

1998-04-23-MA-PEA-Waiehu Kou Phase 2
Native Hawaiian Housing

APR 23 1998

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FINAL ENVIRONMENTAL ASSESSMENT

WAIEHU KOU PHASE 2

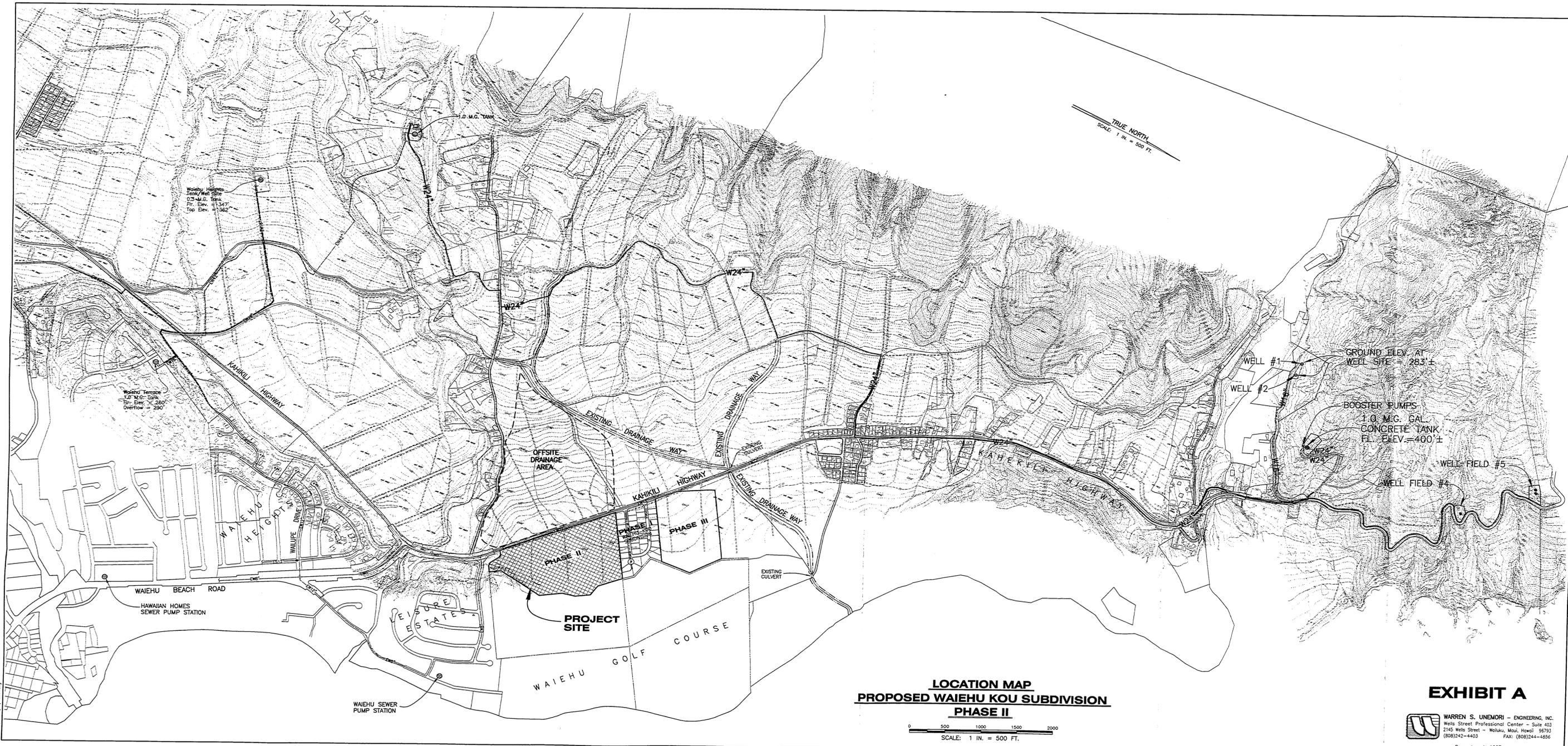
~ Native Hawaiian Housing ~



Proposing Agency:

Department of Hawaiian Home Lands
State of Hawaii

April 1998



**LOCATION MAP
PROPOSED WAIIEHU KOU SUBDIVISION
PHASE II**

0 500 1000 1500 2000
SCALE: 1 IN. = 500 FT.

EXHIBIT A

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December 4, 1997

FINAL ENVIRONMENTAL ASSESSMENT

Waiehu Kou Phase 2

Native Hawaiian Housing

Waiehu, Maui, Hawaii

Tax Map Key: (2) 3-2-13:01

Proposing Agency:

**Department of Hawaiian Home Lands
State of Hawaii
1099 Alakea Street, 20th Floor
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April 1998

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SECTION 1 INTRODUCTION AND SUMMARY

1.1 INTRODUCTION AND PURPOSE

The Department of Hawaiian Home Lands (DHHL) is planning to develop approximately 100 single family units for the purpose of providing homes for native Hawaiian beneficiaries. A two-acre park and a two-acre site for a future commercial development will also be part of this project. The project is identified as Waiehu Kou Phase 2, TMK: (2) 3-2-13:01, and contains 35.33 acres, of which 31 acres are developable. The undevelopable 4-acre area contains steep sand dune slopes along the eastern and southern sides of the site.

The existing Waiehu Kou Phase 1 subdivision, which contains 39 Hawaiian homestead lots, was developed by DHHL in 1993. Two parcels, one north and one south of the subdivision, were purchased by DHHL from Wailuku Agribusiness, Inc. in 1997. The southern parcel is identified as Phase 2 of this project and the northern parcel is identified as Phase 3. The Phase 3 parcel is 22.427 acres, TMK: (2) 3-1-13:09, and is currently planted in macadamia nut trees. It is anticipated that this site will continue to be cultivated in macadamia nut trees for the foreseeable future until the demand for additional residential lots warrants development. The subject of this Environmental Assessment (EA) is the Phase 2 parcel.

1.2 PROJECT LOCATION

The site is located on the northern side of the Island of Maui, approximately 2.5 miles northeast of Wailuku and 3 miles northwest of Kahului (see Figure 1). Waiehu Municipal Golf Course is located adjacent to and makai of the parcel and the Leisure Estates Subdivision (also known as Ocean View Estates) is located adjacent to and south of the property. Access to the site is off of Kahekili Highway (see Figure 2).

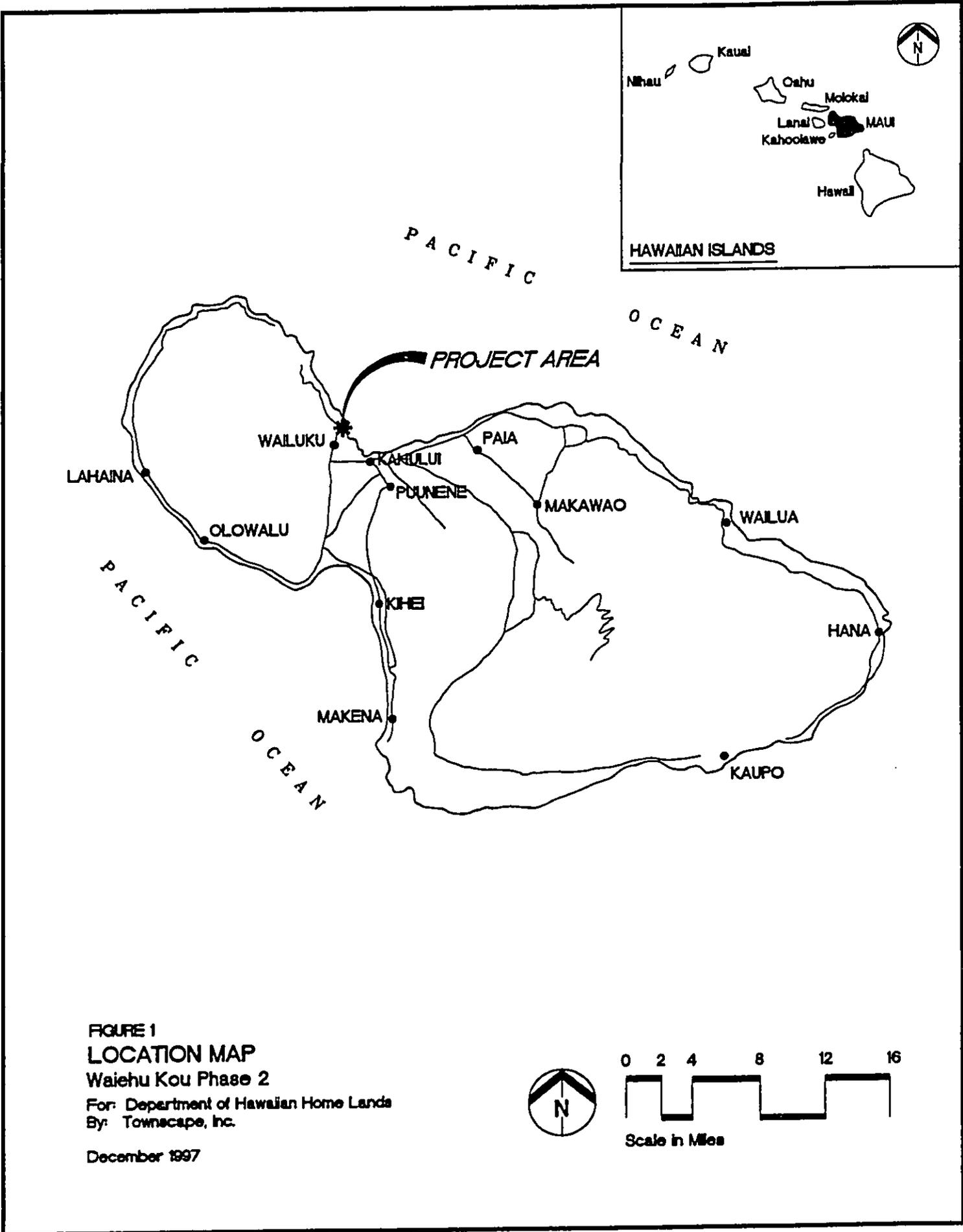


FIGURE 1
LOCATION MAP
 Waiehu Kou Phase 2
 For: Department of Hawaiian Home Lands
 By: Townscape, Inc.
 December 1997

1.3 PROJECT DESCRIPTION

This project is planned to contain approximately 100 single-family units, a park and a neighborhood commercial site. Lot sizes will average approximately 7,500 square feet with a minimum lot size of 6,000 square feet. The residential lots will be leased to eligible native Hawaiians for one dollar (\$1.00) a year pursuant to the Hawaiian Homes Commission Act, 1920, as amended. Financially qualified beneficiaries will purchase the homes that will be constructed on the lots. The developer of the project may also offer self-help and owner-builder home construction.

A two-acre park is planned within the project boundary that will be landscaped, and may include parking and a comfort station. The park is intended to be licensed to the County of Maui for operation and maintenance and will be constructed to Maui County standards, or maintained by the Homeowner's Association.

A two-acre parcel for a future neighborhood commercial site will be set aside within the project boundary. This site is planned to accommodate up to 20,000 square feet of retail commercial space, and will include parking and landscaping. DHHL plans to develop and lease this commercial site in the future. As part of the housing project, the site will be designated within the subdivision, the lot will be rough graded and utilities will be constructed to the property line for future connection.

1.4 SUMMARY OF IMPACTS AND MITIGATION MEASURES

1.4.1 Environmental Impacts

Except for short-term dust and noise impacts from construction, development of the project will not have an adverse affect on the physical environment. Biological, botanical and archaeological surveys of the site were performed and the surveys did not identify any resources of significance.

1.4.2 Social and Economic Impacts

The project is contiguous with an existing Hawaiian homestead subdivision and will be a natural extension of the existing community. There appears to be strong interest among the DHHL beneficiaries to locate on Maui, as currently there are over 2,700 applicants on the Maui Island-wide Residential Waiting List.

During the construction phase of the project, direct and indirect jobs will be created.

1.4.3 Public Facilities and Services

The existing water, electric, telephone, and cable television systems all have sufficient capacity to accommodate this project. The wastewater treatment plant has sufficient capacity, however, new force mains, sewer lines, pump station, and upgrades to an existing pump station will be needed. On-site drainage facilities will be constructed so as not to increase storm water runoff leaving the site. All infrastructure and utilities will be constructed according to County of Maui standards.

Health services will be provided by Maui Memorial Hospital, St. Francis Medical Center, and Kaiser Permanente Medical Clinic located in Kahului, approximately 2.5 miles from the site.

Police and fire protection will be provided by the Wailuku station located 2.5 miles from the site. Backup fire protection will be provided by the Kahului Station.

School children will attend Waihee Elementary School (grades K to 5), Iao Intermediate School (6-8), and Baldwin High School (grades 9 to 12). According to Department of Education standards, approximately 21 elementary school students, 9 intermediate school students and 10 high school students will come from this 100-unit project.

1.5 RELATIONSHIP TO PLANS, POLICIES AND CONTROLS

1.5.1 Hawaiian Homes Commission Act of 1920

The Hawaiian Homes Commission Act (HHCA) of 1920, as amended, set aside certain lands within the Territory of Hawaii for the benefit of native Hawaiians. This project is being developed to implement the objectives of the HHCA.

1.5.2 Hawaii State Plan and Functional Plans

The project is consistent with the Hawaii State Plan and the Functional Plans by providing the necessary improvements for housing development with no significant adverse impact on the physical, social or economic environments.

1.5.3 State Land Use

The project is within the State "Agricultural" district, according to the State Land Use maps. However, DHHL is exempt from the State Land Use laws and will not require a change in the State Land Use designation to "Urban" for development of this project.

1.5.4 County of Maui General Plan

The project is generally consistent with the objectives and policies of the County General Plan because it will provide needed residential housing and supports DHHLs' development of homestead lands.

1.5.5 County of Maui Development Plan and Zoning

The project parcel is designated "Agriculture" on the Wailuku-Kahului Development Plan and designated "Interim" according to County zoning. DHHL is exempt from County of Maui Development Plan, Special Management Area, and Zoning ordinances, rules and

regulations. However, the development will be constructed according to Maui County standards pertaining to a residential subdivision of comparable lot sizes.

1.6 NECESSARY PERMITS AND APPROVALS

The developer of the project will acquire the necessary permits and approvals for construction, including, but not limited to: Subdivision approval, grading permit, and building permit from the County of Maui, and NPDES permit, and erosion and dust control plan approval from the State Department of Health.

1.7 ALTERNATIVES CONSIDERED

The no action alternative would mean that the 2,700 native Hawaiian applicants would continue to be on the Maui waiting list to receive a residential lot.

Alternatives considered included the types of land uses that would be developed as part of this project. Initially, the project was envisioned as containing primarily single family house lots. However, in response to a request from the existing community, the park and commercial sites were added to provide nearby amenities within walking distance.

Other alternatives that will be considered for this project will deal mainly with the internal configuration of the lots and uses based on proposals received from interested developers of this project. The primary DHHL objective is to provide affordable housing for native Hawaiian beneficiaries.

SECTION 2 PROJECT DESCRIPTION

2.1 OVERVIEW

The Department of Hawaiian Home Lands (DHHL) plans to develop approximately 100 single-family houses on a 35.33-acre site in Waiehu, Maui, Hawaii. A sand dune area of approximately 4 acres on the eastern and southern sides of the site contains relatively steep undevelopable slopes. These sand dunes will remain in their natural state. Thus, the developable area of the property is approximately 31 acres.

The finished lots will be leased to eligible native Hawaiians for one dollar (\$1.00) a year. A developer will be contracted to design and construct on- and off-site infrastructure; and design, build and market the houses, or provide assistance to native Hawaiian beneficiaries wishing to construct their own house. This project will also include a two-acre park and a two-acre neighborhood commercial site. A conceptual diagram showing the acreage of the proposed uses is provided in Figure 3.

2.2 PROJECT DESCRIPTION

The DHHL will contract with a developer to implement the project via the Request for Proposals (RFP) process. The developers' proposals will include descriptions of the site layout and estimated construction costs; house designs, prices, and mix of models (sizes, as well as turnkey versus self-help or owner-builder); marketing and financing plans; and development experience. The layout of residential lots and roadways and siting of the park and commercial parcel will not be determined until a developer has been selected.

Single family lots will average 7,500 square feet with a minimum lot size of 6,000 square feet. Approximately 100 single-family lots are planned. Housing construction will be done by the contractor, by the individual homeowners, or a combination of the two.

A two-acre park is planned within the project that will be landscaped according to County of Maui standards, and may include parking and a comfort station. The park is intended to be licensed to the County of Maui for operation and maintenance. Alternatively, the park could be maintained by the Homeowner's Association that will be established for the project. The developer of the project will determine the location of the park within the project.

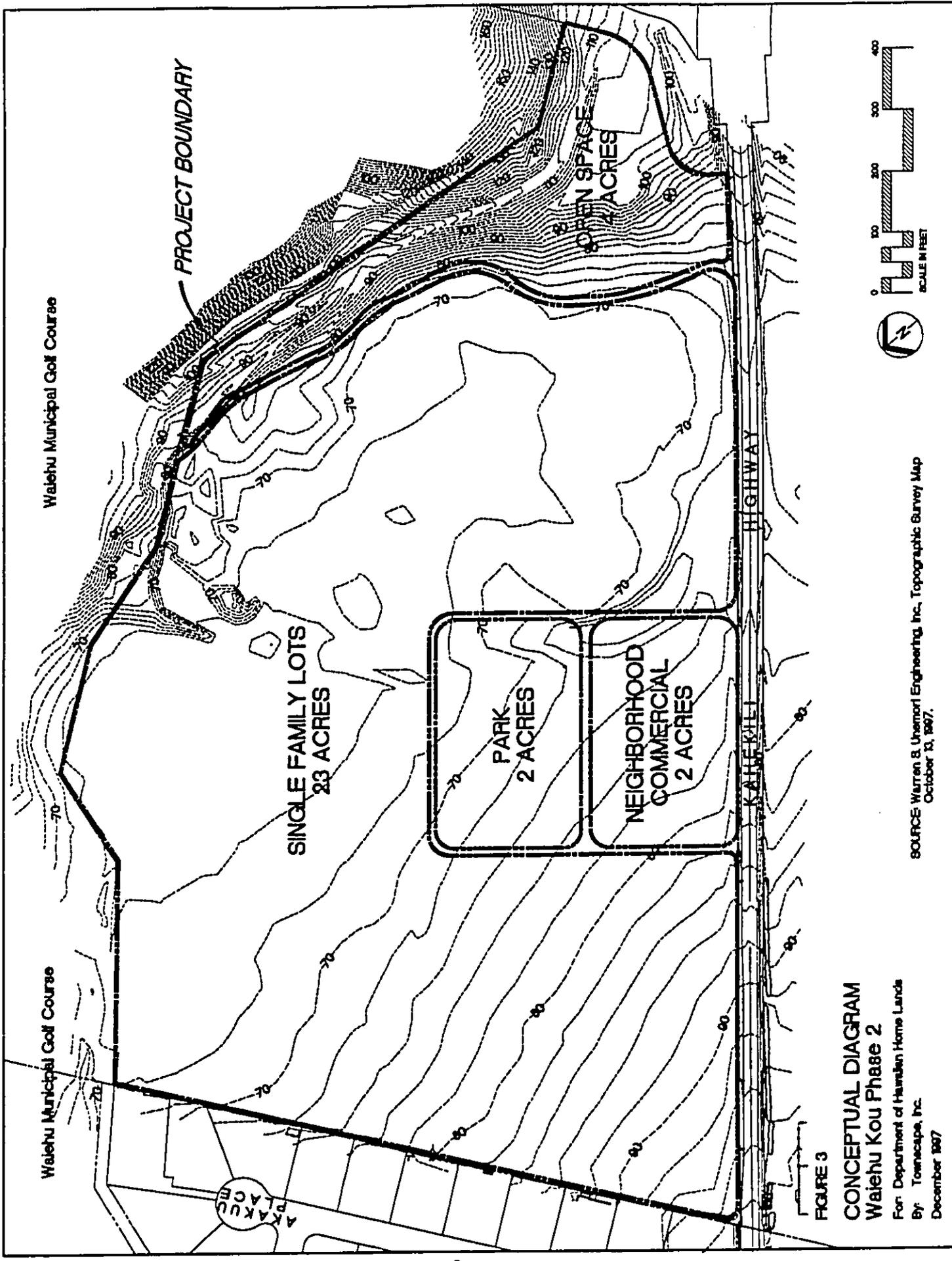


FIGURE 3
CONCEPTUAL DIAGRAM
Waiehu Kou Phase 2
 For: Department of Hawaiian Home Lands
 By: Townscape, Inc.
 December 1997

SOURCE: Warren & Umemori Engineering, Inc., Topographic Survey Map
 October 13, 1997.

At the request of the existing Hawaiian homestead residents, a two-acre site will be set aside within the project boundary for future development of a neighborhood retail commercial facility within walking distance. This would discourage the use of cars for certain shopping trips, thereby reducing traffic congestion, pollution, etc. This site is planned for approximately 20,000 square feet of retail commercial space, plus parking areas and landscaping, and may also include utility substations, if necessary, such as a sewer pump station or telephone switching facility. As part of the housing project, utilities will extend up to the edge of the commercial site and the land will be rough graded. Final grading of the site will be completed when a developer is selected to construct, lease, operate and maintain the commercial property. If there is no demand for a neighborhood commercial facility, the land may be developed into additional residential lots.

The total cost to develop the project is unknown at this time. The DHHL has requested proposals from developers for a site plan with related cost estimates to develop the project as described in the EA. The project cost will be determined by the selected configuration of land uses, on- and off-site infrastructure that may be required, and the amenities provided. DHHL will be responsible for payment of on- and off-site infrastructure. Beneficiaries will be responsible for payment of the cost related to house construction. The developer will be responsible for financing the house construction costs. No direct Federal funds will be used for the site construction. However, Federal mortgage insurance programs and direct mortgage loan programs will be utilized to facilitate the sale of homes to qualified native Hawaiians. The Federal mortgage programs administered by the Department of Housing and Urban Development, Veterans Administration, or Department of Agriculture, Rural Economic Development are expected to be utilized.

DHHL is anticipating construction to begin in early 1999. The project is expected to take two to three years to complete, subject to negotiation and contracting with the selected developer.

DHHL has had discussions with the various County agencies and utilities companies regarding connection to existing infrastructure and utilities. The County agencies indicated that DHHL would be able to connect to the existing sewer and water systems. The sewer and water systems currently have the capacity to accommodate this project. For the sewer system, the County may want to collaborate with DHHL in upsizing the sewer force mains and pump station

to accommodate flows from developments north of the project. Areas north of the site currently utilize individual sewer systems for wastewater disposal. Should the system be designed to accommodate off-site areas, the County and DHHL would each pay a pro-rata share of the costs.

Drainage facilities will be constructed such that there will be no net increase in the volume of storm water leaving the site and entering the existing drainage system. An underground storm drain system will be constructed to direct flows to an existing drainage channel located north of the project site. The park may be used as a shallow detention basin to regulate peak flows leaving the site to pre-development rates. An erosion control plan and Best Management Practices will be prepared for construction operations and submitted to the County of Maui Department of Public Works and Waste Management for review.

Maui Electric Company will provide electric service and cable television service will be provided by TCI Cable. Sandwich Isles Communication, Inc., a native Hawaiian corporation (a subsidiary of Waimana, Inc.) under an exclusive license granted by the Hawaiian Homes Commission, will provide underground telephone service to the property.

