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

January 25, 2005

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson,

Subject: Finding of No Significant Impact
Environmental Assessment For
Consuelo Subdivision, T.M.K.: 8-5-003:20
Waianae, Oahu, Hawaii

The Department of Hawaiian Home Lands (DHHL) has reviewed comments received during the 30-day public comment period on the subject Environmental Assessment which began on November 8, 2005. DHHL has determined that this project will not have significant environmental effects and has issued a FONSI. Please publish this notice in the OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and four copies of the Final EA. If you have any questions, please call Project Manager, Amy Arakaki at 587-6450.

Aloha and mahalo,

Micah Kane, Chairman
Hawaiian Homes Commission

encl.

Final Environmental Assessment

Consuelo Subdivision
TMK: 8-5-003:020
85-576 B Wai`anae Valley Road, Wai`anae, Oahu

Prepared by:

EnviroServices & Training Center, LLC
2850 Pa'a Street, Suite 150
Honolulu, Hawai`i 96819-4441

February 2006

CONSUELO SUBDIVISION
TMK: 8-5-003 : 020
85-576 B Wai`anae Valley Road, Wai`anae, Oahu

Proposed Action	Subdivide the 3.353-acre parcel donated by the Consuelo Zobel Alger Foundation into 21 house lots; install the infrastructure necessary to provide access and utility services; and construct affordable single family homes on these parcels for use of low-income families.
Applicant/Approving Agency	Department of Hawaiian Home Lands 1099 Alakea Street, Suite 2000 Honolulu, HI 96813 Contact: Amy Arakaki (Phone: 587-6450)
Agent	EnviroServices & Training Center 2850 Pa`a Street, Suite 150 Honolulu, HI 96819-4441 Contact: Rose Cruz Churma (Ph: 239-6365; fax: 239-5445)
Land Ownership	Department of Hawaiian Home Lands
Tax Map Key	8-5-003 : 020
Address	85-576 B Wai`anae Valley Road
Land Area	146,056 Square Feet (3.353 Acres)
Existing Use	Vacant
State Land Use District	Agricultural District
Development Plan Area	Wai`anae
County Zoning (LUO)	AG-2 General Agricultural District
Special Management Area (SMA)	Not within the SMA
Special District	Not in Special District
FEMA FIRM Zone	FIRM Zone D
Anticipated Determination	Finding of No Significant Impact (FONSI)

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Section 1.0 Introduction

1.1 Purpose and Objectives

The Department of Hawaiian Home Lands (DHHL) proposes to subdivide the 3.353-acre parcel located in Wai`anae into 21 house lots; install the infrastructure necessary to provide access and utility services; and construct affordable single family homes on these parcels. Upon completion, the single-family homes will be leased by DHHL to lessees whose household income is at, or below 100 percent, of the Honolulu median household income, as adjusted for family size. Leases shall be awarded in accordance with the Hawaiian Homes Commission Act, 1921, as amended (HHCA).

This Environmental Assessment (EA) is prepared pursuant to and in accordance with the requirements of Chapter 343 Hawai`i Revised Statutes, and Chapter 200 of Title 11, Department of Health Administrative Rules. The action that triggers this assessment is the use of State of Hawai`i funds in the planning, design and construction of the residential subdivision. In addition, the subdivision will be located on State-owned lands. Federal funds may be used to implement this project; therefore, this EA is intended to satisfy relevant provisions of the National Environmental Policy Act.

1.2 Project Location and Existing Use

The site is located on parcel TMK 8-5-003: 020 at 85-576 B Wai`anae Valley Road in Wai`anae, Oahu. It is surrounded by privately owned lands on all sides; Plantation Road to the south, by Hoopuhi Road to the west, and agricultural parcels to the north and east. Immediately across Plantation Road is a subdivision of single-family residences called Ke Aka Ho`ona. The site is relatively flat; its elevation increases gradually to the east from 15 to 30 feet above sea level. The vacant parcel is covered with sparse vegetation, and plumeria trees line its south and west borders. (Exhibit 1: Site Location Showing Tax Map Key (TMK) Parcel).

The property is 500 feet east of the confluence of Kawiwi and Kaupuni Streams. The Pacific Ocean (Pokai Bay) is approximately 2,500 feet southwest of the subject parcel. The parcel is about one quarter of a mile from Farrington Highway and is near the Wai`anae Valley Road. (Exhibit 2: Project Location Map)

Section 2.0 Project Background

2.1 Land Donation Agreement

The Consuelo Zobel Alger Foundation (Consuelo), a Hawai`i non-profit corporation, donated the 3.353 parcel of land to DHHL in May 2004, to further Consuelo's goals of providing affordable housing for low-income families. In accepting the donation, DHHL agreed to use reasonable good faith efforts to develop the property with at least 18 affordable single family homes. The DHHL also agreed to develop the affordable residences within four (4) years from the closing date of May 2004. Within that four-year time frame, DHHL agreed to: a) complete the subdivision of the property into at least 18 house lots; b) complete the construction and installation of all on-site infrastructure necessary to provide access and utility services to the house lots; and c) begin construction of the affordable residences.

However, if the agency is unable to develop the property for a cost that would allow the construction and sale of affordable residences despite DHHL's reasonable good faith efforts,

Consuelo has allowed alternative uses. DHHL may develop the property either as four (4) or more agricultural lands or with market priced homes.

The deed further states that if DHHL is able to develop the affordable residences, DHHL shall lease the homes to lessees whose household income is at or below the 100 percent of Honolulu median household income. The household income has to be adjusted for family size, giving preference to lower income lessees who are able to qualify for financing.

2.2 Potential Linkages with Ke Aka Ho`ona

Consuelo has developed an affordable residential community called Ke Aka Ho`ona across Plantation Road from the subject parcel. The foundation also constructed a Community Center, including a playground, at its existing Ke Aka Ho`ona subdivision. In the Donation Agreement, DHHL acknowledges that the residents of the proposed 21-parcel subdivision may want to cross Plantation Road to use the Community Center. The DHHL has agreed to use its "best efforts to work with the City and County of Honolulu and/or the State of Hawaii to install a traffic light or other pedestrian access improvements to assure the safe crossing of Plantation Road by pedestrians." However, the terms and conditions by which the residents of the 21-parcel subdivision can use the amenities of Ke Aka Ho`ona will still be subject to the mutual agreement of Consuelo and DHHL.

2.3 DHHL Not Subject to County Zoning Requirements

DHHL is exempt from state and local land use permitting requirements pursuant to the Hawaiian Homes Commission Act (HHCA) and legal memorandum dated May 6, 1994 by the State Attorney General. The project is situated on lands zoned AG-2. DHHL has determined that R-5 Residential zoning standards are appropriate for the development of this project in support of its overall mission of providing affordable homes to families of native Hawaiian ancestry.

2.4 Compatibility with Neighboring Properties

The project is compatible with the land use and zoning of neighboring properties, specifically the Ke Aka Ho`ona subdivision where linkages are proposed to allow residents the use of its existing amenities. However, both the proposed project and the existing Ke Aka Ho`ona Subdivision are not consistent with the land use and zoning of the area, which is in AG-2. The existing subdivision was designed in accordance with an R-5-zoned subdivision, which is also proposed for the subject project. The two adjacent privately owned parcels (TMK 8-5-003: 19 and 42) on the north and east are also zoned AG-2.

The 14-acre triangular parcel across the subject property, which is called Ke Aka Ho`ona (Spirit of Consuelo), was granted an exemption from zoning ordinances by City Council Resolution 91-172. At the time the exemption was granted, the site was developed to provide transitional housing for not more than 55 families, and was called Weinberg Villages Wai`anae.

