CHANG
Acting Fire Chief

AKL:ny

WILLIAM
E.
WANKET
INC.

November 20, 1990

Mr. Donald S. M. Chang
Acting Fire Chief
Honolulu Fire Department
1455 South Beretania Street
Room 305
Honolulu, Hawaii 96814

RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received

Dear Mr. Chang:

Thank you very much for taking the time to review the above-referenced EISPN and for your letter of November 14, 1990. Although you have no comments at this time, we will continue to coordinate our project with you to provide further opportunity for review.

Sincerely,

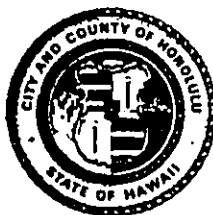

WILLIAM E. WANKET

Room 305
1455 South Beretania Street
Honolulu, Hawaii 96814

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU

1455 SOUTH BERETANIA STREET
HONOLULU HAWAII 96814 - AREA CODE (808) 943-3111

FRANK F. FASI
MAYOR



MICHAEL S. NAKAMURA
CHIEF

HAROLD M. KAWASAKI
DEPUTY CHIEF

OUR REFERENCE KN-LK

November 13, 1990

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

Subject: EISPN - Makaiwa Hills

We have reviewed the material for the above project and would like to offer the following comments.

A major concern of our department is how the anticipated increase in population will affect traffic conditions in the area. The main thoroughfares that will feed the proposed development are already taxed by the current traffic flow. We urge that the traffic analysis consider the effects other developments (e.g., Kapolei and Ko Olina) will have on roadways in the area.

The collective result of the proposed Makaiwa Hills and other developments that will make up the "second city" in Ewa will increase the demand for police services provided by the Pearl City District.

Our ability to adequately meet the greater demand will depend primarily on the availability of funds for sufficient police personnel, equipment, and facilities (another district station and two substations).

Mr. William E. Wanket

-2-

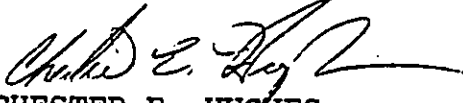
November 13, 1990

The increase in facilities and workforce is essential for us to proactively meet the needs of the growing community. More beats, more patrol units, effective traffic management within and to/from Ewa, and the necessary support staff will be required.

Thank you for the opportunity to comment.

Sincerely,

MICHAEL S. NAKAMURA
Chief of Police

By 
CHESTER E. HUGHES
Assistant Chief of Police
Support Services Bureau

WILLIAM
E.
WANKET
INC.

December 17, 1990

Land Use Consultant

Mr. Michael S. Nakamura
Chief of Police
Police Department
1455 South Beretania Street
Honolulu, Hawaii 96814

RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received

Dear Chief Nakamura:

Thank you for reviewing the above-referenced EISPN and for your letter of November 13, 1990. Information, in response to your comments, is provided below:

Paragraph #1: The traffic impact report, being prepared for the EIS, will include the traffic generated by other developments in the area such as Kapolei and Ko Olina.

Paragraph #2: No response necessary.

Paragraphs #3/4: As part of the Ewa Master Plan, Makaiwa Hills has been included in programs to upgrade police facilities and increase police officers. The social impact assessment being prepared for the project's EIS will include a section on impacts on public services and facilities. The section acknowledges the Department's needs for another district station and two substations, one at Ko Olina and one at Ewa Marina.

Thank you again for your letter. We will continue to coordinate our project with you to ensure further opportunity for review and comments.

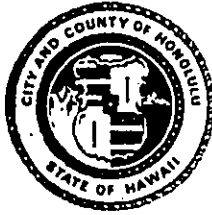
Sincerely,


WILLIAM E. WANKET

Pacific Tower
Suite 660
1001 Bishop Street
Honolulu, Hawaii 96813

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813



FRANK F. FASI
MAYOR

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER

C. MICHAEL STREET
DEPUTY DIRECTOR

In reply refer to:
ENV 90-255(448)

October 30, 1990

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

Subject: Environmental Impact Statement Preparation Notice (EISPN)
Makaiwa Hills
TMK: 9-1-15: 5, 11, 17; 9-1-16: Por. 9; 9-2-03: Por. 2

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

1. The existing Honouliuli Wastewater Treatment Plant cannot accommodate the flows from the proposed development.
2. Although the plant is being expanded, it does not guarantee connection of the project to the treatment plant.
3. "Application for Sewer Connection" forms must be submitted for the different phases of the project.
4. Flow computations for the Kapolei Interceptor Sewer should be submitted with a breakdown of all Campbell Estate properties tributary to the sewer line.
5. Also, a sewer master plan for the Makaiwa Hills development should be submitted for our review.
6. We do not have drainage comments at this time.

Very truly yours,

C. Michael Street
for SAM CALLEJO
Director and Chief Engineer

WILLIAM
E.
WANKET
INC.

Land Use Consultant

December 14, 1990

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
650 South King Street
Honolulu, Hawaii 96813

RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received

Dear Mr. Callejo:

Thank you very much for reviewing the above-referenced EISPN and for your letter of October 30, 1990. Information, in response to your comments, is provided below:

1. Development of this project is expected to begin after the completion of the Honouliuli treatment plant expansion.
- 2/3. We understand that even upon completion of the plant expansion, an application for sewer connection must be submitted and approved by the Division of Wastewater Management (DWM). Availability of treatment capacity would be determined at that time.
4. Sewer requirements for Makaiwa Hills and other Campbell properties served by the proposed Kapolei Interceptor sewer will be coordinated with the DWM.
5. A sewer master plan will be prepared for Makaiwa Hills and will be submitted to the DWM for their review and approval.

We will continue to coordinate our project with you to ensure that you have further opportunity for comment and review.

Sincerely,

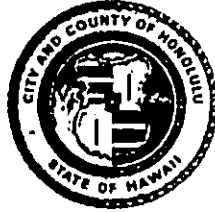

WILLIAM E. WANKET

Pacific Tower
Suite 660
1001 Bishop Street
Honolulu, HI 96813
Phone
(808) 533-4937
FAX 521-5410

OFFICE OF HUMAN RESOURCES
CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING, 6TH FLOOR
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 527-5311

FRANK F. FASI
MAYOR



MARIA VICTORIA R. BUNYE
DIRECTOR

VICTOR D. GUILLERMO, JR.
DEPUTY DIRECTOR

November 16, 1990

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower #660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

The Office of Human Resources has reviewed the Environmental Impact Statement Preparation Notice (EISPN) for the proposed Makaiwa Hills projects and offers the following comments:

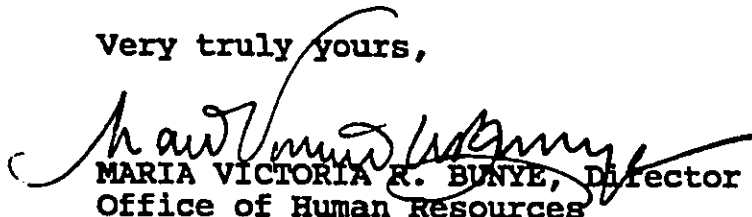
On page 31, item 10, Child Care. "The residential population generated by Makaiwa Hills will increase the regional child care demands." We concur with this statement and propose that the applicant either:

- (1) Dedicate an area within the proposed development to the City and County of Honolulu for the establishment of a child care center, or;
- (2) Make cash payment in lieu of land to the City and County of Honolulu for the development of a child care center to address the needs of the project population at an alternative site within the project's population at an alternative site within the project's immediate vicinity.

In addition, we would like to encourage the establishment of small group homes to meet the needs of the elderly, handicapped, chronically mentally ill, and developmentally disabled populations. The inclusion of such "special needs housing" would help establish a community that offers a range of housing options.

Thank you for the opportunity to comment on this matter.

Very truly yours,


MARIA VICTORIA R. BUNYE, Director
Office of Human Resources

January 17, 1991

WILLIAM
E.
WANKET
INC.

Land Use Consultant

Ms. Maria Victoria R. Bunye
Director
Office of Human Resources
Honolulu Municipal Building, 6th Floor
650 South King Street
Honolulu, Hawaii 96813

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Development - Response to
Comments Received**

Dear Ms. Bunye:

Thank you for taking the time to review the above-referenced EISPN and for your letter of November 16, 1990. In response to your comments, the following information is provided.

1. Child Care Facilities

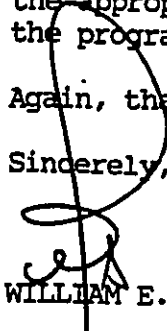
The applicant will work with the Office of Human Resources to ensure that the child care needs of the project are met either by the development of such facilities by the private industry or by assisting the City and County in the provisions for such services.

2. Housing

Regarding your comments on housing, the applicant is committed to the establishment of an affordable housing program in conjunction with and related to the housing component of the Makaiwa Hills project. This commitment includes the provisions of housing units and/or acceptable in-kind substitutes. A variety of units are anticipated, including rentals and other special needs housing. Through the legislative processes of seeking State Land Use Commission approval and City Council approval of a development plan amendment and zone change, the applicant will work with the appropriate government agencies in detailing the scope and timing of the program.

Again, thank you for your comments.

Sincerely,


WILLIAM E. WANKET

Pacific Tower
Suite 660
1001 Bishop Street
Honolulu, HI 96813
Phone
(808) 533-4937
FAX 521-5410

Beyond the call

November 26, 1990

Mr. William E. Wanket
William E Wanket, Inc. President
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Subject: Environmental Impact Statement Preparation Notice
(EISPN) For The Proposed Makaiwa Hills

The Makaiwa Hills development will create additional tele-communication demands; however, Outside Plant Engineering do not foresee any negative impact on the proposed distribution facilities for this area. There are no existing facilities identified at the subject site; therefore, OSP Engineering must be kept abreast to when temporary services for the contractor will be required and to the construction status of the overall development.

If you have questions, please call me at 834-6328 or Francis Mau at 835-6350.



Mark Taosaka
OSP Supervising Engineer

cc: Stan S. Suzuki
Mary Matsuda

makaiwa.let

WILLIAM
E.
WANKET
INC.

1990-11-29

November 29, 1990

Mr. Mark Taosaka
OSP Supervising Engineer
GTE Hawaiian Telephone Company, Inc.
P.O. Box 2200
Honolulu, HI 96841


RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received

Dear Mr. Taosaka:

Thank you very much for reviewing the above-referenced EISPN and for your letter of November 26, 1990 stating that you do not foresee any negative project impacts on proposed distribution facilities for the area. We will continue to coordinate our project with your office through its various stages of development to ensure further opportunity for comment and review.

Again, thank you for your letter.

Sincerely,


WILLIAM E. WANKET

Pacific Tower
Suite 650
1111 Kalia Street
Honolulu, HI 96813



William A. Bonnet
Manager
Environmental Department

December 14, 1990

Mr. William E. Wanket
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

Subject: EISPN Makaiwa Hills

Although we are beyond the date identified for comment in your letter of October 17, Hawaiian Electric Company would like to take this opportunity to provide comments on the proposed project.

1. Page 30, 7a. The Development Plan Application and Environment Assessment document does not identify all of the HECO transmission and subtransmission lines and easements. These have been noted on page 57, figure no. 5 of the document. A thorough title search should be conducted to identify all easements affected by the proposed project.
2. The developer should submit all grading and construction plans affecting all of HECO's easements, power lines, structures, anchors and access roads to each structure site to HECO for approval to ensure that proper ground clearances are maintained, structures and anchors are protected, and the access to each structure site is maintained.
3. No buildings or structures should be allowed within the easement areas. However, should the developer propose joint use of the easement area for recreational purposes, a legal agreement containing terms and conditions for liability and insurance will be considered.

Sincerely,

Enclosure

An HEI Company

WILLIAM
E.
WANKET
INC.

December 27, 1990

Land Use Consultant

Mr. William A. Bonnet
Manager
Environmental Department
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, HI 96840-0001

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comments
Received**

Dear Mr. Bonnet:

Thank you for reviewing the above-referenced EISPN and for your letter of December 14, 1990. Information in response to your comments is provided below:

1. The EIS will identify the major transmission and subtransmission lines crossing the project site. Smaller lines are referred to but may not be shown in the figures. As the project advances through the development plan stage to the zoning and subdivision and more detailed planning and infrastructures are performed, all HECO easements will be identified.
2. Grading and construction plans affecting HECO's easements will be submitted to HECO for review and approval.
3. Development of the project will be coordinated with HECO, including any agreements which may be proposed.

Again, thank you for your letter. We will continue to coordinate the Makaiwa Hills project with you to ensure further opportunity for review and comments.

Sincerely,


WILLIAM E. WANKET

Pacific Tower
Suite 800
1001 Bishop Street
Honolulu, HI 96813
Phone: 535-1111
Fax: 535-1112



William A. Bonnet
Manager
Environmental Department

December 17, 1990

REGISTERED MAIL

Mr. David Rae
The Estate of James Campbell
828 Fort Street Mall, Suite 500
Honolulu, Hawaii 96813

Dear Mr. Rae:

Subject: Proposed Makaiwa Hills Residential Development

As a result of the EIS Preparation Notice sent us with Mr. William Wanket's letter of October 17, Hawaiian Electric Company is taking this opportunity to provide information which we believe is important both to you and to prospective purchasers of the residential properties.

The proposed residential development is east of Hawaiian Electric Company's Kahe Generating Station, with Waimanalo Gulch separating the western boundary of your proposed development from the eastern boundary of our facility. Air dispersion computer modeling at Kahe has shown maximum ground level concentrations of stack gas pollutants to occur within the boundaries of your proposed project. Modeled concentrations are within the Federal and State air quality standards established for these pollutants and air quality monitoring stations have confirmed the conservative nature of the modeled concentrations, i.e. measured concentrations are less than predicted by the models.

In order for HECO's customers to continue to receive reliable electrical services, it is expected that Hawaiian Electric Company will make generation additions to the Kahe facility in the future. These will be undertaken in conformance with Federal and State environmental requirements, but may involve additional and possibly higher stacks. Normal periodic maintenance does result in a visible plume emanating from these stacks. Our experience has been, regardless of compliance with established environmental standards, residential communities are generally not tolerant of electrical generating unit operations in their area. For that reason, we believe it is necessary that the prospective purchasers of this property be made aware of present and planned future electric utility operations as described above.

An HEI Company

Mr. David Rae
The Estate of James Campbell
December 17, 1990
Page 2

The following type of disclosure language would be appropriate:

The subject property is near Hawaiian Electric Company's Kahe Generating Station. Stacks, transmission lines, and other appurtenant facilities may be visible from the property, and during kona wind conditions combustion gases from the facility may impinge upon the property. Existing units are permitted under applicable Federal and State environmental regulations. Permit applications for future unit additions will comply with applicable environmental regulations in effect at that time.

Sincerely,



WAB:kl



WILLIAM
E.
WANKET
INC.

January 18, 1991

Land Use Consultant

Mr. William A. Bonnet
Manager
Environmental Department
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840-0001

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Development - Response to
Comments Received**

Dear Mr. Bonnet:

Thank you for reviewing the above-referenced EISPN and for your letter of December 17, 1990, addressed to Mr. David Rae of The Estate of James Campbell, calling attention to possible future additions to the Kahe facility. We appreciate being advised of the possible improvements and request that you keep us informed of your plans so that we may take appropriate steps as necessary in the planning and marketing of our development.

Again, thank you for your comments.

Sincerely,


WILLIAM E. WANKET

Pacific Tower
Suite 660
1001 Bishop Street
Honolulu, HI 96813
Phone
808-533-1107



EWA BEACH COMMUNITY ASSOCIATION

P.O. BOX 3, EWA BEACH, HAWAII 96706

November 17, 1990

William E. Wanket, Inc.
William E. Wanket,
President
Pacific Tower 660
2002 Bishop Street
Honolulu, Hawaii 96813

Gentleman:

Thank you for the opportunity to review the Environmental Impact Statement Preparation Notice for the proposed Makaiwa Hills development.

We concur that an Environmental Impact Statement should be prepared for this project, as it will have indirect effects on our community in the areas of increased traffic congestion on the H-I Freeway, availability of housing in the Ewa area, and an increased demand on potable water supplies.

We hope to see these issues addressed in detail in the EIS.

Very truly yours,

A handwritten signature in cursive script that reads "Charles 'Dick' Beamer".

Charles "Dick" Beamer

President

Ewa Beach Community Association

WILLIAM
E.
WANKET
INC.

Land Use Consultant

December 22, 1990

Mr. Charles "Dick" Beamer
President
Ewa Beach Community Association
P.O. Box 3
Ewa Beach, Hawaii 96706

**RE: Environmental Impact Statement Preparation Notice (EISPN)
for Proposed Makaiwa Hills Project - Response to Comment
Received**

Dear Mr. Beamer:

Thank you for reviewing the above-referenced EISPN and for your letter of November 17, 1990. Consultant reports are currently being prepared for the project EIS and will include a traffic assessment, a social impact study, and preliminary engineering information for the project.

Again, thank you for your letter. For your information, your letter and this response will be included in the Draft Environmental Impact Statement that is currently being prepared.

Sincerely,


WILLIAM E. WANKET

Pacific Tower
Suite 660
1001 Bishop Street
Honolulu, HI 96813
Phone:
223-1117

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LOCATION: Ewa, Oahu

PROPOSING AGENCY/APPLICANT: The Estate of James Campbell

ACCEPTING AUTHORITY/APPROVING AGENCY: Department of General Planning

→ PUBLICATION DATE: ~~03/08/91~~ 2/23/91 DEADLINE FOR COMMENTS: ~~04/22/91~~ 4/9/91

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**DEIS Federal Comment
Letters And Applicant
Responses**



DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 4TH WEATHER WING (MAC)
PETERSON AIR FORCE BASE, COLORADO 80914-5000

REPLY TO
ATTN OF: Det 5, 4 WW/CC
Hickam AFB, HI 96853-5000

SUBJECT: Review of Draft Environmental Impact Statement (EIS), Makaiwa Hills, Ewa, Oahu,
Hawaii, February 1991

TO: William E. Wanket, Inc
ATTN: Mr William E. Wanket, President
Pacific Tower 660
1001 Bishop St
Honolulu, HI 96813

1. Thank you for the opportunity to review the draft EIS. I was pleased to find my input to Appendix D, Social Impact Assessment, was accurately presented. I have considered the possible impacts more thoroughly and offer the following mitigation measures. I also address one additional concern, as well as a minor correction.

a. Short term construction related impacts. The noise we are concerned about is known as radio frequency interference (RFI), not audible sounds. Since the proposed project will be at least 1/2 mile away and 500 feet below the observatory, we have determined it is highly unlikely our radio telescopes will receive any significant construction related RFI. Similarly, it's doubtful any construction generated dust plumes will be large enough to dramatically interfere with optical telescope operations. Recommended mitigation: Because no or minimal construction activities are expected to impact the observatory, no mitigation is recommended except for strict adherence to public regulations governing such activities.

b. Long term impacts.

(1) Again, one concern was increased levels of mission threatening RFI. Based on discussions with a sister radio observatory located in a less rural environment, we are confident our distance will protect us from virtually all RFI a community might produce. No mitigation is required.

(2) Security. The site is currently manned 24-hours a day. Our manning and protective fence should continue to provide adequate deterrence to all but the most committed vandals/intruders. We are unsure how much, if at all, the security threat may increase. It will primarily depend on the possible use of Palehua Road, which is currently restricted to key holders; the gate is maintained by Campbell Estate. I understand the project management is not certain if Palehua Road will be opened permanently (as part of the Makaiwa Hills development) or only during the construction phase. Recommended mitigation: We can mitigate the increased access the public may have to the observatory by maintaining our high levels of security awareness. Campbell Estate can mitigate increased access to that portion of their property not under development by continuing to maintain the lower gate or moving the gate further up Palehua Road, possibly just east of Makaiwa gulch, in front of the fork in the road. Such action would also serve the possible security interests of Camp Timberline and the "Campsite" residents.

2. I am concerned about safety along Palehua Road. The road is narrow, winding, and steep in some places. There is only one lane and the shoulders are poor in many areas. It is very possible the road will be used by heavy construction vehicles, increasing road wear and tear, and the possibility of an accident. Recommended mitigation: Developer should monitor road conditions and repair deteriorated portions caused by construction vehicles. Construction drivers must be aware the road is used by many people and safe driving habits should be employed at all times.

3. On page 52 of Appendix D, para 5.3.4.1 (10 lines from the bottom), a sentence states the "Campsite" leases are buffered by Camp Timberline and Palehua Solar Observatory. This is incorrect. Attachment 1 is a map which shows the location of all three listed operations. It also highlights another operation not discussed in the EIS. A Second Chance, Inc, is a non-profit drug and alcohol rehabilitation clinic, located on the old "upper" Nike missile site. You can contact Frank Moon, 668-1699, for additional information.

4. On a final note, please direct all future correspondence through the Hickam Air Force Base Civil Engineering Squadron. They will crossfeed information to me and are in a better position to represent the Air Force in this process. The address:

15 ABW/DE
Hickam AFB, HI 96853-5000

Philip M. Nostrand
PHILIP M. NOSTRAND, Capt, USAF
Commander

1 Atch
Sectional Map

cc: 15 ABW/DE
4 WW/DOP

WILLIAM

E.

WANKET

April 7, 1991

Captain Philip M. Nostrand, USAF
Commander
Det 5, 4th Weather Wing
Hickam AFB, Hawaii 96853-5000

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Captain Nostrand:

Thank you very much for your efforts in reviewing the Makaiwa Hills documents and for your letter, undated, regarding the project. We appreciate the information that you have provided and the presentation of potential impacts where either no mitigation is required or suggested mitigative measures are offered. The following is in response to your comments:

Paragraph 1: No comment.

Paragraph 1.a.: The developer will comply with all applicable regulations pertaining to noise and air quality impacts.

Paragraph 1.b.(1): No comment.

Paragraph 1.b.(2): The Applicant shares your concern for security of the proposed project as well as for your installation. Although it is not expected that residents of Makaiwa Hills would contribute to any vandalism in the area, a gate will be maintained, either in its present location or another, to inhibit access into the observatory area.

Paragraph 2: The developer will be responsible to ensure that safe driving habits are observed and that construction-related damages to the road are repaired.

Paragraph 3 and 4: The Social Impact Assessment will revise the statement on "Campsite" leaves and add mention of "A Second Chance, Inc." Future correspondence will be directed through the Hickam Air Force Base Civil Engineering Squadron.

Sincerely,


WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer
15 ABW/DE



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96858-5440

April 2, 1991

REPLY TO
ATTENTION OF:

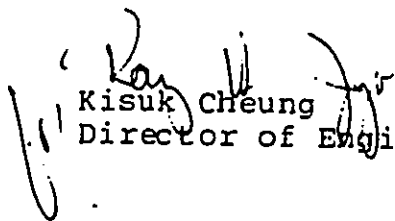
Planning Division

Mr. Bill Medeiros
Department of General Planning
City and County of Honolulu
Municipal Office Building, 8th Floor
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Medeiros:

We have reviewed the Draft Environmental Impact Statement for the proposed Makaiwa Hills, Ewa, Oahu. Our previous comments in response to the Preparation Notice (letter dated November 21, 1990) have been included in the document. We have no additional comments.

Sincerely,


Kisuk Cheung
Director of Engineering

Copies Furnished:

The Estate of James Campbell
Suite 300
828 Fort Street Mall
Honolulu, Hawaii 96813

Mr. William E. Wanket
William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

WILLIAM

E.