Access to the site is via Kahekili Highway, a State-owned roadway. Internal roadways will be constructed to Maui County standards and maintained by the County pursuant to the Hawaiian Homes Commission Act, 1920, as amended. When the Phase 1 project was designed and constructed, DHHL did not own the Phase 2 and Phase 3 parcels. Thus, there was no consideration for an internal connector road to link the three parcels. To construct such a road now would require displacing one or more existing homestead residents. If a connector road is proposed, discussion with affected homeowners and the existing community association must take place to determine the feasibility.

SECTION 3

EXISTING PHYSICAL ENVIRONMENT AND RELATED IMPACTS

3.1 GEOGRAPHY AND CLIMATE

The proposed project is situated on the Island of Maui on the northeastern base of the West Maui Mountains. According to the Atlas of Hawaii, the average rainfall in the Waiehu area is approximately 30 inches or less. No adverse impacts on the geography and climate are anticipated from of this project.

3.2 SURROUNDING LAND USES AND OWNERSHIP

Land uses adjacent to the property include residential (the Waiehu Kou Phase 1 project to the north and Leisure Estates Subdivision to the south), recreational (Waiehu Municipal Golf Course to the east) and agricultural (macadamia orchards to the west). Waiehu Kou Phase 1 is owned by the Department of Hawaiian Home Lands, Waiehu Municipal Golf Course is owned by the County of Maui, Leisure Estates is privately owned, and the macadamia nut orchards are owned by Wailuku Agribusiness, Inc.

Waiehu Kou Phase 2 is the second of three phases of Hawaiian Home Lands development in the Waiehu Area. The Phase 1 subdivision was designed and constructed prior to the acquisition of the Phase 2 and 3 parcels by the DHHL. The site of Waiehu Kou Phase 3 is adjacent to and north of the existing Waiehu Kou Phase 1 subdivision. The Phase 3 site consists of 22.427 acres and is currently planted in macadamia nut trees. The Phase 3 parcel is intended to continue to be planted with macadamia nut trees for the foreseeable future.

The project is contiguous with existing Hawaiian homesteads and other residential development and is not anticipated to have an adverse impact on the surrounding land uses and ownership. Stray balls from the golf course could impact the site. Thus, the thicketed slopes will be left in its natural state and serve as a buffer to the residential use.

3.3 SOILS AND TOPOGRAPHY

According to the U.S. Department of Agriculture, Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii (1972), the site is composed of one predominant soil series: Iao (IaA) Iao silty clay, 0 to 3 percent slopes. On this soil series, runoff is slow and the erosion hazard is not more than slight.

A topographic survey was performed for the site (see Figure 4). As shown in the topographic map, the southeastern side of the site contains relatively steep slopes. This steep slope area will remain in its undeveloped condition. Development of the project will extend to the base of this slope.

The eastern half of the property is relatively flat and the western half slopes up to Kahekili Highway at an average slope of approximately 3 percent.

During construction, the property will be graded and soil may be imported to provide sufficient slope to install underground utilities and/or to replace unsuitable material. Construction waste will be taken to the Maui Construction and Demolition Landfill in Maalaea. No adverse impacts resulting from grading or soil conditions are expected.

3.4 NOISE

Short term noise impacts will occur during the construction phase of the project. However, these impacts will be mitigated through the establishment of start and curfew times in accordance with the State Department of Health regulations and use of mufflers on construction equipment.

Long term noise impacts will be generated from the increase in traffic, typically during the morning and afternoon peak hours. However, the relatively small volume of additional traffic and the efficiency of the roadway system will mitigate excessive long-term noise impacts. The noise levels are not expected to exceed State DOH standards.

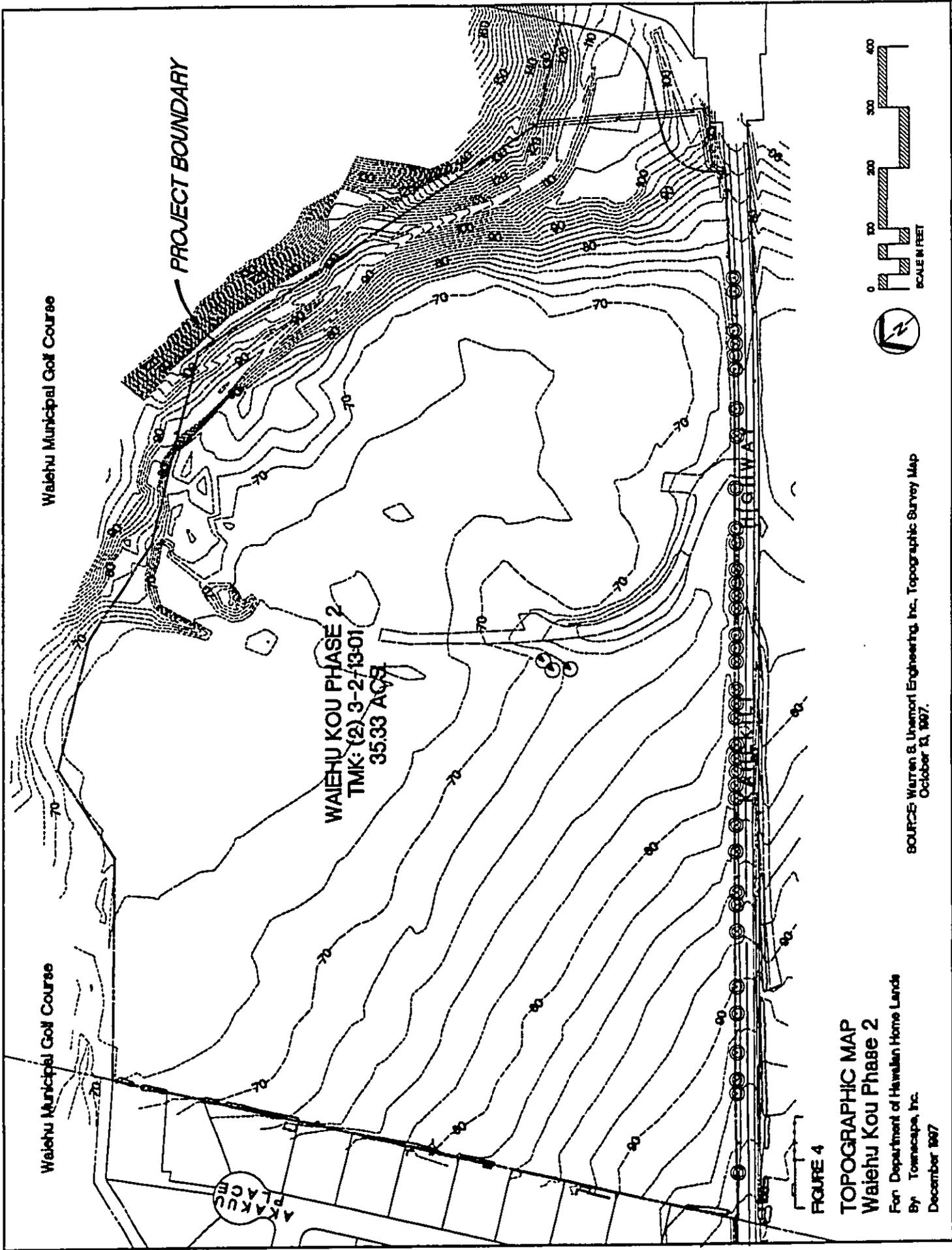


FIGURE 4

TOPOGRAPHIC MAP
Waiehu Kou Phase 2

For Department of Hawaiian Home Lands
By Tonascapa, Inc.
December 1997

SOURCE: Warren & Umemori Engineering, Inc., Topographic Survey Map
October 31, 1997.

3.5 AIR QUALITY

Short term impacts on air quality will occur during the construction phase of the project. Performing dust control practices in accordance with Department of Health regulations will mitigate these impacts. Dust screens and frequent watering of the soil will reduce the amount of fugitive dust emissions that are generated during construction.

Long term impacts on air quality will occur from the increase in traffic. However, with the tighter motor vehicle emissions control standards and the prevailing northeast trade winds, pollutants in the air are not expected to exceed State DOH standards.

3.6 FLORA

Char & Associates conducted a survey of the site in November 1997 (see Appendix A). No proposed, rare, threatened or endangered plants were found on the site. The site contained weedy scrub vegetation of introduced or alien species. The dwarf or creeping naupaka (*scevola coriacea*), an endangered species, is known from the adjacent municipal golf course and Waiehu Ocean View Estates, but none were found during the survey.

A number of mature ironwood trees line the highway just off the property boundary. Some may have to be removed to create access points and to increase the sight distance of drivers exiting the project site. While these trees are not considered rare, threatened, or endangered plants, there may be organizations opposed to their removal. The Maui County Arborist Committee and State Department of Transportation (DOT) will be consulted prior to the removal of any iron wood trees.

Along the edge of the property abutting the Waiehu Golf Course, was a dense thicket of koa haole shrubs and scattered stands of kiawe trees. Because there were no rare, threatened or endangered species on the site, no adverse impacts on the botanical resources are expected.

3.7 FAUNA

Phil Bruner, Environmental Consultant, performed a faunal (bird and mammal) survey of the site in November 1997 (see Appendix B). During the survey, no rare, threatened, or endangered fauna were found on the site. Two (2) Pacific Golden Plover, a migratory bird species, were seen on the site. However, this species is not threatened or endangered.

Eleven (11) species of non-native birds were recorded at the site. Feral mammals consisted of mongoose and house mouse. Since no rare, threatened or endangered fauna were present on the site, adverse impacts on the faunal resources are not anticipated.

3.8 ARCHAEOLOGY

The State Historic Preservation Division (SHPD) inspected the site in June 1997 (see Appendix C). Their findings indicated that the site had been used in the past for cultivation of sugarcane and pineapple, and has been extensively altered. However, sand dunes adjacent to the site may contain burials. SHPD recommended that these sand dunes remain intact. DHHL has already informed interested developers of the site that these sand dunes will remain in their natural state.

Because the site had been significantly altered in the past from agricultural activities, SHPD indicated that significant historic resources are not likely to be present on the site and concluded that no additional archaeological work was needed on the site. However, should cultural resources of significance be uncovered during the construction stage of the project, work will stop and the SHPD will be consulted immediately.

3.9 AGRICULTURE

The site was used in the past for cultivation of sugar cane and pineapple. However, the site is not currently being used for agriculture: it is presently undeveloped and contains sparse weedy and scrub vegetation. Thus, no adverse impacts on agriculture are expected.

3.10 VISUAL RESOURCES

Although the property is located near the coastline, there are no coastal views. Waiehu Golf Course, located makai of the site is at a higher elevation and blocks coastal views from the site. However, dramatic views of the West Maui Mountains are available from the site.

Because the site is at a low elevation, development of the site will not block existing visual resources from neighboring sites. Thus, no negative impacts on visual resources are anticipated.

SECTION 4

SOCIO-ECONOMIC ENVIRONMENT AND RELATED IMPACTS

4.1 POPULATION CHARACTERISTICS

According to the 1990 census, the County of Maui had a resident population of 100,504 people. Of that total, the Waihee/Waiehu area accounted for 4,004 people, or 4 percent of the County population. The 1996 resident population estimate for the County of Maui was 117,100 people, according to the State Data Book. If the Waihee/Waiehu area continued to account for 4 percent of the total County population, the estimated 1996 population would be 4,684 people.

Population projections prepared by the State Department of Business, Economic Development and Tourism indicated that by year 2000, the resident population would increase to 124,000 people and by year 2010 the Maui County population is projected at 140,900 people. The Waihee/Waiehu area may thus account for 4,960 people by the year 2000 and 5,636 people by year 2010, based on a share of 4 percent of the County population.

This population increase for the Waihee/Waiehu area calculates to an additional 276 people by the year 2000 and an additional 676 people over the next decade to the year 2010. Based on a State-wide average household size of 3.5 persons (1990), the projected population increase for the years 2000 and 2010 would calculate to approximately 79 to 190 new households for the Waihee-Waiehu area.

Development and occupation of the project units will thus satisfy some of the growth that is expected in the area. However, it should also be noted that some of the applicants on the DHHL Maui Waiting List may already reside in the area.

4.2 ECONOMIC CHARACTERISTICS

In 1996, there were approximately 67,700 people in the labor force for the County of Maui with 62,750 people employed and 4,950 people unemployed. The average annual wage for the County of Maui in 1995 was \$24,339 compared to a State average of \$26,983.

The Service Industry had the highest number of jobs totaling 21,350, which includes employment at hotels with 10,900 jobs. The Wholesale and Retail Trade industry had the second highest jobcount of 14,800 jobs.

Although agriculture still plays an important role on Maui, the tourist industry plays a major role in the island's economy. The County of Maui had the second highest number of visitors in 1996 of approximately 2,365,000 people. Oahu had the highest visitor count of nearly 5,000,000 people. It is estimated that in 1994, visitor expenditures for the island of Maui were \$2,531 million. The value of crop and livestock sales for Maui County in 1994 was \$124 million.

Development of the project will have a positive impact on the economy of Maui because direct and indirect jobs will be created during the construction phase of the project. Thus, the project will have a temporary beneficial impact on the local economy.

SECTION 5

PUBLIC FACILITIES AND SERVICES AND RELATED IMPACTS

A Preliminary Engineering Report (PER) was prepared by Warren S. Unemori Engineering, Inc. For details on water, sewer, drainage, roadway, electricity, telephone and cable, the reader is referred to the PER in Appendix D.

5.1 FLOODING AND DRAINAGE

According to the National Flood Insurance Boundary Maps, the site is designated "Zone C," which means "areas of minimal flooding." The site is also outside of the tsunami inundation zone.

Existing drainage facilities have been constructed in the vicinity of the project site. An underground drainage system has been installed in the Waiehu Kou Phase 1 project. Storm water is collected by a series of catch basins located on the makai side of the parcel and directed towards a drainage culvert in Wailuku Agribusiness, Inc. lands north of the site via a drainage easement located on the makai side of the Waiehu Kou Phase 3 parcel. The storm waters eventually discharge into the ocean.

The drainage system for the project will include a series of catch basins that will direct flows to the drainage channel located on Wailuku Agribusiness, Inc. lands. Drainage retention basins are planned on the site to retain excess storm water. The two-acre park may serve as a drainage retention basin in times of storms to regulate storm flows into the drainage channel to pre-development rates.

5.2 POTABLE WATER

The County of Maui, Department of Water (DOW) will provide potable water to the site. Twelve-inch and 8-inch lines have been installed along Kahekili Highway. DOW indicated that water is currently available to service the site and that the water distribution system and storage

capacities are adequate. The 12-inch line along Kahekili Highway is adequate to provide domestic and fire flow demands of the project.

DHHL has water credits for its participation in the development of potable water facilities in Upcountry Maui. These credits exceed the number of units that are planned at Waiehu Kou Phase 2 and DHHL intends to designate credits to this project.

5.3 WASTEWATER TREATMENT AND DISPOSAL

The Waiehu Kou project area is presently unsewered. The nearest sewer residential community is Leisure Estates located south of the project site. Waiehu Kou Phase 1 homes are utilizing individual sewer systems for wastewater disposal. However, a dry gravity system was installed for this subdivision for future hookup to the County system.

Since the project area is currently unsewered, a new sewer pump station will have to be installed. A flag lot at the end of Akakuu Place has been set aside for a sewage pumping station. This station could be sized to handle wastewater from all three (3) phases of the Waiehu Kou development.

Wastewater should be collected by an on onsite gravity collection system from the project and directed to the new pump station. This pump station could be designed to either pump to the gravity system in the adjoining Leisure Estates subdivision (alternative 1) or into the gravity system on Wailupe Drive in Waiehu Heights subdivision (alternative 2).

For alternative 1, approximately 1,000 feet of force main would be required beyond the project site. According to Division of Wastewater Management for the County Department of Public Works and Waste Management, the Waiehu Pump Station, which receives the sewage from Leisure Estates, still has some capacity left to handle dry weather flow from the project, but will need to be upsized to handle wet weather flow.

Alternative 2 would bypass the Waiehu Pump Station, but would require installation of about 3,400 feet of force main from the south end of the project site to the gravity system on Wailupe Drive. This gravity system flows to a pump station on Waiehu Beach Road (known as the Hawaiian Home Lands Pump Station) and has excess capacity to handle additional flows.

The County indicated a desire to possibly share in the cost to upsize the sewer facilities for future connection of residents in the Waihee area, as there are currently no sewer lines in Kahekili Highway. The developer of the project will work with the County to determine the appropriate facilities needed for upsizing the wastewater facilities.

5.4 TRANSPORTATION

The main transportation corridor servicing the site is Kahekili Highway, which is a State-owned, two-lane roadway fronting the project site. The section of the highway abutting the project site has a right-of-way width of 40 feet. Kahekili Highway continues northward to Waihee Village and to other areas on the northwestern coastline of the island. Kahekili Highway extends southward to Wailuku, approximately 2 miles south of the project site. It also intersects with Waiehu Beach Road about half mile south of the project site. Waiehu Beach Road extends southward to Kahului, which is about 3 miles away from the site.

In the Maui Long Range Transportation Plan, Kahekili Highway is recommended to be widened from 2 lanes to four lanes from Waiehu Beach Road to Waihee Valley Road in the 2006 to 2020 time period. In the vicinity of Waiehu Kou Phase 1, approximately 10 feet was added to Kahekili Highway right-of-way. Thus, it is anticipated that a 10-foot wide strip along Kahekili Highway will need to be provided for widening of the existing right-of-way.

A Traffic Impact Analysis Report was prepared by Julian Ng, Incorporated to evaluate potential traffic impacts resulting from the development of the project (see Appendix E). The study concluded that the project is planned in an area of little traffic congestion and will have a minor impact on traffic conditions and on regional traffic demands.

The need for acceleration lanes for right turn movements and deceleration lanes for left turn movements in and out of the project site was evaluated. Results of the study indicated that if only one access road into the project was provided, then a separate deceleration lane on Kahekili Highway would be needed for right turn movements into the project site. However, if two access roadways into the project are provided, acceleration and deceleration lanes will not be warranted. Thus, the study recommended that two access roadways into the project be provided.

After development of this project, Kahekili Highway in the vicinity of the project will continue to operate at acceptable levels of service to the year 2020. Thus, except for clearing trees that may obstruct safe sight distance at the two intersections, no other roadway improvements are recommended. Ironwood trees fronting Waiehu Kou Phase 1 were removed to allow for safe sight distance in and out of the subdivision.

The developer will coordinate with the State Department of Transportation (DOT), Highways Division, to determine the appropriate setback requirements along Kahekili Highway and the number of access points into the project. A sight distance study will also be submitted to DOT for review and approval.

5.5 POWER AND COMMUNICATIONS

Electric power will be supplied by Maui Electric Company via overhead or underground lines as determined by the developer of the project. The existing Waiehu Kou Phase 1 subdivision is being serviced via overhead electrical lines. DHHL will encourage the developer to design the houses to take advantage of the prevailing trade winds for cooling, provide an option to the homeowners for solar water heaters versus electric, and install low flush toilets and energy-efficient devices to promote an environmentally sensitive and energy efficient development.

Telephone service will be provided by Sandwich Isles Communications and will be placed underground.

TCI Cable will provide cable service to the site. The cable lines will probably be placed in the same underground duct system as the telephone line. TCI Cable indicated that service will be made available to the site.

5.6 FIRE, POLICE AND EMERGENCY MEDICAL SERVICES

Fire protection service for this area is provided by the Wailuku Fire Station with backup service from the Kahului Station. According to discussions with the Department of Fire Control (DFC), response time to the site is estimated at between 5 and 10 minutes. DFC did not indicate having a major concern with regards to this development.

The Wailuku Station is equipped with a 5-person engine and Kahului Fire Station is equipped with a 5-person engine, a 5-person rescue truck and a 2,500-gallon tanker. Ambulance service is provided by American Medical Response out of Kahului.

Police service is provided by 13 police officers on three shifts to cover the Wailuku area. Two of the police officers are assigned to the Waiehu area. Backup service is provided by units out of the Kahului area.

Health services will be provided by Maui Memorial Hospital, St. Francis Medical Center, and Kaiser Permanente Medical Clinic located in Kahului approximately 2.5 miles from the site. No adverse impacts on the police, fire or emergency medical facilities are anticipated as a result of this project.

5.7 SCHOOLS

Schools servicing the area include Waihee Elementary School, Iao Intermediate School and Baldwin High School. All of these schools are over-crowded. Waihee Elementary School has a capacity of 756 students with an enrollment of 858 students. Iao Intermediate School has a capacity of 640 students with 823 students enrolled. Baldwin High School has an enrollment of 1,850 students with a capacity for only 1,668 students.

Based on discussions with Department of Education (DOE), the 100-unit project will have about 21 elementary students, 9 intermediate students and 10 high school students. A master plan is being prepared for Iao Intermediate School to increase the school capacity. However, implementation of the master plan may take years to complete.

Although the project may generate a number of school aged students, the actual net increase of students may not be as indicated above. Some of the new residents of this project may already reside in this area of Maui and their children may already attend these schools. Thus, the impact on these schools may not be very significant.

SECTION 6
**RELATIONSHIP TO STATE AND COUNTY PLANS,
POLICIES AND CONTROLS**

6.1 HAWAIIAN HOMES COMMISSION ACT OF 1920

In 1921, Congress passed the Hawaiian Homes Commission Act (HHCA) of 1920, 42 Stat. 108, as amended, which set aside certain lands within the Territory of Hawaii for the benefit of native Hawaiians. This project implements the HHCA by developing house and lot packages for the purpose of distributing homestead leases and providing needed housing for native Hawaiians.

6.2 HAWAII STATE PLAN

The Hawaii State Plan was developed to serve as a guide for future development of the State of Hawaii in areas of population growth, economic benefit, enhancement and preservation of the physical environment, facility systems maintenance and development, and socio-cultural advancement. The Plan identifies, in general, the goals, objectives, policies and priorities for the development and growth of the State.

The proposed project is consistent with the objectives and policies of the Hawaii State Plan. The following describes the relationship and compatibility of the proposed project with the overall plans for the State of Hawaii, as set forth in the Hawaii State Plan.

6.2.1 Population (HRS Section 226-5)

Development of this project will provide much-needed housing for native Hawaiian community on Maui. The number of applicants on the DHHL housing waiting list for the island of Maui as of September 1997 was approximately 2,700. This project will create the opportunity for the native Hawaiians to become homeowners.

6.2.2 Economy (HRS Section 226-6)

The proposed project will create short-term design and construction employment opportunities. Long-term employment will be created by the development of the commercial site.

The economic objective to improve the standard of living will be fulfilled by the design and construction of quality affordable homes for native Hawaiian beneficiaries. These new homes will improve their quality of life and enhance their mental well being.

6.2.3 Physical Environment (HRS Section 226-11, 12 and 13)

Although the project site is near the coastline, the Waiehu Golf course has been developed between the project site and the shoreline. Therefore, the project will not affect shoreline or marine resources.

The project site is contiguous to existing residential development to the north and south and is a natural infill residential project.

Because the project is situated at a low elevation relative to surrounding developed lands, existing scenic views will be preserved. New residents of this community will be able to experience scenic views of the west Maui Mountains from their homes.