The landowner, Consuelo Foundation, eventually developed the site into 75 single-family homes. As stated in the foundation's 2004 Annual Report, the housing project "supports low income and homeless families with a self-help home provided they remain free from substance abuse and family violence." This Hawai`i-based non-profit has been recognized internationally for its innovative programs "to renew hope for those who have lost it and to give hope to those who never had it" as expressed by Consuelo Zobel Alger. She directed that a portion of her wealth should be used to help the people of Hawai`i, particularly those of Hawaiian ancestry. The

foundation also expressed willingness in helping DHHL in its mission of providing affordable housing, not only by donating land for DHHL initiatives, but also by developing programs that would be helpful to the beneficiaries. (Exhibit 3: Zoning Map of Subject Parcel)

2.5 Ownership of Plantation Road & Hoopuhi Road.

The two roadways fronting the parcel are both privately owned. The tax records show the legal owner of both roadways as Capital Investment of Hawai`i, Inc. (TMK: 8-5-03: 035 & 8-5-03: 006). The City was granted a utility easement along Plantation Road. Water and sewer mains have been installed along Plantation Road. Prior to any improvements to both roadways, DHHL will seek necessary approvals from the landowner.

Section 3.0 Technical Information

3.1 Proposed Project Design

3.1.1 Subdivision Design. The subdivision will consist of 21 residential lots with a minimum lot area of 5,000 square feet each. The subdivision will be accessed from Plantation Road right across from the entry access to Ke Aka Ho`ona, a 75 residential lot subdivision owned by Consuelo Foundation and leased to low-income families of Native Hawaiian ancestry. The layout of the proposed subdivision is shown in Exhibit 4: Preliminary Subdivision Plan.

The project will be designed based on requirements of the R-5 residential zoning standards of the City and County of Honolulu. Because the agency is not subject to the Land Use Ordinance and Subdivision Rules and Regulations (SR&R) it has exempted itself from several requirements that are described in Exhibit 5: DHHL letter to DPP dated 4/22/05. Basically, DHHL exempts itself from the following:

- Payment of subdivision filing fees by a government agency
- Parks dedication
- Dedication of roadways and improvements solely for maintenance purposes
- Final map approval
- Submission of an agreement and surety bond for repair and replacement of subdivision improvements
- Submission of an agreement and bond for energizing and maintenance of streetlights.
- Roadway improvements along the property frontage

3.1.2 Building and Landscaping Design. The DHHL has no building or landscaping designs as of this date. Beneficiaries will be encouraged to use drought tolerant, native and indigenous plants.

3.2 Construction Schedule

3.2.1 Surcharging. Prior to the installation of the subdivision's utilities and roadways and the construction of the houses, the underlying soil has to be stabilized through a surcharge program. Essentially this involves removing the soft soil and bringing in structural fill material to the site. The new fill material will need to be undisturbed and remain in place for a period of six to nine months to allow the underlying soils to settle. During the surcharging period, the lot will be grassed over to prevent dust and erosion and a construction fence and dust barrier will be built around the entire property.

The surcharge program will not extend into the adjacent properties. All work will be confined to the project site. DHHL will not need any type of permission from the adjacent property owners.

3.2.2 Retaining Wall and Separation Fence. The retaining wall will be required along the adjacent property lines (north and east boundaries) due to grade separation resulting from the new soil fills placed at the site. Retaining walls will be built within the confines of the property before the surcharge operations begin. DHHL will not need any type of permission from the adjacent property owners

3.2.3 Subdivision Development. It is stipulated in the Donation Deed that the DHHL has to complete the development within four years of May 2004, the deed's closing date. Within that four-year window, the DHHL should have completed the construction and installation of all on-site infrastructure necessary to provide access and utility services to the subdivided lots and begin construction of the affordable homes. Should DHHL fail to comply with the schedule, "Consuelo shall have the right, but not the obligation, to require that DHHL convey the property to Consuelo at no cost to Consuelo." It is the intent of DHHL to comply with this schedule.

3.3 Estimated Cost. The surcharging process is expected to cost $800,000 at May 2005 prices. No other site development cost estimates is available at this time including cost of constructing the 21 one or two-story wood-framed structures with concrete slabs-on-grade construction. Some off-site improvements are also anticipated but no cost estimates are also available.

Section 4.0 Description of the Affected Environment

4.1 Physical Environment

4.1.1 Climate. Like the rest of Leeward Coast, the area's climate is semi-arid with rainfall occurring mainly through the months of November to April and averages below 20 inches. The average temperatures are moderate ranging from 60 to 89 degrees Fahrenheit.

The proposed project will not have any significant effect on the surrounding climate conditions. The project will provide adequate landscaping to assist in the mitigation of any localized increases in temperature due to roadways, parking and related structures.

4.1.2 Topography, Geology, Soils. The site is located on the northwestern coast of Oahu, along the west coastal plain of the Wai`anae range. It is relatively flat but slopes gradually to the east from about 15 to 30 feet above sea level. The geo-technical engineering exploration of the site disclosed that the majority of the site is generally underlain by compressible deposits consisting of soft silty and sandy clays as well as loose silty sand and clayey gravel of variable thickness and varying depths. A summary of the site's geo-technical engineering study is shown in Exhibit 6: Summary of Findings & Recommendations, Geo-technical Engineering Exploration, Consuelo Alger Subdivision.

According to the Soil Conservation Service, the soil types present are:

- Pulehu Clay Loam. These consist of well-drained soils on alluvial fans and stream terraces and in basins. It is moderately permeable with slopes as much as seven percent. Permeability is moderate, run-off slow, and the erosion hazard is no more than slight. The soil is reported to have a moderate to low shrink-swell potential.
- Ewa Silty Clay Loam. These consist of well-drained soils in basins and on alluvial fans. Ewa Silty Loam mapped at the site is described as moderately shallow with two to six percent

slopes. Permeability is moderate, run-off is slow, and the erosion hazard is slight. The soil is reported to have a moderate to low shrink-swell potential.

Based on the Agricultural Lands of Importance to the State of Hawai`i (ALISH) map, the site is on "Prime Agricultural Lands." These are lands which has the soil quality, growing season and moisture supply needed to produce sustained high yields with the least resources and least damage to the environment. The ALISH is the result of a land inventory initiated by the State of Hawaii in 1975 and adopted by the Board of Agriculture in January 1977.

The Land Study Bureau classifies the area as "A100i." (See Map 132, Detailed Land Classification – Island of Oahu). This 1972 study uses a five-class productivity rating from A to E with A representing the class of highest productivity and E the lowest.

Both these studies were initiated approximately 30 years ago when agriculture was at its primacy in the State. However, despite its rating as a prime agricultural land, the parcel remained fallow for more than a decade.

4.1.3 Hydrology. An upper and a lower aquifer are present beneath the site. The two aquifers are both basal (fresh water in contact with seawater) and are part of the Wai`anae Aquifer System of the Wai`anae Sector of Oahu. The upper aquifer is moderately saline and unconfined in sedimentary deposits. The lower aquifer has low salinity and is confined in basalt dike compartments. Only the upper aquifer is listed as currently used. However, both are not listed as ecologically important or used for drinking water, but the upper aquifer has a high vulnerability to contamination as noted in the 2001 Phase 1 Environmental Site Assessment (ESA) report for the property, which is reproduced in Appendix A.

The property is approximately 2,500 feet from the Pacific Ocean (Pokai Bay) and 500 feet east of the confluence of Kawiwi and Kaupuni Streams. In the late 1950's studies were performed to determine what drainage facilities would be needed to handle the impact of a 100-year storm. As a result of these studies, four large concrete lined drainage channels were constructed to discharge storm run-off into the ocean. One of these channels are Kaupuni Stream Channel that discharges into the northwestern side of Poka`i Bay. Approximately 400 lineal foot of storm drain system is being proposed to allow ground water from the proposed subdivision to drain into the Kaupuni Stream Channel.