WANKET

April 7, 1991

Mr. Kisuk Cheung
Director of Engineering
U.S. Army Engineer District, Honolulu
Building 230
Ft Shafter, Hawaii 96858-5440

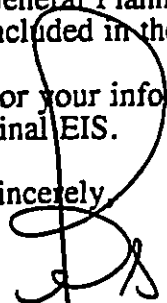
RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Mr. Cheung:

Thank you very much for the copy of your letter of April 2, 1991 to the Department of General Planning and for acknowledging that your previous comments have been included in the Draft EIS. We appreciate your efforts in reviewing the documents.

For your information, your letter, together with this response, will be published in the Final EIS.

Sincerely,


WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer



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

IN REPLY REFER TO:

11010
Ser OOF(236)/0797
21 MAR 1991

Mr. Bill Medeiros
Department of General Planning
Municipal Office Building, 8th Floor
650 South King Street
Honolulu, HI 96813

Dear Mr. Medeiros

DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
MAKAIWA HILLS, EWA, OAHU, HAWAII

We have reviewed the DEIS Makaiwa Hills provided in your undated letter and have no comments at this time.

Thank you for the opportunity to review and comment on the proposed Makaiwa project. We would like to be included in the distribution for the Final EIS. Should you have any questions, the Navy point of contact is Bill Liu, telephone 471-3324.

Sincerely,

W. K. LIU
Assistant Base Civil Engineer
By direction of
the Commander

Copy to:
Estate of James Campbell
William E. Wanket, Inc.



WILLIAM
E.
WANKET
INC.

Land Use Consultant

April 2, 1991

Mr. W.K. Liu
Assistant Base Civil Engineer
Commander
Naval Base Pearl Harbor
Box 110
Pearl Harbor, Hawaii 96860-5020

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Mr. Liu:

Thank you very much for the copy of your letter of March 21, 1991 to the Department of General Planning regarding the proposed Makaiwa Hills project. We appreciate your efforts in reviewing the documents. By copy of this letter, we will notify the Office of Environmental Quality Control of your request to be included in the distribution of the Final EIS.

For your information, your letter, together with this response, will be published in the Final EIS.

Sincerely,


WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer
Office of Environmental Quality Control

Pacific Tower
Suite 660
1001 Bishop Street
Honolulu, HI 96813
808-551-4337

**DEIS State
Comment Letters
And Applicant
Responses**

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JOHN WAIHEE
GOVERNOR



YUKIO KITAGAWA
CHAIRPERSON, BOARD OF AGRICULTURE

ILIMA A. PIIANAIA
DEPUTY TO THE CHAIRPERSON

FAX: 548-6100

Mailing Address:
P. O. Box 22159
Honolulu, Hawaii 96823-2159

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814-2512

April 9, 1991

COPY

To: Benjamin B. Lee
Chief Planning Officer
Department of General Planning
City and County of Honolulu

From: Yukio Kitagawa, Chairperson *YKC*
Board of Agriculture

Subject: Draft Environmental Impact Statement (DEIS) for
Makaiwa Hills Residential Community
Amendments to the Ewa Development Plan Land Use Map
Estate of James Campbell
TMK: 9-1-15: 5, 11, 17
9-1-16: por. 9
9-2-03: por. 2 Ewa, Oahu
Area: approximately 1,915 acres

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

According to the DEIS (page 72 and Volume II, Appendix H), the proposed development will displace a small (two-dozen head) pasture operation situated in the southeastern corner of the property and reduce the acreage available for grazing by the Rocker G. Livestock Company from 3,800 to 2,000 acres (by the year 2010). The economic effect of the acreage reduction on the latter operation will be to eliminate the temporary grazing of about 400-500 head of off-island cattle. The DEIS states that there will be no effect on the Company's own year-round operation of 200 mother cows and their calves.

It is not evident from the DEIS the extent to which the Company is dependent on the revenues derived from the temporary grazing of neighbor island cattle to support its own cattle operation. Therefore, we cannot independently conclude that there will be no negative impact resulting from the proposed action.

The Rocker G. Livestock Company is an example that the most marginally productive lands within agriculturally designated



Mr. Benjamin B. Lee
April 9, 1991
Page -2-

areas on Oahu can sustain economically viable agricultural activities. However, availability of affordable pasture land is but one of a number of variables that determine the economic viability of a cattle ranch. The livestock industry (dairy, beef cattle, swine, poultry), as a whole, on Oahu is facing a number of crises (including urban encroachment) that threaten its economic existence. In response to this situation, the State is planning to develop a Livestock Agricultural Park on Oahu to locate some of the confined livestock operations facing dislocation.

Thank you for the opportunity to comment.

c: The Estate of James Campbell
Suite 300
828 Fort Street Mall
Honolulu, HI 96813
Attention: David Rae

William E. Wanket, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813
Attention: William E. Wanket

Office of Environmental Quality Control

WILLIAM
E.
WANKET

April 12, 1991

Mr. Yukio Kitagawa
Chairperson
Board of Agriculture
1428 South King Street
Honolulu, Hawaii 96814-2512

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Mr. Kitagawa:

Thank you very much for reviewing the above-referenced DEIS and for the copy of your April 9, 1991 letter to the Department of General Planning. In response to your comments the following information is provided:

Paragraph 1. No response necessary.

Paragraph 2. The letter accurately paraphrases the referenced section of the DEIS.

Paragraph 3. According to Decision Analysts Hawaii, Inc. (preparers of the Agricultural Impact Assessment), the Rocker G. Livestock Company has derived \$10,000 to \$14,000 per year from the temporary grazing of off-island cattle on its ranch. The Company expects to adjust to the new conditions and maintain operations at a level that will continue to support the equivalent of two full-time jobs. The adjustment made by the Company is likely to be triggered by the closing of the feed-lot located at Campbell Industrial Park, independently of the development of the Makaiwa Hills Residential Community.

Paragraph 4. Thank you for the information on the State's plans to develop a Livestock Agricultural Park on Oahu.

For your information, your letter, together with this response, will be included in the EIS.

Sincerely,


WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer



DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM

JOHN WAIHEE
GOVERNOR

DIRECTOR
BARBARA KIM STANTON
DEPUTY DIRECTOR
MURRAY E. TOWILL
DEPUTY DIRECTOR

ENERGY DIVISION, 335 MERCHANT ST., RM. 110, HONOLULU, HAWAII 96813 PHONE: (808) 548-4080 FAX: (808) 531-5243

RICK EGGED

April 9, 1991

Department of General Planning
Municipal Office Building, 8th Floor
650 South King Street
Honolulu, Hawaii 96813
Attn: Bill Medeiros.

Dear Mr. Medeiros:

Subject: Draft Environmental Impact Statement
(DEIS) for Makaiwa Hills

The Energy Division has reviewed the above DEIS. We appreciate the stated commitment (pp. 105, 109-110) to establish energy efficiency design guidelines for this project, and will be pleased to work with the developer in creating an energy-efficient community in Makaiwa Hills.

Sincerely,

for Maurice H. Kaya
Energy Program Administrator

MHK/PE

cc: The Estate of James Campbell
William E. Wanket, Inc.

WILLIAM
E.
WANKET
INC.

Energy Consultants

April 10, 1991

Mr. Maurice H. Kaya
Energy Program Administrator
Department of Business, Economic Development
& Tourism
335 Merchant Street, Room 110
Honolulu, Hawaii 96813

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Thank you very much for the copy of your letter of April 9, 1991 to the Department of
General Planning regarding the proposed Makaiwa Hills project. We appreciate your
comments and your references to the guidelines for energy efficiency that will be
established, in the future, as part of the development's Covenants, Conditions and
Restrictions (CC&Rs).

For your information, your letter, together with this response, will be published in the
Final EIS.

Sincerely,


WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer

Pacific Tower
Suite 650
1001 Bishop Street
Honolulu, HI 96813
Phone: 533-4377

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
1010 KANE OHIA DRIVE, HONOLULU, HAWAII 96813

February 28, 1991

Engineering Office

Department of General Planning
Municipal Office Building, 8th Floor
650 South King Street
Honolulu, Hawaii 96813

Gentlemen:

DEIS Makaiwa Hills in Ewa

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,

SIGNED

Jerry M. Matsuda
Lieutenant Colonel
Hawaii Air National Guard
Contracting & Engineering Officer

cc: Mr. David Rae
The Estate of James Campbell
Mr. William E. Wanket
William E. Wanket, Inc.
Office of Environmental
Quality Control

WILLIAM
E.
WANKET
INC.

April 2, 1991

Environmental Consultants

Jerry M. Matsuda
Lieutenant Colonel
Hawaii Air National Guard
Contracting & Engineering Officer
Department of Defense
Office of the Adjutant General
3949 Diamond Head Road
Honolulu, Hawaii 96816-4495

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Lieutenant Colonel Matsuda:

Thank you very much for the copy of your letter of February 28, 1991 to the Department of
General Planning regarding the above-referenced project. We appreciate your efforts in
reviewing the documents.

For your information, your letter, together with this response, will be included in the Final
EIS.

Sincerely,


WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer

Pacific Tower
Suite 630
1001 Bishop Street
Honolulu, Hawaii 96813

4/21-1144

JOHN WAINEE
GOVERNOR OF HAWAII



JOHN C. LEWIN, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EPHSD

March 27, 1991

91-1-085

Mr. Bill Medeiros
Department of General Planning
City and County of Honolulu
Municipal Office Building, 8th Floor
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Medeiros:

Subject: Draft Environmental Impact Statement Makaiwa Hills
Ewa, Oahu
TMK: 9-1-15: 5, 11 and 17
TMK: 9-1-16: Portion 9
TMK: 9-2-03: Portion 2

RECEIVED
MAR 29 1991

RECEIVED
MAR 29 9:12

We have reviewed the material on the above subject project submitted by your office. We have the following comments to offer:

Clean Water

Construction activity involving clearing, grading and excavation of more than five (5) acres of total land area, a stormwater National Pollutant Discharge Elimination System (NPDES) permit application should be submitted to the Director of Health at least 90 days before the date on which construction is to commence.

Wastewater

The subject project is located within a proposed critical wastewater disposal area, as determined by the Oahu Wastewater Advisory Committee.

It has been determined that currently there are no existing wastewater facilities within the project site. The subject project is located within the service area of a municipal sewer system. Therefore, the Department of Health has no objections to the proposed development provided that the project is connected to the public sewers. We do reserve the right to review the detailed wastewater plans for conformance to the Department of Health Administrative Rules, Chapter 11-62, "Wastewater Systems."

Very truly yours,

JOHN C. LEWIN, M.D.
Director of Health

WILLIAM
E.
WANKET
INC.

Land Use Consultant

April 11, 1991

Mr. John C. Lewin, M.D.
Director
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Mr. Lewin:

Thank you very much for reviewing the above-referenced DEIS. We have received a copy of your letter from the Department of General Planning and appreciate the information that you have provided. The following is in response to your information:

1. Clean Water. The developer will comply with all of the pertinent requirements and regulations set forth by your department, including a stormwater National Pollutant Discharge Elimination System (NPDES) permit application.
2. Wastewater. The DEIS acknowledges (Volume I, Page 86) that expansion of the Honouliuli Wastewater Treatment Plant is tentatively scheduled for completion by 1994. The development of Makaiwa Hills, however, is not anticipated to precede completion of the WWTP expansion. Although connection to Honouliuli is not guaranteed, even with the expansion of the plant, an application for sewer connection will be filed with the Division of Wastewater Management (DWM) for review. Wastewater requirements will continue to be coordinated with DWM and detailed wastewater plans, when they become available, will be provided to the Department of Health for review and approval.

For your information, your letter, together with this response, will be included in the EIS.

Sincerely,


WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer

Pacific Tower
Suite 650
1001 Bishop Street
Honolulu - 96810
Phone: 551-4411

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

P. O. BOX 621
HONOLULU, HAWAII 96809

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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MANABU TAGOMORI
Dan T. Kochi

AQUACULTURE DEVELOPMENT
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CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

REF:OCEA:JN

MAR 28 1991

File No.: 91-342
Doc. No.: 0401E

The Honorable Benjamin Lee
Department of General Planning
Municipal Office Building, 8th Floor
650 S. King Street
Honolulu, Hawaii 96813
Attn: Bill Medeiros

Dear Mr. Lee:

Subject: Draft EIS - Makaiwa Hills in Ewa TMK: 9-1-15: 5, 11,
17 and 9-1-16: Por. 9; and 9-2-03: Por. 2

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.

Our Department's Historic Preservation Division indicates that we have recently reviewed a draft of the archaeological inventory survey report for the project parcel and have forwarded our comments to the report's authors. At this point, we are unable to determine if the inventory survey is adequate. We expect that our comments will be addressed in the final draft of the report and that the report will be summarized in the Final EIS.

Our Division of Forestry and Wildlife comments that even though the Pueo was not seen during the wildlife survey, the Pueo is known to favor open grassy areas for feeding purposes. This area is one of only a few open grassy areas on Oahu and the proposed development will destroy a large part of their feeding habitat. The lands designated as preservation may be of some compensation for this loss; however, the permanency of this designation or protection from future development is not addressed other than the possible future golf course on 180 acres.

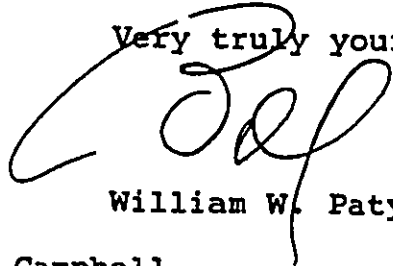
Honorable Benjamin Lee

-2-

Doc. No.: 0401E

Thank you for your cooperation in this matter. Please feel free to call Roy Schaefer of our Office of Conservation and Environmental Affairs, at 548-7837, if you have questions.

Very truly yours,



William W. Paty

cc: The Estate of James Campbell
William E. Wanket, Inc.
OEQC

April 10, 1991

Mr. William W. Paty
Chairperson
Board of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Mr. Paty:

Thank you for your letter of March 28, 1991 to the Department of General Planning regarding the proposed Makaiwa Hills project. We appreciate your efforts in reviewing the documents. Information in response to your comments is provided below:

1. Paragraph 1. No comments necessary.
2. Paragraph 2. Mr. Hallett Hammatt of Cultural Surveys Hawaii and I met with Tom Dye, your department, on April 8, 1991 to coordinate our response to the comments contained in Paragraph 2 of your letter (which references a letter (enclosed), dated February 26, 1991, sent only to Cultural Surveys Hawaii by the Historic Preservation Division). Following is a summary of our coordinated response.

The archaeological assessment is being revised to address the following two categories of concern expressed in the February 26 letter: (1) technical problems, (2) substantive problems. As stated at the April 8 meeting, the technical problems are mainly related to possible ambiguities and omissions in the text of the report which could prevent clear understanding of the data. This will be handled with the appropriate revisions and, in most cases, are self explanatory.

The substantive problems (according to the February 26 letter) are as follows:

- a. Insufficient information on which to judge the adequacy of the survey. This will be corrected by expanding the detailed information on person days, number of sweeps, general conduct and emphasis of the survey. In particular, there is concern that the burned area contains more sites than unburned areas. This raises the question of undiscovered sites in the project area. Of course, this is always a possibility. However, in this case, the equivalent elevations of the property on both sides have been severely impacted by bulldozing. This and the possibility of small features being

missed will be addressed in the revision of the report. Cultural Surveys, Hawaii believes that the 125 person days, involving 60 sweeps over a period of 25 field days is adequate coverage for the project area.

b. Context of sites in the settlement pattern of the ahupuaa. This will be addressed by additions in a section of the report which will deal with Honouliuli ahupuaa as a settlement area with three main foci of habitation, coastal zone, Honouliuli taro lands and mauka activity at Puu Kuua. Previous studies will be incorporated such as those of West Beach and West Loch Estates.

c. Impact of the Makaiwa Hills project on significant sites. This concern is dealt with in a general sense in the report. However additions will be made to specify that detailed preservation plans and a data recovery plan will be required which will adequately address these concerns.

d. Adequacy of descriptions of test excavations. This information is available in the field notes and will be added to the report.

e. Detailed recommendation and analysis of impact of the development on the archaeological sites is not presented in the survey report. General recommendations are given, however, final site treatment and mitigation will be detailed in a data recovery plan and preservation plan. These plans will be submitted for review and approval to the Department of Land and Natural Resources, Historic Preservation Division.

The revised archaeological study will be summarized in the narrative portion of the Final EIS and included as an Appendix to that document.

3. Paragraph 3. The project's avifaunal and feral mammal consultant, Phil Bruner, agrees that the Pueo are known to favor open grassy areas for feeding purposes. However, he questions the statement that "This area is one of only a few open grassy areas on Oahu and the proposed development will destroy a large part of their feeding habitat." In order to discuss the documentation for these statements, the consultant attempted but was unable to contact Mr. Herbert Kikukawa, of the State Forestry Division, who according to Roy Schaefer of the Office of Conservation and Environmental Affairs, DLNR, had prepared the comments on the Pueo.

The suggestion, according to the consultant, that Pueo are relegated to grasslands is in fact not substantiated by published data. Pueo are known to feed in a variety of habitats other than grasslands (Hawaii's Birds - Hawaii Audubon Society, 1989, Field Guide to the Birds of Hawaii and the Pacific - Pratt et al. 1987) Pueo can also be seen foraging frequently in agricultural fields and even native forests. See attached letter from Bruner to Lani Nedbalek of my office, dated April 5, 1991.

Makaiwa Hills proposes 901 acres to be designated as Preservation. Of those 901 acres, 721 in the "upper preservation" area are intended to remain essentially in its

-Page 3-
Department of Land and Natural
Resources

natural condition (see page 14, DEIS), although certain recreational-type activities such as nature or riding trails may extend into the gulches." The lower preservation area (180 acres) is being considered for active or semi-active recreational activities, including a golf course. If the golf course option is selected, a separate Development Plan Amendment will be prepared in the future.

Again, thank you for your comments. We appreciated the opportunity of coordinating our project with Tom Dye, Historic Preservation Division. For your information your letter, together with this response, will be included in the Final EIS.

Sincerely,



WILLIAM E. WANKET

Enclosure

cc: Benjamin B. Lee, Chief Planning Officer
Historic Preservation Division, DLNR

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JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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AQUACULTURE DEVELOPMENT
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RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER RESOURCE MANAGEMENT

February 26, 1991

Dr. Hallett H. Hammatt
Cultural Surveys of Hawaii
49 South Kalaheo Avenue
Kailua, HI 96734

Dear Dr. Hammatt:

SUBJECT: Review of revised draft of An archaeological inventory
survey for the Makaiwa Hills Project Site.
Honouliuli, 'Ewa, O'ahu
THK: 9-1-15: 5, 11, 17; 9-1-16: por. 9; 9-2-3: por. 2

This revised draft report details the results of an archaeological inventory survey of 1,915 acres. As it stands, we believe that the report still does not meet the minimal standards of an archaeological inventory survey and is thus not acceptable.

In particular, there is insufficient information with which to judge the adequacy of the survey. The survey methods are described briefly and incompletely, so it is not possible to assess whether the survey has adequately covered the project parcel. It may be significant that the density of sites in the area of Figure 6 designated "burnt area" is higher than that elsewhere in the parcel, where vegetation may have hindered the discovery or recognition of certain site types. Also, the discovery of one agricultural feature and two possible agricultural features in an area this size is unusual. There may be reasons for this that have nothing to do with the adequacy of the survey techniques, but these are not indicated clearly in the draft report.

While the site descriptions do appear acceptable, their context in the settlement pattern of their ahupua'a is not made clear -- a vital need for significance evaluations. The late prehistoric settlement pattern of the large ahupua'a of Honouliuli is becoming very clear with all of the recent archaeological and historical work in this area. Also, a crucial very early site is found on the Ewa plain in Honouliuli just below your project. The Makaiwa Hills project is the first large area of the Honouliuli volcanic upland to be explored archaeologically. The area is crucial in the analysis of the settlement pattern of the ahupua'a. The prehistoric settlement pattern of the ahupua'a is not adequately addressed by the section on the prehistory and early history of land use, which focuses primarily on legendary material. The discussion needs to be improved. Crucial sources for this work include Davis and Haun (1987), listed in your references cited, and Davis, Haun, and Rosendahl (1986) Phase 3 - Data recovery plan for archaeological and paleontological excavations; West Beach data recovery program. Both of these volumes provide summaries of the settlement pattern, and both reports are available for use at our library.

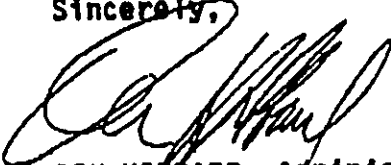
Dr. Hallett H. Hammatt
February 26, 1991
Page Two

The portion of the report on site significance needs to clarify and explicitly spell out the justifications for site significance evaluations, particularly the sites considered "no longer significant". Of the 34 sites located during the survey, 17 are listed as significant. Twelve sites, including ten habitation enclosures and two of the agricultural features, are listed as significant for their information content alone. Five rockshelter sites, including two associated with petroglyphs, are listed as significant for multiple criteria. We concur with the significance evaluations for the 17 sites that are considered "no longer significant" and the 12 sites significant for their information content alone. We also agree with the significance evaluation for site 4322, a rockshelter with associated quarry. However, we disagree with the significance evaluations for the remaining four sites. We believe that site 2893 is further significant for its cultural value (Hawaii Register of Historic Places, criterion E) as one of the largest petroglyph concentrations on the island. The remaining three rockshelters are not particularly unusual, except for the possibility of their preserving normally perishable organic material. Thus, we believe that they do not appear to be noteworthy examples of this site type, and thus are not significant under criterion C of the Hawaii Register of Historic Places. We would evaluate them as significant for their information content alone.

The impact of the Makaiwa Hills project on each of these significant sites is not explicitly addressed in the report, so that it is impossible to judge the appropriateness of the recommended mitigation measures. We wonder if it is wise to preserve through avoidance rockshelters that are located close to residential areas, because children find them attractive places to excavate. In this situation it might be best to draw up a data recovery plan before the sites are disturbed. Also, the type of preservation recommended for site 50-80-12-2893, the rockshelter site with petroglyphs, should be explicit. Here the choices include 1) avoidance, 2) stabilization, 3) restoration, and 4) exhibition or interpretive display. One of the latter choices might be most appropriate given the unique nature of this site and its recent close brush with destruction through road building activities.

Attached is a list of general and specific comments that we hope will help in your revision of the draft report. Should you have any questions please do not hesitate to contact Tom Dye at 587-0014. If you disagree with any of the points, please contact our office and set up a meeting, so these disagreements can be resolved.

Sincerely,



DON HIBBARD, Administrator
State Historic Preservation Division

Attachments

GENERAL COMMENTS

The extensive use of secondary sources should be avoided. Many of the primary references are easily available in local libraries and the text should refer to them.

Plan view maps would all benefit from cross sections. It is often difficult to visualize a site without some idea of the lay of the land.

Maps give measurements in feet. The metric system is universally used in other reports in the Pacific and is the standard used here in Hawaii.

SPECIFIC COMMENTS

How many man/days were spent on the project? Who directed field activities? Who was on the crew?

Figure 2 shows the project location in Nanakuli instead of Honouliuli.

The base map for Figure 6 appears to be the USGS 7.5 minute quad map. A reference here would be appropriate. Also, UTM coordinates for 3 points on the site location map would aid in the recording of site locations.

Table 1 lists as a function "recurrent habitation." Is this defined anywhere? If not, does it differ in some way from temporary or permanent habitation? Recommendations for 50-80-12-2893 are Preserve -- what about data recovery?