Sand dunes on the east and south sides of the site may contain burials. These areas will be left in their natural state. The remainder of the site had been cultivated for many years and the probability of burials is small. If human remains are encountered during the construction phase of the project, the State Historic Preservation Division will be contacted and work will cease until appropriate mitigation measures can be established.

6.2.4 Facility Systems (HRS Sections 226-14, 15, 16, 17 and 18)

The developer of the project will work together with the State and County agencies to provide adequate infrastructure to service the site. Underground sewer lines will be placed within the roadway rights-of-way and will be sized to accommodate the existing Waiehu Kou Phase 1 homes. The developer will work with the County to size the force main along Kahekili Highway to accommodate future expansion of the County system to service areas north of the project site, such as Waihee Village.

Potable water will be provided to the site by the County's water system. The 12-inch line within Kahekili Highway was sized to accommodate future development by DHHL.

As in the Waiehu Kou Phase 1 project, a 10-foot wide strip of land along Kahekili Highway will be set aside for future roadway widening planned by the State.

Sandwich Isles Communications will install underground telephone lines within the subdivision roadway rights-of-way. It is anticipated that TCI cable will also install cable lines within the same underground duct system.

6.2.5 Socio-Cultural Advancement (HRS Sections 226-19, 20, 22, 23, 24, 25)

The project satisfies the State's objectives for socio-cultural advancement because it provides housing opportunities for native Hawaiians. Houses will be purchased at very affordable prices, since the land and site improvement costs are currently not factored into the price of the house. It is anticipated that some of the houses will be built by the beneficiaries, promoting a sense of pride, responsibility, and personal well being. Self-help built houses also provides a means to offer even more affordable homes for those that are economically disadvantaged.

The park site will provide the people of this community a place for recreation, leisure and informal gatherings. Other open space areas, such as the sand dunes, will be left in their natural state, mainly because of the possibility of burials.

The project is not within the *tsunami inundation zone* or within a flood zone, as determined by the Federal Emergency Management Authority (FEMA). Therefore, public safety will not be jeopardized by these natural disasters.

The State government is taking an active role in the development of this new community that will provide needed housing opportunities for native Hawaiian people.

6.3 STATE FUNCTIONAL PLANS

The State Functional Plans were formulated to specify in greater detail the policies, guidelines and priorities set forth in the Hawaii State Plan. The thirteen functional plans include Energy, Transportation, Historic Preservation, Recreation, Health, Agriculture, Tourism, Education, Higher Education, Housing, Human Services, Employment and Conservation Lands. The following is a description of the proposed project as it relates to the applicable State Functional Plans.

6.3.1 State Energy Functional Plan

The State's goal with regard to energy deals with reducing dependence on petroleum and other fossil fuels. To support this goal, the land uses planned within the community will be developed such that there will be easy pedestrian access to the park and commercial site. Sidewalks will be provided to encourage residents to walk rather than drive to these destinations.

The developer may propose options to install solar or gas water heaters to minimize the demand for electrical power. DHHL will also encourage the developer to design the houses to take advantage of the prevailing tradewinds for cooling and install low-flush toilets and energy efficient devices to promote an environmentally sensitive and energy efficient development.

6.3.2 State Transportation Functional Plan

The objective of the Transportation Functional Plan is to provide for the efficient, economical, safe, and convenient movement of people and goods in consonance with the planned growth objectives for the State of Hawaii. The roadways within the subdivision will be constructed to Maui County standards. Kahekili Highway, which fronts the project site, will have an additional 10 feet of roadway right-of-way for future roadway widening improvements, including additional pavement and a sidewalk.

According to the traffic report, the project is situated in an area of little traffic congestion. Thus, the transportation system in the vicinity of the project is expected to operate efficiently and safely.

In addition, because the project will have a park and commercial site, pedestrian traffic to and from these destinations will lessen the use of motor vehicles on the area roadways. Residents will have the convenience of walking to the park for recreation, and walking to the commercial site for minimal shopping.

6.3.3 State Agriculture Functional Plan

The project is consistent with State's objectives for the Agriculture Functional Plan because it will not affect the viability of the sugar and pineapple industries, or hinder the growth of diversified agriculture. The land is designated agriculture on the State Land Use Maps, however, agricultural crops are not being cultivated on the land.

6.3.4 State Historic Preservation Functional Plan

The project is consistent with the objective of the Historic Preservation Functional Plan because the sand dunes will not be disturbed. The State Historic Preservation Division performed a site reconnaissance of the property and did not identify any historic or cultural resources on the

property. The site has been highly disturbed by agricultural operations in the past. However, sand dunes on the east on the south sides of the property may contain burials. These sand dunes will be left in their natural state. If cultural or historic resources are uncovered during the construction period of the project, the State Historic Preservation Division will be consulted for the appropriate mitigation measures.

6.3.5 State Recreation Functional Plan

This project satisfies the objective of the Recreational Functional plan because it will contain a two-acre park site that will be open to the public. Creation of this park will reduce the demand on existing park facilities in the vicinity of the project.

6.3.6 State Housing Functional Plan

This project satisfies the objective of the Housing Functional Plan to provide affordable housing. DHHL will be working with the private sector to build turnkey houses for purchase by native Hawaiian beneficiaries or to provide self-help and owner-builder house lots.

6.3.7 State Employment Functional Plan

The focus of the Employment Functional Plan is to provide employment training and education to cope with changes in the work force and to prepare people for the working environment. Although the project is not expected to provide these types of services, the development of the project will create direct and indirect employment during the construction phase of the project that could potentially be filled by persons involved in employment programs. Longer-term employment opportunities will be created when the commercial site is developed.

6.4 STATE LAND USE

The State Land Use designation for the property is "Agricultural". However, DHHL is exempt from the State Land Use Law and will exercise this exemption to develop the property into residential, park and commercial uses.

6.5 COUNTY OF MAUI GENERAL PLAN

The project is consistent with the Population and Land Use objectives and policies of the County of Maui General Plan by providing needed residential housing units at affordable prices and carrying out the policy to support DHHLs' development of homestead lands.

The project will not adversely impact the environment or cultural resources in the area and is consistent with the Environment and Cultural Resources objectives and policies of the General Plan. No rare, threatened or endangered plants or animals were present at the site. Sand dunes, which are likely to contain burials, will be left in its natural state.

The internal roadway system within the subdivision will be designed to provide efficient movement of vehicular and pedestrian traffic consistent with the Transportation objectives and policies. In addition, a 10-foot wide strip of land along Kahekili Highway will be set aside for future roadway widening.

Infrastructure systems, such as sewer, water and drainage will be constructed to provide adequate service for the new residents for a healthy and safe environment. Utilities systems, such as telephone, electric and cable, will also be provided. These improvements are consistent with the General Plan Water and Public Utilities and Facilities objectives and policies.

The park facility is planned to be developed by a partnering of the Department of Parks and Recreation and the community to provide the appropriate facilities that will meet the recreational needs of the users. The sand dunes will be left in its natural state because of the possibility of important cultural resources. The park and open areas are consistent with the General Plan objectives and policies for Recreation and Open Space.

Development of the project will be consistent with the Government objective and policies because coordination among the various agencies to minimize duplication of effort is planned for the wastewater collection system, the drainage system and improvements on Kahekili Highway.

6.6 WAILUKU/KAHULUI COMMUNITY PLAN

The Community Plan designation for the project site is "Agriculture". DHHL is exempt from Community Plan redesignation. However, the project does support some of the recommendations discussed in the Plan as follows:

With regards to the Socio-Economic aspects, the project is contiguous with existing residential areas and is a natural residential infill site, being located between two existing subdivisions of Waiehu Kou Phase 1 and Leisure Estates.

The sand dunes that abut the eastern and southern sides of the site will be left in its natural state, which is consistent with the Physical Aspects, Environment recommendation. In addition, the sand dunes may contain archaeological resources of significance, which supports the Human Resources, Cultural Resources recommendation.

The project will contain turnkey homes that will be constructed by a private developer and be sold to Hawaiian beneficiaries at very affordable prices. A self-help component may also be included. A park and commercial site are also planned to provide nearby recreational and shopping conveniences. Thus, the project supports the recommendations of the Physical Aspects, Land Use, and Human Systems, Recreation and Housing recommendations.

The developer will work with the County Department of Public Works and Waste Management on the design and cost sharing of both the sewer system and the drainage system in the vicinity of the project. Since the area is currently unsewered, it provides the opportunity to extend the existing sewer system to unserved area, thus carrying out the Transportation and Utilities, Liquid Waste recommendation of the Community Plan.

6.7 COUNTY ZONING

County Zoning designation for the parcel is "Interim". DHHL is also not subject to County zoning rules and regulations. However it is anticipated that the project will be developed according to R-1 standards with a minimum lot size of 6,000 square feet.

SECTION 7
PERMITS REQUIRED

7.1 STATE PERMITS

<u>Permit</u>	<u>Agency</u>
NPDES Permit	State Department of Health

In addition to the NPDES permit, an erosion and dust control plan approval from the Department of Health will be needed.

7.2 COUNTY PERMITS

The following County of Maui permits will be required:

<u>Permit</u>	<u>Agency</u>
Grading Permit	County of Maui, Department of Public Works and Waste Management
Building Permit	County of Maui, Department of Public Works and Waste Management

In addition to the permits listed above, a subdivision plan approval will also be needed from the County Planning Department.

7.3 FEDERAL PERMITS

Federal permits are not required for the proposed development.

SECTION 8

ALTERNATIVES TO THE PROPOSED ACTION

8.1 NO ACTION ALTERNATIVE

The no action alternative would mean that none of the 2,700 native Hawaiian people on the DHHL Maui waiting list would be able to purchase a new house in Waiehu. Non-development would also require the expenditure of State resources to prevent the parcel from becoming overgrown, a site for trash dumping, a breeding ground for rodents and insects, and an eyesore.

8.2 ALTERNATIVES CONSIDERED

Alternatives considered dealt mainly with the land uses within the parcel. DHHL considered planning the entire site exclusively for the development of single family houses. However, in order to create a more livable environment in response to a request from the existing community, DHHL included as part of the plan, the two-acre park site for recreational and social activities, and the two-acre commercial site for convenience shopping and potential employment opportunities. This mix of land uses provides some of the amenities and conveniences for the people of Phase 1 and this new community within walking distance.

Other alternatives that will be considered in the future will deal mainly with the placement of the various land uses within the site. These alternatives will be developed by prospective developers of the site as part of the "Request for Proposals" process.

SECTION 9

**DETERMINATION, FINDINGS AND REASONS FOR SUPPORTING
DETERMINATION**

The following is an assessment, based on the thirteen (13) "Significance Criteria" of Title 11, Chapter 200-12 of the Department of Health Administrative Rules, to determine whether or not the project will have a significant impact on the environment.

- 1) *Involves a loss or destruction of any natural or cultural resources;*

Development of the project will not impact natural or cultural resources in the area. Botanical, biological and archaeological surveys were performed and the results indicated that the property did not contain any important natural or cultural resources. Sand dunes adjacent to the site that may contain burials will be left in its natural state.

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

The project was used for agriculture in the past and is currently fallow. The location of the site between existing residential developments makes for a natural infill of this residential community and provides needed housing for native Hawaiian beneficiaries. A park, commercial site, and open space area are also planned, which will provide additional beneficial uses of the site.

- 3) *Conflicts with the State's long-term goals or guidelines as expressed in Chapter 344, HRS;*

The proposed development is consistent with the Chapter 344, State Environmental Policy because it will not have significant environmental impacts, will be constructed in harmony with the environment, and will provide a safe and healthy community for future residents.

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

The project will have a beneficial effect on the economy and the social welfare of the community. During the construction phase of the project, short term direct and indirect employment will be created. Once the project construction phase is completed, the native Hawaiian beneficiaries will have affordable houses in which to reside, and nearby recreational, open space and commercial amenities.

5) *Substantially affects public health;*

Short term noise and air quality impacts may occur during the construction phase of the project. However, these impacts can be mitigated as discussed in earlier sections of this EA. The project will be developed to create a safe and healthy environment for future residents.

6) *Involves substantial secondary effects, such as population changes or infrastructure demands;*

The project probably will increase the population and infrastructure requirements in the Waiehu area. However, based on the State's projected population growth, as discussed in Section 4, the project will satisfy some of this expected growth. It should also be noted, that some of the future residents of this community already reside on the island of Maui and possibly in the Waiehu area. Thus, substantial secondary effects are not expected.

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

The project will be developed to minimize negative effects on the environmental quality of the area. The site lies in a low area and is not expected to obstruct scenic views. The sand dunes adjacent to the site that will be kept in its natural state, forms a natural buffer from adjacent land uses of the Waiehu Golf Course and Leisure Estates subdivision.

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

The project is not expected to have a considerable cumulative effect on the environment that will involve the need for larger actions. Once the land is development and occupied as described, the demand for additional facilities and services is not anticipated.

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

According to the botanical and biological surveys, the site did not contain and rare, threatened or endangered species or habitat. Thus, no adverse impacts are expected.

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

The project is not expected to detrimentally affect air or water quality or ambient noise levels. The Department of Health standards for air quality and noise levels are not expected to be exceeded. The project is not being developed over a potable water aquifer and is not expected to adversely impact potable groundwater sources.

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

The project is not located in an environmentally sensitive area that will suffer damage. The site is outside of the tsunami inundation zone and is not situated in an identified flood zone, as defined by the Federal Emergency Management Agency.

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

The site is not located in an area that will obstruct scenic vistas and view planes that have been identified in County of State plans or studies. The site lies at a relatively low elevation compared to the higher elevation sand dunes adjacent to the site.

13) Requires substantial energy consumption.

The project is not expected to require a substantial consumption of energy. Energy conservation devices, such as solar water heaters, will be encouraged to reduce the demand on electricity.

Based on the foregoing and comments received during the public comment period, no significant adverse environmental impact is expected from the development of this project. Copies of comments letters and responses have been included in Section 11 of this Final EA.

SECTION 10

**LIST OF INDIVIDUALS, ORGANIZATIONS AND
AGENCIES CONSULTED**

10.1 STATE

Department of Education – Telephone conversation

Department of Transportation – Meeting of 11/13/97

Department of Land and Natural Resources, Historic Preservation Division – Telephone conversation

10.2 COUNTY OF MAUI

Office of the Mayor – Meeting of 9/5/97

Department of Public Works and Waste Management – Meeting of 9/5/97 and 11/13/97

Department of Planning – Meeting of 9/5/97

Department of Water Supply – Meeting of 9/5/97

Department of Parks and Recreation – Meeting of 11/13/97

Police Department – Telephone conversation

Fire Department – Telephone conversation

10.3 OTHERS

Maui Electric Company – Telephone conversation

TCI Cable – Telephone conversation

Waiehu Kou Community Association – Telephone conversation and informal meeting

Sandwich Isles Communications, Inc. – Telephone conversation

Written documentation of meetings and responses during the consultation period has been included in Section 11.

SECTION 11

CORRESPONDENCE, COMMENT LETTERS AND RESPONSES

The following pages include written correspondence during the consultation period of the project, and comment letters and responses received during the 30-day Draft Environmental Assessment review and comment period. The following is a list of the correspondence, and comment letters and responses:

11.1 CORRESPONDENCE

1. Memorandum of meeting with County officials, 9/5/97.
2. Letter to Parks dated 11/18/97 re: meeting of 11/13/97
3. Response letter from Parks dated 11/24/97
4. Letter to State DOT dated 11/18/97 re: meeting of 11/13/97
5. Letter to County Wastewater Reclamation Division (WRD) dated 11/18/97 re: meeting of 11/13/97
6. Response letter from WRD dated 11/25/97

11.2 COMMENT LETTERS AND RESPONSES

The list is in the order that it was received. Response letters follow each comment letter.

1. County Department of Planning, February 5, 1998
2. County Department of Parks and Recreation, February 13, 1998
3. Mr. & Mrs. David Brown, February 17, 1998
4. Office of Hawaiian Affairs, February 23, 1998
5. Office of Environmental Quality Control, March 3, 1998
6. County Department of Public Works and Waste Management, March 9, 1998
7. County Department of Fire Control, March 27, 1998
8. State Department of Transportation, March 27, 1998

TOWNSCAPE, INC.

Planned Communities, Master Plans, Land Use Permits

900 Fort Street Mall, Suite 800, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: townscap@panworld.net

MEMORANDUM

Waiehu Kou Residence Lots

TO: Department of Hawaiian Home Lands

FROM: Joanne Hiramatsu

NOTES FROM MEETING WITH MAUI COUNTY OFFICIALS ON SEPTEMBER 5, 1997

Participants: George Kaya, Executive Assistant, Office of the Mayor
Charles Jencks, Director of Public Works and Waste Management (DPWWM)
Mac Aquinde, Land Use and Building, Plans Examiner
Dave Craddick, Department of Water Supply
Mona Kapaku, DHHL, Maui District Supervisor
Stewart Matsunaga, DHHL, Honolulu Office
Darrell Ing, DHHL, Honolulu Office
Bruce Tsuchida, Townscape, Inc.
Joanne Hiramatsu, Townscape, Inc.

DISCUSSION:

1. Department of Hawaiian Home Lands is planning to develop Phase 2 of the Waiehu Kou Subdivision. The project is planned for Single Family Lots, Park and Commercial uses on approximately 37 acres. The average single family lot size is expected to be approximately 7,500 square feet. Approximately 100 lots are planned as a turnkey project (i.e., house and lot packages). DHHL will also be speaking with Department of Education and the State Department of Transportation regarding this project.
2. State Land Use designation is "agricultural" and County Zoning designation is "interim". DHHL is exempt from State and County Land Use Designations and they will exercise that right for the development of this project.
3. According to the DPWWM, the project will generate 35,000 gpd and the sewer charge will be \$4.57/gallon for capacity at the wastewater treatment plant. DPWWM sewer charge will be payable at time of application. Verification is needed on the location and capacity of the sewer line. DHHL should contact Tracy Takamine of Wastewater for more details at 243-7417.
4. Building permits can be obtained within two days. Conformance with the 1991 Uniform Building and Plumbing codes will be required.

5. Drainage will not be a problem as long as the project does not increase flows into the existing system. Glenn Ueno can be contacted at 243-7373 for drainage guidelines.
6. The County indicated that they would need 45 days to review the subdivision plans and respond to DHHL. The County's response to the Subdivision Plans Review will include a list of agencies which did not comment on the plans with contact names and telephone numbers.
7. The Department of Water Supply (DWS) will be charging \$3,350 plus an installation fee for each unit constructed. Currently there is no moratorium on water hookup. However, once approvals are received from the DWS approved number of units must tie into the system within one year. Copper service lines will be a requirement. The DHHL has credits accrued from previous projects. DWS and DHHL need to discuss the amount of credits and how they should be applied to new DHHL projects.
8. The fee for refuse collection will be \$60 per year per unit.
9. Henry Oliva of the Parks Department can be contacted at 243-7626 regarding requirements for the proposed park. Parks Department can also be contacted for comments regarding the golf course.
10. Humps have been placed in a number of residential roadways on Maui. Each hump costs about \$3,000 and is funded by the County for neighborhoods requesting humps within existing roadways.
11. Street lighting standards can be modified to include street lighting only at intersections. Street tree requirements could also be modified. For additional information DHHL should contact Ann Cua of the Planning Office.
12. The County suggested that curb cuts be included at the subdivision stage of the project rather than at the building permit stage. Concrete swales along side roadways could be developed in lieu of curb, gutter and sidewalks.
13. Electric lines are generally placed underground. However, overhead lines can be installed.
14. Phase 3 of the project will occur at a later date. A portion of Phase 3 is within the flood zone and the project must comply with flood zone requirements in order to obtain mortgages and flood insurance.

TOWNSCAPE, INC.

Planned Communities, Master Plans, Land Use Permits

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November 18, 1997

Mr. Henry Oliva, Director
Department of Parks and Recreation
County of Maui
1580-C Kaahumanu Avenue
Wailuku, Hawaii 96793

Dear Mr. Oliva:

SUBJECT: Waiehu Kou Phase 2 Project

Thank you for taking the time to meet with Stewart Matsunaga and Darrell Ing from the State Department of Hawaiian Home Lands (DHHL), and myself on Thursday, November 13, 1997, to discuss the subject project. The following was discussed at that meeting:

1. The Department of Hawaiian Home Lands (DHHL) plans to set aside a 2-acre area for a neighborhood recreational park in the Waiehu Kou Phase 2 project that would be turned over to the County for maintenance.
2. As a minimum the County would require grassing, landscaping and parking. Parking requirements are generally calculated based on the number of bleachers provided in the park facility. Bleachers are not planned within the Waiehu Kou park. The park should be designed to keep maintenance low.
3. An irrigation system and a stub for electricity are recommended.
4. The park could be integrated into the drainage plan. It was suggested that a swale feature be designed around the perimeter of the park rather than using the entire site as a drainage retention basin because of maintenance concerns to remove the silt after a storm.
5. Design of the park should be "inviting" to uses (i.e., easy access, no high fencing, and attractive landscaping).
6. If restrooms are planned, the facility must be handicap accessible. Restrooms are not necessarily required in a neighborhood park.
7. Other improvements within the park (e.g., playground equipment) are generally provided by the County partnering with the community in which the park is

Mr. Henry Oliva
November 18, 1997
Page 2

located. Fundraisers would be planned to raise money to purchase and install such facilities.

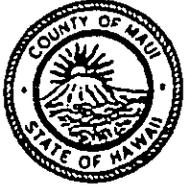
8. In order to provide the appropriate improvements within the park, the County would need the demographics of the residents within the subdivision.
9. The County of Maui Ordinance No. 2470, Bill No. 82, pertaining to Parks and Playgrounds was received by DHHL from the County.

If there were other important issues that were discussed or if our recollection of the discussion is inaccurate, please contact the undersigned.

Sincerely,


Joanne Hiramatsu
Senior Planner

cc: Stewart Matsunaga, DHHL
Darrell Ing, DHHL



DEPARTMENT OF
PARKS AND RECREATION
COUNTY OF MAUI

1580-C Kaahumanu Avenue, Wailuku, Hawaii 96793

LINDA CROCKETT LINGLE
Mayor

HENRY OLIVA
Director

ALLEN T. SHISHIDO
Deputy Director

(808) 243-7230
FAX (808) 243-7934

November 24, 1997

Ms. Joanne Hiramatsu
Senior Planner
Townscape, Inc.
900 Fort Street Mall, Suite 800
Honolulu, HI 96813

Dear Ms. Hiramatsu:

SUBJECT: WAIEHU KOU PHASE 2 PROJECT

Thank you for your summary of our meeting. I do have a clarification with regard to item #1 in which you stated that the "... project would be turned over the County for maintenance." We discussed the possibility of this happening. Wording should read "could." As I stated, detailed discussions would need to occur before this was decided. As an example, we've successfully negotiated with homeowners associations to maintain the park either as a private park or a public park. As was mentioned, discussions on those details would need to occur.

Other than the above clarification, all items were mentioned in our preliminary discussion on this project.

Sincerely,

HENRY OLIVA
Director

s:\alf\waiehu.kou\hiramatsu

TOWNSCAPE, INC.