The entire Wai`anae Coast is subject to severe damage from any major tsunami. The tsunami evacuation zone for the Wai`anae district extends up to or as much as 0.25-mile inland of Farrington Highway. Evacuation maps of the area show that the property is above the tsunami zone.

The property is on FIRM Zone D, an area of undetermined but possible floor hazards.

4.1.4 Terrestrial Flora and Fauna. At the present time, vegetation consists of low-lying secondary growth consisting of low-lying weeds and shrubs that include stands of castor bean. plumeria trees line its south and west borders. Aerial photographs show that the area was used for agricultural purposes as early as 1944 when this type of documentation became available. The site's historical use precludes the existence of known rare Hawaiian plants or endangered wildlife, on the site or its immediate vicinity.

4.1.5 Scenic and Visual Resources. No significant coastal visual resources are in the vicinity. Views of the Wai`anae Range dominate the scenic vistas within the project area.

4.1.6 Historical, Cultural and Archaeological Resources. The project site does not contain any known sites of historic or cultural significance and is not listed on either the Hawai`i or National Registers of Historic Places. An archaeological and cultural impact evaluation for the proposed project is attached as Appendix B. This report notes that there will be no adverse impact to historical or cultural resources with the implementation of the project.

Should any unidentified archaeological resources be encountered during construction, all work will cease and the Historic Preservation Office will be contacted for review and approval of mitigation measures.

4.1.7 Noise Quality. Potential noise impacts are expected from construction of the subdivision. Construction impacts will be temporary and localized, and are the normal result of construction related activity. The State Department of Health administers rules and regulations relating to the hours during which construction is permitted, and the noise levels permitted.

4.1.8 Air Quality. The major factor affecting the long-term air quality in the area is vehicular traffic. According to studies prepared for this project, the resulting increase in air pollution due increased vehicular traffic was found to be relatively smaller than the significant emission rates as defined in the Hawaii Administrative Rules. The study states that it is unlikely that any measurable impacts on air quality will occur. Implementing measures for long term impacts from the proposed project is unnecessary and unwarranted. Please refer to Appendix C: Air Quality Environmental Assessment report dated April 2005.

As discussed earlier in this report, prior to the installation of the subdivision's utilities and roadways and the construction of the houses, the underlying soil has to be stabilized through a surcharge program. Essentially this involves removing the soft soil and bringing in structural fill material to the site. The new fill material will need to be undisturbed and remain in place for a period of six to nine months to allow the underlying soils to settle. During the surcharging period, the lot will be grassed over to prevent dust and erosion and a construction fence and dust barrier will be built around the entire property. Whatever air quality issues arising from the surcharging will be temporary and localized to this parcel.

A dust control management plan will be developed which identifies and addresses all activities that have a potential to generate fugitive dust. The plan, which does not require the State Department of Health (DOH) approval, will help recognize and minimize the dust problems of the project.

4.1.9 Water Quality and Water Services. The water system that serves the area consists of source wells in Makaha and Wai`anae Valley. Water is conveyed to users through a system of water mains that follow the major roads and in sizes suitable for delivering required quantity of water for domestic use and fire protection. According to the Board of Water Supply (BWS) the existing water system is adequate to accommodate the proposed 21 single family housing units proposed for the site. The project will be served by new waterlines that will connect to an existing 8-inch water main along Plantation Road.

Fire Protection is provided by fire hydrants along Plantation Road. All water connectivity, fire apparatus accessibility and protection plans will be reviewed and approved by BWS, the Fire Department and the City's Department of Planning and Permitting (DPP) prior to construction.

The BWS approved Reduced Pressure Principle Back Flow Prevention Assemblies will be installed where appropriate. No adverse impacts are anticipated on surface water or ground water since the project does not include injection wells or cesspools. Any runoff or wastewater disposal required for the project will be done in full compliance with County, State and Federal guidelines.

4.1.10 Wastewater. Wastewater from this site is transported along Plantation Road to the Wai`anae Waste Water Treatment Plant (WWTP). The project's impact on the municipal waste water system is not significant. In April 2005, a sewer connection permit was granted by the City's DPP for 21 dwelling units with three bedrooms each.

4.1.11 Hazardous Materials/Hazardous Waste. In October 2001, a Phase I (ESA) was conducted by Masa Fujioka & Associates on the site. The report indicates that no evidence of hazardous substances, hazardous wastes or hazardous materials was found on the site. The report notes that it is possible that pesticides and herbicides have been applied to crops and the soil in the past. However, the investigators observed no evidence of chemical spills or misuse of agricultural chemicals. A copy of the Phase 1 ESA is shown in Appendix A.

4.2 Socio-Economic Environment

4.2.1 Population Data. The population of the Wai`anae District was estimated at 7,000, or about 2.0 percent of Oahu's population in 1950. By 1998, the population increased to 40,000, or about 4.5 percent of Oahu's population. The district could add between 10,000 to 20,000 people to the population by 2020 if this historical trend continues. However, the Wai`anae Sustainable Communities Plan targets for less population growth for the 20 year time line of the plan. The plan was prepared by the City and County of Honolulu to help guide public policy, investment and decision making.

4.2.2 Surrounding Land Use and Community Character. The project parcel is located in the Wai`anae District, which consists of white sand beaches along its coast, a narrow coastal plane, large valleys that extend three to five miles inland, and the bold and dramatic profile of the Wai`anae Mountains. The district is comprised of four distinct sub-communities of Nanakuli, Maili, Wai`anae, and Makaha and Makua. Nine ahupua`a – the historical system of organizing the landsacpe—has been identified for the Wai`anae Coast. These major ones -- Nanakuli, Lualualei, Wai`anae, Makaha, and Makua—are all physically distinct valleys with associated ridges and mountain areas, and are at the same time, distinct and separate watersheds. (Exhibit 7: Ahupua`a Map of Waianae District)

The project parcel is located in the ahupua`a of Wai`anae. The general land pattern for the area is typical of rural coastal communities in Hawaii, with residential and commercial development clustered near the ocean, while the inland valleys are largely devoted to agricultural uses and open space. The parcel is located across Plantation Road from a 75-parcel residential subdivision.

4.3 Public Facilities and Services

4.3.1 Schools and Recreational Facilities. The Wai`anae District currently contains 10 public schools operated under the State Department of Education (DOE). There are seven elementary schools, one intermediate school one high school and one combined intermediate and high school. The schools that may be impacted due to its proximity to the subject project are Wai`anae Elementary, Wai`anae Intermediate School and Wai`anae High School. The student population in school year 2004-05 is noted below:

Wai`anae Elementary	618
Wai`anae Intermediate	1,137
Wai`anae High School	1,989

Based on information culled from the Wai`anae Development Plan Revision Project: Background Report prepared for the City and County of Honolulu, the schools in the district is near to over its capacity conditions. However, the report also notes that the DOE has plans to construct two new schools in the Nanakuli area. The DOE also has plans to expand four of the schools in the district by constructing additional classroom buildings in the near future.

According to the State Department of Education (DOE), it does not request school fair share contributions from residential projects with less than 50 units.

Leeward Community College has a satellite facility in a single building next to the Wai`anae Mall that offers associate degrees and vocational programs such as nursing. Wai`anae also offers a number of enrichment programs on Hawaiian culture. One of the more well known programs is the Cultural Learning Center at Ka`ala, which focuses on "hands-on" projects with adults and youth such as planting taro and medicinal plants.

The DHHL is also exempt from having to comply with the City's Park Dedication Rules and Regulations. However, the City's Department of Design & Construction (DCC) noted in their pre-consultation response letter that the DHHL has provided the City with long-term leases on DHHL's land for development of parks in areas where their beneficiaries typically have homes including Wai`anae.