Scope and Methods section is too sketchy to give the reader information on the survey. This is especially the case with the site recording process. How many sites were mapped? At what scale were the maps drawn? The survey methods description is also sketchy. The pedestrian sweeps at 15.2 m intervals -- were the 4 to 5 archaeologists all within the 15.2 m interval, or were they each covering a 15.2 m interval? Given the ground vegetation, what types of historic site might have been missed by this procedure? Note that site density in the area of Figure 6 designated as "burnt area" is quite a bit higher than in surrounding areas. Is this due to a combination of vegetation and wide sample intervals? Also, was the entire 1,915 acre parcel surveyed? If so, it would be well to state this specifically.

The project area description is also sketchy. The description of the topography of the project area neglects the ridges that separate the three major gulches. Ten soil types are listed for the project area; there is no attempt to describe soil characteristics or their distribution over the project parcel. This is a necessary step in describing patterns of land use and developing models of settlement pattern. The description of vegetation would be more helpful if the influence of the various plant communities on survey work were described. Again, it would be helpful if Rock's very generalized vegetation scheme could be related to the project parcel.

The ditches mentioned on p.20 -- have they been given site numbers? Are they within the project area?

p. 26, Haun and Davis 1987 is not in the bibliography. Is this Davis and Haun 1987?

p. 27 states the intent of visiting site 2893 was "to obtain any additional information that may not have been included in the previous studies." Yet, these petroglyphs have still not been recorded in systematic detail. This fact should be spelled out clearly and explicit plans made for their proper recording. The recommendation that the site be preserved is a good one, but it needs to be accompanied by some idea of what preservation means in this context. Is preservation with interpretive display a good idea? Or should the site be preserved through avoidance?

Site 4310 is described as "late historic or modern." Does the term "late historic" make reference to the definition of historic sites as 50 years or older? If so, could this be defined somewhere in the report?

Site 4317 is described as a circular enclosure, but the map in Figure 11 shows a "U" or "J" shaped structure. The phrase "sparse concentration" seems to contradict itself. Was charcoal collected for dating? The soil layers are incompletely described: information on depths, nature of the layer boundary, and color of Stratum I are needed. According to the description of the excavation as "below the underlying ground surface" of the platform, it seems highly unlikely that Stratum I filtered down from above -- or was the platform floating in air at some point?

The excavation potential of site 4318 is listed as fair to poor. Is this due to the probability of a shallow deposit, or to some other fact?

The netting mentioned in the description of site 4319 is intriguing. Sites yielding similar materials have added much to our knowledge of Hawaiian prehistory. Certainly, a find of this potential importance deserves more in the way of description than the inference that it is prehistoric. Also, the grass on the surface, though to be a sleeping mat (why?), is old, too? If so, then continued disturbance by animals presents a significant threat to the site's integrity. What is the present and eventual disposition of this and other collected artifacts?

Site 4322 is an interesting example of an unusual site type. Cleghorn et al. have shown that it is often possible to source adzes when petrographic descriptions of quarry rocks are available. Were any basalt flakes collected for petrographic analysis? Quarries are notoriously difficult to date. This one would appear to have quite a bit of potential. Were any dateable materials evident in the sides of the trench?

Site 4324, a mound or ahu, is listed as having an agricultural function, but no evidence is adduced in support of this inference.

The excavation at site 4328 is inadequately described. The sentence "No cultural remains were recovered from this trench which was excavated until reaching sterile soil at a maximum depth of 25 cm below ground surface" leaves hanging the question of how sterile soil was distinguished from the overlying (sterile?) soil. Minimally, soil layers must be described in sufficient detail for future excavators. Given the negative results of the test, what is the basis for the evaluation of good excavation potential for the rest of the feature and for features B and C?

Does the possible hearth noted for site 4336 show on the map, Figure 23? If so, it should be labeled. If not, it should be included. Figure 23 describes the soil in the interior of the enclosure as "shallow," but the text does not describe how soil depth was measured.

Brigham Young University
Hawaii Campus
Museum of Natural History



5 April 1991

Lani Nedbalek
Pacific Tower
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Lani:

This letter is in regards to your inquiry about comments on the faunal survey of the Makaiwa Hills project. As I mentioned to you on the phone, I called Roy Schaefer of the Office of Conservation and Environmental Affairs for the State of Hawaii. He was kind enough to find out that Herbert Kikukawa of the State Forestry Division was responsible for the comments regarding the Pueo that appeared in the letter signed by William W. Paty and sent to Benjamin Lee. I have tried to contact Mr. Kikukawa over the past two days, but he has been "unavailable" according to his secretary. I will be happy to continue to try to speak to him if you like, but I can't say when I will be fortunate in getting through. It seems Mr. Kikukawa's schedule is very tight.

In the absence of actually learning the source of information upon which the statements made in the letter to Benjamin Lee were based, I will still go ahead and provide you, in this letter, my opinions and thoughts regarding these questions. First of all, the third paragraph of the letter, the only one dealing with items I should comment on, states that "Pueo is known to favor open grassy areas for feeding purposes." This statement is not earth shaking and is, in fact, common knowledge that could be gained by reading any number of publications dealing with Hawaiian birds. The next sentence, however, is the interesting one in the paragraph. It states "This area is one of only a few open grassy areas on Oahu and the proposed development will destroy a large part of their feeding habitat." This statement is interesting for two reasons: (1) Where is the documentation to suggest that this area is in fact "one of the few open grassy areas on Oahu? (2) What data are available to show that "the proposed development will destroy a large part of their feeding habitat? Pueo are known to feed in a variety of habitats other than grasslands (Hawaii's Birds - Hawaii Audubon Society 1989, Field Guide to the Birds of Hawaii and the Pacific - Pratt et al. 1987). It has been my experience that Pueo can also be seen foraging frequently in agricultural fields and even native forests. To suggest that Pueo are relegated to grasslands is in fact not substantiated by published data. What we need here, it seems to me, is for whoever is ultimately responsible for the statements in the letter to Mr. Lee to have the burden of proof on their back to substantiate the allegations they make. Personally I think they will be unable to produce data to support the specifics noted in their response to the faunal survey for this property.

If you want me to pursue this further let me know.

Sincerely,
Phil Bruner

A handwritten signature in black ink, appearing to read "Phil Bruner".

Assistant Professor of Biology

Brigham Young University-Hawaii Campus, Laie, Hawaii 96762-1294 (808) 293-3800, 3816

JOHN WAIHEE
GOVERNOR



BRIAN J. J. CHOY
Acting Director

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
220 SOUTH KING STREET
FOURTH FLOOR
HONOLULU, HAWAII 96813
April 1, 1991

Mr. William Medeiros
Department of General Planning
650 South King Street, 8th Floor
Honolulu, Hawaii 96813

Dear Mr. Medeiros:

SUBJECT: Makaiwa Hills
Draft Environmental Impact Statement

We have reviewed the document listed above and have no comments to offer at this time.

Thank you for the opportunity to submit comments on this project.

Sincerely,

Brian J. J. Choy
Brian J.J. Choy

cc: William E. Wanket, Inc.

WILLIAM
E.
WANKET

April 7, 1991

Mr. Brian J. J. Choy
Director
Office of Environmental Quality Control
220 South King Street, 4th Floor
Honolulu, Hawaii 96813

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Mr. Choy:

Thank you very much for the copy of your letter of April 1, 1991 to the Department of General Planning regarding the proposed Makaiwa Hills project. We appreciate your efforts in reviewing the documents.

For your information, your letter, together with this response, will be published in the Final EIS.

Sincerely,



WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer

(P)1215.1

MAR 1 1984

Department of General Planning
City and County of Honolulu
650 South King Street, 8th Floor
Honolulu, Hawaii 96813

Attention: Mr. Bill Medeiros

Gentlemen:

Subject: Makaiwa Hills in Ewa
Draft EIS

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

Should there be any questions, please contact Mr. Ralph Yukumoto of the Planning Branch at 548-7192.

Very truly yours,



TEUANE TOMINAGA
State Public Works Engineer

RY:jk

cc: The Estate of James Campbell
William E. Wanket, Inc.

WILLIAM
E.
WANKET
INC.

Land Use Consultant

April 2, 1991

Mr. Teuane Tominaga
State Public Works Engineer
State Department of Accounting and
General Planning, Division of
Public Works
P.O. Box 119
Honolulu, Hawaii 96810

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Mr. Tominaga:

Thank you very much for the copy of your letter of March 1, 1991 to the Department of
General Planning regarding the above-referenced project. We appreciate your efforts
in reviewing the DEIS.

For your information, your letter, together with this response, will be published in the
Final EIS.

Sincerely,


WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer

Pacific Tower
Suite 600
1001 Bishop Street
Honolulu, HI 96813



University of Hawaii at Manoa

Environmental Center
A Unit of Water Resources Research Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 956-7361
April 9, 1981

Mr. William E. Wankel, President
William E. Wankel, Inc.
Pacific Tower 660
1001 Bishop Street
Honolulu, HI. 96813

Dear Mr. Wankel:

Makua Hills DEIS
Ewa, Ewa, Hawaii

The Environmental Center has conducted a review of the referenced DEIS. We apologize for the informality of the present communication, but our review, and the comments to commit it to print are not presently accessible, due to the persistence of the electric power outage at the University. Since it does not appear that we will be able to finalize our comments before the expiration of the review deadline, I will attempt to summarize them, with the understanding that the full text of our remarks will be forwarded at the earliest opportunity. Our review was conducted with

AN EQUAL OPPORTUNITY EMPLOYER

the assistance of Tom Matsuoaka, School of Social Work; Luciano Minerbi, Department of Urban and Regional Planning; and Alex Bitaro, Environmental Center.

Traffic

Our reviewers believe that the construction-related, as well as the persistent impacts to regional traffic necessitate resolution of the Ewa Regional Transportation Master Plan prior to the project's approval.

Archaeological Resources

Our reviewers suggest that archaeological sites could be enclosed within an archaeological boundary district to reflect the significance of their relative location to one another. Significance determinations should not be restricted solely to potentially recoverable artifacts, but should also include cultural, religious, agricultural, and ancestrally noteworthy considerations as determined from consultation with both archaeological consultants and knowledgeable native Hawaiian residents of the project district.

Open Space

Concerns were voiced that the project's impact on the loss of open space needs to be addressed more thoroughly.

Housing

This DEIS fails to articulate clearly how many affordable units (rental or for purchase) and at what price range are being provided. Apparently, details of number, configuration, location, price, and timing of affordable housing construction are left to subsequent negotiation with government agencies. This information should be a central feature of a DEIS for a housing development.

Socio-economic Assessment

Section 4.A.5.1, (p. 62), states, "whether or not Kakaia Hills contributes to or causes social conflicts because of its eyescale nature is unknown at this time." Our reviewers would like to know more details about anticipated possible "social conflicts."

Our reviewers also suggested that a description of the interview methodology might be included to better assess the context of the interview opinions presented. The document states that there is a feeling among "most" of the people interviewed that "more affluent residents would help Ewa's economy and 'round out' the social characteristics of the Ewa region" (Section 4.2, p. 58). Our reviewers suggest that the "rounding out" effect will vary significantly depending on whether the units will be used as summer homes for foreign investors, or as permanent residences for local executives and professionals.

Our reviewers also note that in Section 4.A.5.3 (p.64), Impacts to Nearby Residential Units, no mitigation measures are recommended to offset property value increases which may occur in Nondrai/Wandrai gardens because, "This is an impact already occurring due to the Oline and Kapolei developments; this trend would continue even if Makaiwa Hills were not built." Our reviewers believe that the cumulative impacts of the development need to be assessed, regardless of the existence of a trend prior to the proposed development. Also, secondary and/or indirect effects on communities adjacent to the project area should be fully documented pursuant to the EIS Rules, Section 11-200-17(i).

Our reviewers had additional concerns which were more fully articulated in our formal review. As soon as power is available, we will forward these concerns for your consideration. We hope our comments will assist in providing for a more comprehensive Final EIS, and once again, we apologize for the inconvenience of the present format.

Sincerely,

John T. Horrocks, Ph.D.

John T. Horrocks, Ph.D.

Environmental Coordinator.

April 15, 1991

Mr. John T. Harrison, Ph.D.
Environmental Coordinator
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Mr. Harrison:

Thank you for your letter of April 9, 1991 regarding the proposed Makaiwa Hills project. We appreciate your efforts in reviewing the documents. Information in response to your comments is provided below:

Traffic:

The Makaiwa Hills development is tentatively scheduled to start construction in 1996. By this time, the Ewa Region Highway Master Plan will be completed. The Estate of James Campbell is committed to participating in the Ewa Region Highway Master Plan, which is in progress and is scheduled to be completed this year. The Master Plan will determine the needed improvements to the highway network and determine the fair share costs for all participants.

Archaeological Resources

We have discussed your comments with the project's archaeological consultant, Cultural Surveys Hawaii, and provide the following information in response:

In reference to the designation of the Makaiwa Hills site as a District, the consultant believes that a district nomination is not warranted because the sites do not show spacial continuity and are not particularly representative of a time period or periods in prehistory and history. We have coordinated our findings with the State Historic Preservation Office and we are in general agreement as to the significance evaluations. There is one site which is definitely of cultural value, a series of 50 petroglyphs, and the site has been evaluated as significant under this criteria as advised by the State. There are also four sites evaluated as excellent examples of site types. Although some of the sites are judged to be of information value alone, we have considered other criteria in evaluating the sites. There is still much archaeological research to be done in the project area and the consultants are aware of the many considerations mentioned by you in carrying out this work.

Open Space

The general comment that the project's impact on the loss of open space needs to be addressed more thoroughly is noted, and will be taken into consideration during the preparation of the FEIS.

Housing

To the extent practicable at this time, the Makaiwa Hills affordable housing options are clearly stated in the DEIS. It is also clearly stated that the applicant is committed to the establishment of an affordable housing component, and will work with government to define its scope as the project goes through the development plan, land use boundary change and zoning processes. These processes require public review and hearings and I'm sure your agency will be given an opportunity to comment further.

Socio-Economic Assessment

Your comments have been reviewed by Earthplan, who prepared the Makaiwa Hills social assessment. Attached and made part of this letter is a letter from Earthplan to William E. Wanket, Inc. that addresses the comments raised.

Again, thank you for your comments. For your information, your letter, together with this response, will be included in the EIS.

Sincerely,



WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer

Enclosures



Planning and Design

81 S. Hotel Street, Suite 211
Honolulu, Hawaii 96813

(808) 524-8387
(808) 524-8393 Fax

April 11, 1991

William E. Wanket, Inc.
Pacific Tower, Suite 660
1001 Bishop Street
Honolulu, Hawai'i 96813

Dear Bill:

Subject: **Makaiwa Hills**
Response to Comments on DEIS from UH Environmental Center

This letter is in response to your request for my comments on the above. I understand that portions of this letter will be used in your response to the UH Environmental Center.

In general, I find that the comments have already been addressed in the full text of my report which is attached as Appendix D in Volume 2. Nevertheless, I am addressing each item separately in this letter.

1. Potential Social Conflicts

The reviewer wanted more details about possible social conflicts referred to on page 62 of the DEIS. My response to this item is in two parts.

First, I discuss the nature of potential social conflicts in the context of adding an upscale community to the 'Ewa region, and this discussion is found in Section 5.2 of my report. As stated on page 46 in Appendix D:

"Social disharmony can occur when a definable group feels excluded from a facility, area, service or otherwise resource they wish to access, and at this time, there is no way of knowing if Makaiwa Hills will foster or encourage a sense of exclusion. Specific rules which prohibit access would exacerbate tension between the "haves and have-nots." Further, an individual's anxiety during personal economic crisis is heightened when faced with evidence of "conspicuous consumption" (expensive cars, exclusive clubs, designer clothes, etc.) exhibited by the wealthy.

Conflict would also occur if, to house upper income families, Makaiwa Hills would displace a public use or resource, such as recreation. No on-site community uses exist, however, and the project will not eliminate an important public resource."

Second, I stress that the actual manifestations of these conflicts are difficult to predict because social change and development are part of a natural evolutionary process of any community. As I stated previous to the text above, "the upscale nature of Makaiwa Hills may not be a problem if the region is socially and economically integrated at the time of project implementation." I then described factors leading to such integration. In reality, the true nature of the impacts can only be assessed retrospectively.

2. Interview Methodology

The reviewer suggested a description of the interview methodology. As stated on page 26 and 27 of Appendix D, we conducted interviews to identify community issues and concerns regarding Makaiwa Hills. We selected individuals so that they provided a cross-section of potential interests, including leaders of regional Ewa organizations, residents in nearby communities who are active in their community activities; and residents and operators of nearby activities who live or work adjacent to the project site. On page 46, we state that over 80 percent of those interviewed were residents and most belonged to regional organizations, such as the Ewa Neighborhood Board, the Makakilo Community Association, and the Honokai Hale/Nanakai Gardens Community Association. We also concentrated on people living in Makakilo and Honokai Hale/Nanakai Gardens. The non-resident interviewees operated a business near the project site.

The 32 people interviewed were asked to provide their perspectives on how the proposed project might affect the nearby uses and the regional community. They were not asked to represent the views of their organizations, although if the organization has taken a formal position, then they were asked to discuss these positions. Further, some of those interviewed were asked to provide information about their respective area of expertise, in addition to their perspective on project issues.

3. Housing Issue

The reviewer suggests that the "rounding out" effect of introducing upscale housing will vary significantly "depending on whether the units will be used as (?) homes for foreign investors, or permanent residences for local executives and professionals." My response is in two parts.

First, I am reporting the perceptions of those interviewed. The reviewer is referring to a discussion of issues raised in our interviews; specifically in Section 4.2.4 of Appendix D, page 38 and 39. Informants felt that residents of the proposed community "would contribute to the economy and help diversify the social characteristics of the are." Even though the reviewer may not agree with that statement, it would be inappropriate to change informants' comments.

Second, although the possibility of foreign investors certainly exists, I understand that the project will target executives, retirees and second home owners, and that there will be an emphasis on local residents. The report was written based on project assumptions.

4. Mitigation Measures for Increased Property Values

The reviewer believes that the cumulative impacts of the development need to be assessed, and, presumably, that we should be recommending appropriate mitigation measures for increased property values.

On page 49 of Appendix D, we say that with the proposed project, "Honokai Hale/Nanakai Gardens will be sandwiched by a makai upscale resort residential community and a mauka residential community characterized by executive homes. The project will therefore add to the situation of increased property values and corresponding property tax increases." Hence, we disclosed that the project will actively participate in the cumulative effects of increased property values.

We also point out on the same page that the increased property values will have both positive and negative impacts, depending on the situation of individual home owners. Therefore, for many people, no mitigation would be necessary.

Those with fixed incomes will be negatively impacted because they will have difficulty paying increased taxes. We believe that, by itself, Makaiwa Hills cannot address or solve this problem and it would be misleading to assert an unrealistic measure simply to recommend something.

5. Secondary and/or indirect effects

The reviewer wants full documentation of adjacent and/or indirect effects on communities adjacent to the project area, pursuant to DOH Chapter 200, EIS Rules.

Secondary population and growth impacts on nearby communities are discussed in Section 5.3, whereby we discuss the project direct and indirect impacts on nearby residential communities, Ko Olina, Camp Timberline, Palehua Solar Observatory and other leases. We discuss property value impacts, the potential for different resident patterns, the effects of altering the physical layout, and the long-term effect of the project on specific uses. In Appendix D, this discussion can be found on pages 47 through 52. I note that these impacts were also discussed with informants interviewed for this study.

In addition, because we consider the 'Ewa region as a "community adjacent to the project area," we provide a full discussion of regional primary and secondary impacts. In Section 5.2.2, we discuss the project's relationship to growth policies, the effects of having another hillside development and of an upscale community, and the location of affordable units. In Appendix D, this discussion can be found on pages 45 through 47.

As I said earlier, I believe that our full report addresses comments from this reviewer. If you need further information, please call me.

Sincerely yours,

EARTHPLAN


Berna Cabacungan

**DEIS City Comment
Letters And Applicant
Responses**

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March 15, 1991

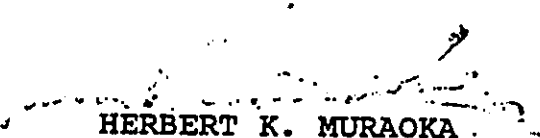
MEMO TO: BENJAMIN LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

ATTN: BILL MEDEIROS

FROM: HERBERT K. MURAOKA
DIRECTOR AND BUILDING SUPERINTENDENT

SUBJECT: MAKAIWA HILLS IN EWA
DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)

We have reviewed the DEIS for the subject project and have no comments to offer.


HERBERT K. MURAOKA
Director and Building Superintendent

JH:jo
cc: J. Harada
The Estate of James Campbell
Wills & Associates, Inc.
Office of Environmental Quality Control

WILLIAM
E.
WANKET
INC.

Land Use Consultant

April 2, 1991

Mr. Herbert K. Muraoka
Director and Building Superintendent
Building Department
650 South King Street
Honolulu, Hawaii 96813

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Mr. Muraoka:

Thank you very much for the copy of your letter of March 15, 1991 to the Department of General Planning regarding the above-referenced project. We appreciate your efforts in reviewing the documents.

For your information, your letter, together with this response, will be included in the Final EIS.

Sincerely,

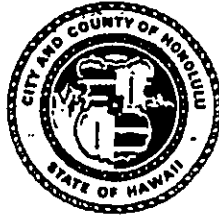

WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer

Pacific Tower
Suite 660
1001 Bishop Street
Honolulu, HI 96813
Phone
808-531-4007

DEPARTMENT OF HUMAN RESOURCES
CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING, 6TH FLOOR
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 527-5311



FRANK F. FASI
MAYOR

MARIA VICTORIA R. BUNYE
Acting DIRECTOR
VICTOR D. GUILLERMO, JR.
Acting DEPUTY DIRECTOR

January 29, 1991

Mr. William E. Wanket, President
William E. Wanket, Inc.
Pacific Tower, Suite 660
1001 Bishop Street
Honolulu, Hawaii 96813

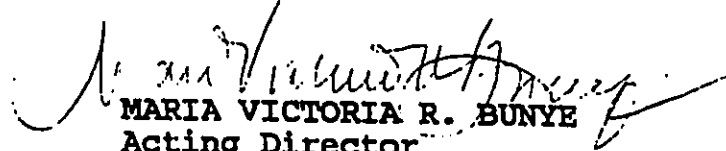
Dear Mr. Wanket:

This is to acknowledge receipt of your letter dated January 17, 1991 regarding our department's review of the Environmental Impact Statement Preparation Notice (EISP) for the proposed Makaiwa Hills project.

We look forward to working with the applicant (The Estate of James Campbell) in insuring that the increased child care demands generated by the proposed project are adequately met. We offer the services of the Mayor's Child Care Task Force as well in accomplishing this task.

Thank you very much.

Very truly yours,


MARIA VICTORIA R. BUNYE
Acting Director
Department of Human Resources

MVRB:ds

WILLIAM
E.
WANKET
INC.

April 2, 1991

Ms. Maria Victoria R. Bunye
Acting Director
Department of Human Resources
650 South King Street, 6th Floor
Honolulu, Hawaii 96813

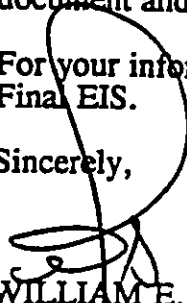
RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Ms Bunye:

Thank you for your letter of January 29 1991 on the project's Environmental Impact Statement Preparation Notice (EISP/N). We appreciate your efforts in reviewing the document and for your offer of the services of the Mayor's Child Care Task Force.

For your information, your letter, together with this response, will be published in the Final EIS.