Planned Communities, Master Plans, Land Use Permits

900 Fort Street Mall, Suite 800, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: townscap@panworld.net
November 18, 1997

Mr. Fred Cajigal
Department of Transportation
State of Hawaii
650 Palapala Drive
Kahului, Hawaii 96732

Dear Mr. Cajigal:

SUBJECT: Waiehu Kou Phase 2 Project

Thank you for taking the time to meet with Stewart Matsunaga and Darrell Ing from the State Department of Hawaiian Home Lands (DHHL), and myself on Thursday, November 13, 1997, to discuss the subject project. The following was discussed at that meeting:

1. The Department of Hawaiian Home Lands (DHHL) plans access the Waiehu Kou Phase 2 project from Kahekili Highway, which is a State-owned roadway. Access to the project via the existing Waiehu Kou project will not be possible, since a roadway connection through the property was not provided.
2. Kahekili Highway is not a limited access highway and is classified as a major collector road.
3. The major constraint for access onto Kahekili Highway is the ironwood trees. These trees limit visibility moving onto Kahekili Highway and provide an unsafe movement of traffic. Removal of those trees will probably meet with opposition from environmental groups such as the Sierra Club and Outdoor Circle.
4. DOT would prefer only one access onto Kahekili Highway from the Waiehu Kou Phase 2 project, unless the visibility problem can be resolved. The existing intersections with Kahekili Highway for the Waiehu Kou Phase 1 project are spaced at 600 feet apart, centerline to centerline.
5. Although the Long-Range Transportation Plan for Maui indicates that Kahekili Highway is planned as a four-lane highway in the 2006 to 2020 time frame, the rural nature of the area may not warrant a four-lane highway. In addition, land would need to be acquired from existing residences abutting the Kahekili right-of-way.

If there were other important issues that were discussed or if our recollection of the discussion is inaccurate, please contact the undersigned.

Sincerely,



Joanne Hiramatsu
Senior Planner

Cc: Stewart Matsunaga, DHHL
Darrell Ing, DHHL

TOWNSCAPE, INC.

Planned Communities, Master Plans, Land Use Permits

900 Fort Street Mall, Suite 800, Honolulu, HI 96813
Telephone (808) 536-6999 Facsimile (808) 524-4998
email address: townscap@panworld.net

November 18, 1997

Mr. Tracy Takamine
Wastewater Reclamation Division
County of Maui
200 South High Street
Wailuku, Hawaii 96793

Dear Mr. Takamine:

SUBJECT: Waiehu Kou Phase 2 Project

Thank you for taking the time to meet with Stewart Matsunaga and Darrell Ing from the State Department of Hawaiian Home Lands (DHHL), and myself on Thursday, November 13, 1997, to discuss the subject project. The following was discussed at that meeting:

1. The Department of Hawaiian Home Lands (DHHL) plans to connect the Waiehu Kou Phase 2 subdivision to the County's sewer system and turn the facilities over to the County for maintenance. DHHL may also plan to connect the existing Waiehu Kou Phase 1 subdivision, which already has dry sewer lines installed, and size the new sewer lines to accommodate the future Waiehu Kou Phase 3 project.
2. The sewer hook-up fees are generally charged at \$4.20 per gallon at an average of 350 gallons per unit, or approximately \$1,600.
3. DHHL already has a lot set aside for a pump station in the existing Waiehu Kou Phase 1 subdivision. The County would want the force main to be pumped to Kahekili Highway then onto Hoana Street and connect to the Leisure Estates sewer system. The Leisure Estates sewer system flows by gravity to a pump station on Lower Waiehu Beach Road. From the pump station, the sewage is pumped to the Hawaiian Home Lands pump station on Waiehu Beach Road.
4. Because the existing Waihee community is currently utilizing cesspools, the County may want to participate in the design and construction of the system with the State to upsize the sewer line within Kahekili Highway for future connection or extension of service to the Waihee area.
5. The County will check on the capacity of the pump stations and force main from the Leisure Estates pump station to the Hawaiian Home Lands pump station on Waiehu Beach Roads.

If there were other important issues that were discussed or if our recollection of the discussion is inaccurate, please contact the undersigned.

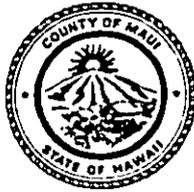
Sincerely,



Joanne Hiramatsu
Senior Planner

cc: Stewart Matsunaga, DHHL
Darrell Ing, DHHL

LINDA LINGLE
Mayor
CHARLES JENCKS
Director
DAVID GOODE
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
AND WASTE MANAGEMENT
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793
November 25, 1997

RALPH NAGAMINE, L.S., P.E.
Land Use and Codes Administration

EASSIE MILLER, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

Solid Waste Division

BRIAN HASHIRO, P.E.
Highways Division

Ms. Joanne Hiramatsu
Senior Planner
Townscape, Inc.
900 Fort Street Mall, Suite 800
Honolulu, HI 96813

Dear Ms. Hiramatsu:

**SUBJECT: WAIEHU KOU PHASE 2
WASTEWATER INFRASTRUCTURE**

In response to your letter dated November 18, 1997 and your meeting with Mr. Tracy Takamine on November 13, 1997 the following information is provided:

1. We confirm that there is no County wastewater system available for this subdivision within the immediate area.
2. The developer will be required to construct an offsite wastewater transmission system and connect this subdivision to the County system.
3. The developer will be required to connect the dry wastewater system currently in place in the Waiehu Kou Phase 1 subdivision during the Phase 2 construction.
4. Item 2 of your letter is in error. The assessment fee is \$4.57 per gallon not \$4.20.
5. We understand that it is the intent to turn over the operation of the pump station to the County. If this is the case, then the pump station shall be built to County standards. Additionally, design of the pump station shall include possible connection of the existing Waihee area to this system. The County shall pay a proportional share for this up sizing.
6. A review of the topography of the area indicates that a gravity line will not be possible along Kahekili Highway. A force main will have to be

Ms. Joanne Hiramatsu
November 25, 1997
Page 2 of 2

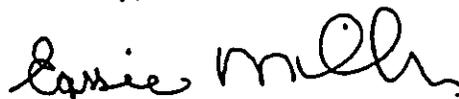
constructed from the new pump station to the County's existing Waiehu Pump Station or Hawaiian Homes Pump Station. It is recommended that the developer conduct a preliminary engineering report to determine the routing of the force main. Please insure that coordination is made with this office and provide a copy for review and approval.

7. Preliminary evaluation of the existing pump stations indicate that there is capacity to accommodate the new developments average daily flow, however, based on peak wet weather flow the station will need to be upgraded. A more detailed analysis will need to be done to confirm these numbers.

We look forward to working with the State in the development of this project and will provide as much assistance as possible.

If you have any questions, please call Mr. Tracy Takamine at 243-7424.

Sincerely,



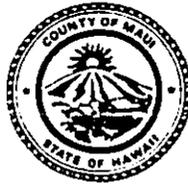
Eassie Miller, Chief
Wastewater Reclamation Division

TT.(97159.SD2)
c. John Oka

LINDA LINGLE
Mayor

DAVID W. BLANE
Director

LISA M. NUYEN
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

February 5, 1998

CLAYTON I. YOSHIDA
Planning Division

AARON H. SHINMOTO
Zoning Administration and
Enforcement Division

Ms. Joanne Hiramatsu
Townscape, Inc.
900 Fort Street Mall, Suite 800
Honolulu, Hawaii 96813

Dear Ms. Hiramatsu:

RE: Draft Environmental Assessment (EA) for the Proposed Waiehu
Kou Subdivision Phase 2 Native Hawaiian Housing Project at
TMK: 3-2-013:001, Waiehu, Island of Maui, Hawaii

Thank you for the opportunity to comment on the Draft Environmental Assessment (EA) for the above-referenced project. The Maui Planning Department (Department) has the following comments:

1. Although the project is exempt from County general plans, development plans and zoning, the EA document should still address local land use laws. There are objectives and policies in the plans that are also applicable to Hawaiian Home Lands which should be acknowledged. For example, one of the major themes of the General Plan for the County of Maui is to "provide for needed resident housing." This includes housing for Native Hawaiians. Further, a policy of the County General Plan under "Land Use Objective" is to "support the Department of Hawaiian Home Lands' development of homestead lands."

Similarly, the Wailuku-Kahului Community Plan is more than a land use map identifying the project site as "Agriculture." There are objectives and policies of the General Plan which are applicable to the project, such as, to "preserve the shoreline sand-dune formations throughout the planning region. These topographic features are a significant element of the natural setting and should be protected from any actions which would detract from their scenic value."

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793
PLANNING DIVISION (808) 243-7735; ZONING DIVISION (808) 243-7253; FACSIMILE (808) 243-7634

Ms. Joanne Hiramatsu
February 5, 1998
Page 2

Enclosed for your information and inclusion in the EA are copies of the General Plan 1990 and Wailuku-Kahului Community Plan.

2. Relative to the site plan of the project, the Department recognizes that a major objective of the Hawaiian Homes Commission Act of 1920 is to provide lands for housing. As stated in the EA document, there are approximately 2,700 applicants on the waiting list for housing on Maui. With this many applicants, the Department recommends that the property be used for housing purposes rather than including a 2.0 acre business site as a future use which may not be realized. The project site is within approximately five minutes travel time from the commercial and industrial areas of Wailuku Town which provide adequate opportunities for shopping, services and employment to future residents of the subdivision. The ambience of the Waiehu Kou area is that the site is at the outskirts of Wailuku Town with a rural character and yet near enough to urban services.

Further, consideration should be given to locating the proposed park site adjacent to the four acre open space area (sand dunes). This will enhance the potential for incorporating the open space area into the park for future planning for recreational trails within the dunes, educational opportunities, as well as cultural/preservation efforts which may be appropriate. Even if the area were to remain undeveloped, it provides valuable open space which will only enhance the recreational park.

According to the EA, consideration is being given to using a portion of the park site as a drainage-retention basin. With the existing homes in Waiehu Kou Phase 1 and the 100 new homes, as well as a future Phase 3, the Department feels that usable park lands are essential in order to provide recreational opportunities to the residents of the project. Consideration should be given to include a small community recreation center/restrooms, as well as an athletic field (active sports), besides landscaping and parking. The nearest park sites require travel to a small field at Waihee Town and another field near the shoreline below Leisure Estates. These existing parks are inadequate to meet the needs of the additional residents.

Ms. Joanne Hiramatsu
February 5, 1998
Page 3

The EA indicates that dedication of the park lands to the County of Maui is proposed. It should be noted that County Council action is required for the proposed dedication. However, the Department questions whether the County would be willing to assume the responsibility and costs for the short-term and long-term maintenance and repairs of a drainage basin that may be included in the park site. The EA should include comments from both the Department of Parks and Recreation and the Department of Public Works and Waste Management.

3. Infrastructure:

Water: Although the EA indicates that the new wells and transmission lines will provide additional water to the Central Maui area, it should be noted that there are previous commitments to other developers for the water under development, such as C. Brewer's Kehalani Project District, Maui Lani, Wailea Resort and Makena Resort. The EA should address this issue and include comments from the Department of Water Supply to confirm that water will be available to the project and system upgrades will not be required.

Traffic: Consideration should have been given to an internal-connector roadway system between the three phases of the Waiehu Kou Subdivision as presently designed residents of each phase must exit the subdivision to get to the other phases. An internal connector roadway would have reduced local traffic on Kahekili Highway, as well as provide an alternative route to Kahekili Highway from the different phases, especially in terms of unforeseen closure of the access streets due to emergencies.

The EA should also include comments from the Department of Transportation verifying that the Traffic Impact Analysis Report's assessment and recommendations are acceptable.

Ms. Joanne Hiramatsu
February 5, 1998
Page 4

Fire: The EA does not provide adequate information on the capacity of the existing Wailuku Fire Station to provide fire protection and the response time to the area. It should be noted that the Wailuku Fire Station, in recent years, has had service areas added, such as the Kehalani Project District, Waikapu's Waiolani Subdivision, development in the Waiehu Terrace area (HFDC), Leisure Estates and development in the industrial subdivisions of Wailuku Town. Comments from the Department of Fire Control should be included in the EA.

4. Relative to the removal of the ironwood trees along Kahekili Highway, the developer is advised that they should contact the Maui County Arborist Committee (Committee) who reviews plans for the planting and removal of trees from public rights-of-way. The Committee provides valuable input to developers which may be helpful and may alleviate future complaints from the public especially from groups like the Outdoor Circle who may voice concern over the removal of mature ironwood trees from along the highway.
5. Page 30 of the EA Report should be corrected to reflect that the Department of Public Works and Waste Management, Land Use and Codes Administration, is the County agency who reviews subdivision plan approvals, as well as grading and building permits.

Thank you for the opportunity to comment. If additional clarification is required, please contact Ms. Colleen Suyama, Staff Planner, of this office at 243-7735.

Very truly yours,

Lisa M. Nguyen

for DAVID W. BLANE
Director of Planning

Ms. Joanne Hiramatsu
February 5, 1998
Page 5

DWB:CMS:osy
Enclosures

c: Clayton Yoshida, AICP, Planning Program Administrator
Aaron Shinmoto, P.E., Planning Program Administrator
Colleen Suyama, Staff Planner
Department of Public Works and Waste Management
Department of Parks and Recreation
Department of Water Supply
Department of Fire Control
Project File
General File
(S:\CMS\Waikou)

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



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

KALI WATSON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

March 31, 1998

Mr. David Blane, Director of Planning
Department of Planning
County of Maui
250 South High Street
Wailuku, Maui, Hawaii 96793

Dear Mr. Blane:

SUBJECT: Draft Environmental Assessment
Waiehu Kou Phase 2

Thank you for your comments on the Draft Environmental Assessment (EA) for the subject project. We appreciated your review of the EA and have the following responses to your comments.

1. The Final EA will include a discussion of County land use laws (General Plan, Zoning, Community Plan).
2. The commercial parcel is not planned for development at this time. The parcel site will be graded with utility stub-outs installed. At the request of the existing Hawaiian homestead residents, the site is being set aside for a neighborhood commercial facility within walking distance. This would discourage the use of cars for certain shopping trips, thereby reducing traffic congestion, pollution, etc. However, in the event the market demand for a commercial facility proves infeasible, the site may be developed into residential lots. The site may also include utility substations, if necessary, such as a sewer pump station or telephone switch facility.

The siting of the park and commercial sites will be determined upon selection of a developer for the project. All of the proposals under consideration locate the park adjacent to the four-acre open space area.

Preliminary discussions with the Department of Parks and Recreation (DPR) took place prior to the preparation of the EA. It was mutually agreed that park facilities would be planned based on the family profile of the new residents. A partnering of DPR and the community is envisioned to provide the appropriate park facilities for the users of the park. Correspondence documenting these discussions with DPR will be included in the Final EA.

Licensing of the park facility to the County is a consideration. Alternatively, the park could be maintained by the Homeowner's Association that will be established for the project.

Mr David Blane
Page 2
March 31, 1998

3. Water – Discussions have taken place with the Department of Water Supply (DWS) on water availability for the project. However, a water commitment from DWS is premature at this time because DHHL is still in the process of reviewing proposals received from potential developers for the project. According to DWS, once a water commitment is received, the developer will have one year to tie into the system. We also understand that there is currently no moratorium on water hookups. A request for water hookups will be made after a developer has been selected and a site plan and lot count have been determined. It should also be noted that DHHL does have water credits for its participation in the development of potable water facilities in Upcountry Maui. These credits exceed the number of units that are planned at Waiehu Kou Phase 2.

Traffic – When the Phase 1 project was designed and constructed, DHHL did not own the Phase 2 and 3 parcels. Thus, there was no consideration for an internal connector road to link the three parcels. To construct such a road now would require displacing one or more existing homestead residents. If a connector road is proposed, discussion with affected homeowners and the existing community association must take place to determine the feasibility.

The State Department of Transportation (DOT) has been given a copy of the Draft EA for review and comment. DOT was requested to provide comments by March 30, 1998. Comments received will be incorporated into the Final EA.

Fire – Telephone discussions with the Department of Fire Control (DFC) indicated that the estimated time of arrival is between 5 and 10 minutes. DFC did not indicate having a major concern with regard to this development. DFC was provided with a copy of the Draft EA for review and comment. However, to date, no comments have been received.

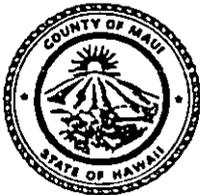
4. The Maui County Arborist Committee and State Department of Transportation (DOT) will be consulted prior to the removal of any ironwood trees.
5. Page 30 of the Draft EA will be corrected to reflect Department of Public Works and Waste Management, Land Use and Code Administration as the County agency which reviews subdivision plan approvals, and grading and building permits.

If you have any questions or additional comments and suggestions, contact Darrell Ing, at 586-3844.

Aloha



KALI WATSON, Chairman
Hawaiian Homes Commission



DEPARTMENT OF
PARKS AND RECREATION
COUNTY OF MAUI

1580-C KAAHUMANU AVENUE WAILUKU, HAWAII 96793

LINDA LINGLE
Mayor

HENRY OLIVA
Director

ALLEN SHISHIDO
Deputy Director

(808) 243-7230
FAX (808) 243-7934

February 13, 1998

Joanne Hiramatsu
Townscape, Inc.
900 Fort Street Mall, Suite 800
Honolulu, HI 96813

Dear Ms. Hiramatsu:

SUBJECT: WAIEHU KOU PHASE 2
DRAFT ENVIRONMENTAL ASSESSMENT

We have reviewed the above referenced document and provide the following comments:

1. The Department of Parks and Recreation requests participation in the planning and siting of the park at a very early stage. As you may know, the Waiehu Golf Course abuts the proposed subdivision and a cooperative planning effort would be in the best interest of both parties.
2. We are in the process of planning for improvements to the Waiehu Golf Course which includes upgrading the infrastructure such as sewer and fire protection, providing vehicular access for our maintenance personnel, and relocating our golf course maintenance shop. It may be feasible to share in the cost of some of these improvements that would be of mutual benefit to both parties.

Thank you for the opportunity to comment on this. We look forward to meeting with you to further discuss this project.

Sincerely,

HENRY OLIVA
Director

c: Patrick T. Matsui, Chief of Planning and Development
Ronald Kubo, Waiehu GC Superintendent
Charles Jencks, Director of Public Works

s:\planning\ptm\hhlsubb.wpd

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



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

KALI WATSON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

March 31, 1998

Mr. Henry Oliva, Director
Department of Parks and Recreation
County of Maui
1580-C Kaahumanu Avenue
Wailuku, Hawaii 96793

Dear Mr. Oliva:

SUBJECT: Draft Environmental Assessment
Waichu Kou Phase 2

Thank you for your comments on the Draft Environmental Assessment (EA) for the subject project. We appreciated your review of the EA and have the following responses to your comments:

Your office will be consulted in the planning and development of the park that is planned within this new community.

The project will involve upgrades to infrastructure facilities as well as new facilities to accommodate this project. A cost sharing of some of these common facilities would be of great benefit to both of our offices.

If you have any questions or additional comments and suggestions, contact Darrell Ing, at 586-3844.

Aloha,

A handwritten signature in cursive script that reads "Kali Watson".

KALI WATSON, Chairman
Hawaiian Homes Commission

David and Anne Brown
2525 Kahekili Highway
Wailuku, Hawaii 96793-9233
808 244-5721

February 17, 1998

Department of Hawaiian Home Lands
P.O.Box 1879
Honolulu, Hawaii 96805

Dear Mr. Ing:

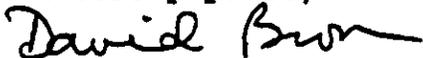
Concerning: Waiehu Kou Phase 2 Native Housing - DEA First Notice

An Environmental Impact Statement must be done for the following reasons:

1. Scaevola coriacea, the recumbent naupaka with no Hawaiian name has been found in Leisure Estates Subdivision and the Waiehu Municipal Golf Course, both of which adjoin your property. U.S. ENDANGERED SPECIES
2. A complete archeological survey as part of the EIS is necessary. In 1998 two or more ancient burials were discovered under Kahekili Highway. Even though your parcel has been farmed, there is still archeological meaning there.
3. A complete grading plan will be a part of the EIS. As you know you got a waiver of the drainage plan for your first increment. That was an error. Kahekili Highway floods regularly next to your land. With sugar cane replaced by macadamia nut trees mauka of your land more flooding is expected.
4. The two acre site for commercial development should be studied in the EIS. Commercial growth has no place in the agricultural/rural area.
5. This project needs a road usage survey. Kahekili Highway is already impassable at school times in the morning and afternoon. The left hand turn needed by parents to turn into Waihee School effectively closes Kahekili Highway in both directions. This is especially bad in the morning. Your project is of such magnitude that you will want to make an off-site improvement at Waihee School to improve the traffic flow.
6. The population of Waihee is about 170 homes. Your project overwhelms the Waihee Village. You can address these social impacts in your EIS.

I welcome the Waiehu Kou Phase 2 Native Hawaiian Housing. I will be willing to work with you on the Environmental Impact Statement. Welcome to the Neighborhood!

Sincerely yours,



David H. Brown

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



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

KALI WATSON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

March 31, 1998

Mr. & Mrs. David Brown
2525 Kahekili Highway
Wailuku, Hawaii 96793 -9233

Dear Mr. & Mrs. Brown:

SUBJECT: Draft Environmental Assessment
Waichu Kou Phase 2

Thank you for your comments on the Draft Environmental Assessment (EA) for the subject project. We appreciated your review of the EA and have the following responses to your comments:

1. Scaevola coriacea – A botanical survey of the property was performed to identify any endangered plants on the property. A copy of the report was included in the Draft Environmental Assessment (DEA). The botanist was aware of the *scaevola coriacea* in neighboring areas prior to conducting the survey. However, neither it nor any other endangered plants were encountered on the property.
2. Archaeology – An archaeological survey of the property was conducted by the State Historic Preservation Division. The survey concluded that there were no archaeological resources of significance on the property. However, the sand dunes adjacent to the property may contain burials. For this reason, the adjacent sand dunes are not planned for development and will be left in their natural state. Should archaeological resources be uncovered during the construction stage of the project, work will stop and the State Historic Preservation Division will be consulted immediately.
3. Drainage – A drainage and grading plan will be prepared for the project to mitigate any adverse drainage impacts from the development of the project.
4. Commercial parcel – The commercial parcel is being set aside for a future neighborhood commercial site that would potentially provide walking distance conveniences for the future and nearby residents. If the economics proves that a commercial site is not feasible, the site may be developed into additional residential lots.
5. Roadway usage – A Traffic Impact Analysis Report was prepared for the project. The study concluded that Kahekili Highway has little traffic congestion and will not warrant acceleration or deceleration lanes if two access roadways into the project are constructed. In addition, a 10-

Mr. & Mrs. David Brown
Page 2
March 31, 1998

foot wide strip of land adjacent to the project boundary will be set aside for future roadway improvements on Kahekili Highway.

The Department of Education was also consulted in regards to the impact on school facilities. Approximately 21 new elementary school students could potentially reside in this development. However, it should be noted that some of the future residents of this project may already reside on Maui and their children may already go to Waichu Elementary School.

6. Waihee Village— This project is not adjacent to Waihee Village. The project site is an infill project: being situated between the existing Waichu Kou Phase I and Leisure Estates subdivisions.

We appreciate your offer to work with us on the preparation of an Environmental Impact Statement. However, based on the thirteen Significance Criteria in Title 11, Chapter 200-12 of the Department of Health Administrative Rules, we have determined that no significant adverse environmental impact is expected from the development of this project, and no Environmental Impact Statement is required.

If you have any questions or additional comments and suggestions, contact Darrell Ing, at 586-3844.