The Wai`anae District contains a diverse number of parks. The parks closest to the proposed project are the Pokai Bay Beach Park, the Wai`anae Regional Park and Pilila`au Community Park, which are within walking distance of the proposed subdivision. Studies prepared for the City indicate that the district has sufficient park acreage.

4.3.2 Police and Fire Protection. The Honolulu Police Department provides police services to the Wai`anae District through the Wai`anae Police Station and the Barbers Point substation. On a typical shift, between 14 to 17 police officers are on duty.

The Honolulu Fire Department has two fire stations located in Nanakuli and in the Wai`anae Valley. The Nanakuli Fire Station maintains a 5-person engine while the one in Wai`anae Valley has a five-person engine, a five-person ladder truck and a one-person tanker. Back up service is also provided by fire stations in Kapolei, Makakilo, Ewa and Waipahu.

4.3.3 Medical and Health Facilities. Typical medical care services are provided by Kaiser Permenente in Maili and the Wai`anae Coast Comprehensive Health Center. Emergency

ambulance service is provided from the Wai`anae Fire Station with one unit. Patients are usually taken to St. Francis West Hospital in Ewa or to the Wai`anae Comprehensive Health Care Facility. Emergency service for Kaiser Permanente is provided from the Moanalua facility with ambulance service provided by the Leeward Clinic in Waipahu. In severe medical situations, a helicopter will be dispatched to Wai`anae to bring patients to the Queens Medical Center in Honolulu.

4.3.4 Transportation Facilities and Accessibility. The major roadway in Wai`anae is Farrington Highway. It serves as both the local coastal road for trips within Wai`anae, as well as the commuter highway for trips outside Wai`anae. The subject parcel can be reached from Farrington Highway via two access points that lead inland towards the valley. From the Wai`anae Valley Road junction across from the Wai`anae Commercial Center and from the Old Government Road that merges into Plantation Road.

Plantation Road is on a public bus line. A bus stop is located right in front of the property. Bus stops are located at the junction of Plantation Road and Wai`anae Valley Road, mauka of the property and in front of Pilila`au Park on Plantation Road, makai of the subject project.

Privately owned Plantation Road has an existing 50-foot right-of-way-width. The road is surfaced with asphalt. The only access to the proposed subdivision will be from Plantation Road. There will be no access from Hoopuhi Road, which is also privately owned. In its letter to the City's Department of Planning and Permitting dated April 2005, DHHL states that "it will work with the City to provide improvements consistent with existing street frontage on Plantation Road," as shown in Exhibit 5: DHHL letter to DPP dated 4/22/05). Other traffic improvements to Plantation Road are under discussion with DPP. All improvements will be subject to approvals from the owner, Capital Investments Inc. Photos of the property and its street frontage is shown in Exhibit 8: Photos of the Property and Surroundings.

4.3.5 Water and Sewer. Water and sewer services are discussed under Section 4.1.9 and 4.1.10 respectively.

4.3.6 Ground Drainage. Approximately 400 lineal foot of storm drain system is being proposed to allow ground water from the proposed subdivision to drain into the Kaupuni Stream Channel. This would require permission to install the storm drain systems on the privately owned Plantation Road and Hoopuhi Road.

4.3.7 Solid Waste. During the construction phase, the recycling of green waste will be considered during clear and grub activities. The recycling of construction waste will also be considered, as appropriate.

For the long-term, collection and disposal of domestic solid waste will be provided by the City's Refuse Division. Solid waste from Wai`anae, as well as other Oahu districts is disposed of at the Waimanalo Gulch Sanitary Landfill and at the H-POWER waste-to-energy facility. The amount of solid waste to be collected from the project will not significantly impact on the capacities of either method of disposal.

In the design of the housing units, DHHL will consider providing space for recycling activities to encourage the recycling of solid waste(s) generated by building occupants.

4.3.8 Electrical Service. Electricity will be provided to the site through existing Hawaiian Electric Company facilities. It is anticipated that power will be tapped from overhead electric poles and routed to go underground at the junction of the subdivision's entry access and Plantation Road. All power lines will be installed underground within the premises of the subdivision. No negative impact is anticipated except for the expected minor disruptions during construction

4.3.9 Telephone and Cable. The DHHL has licensed Sandwich Isles Communications, Inc. (SIC) to provide modern, high-speed broadband telecommunications services to DHHL developments. SIC was founded in 1995 and has been serving DHHL since 1998. The SIC network will tie together DHHL areas on the six major Hawaiian Islands. The system is designed to avoid disrupting scenic view planes by installing underground optic cables. SIC contractors will use drilling and boring techniques that minimize open trenching, erosion and traffic disruption. The system is also independent of any existing networks in Hawai`i, but is connected to Hawaiian Telcom system to provide statewide and overseas service. SIC is one of several participants in a federal loan program to provide utility infrastructure to rural areas in the nation. As such, no funds are needed from DHHL.

For this project, the telecommunication lines will be integrated into the electrical conduits that will also be located underground within the boundaries of the subdivision. SIC lines will also be installed below grade along Plantation Road and Wai`anae Valley Road running mauka to Kaneaki Road at the entrance to the DHHL Freitas Dairy Subdivision. The telecommunications lines will use approximately 4,000 feet of abandoned City-owned water main to link it with the SIC electronic transmitter located at the Freitas Dairy Subdivision.

The installation at the Plantation Road segment will require permission from the landowner, Capital Investments, Inc. This segment of work on Plantation Road will be part of the initial site work to subdivide the 3.353-acre parcel into 21 house lots and install the infrastructure necessary to provide access and utility services.

The segment on Wai`anae Valley Road to Kaneaki Road is covered by a master agreement between SIC and the City that allows SIC use of abandoned water mains along City-owned roads. Approvals and permits for this segment of the SIC line installation is not part of this project.

Although there is some minor disruption due to the installation of the SIC lines, this would allow DHHL homeowners to access a cutting-edge broadband fiber optic system that will provide essential telecommunications services at affordable rates. Since no funds are expected from the DHHL, this allows the agency to dedicate its limited resources to its primary mission.

Section 5.0 Relationship to Federal, State and City & County Land Use Plans and Policies

5.1 Federal

The project is in compliance to the Hawaiian Homes Commission Act of 1920. Section 207 of the Act authorizes the DHHL to lease to Native Hawaiians the right to the use and occupancy of Hawaiian Home Lands for "agricultural", "pastoral" and "residential" purposes. The Act also allows DHHL to grant licenses to public utilities and others for various purposes. The Hawaiian Homes Commission Act was enacted by the United States Congress and adopted as a provision

of the Constitution of the State of Hawai`i. The Federal government transferred responsibility for management of Hawaiian home lands to the State at statehood.

5.2 State of Hawaii

5.2.1 Hawaii State Plan. The Hawaii State Plan (Chapter 226, Hawaii Revised Statutes) provides a guide for the future of Hawaii by setting forth a broad range of goals, objectives, and policies for growth and development of the State. The proposed project is generally consistent with the Hawaii State Plan.

5.2.2 State Functional Plans. The Hawaii State Functional Plan (Chapter 226) provides a management program that allows judicious use of the State's natural resources to improve current conditions and attend to various societal issues and trends. The proposed project is generally consistent with the State Functional Plans, particularly its housing goals.

5.2.3 State Land Use Law. The State Land Use Commission classifies the subject property as Agricultural. The proposed subdivision does not conform to the State Agricultural classification of Chapter 205, Hawaii Revised Statutes and State of Hawaii Land Use Commission Rules (Hawaii Revised Statutes, Chapter 205; Hawaii Administrative Rules, Title 15, Subtitle 3, Chapter 15). However, under the provisions of the Hawaiian Homes Commission Act, 1920, as amended (HHCA), DHHL-owned lands are not subject to this law.