Sincerely,



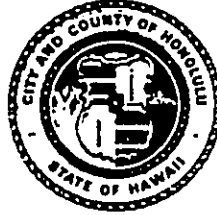
WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer

Phone Tower
1000 S. King Street
Honolulu, Hawaii 96813

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4432



FRANK F. FASI
MAYOR

DONALD A. CLEGG
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

LU 02/91-1195 (JSM)

April 8, 1991

Mr. William E. Wanket
Pacific Tower 660
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Wanket:

DRAFT ENVIRONMENTAL IMPACT STATEMENT
MAKAIWA HILLS IN EWA

The Environmental Affairs Branch of the Department of Land Utilization has reviewed the Draft Environmental Impact Statement (DEIS) for the proposed Makaiwa Hills development.

There may be potential problems posed by the threat of increased erosion and runoff created during the construction of the residential and commercial portions of the project. We note that you address these concerns in the DEIS and have offered mitigating measures for these problems. Based on our present understanding of the possible impacts, we feel that the various mitigating measures discussed in the DEIS will be sufficient to address these concerns.

Some portion of the lower preservation area might be well suited to meeting the parks and the active outdoor recreational needs for the community. Although, a portion of the project in the eastern part of the development was specifically designated as park, no such designation was made in the lower preservation areas. The designation of a portion of the lower preservation area as park would provide a centrally located facility.

The development area may be a foraging site for the Hawaiian Owl (the Pueo) which is an endangered species. Because of the sensitivity associated with endangered species, we believe that comments on this specific issue should be directly solicited from the appropriate experts at either the United States Department of the Interior Fish & Wildlife Service, or the Department of Land and

Mr. William E. Wanket
Page 2
April 8, 1991

Natural Resource's Forestry and Wildlife Division. This will allow more precise assessment of the impact of this proposed development on this endangered species.

We understand that the golf course is not a part of the proposed development project at this time, and is not a part of this DEIS. Despite claims that the golf course remains only one possible use for the "lower preservation" areas, we note that the golf course is commonly presented to the public as a part of the Campbell Estate's Master Plan for the area. For this reason, we believe that the Campbell Estate has every intention of building a golf course in the "lower preservation" area at some later date. Our concern is that this golf course may generate significant negative environmental impacts which may not be subject to adequate review at a later date.

Among the areas of our concern are:

1. The levels of erosion that will be involved with the substantial landscaping associated with the grading of the golf course have not been clearly established. Of particular concern is the fact that this project calls for the extensive movement of soil, involving the covering of large areas with up to one foot of imported top soil. The DEIS does not discuss the anticipated size of this substantial grading, and it is not clear whether or not the erosional studies have incorporated these factors into their studies.
2. The golf course is projected to occupy 180 acres, but only 180 acres of the lower portion of the project have been designated for lower preservation. Nonetheless, the lower preservation areas are also designated to provide other amenities such as community clubhouses, swimming pools, recreational courts, botanical or zoological gardens, equestrian center, or play fields. These facilities ordinarily take up substantial amounts of space. How is it anticipated that this discrepancy will be resolved?
3. Golf courses typically entail high levels of use of both pesticides and fertilizers. Safeguards need to clearly be established to ensure the proper utilization of these chemicals.

Mr. William E. Wanket
Page 3
April 8, 1991

In spite of these and other environmental concerns, once Campbell Estate receives the requested zoning reclassification, they will no longer be legally mandated to submit a golf course proposal for environmental review.

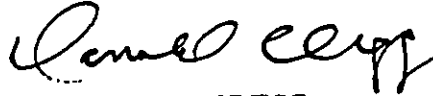
In light of these concerns, we feel that the EIS (which incorporates the preservation designation for the lower preservation areas) should only be accepted with the condition that a supplemental EIS for the golf course will be filed prior to any future formal applications for a golf course on the lower preservation site.

As an alternative, we believe that the proposal should be amended to delete any zone change for the area designated as "lower preservation". This does not seem to be a change which would have much impact on the nature of the project proposal covered by this EIS. Under the current zoning designations, the open space and outdoor recreational aspects of the proposed Makaiwa Hills development could be preserved, without creating an opening for future unconsidered development.

We appreciate the opportunity to review and comment upon the DEIS.

Should you have any questions, please contact John Morihara of our staff at 527-5349.

Very truly yours,



DONALD A. CLEGG
Director of Land Utilization

DAC:lg
eis2.jsm/10

WILLIAM
P.
WILLIAMS
DIRECTOR
DEPARTMENT OF LAND UTILIZATION

April 11, 1991

Mr. Donald A. Clegg
Director
Department of Land Utilization
650 South King Street
Honolulu, Hawaii 96813

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Mr. Clegg:

Thank you for your letter of April 8, 1991 regarding the proposed Makaiwa Hills project. We appreciate your efforts in reviewing the documents. Information in response to your comments is provided below:

Paragraph 1 and 2: No response necessary.

Paragraph 3: The DEIS does recognize the possibility of portions of the "Lower Preservation" area being suitable for recreational uses other than, or in combination with, a golf course (Volume I, Page 14, and Volume II, Appendix G). Regarding the park designation proposed in the eastern part of the development, we are currently working with the Department of Parks and Recreation to relocate the designation to a more suitable site. In this respect, we note your suggestion that a portion of the "Lower Preservation" area would provide a centrally located facility.

Paragraph 4: With respect to your comments on the Pueo, we have received similar comments from the State Department of Land and Natural Resources (DLNR). Attached is our response to those comments. Coordination will continue with DLNR as the project continues to be reviewed through the various planning and zoning processes. According to the distribution list provided by OEQC, the U.S. Fish and Wildlife Service has received a copy of the DEIS. As of this date we have not received any comments from that agency.

Paragraph 5: Although a golf course component is not part of the Development Plan (DP) Amendment proposal, it is an integral part of the DEIS, pursuant to the Environmental Impact Statement Rules, Subchapter 7, Section 11-200-17(b)(4) and (f). This section refers to alternatives considered, which is the subject of Chapter VII of Volume I. Also, Volume II contains technical studies that specifically address environmental matters relating to golf course

WILLIAM
P.
WILLIAMS
DIRECTOR
DEPARTMENT OF LAND UTILIZATION
650 SOUTH KING STREET
HONOLULU, HAWAII 96813
PHONE (808) 521-1111
FAX (808) 521-1111

development. A DP Amendment Application will be filed with the Department of General Planning (DGP). In filing such an application, an environmental assessment must be prepared and is subject to review under Chapter 343, HRS.

Paragraph 6: Regarding the areas of concern listed in your letter, we respond as follows:

1. A short term soil erosion potential analysis has not been specifically done for the development of the lower preservation area into a possible golf course. The 180 acres which may be developed into a golf course is included, however, in the short term soil erosion potential analysis for the overall development. Mitigative measures identified in the short term impacts and mitigation section would apply to development of a golf course.

All grading work, whether for residential or golf course construction, will be done in accordance with Chapter 23, Grading, Soil Erosion and Sediment Control of the Revised Ordinances of Honolulu, as amended. Grading and soil erosion control plans will comply with the Soil Erosion Standards and Guidelines of the Department of Public Works, City and County of Honolulu.

2. No determination has been made at this time as to the specific uses/activities for the lower preservation area, other than being recreational in nature. In the DEIS, we have identified a range of recreational-type uses that may be potentially suitable for this area. It is not an all-inclusive list and it was not intended to imply that each activity listed was to be accommodated.

3. Appendix K (DEIS, Volume II) addresses the environmental impact of fertilizer, herbicide, and pesticide uses associated with a potential golf course development in the lower preservation area. Appropriate mitigative measures were also presented and summarized in Chapter VII, Volume I, and includes meeting the conditions established by the Department of Health, as well as other appropriate agencies.

Paragraph 7: As stated clearly in the DEIS, if a golf course component is to be added to the Makaiwa Hills project, a separate DP Amendment Application will be filed with the Department of General Planning (DGP). DGP's rules and regulations require all DP Amendment Applications include an Environmental Assessment (EA), which is reviewed by DGP. Furthermore, the DEIS (Page 132, Volume I) recognizes the on-going discussions between the Administration and the City Council on new golf course procedures and requirements, and states that the Applicant, in applying for a golf course DP Amendment, will comply with all adopted changes.

Paragraphs 8 and 9: The Applicant is committed to filing a separate Development Plan Amendment Application if a golf course component is later selected to be added to the Makaiwa Hills project. Such an application would be subject to compliance with Chapter 343, HRS. Determining now, in anticipation of such a request, that an EIS is to be required seems contrary to the procedures of Chapter 343, HRS, as well as to DGP's rules and procedures for

April 10, 1991

Mr. William W. Paty
Chairperson
Board of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Mr. Paty:

Thank you for your letter of March 28, 1991 to the Department of General Planning regarding the proposed Makaiwa Hills project. We appreciate your efforts in reviewing the documents. Information in response to your comments is provided below:

1. Paragraph 1. No comments necessary.
2. Paragraph 2. Mr. Hallett Hammett of Cultural Surveys Hawaii and I met with Tom Dye, your department, on April 8, 1991 to coordinate our response to the comments contained in Paragraph 2 of your letter (which references a letter (enclosed), dated February 26, 1991, sent only to Cultural Surveys Hawaii by the Historic Preservation Division). Following is a summary of our coordinated response.

The archaeological assessment is being revised to address the following two categories of concern expressed in the February 26 letter: (1) technical problems, (2) substantive problems. As stated at the April 8 meeting, the technical problems are mainly related to possible ambiguities and omissions in the text of the report which could prevent clear understanding of the data. This will be handled with the appropriate revisions and, in most cases, are self explanatory.

The substantive problems (according to the February 26 letter) are as follows:

- a. Insufficient information on which to judge the adequacy of the survey. This will be corrected by expanding the detailed information on person days, number of sweeps, general conduct and emphasis of the survey. In particular, there is concern that the burned area contains more sites than unburned areas. This raises the question of undiscovered sites in the project area. Of course, this is always a possibility. However, in this case, the equivalent elevations of the property on both sides have been severely impacted by bulldozing. This and the possibility of small features being

missed will be addressed in the revision of the report. Cultural Surveys, Hawaii believes that the 125 person days, involving 60 sweeps over a period of 25 field days is adequate coverage for the project area.

b. Context of sites in the settlement pattern of the ahupuaa. This will be addressed by additions in a section of the report which will deal with Honouliuli ahupuaa as a settlement area with three main foci of habitation, coastal zone, Honouliuli taro lands and mauka activity at Puu Kuaa. Previous studies will be incorporated such as those of West Beach and West Loch Estates.

c. Impact of the Makaiwa Hills project on significant sites. This concern is dealt with in a general sense in the report. However additions will be made to specify that detailed preservations plans and a data recovery plan will be required which will adequately address these concerns.

d. Adequacy of descriptions of test excavations. This information is available in the field notes and will be added to the report.

e. Detailed recommendation and analysis of impact of the development on the archaeological sites is not presented in the survey report. General recommendations are given, however, final site treatment and mitigation will be detailed in a data recovery plan and preservation plan. These plans will be submitted for review and approval to the Department of Land and Natural Resources, Historic Preservation Division.

The revised archaeological study will be summarized in the narrative portion of the Final EIS and included as an Appendix to that document.

3. Paragraph 3. The project's avifaunal and feral mammal consultant, Phil Bruner, agrees that the Pueo are known to favor open grassy areas for feeding purposes. However, he questions the statement that "This area is one of only a few open grassy areas on Oahu and the proposed development will destroy a large part of their feeding habitat." In order to discuss the documentation for these statements, the consultant attempted but was unable to contact Mr. Herbert Kikukawa, of the State Forestry Division, who according to Roy Schaefer of the Office of Conservation and Environmental Affairs, DLNR, had prepared the comments on the Pueo.

The suggestion, according to the consultant, that Pueo are relegated to grasslands is in fact not substantiated by published data. Pueo are known to feed in a variety of habitats other than grasslands (Hawaii's Birds - Hawaii Audubon Society, 1989, Field Guide to the Birds of Hawaii and the Pacific - Pratt et al. 1987) Pueo can also be seen foraging frequently in agricultural fields and even native forests. See attached letter from Bruner to Lani Nedbalek of my office, dated April 5, 1991.

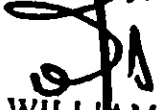
Makaiwa Hills proposes 901 acres to be designated as Preservation. Of those 901 acres, 721 in the "upper preservation" area are intended to remain essentially in its

-Page 3-
Department of Land and Natural
Resources

natural condition (see page 14, DEIS), although certain recreational-type activities such as nature or riding trails may extend into the gulches." The lower preservation area (180 acres) is being considered for active or semi-active recreational activities, including a golf course. If the golf course option is selected, a separate Development Plan Amendment will be prepared in the future.

Again, thank you for your comments. We appreciated the opportunity of coordinating our project with Tom Dye, Historic Preservation Division. For your information your letter, together with this response, will be included in the Final EIS.

Sincerely,



WILLIAM E. WANKET

Enclosure

cc: Benjamin B. Lee, Chief Planning Officer
Historic Preservation Division, DLNR

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

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PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER RESOURCE MANAGEMENT

February 26, 1991

Dr. Hallett H. Hammatt
Cultural Surveys of Hawaii
49 South Kalaheo Avenue
Kailua, HI 96734

Dear Dr. Hammatt:

SUBJECT: Review of revised draft of An archaeological inventory survey for the Makaiwa Hills Project Site.
Honouliuli, 'Ewa, O'ahu
TMK: 9-1-15: 5, 11, 17; 9-1-16: por. 9; 9-2-3: por. 2

This revised draft report details the results of an archaeological inventory survey of 1,915 acres. As it stands, we believe that the report still does not meet the minimal standards of an archaeological inventory survey and is thus not acceptable.

In particular, there is insufficient information with which to judge the adequacy of the survey. The survey methods are described briefly and incompletely, so it is not possible to assess whether the survey has adequately covered the project parcel. It may be significant that the density of sites in the area of Figure 6 designated "burnt area" is higher than that elsewhere in the parcel, where vegetation may have hindered the discovery or recognition of certain site types. Also, the discovery of one agricultural feature and two possible agricultural features in an area this size is unusual. There may be reasons for this that have nothing to do with the adequacy of the survey techniques, but these are not indicated clearly in the draft report.

While the site descriptions do appear acceptable, their context in the settlement pattern of their ahupua'a is not made clear -- a vital need for significance evaluations. The late prehistoric settlement pattern of the large ahupua'a of Honouliuli is becoming very clear with all of the recent archaeological and historical work in this area. Also, a crucial very early site is found on the Ewa plain in Honouliuli just below your project. The Makaiwa Hills project is the first large area of the Honouliuli volcanic upland to be explored archaeologically. The area is crucial in the analysis of the settlement pattern of the ahupua'a. The prehistoric settlement pattern of the ahupua'a is not adequately addressed by the section on the prehistory and early history of land use, which focuses primarily on legendary material. The discussion needs to be improved. Crucial sources for this work include Davis and Haun (1987), listed in your references cited, and Davis, Haun, and Rosendahl (1986) Phase 3 - Data recovery plan for archaeological and paleontological excavations; West Beach data recovery program. Both of these volumes provide summaries of the settlement pattern, and both reports are available for use at our library.

Dr. Hallett H. Hammatt
February 26, 1991
Page Two

The portion of the report on site significance needs to clarify and explicitly spell out the justifications for site significance evaluations, particularly the sites considered "no longer significant". Of the 34 sites located during the survey, 17 are listed as significant. Twelve sites, including ten habitation enclosures and two of the agricultural features, are listed as significant for their information content alone. Five rockshelter sites, including two associated with petroglyphs, are listed as significant for multiple criteria. We concur with the significance evaluations for the 17 sites that are considered "no longer significant" and the 12 sites significant for their information content alone. We also agree with the significance evaluation for site 4322, a rockshelter with associated quarry. However, we disagree with the significance evaluations for the remaining four sites. We believe that site 2893 is further significant for its cultural value (Hawaii Register of Historic Places, criterion E) as one of the largest petroglyph concentrations on the island. The remaining three rockshelters are not particularly unusual, except for the possibility of their preserving normally perishable organic material. Thus, we believe that they do not appear to be noteworthy examples of this site type, and thus are not significant under criterion C of the Hawaii Register of Historic Places. We would evaluate them as significant for their information content alone.

The impact of the Makaiwa Hills project on each of these significant sites is not explicitly addressed in the report, so that it is impossible to judge the appropriateness of the recommended mitigation measures. We wonder if it is wise to preserve through avoidance rockshelters that are located close to residential areas, because children find them attractive places to excavate. In this situation it might be best to draw up a data recovery plan before the sites are disturbed. Also, the type of preservation recommended for site 50-80-12-2893, the rockshelter site with petroglyphs, should be explicit. Here the choices include 1) avoidance, 2) stabilization, 3) restoration, and 4) exhibition or interpretive display. One of the latter choices might be most appropriate given the unique nature of this site and its recent close brush with destruction through road building activities.

Attached is a list of general and specific comments that we hope will help in your revision of the draft report. Should you have any questions please do not hesitate to contact Tom Dye at 587-0014. If you disagree with any of the points, please contact our office and set up a meeting, so these disagreements can be resolved.

Sincerely,



DON HIBBARD, Administrator
State Historic Preservation Division

Attachments

GENERAL COMMENTS

The extensive use of secondary sources should be avoided. Many of the primary references are easily available in local libraries and the text should refer to them.

Plan view maps would all benefit from cross sections. It is often difficult to visualize a site without some idea of the lay of the land.

Maps give measurements in feet. The metric system is universally used in other reports in the Pacific and is the standard used here in Hawaii.

SPECIFIC COMMENTS

How many man/days were spent on the project? Who directed field activities? Who was on the crew?

Figure 2 shows the project location in Nanakuli instead of Honolulu.

The base map for Figure 6 appears to be the USGS 7.5 minute quad map. A reference here would be appropriate. Also, UTM coordinates for 3 points on the site location map would aid in the recording of site locations.

Table 1 lists as a function "recurrent habitation." Is this defined anywhere? If not, does it differ in some way from temporary or permanent habitation? Recommendations for 50-80-12-2893 are Preserve -- what about data recovery?

Scope and Methods section is too sketchy to give the reader information on the survey. This is especially the case with the site recording process. How many sites were mapped? At what scale were the maps drawn? The survey methods description is also sketchy. The pedestrian sweeps at 15.2 m intervals -- were the 4 to 5 archaeologists all within the 15.2 m interval, or were they each covering a 15.2 m interval? Given the ground vegetation, what types of historic site might have been missed by this procedure? Note that site density in the area of Figure 6 designated as "burnt area" is quite a bit higher than in surrounding areas. Is this due to a combination of vegetation and wide sample intervals? Also, was the entire 1,915 acre parcel surveyed? If so, it would be well to state this specifically.

The project area description is also sketchy. The description of the topography of the project area neglects the ridges that separate the three major gulches. Ten soil types are listed for the project area; there is no attempt to describe soil characteristics or their distribution over the project parcel. This is a necessary step in describing patterns of land use and developing models of settlement pattern. The description of vegetation would be more helpful if the influence of the various plant communities on survey work were described. Again, it would be helpful if Rock's very generalized vegetation scheme could be related to the project parcel.

The ditches mentioned on p.20 -- have they been given site numbers? Are they within the project area?

p. 26, Haun and Davis 1987 is not in the bibliography. Is this Davis and Haun 1987?

p. 27 states the intent of visiting site 2893 was "to obtain any additional information that may not have been included in the previous studies." Yet, these petroglyphs have still not been recorded in systematic detail. This fact should be spelled out clearly and explicit plans made for their proper recording. The recommendation that the site be preserved is a good one, but it needs to be accompanied by some idea of what preservation means in this context. Is preservation with interpretive display a good idea? Or should the site be preserved through avoidance?

Site 4310 is described as "late historic or modern." Does the term "late historic" make reference to the definition of historic sites as 50 years or older? If so, could this be defined somewhere in the report?

Site 4317 is described as a circular enclosure, but the map in Figure 11 shows a "U" or "J" shaped structure. The phrase "sparse concentration" seems to contradict itself. Was charcoal collected for dating? The soil layers are incompletely described: information on depths, nature of the layer boundary, and color of Stratum I are needed. According to the description of the excavation as "below the underlying ground surface" of the platform, it seems highly unlikely that Stratum I filtered down from above -- or was the platform floating in air at some point?

The excavation potential of site 4318 is listed as fair to poor. Is this due to the probability of a shallow deposit, or to some other fact?

The netting mentioned in the description of site 4319 is intriguing. Sites yielding similar materials have added much to our knowledge of Hawaiian prehistory. Certainly, a find of this potential importance deserves more in the way of description than the inference that it is prehistoric. Also, the grass on the surface, though to be a sleeping mat (why?), is old, too? If so, then continued disturbance by animals presents a significant threat to the site's integrity. What is the present and eventual disposition of this and other collected artifacts?

Site 4322 is an interesting example of an unusual site type. Cleghorn et al. have shown that it is often possible to source adzes when petrographic descriptions of quarry rocks are available. Were any basalt flakes collected for petrographic analysis? Quarries are notoriously difficult to date. This one would appear to have quite a bit of potential. Were any dateable materials evident in the sides of the trench?

Site 4324, a mound or ahu, is listed as having an agricultural function, but no evidence is adduced in support of this inference.

The excavation at site 4328 is inadequately described. The sentence "No cultural remains were recovered from this trench which was excavated until reaching sterile soil at a maximum depth of 25 cm below ground surface" leaves hanging the question of how sterile soil was distinguished from the overlying (sterile?) soil. Minimally, soil layers must be described in sufficient detail for future excavators. Given the negative results of the test, what is the basis for the evaluation of good excavation potential for the rest of the feature and for features B and C?

Does the possible hearth noted for site 4336 show on the map, Figure 23? If so, it should be labeled. If not, it should be included. Figure 23 describes the soil in the interior of the enclosure as "shallow," but the text does not describe how soil depth was measured.

Brigham Young University
Hawaii Campus
Museum of Natural History



5 April 1991

Lani Nedbalek
Pacific Tower
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Lani:

This letter is in regards to your inquiry about comments on the faunal survey of the Makaiwa Hills project. As I mentioned to you on the phone, I called Roy Schaefer of the Office of Conservation and Environmental Affairs for the State of Hawaii. He was kind enough to find out that Herbert Kikukawa of the State Forestry Division was responsible for the comments regarding the Pueo that appeared in the letter signed by William W. Paty and sent to Benjamin Lee. I have tried to contact Mr. Kikukawa over the past two days, but he has been "unavailable" according to his secretary. I will be happy to continue to try to speak to him if you like, but I can't say when I will be fortunate in getting through. It seems Mr. Kikukawa's schedule is very tight.

In the absence of actually learning the source of information upon which the statements made in the letter to Benjamin Lee were based, I will still go ahead and provide you, in this letter, my opinions and thoughts regarding these questions. First of all, the third paragraph of the letter, the only one dealing with items I should comment on, states that "Pueo is known to favor open grassy areas for feeding purposes." This statement is not earth shaking and is, in fact, common knowledge that could be gained by reading any number of publications dealing with Hawaiian birds. The next sentence, however, is the interesting one in the paragraph. It states "This area is one of only a few open grassy areas on Oahu and the proposed development will destroy a large part of their feeding habitat." This statement is interesting for two reasons: (1) Where is the documentation to suggest that this area is in fact "one of the few open grassy areas on Oahu? (2) What data are available to show that "the proposed development will destroy a large part of their feeding habitat? Pueo are known to feed in a variety of habitats other than grasslands (Hawaii's Birds - Hawaii Audubon Society 1989, Field Guide to the Birds of Hawaii and the Pacific - Pratt et al. 1987). It has been my experience that Pueo can also be seen foraging frequently in agricultural fields and even native forests. To suggest that Pueo are relegated to grasslands is in fact not substantiated by published data. What we need here, it seems to me, is for whoever is ultimately responsible for the statements in the letter to Mr. Lee to have the burden of proof on their back to substantiate the allegations they make. Personally I think they will be unable to produce data to support the specifics noted in their response to the faunal survey for this property.