Aloha,



KALI WATSON, Chairman
Hawaiian Homes Commission



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813-5249
PHONE (808) 594-1888
FAX (808) 594-1865

February 23, 1998

Ms. Joanne Hiramatsu
Townscape, Inc.
900 Fort Street Mall, Suite 800
Honolulu, HI 96813

Dcc. No. EIS-134

Subject: Draft Environmental Assessment (DEA) for Waiehu Kou Phase 2,
Native Hawaiian Housing, Waiehu, Island of Maui

Dear Ms. Hiramatsu:

Thank you for the opportunity to review the Draft Environmental Assessment (DEA) for Waiehu Kou Phase 2, Native Hawaiian Housing, Waiehu, Island of Maui. The Department of Hawaiian Home Lands (DHHL) is planning to construct on 35 acres about 100 single family units for Native Hawaiian beneficiaries. The proposed housing development is identified as Waiehu Kou Phase 2.

The Office of Hawaiian Affairs (OHA) has no objections at this time to the proposed development. Except for short-term dust and noise impacts during construction, the development apparently bears no adverse impacts on adjacent lands nor upon existing flora and fauna and no known archaeological remains exist in the area. However, OHA concurs with the State Historic Preservation Division recommendation to leave sand dunes along the eastern and southeastern sides of the development untouched as they are likely to contain burials and other cultural remains.

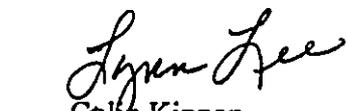
Letter to Ms. Joanne Hiramatsu
February 23, 1998
Page 2

Please contact Colin Kippen (594-1938), LNR Officer, or Luis Manrique (594-1758), should you have any questions on this matter.

Sincerely yours,



Randall Ogata
Administrator


for
Colin Kippen
Officer,
Land and Natural
Resources Division

cc: Board of Trustees
CAC, Island of Maui

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



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

KALI WATSON
CHAIRMAN
HAWAIIAN HOMES COMMISSION
JOBIE M. K. M. YAMAGUCHI
DEPUTY TO THE CHAIRMAN

March 31, 1998

Mr. Randall Ogata, Administrator
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813-5249

Attention: Mr. Colin Kippen, Land and Natural Resources Division

Dear Mr. Ogata:

SUBJECT: Draft Environmental Assessment
Waiehu Kou Phase 2

Thank you for your comments on the Draft Environmental Assessment (EA) for the subject project. We appreciated your review of the EA and have the following responses to your comments:

The use of dust screens and frequent watering will mitigate short-term dust impacts during the construction phase. Fortunately, the project site is located such that the prevailing trade winds blow into the agricultural fields across Kahekili Highway rather than towards neighboring residential areas of Waiehu Kou Phase 1 and Leisure Estates residents.

Noise impacts during construction will be mitigated by the use of mufflers on construction equipment and specific start and curfew times.

Potential dust and noise mitigation practices will be performed in accordance with the Department of Health regulations.

If you have any questions or additional comments and suggestions, call Darrell Ing, at 586-3844.

Aloha,

A handwritten signature in cursive script that reads "Kali Watson".

KALI WATSON, Chairman
Hawaiian Homes Commission

BENJAMIN J. CAYETANO
GOVERNOR



GARY GILL
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

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

March 3, 1998

Kali Watson
Department of Hawaiian Home Lands
335 Merchant Street #202
Honolulu HI 96813

Attn: Darrell Ing

Dear Mr. Watson:

Subject: Draft Environmental Assessment (EA) for Waiehu Kou Phase II Native Hawaiian Housing, Maui

1. **Segmentation:** Phases I and III are referenced in this draft EA. The Environmental Impact Statement law prohibits segmentation of larger projects and requires that full disclosure of impacts be made on projects in their entirety. Provide a full analysis and discussion of impacts of phases I and II, and to the greatest foreseeable extent possible, Phase III. Also discuss any related projects in the area.
2. **Significance criteria:** Include a discussion of findings and reasons, according to the significance criteria listed in HAR 11-200-12, that supports the anticipated Finding of No Significant Impact (FONSI) determination. You may use the enclosed sample as a guideline. This analysis must be done prior to a determination of significance of impacts.
3. **Determination:** A determination stating that an environmental impact statement will not be required is listed in Section 9 of the draft EA. The EIS law prohibits a determination of significant impact or lack of significant impact before the end of 30-day public review period and prior to receipt, response and analysis of all written comments. For a draft EA the proper determination is *anticipated FONSI* (Finding of No Significant Impact). Please also note that, as of April 1996, the term "negative declaration" has been replaced with Finding of No Significant Impact.

Kali Watson
March 6, 1998
Page 2

4. Funding: The total project cost is not given. Please disclose all state or county funds involved, including any federal funds flowing through the state or county.
5. Contacts: Document all contacts in the final EA and include copies of any correspondence.
6. Timeframe: What are the anticipated start and end dates of this project?
7. Roadways: Where will roads be located? Will roadways within the project be built to county standards and dedicated to the county after construction? Provide a subdivision or lot plan to assist reviewers in analysis of project impacts.
8. Grading: The parcel appears to rise about 30 feet in elevation from the makai boundary to Kahekili Highway. Please describe the extent of grading planned to construct the finished lots and what measures will be taken to reduce polluted runoff during and after construction.
9. Resource conservation measures: Please describe any efforts to require or encourage the use of elements or materials in individual homes to promote environmentally sensitive and energy efficient design, such as low-flush toilets, solar panels or energy-efficient fixtures.

If you have any questions, please call Nancy Heinrich at 586-4185.

Sincerely,



GARY GILL
Director

Enc.

c: Joanne Hiramatsu, Townscape

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



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

KALI WATSON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

March 31, 1998

Mr. Gary Gill, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Mr. Gill:

SUBJECT: Draft Environmental Assessment
Waiehu Kou Phase 2

Thank you for your comments on the Draft Environmental Assessment (EA) for the subject project. We appreciate your review of the EA and have the following responses to your comments.

1. Segmentation – As stated in the EA, Phase 1 of the project was designed and constructed prior to the acquisition of the Phase 2 and 3 parcels by the Department of Hawaiian Home Lands (DHHL). This Environmental Assessment for Phase 2 does not include any other phases because Phase 3 of the project is expected remain in macadamia nut orchards for the foreseeable future. An Environmental Assessment shall be prepared when development plans for that parcel have been determined.
2. Significance criteria – A discussion of findings and reasons, according to the significance criteria, will be included in the Final Environmental Assessment.
3. Determination – A determination on whether or not an Environmental Impact Statement is required will be made after review and analysis of all written comments. We acknowledge that the term “negative declaration” has been replaced with “Finding of No Significant Impact.”
4. Funding – The total cost to develop the project is unknown at this time. The DHHL has requested proposals from developers for a site plan with related cost estimates to develop the project as described in the EA. The project cost will be determined by the selected configuration of land uses, on- and off-site infrastructure that may be required, and the amenities provided. DHHL will be responsible for payment of on- and off-site infrastructure. Beneficiaries will be responsible for payment of the cost related to house construction. The developer will be responsible for financing the house construction costs. No direct Federal funds will be used for the site construction. However, Federal mortgage insurance programs and direct mortgage loan programs will be utilized to facilitate the sale of homes to qualified

Mr. Gary Gill
Page 2
March 31, 1998

native Hawaiians. The Federal mortgage programs administered by the Department of Housing and Urban Development, Veterans Administration, or Department of Agriculture, Rural Economic Development are expected to be utilized.

5. Contacts – Copies of written correspondence with agencies and organizations will be included in the Final EA. Some of the contacts listed in Section 10 of the Draft EA were telephone conversations. Source of all contacts will be indicated in the Final EA.
6. Timeframe – DHHL is anticipating construction to begin in early 1999. The project is expected to take two to three years to complete, subject to negotiation and contracting with the selected developer.
7. Roadways – DHHL did not prepare a site plan for the project. The exact location of roadways will be determined after the developer is selected, as each developer has proposed differing alignments. However, based on preliminary discussions with the State Department of Transportation and based on the recommendation in Traffic Impact Analysis Report, a maximum of two access roadways into the project are anticipated. Roadways will be built to meet County standards. By statute, the Counties are responsible to maintain the roadways on Hawaiian home lands. However, Hawaiian home lands are inalienable and cannot be dedicated to the County.
8. Grading – The grading plan has not yet been determined because the developer and its lotting and roadway configuration has not been selected. It is expected that because the majority of the site is relatively flat, cutting and filling will be kept to a minimum. In addition, the sand dunes area on the makai portion of Phase 2 will not be graded or developed due to potential occurrence of burials. An erosion control plan and Best Management Practices will be prepared for construction operations.
9. Resource conservation measures – DHHL will encourage the developer to design the houses to take advantage of the prevailing trade winds for cooling, provide an option to the homeowners for solar water heaters versus electric, and install low flush toilets and energy-efficient devices to promote an environmentally sensitive and energy efficient development.

If you have any questions or additional comments and suggestions, contact Darrell Ing, at 586-3844.

Aloha,



KALI WATSON, Chairman
Hawaiian Homes Commission

LINDA LINGLE
Mayor

CHARLES JENCKS
Director

DAVID C. GOODE
Deputy Director



RALPH NAGAMINE, L.S., P.E.
Land Use and Codes Administration

EASSIE MILLER, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

Solid Waste Division

Telephone: (808) 243-7845
Fax: (808) 243-7955

COUNTY OF MAUI
**DEPARTMENT OF PUBLIC WORKS
AND WASTE MANAGEMENT**
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

March 9, 1998

Ms. Joanne Hiramatsu
Townscape, Inc.
900 Fort Street Mall, Suite 800
Honolulu, Hawaii 96813

Dear Ms. Hiramatsu:

**SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
WAIEHU KOU PHASE II
TMK: (2) 3-2-013:001**

We reviewed the subject submittal and have the following comments.

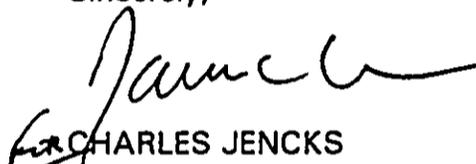
1. Construction waste shall be taken to the Maui Construction and Demolition Landfill in Maalaea.
2. The developer should be informed that the Wastewater Reclamation Division cannot insure that wastewater system capacity will be available for the project.
3. Provide discussion and calculations (sewer impact study) to substantiate that the existing wastewater system is adequate to serve this project. Wastewater contribution calculations are required before a building permit is issued.
4. The developer shall pay assessment fees for treatment plant expansion costs in accordance with the ordinance setting forth such fees.
5. The developer is required to fund any necessary off-site improvements to the collection system and wastewater pump stations required as a result of this development.
6. A detailed drainage report and an erosion control Best Management Practices (BMP) plan shall be submitted with the subdivision

Ms. Joanne Hiramatsu
March 9, 1998
Page 2

construction plans for review and approval prior to issuance of grading permits. The drainage report shall include hydrologic and hydraulic calculations and the schemes for disposal of runoff waters. It must comply with the provisions of the "Rules for Design of Storm Drainage Facilities in the County of Maui" and must provide verification that the grading and runoff water generated by the project will not have an adverse effect on adjacent and downstream properties. The BMP plan shall show the location and details of structural and non-structural measures to control erosion and sedimentation to the maximum extent practicable.

If you have any questions, please contact David Goode at 243-7845.

Sincerely,


for CHARLES JENCKS
Director of Public Works
and Waste Management

DG:co/mt
S:\LUCA\ZM\WAIEHU.

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



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

KALI WATSON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

March 31, 1998

Mr. Charles Jencks, Director
Department of Public Works and Waste Management
County of Maui
200 South High Street
Wailuku, Maui, Hawaii 96793

Dear Mr. Jencks:

SUBJECT: Draft Environmental Assessment
Waiehu Kou Phase 2

Thank you for your comments on the Draft Environmental Assessment (EA) for the subject project. We appreciated your review of the EA and have the following responses to your comments.

1. The EA shall include a statement that construction waste will be taken to the Maui Construction and Demolition Landfill in Maalaea.
2. We will inform the developer that the Wastewater Reclamation Division cannot insure that wastewater system capacity will be available for the project.
3. A sewer impact study to substantiate that the existing wastewater system is adequate to serve this project will be performed by the selected developer prior to the acquisition of a building permit.
4. Appropriate assessment fees for treatment plant expansion costs will be part of the development cost.
5. Off-site improvements to the collection system and wastewater pump station that are required as a result of this development will be constructed by the developer at DHHL's cost.
6. A detailed drainage report and an erosion control Best Management Practices (BMP) plan will be submitted with the subdivision construction plans for review and approval prior to issuance of grading permits.

If you have any questions or additional comments and suggestions, contact Darrell Ing. at 586-3844.

Aloha.

A handwritten signature in cursive script that reads "Kali Watson".

KALI WATSON, Chairman
Hawaiian Homes Commission

LINDA CROCKETT LINGLE
MAYOR



RONALD P. DAVIS
CHIEF

HENRY A. LINDO, SR.
DEPUTY CHIEF

COUNTY OF MAUI
DEPARTMENT OF FIRE CONTROL

200 DAIRY ROAD
KAHULUI, MAUI, HAWAII 96732
(808) 243-7561

March 27, 1998

Joanne Hiramatsu
Townscape Inc.
900 Fort Street Mall, Suite 800
Honolulu, HI. 96813

SUBJECT: Waiehu Kou Phase 2 Draft Environmental Assessment

Dear Ms. Hiramatsu

The Maui County Department of Fire Control has reviewed the subject draft EA and has no objection to the project. We would however like to make a correction to page 21 regarding fire services. The Kahului Fire Station is equipped with a 5-person engine, a 5-person rescue truck and a 1-person 2500-gallon tanker. These resources are adequate to provide fire service to the project. the response time to the area is 5 to 10 minutes.

Thank you for the opportunity to comment.

Sincerely

A handwritten signature in black ink, appearing to read "Ben H Bland III".

Ben H Bland III, Lieutenant
Fire Prevention Bureau
County of Maui, Dept. of Fire Control

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



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

KALI WATSON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

April 2, 1998

Lt. Ben H. Bland III
Fire Prevention Bureau
County of Maui, Department of Fire Control
200 Dairy Road
Kahului, Maui 96732

Dear Lt. Bland:

SUBJECT: Draft Environmental Assessment
Waiehu Kou Phase 2

Thank you for your comments on the Draft Environmental Assessment (EA) for the subject project.
We appreciate your review of the EA.

Coorections will be made to the EA regarding the equipment and staff a the Kahului Fire Station.

If you have any questions or additional comments and suggestions, call Darrell Ing, at 586-3844.

Aloha,

A handwritten signature in cursive script that reads "Kali Watson".

KALI WATSON, Chairman
Hawaiian Homes Commission

BENJAMIN J. CAYETANO
GOVERNOR



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

March 27, 1998

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAAI
GLENN M. OKIMOTO

IN REPLY REFER TO:

STP 8.8505

Mr. Bruce Tsuchida
President
Townscape, Inc.
900 Fort Street Mall, Suite 800
Honolulu, Hawaii 96813

Attention: Ms. Joanne Hiramatsu

Dear Mr. Tsuchida:

Subject: Waiehu Kou Phase 2 Housing Project
Draft Environmental Assessment
TMK: 3-2-013: 01

Thank you for your transmittal of March 19, 1998, requesting our review of the subject project.

Our comments are as follows:

1. The Maui Long Range Land Transportation Plan includes widening of Kahekili Highway from two to four lanes. The developer will need to coordinate the setback requirements for roadway widening with our Highways Division.
2. We have concerns on the number of proposed access points to Kahekili Highway. The developer must also coordinate the access plans with our Highways Division. A sight-distance study must also be submitted for our review and approval.

We appreciate the opportunity to provide comments.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Kazu Hayashida".

KAZU HAYASHIDA
Director of Transportation

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



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

KALI WATSON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

April 2, 1998

Mr. Kazu Hayashida, Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Dear Mr. Hayashida:

SUBJECT: Draft Environmental Assessment
Waiehu Kou Phase 2

Thank you for your comments on the Draft Environmental Assessment (EA) for the subject project. We appreciate your review of the EA and have the following responses to your comments:

The developer will coordinate the setback requirements for Kahekili Highway and access points into the project with the Highways Division. A sight distance study will be submitted for your review and approval.

If you have any questions or additional comments and suggestions, call Darrell Ing, at 586-3844.

Aloha,

A handwritten signature in cursive script that reads "Kali Watson".

KALI WATSON, Chairman
Hawaiian Homes Commission

APPENDIX A

BOTANICAL RESOURCES ASSESSMENT

BOTANICAL RESOURCES ASSESSMENT
WAIEHU KOU PHASE 2 PROJECT
WAILUKU DISTRICT, MAUI

by

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

Prepared for: TOWNSCAPE, INC.

November 1997

BOTANICAL RESOURCES ASSESSMENT
WAIEHU KOU PHASE 2 PROJECT
WAILUKU DISTRICT, MAUI

INTRODUCTION

The Department of Hawaiian Home Lands (DHHL) is planning to develop a 35-acre site at Waiehu, near Wailuku, Maui. The preliminary development plan includes 100+ single family lots, a 2-acre park, a small commercial lot, and the required roads and utilities. The site is bounded by the completed Waiehu Kou Phase 1 project site to the west, Waiehu Municipal Golf Course to the north, Waiehu Ocean View Estates to the east, and Kahekili Highway to the south.

The majority of the site is more or less level with the substrate consisting of 'Iao silty clay soil (0 to 3 percent slopes), "IaA" on the soil maps (Foote et al. 1972), or light grayish-brown loose sand. The more or less level areas are covered by weedy, open scrub vegetation. A sandy ridge covered by a koa haole and kiawe thicket separates the parcel from the municipal golf course.

The soil maps (Foote et al. 1972), which are based on aerial photographs from the early 1960's, show that most of the site was in sugar cane cultivation. More recently, the portion of the site with soil was used for growing pineapples.

Field studies to assess the botanical resources found on the 35-acre Waiehu Kou Phase 2 project site were conducted on 19 November 1997 by a team of two botanists. The primary objectives of the survey were to prepare a general description of the vegetation on the site and to search for threatened and endangered species as

well as species of concern. The dwarf or creeping naupaka (Scaevola coriacea), an endangered species protected by Federal and State endangered species laws, is known from the adjacent municipal golf course and Waiehu Ocean View Estates (Herbst 1986).

Prior to the field studies, topographic maps and soil maps of the project site were examined to familiarize the principal investigator with vegetation cover types, topography, boundaries, and reference points. In the field, notes were made on disturbances, plant associations and distribution, substrate types, drainage patterns, etc. Plants were identified in the field. Plants which could not be positively identified were collected for later determination in the herbarium (University of Hawai'i, Manoa -- HAW), and for comparison with the taxonomic literature.

DESCRIPTION OF THE VEGETATION

In the discussion which follows, the plant names used are in accordance with the most recent taxonomic treatment of the Hawaiian flora by Wagner et al. (1990).

The majority of the site consists of more or less level land covered by a weedy scrub vegetation composed of introduced or alien plant species. Introduced species are all those plants which were brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact (Cook's discovery of the islands in 1778). An existing dirt road, paved in some places, runs through the middle of the site. To the west of this road, the substrate is very dark brown to dark grayish-brown soil ('Iao silty clay). This portion of the site was under pineapple cultivation at one time, and there are remnant dried out pineapple plants (Ananas comosus), black plastic sheeting, and pvc piping scattered here and there. Sourgrass (Digitaria insularis), a native of the New World tropics, is the dominant plant cover with

smaller patches of castor bean (Ricinus communis), smooth rattlepod (Crotalaria pallida), Glycine wightii, maunaloa vine (Canvalia cathartica), and Chinese violet (Asystasia gangetica).

To the east of the existing road, the substrate is sandy and has also been bulldozed. This section of the parcel supports scattered clumps and individuals of young ironwood trees (Casuarina equisetifolia). Bermuda grass or manienie (Cynodon dactylon) is abundant in places forming loose mats, 6 to 10 inches tall. Golden crownbeard (Verbesina encelioides), an annual with large clusters of bright yellow, daisy-like flowers, is abundant during this time of year. Other species occurring here in fairly large numbers are Guinea grass (Panicum maximum), Natal redtop grass (Melinis repens), Macroptilium atropurpureum, Heliotropium procumbens, Florida beggarweed (Desmodium tortuosum), and young koa haole shrubs (Leucaena leucocephala).

Where the project site abuts the Waiehu Municipal Golf Course, there is a dense thicket of koa haole shrubs, 7 to 15 ft. tall, and scattered stands of kiawe trees (Prosopis pallida), 20 to 30 ft. tall. Beneath the taller woody components is a thick growth of Guinea grass with clumps 3 to 6 ft. tall. Locally common are mats of Chinese violet. Wild bittermelon vines (Momordica charantia) are abundant along the margins of the thicket later in the year. A few grassy openings are found in the thicket, usually where it has been recently disturbed. These areas support other weedy plants such as sourbush (Pluchea carolinensis), Spanish needle (Bidens pilosa), four o'clock (Mirabilis jalapa), Jamaica vervain (Stachytarpheta jamaicensis), and a number of species from the weedy scrub vegetation found on the level, more recently disturbed portion of the project site.

DISCUSSION AND RECOMMENDATIONS

With the exception of the area covered by the koa haole and kiawe thicket, all of the project site has been recently disturbed. There is evidence of past sugar cane cultivation and, more recently, pineapple cultivation on the portion of the project site with soil. Part of the parcel was used as a construction base site for the earlier development. The more or less sandy areas have also been graded.

The vegetation on the 35-acre parcel is dominated almost exclusively by introduced plants. An intensive search was made in the area of the koa haole and kiawe thicket for the endangered dwarf naupaka (Scaevola coriacea), but we did not find any plants. The Guinea grass is very dense in the thicket area and tends to crowd out any other smaller plants. Only three native species were observed on the site and they occurred in low numbers. These were the 'ilima (Sida fallax), 'uhaloa or hi'aloa (Waltheria indica), and popolo (Solanum americanum). These three native species are indigenous, that is, they are native to the Hawaiian Islands and also elsewhere. None of the plants found during the field studies is a listed, proposed, or candidate threatened and endangered species; nor is any plant a species of concern (U.S. Fish and Wildlife Service 1997).

Given the findings above, the proposed development of the site should not have a significant negative impact on the botanical resources. Portions of the koa haole and kiawe thicket should be left intact to serve as a buffer zone between the proposed homes and the golf course, and because of the possibility of burials. Not everyone plays as well as Tiger Woods or Arnold Palmer, and stray golf balls can occasionally be found in the thicket area.

LITERATURE CITED

- Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens. 1972. Soil survey of the islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. U.S. Department of Agriculture, Soil Conservation Service, Washington, D.C.
- Herbst, D.R. 1986. Endangered and threatened wildlife and plants; Determination of endangered status for Scaevola coriacea (drawf naupaka). Federal Register 51: 17971-17974.
- U.S. Fish and Wildlife Service. 1997. U.S. Fish and Wildlife Service species list, plants. September 25, 1997. Pacific Islands Ecoregion Office, Honolulu, HI.
- Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i. 2 vols. University of Hawai'i Press and B.P. Bishop Museum Press, Honolulu. B.P. Bishop Museum Special Publication 83.