5.2.4 Coastal Zone Management Act. The proposed Consuelo Subdivision is not located on the coastline or shoreline and does not involve coastal resources. In any event, the subdivision will be designed in a manner that will not negatively impact the coastline, its resources and the surrounding community.

5.3 City & County of Honolulu

The City & County General Plan provides a statement of long range social, economic, environmental, and design objectives for the Island of Oahu. It also includes a statement of polices necessary to meet these objectives.

5.3.1 General Plan. The proposed Consuelo Subdivision is consistent with, and supports the following objectives and policies of the General Plan, specifically in the area of housing. The project will provide additional decent housing for the people of Oahu at prices they can afford. It will also provide the people of Oahu with a choice of living environments which are reasonably close to employment, recreation, and commercial centers and which are adequately served by public utilities.

5.3.2 Wai`anae Sustainable Communities Development Plan. This document, adopted in July 2000, is one of a set of eight community oriented plans intended to help guide public policy, investment and decision-making over the next 20 years. The Wai`anae district is one of the six areas which are envisioned as relatively stable regions in which public programs will focus on supporting existing populations which is why it is entitled "Sustainable Communities Plan" in order to appropriately indicate their intent.

The Wai`anae District is targeted for very little growth over the 20-year time line of this plan. The focus of this plan is the preservation of the rural landscape and the country lifestyle of the Wai`anae District and its people. However, the document also notes that this will be a difficult

policy to implement as evidenced by the tremendous growth the area has experienced over the past 40 years.

The report describes a number of interesting housing trends for the Wai`anae district. Wai`anae's population growth between 1980 and 1990 (18.8 %) was larger than the increase in occupied housing units (12.1%). This disparity suggests a trend towards larger households, more overcrowding, and/or more homeless people. The report also notes that "some percentage of people occupying the new homes are Wai`anae families that had been doubling up with other families." The report further notes that "affordable house prices and affordable rentals will be needed."

Although the development is inconsistent with the zoning and land use policies of the document, it is supportive of the housing objectives. Please note, however, that DHHL owned land is exempt from State and County zoning and land use regulations.

Section 6.0 Alternatives to the Proposed Action

6.1 No Action

The No-Action alternative would result in lost opportunity to provide additional 21 homes for low-income Hawaiian families.

6.2 Alternative Sites

The property was donated to DHHL by the Consuelo Foundation. No alternative sites were offered.

6.3 Alternative Uses

If the agency is unable to develop the property for a cost that would allow the construction and sale of affordable residences despite DHHL's reasonable good faith efforts, Consuelo has allowed alternative uses. DHHL may develop the property either as four (4) or more agricultural lands or with market priced homes. If the DHHL is unable to develop the property within a four-year time frame, the property will revert back to the Consuelo Foundation.

6.4 Recommended Action

The recommended action is to proceed with the conversion of the property into 21 affordable single family homes.

Section 7.0
Relationship Between Local Short-term Uses and the Maintenance and Enhancement of Long Term Productivity

No short-term exploitation of resources resulting from the proposed project will have long term adverse consequences. The parcel, which is in an agricultural zoned land, has remained fallow and underutilized for more than a decade. Its conversion into a residential housing subdivision of 21 affordable single family homes will add to the needed housing stock for the area, particularly for DHHL beneficiaries. There are adequate infrastructure and community resources to support the 21 single-family homes. It is expected that the additional 21 homes will not significantly impact on traffic along Plantation Road. However, DHHL is under discussion with the City to implement measures that would satisfy Consuelo's request to provide safe pedestrian

access between the proposed 21-parcel development and the existing Ke Aka Ho`ona subdivision.

Section 8.0
Irreversible/Irretrievable Commitment of Resources by the Proposed Action

Development of the proposed subdivision will involve the irretrievable loss of certain environmental and fiscal resources. However the costs associated with the use of these resources should be evaluated in light of the long-term benefits to the State of Hawaii particularly to its low-income population, specifically those with Hawaiian and or part-Hawaiian ancestry.

Section 9.0
Summary of Impacts

9.1 Summary of Impacts

9.1.1 Physical Impacts. No long term negative physical impacts are anticipated with the implementation of the proposed action. Short-term construction related impacts are anticipated but should be adequately mitigated through the use of sound construction practices.

Beneficial impacts include the provision of additional housing stock to the State that needs more affordable housing for its residents, particularly those of Hawaiian ancestry.

9.1.2 Impacts on Public Facilities and Services. No long-term impacts are anticipated on public facilities and services.

9.1.3 Socio Economic Impacts. No long-term negative impacts are anticipated to the socio-economic environment as a result of the proposed action. A short-term benefit of the project is the creation of employment in the planning, design and construction industries. The long-term benefits are the provision of additional housing stock to the State that needs more affordable housing for its residents, particularly those of Hawaiian ancestry. Although the 3.53-acre parcel will be taken out of the land area designated for agriculture, there is no anticipated negative impact on agricultural production. The site has remained fallow for more than a decade as evidenced by aerial photographs in 1993 that showed the site as barren and unutilized.

9.2 Need for an Environmental Impact Statement (EIS)

Because no long-term adverse impacts are anticipated as a result of the proposed project, it is expected that an Environmental Impact Statement is not required and a determination of Finding of No Significant Impact (FONSI) will be recommended.

9.3 Significance

According to the Department of Health Rules (Chapter 11-200-12), an applicant must determine whether an action may have a significant impact on the environment. These would include (1) all phases of the project; (2) its expected primary and secondary consequences; (3) its cumulative impact with other projects; and (4) its short and long-term effects. The Rules establish a Significance Criterion to be used as a basis for identifying whether significant environmental impact will occur. According to the Rules, an action shall be determined to have a significant impact on the environment if it meets any of the following criteria.

1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource. No natural or cultural resources have been identified on the site.

2. *Curtails the range of beneficial uses of the environment.* The land is zoned for agricultural use. However, the project will be built on fallow land. The parcel has remained fallow for more than a decade since agriculture ceased to be the primary industry in the State. It will not negatively impact other beneficial uses such as agricultural activities. If the parcel is not developed for housing by DHHL as desired by the donor, the land will likely remain fallow.

3. *Conflicts with the state's long term-environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.* The project does not conflict with any long term environmental policies, goals and guidelines.

4. *Substantially affects the economic or social welfare of the community or State*. The project could have a significant positive effect on the economic welfare of the community by providing additional housing stock for low-income residents.

5. *Substantially affects public health.* Noise and dust will be generated during construction. However, these can be mitigated by existing regulations as cited in this Assessment.

6. *Involves substantially secondary impacts, such as population changes or effects on public facilities.* The project will not have significant adverse secondary impacts on public facilities. Although the project will increase water consumption, wastewater discharge and power consumption, these consequences are unavoidable. However, these should not tax the utility systems already serving the adjacent residential communities.

7. *Involves a substantial degradation of environmental quality*. The project will not substantially degrade the environmental quality. Existing trees will be retained or replaced and the structures on site will not exceed two stories in height, thus preserving public view planes.

8. *Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment for larger actions.* The project will not have a considerable impact on the environment and does not involve a commitment for larger actions.

9. *Substantially affect a rare, threatened or endangered species or its habitat.* No rare or threatened species or habitats have been identified on the site.

10. *Detrimentally affects air or water quality or ambient noise levels.* Dust and emission will be generated during construction. However, these can be controlled by measures described earlier in this Assessment.

11. *Affects or is likely to suffer damage by being located in an environmentally sensitive area such as flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater or coastal waters.* The project will not be developed in an environmentally sensitive area.

12. *Substantially affects vistas and view planes identified in County or State plans or studies.* The project will not impact any scenic or view planes.