If you want me to pursue this further let me know.

Sincerely,
Phil Bruner

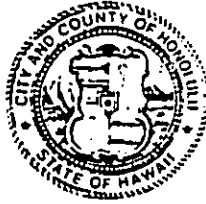
A handwritten signature in black ink, appearing to read "Phil Bruner".

Assistant Professor of Biology

Brigham Young University-Hawaii Campus, Laie, Hawaii 96762-1294 (808) 293-3800. 3816

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU HAWAII 96813



FRANK F. FASI
MAYOR

WALTER M. OZAWA
DIRECTOR

ALVIN K. C. AU
DEPUTY DIRECTOR

March 7, 1991

TO: BENJAMIN B. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: WALTER M. OZAWA, DIRECTOR

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
MAKAIWA HILLS - EWA
TMK 9-1-15 and 9-1-16

We have reviewed the Draft Environmental Impact Statement (DEIS) for the Makaiwa Hills project and make the following comments.

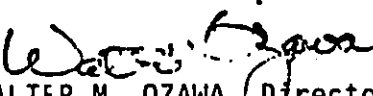
The size and population generated by the proposed project will have a significant impact on our existing and proposed public parks in the subject area. Additional developments in the subject area consisting of Ko Olina, Kapolei City, Makakilo and the Villages of Kapolei make it important that an adequate and effective public park system be developed to serve all of these projects, as well as Makaiwa Hills.

The applicant is aware that the 16-acre site located in Awainui Gulch at the easterly end of the project is unacceptable as a public park. We are waiting for the applicant to continue discussions to relocate the park site to meet City park standards. We are very concerned that the applicant has included the construction of the 16-acre park in Phase I of the project without our knowledge.

MEMO TO: BENJAMIN B. LEE
March 7, 1991
Page 2

Until the public park issue for Makaiwa Hills is resolved, we cannot approve any of the project's future applications submitted to the City under the planning process.

Should you have any questions, please contact Mr. Jason Yuen of our Advance Planning Branch at extension 6315.


WALTER M. OZAWA, Director

WMO:11

Attachment: 11/7/90 letter

cc: Campbell Estate
✓ William E. Wanket

WILLIAM
E.
WANKET

April 7, 1991

Mr. Walter M. Ozawa
Director
Department of Parks and Recreation
650 South King Street
Honolulu, Hawaii 96813

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

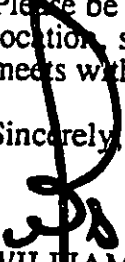
Dear Mr. Ozawa:

Thank you for your letter of March 7, 1991 to the Department of General Planning regarding the proposed Makaiwa Hills project. We appreciate your efforts in reviewing the documents. Information in response to your comments is provided below:

Paragraphs 1 and 2: No comment necessary.

Paragraph 3, 4 and 5: On March 7, 1991, representatives of The Estate of James Campbell had the opportunity of meeting with Mr. Jason Yuen of your staff to discuss the proposed Makaiwa Hills park site. At the present time, the plans are conceptual. We agreed to work with your office in locating alternative sites as the project advances through the planning process, and more engineering information becomes available. Please be assured that we will maintain close contact with your staff to ensure that the location, size and configuration, as well as the construction schedule of the park site, meets with your approval.

Sincerely,


WILLIAM E. WANKET

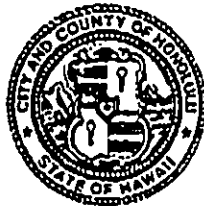
cc: Benjamin B. Lee, Chief Planning Officer

3191-857

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. PASI
MAYOR



SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER

C. MICHAEL STREET
DEPUTY DIRECTOR
In reply refer to:
ENV 91-55(449)

March 13, 1991

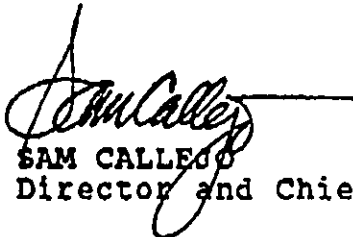
MEMORANDUM

TO: BENJAMIN B. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
MAKAIWA HILLS IN EWA
TMK: 9-1-15: 5, 11, 17; 9-1-16: POR. 9; AND
9-2-03: POR. 2

We have reviewed the subject DEIS and have no comments to offer at this time.


SAM CALLEJO
Director and Chief Engineer

RECEIVED
CACHMAN

1991 APR 15 AM 10:06

RECEIVED

WILLIAM
E.
WANKET
INC.

Land Use Consultant

April 12, 1991

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
650 South King Street
Honolulu, Hawaii 96813

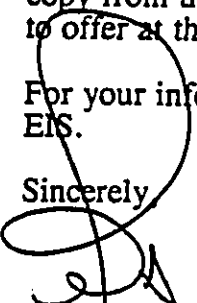
RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Mr. Callejo:

Thank you very much for reviewing the above-reference DEIS . We have received a copy from the Department of General Planning indicating that you have no comments to offer at this time.

For your information, your letter, together with this response, will be included in the EIS.

Sincerely,


WILLIAM E. WANKET

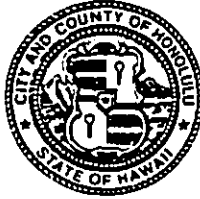
cc: Benjamin B. Lee, Chief Planning Officer

Pacific Tower
Suite 660
1001 Bishop Street
Honolulu, HI 96813
Phone: (808) 525-1234
Fax: (808) 525-1235

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU

1455 SOUTH BERETANIA STREET, ROOM 305
HONOLULU, HAWAII 96814

FRANK F. FASI
MAYOR



LIONEL E. CAMARA
FIRE CHIEF

DONALD S.M. CHANG
DEPUTY FIRE CHIEF

February 26, 1991

TO: BENJAMIN B. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

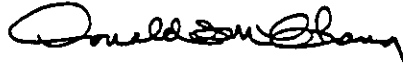
ATTN: WILLIAM J. MEDEIROS

FROM: DONALD S. M. CHANG, ACTING FIRE CHIEF

SUBJECT: DEIS MAKAIWA HILLS, EWA, OAHU
TMK: 9-1-15: 5, 11, 17; 9-1-16: POR 9; 9-2-03: POR 2

We have reviewed the subject material provided and have no additional comments.

Should you have any questions, please contact Battalion Chief Attilio Leonardi of our Administrative Services Bureau at 943-3838.


DONALD S. M. CHANG
Acting Fire Chief

AKL:ny

cc: David Rae (The Estate of James Campbell)
William E. Wanket, Inc.
Office of Environmental Quality Control

WILLIAM
E.
WANKET
INC.

Land Use Consultant

April 2, 1991

Mr. Donald S.M. Chang
Acting Fire Chief
1455 South Beretania Street
Room 305
Honolulu, Hawaii 96813

RE; Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Mr. Chang:

Thank you very much for the copy of your letter of February 26, 1991 to the
Department of General Planning regarding the proposed Makaiwa Hills project.
We appreciate your efforts in reviewing the documents.

For your information, your letter, together with this response, will be published in the
Final EIS.

Sincerely,


WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer

Pacific Tower
Suite 600
1001 Bishop Street
Honolulu, HI 96813

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU

1435 SOUTH KEMERUA STREET
HONOLULU, HAWAII 96814 - AREA CODE: (808) 243-1111



FRANK F. FASI
MAYOR

MICHAEL S. NAKAMURA
CHIEF

HAROLD M. KAWASAKI
DEPUTY CHIEF

OUR REFERENCE KN-LK

April 1, 1991

TO: BENJAMIN E. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

ATTENTION: BILL MEDEIROS

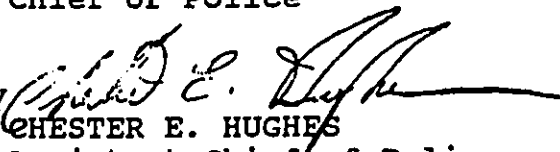
FROM: MICHAEL S. NAKAMURA, CHIEF OF POLICE
HONOLULU POLICE DEPARTMENT

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT, VOLUMES I & II,
MAKAIWA HILLS, EWA, OAHU, HAWAII

We have reviewed the material for the above project and have no additional comments to our November 13, 1990 response.

Thank you for the opportunity to comment.

MICHAEL S. NAKAMURA
Chief of Police

By 
CHESTER E. HUGHES
Assistant Chief of Police
Support Services Bureau

cc: The Estate of James Campbell
William E. Wanket,
OEQC

WILLIAM
E.
WANKET

April 7, 1991

Mr. Chester E. Hughes
Assistant Chief of Police
Support Services Bureau
1455 South Beretania Street
Honolulu, Hawaii 96814


RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills Project - Response to Comments Received

Dear Mr. Hughes:

Thank you very much for the copy of your letter of April 1, 1991 to the Department of
General Planning regarding the proposed Makaiwa Hills project. We appreciate your
efforts in reviewing the documents.

For your information, your letter, together with this response, will be published in the
Final EIS.

Sincerely,


WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer

**DEIS Other
Comment Letters
And Applicant
Responses**

ENV 2-1
EIS
JA/G



William A. Bonnet
Manager
Environmental Department

March 20, 1991

Mr. Bill Medeiros
Department of General Planning
Municipal Office Building, 8th Floor
650 S King Street
Honolulu, Hawaii 96813

Dear Mr. Medeiros:

Subject: DEIS Makaiwa Hills

We have reviewed the subject DEIS, and have concerns with regard to the impact of the project on future generation expansion at Hawaiian Electric Company's Kahe Generating Station. The EISPN Comment Letters and Responses includes my letter of December 17, 1990 to David Rae of The Estate of James Campbell confirming HECO's intent to add generation in the future and pointing out the impact of Makaiwa Hills development on such generation additions. This letter was acknowledged by William Wanket on January 19, 1981; his acknowledgement is also included in the DEIS.

Page 7 of Appendix F, Air Quality Impact Report, explicitly recognizes that "...it is likely that additional generation units will eventually be added to the Kahe facility thereby increasing possible impact on Makaiwa residents." Page 15 of that same appendix, under mitigation, recommends that "...future residents of Makaiwa Hills should be advised prior to purchase that their property may be impacted by emissions from the Kahe Generating Station during periods of northwesterly winds...furthermore, they should be advised that visible emissions occur during routine maintenance and that stacks, transmission lines, and other appurtenant facilities may be visible from their property. Finally, they should be advised that due to future population growth, the plant may be expanded to meet the increased electrical demand of that population."

Chapter II of the DEIS discusses the physical environment and project impacts. The air quality section makes no reference to the Kahe facility, in its present configuration or with intended expansion. Likewise, mitigative measures in this section do not reflect the very explicit recommendations of Appendix F with regard to prospective residential property purchaser disclosure.

Mr. Bill Medeiros
March 20, 1991
Page 2

Section IV. A.5.3 deals with Impacts on the Nearby Uses, including the Waimanalo Gulch Landfill but is silent on HECO's Kahe Generation Station. Section V. G. on Power and Communications summarizes Appendix A and, with regard to HECO, is limited to a discussion of transmission alignment. Appendix A does not address HECO generation addition at Kahe. The mitigative measures for the HECO system are described as "under consideration in the planning of new facilities". Does this or does this not include disclosure of potential visual and air quality impacts of existing and future generation at Kahe? Section VI. B.2. on the electrical generation component of State Functional Plans speaks of generation expansion at Kahe only in terms of a proposed unit addition superseded by non-utility generation projects in the Campbell Industrial Park. The implication is that there is no intent to add generation in the future at Kahe; this is not correct.

Hawaiian Electric Company, as stated in my December 1990 letter, "will make generation additions to the Kahe facility in the future." We do not believe the DEIS provides adequate assessment of the compatibility of this intent with the proposed residential development. HECO shall reserve comments pertaining to the protection of existing power lines bordering the project area until construction plans are finalized.

Sincerely,



cc: Mr. David Rae, The Estate of James Campbell
Mr. William E. Wanket, William E. Wanket, Inc. ✓

bcc: G. T. Iwahiro
R. K. McQuain
R. B. Munger



WILLIAM
E.
WANKET

April 2, 1991

Mr. William A. Bonnet
Manager
Environmental Department
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840-0001

RE: Draft Environmental Impact Statement (DEIS) for Proposed
Makaiwa Hills - Response to Comments Received

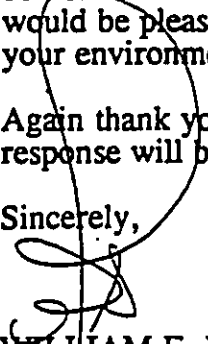
Dear Mr. Bonnet:

Thank you for the copy of your letter to the Department of General Planning regarding the above-referenced project. Information in response to your comments is provided below:

1. Paragraph 1: No comment.
2. Paragraph 2: No comment.
3. Paragraph 3 and 4: The EIS will include additional statements, as appropriate, on HECO's future plans to add generation at Kahe.
4. Paragraph 5: The information contained in the DEIS reflects the scope of information you provided in your letter which simply stated that HECO expects to make future additions to the Kahe facility, and that the future residents of Makaiwa Hills should be made aware that this may involve additional and possibly higher stacks that combustion gases may impinge upon the property. You further stated that any additions "...will be undertaken in conformance with Federal and State environmental requirements in effect at that time..." We would be pleased to comment further once HECO's expansion plans become available and your environmental studies are complete.

Again thank you for your comments. For your information, your letter together with this response will be included in the Final EIS.

Sincerely,


WILLIAM E. WANKET

cc: Benjamin B. Lee, Chief Planning Officer

Figures

12
11
10
9
8
7
6
5
4
3
2
1

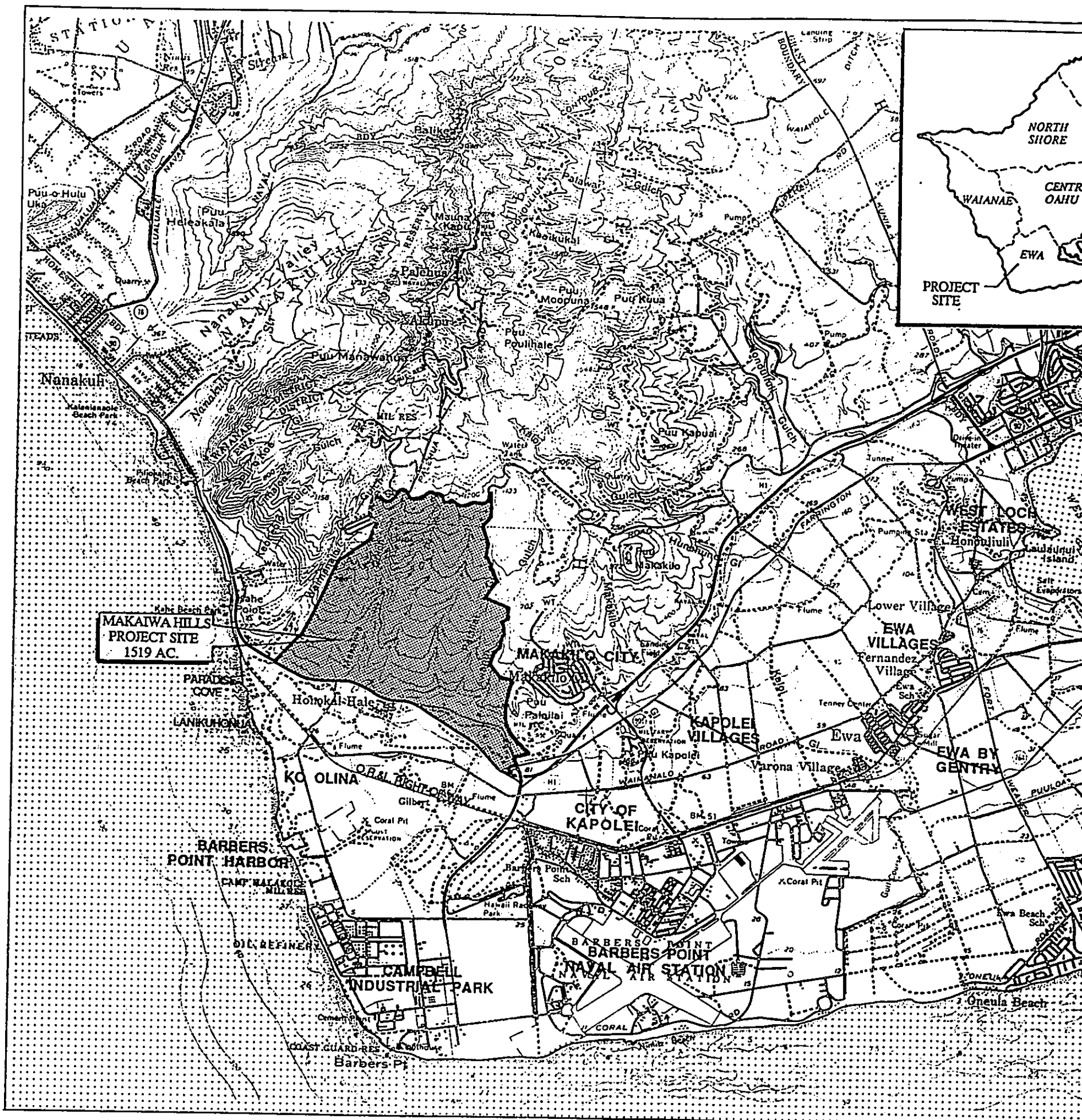
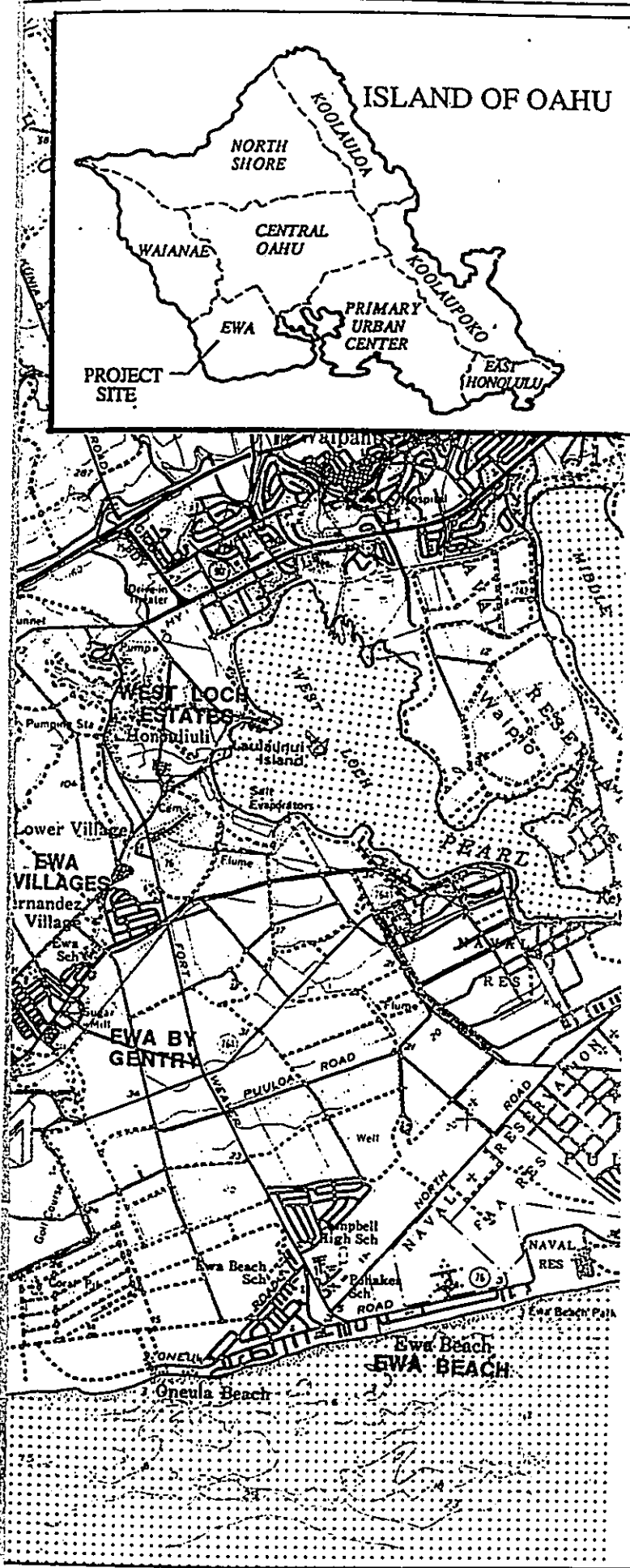


FIGURE NO. 1

Location Map

PREPARED FOR THE ESTATE OF JAMES CAMPBELL

Makaiwa Hills





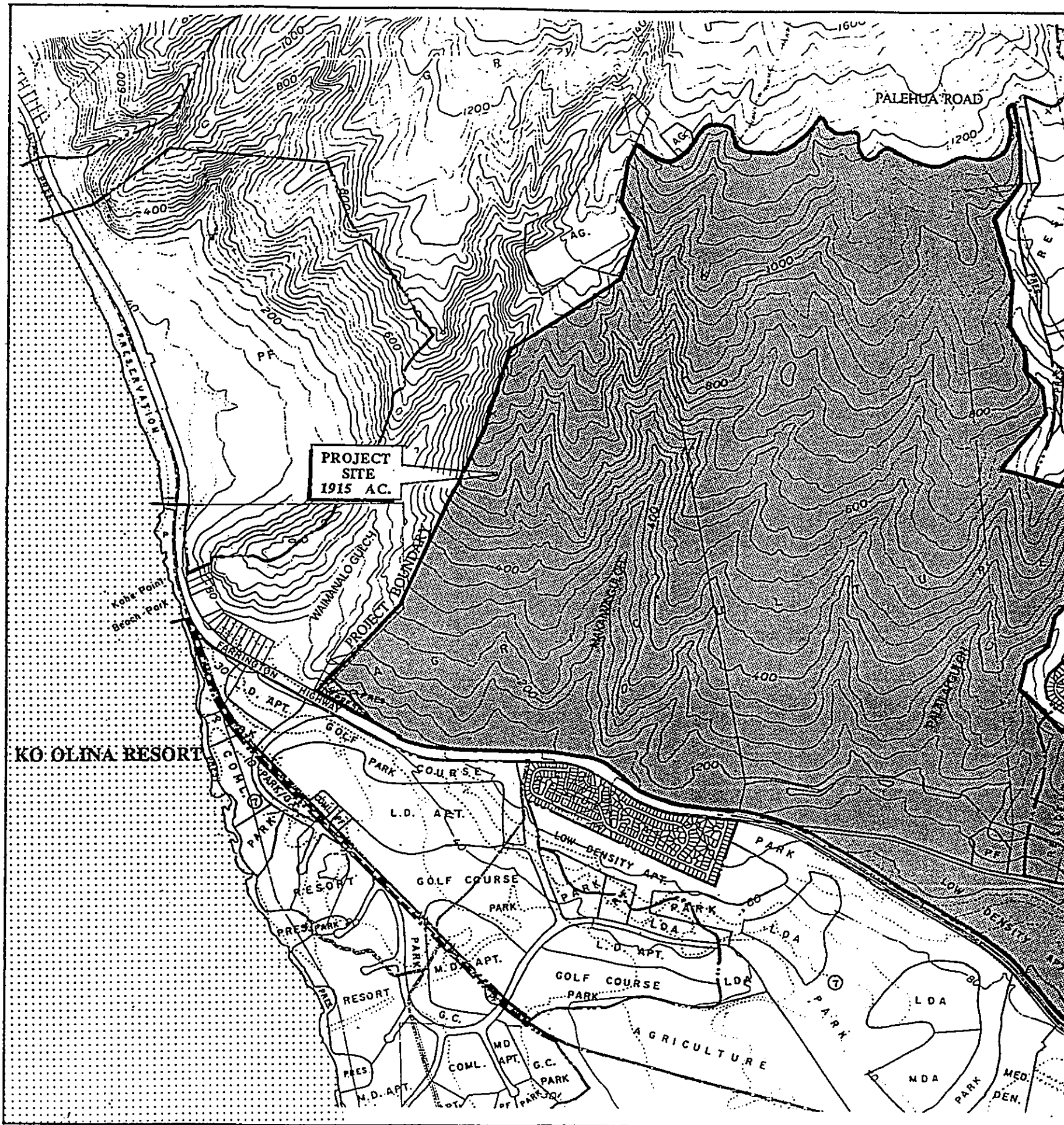




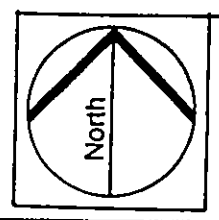
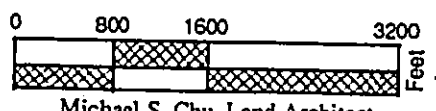
FIGURE NO.3
Existing Ewa Development Plan
Land Use