APPENDIX B

AVIFAUNAL AND FERAL MAMMAL SURVEY

AVIFAUNAL AND FERAL MAMMAL SURVEY OF DHHL
WAIEHU PROJECT, MAUI

Prepared for
Townscape, Inc., Honolulu
by

Phillip L. Bruner
Assistant Professor of Biology
Director, Museum of Natural History
BYU-Hawaii
Environmental Consultant - Faunal (Bird & Mammal) Surveys
Laie, Hawaii 96762

24 November 1997

INTRODUCTION

The purpose of this report is to summarize the findings of a bird and mammal field survey of 35 acre site at Waiehu, Maui. Figure One shows the location of the survey. Also included in the report are references to pertinent literature and unpublished reports.

The objectives of the field survey were to:

- 1- Document what bird and mammal species occur on the property or may likely occur given the available habitats and limitations imposed by predators and disturbance.
- 2- Provide current baseline information on the relative abundance of each species.
- 3- Note the presence or likely occurrence of any native fauna particularly any that are considered "Endangered" or "Threatened".

GENERAL SITE DESCRIPTION

This site contains a limited array of habitats. Grass and scrub vegetation dominate the site. A line of trees separates the property along its makai boundary from Waiehu Golf Course. Residential housing and Kahekili Highway also adjoin the site.

STUDY METHODS

The survey was conducted on 20 November 1997. The entire site was traversed on foot. Field observations were made with binoculars and by listening for vocalizations. These observations were concentrated during the peak bird and mammal activity periods of early morning and late afternoon/dusk. Attention was also paid to the presence of tracks and scats as indicators of bird and mammal activity.

All birds and mammals seen or heard were tallied. These data provide the basis for the relative abundance estimates given in this report. Published and unpublished resources were also consulted (Bruner 1989, Hawaii Audubon Society 1993, Pratt et al. 1987). Observations of feral mammals were limited to visual sightings and evidence in the form of scats and tracks. No attempts were made to trap mammals in order to obtain data on their relative abundance and distribution. An effort of this magnitude was considered unnecessary for the purpose of this survey.

Scientific names used in this report follow those given in Pyle (1997) and Honacki et al. (1982). Weather during the survey was mixed with rain during the morning and mostly cloudy in the late afternoon.

RESULTS AND DISCUSSION

Native Birds:

No native species were recorded. The Short-eared Owl or Pueo (Asio flammeus) forages in open habitat and forest. They are fairly common on the slopes of Haleakala and may occur in the Waiehu area. This would be the only native bird that might be found on or around the site. They are not listed as endangered or threatened on Maui.

Migratory Birds:

Migratory shorebirds breed in the arctic and winter in Hawaii. The Pacific Golden-Plover (Pluvialis fulva) is the most abundant migratory shorebird in Hawaii (Hawaii Audubon Society 1993). They forage on lawns, pastures, and fields as well as along shorelines. Extensive research on this species, both in Hawaii and Alaska, has yielded much information on their life history (Johnson et al. 1981, 1989, 1993). Two plover were tallied on the survey. This species can also be seen on Waiehu Golf Course. They are not threatened or endangered. The Ruddy Turnstone (Arenaria interpres) also forages in small flocks along shorelines, mudflats, lawns and fields and may also occur at this site.

Introduced Birds:

A total of 11 species of non-native (introduced) birds were recorded on the survey. Table One gives the names of these species

and indicates their relative abundance. Most species expected in this area and habitat were accounted for. Pratt et al. (1987) and Hawaii Audubon Society (1993) provide additional information on introduced birds in Hawaii.

Feral Mammals:

Small Indian Mongoose (Herpestes auropunctatus), Cats (Felix catus), and House Mouse (Mus musculus) were all seen on and around the site. These species are abundant in Hawaii (Tomich 1986). The native endangered Hawaiian Hoary Bat (Lasiurus cinereus semotus) is uncommon on Maui (Kepler and Scott 1990). They forage in a wide variety of habitats from forest to urban and even at high elevation (10,000 feet). None were recorded on this survey.

CONCLUSIONS

The DHHL Property at Waiehu, Maui has been recently cleared of large trees and brush. No native birds were recorded. The only migrant was the Pacific Golden-Plover, the most abundant winter migrant in Hawaii. The introduced species of birds found on the survey were those typical of this region. No unusual or unexpected species were recorded. Feral mammals were also the usual, common introduced species. The native and endangered Hawaiian Hoary Bat was not found on the survey. It is uncommon on Maui. This site does not contain any special or unique resources important to native, migratory or introduced wildlife. The proposed development should have no significant impact on wildlife in this region of the island.

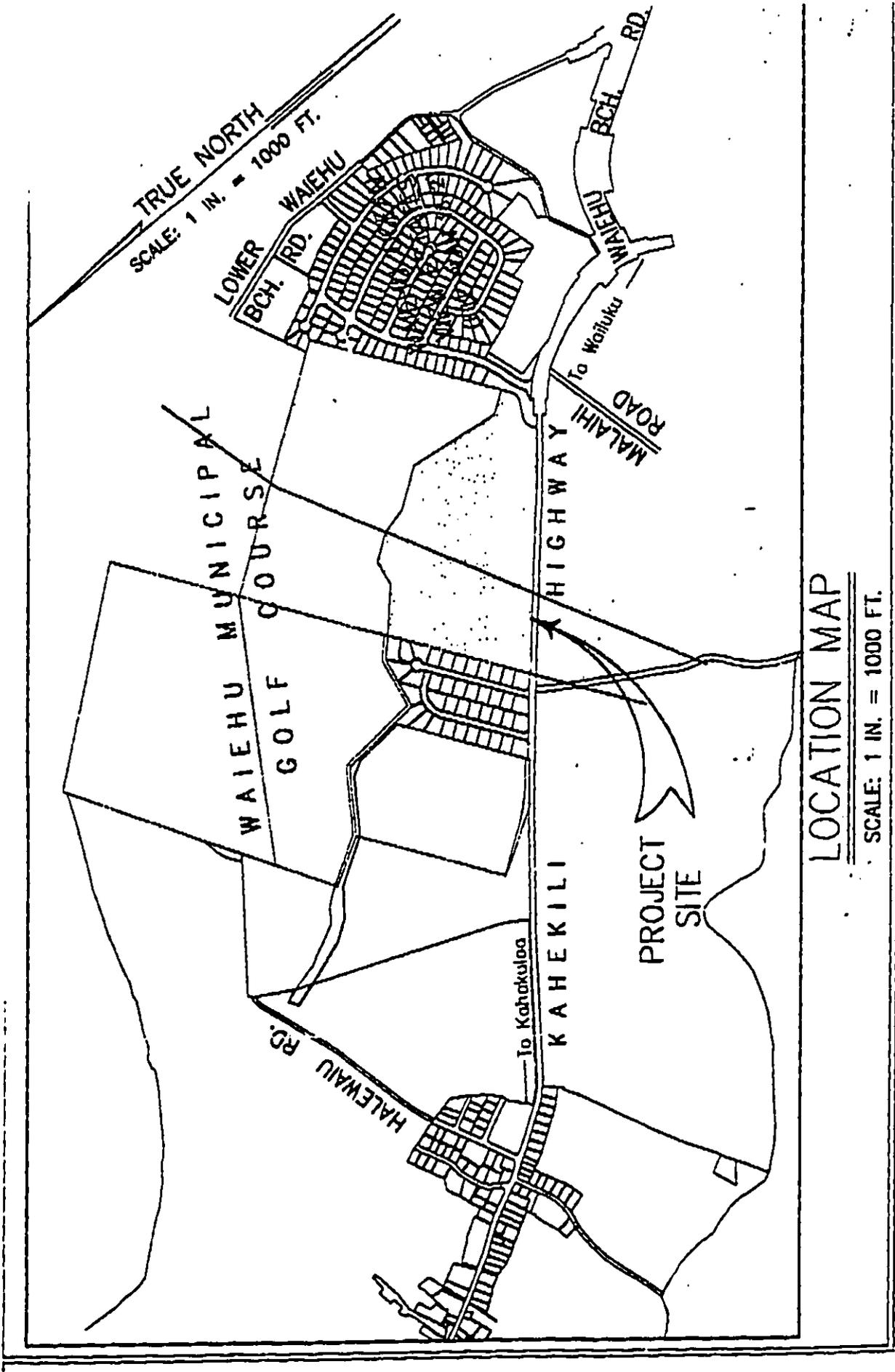


Fig. 1. Location of faunal survey DHHL Waiehu, Maui.

TABLE 1

Introduced birds recorded at Waiehu, Maui on 20 November 1997. Relative abundance = number of birds observed on survey. A = abundant 20+; C = common 10-19; U = uncommon 5-9; R = rare (less than 5 recorded).

COMMON NAME	SCIENTIFIC NAME	RELATIVE ABUNDANCE
Gray Francolin	<u>Francolinus pondicerianus</u>	R
Spotted Dove	<u>Streptopelia chinensis</u>	A
Zebra Dove	<u>Geopelia striata</u>	C
Sky Lark	<u>Alauda arvensis</u>	R
Hwamei	<u>Garrulax canorus</u>	R
Common Myna	<u>Acridotheres tristis</u>	A
Japanese White-eye	<u>Zosterops japonicus</u>	C
Northern Cardinal	<u>Cardinalis cardinalis</u>	U
House Finch	<u>Carpodacus mexicanus</u>	A
House Sparrow	<u>Passer domesticus</u>	U
Nutmeg Mannikin	<u>Lonchura punctulata</u>	C

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- Tomich, P.Q. 1986. Mammals in Hawaii. Bishop Museum Press, Honolulu.

APPENDIX C

**MEMORANDUM DATED JULY 8, 1997
FROM DLNR HISTORIC PRESERVATION
DIVISION TO DHHL**

BENJAMIN J. JAYETANO
GOVERNOR OF HAWAII



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

July 8, 1997

RECEIVED JUL 10 1997
MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTES

Gilbert Coloma-Agaran

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
CONSERVATION AND
ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
DIVISION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

MEMORANDUM

LOG NO: 19778 ✓
DOC NO: 9707RC01

TO: Darrell Yagodich, Planning Office
Department of Hawaiian Home Lands

FROM: Don Hibbard, Administrator
Department of Land & Natural Resources
State Historic Preservation Division

A handwritten signature in black ink, appearing to be "D. Hibbard".

SUBJECT: **High Priority Project -- Proposed Waiehu Residential Lots (DHHL)**
Waiehu, Wailuku, Maui
TMK: 3-2-13: Portions 1 and 9

On June 22, 1997, after discussions with Dr. Ross Cordy (our Branch Chief for Archaeology), Dr. Boyd Dixon of our Maui staff inspected these parcels.

This project area is on the inland side of the large Waiehu sand dunes. To our knowledge, no archaeological work had occurred in this area until this evaluation. Also, to our knowledge, no historic properties were previously identified in this project area.

Based on Mahele records and on similar patterns in Wailuku and Waihee, the precontact settlement in this area is expected to have seen some dry land farming and some scattered housing on the flat soils inland of the dunes. The dunes would have been the location of scattered clusters of burials.

All of the parcel 9 project area and the western part of parcel 1 consist of sandy silts and gravel which appear to have been planted in sugarcane and pineapple in this century. In fact, parcel 9 had evident furrows and black plastic, apparently remaining from recent planting. Clearly these land surfaces have been extensively altered over the years, making it unlikely that significant historic properties remain in these areas. Residential development can occur in these areas with "no effect" to such historic sites. No additional archaeological work is needed in this area.

Darrell Yagodich
Page 2

The eastern part of parcel 1 the terrain consists of remnants of the high dune sands which have been graded in the past. Because native Hawaiian burials have been found elsewhere in the Waiehu dunes, it is *highly likely that burials (intact and disturbed)* are present in this portion of parcel 1. It is our recommendation that these dune areas be left intact, and not be developed for residential lots. No archaeological work is needed in this area at this time, but again it is considered highly likely to have burials. Perhaps minimal landscaping could be done possibly to restore the dunes' original form. Any restoration work here should be done with great caution, and be preceded by the preparation of a burial treatment plan and by archaeological work, so burials can be properly and sensitively identified and treated. You might wish to have a setback from the edge of the dunes, to prevent any accidental damage to burials.

RC:jen

c: Ray Soon, Administrator, DHHL Development Assistance Group

APPENDIX D

PRELIMINARY ENGINEERING REPORT

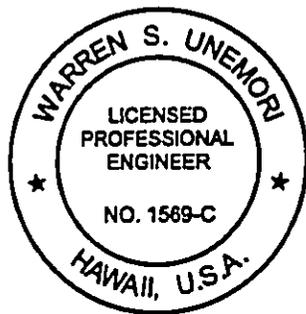
Established 1969

Preliminary Engineering Report for

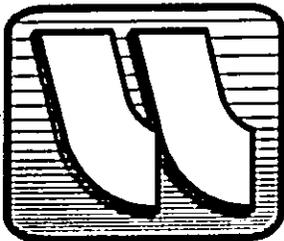
PROPOSED WAIEHU KOU SUBDIVISION - PHASE II

Waiehu, Maui, Hawaii
TMK: (2) 3-2-13: 01

Developer: Department of Hawaiian Home Lands
Address: Honolulu, Hawaii



A handwritten signature in black ink, appearing to read "Warren S. Unemori".



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WARREN S. UNEMORI ENGINEERING, INC.
Civil and Structural Engineers - Land Surveyors
Wells Street Professional Center - Suite 403
2145 Wells Street
Wailuku, Maui, Hawaii 96793
January, 1998

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**PRELIMINARY ENGINEERING REPORT
FOR
PROPOSED WAIEHU-KOU SUBDIVISION - PHASE II**

1.0 INTRODUCTION

The purpose of this report is to provide a brief description and evaluation of existing infrastructure in the vicinity of the project site. It also provides a brief overview of probable infrastructural improvements that may be needed to support the Proposed Waiehu-Kou Subdivision - Phase II (WKS-II).

2.0 EXISTING INFRASTRUCTURE

2.1 Water System

Water for the Waiehu and Waihee communities in Central Maui is provided by wells in Upper Waiehu. These wells draw water from the basal lens referred to as the Iao Aquifer.

The Department of Water Supply recently developed two new deep wells in North Waihee. These wells, with a pumping capacity of approximately 1.0 MGD each, are currently drawing water from the heretofore undeveloped North Waihee aquifer and pumping it into the Central Maui system at Waihee Village. With the completion of the new 24-inch transmission line and the one million gallon storage reservoir and pumping facility now under construction in North Waihee, water will be pumped from the North Waihee aquifer to the Central Maui system in Upper Waiehu, supplementing water being drawn from the Iao Aquifer sources. (See Exhibit A.)

A new 12-inch transmission line was also installed recently from the end of the 12-inch line on Kahekili Highway at Kohomua Street of Waiehu-Kou Subdivision - Phase I to Waihee Village. As a result, the Waiehu-Kou project area can now be fed from both the Iao and Waihee well sources.

Storage for Waiehu and Waihee communities is being provided by the 300,000 gallon Waiehu Heights tank at elevation 350 feet. A new 1.0 MG storage tank is presently under construction in North Waihee at elevation

400 feet. With the completion of this tank and the installation of approximately 2000 feet of new 12-inch transmission line, this facility could function as the main storage reservoir for the Waihee and Waiehu communities.

2.2 Sewer System

The Waiehu-Kou project area is presently unsewered. The nearest sewer residential community is Leisure Estates located south of the WKS-II project site. Homes in Waiehu-Kou - Phase I are utilizing individual sewer systems for wastewater disposal. However a dry gravity system was installed for this subdivision for future hookup to the County system.

2.3 Drainage System

The project site is presently undeveloped and not being used for any particular purpose. It was previously cultivated in sugar cane.

Runoff from portions of Leisure Estates subdivision to the south and Waiehu Golf Course to the east (approximately 4 acres) presently flows into the project site. Additionally runoff from about 68 acres of agricultural lands (macadamia nut orchard) mauka of Kahekili Highway southwest of the project site, also flows across the low (sag) point on Kahekili Highway into the project site. This offsite runoff then flows diagonally across the project site in a south to north direction at a slope of approximately 1.0%.

2.4 Roadway

Kahekili Highway is a State-maintained two-lane substandard rural road. Its pavement width varies between 20 to 24 feet. Large diameter ironwood trees line the project frontage. These trees compounded by the very narrow shoulders present a very hazardous condition for motorists. The posted speed limit on this section of the roadway is 30 MPH.

Kahekili Highway and Waiehu Beach Road, located 0.30 mile to the south, are the two main roadways that link the communities of Waihee and Waiehu to the urban core of Central Maui.

2.5 Electricity and Telephone

Overhead electrical and telephone distribution lines are available on the mauka or westerly side of Kahekili Highway.

3.0 PROBABLE INFRASTRUCTURAL IMPROVEMENTS

3.1 Water System

The existing 12-inch transmission line on Kahekili Highway is adequate to provide the required domestic and fire flow demands of the project.

Onsite water distribution line will have to be extended in the WKS-II project site along the subdivision streets for domestic use and fire protection purposes. Sizes of these distribution lines will be determined by the fire flow demands of the various land use components of the development.

Subject to the approval of Department of Water Supply, storage, transmission, and source development obligations could be met with payment of the comprehensive meter fee for each lot.

3.2 Sewer System

Since the project area is not presently sewerred, a new sewer pump station will have to be installed. This station should be sized to handle wastewater from all three (3) phases of Waiehu Kou development.

Wastewater generated by all three phases would be collected by an onsite gravity collection system and directed into the new pump station. This station could be designed to either pump the sewer to Waiehu pump station (alternative 1) in the adjoining Leisure Estates or (alternative 2) into the gravity system on Wailupe Drive in Waiehu Heights subdivision. Both alternatives would discharge into the County's pump station in Paukukalo. This station was recently retrofitted to increase its pumping capacity.

With alternative 1, 1000 feet of force main would be required beyond the project site. According to DPWWM, Waiehu Pump Station still has some capacity left to handle dry weather flow from the project but will need to be upsized to handle wet weather flow. Also since this station is located near

sea level continuous dewatering may be required during the retrofiting process.

Alternative 2 would bypass Waiehu pump station but would require installation of about 3400 feet of force main from the south end of the project site to the gravity system on Wailupe Drive.

In a letter to Townscape Inc., dated November 25, 1997, the County Division of Wastewater Management have expressed an interest in participating with DHHL in upsizing the sewer pump station and force main on a prorata basis. The purpose being to eventually connect Waihee Village, which is still unsewered, to the proposed system. Based on economies of scale, installing a pump station and force main jointly can only result in cost savings for both parties.

3.3 Drainage

An underground storm drain system will have to be installed to handle post development runoff from WKS-II development. This system will also have to be sized to handle existing offsite runoff from tributary areas to the east and south of the project site as well as from the agricultural lands located above Kahekili Highway in accordance with the "Rules for the Design of Storm Drainage Facilities in the County of Maui".

Approximately half a mile of offsite drain system will also be needed to convey onsite/offsite runoff from WKS-II into the existing drainage channel located northwest of the Phase II project area. Easements may be required along the easterly boundary of Phases I and III of Waiehu-Kou subdivision and from Wailuku Agribusiness Company for this purpose. The design capacity of the existing corrugated aluminum box culvert across the makai end of Halewaiu Road will need to be investigated. Should this box culvert lack the capacity to handle the additional runoff generated by the project, an option may be to utilize the 2.0 acre playground as a shallow detention basin in order to reduce peak flow from WKS-II to pre-development rates. The alternative would be to increase the capacity of the drainageway at the culvert crossing.

3.4 Roadway

Access to WKS-II will be from Kahekili Highway. Since Kahekili Highway, although substandard in sections, is considered a rural arterial, access to WKS-II may be limited to two locations. Left turn storage lanes may also be required to enhance safety and facilitate smoother ingress and egress.

Based on the criteria used for Waiehu-Kou Subdivision Phase I, improvements along Kahekili Highway will probably involve dedication of additional 10 feet of right-of-way for road widening purpose. It will also require removal of the existing ironwood trees, pavement widening, installation of concrete curb, gutter, and sidewalk.

Drainage catch basins that tie into the onsite drainage system will also be required to prevent ponding at the sag point of the highway.

Onsite subdivision streets will have a right-of-way of 44 feet with 8 foot shoulders and rolled concrete curb and gutters on both sides. According to the Maui County Code sidewalk four-feet in width is required on one side only. However, sidewalks on both sides would be desirable to accommodate the mobility impaired. Pavement width will be 24 feet.

3.5 Electrical, Telephone and CATV

The electrical distribution system will possibly be extended overhead into the project along the subdivision streets from Kahekili Highway as was done in Phase I. However, to reduce the network of overhead lines, consideration should be given to running secondary leads between the primary overhead system and the homes underground, especially where they cross subdivision streets.

The telephone and cable TV distribution systems will be installed underground by the respective providers of these services. Therefore the bid proposal should be provided with an additive alternative to underground the electrical distribution system also.

4.0 CONCLUSION

Based on the foregoing the two significant infrastructural improvements for the proposed WKS-II project are the sewer pump station including force main and offsite drainage system. In the context of the overall development of Waiehu-Kou Phases I, II, and III, these offsite improvements, although unusual, are not extraordinarily excessive burdens on the project or beyond those usually associated with residential developments, especially if the County is willing to participate in the development of the new sewer pump station and force main.

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**OVERSIZED
DRAWING/MAP**

**PLEASE SEE
35MM ROLL**

0013

APPENDIX E

TRAFFIC IMPACT ANALYSIS REPORT

▶ TRAFFIC IMPACT ANALYSIS REPORT

WAIEHU KOU, PHASE 2

▶ WAIEHU, MAUI, HAWAII

▶ prepared for:

Department of Hawaiian Home Lands

▶ prepared by:

Julian Ng, Incorporated
P. O. Box 816
Kaneohe, Hawaii 96744

▶ January, 1998

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**Traffic Impact Analysis Report
Waiehu Kou, Phase 2
Waiehu, Maui, Hawaii**

January, 1998

The Department of Hawaiian Home Lands (DHHL) will be developing Phase 2 of the Waiehu Kou project north of Wailuku, Maui. The proposed project is the second of three phases of a community located between the Waiehu Heights Phase IV subdivision (Hoana Street) and the village of Waihee. Exhibit 1 shows the location of the project, which would be situated between Kahekili Highway and the Waiehu Golf Course. The project will be designed by a developer to be selected by DHHL. The project would be served by roadways which would intersect with Kahekili Highway, a two-lane highway which connects Wailuku to the south with Waihee to the north.

A traffic study was conducted to evaluate the potential traffic impacts of the proposed project. Traffic impacts at the new intersections formed by the project roadways with Kahekili Highway were considered, as well as the project's contribution to traffic growth on Kahekili Highway and on Waiehu Beach Road north of Wailuku. Field counts were taken at the Kahekili Highway intersections with the roadways serving Phase 1 of the Waiehu Kou (Kohomua Street and Akakuu Street) and with Waiehu Beach Road to supplement data obtained from the State Highways Division.

This report includes analyses of intersection conditions. Operating conditions are described by a level of service (LOS) which is determined using analyses methods described in the *Highway Capacity Manual*¹. At unsignalized intersections, the volumes of the uncontrolled movements affect the capacity available for the other movements which must yield or stop. The analyses of unsignalized intersections used the procedure from the 1994 update of the *Highway Capacity Manual* to identify average delays and levels of service for each controlled movement. These Levels of Service (LOS) are defined using the letters A through F:

<u>LOS</u>	<u>Average delay (seconds)</u>	<u>General Description</u>
A	≤ 5 seconds	Little or no delay
B	> 5 and ≤ 10 seconds	Short traffic delays
C	> 10 and ≤ 20 seconds	Average traffic delays
D	> 20 and ≤ 30 seconds	Long traffic delays
E	> 30 and ≤ 45 seconds	Very long traffic delays
F	> 45 seconds	Very long traffic delays

¹ Transportation Research Board, National Research Council, *Highway Capacity Manual - Third Edition*, Washington, D.C., 1994.