13. *Requires substantial energy consumption.* The project will not require substantial energy consumption to complete. The subdivision and building design will adhere to guidelines established in State and County policies as it affects energy conservation and the use of recycled-content products.

Section 10.0
Necessary Permits and Approvals

10.1 Federal
No Federal permits are required.

10.2 State of Hawaii
A National Pollutant Discharge Elimination System (NPDES) permit is required by the State Department of Health (DOH) in compliance with the Clean Water Act prior to the initiation of construction activities.

The State requires the preparation of an Environmental Assessment. If the state provisions are addressed, the applicant can determine that an Environmental Impact Statement (EIS) will not be required, and can then issue a FONSI (Finding of No Significant Impact) for this project.

10.3 City & County of Honolulu
Under the provisions of the Hawaiian Homes Commission Act, 1920, as amended (HHCA), DHHL is not subject to the City & County of Honolulu's Land Use Ordinance and Subdivision Rules and Regulations (SR&R). However, DHHL has determined that R-5 Residential zoning standards are appropriate for the development and will secure all applicable reviews and approval for the following:

- Subdivision
- Grading, Grubbing, and Stockpiling
- Permit to Excavate Public Right of Way
- Sewer Connection
- Sewer Systems for New Subdivisions
- Connection to the City's Storm Sewer System
- Building Permits for Building, Electrical, Plumbing, Sidewalk/Driveway
- Certificate of Occupancy
- Water Connection/Facilities Charges
- Street Lighting for Subdivisions

10.4 Private Sector
Plantation Road and Hoopuli Road, the two roadways fronting the subject parcel on the west and south boundaries are both privately owned. The tax records show the legal owner of both

roadways as Capital Investment of Hawaii, Inc. DHHL needs to request for permission from the owners to install any infrastructure improvements on either or both roadways.

Section 11.0 References

Baker, Harold L. AGRICULTURAL LANDS OF IMPORTANCE TO THE STATE OF HAWAI`I. Honolulu. Tropical Agriculture and Human Resources, University of Hawaii, 1977

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Hawai`i Department of Business, Economic Development & Tourism. THE STATE OF HAWAI`I DATA BOOK 2000. Honolulu, 2001.

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Hawai`i Department of Human Services. FINAL ENVIRONMENTAL ASSESSMENT, WEINBERG VILLAGES WAI`ANAE, OAHU. Honolulu. September 1991

Geolabs, Inc. GEOTECHNICAL ENGINEERING EXPLORATION, CONSUELO ALGER SUBDIVISION, TMK: 8-5-03: 20, WAI`ANAE, OAHU, HAWAI`I. May 2005

Juvik, Sonia P. and James O., eds. ATLAS OF HAWAI`I. 3d ed. Honolulu: University of Hawai`i Press, 1998.

Land Study Bureau, University of Hawai`i. DETAILED LAND CLASSIFICATION – ISLAND OF OAHU. Honolulu. December 1972

Masa Fujioka & Associates. PHASE 1, ENVIRONMENTAL SITE ASSESSMENT, TMK (1) 8-5-3: PARCEL 20, WAI`ANAE, HAWAI`I. October 2001

Sandwich Isles Communications, inc. SANDWICH ISLES COMMUNICATIONS NETWORK FOR HAWAIIAN HOME LANDS FACT SHEET. Honolulu. June 2005

Section 12.0
Preparation of the Draft Environmental Assessment: Pre-Consultation Responses

The following agencies and individuals responded to the project's letter of consultation. Copies of the responses are enclosed in Appendix D. The DHHL also presented the project to the Wai`anae Neighborhood Board. The minutes of the meeting pertaining to the project is also enclosed.

State Agencies
Hawaii Department of Accounting and General Services
Hawaii Department of Business & Economic Development and Tourism
    Office of Planning
    Strategic Industries Division
Hawaii Department of Education
Hawaii Department of Health
Hawaii Department of Land & Natural Resources, Historic Preservation & Land Divisions
Hawaii Department of Transportation

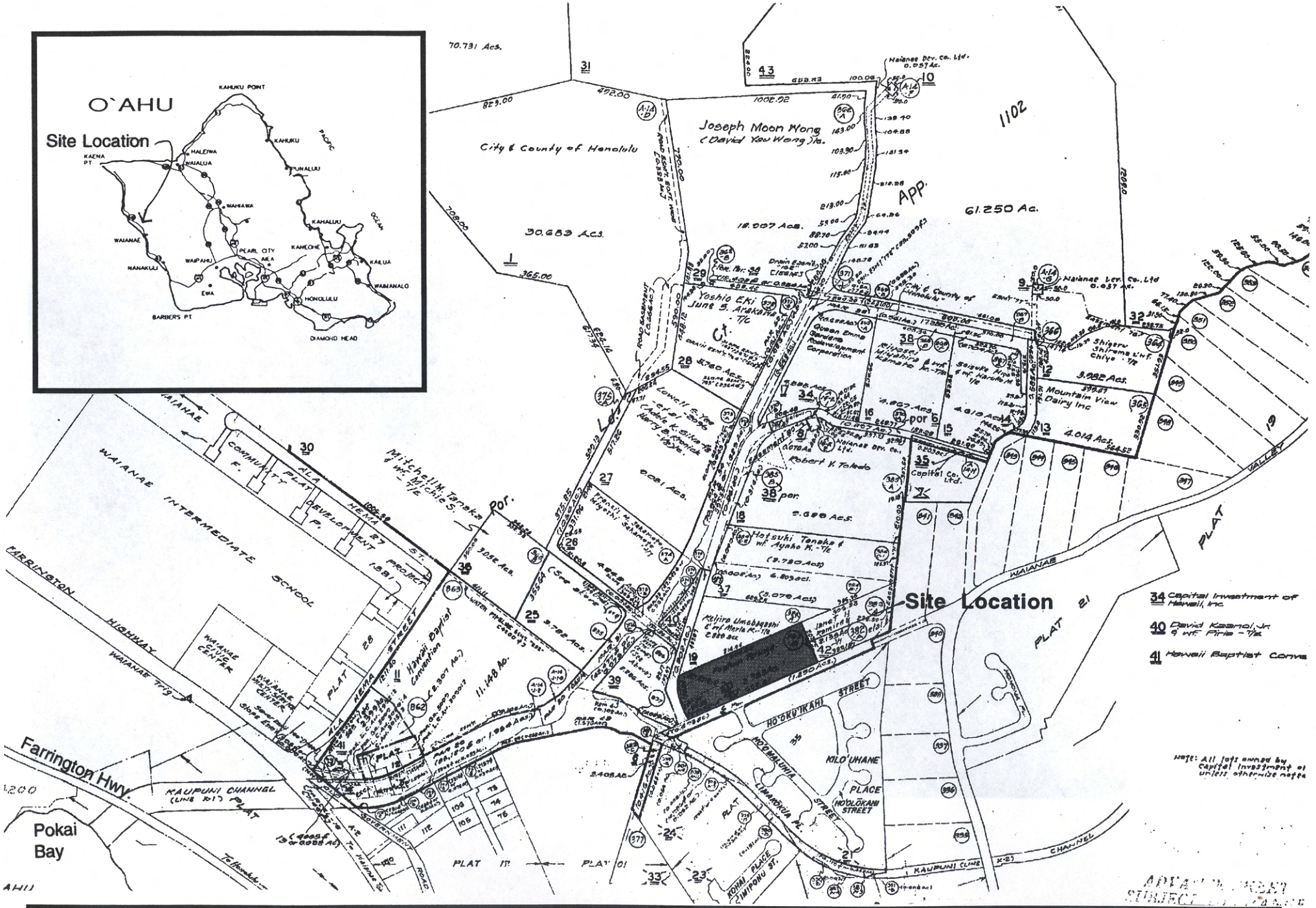
City & County of Honolulu Agencies
C&C Honolulu Department of Design & Construction
    Land Division
    Wastewater Division
C&C Honolulu Department of Transportation Services
C&C Honolulu Department of Parks & Recreation
C&C Honolulu Department of Planning & Permitting
C&C Honolulu Department of Facility Maintenance
C&C Honolulu Fire Department
C&C Board of Water Supply
C&C Police Department
Wai`anae Neighborhood Board