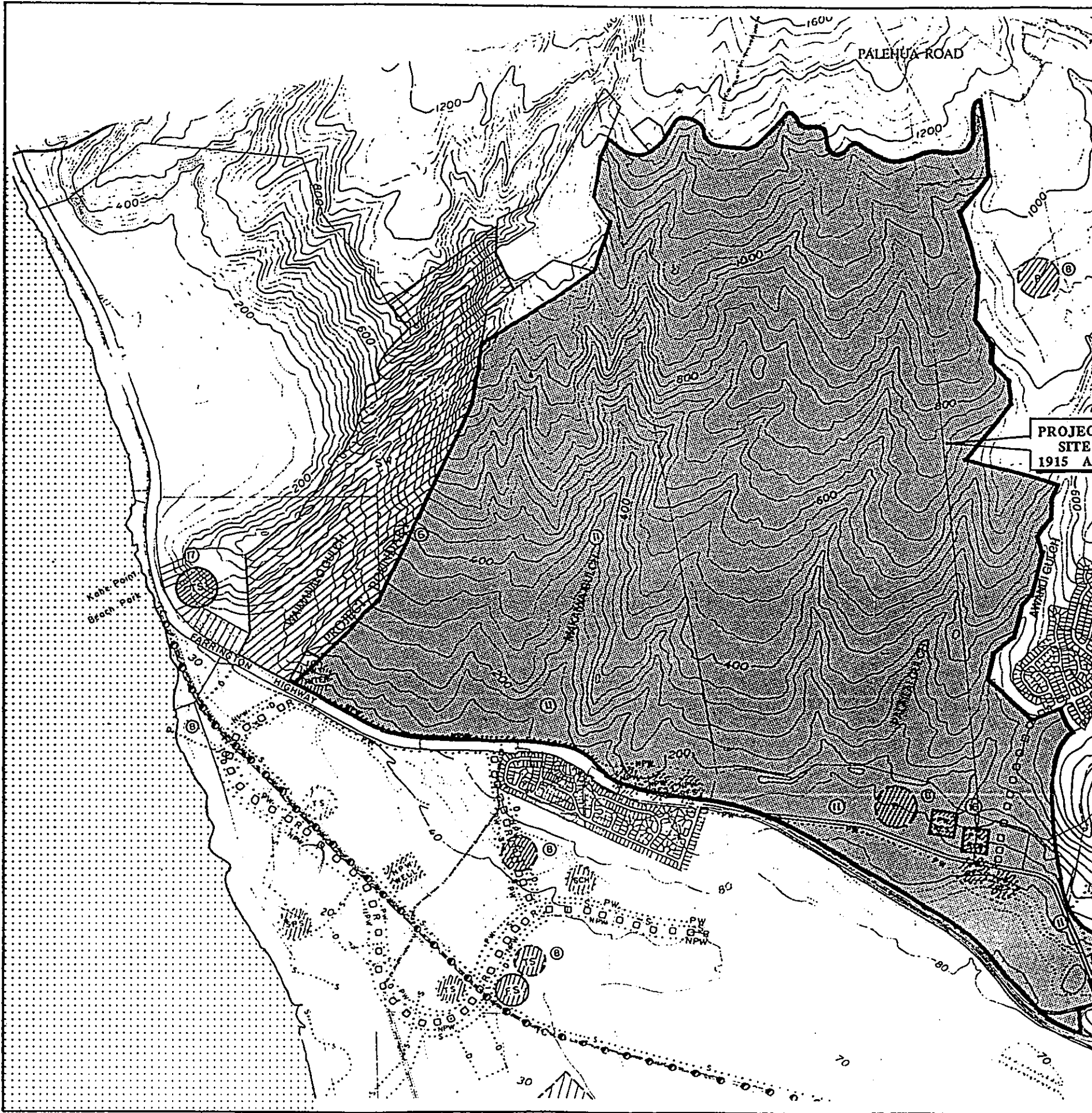
PREPARED FOR THE ESTATE OF JAMES CAMPBELL

Makaiwa Hills

L E G E N D

PR	PRESERVATION
AG	AGRICULTURE
RES	RESIDENTIAL
LDA	APARTMENT LOW DENSITY
MDA	APARTMENT MEDIUM DENSITY
HDA	APARTMENT HIGH DENSITY
RESORT	RESORT
COML	COMMERCIAL
PARK	PARK & RECREATION
GC	GOLF COURSE
PF	PUBLIC FACILITY





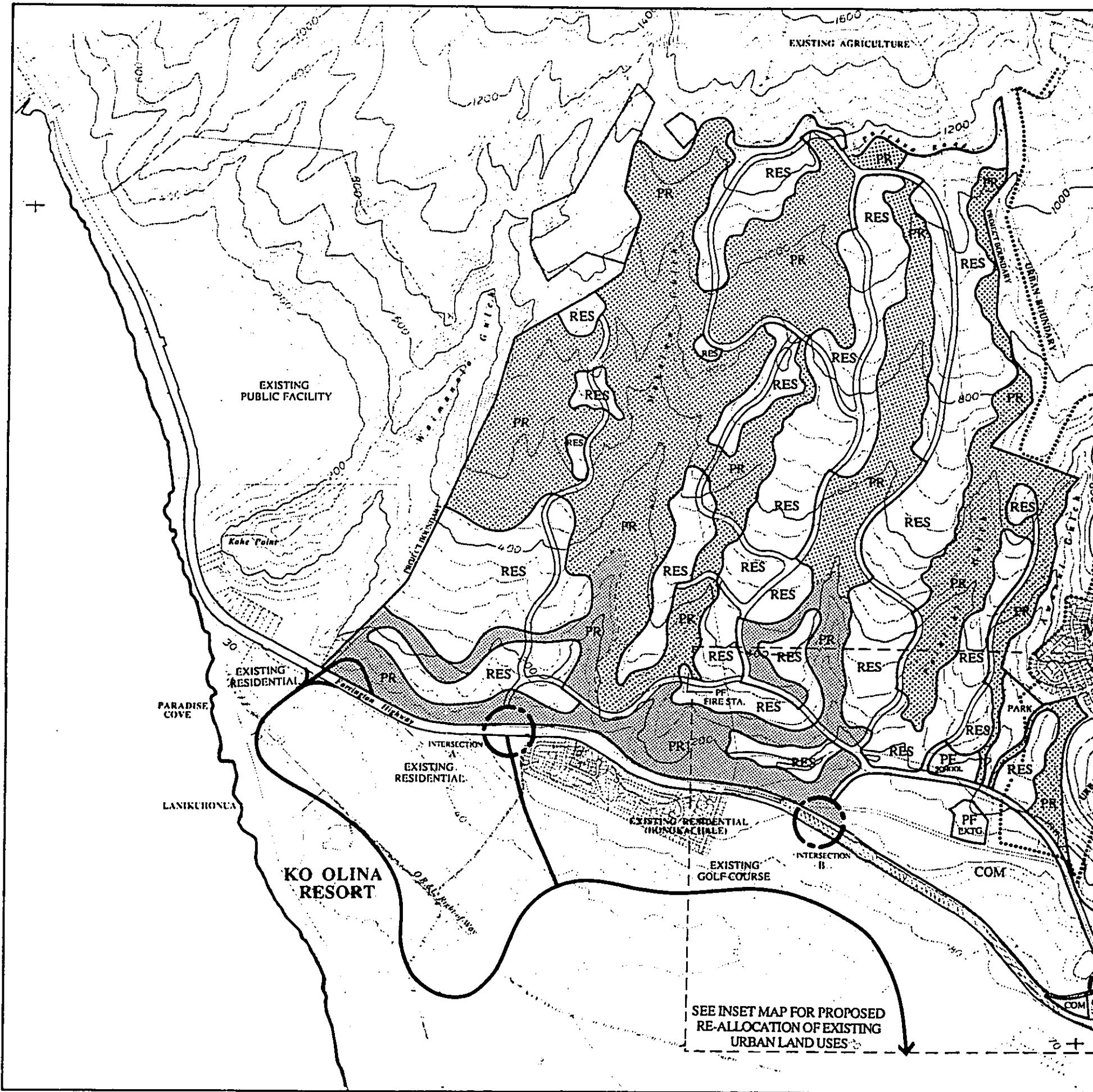


FIGURE NO. 5 + Proposed Ewa Development Plan Land Use Amendment

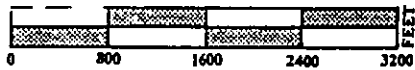
PREPARED FOR: THE ESTATE OF JAMES CAMPBELL

Makaiwa Hills

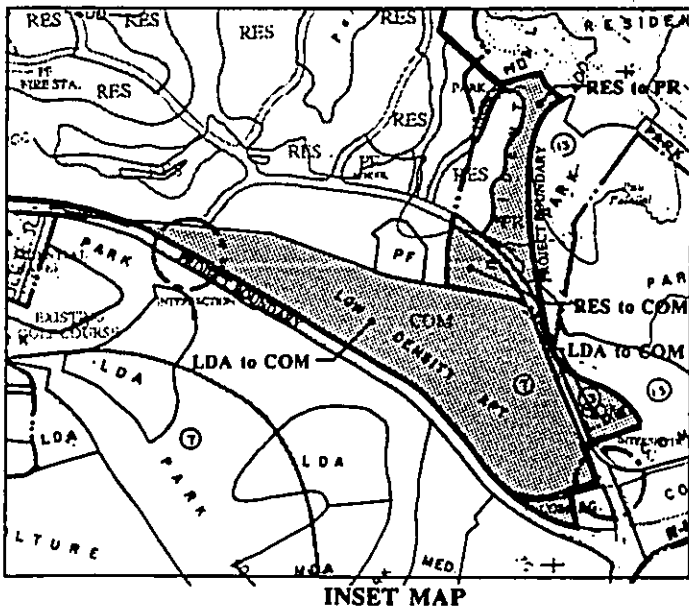
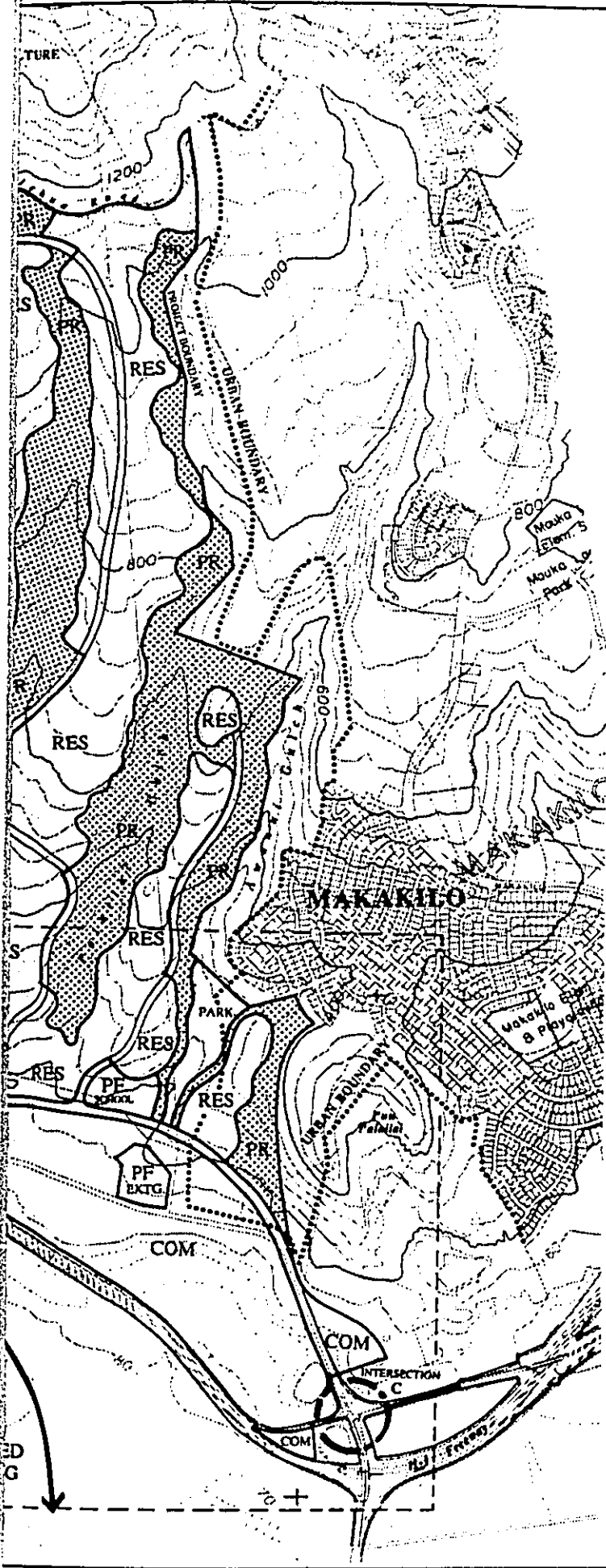
LEGEND

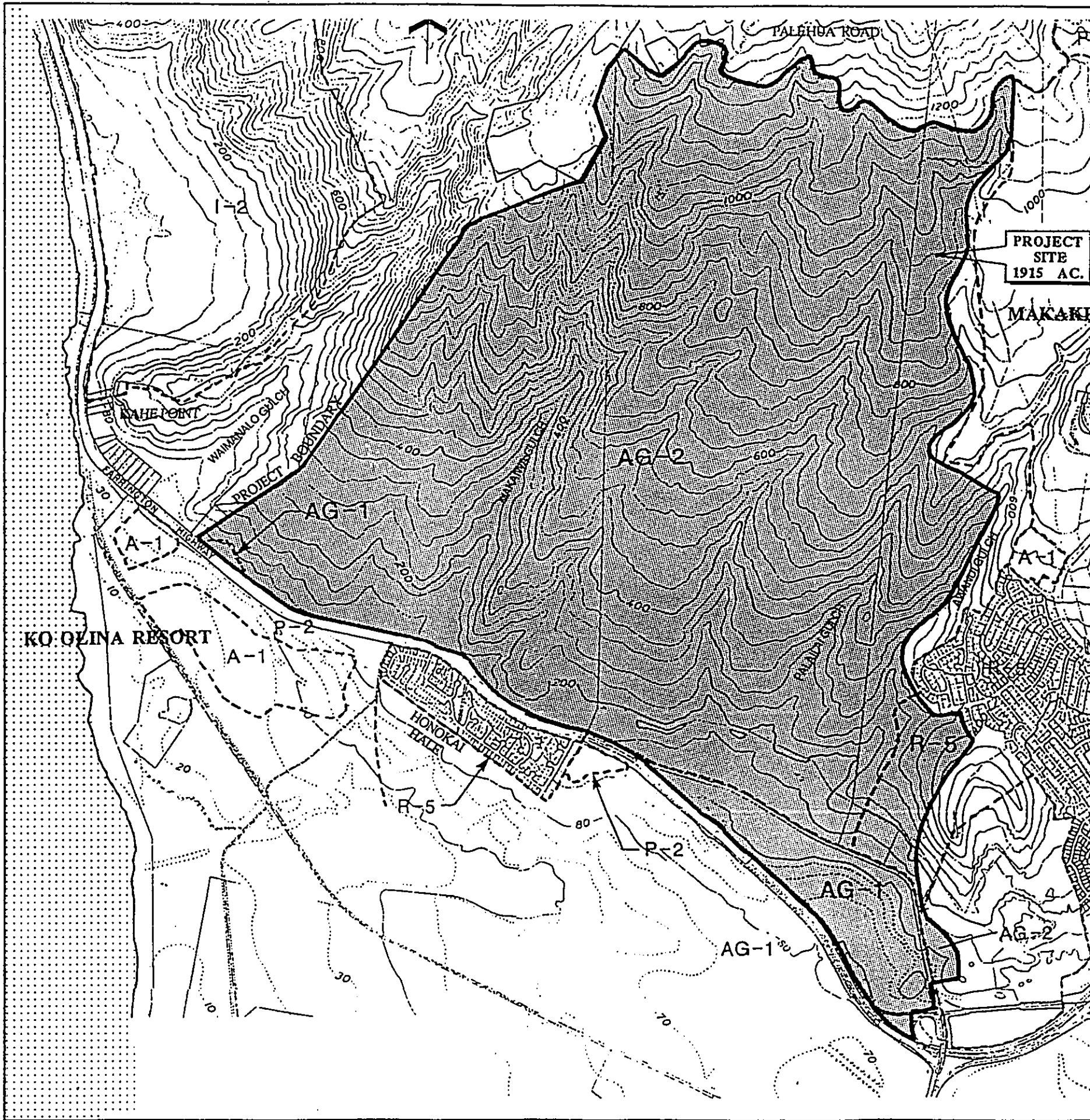
ACERAGE	SYMBOL	LAND USE CLASSIFICATION
721		Preservation (upper)
180		Preservation (lower)
16		Park
726		Residential
156		Commercial
1		Public Facility/ Fire Station
8		Public Facility/ School
107		Proposed Roadway

1915 ac. total
2130 dwelling units



prepared by: MICHAEL S. CHU, LAND ARCHITECT





PROJECT SITE
1915 AC.

MAKANI

KO OLINA RESORT

PALEHUA ROAD

KAHE POINT

PROJECT BOUNDARY

HONOKAI HALE

AG-2

AG-1

AG-1

AG-1

AG-2

A-1

R-5

P-2

20

80

30

70

70

4

5

6

7

8

9

10

11

12

13

FIGURE NO. 6
Existing Zoning

PREPARED FOR THE ESTATE OF JAMES CAMPBELL

Makaiwa Hills

L E G E N D

-
- A-1 APARTMENT
 - AG-1 RESTRICTED AGRICULTURE
 - AG-2 GENERAL AGRICULTURE
 - I-2 GENERAL INDUSTRIAL
 - P-2 GENERAL PRESERVATION
 - R-5 RESIDENTIAL



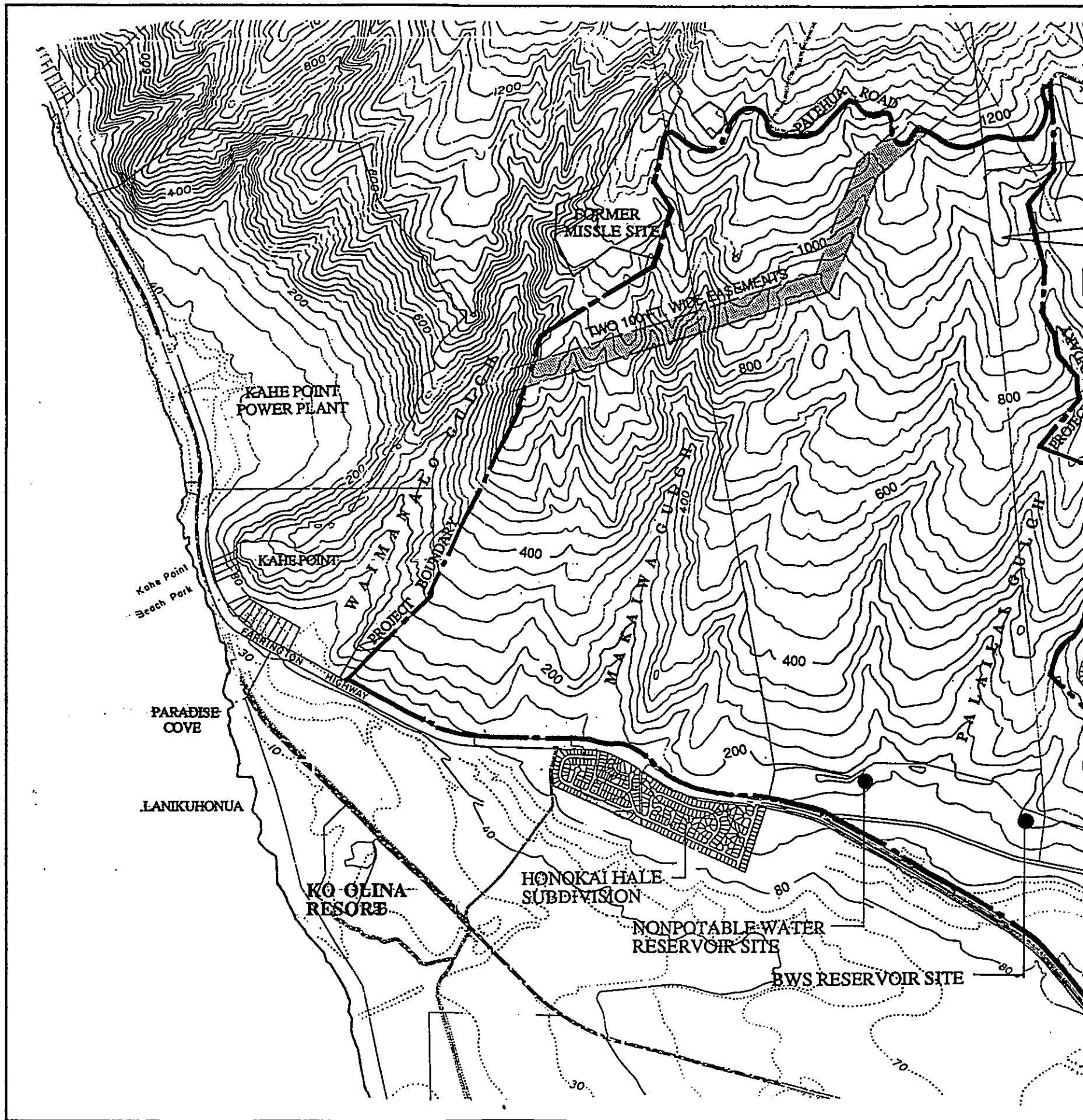


FIGURE NO. 7
 Topography and Existing Uses
 PREPARED FOR THE ESTATE OF JAMES CAMPBELL