Existing Traffic Conditions

The project site is located approximately 2 miles north of Wailuku, adjacent to Kahekili Highway, an undivided State highway which is the only link between the communities of Waihee and Kahakuloa on the northwest coast of Maui and the Waiehu area just north of Wailuku. While the speed limit on most of the highway is 35 miles per hour, there are speed zones of 20 miles per hour in Waihee village and 30 miles per hour fronting Waiehu Kou Phase 1. Waiehu Beach Road, which intersects with Kahekili Highway approximately ½-mile south of the project site, connects to the lower Wailuku and Kahului areas of central Maui.

The *Traffic Summary, Island of Maui 1995* report published by the State Department of Transportation shows an average daily traffic (ADT) in 1995 of 3,641 vehicles per day (vpd) on Kahekili Highway between Waiehu Beach Road and Waihee Valley Road, which is 2.21 miles to the north. Traffic volume during the morning peak hour is estimated to be 16.5% of the daily volume, with 55% of the volume in the peak direction. Afternoon peak hour traffic volume is estimated to be 10% of the daily volume, split evenly between the northbound and southbound directions.

Traffic counts are taken biannually by the State Highways Division near the project site. The daily volumes from the counts taken in April 1997 are summarized in Table 1. Peak hours in the 1997 counts occurred 7:00 to 8:00 AM and 4:15 to 5:15 PM.

Table 1
STATE TRAFFIC COUNT DATA
Kahekili Highway

0.7 mile north of Waiehu Beach Road (Station C-3-A)	<u>southbound</u>	<u>northbound</u>
November, 1985	1,354	1,336
July, 1987	1,526	1,534
May, 1989	1,557	1,524
May, 1991	1,771	1,802
June 1993	1,895	1,909
September 1995	2,271	2,223
April 1997	3,024	2,564

Source: State of Hawaii, Department of Transportation, Highways Division

The State Highways Division has also taken approach and departure counts at the intersection of Kahekili Highway and Waiehu Beach Road. The daily volumes and the 1997 peak hour volumes from these counts are shown in Table 2. The morning peak hour occurred from 6:45 to 7:45 AM on the south leg of Kahekili Highway and from 7:00 to 8:00 AM on the other legs of the intersection; the afternoon peak hour was 4:15-5:15 PM on the north leg of Kahekili Highway and 4:00-5:00 PM on the other legs.

Table 2
STATE TRAFFIC COUNT DATA
Kahekili Highway and Waiehu Beach Road

(Station 3-E)	Kahekili Highway (north of intersection)		Kahekili Highway (south of intersection)		Waiehu Beach Road (east of intersection)	
	<u>south- bound</u>	<u>north- bound</u>	<u>south- bound</u>	<u>north- bound</u>	<u>west- bound</u>	<u>east- bound</u>
October, 1985	1,530	1,537	1,110	1,264	1,487	1,578
July, 1987	1,610	1,820	1,236	1,409	1,785	2,000
May, 1989	2,019	1,500	1,392	1,770	1,826	2,136
April, 1991	2,263	2,114	1,801	2,016	2,225	2,372
June 1993	2,649	2,651	1,633	1,776	2,332	2,280
September 1995	3,017	2,936	1,977	2,140	2,212	2,466
April 1997	3,510	3,865	1,829	2,132	2,565	2,850

Source: State of Hawaii, Department of Transportation, Highways Division

Manual turning movement counts at the highway intersections with the roadways serving the Waiehu Kou Phase 1 project and at the intersection of Kahekili Highway and Waiehu Beach Road were taken in November, 1997 to determine existing turning movements. Table 3 shows the approach and departure volumes from these field counts compared with the volumes from the State's counts taken in April, 1997.

Table 3
COMPARISON OF TRAFFIC DATA

Counts taken:	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
	<u>State*</u>	<u>Field</u>	<u>State*</u>	<u>Field</u>
Kahekili Highway, north of Kohomua Street				
southbound	422	450	231	225
northbound	404	474	214	227
Kahekili Highway, north of Waiehu Beach Road				
southbound	515	554	245	288
northbound	460	460	336	379
Waiehu Beach Road, east of Kahekili Highway				
westbound	276	296	199	201
eastbound	326	337	248	223
Kahekili Highway, south of Waiehu Beach Road				
northbound	237	250	215	294
southbound	271	303	132	181

* State Highways count (April, 1997)

The data from the field counts are summarized in the attached appendix. The existing peak hour volumes from the field counts are shown in Exhibit 2.

The results of the unsignalized intersection analyses of the three unsignalized intersections, which compare reasonably with field observations, are shown in Table 4.

Table 4
EXISTING INTERSECTION CONDITIONS

	AM Peak Hour		PM Peak Hour	
	Delay *	LOS	Delay *	LOS
Kohomua Street at Kahekili Highway				
southbound left turn	3.5	A	2.7	A
westbound shared lane	10.9	C	6.0	B
Akakuu Street at Kahekili Highway				
southbound left turn	3.6	A	2.8	A
westbound shared lane	12.3	C	5.8	B
Waiehu Beach Road at Kahekili Highway				
southbound left turn	3.7	A	3.3	A
westbound shared lane	13.1	C	6.5	B

* average delay in seconds per vehicle

Future Traffic Conditions

The biannual traffic counts indicate that traffic volumes on Kahekili Highway are increasing. The *Maui Long Range Land Transportation Plan* forecasted that the peak hour traffic volumes on Kahekili Highway and Waiehu Beach Road would increase as shown in Table 5. The average annual growth in peak hour traffic volumes, assuming annual compounding, are approximately 2 percent on Kahekili Highway and 1½ percent on Waiehu Beach Road.

Table 5
PROJECTED INCREASES IN HIGHWAY TRAFFIC

	AM Peak Hour			PM Peak Hour		
	1990 volume	2020 forecast	Increase 2020/1990	1990 volume	2020 forecast	Increase 2020/1990
Kahekili Highway, south of Waiehu Beach Road						
southbound	628	1,180	+88%	280	502	+79%
northbound	276	499	+81%	663	1,251	+89%
total (2-way)	904	1,679	+86%	943	1,753	+86%
Waiehu Beach Road, north of Iao Bridge						
eastbound	442	689	+56%	189	286	+51%
westbound	197	301	+53%	435	714	+64%
total (2-way)	639	990	+55%	624	1,000	+60%

Based on the forecasts from the long-range transportation plan, a future traffic assignment for year 2020 was developed by factoring the existing (November, 1997) volumes for an average growth of 2% per year for 23 years. The future traffic volumes on Kahekili Highway near the proposed project would be approximately 58% greater than existing; the additional traffic would be about 530 vehicles per hour in the AM Peak Hour, and 260 vehicles per hour in the PM Peak Hour.

The *Maui Long Range Land Transportation Plan* also recommended highway improvements. The widening to four lanes, on Kahekili Highway between Waihee Valley Road and Waiehu Beach Road, and on Waiehu Beach Road between Kahekili Highway and Kahului Beach Road, are identified as improvements in the period 2006 to 2020.

The State Highways Division's estimates of average daily traffic (ADT) on Kahekili Highway (Waihee Valley Road to Waiehu Beach Road) for the odd-numbered years between 1987 and 1995 were evaluated to develop a short-term growth rate based on a trendline. A regression of the daily traffic estimates show a close correlation with an annual growth (compounded) of 6.26%, as illustrated in Table 6.

Table 6
REGRESSION OF STATE TRAFFIC ESTIMATES

Kahekili Highway, between Waiehu Beach Road and Waihee Valley Road	Estimated ADT *	Regression estimate	variance
1987	2,214	2,163	-2.3%
1989	2,401	2,442	1.7%
1991	2,757	2,758	0.0%
1993	2,988	3,113	4.2%
1995	3,641	3,515	-3.5%
1997 (extrapolation)	--	3,969	--
2005 (extrapolation)	--	6,449	--

* Source: State Highways Division

If the recent 6.26% annual growth in traffic volumes were to continue, the Long Range Transportation Plan traffic projections for year 2020 may occur in the year 2005.

Project Traffic

The proposed development consists of a residential subdivision to create approximately 100 lots for single family dwellings, a small park, and a neighborhood commercial area. The traffic volumes generated by the single family dwellings were estimated using factors for detached dwelling units published by the Institute of Transportation Engineers². The

² Institute of Transportation Engineers, *Trip Generation - 6th Edition*, Washington, D.C., 1997.

net impact of the park would be negligible, since many users would be nearby residents. The traffic generated by the commercial site was estimated for a shopping center with a gross floor area of 20,000 square feet, with an estimated 15% of its traffic to and from dwellings within the project, and 25% diverted from the existing flow on the highway. Table 7 shows the traffic generation computation for the project.

Table 7
PROJECT TRAFFIC GENERATION

	Trip generation factor, %In				AM Pk. Hr.		PM Pk. Hr.	
	AM Pk. Hr.	PM Pk. Hr.	enter	exit	enter	exit	enter	exit
100 detached DUs	0.75	25%	1.01	64%	19	56	65	36
20 KSF, retail (net)	2.05	66%	7.55	47%	27	14	71	80
Net traffic at highway					46	70	136	116
diverted traffic					(8)	(8)	(27)	(27)
Increase attributable to project					38	62	109	89

The increase in traffic attributable to the project is a portion of the increase in traffic computed using the growth factors. The project traffic, therefore, is considered to have been included in the future forecast in the following analyses. The project impacts have been evaluated at the new intersections along Kahekili Highway created to serve the project and at the locations where the long-range plan provided forecasts of future traffic.

Traffic Distribution: The project traffic was distributed onto the roadway system using the distribution of existing traffic, based on the field counts at the Phase 1 roadways. The traffic to the south was further distributed to Waiehu Beach Road or to Kahekili Highway south of Waiehu Beach Road using the field counts at that intersection. The distribution factors used for project traffic is shown in Table 8.

Table 8
PROJECT TRAFFIC DISTRIBUTION

	AM Peak Hour		PM Peak Hour	
	entering	exiting	entering	exiting
Kahekili Highway, north (Waihee)	11%	15%	12%	21%
Kahekili Highway, south (Wailuku)	58%	55%	61%	53%
Waiehu Beach Road, south (Kahului)	31%	30%	27%	26%

Traffic assignments and capacity analyses: The project traffic estimates were combined with the future baseline traffic projections. The future with project traffic assignments with one roadway serving the proposed project is shown in Exhibit 3. Traffic assignments were also developed for a case in which there would be two access roadways to the proposed project, with 72% of the project traffic using the south access road, as shown in Exhibit 4. The results of the intersection analyses are shown in Table 9.

Table 9
FUTURE WITH PROJECT INTERSECTION CONDITIONS

	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
	<u>Delay *</u>	<u>LOS</u>	<u>Delay *</u>	<u>LOS</u>
Kohomua Street at Kahekili Highway				
southbound left turn	4.8	A	3.2	A
westbound shared lane (Kohomua St.)	23.4	D	8.4	B
Akakuu Street at Kahekili Highway				
southbound left turn	4.8	A	3.2	A
westbound shared lane (Akakuu St.)	25.2	D	8.3	B
Single Project Access Road at Kahekili Highway				
southbound left turn	5.0	B	3.6	A
westbound shared lane (project road)	45.0	F	12.6	C
westbound left turns **	48.8	F	13.7	C
westbound right turns **	6.5	B	4.4	A
Two Project Access Roads at Kahekili Highway: North Intersection				
southbound left turn	4.9	A	3.3	A
westbound shared lane (project road)	26.1	D	9.0	B
westbound left turns **	29.3	D	10.2	C
westbound right turns **	6.3	A	4.2	A
Two Project Access Roads at Kahekili Highway: South Intersection				
southbound left turn	5.0	B	3.6	A
westbound shared lane (project road)	35.5	E	12.0	C
westbound left turns **	39.4	E	13.4	C
westbound right turns **	6.5	B	4.4	A

* average delay in seconds

** if dedicated lanes are provided on project road(s) for each turn

The analyses indicate that long delays can be expected in the future for vehicles entering the highway from the project. The peak hour volumes, however, would not satisfy warrants (minimum volumes or conditions) for traffic signals. Two roadways serving the project would lessen the delays to traffic that enter the highway. Delays to vehicles making right turns can be mitigated by providing sufficient width on the project road for dedicated lanes so that the right turn movements are not delayed by vehicles waiting to turn left from a shared lane.

Only minimal delays on the highway would be caused by southbound vehicles waiting to turn left into the project roadway(s) against the oncoming northbound traffic.

Separate Turn Lanes: The need for separate turn lanes on Kahekili Highway at the project road intersections was also evaluated. These lanes are used for acceleration or deceleration out of the through lanes on the highway, or to reduce the likelihood that a vehicle waiting to turn against oncoming traffic would block the traffic in the highway's through lane.

Acceleration lanes are provided to facilitate the entry of a vehicle from a side street onto a highway by permitting the entering vehicle to accelerate to reduce the difference in speeds between it and a vehicle traveling on a highway. The good levels of service for right turns onto the highway that were found in the capacity analyses indicate that acceleration lanes are not needed.

Separate left turn lanes are provided at major intersections on high-speed two-lane highways to reduce the likelihood that vehicles will arrive behind another vehicle waiting to make a left turn against oncoming traffic. A separate left turn lane would provide space for a vehicle that must wait to do so out of the through lane. Deceleration lanes provide a similar function for vehicles making right turns off of a highway.

The design of highway facilities is based on the American Association of State Highways and Transportation Officials (AASHTO) publication *A Policy on Geometric Design of Highways and Streets*³. In this publication, a guide is provided for determining when a separate left turn lane should be provided on a two-lane highway (Table IX-15). The table provides volumes which when exceeded for the given operating speed and the appropriate percentage of left turns, indicate that a separate left turn lane is warranted and should be considered. This table is based on an article⁴ written by M. D. Harmelink in 1967, which proposed a warrant based on the following:

On two-lane highways, it is the arrival of advancing, through vehicles behind a stopped left-turning vehicle that will affect safety and capacity (an arriving through vehicle is one that has been stopped or brought to creep speed by a left-turning vehicle in the advancing lane); the probability of this occurrence should not exceed:

0.020 for design speed = 50 mph, operating speed (v) = 40 mph;
0.015 for design speed = 60 mph, operating speed (v) = 50 mph; and
0.010 for design speed = 70 mph, operating speed (v) = 60 mph.

For Kahekili Highway in the vicinity of the proposed project, the posted speed limit is 35 miles per hour (mph); however, in the vicinity of the Phase 1 roadways, the speed limit is 30 mph. Therefore, an appropriate design speed would be 40 mph; extrapolating the probabilities shown above, a probability of 0.025 would be used for this speed.

A similar calculation was used to determine if a separate lane should be provided for right turns. If provided, the lane will permit right-turning vehicles to decelerate to a speed at which the turn can be safely made away from the through lane. Table 10 summarizes the evaluation for separate turn lanes on Kahekili Highway.

³ American Association of State Highway and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*, Washington, D.C., 1990.

⁴ M. D. Harmelink, "Volume Warrants for Left-Turn Storage Lanes at Unsignalized Grade Intersections." Highway Research Record No. 211, 1967

Table 10
SEPARATE TURN LANE ANALYSES

	Single Access Road	Two Access Roads	
		South Road	North Road
Southbound left turns			
Probability of delay, AM Peak Hour	0.015	0.010	0.002
Probability of delay, PM Peak Hour	0.023	0.017	0.005
Separate southbound turn lane warranted?	no	no	no
Northbound right turns			
Probability of delay, AM Peak Hour	0.045	0.034	0.011
Probability of delay, PM Peak Hour	0.095	0.073	0.024
Separate northbound turn lane warranted?	yes	yes	no

* separate lane warranted when probability exceeds 0.025 for design speed = 40 mph

Project Traffic Compared to Total Traffic: The traffic estimates for the proposed project were also compared to the growth and the forecasted future traffic at two locations that were considered in the long-range plan. As shown in Table 11, project traffic is only a portion of the expected growth and would be less than 15% of the forecasted volumes.

Table 11
PROJECT TRAFFIC COMPARED WITH HIGHWAY TRAFFIC

	1990 volume	2020 forecast	Project volume	Project Traffic, % of growth forecast	
Kahekili Highway, south of Waiehu Beach Road					
AM Peak Hour					
southbound	628	1,180	38	6.9%	3.2%
northbound	276	499	27	12.1%	5.4%
total (2-way)	904	1,679	65	8.4%	3.9%
PM Peak Hour					
southbound	280	502	61	27.5%	12.2%
northbound	663	1,251	83	14.1%	6.6%
total (2-way)	943	1,753	144	17.8%	8.2%
Waiehu Beach Road, north of Iao Bridge					
AM Peak Hour					
southbound	442	689	21	8.5%	3.0%
northbound	197	301	14	13.5%	4.7%
total (2-way)	639	990	35	10.0%	3.5%
PM Peak Hour					
eastbound	189	286	30	30.9%	10.5%
westbound	435	714	37	13.3%	5.2%
total (2-way)	624	1,000	67	17.8%	6.7%

CORRECTION

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

Table 10
SEPARATE TURN LANE ANALYSES

	Single Access Road	Two Access Roads	
		South Road	North Road
Southbound left turns			
Probability of delay, AM Peak Hour	0.015	0.010	0.002
Probability of delay, PM Peak Hour	0.023	0.017	0.005
Separate southbound turn lane warranted?	no	no	no
Northbound right turns			
Probability of delay, AM Peak Hour	0.045	0.034	0.011
Probability of delay, PM Peak Hour	0.095	0.073	0.024
Separate northbound turn lane warranted?	yes	yes	no

* separate lane warranted when probability exceeds 0.025 for design speed = 40 mph

Project Traffic Compared to Total Traffic: The traffic estimates for the proposed project were also compared to the growth and the forecasted future traffic at two locations that were considered in the long-range plan. As shown in Table 11, project traffic is only a portion of the expected growth and would be less than 15% of the forecasted volumes.

Table 11
PROJECT TRAFFIC COMPARED WITH HIGHWAY TRAFFIC

	1990 volume	2020 forecast	Project volume	Project Traffic, % of growth forecast	
Kahekili Highway, south of Waichu Beach Road					
AM Peak Hour					
southbound	628	1,180	38	6.9%	3.2%
northbound	276	499	27	12.1%	5.4%
total (2-way)	904	1,679	65	8.4%	3.9%
PM Peak Hour					
southbound	280	502	61	27.5%	12.2%
northbound	663	1,251	83	14.1%	6.6%
total (2-way)	943	1,753	144	17.8%	8.2%
Waichu Beach Road, north of Iao Bridge					
AM Peak Hour					
southbound	442	689	21	8.5%	3.0%
northbound	197	301	14	13.5%	4.7%
total (2-way)	639	990	35	10.0%	3.5%
PM Peak Hour					
eastbound	189	286	30	30.9%	10.5%
westbound	435	714	37	13.3%	5.2%
total (2-way)	624	1,000	67	17.8%	6.7%

Summary of Analyses: With the development of the project, the speed limit on the highway, which currently varies in the short distance between Waihee and Waiehu Beach Road, should be changed to the 30 miles per hour (Exhibit 5). Further, the findings of the analyses indicate that:

- the very long delays that may occur for traffic wishing to enter the highway from the project could be lessened by providing access through two intersections
- delays to entering traffic that turn right onto the highway can be significantly reduced by providing separate lanes for left and right turns at the approach(es) to the highway on the project access road(s).
- a separate lane for left turns into the project roadway(s) from the southbound lanes of Kahekili Highway is not warranted
- a separate lane for northbound right turns into the project should be provided if a single access road is used; if two access roads are provided, a separate lane for right turns will be needed at only one of the intersections.

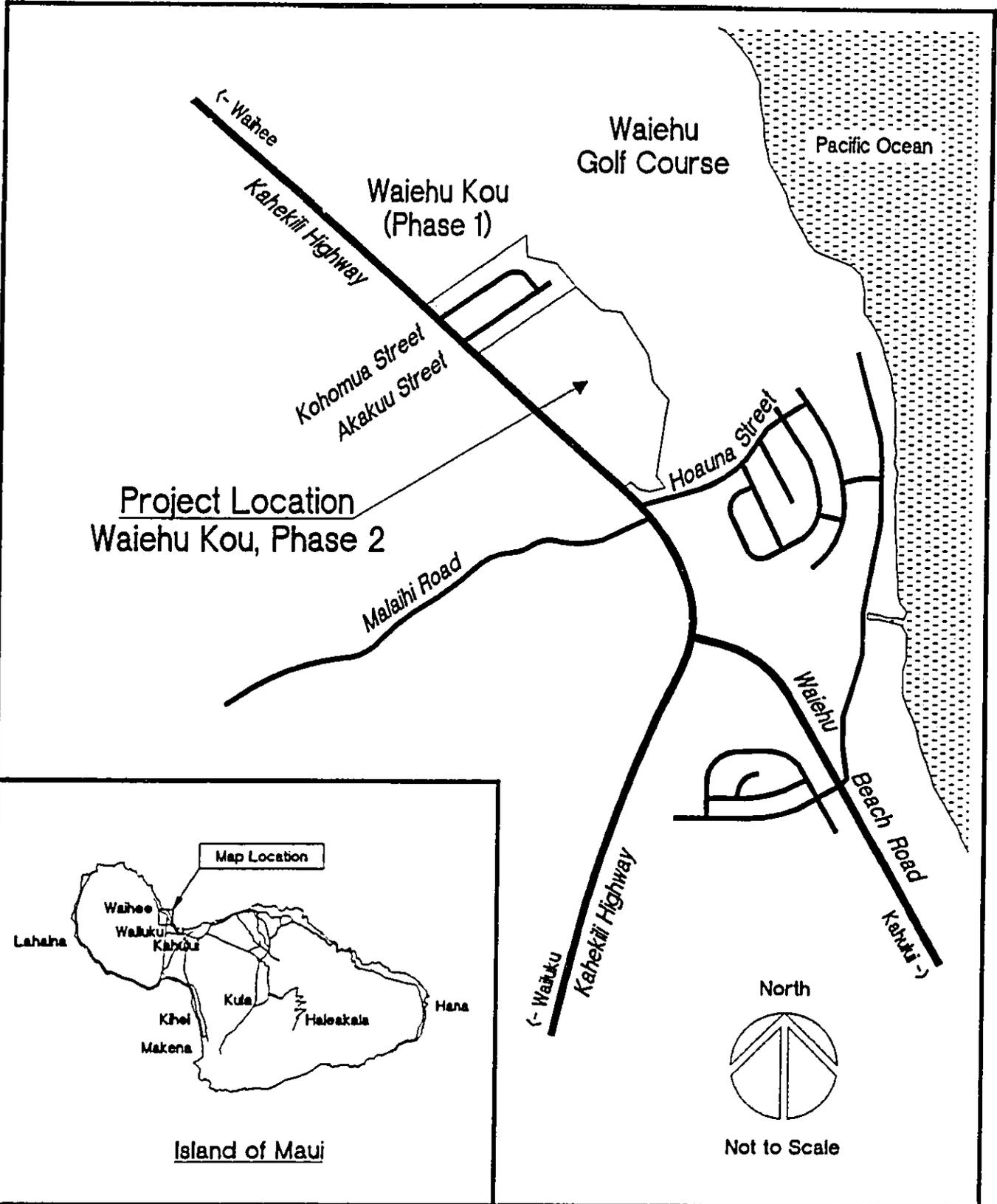
Conclusions and Recommendations

The proposed project is located in an area which presently has little traffic congestion. With an average 2% per annum growth in traffic volumes (as indicated by traffic forecasts shown in the long-range land transportation plan for the island), traffic conditions in the vicinity of the proposed project would generally continue to be acceptable to year 2020. Project traffic will only be a small portion of the total future traffic volume in the area. The primary impact of the project would be the introduction of new intersections on Kahekili Highway.