Private Sector
Hawaiian Electric Company, Inc.
Mr. & Mrs. Keijiro Umebayashi

Compilation of
EXHIBITS

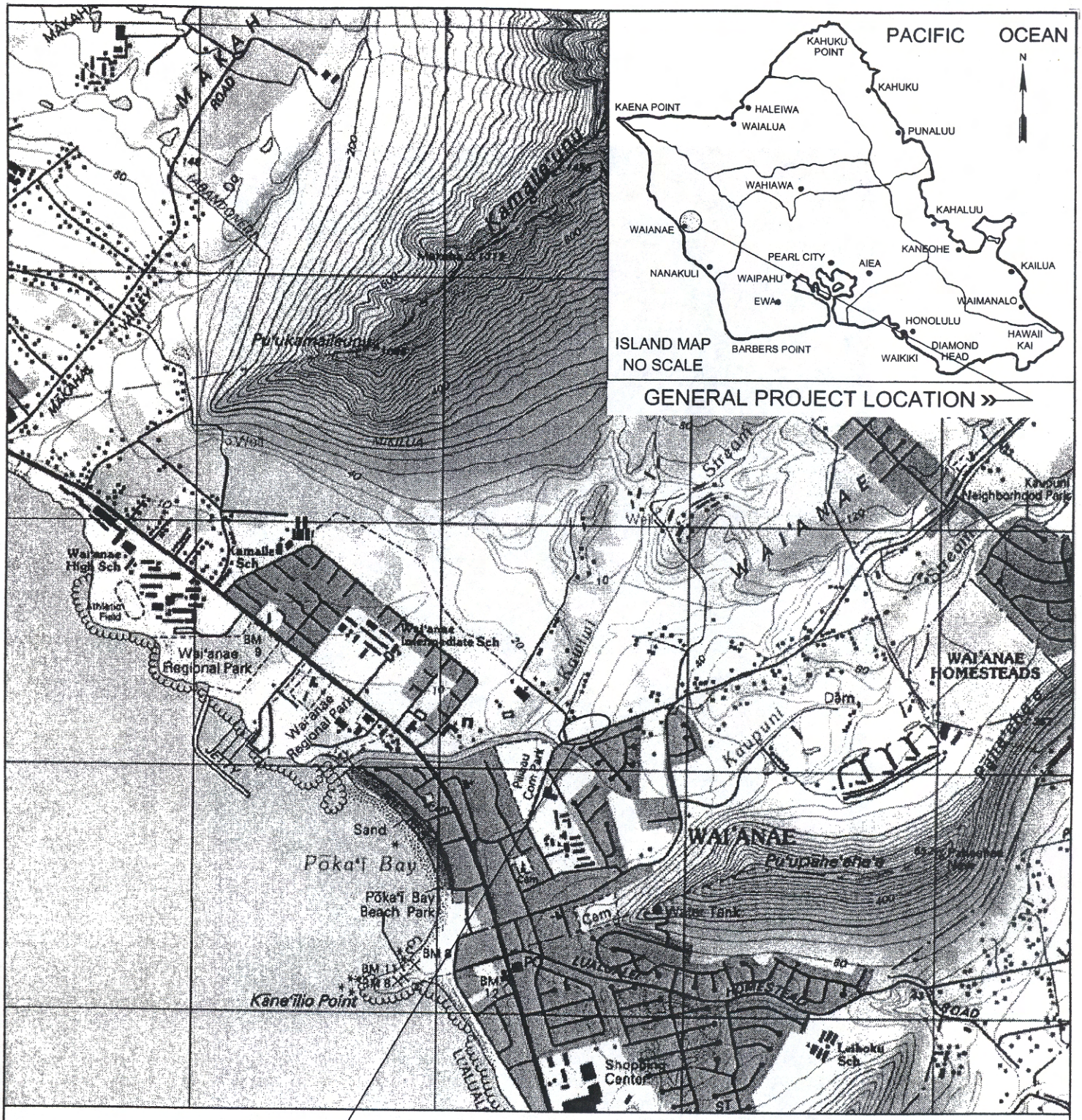
Environmental Assessment

Consuelo Subdivision
TMK: 8-5-003 : 020
85-576 B Wai`anae Valley Road, Wai`anae, Oahu