Makaiwa Hills

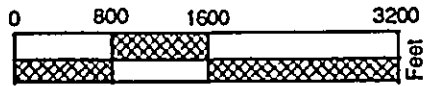
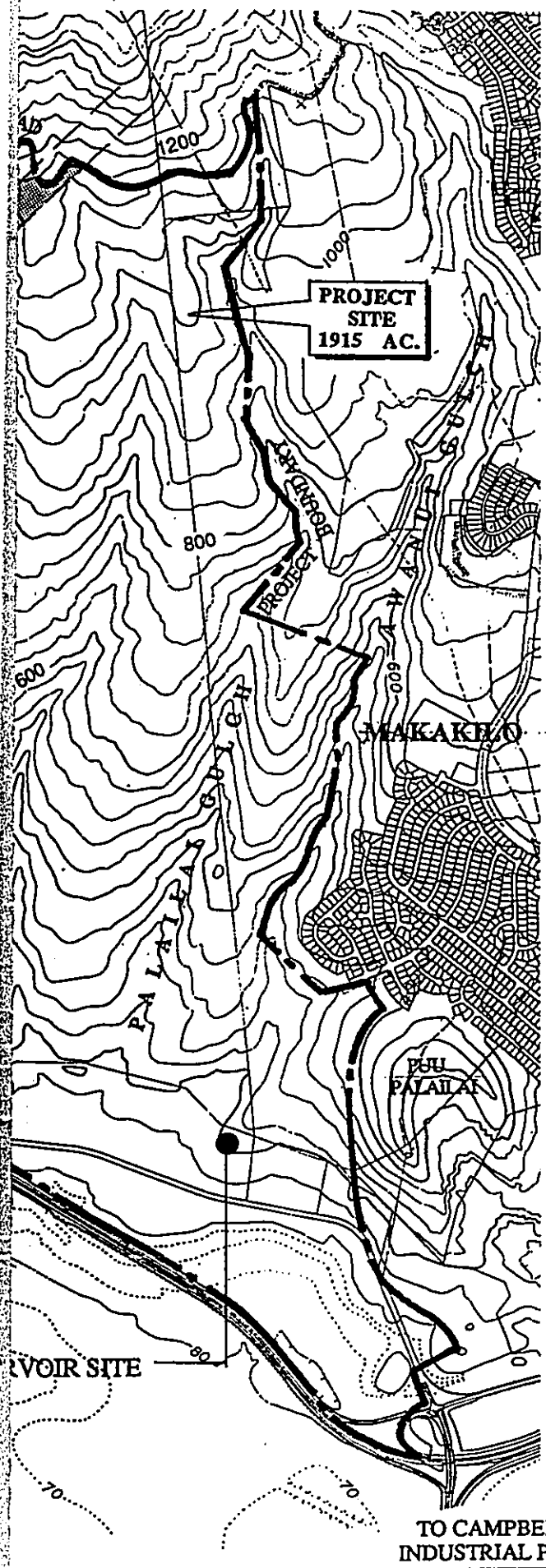
LEGEND

 HECO EASEMENT FOR OVERHEAD TRANSMISSION

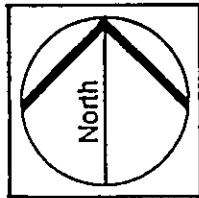
 WATER TANK

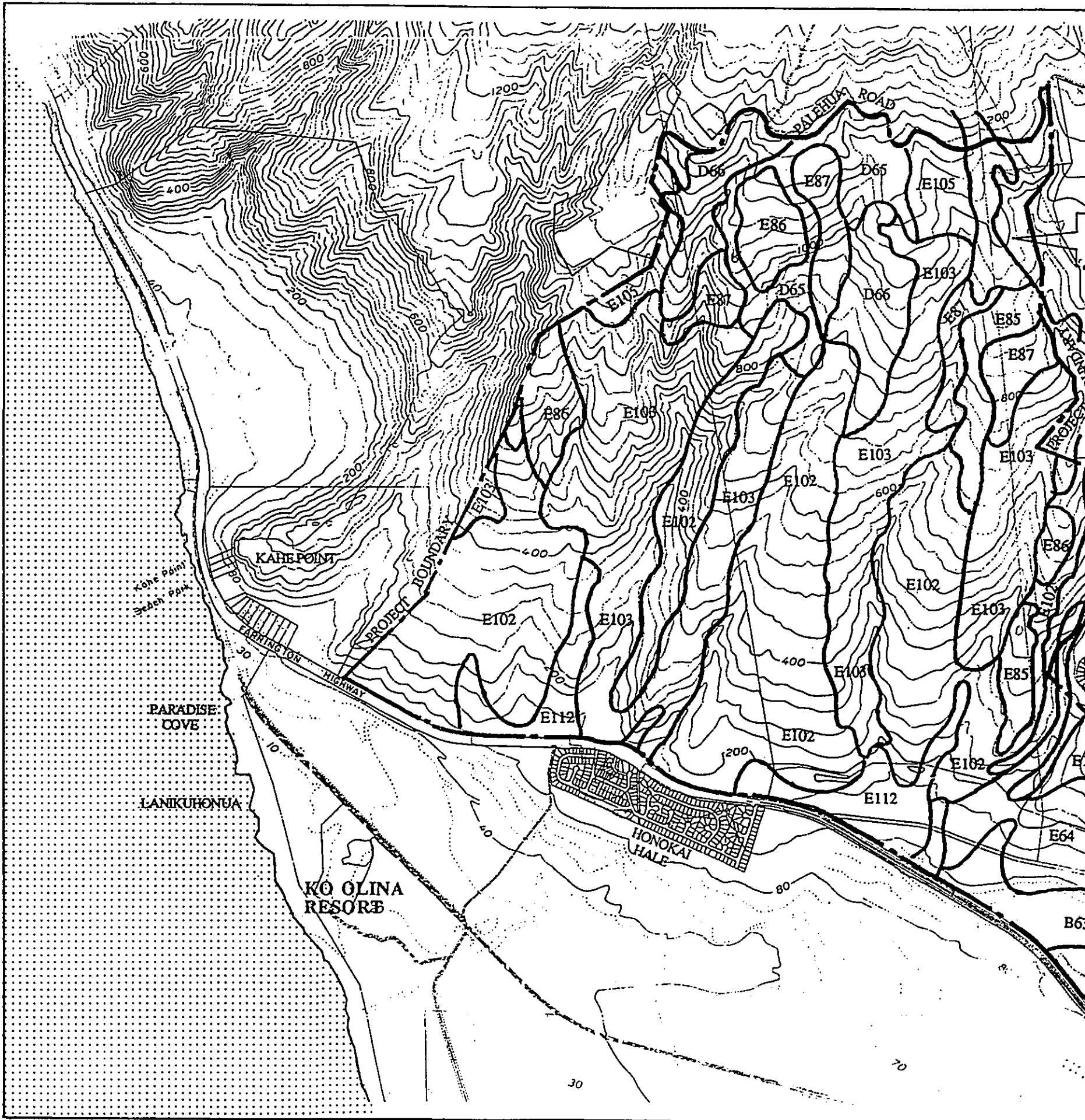
 EXISTING SUBDIVISION

 ELEVATION IN FEET



Michael S. Chu, Land Architect





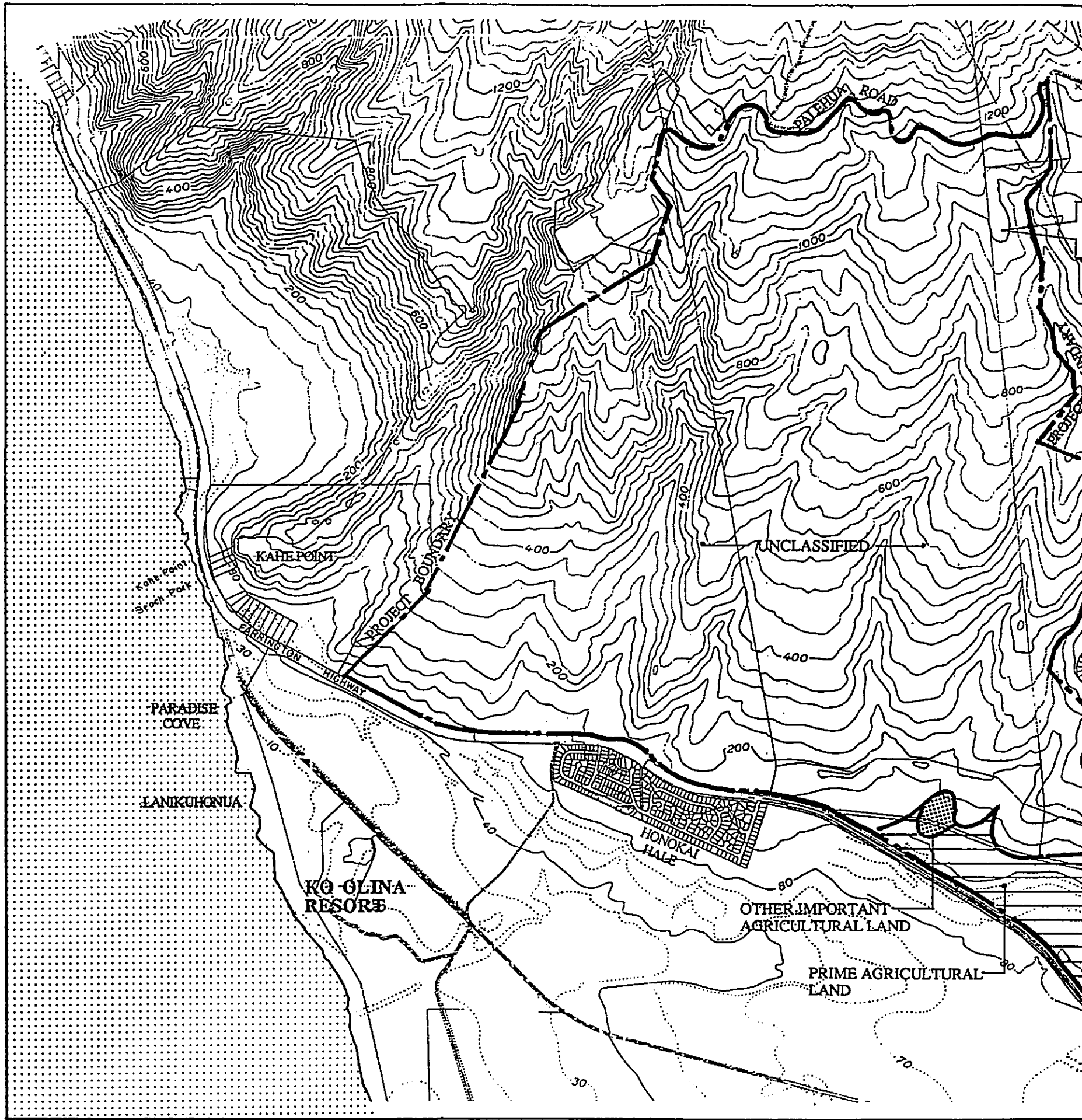
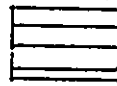


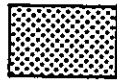
FIGURE NO. 9
Soils- ALISH
PREPARED FOR THE ESTATE OF JAMES CAMPBELL

Makaiwa Hills

L E G E N D



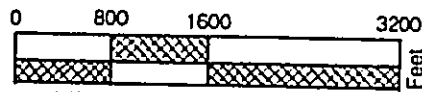
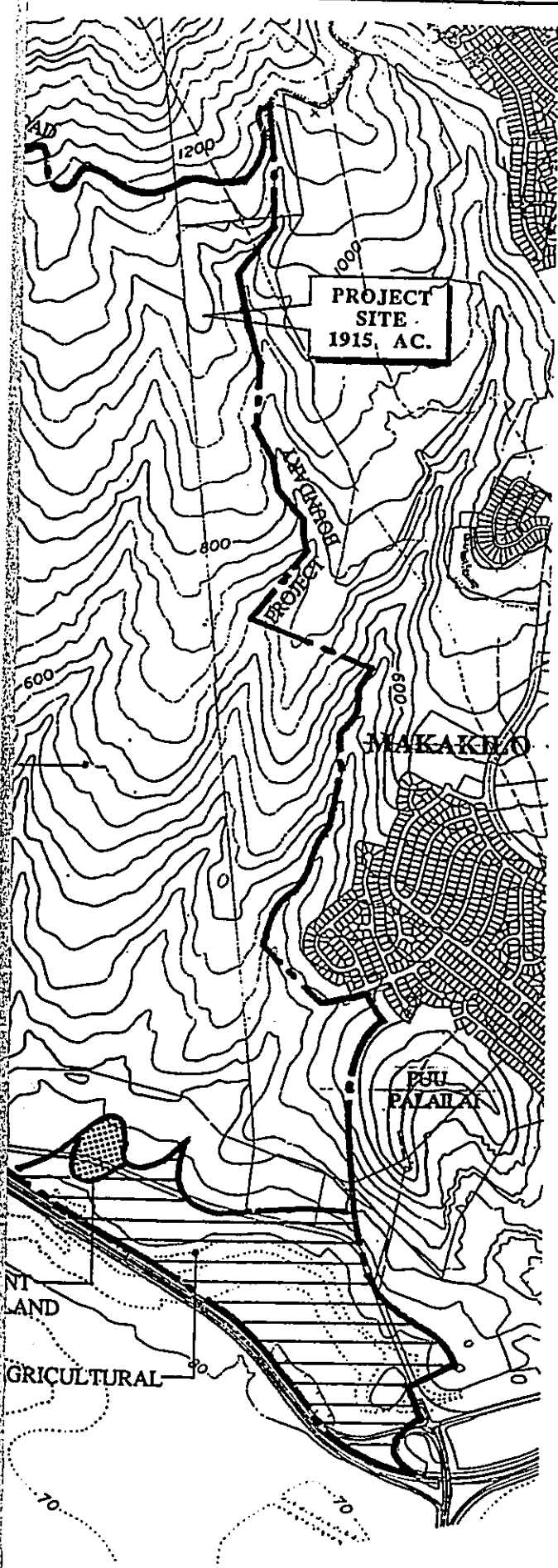
PRIME AGRICULTURAL LAND
Land which have the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops economically when treated and managed according to modern farming methods.



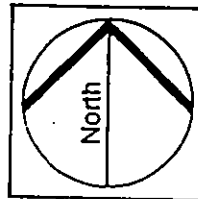
OTHER IMPORTANT AGRICULTURAL LAND
Land other than Prime or Unique Agricultural Land that is also of state-wide or local importance for agricultural use.



UNCLASSIFIED



Michael S. Chu, Land Architect



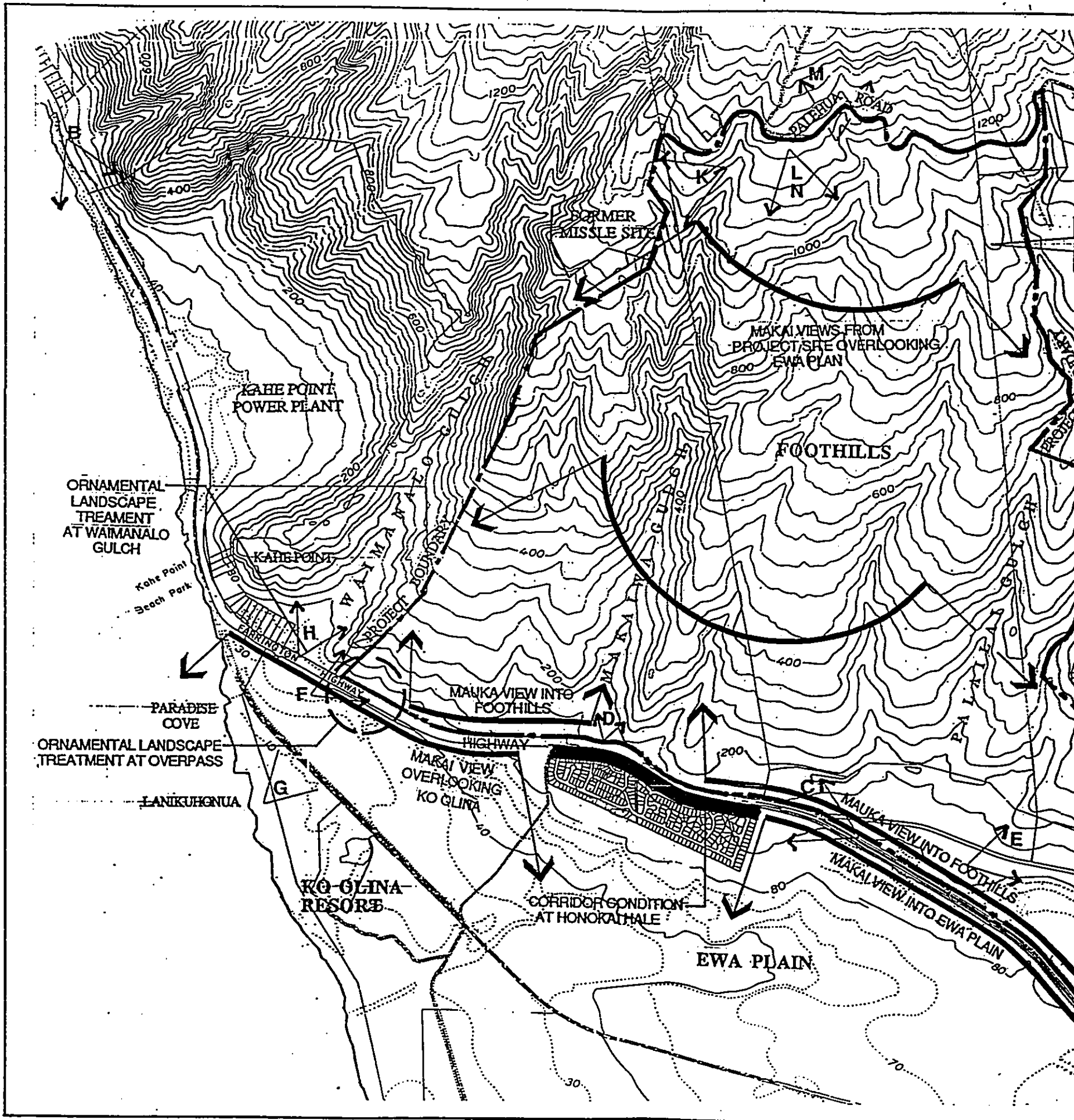


FIGURE NO.10
Existing Views &
Site Photo Location
 PREPARED FOR THE ESTATE OF JAMES CAMPBELL

Makaiwa Hills

LEGEND

MAJOR SITE & ROADWAY VIEWS

CORRIDOR CONDITION

LANDSCAPE TREATMENT AT
OVERPASS

SITE PHOTO LOCATION

NOTE: Site Photos A, I and K are
located beyond limits of map

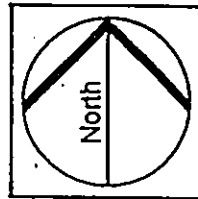
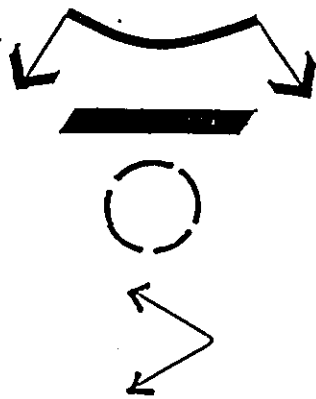
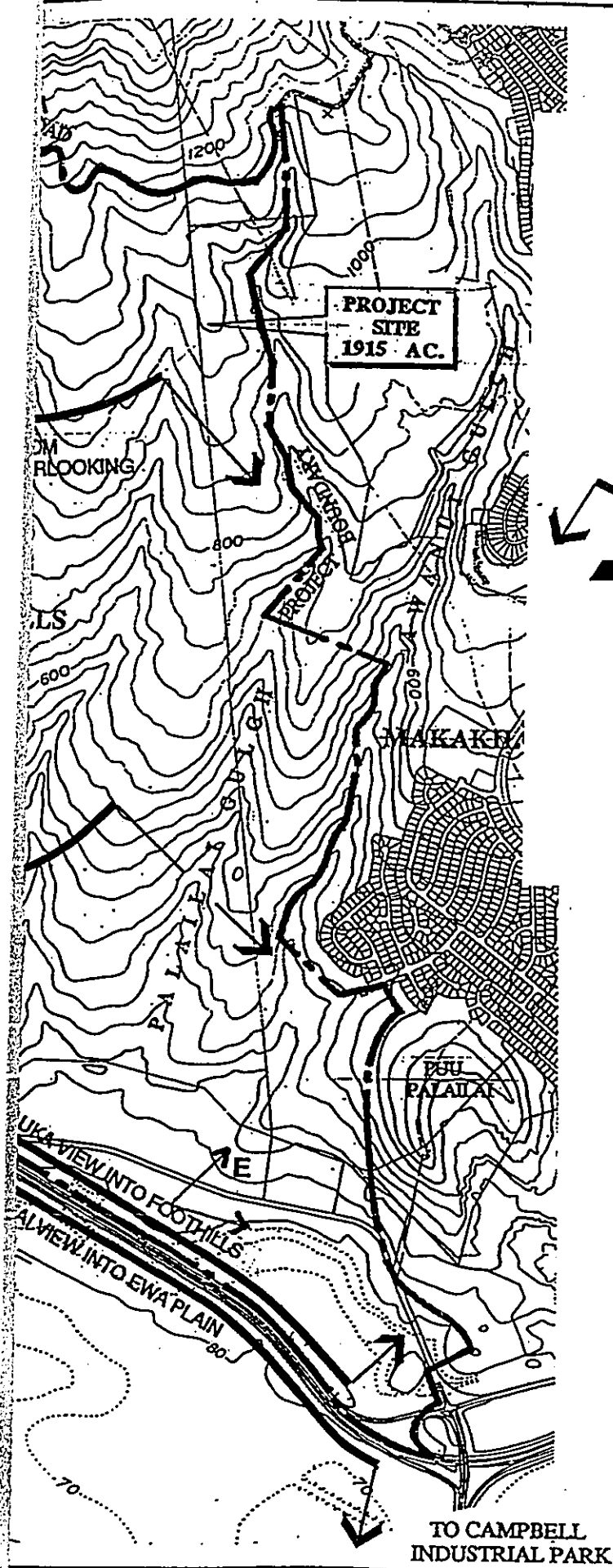




PHOTO A

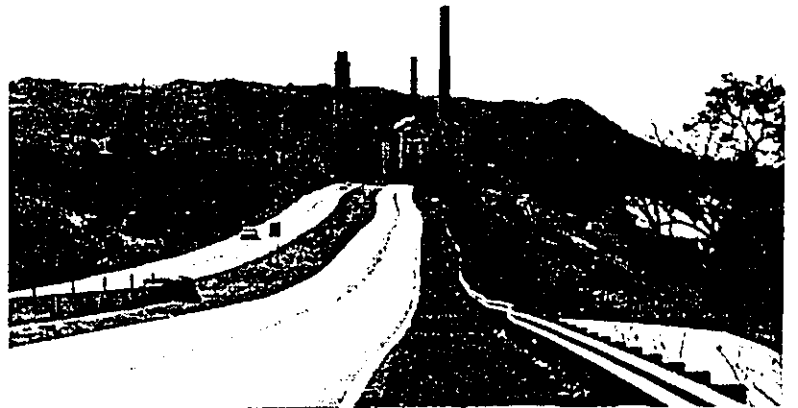


PHOTO B



PHOTO DESCR
PHOTO A
Distant view from
looking towards th
of the Waianae M
project site lies be
exhaust vent of the
silhouetted against

PHOTO B
Roadway view in
Beach Park. The
(Makakilo Slightly
Waianae Mounta
existing power pla
project site lies be
not visible from
island.

PHOTO D

PHOTO E





PHOTO B



PHOTO C

PHOTO DESCRIPTION

PHOTO A

Distant view from near Maile Point (Waianae) looking towards the Ewa Plain and foothills of the Waianae Mountains. The Makaiwa project site lies beyond the ridgeline. The exhaust vent of the Kahe Point power plant is silhouetted against the skyline.