If served by a single access road to the highway, very long delays for project vehicles wishing to enter the highway may occur during the morning peak hour. For traffic leaving the highway, a separate right turn lane should be provided for northbound right turns into the project. A separate left turn lane from the highway for southbound traffic, however, would not be warranted.

A second access road into the project from Kahekili Highway should be provided to distribute the project's traffic demands to two unsignalized intersections. With two access roads, traffic wishing to enter the highway would have less delay. A separate northbound lane for right turns from the highway should be provided at the primary project roadway; a separate turn lane at the other roadway should not be needed. As in the case of a single project road, a separate lane for southbound left turns would not be warranted.

The roadways should be located and the roadside should be cleared to provide adequate intersection sight distances. Consideration should also be given to extending the 30 mile per hour speed zone that currently exists near the Waiehu Kou Phase 1 roadways to include the Phase 2 intersections.



TARZING 50 01/22/98 1153

Traffic Impact Analysis Report
Waiehu Kou, Phase 2

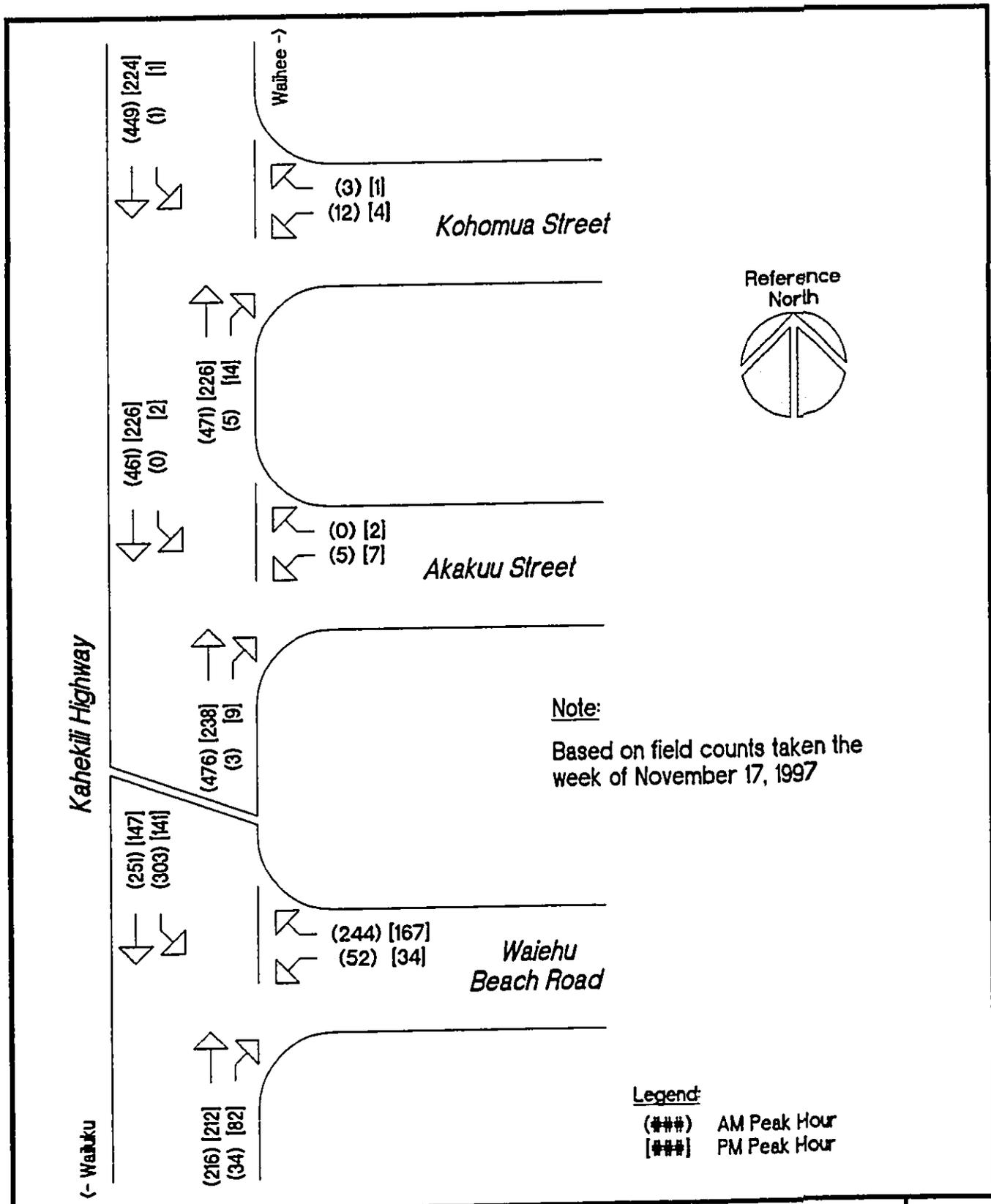
prepared for: Department of Hawaiian Home Lands
 prepared by: Julian Ng, Incorporated

January, 1998

PROJECT LOCATION
Waiehu, Maui

Exhibit
1

Not to Scale



TAK:JHC:SD 01/22/98 11.53

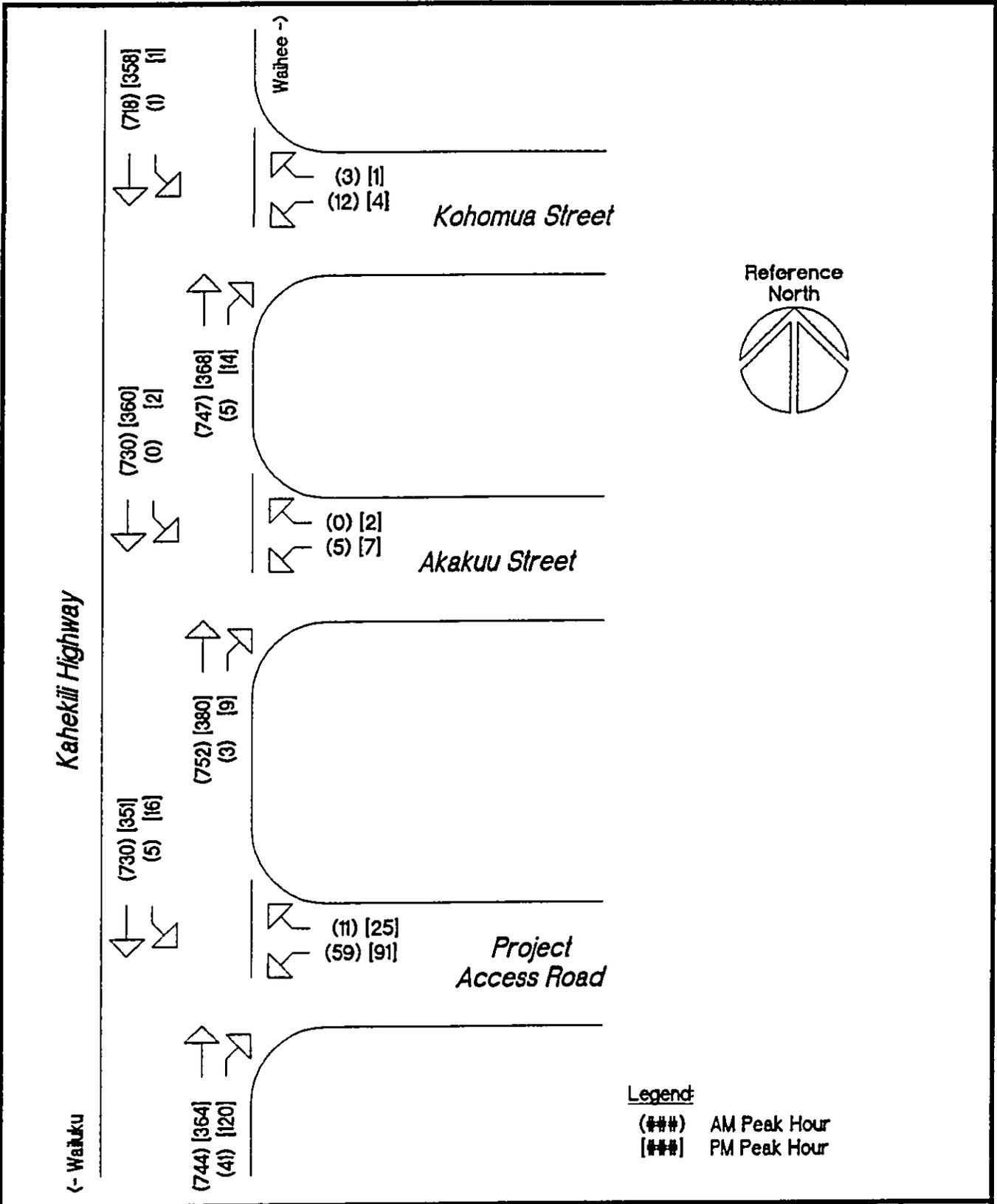
Traffic Impact Analysis Report
Waiehu Kou, Phase 2

prepared for: Department of Hawaiian Home Lands
prepared by: Julian Ng, Incorporated

January, 1998

EXISTING (1997) TRAFFIC
AM AND PM PEAK HOURS

Exhibit
2
Not to Scale



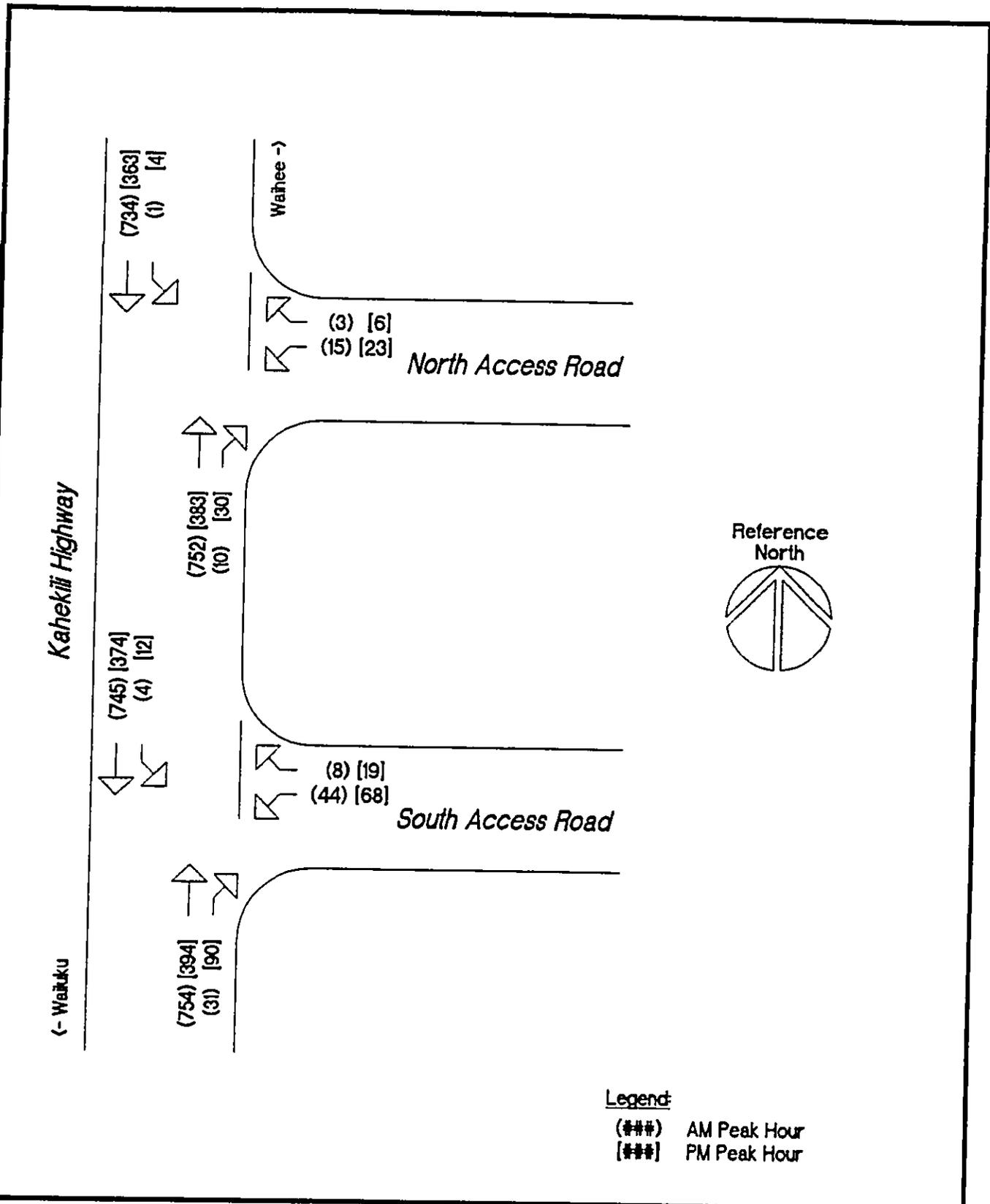
Traffic Impact Analysis Report
Waiehu Kou, Phase 2

prepared for: Department of Hawaiian Home Lands
prepared by: Julian Ng, Incorporated

January, 1998

**TRAFFIC ASSIGNMENT
FUTURE WITH PROJECT
SINGLE ACCESS ROAD**

Exhibit
3
Not to Scale



TMEHC:SD 01/22/98 13.53

**Traffic Impact Analysis Report
 Waiehu Kou, Phase 2**

prepared for: Department of Hawaiian Home Lands
 prepared by: Julian Ng, Incorporated

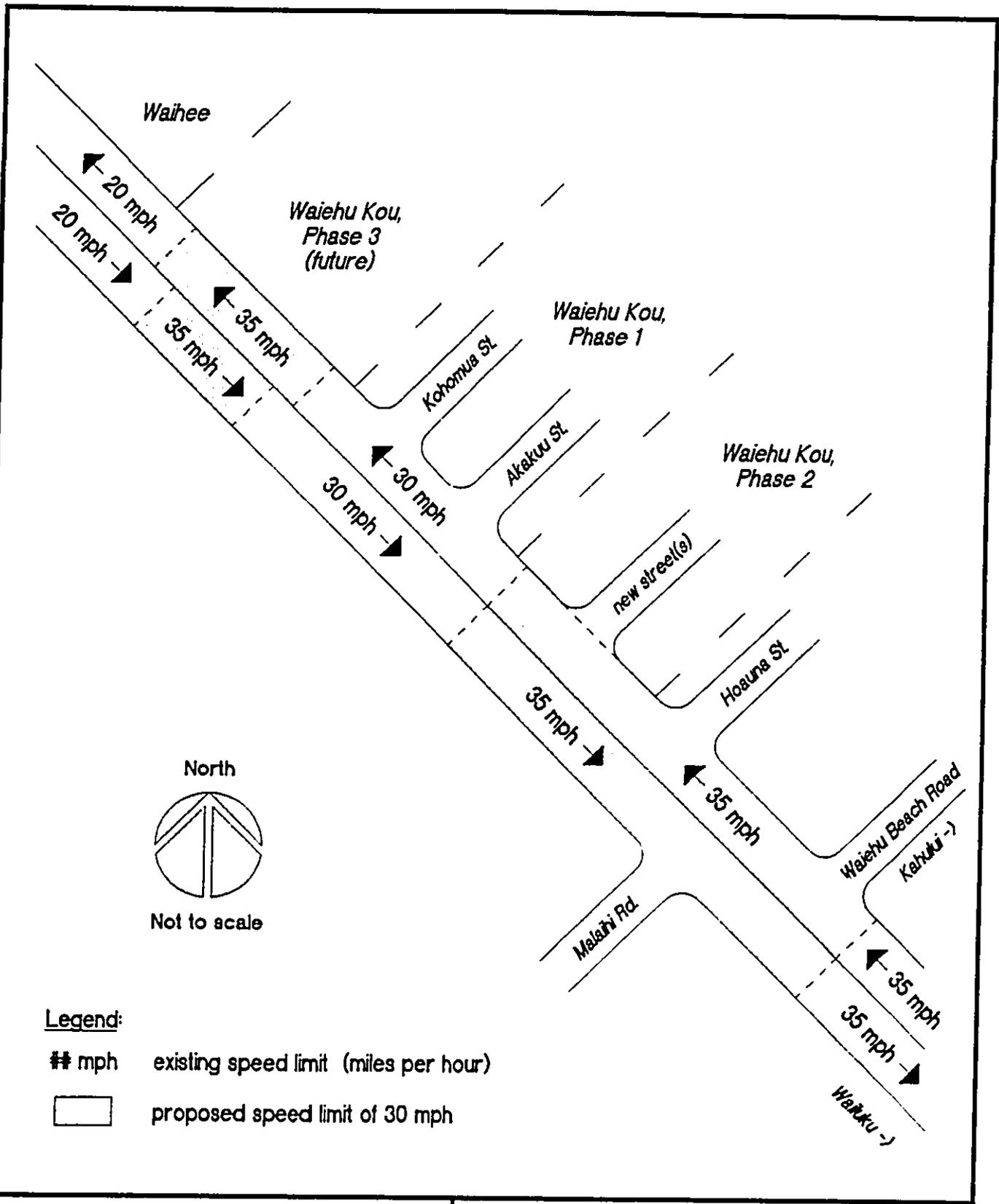
January, 1998

**TRAFFIC ASSIGNMENT
 TWO PROJECT ROADWAYS**

Exhibit

4

Not to Scale



TAP:INC:SD 01/27/98 1353

Traffic Impact Analysis Report
 Waiehu Kou, Phase 2

prepared for: Department of Hawaiian Home Lands
 prepared by: Julian Ng, Incorporated

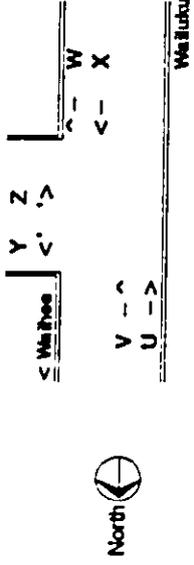
January, 1998

SPEED LIMITS ON
 KAHEKILI HIGHWAY

Exhibit
 5
 Not to Scale

Appendix: Field Traffic Count Data

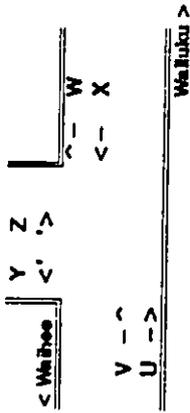
Kahekili Hwy. and Kohomua Street



Counts Taken:
11/18 /97 (Tuesday) AM Peak Hour: 07:00 08:00
11/18 /97 (Tuesday) PM Peak Hour: 04:30 05:30

Total vehicles	Kahekili Hwy.				side st.			highway vol.	
	U	V	W	X	Y	Z	Total	north	south
06:30 - 06:45 AM	31	0	2	42	0	0	75	73	75
06:45 - 07:00 AM	54	0	0	60	0	3	117	114	117
07:00 - 07:15 AM	75	0	1	104	0	2	182	179	182
07:15 - 07:30 AM	114	0	0	143	1	3	261	258	260
07:30 - 07:45 AM	139	0	2	169	1	4	315	309	314
07:45 - 08:00 AM	121	1	2	55	1	3	183	178	181
08:00 - 08:15 AM	21	0	0	45	0	1	67	66	67
08:15 - 08:30 AM	22	0	0	51	0	1	74	73	74
Total counted	577	1	7	669	3	17	1,274	1,250	1,270
Peak Hour	449	1	5	471	3	12	941	924	937

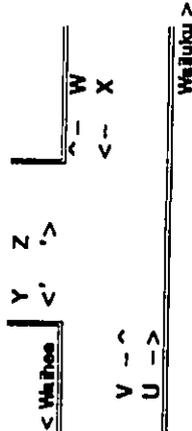
Kahekili Hwy. and Akakuu Street



Counts Taken:
11/18 /97 (Tuesday) AM Peak Hour: 07:00 08:00
11/18 /97 (Tuesday) PM Peak Hour: 04:30 05:30

Total vehicles	Kahekili Hwy.				side st.			highway vol.	
	U	V	W	X	Y	Z	Total	north	south
06:30 - 06:45 AM	31	0	2	44	0	4	81	75	81
06:45 - 07:00 AM	57	0	1	60	0	3	121	117	121
07:00 - 07:15 AM	77	0	1	105	0	3	186	182	186
07:15 - 07:30 AM	117	0	1	143	0	1	262	260	262
07:30 - 07:45 AM	143	0	1	171	0	1	316	314	316
07:45 - 08:00 AM	124	0	0	57	0	0	181	181	181
08:00 - 08:15 AM	22	0	2	45	0	1	70	67	70
08:15 - 08:30 AM	23	0	1	51	0	1	76	74	76
Total counted	594	0	9	676	0	14	1,293	1,270	1,293
Peak Hour	461	0	3	476	0	5	945	937	945

Kahekili Hwy. and Waihehu Beach Road



Counts Taken:
11/20 /97 (Thursday) AM Peak Hour: 07:00 08:00
11/20 /97 (Thursday) PM Peak Hour: 04:15 05:15

Total vehicles	Kahekili Hwy.				Waihehu BR			highway vol.	
	U	V	W	X	Y	Z	Total	north	south
06:30 - 06:45 AM	27	21	10	35	27	12	132	110	84
06:45 - 07:00 AM	36	55	5	27	37	13	173	155	81
07:00 - 07:15 AM	51	38	7	45	39	16	196	173	119
07:15 - 07:30 AM	77	70	5	65	95	19	331	307	166
07:30 - 07:45 AM	61	92	12	59	77	5	306	289	137
07:45 - 08:00 AM	62	103	10	47	33	12	267	245	131
08:00 - 08:15 AM	34	39	11	24	29	9	146	126	78
08:15 - 08:30 AM	24	31	7	18	21	3	104	94	52
Total counted	372	449	67	320	358	89	1,655	1,499	848
Peak Hour	251	303	34	216	244	52	1,100	1,014	553

Total vehicles

Total vehicles	Kahekili Hwy.				side st.			highway vol.	
	U	V	W	X	Y	Z	Total	north	south
04:00 - 04:15 PM	67	0	2	56	0	1	126	123	126
04:15 - 04:30 PM	47	1	0	36	0	0	84	84	83
04:30 - 04:45 PM	59	0	6	64	1	1	131	124	130
04:45 - 05:00 PM	66	0	3	58	0	1	128	124	128
05:00 - 05:15 PM	53	1	2	51	0	1	108	105	107
05:15 - 05:30 PM	46	0	3	53	0	1	103	99	103
05:30 - 05:45 PM	43	1	3	32	1	0	80	77	78
05:45 - 06:00 PM	32	0	2	27	0	2	63	59	63
Total counted	413	3	21	377	2	7	823	795	818
Peak Hour	224	1	14	226	1	4	470	452	468