PHOTO B

Roadway view in the vicinity of Nanakuli Beach Park. The profile of the foothills (Makakilo Slightly Dissected Uplands) of the Waianae Mountains is obscured by the existing power plant. The Makaiwa Hills project site lies beyond the ridgeline and is not visible from the Waianae side of the island.

PHOTO C

View of highway between Honokai Hale and Kamokila Park indicating a slight cliff condition along the mauka side of the highway. The highway frontage at this location is designated as Lower Preservation and extend mauka 200 to +1000 ft. from the edge of the highway.

PHOTO D

Mauka view at roadway intersection fronting Honokai Hale. The low lying, dry coast scrub vegetation is typical for the entire project site fronting the highway. The highway frontage at this location is designated as Lower Preservation.

PHOTO E

View of the highway frontage and southeastern portion of project site (approximately 156 ac./proposed commercial area). Unlike the predominant foothill and gully conditions of the Makaiwa Hills site, this area is low lying and relatively flat. Distant views of Makakilo houses are visible along the ridgeline beyond.

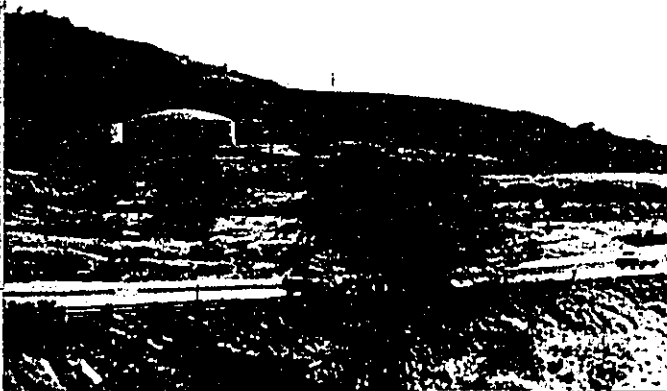


FIGURE NO. 11

Site Photo

PREPARED FOR THE ESTATE OF JAMES CAMPBELL

Makaiwa Hills

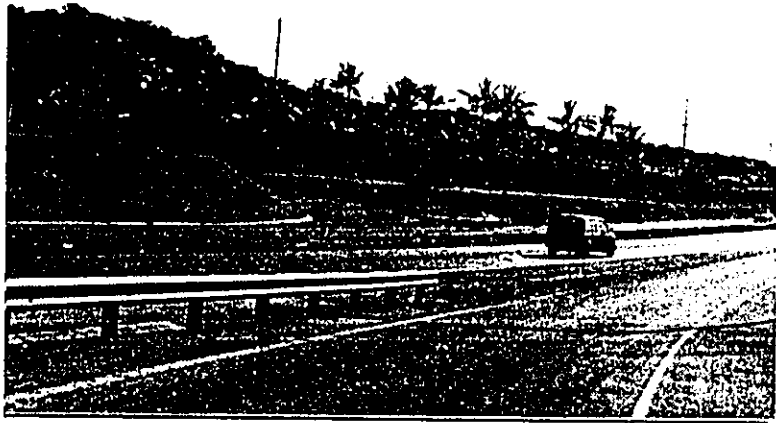


PHOTO F

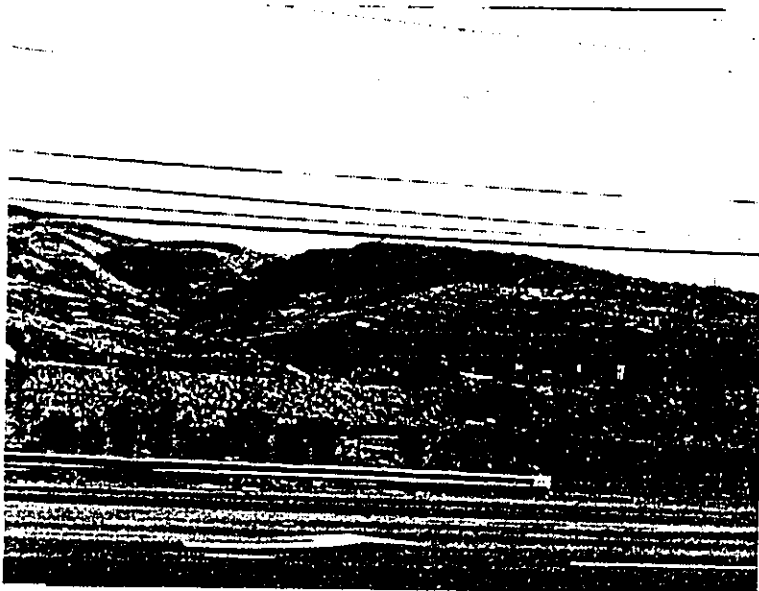
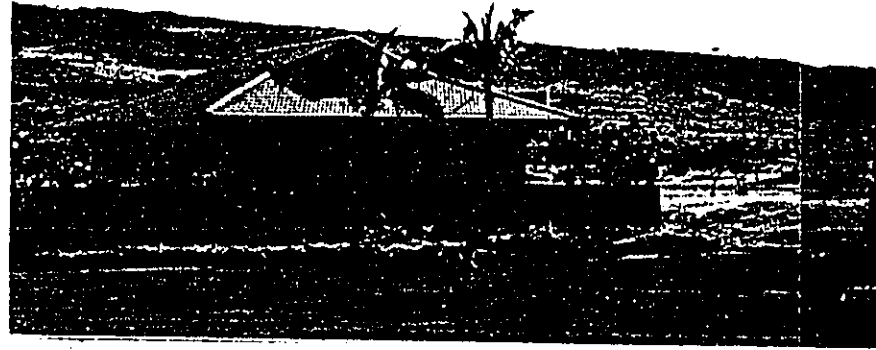


PHOTO I

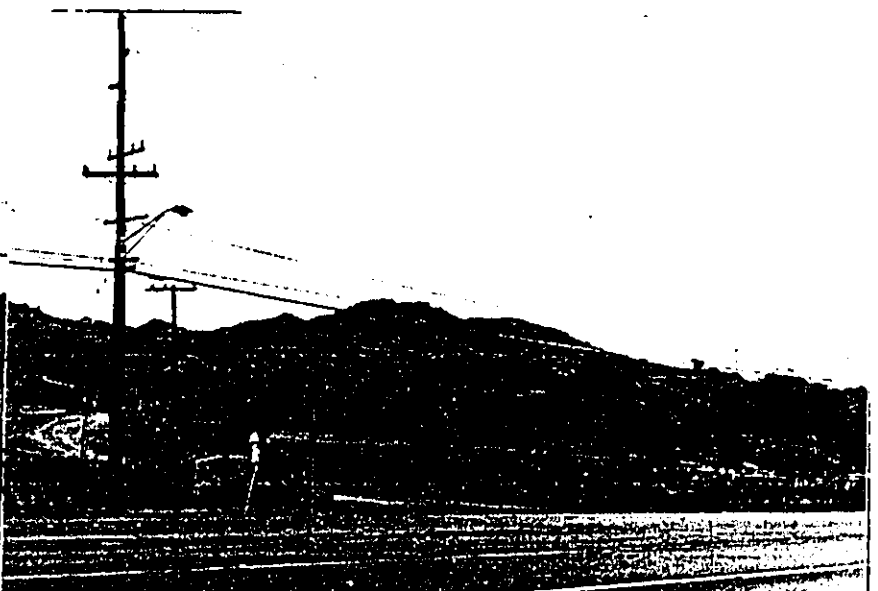


PHOTO J

PHOTO H

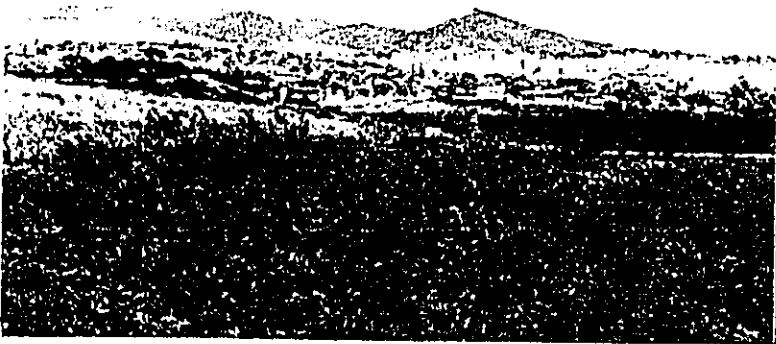


PHOTO
PHOTO
Roadwa
resort.
overpas
contrast

PHOTO
Mauka
sloping
grounds

PHOTO
View of
edge of
along e

PHOTO
View fr
Mounta
are app
develop



PHOTO G

PHOTO DESCRIPTION

PHOTO F

Roadway view of Farrington Highway at the overpass into the Ko Olina resort. Newly developed ornamental landscape treatment/ maintenance at overpass and along makai side of highway fronting Ko Olina distinctly contrast the "natural" character of the area.

PHOTO G

Mauka view from Ko Olina. Ridgeline beyond is typical of the general sloping terrain of the foothills. Note visual contrast between Ko Olina grounds (midground) and foothills (background).

PHOTO H

View of Waimanalo Gulch (landfill). Ridgeline beyond represent western edge of Makaiwa Hills project site. Note ornamental landscape treatment along edge of highway.

PHOTO I & J

View from Farrington Highway of the Waianae foothills and the Waianae Mountains beyond. Residential structures (Makakilo) within the foothills are approximately 1000 ft. from the highway. Proposed residential developments at Makaiwa Hills may likely be similar in degree of visibility.

FIGURE NO. 12

Site Photo

PREPARED FOR THE ESTATE OF JAMES CAMPBELL

Makaiwa Hills

OTO H

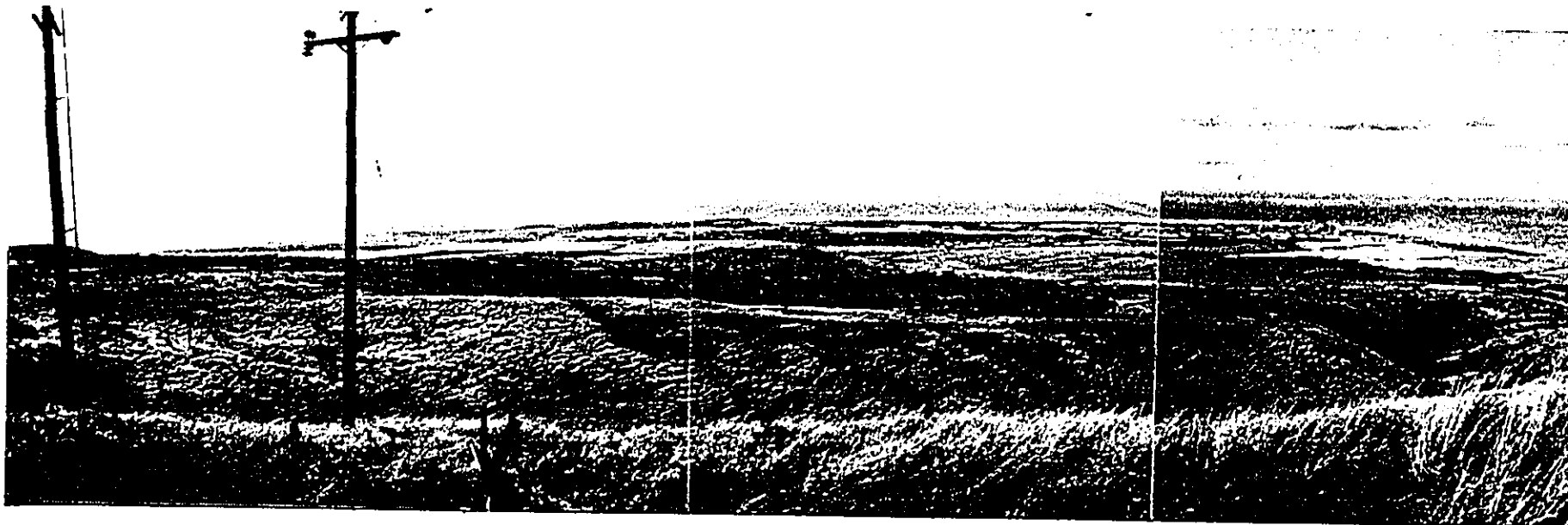
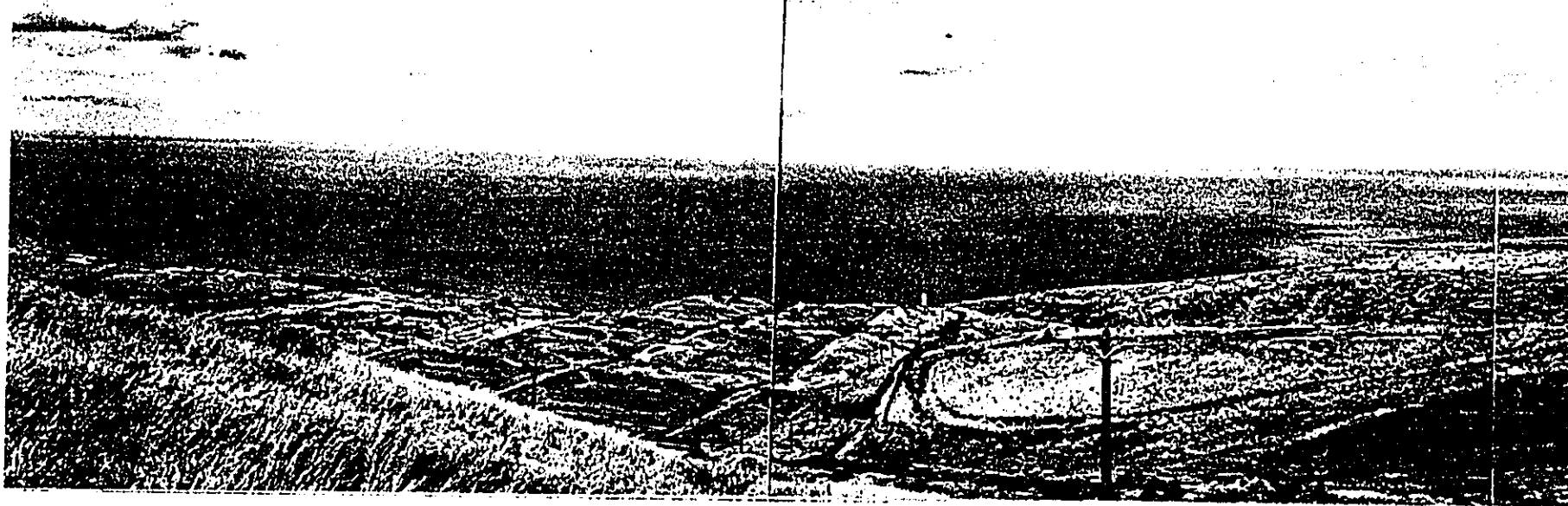
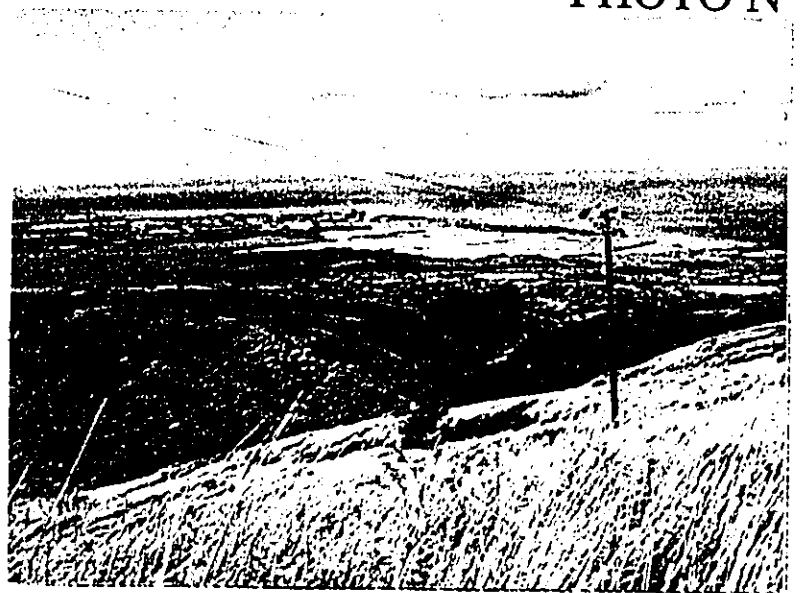


PHOTO M



PHOTO N



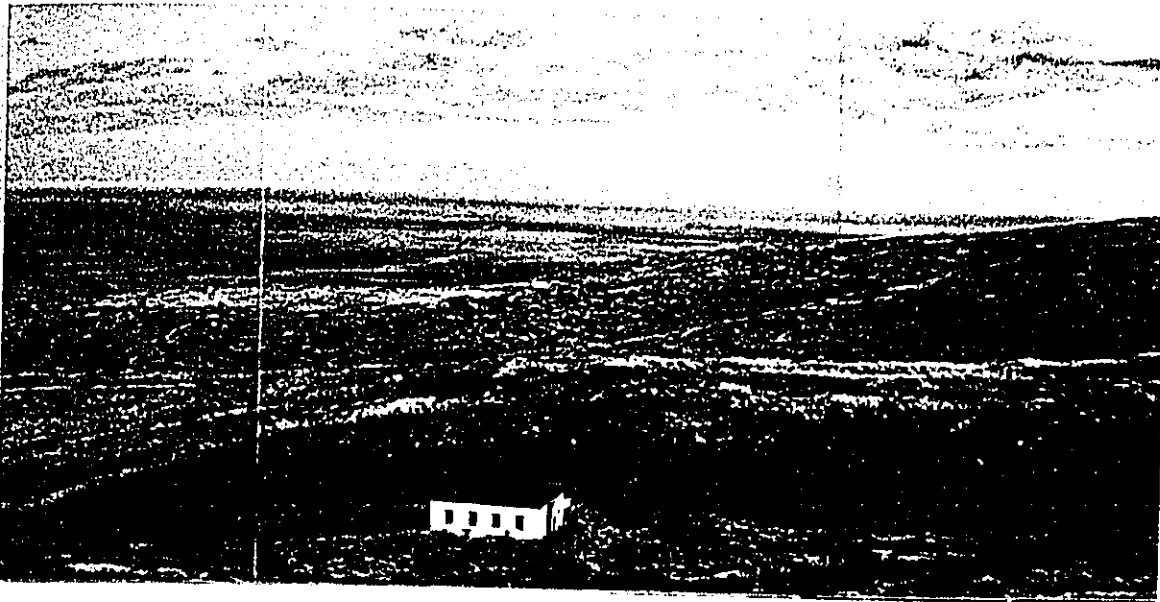


PHOTO K



PHOTO L



PHOTO N

PHOTO DESCRIPTION

PHOTO K

Makai views (southwest) from the upper slopes (approx. 1000 ft. elevation) of the Makaiwa Hills project site. Photo K overlooks the old missile site which lies outside the project area.

PHOTO L

Unobstructed makai views (southeast) from the upper slopes (approx. 1000 ft. elevation) overlooking the Ewa Plain and the South Shore Viewshed. The Makaiwa Gulch lies at midground. View of Diamond Head can be seen in the very far distance.

PHOTO M

View of the Forest Reserve (dense vegetated area) beyond the project site.

PHOTO N

View of Makaiwa Gulch from the upper slopes of the project site. Makaiwa Gulch, Palailai Gulch and tributary gullies to remain in a "natural" condition (Upper Preservation). Areas designated as Lower Preservation to remain "natural" with an option for golf course development.

FIGURE NO. 13

Site Photo

PREPARED FOR THE ESTATE OF JAMES CAMPBELL

Makaiwa Hills

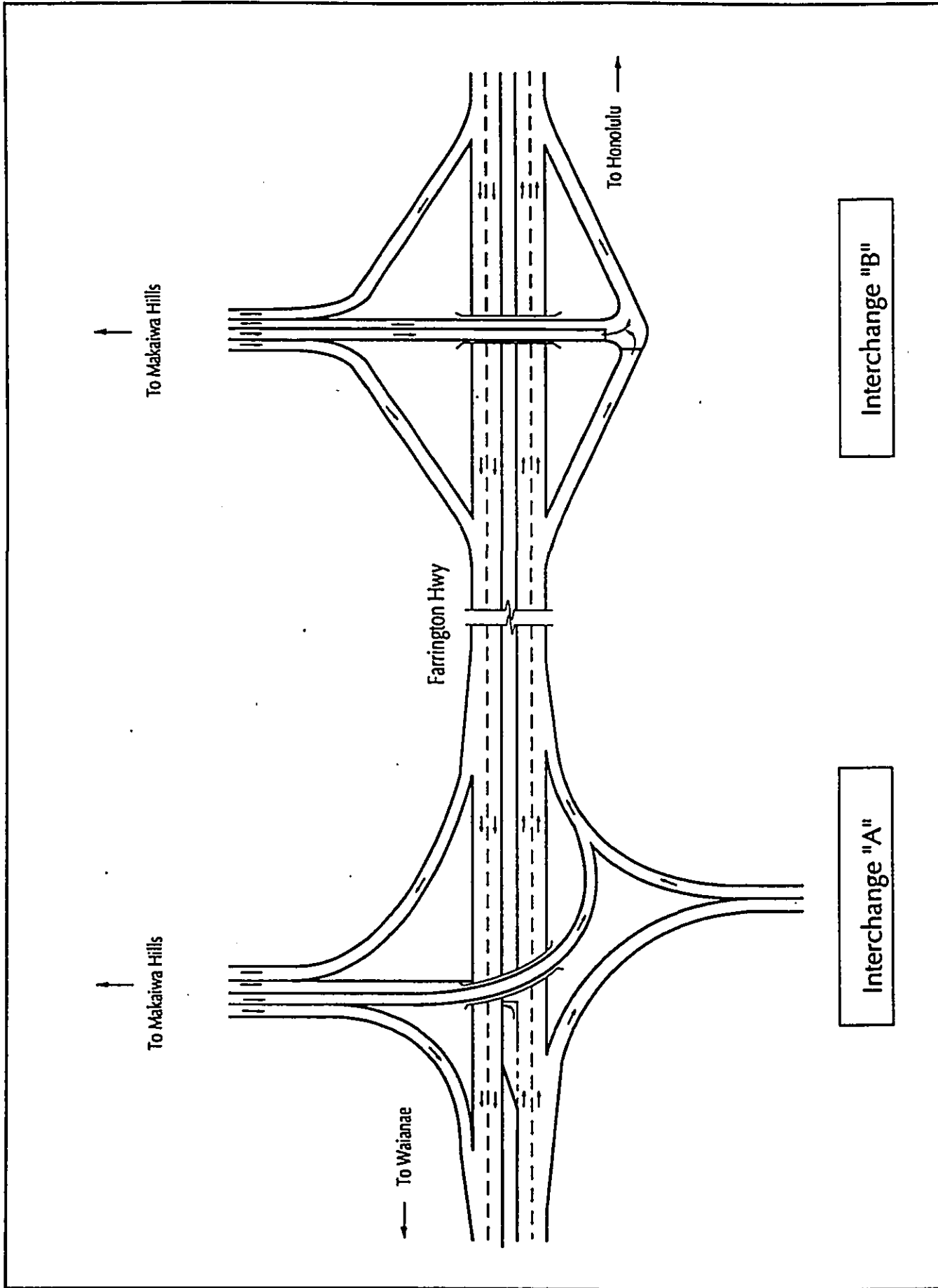


FIGURE 14

Preliminary Layout for Interchanges "A" and "B"