CONSUELO SUBDIVISION
TMK: 8-5-03: 020, Wai`anae, Oahu

Exhibit 1: Site Location Showing Tax Map Key (TMK) Parcel

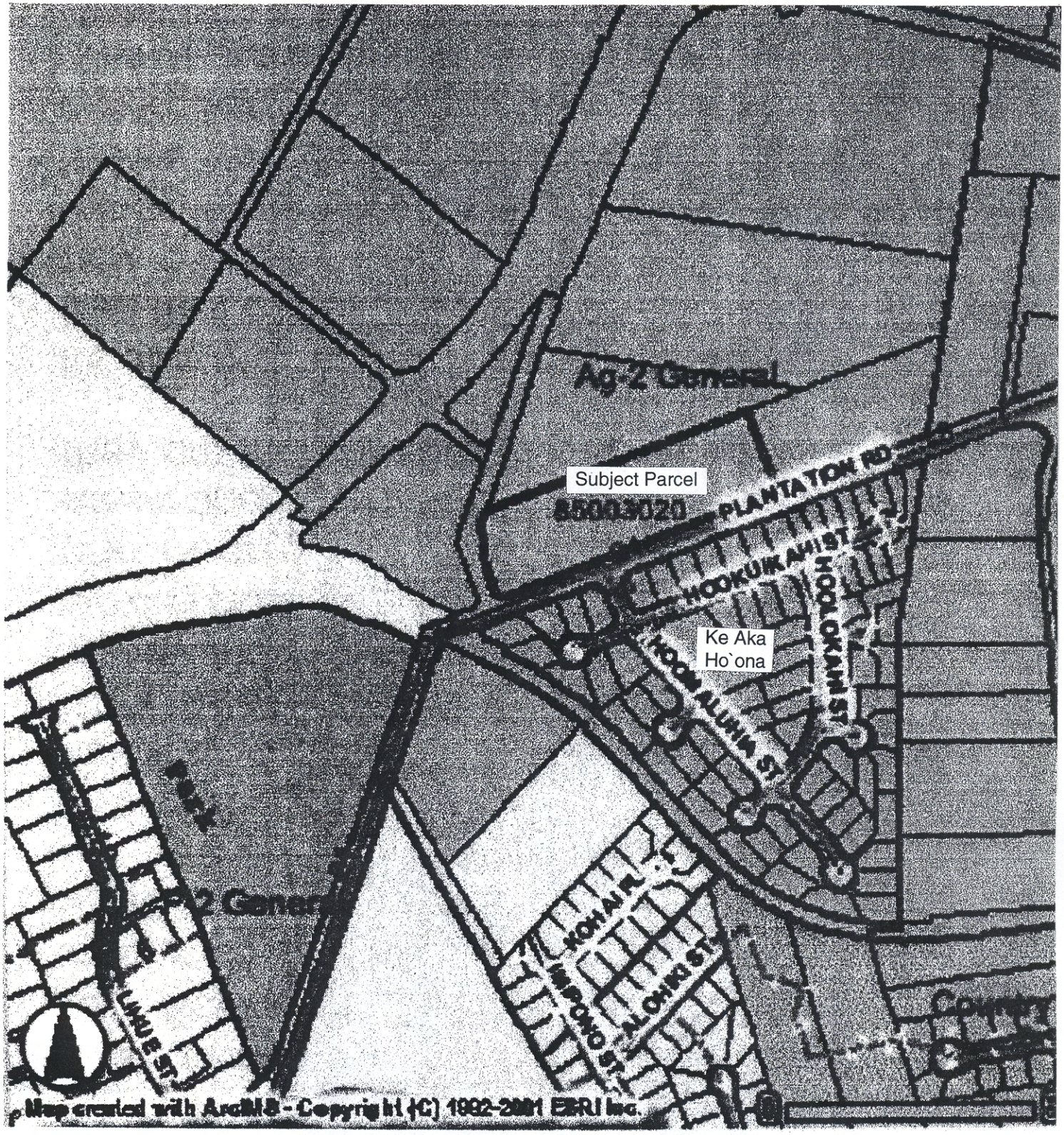


REFERENCE: HAWAII USGS TOPOGRAPHIC MAPS BY NATIONAL GEOGRAPHIC (2002).

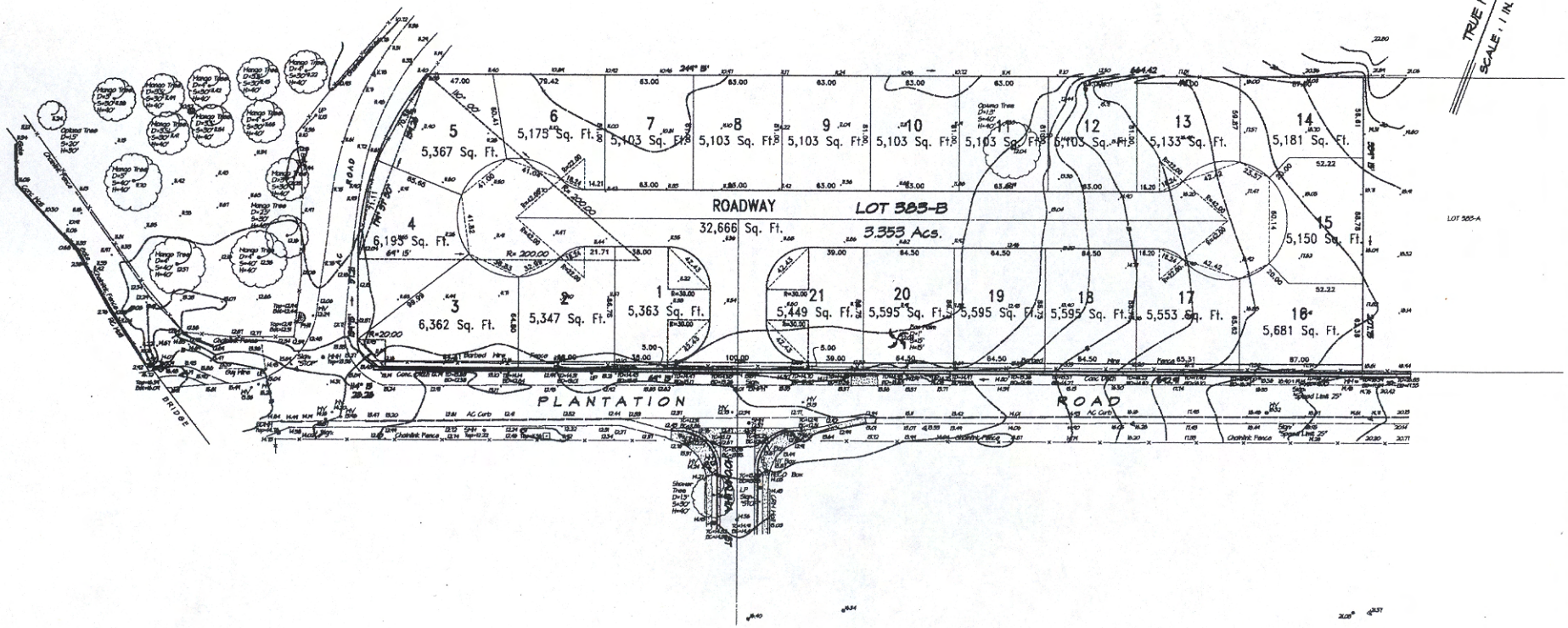
GEOLABS, INC. *Geotechnical Engineering*		
DATE: MARCH 2005	DRAWN BY: JRP	PLATE: 1
SCALE: 1" = 2,000'	W.O.: 5410-00	

CONSUELO SUBDIVISION
TMK: 8-5-03: 020, Wai`anae, Oahu

Exhibit 2: Project Location Map



CONSUELO SUBDIVISION TMK: 8-5-03: 020, Wai`anae, Oahu	**Exhibit 3**: Zoning Map of Subject Parcel & Ke Aka Ho`ona



LEGEND:

AC	Asphaltic Concrete	LP	Light Pole
B	Bottom	PH	Planting Meter
BC	Bottom Curb	S	Sewer, Spread
BDC	Bottom Drop Curb	SDMH	Storm Drain Manhole
BM	Bottom Mat	SMH	Sewer Manhole
CB	Catch Basin	SL	Street Light
CO	Clean Out	T	Top
Conc.	Concrete	TC	Top Curb
CRM	Cement Rubble Masonry	TDC	Top Drop Curb
D	Diameter, Drain	TP	Top Pipe
FH	Fire Hydrant	TM	Top Mat
G	Gas, Ground	UP	Utility Pole
GI	Grate Inlet	WM	Water Meter
H	Height	WMH	Water Manhole
HECO	Hawaiian Electric Company	WV	Water Valve
HTCo	Hawaiian Telephone Company		
Inv.	Invert		

SUBDIVISION MAP
Consuelo Alger Foundation
Waianae, Oahu, Hawaii
TMK : 8 - 5 - 03 : 20

PRELIMINARY

WILLIAM DEAN ALCON
LICENSED PROFESSIONAL LAND SURVEYOR
No. 8296
HAWAII, U.S.A.

Lic. Exp. 04/28
Licensed Professional Land Surveyor
Certificate Number 8296

#040620.4A
FB : 246 : 01

ALCON & ASSOCIATES, INC.
716 UMI STREET, SUITE 250
HONOLULU, HI 96804

JANUARY 25, 2004

CONSUELO SUBDIVISION
TMK: 8-5-03: 020, Wai`anae, Oahu

Exhibit 4: Preliminary Subdivision Plan

Exhibit 5

DHHL letter to DPP dated 04/22/05

Environmental Assessment

Consuelo Subdivision
TMK: 8-5-003 : 020
85-576 B Wai`anae Valley Road, Wai`anae, Oahu

LINDA LINGLE
GOVERNOR
STATE OF HAWAII

MICAH A. KANE
CHAIRMAN
HAWAIIAN HOMES COMMISSION

BEN HENDERSON
DEPUTY TO THE CHAIRMAN

KAULANA H. PARK
EXECUTIVE ASSISTANT

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

April 22, 2005

Mr. Henry Eng, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Eng:

Subject: Consuelo Subdivision
Waianae, Oahu, Hawaii
Tax Map Key: 8-5-03:20

The Department of Hawaiian Home Lands (DHHL), as Owner of the above captioned parcel, is developing the property for 21 single-family residential units and a roadway lot.

Under provisions of the Hawaiian Homes Commission Act, 1920, as amended (HHCA), DHHL is not subject to the Land Use Ordinance and Subdivision Rules and Regulations (SR&R). The project is situated on lands zoned AG-2 (City and County of Honolulu). DHHL has determined that R-5 Residential zoning standards are appropriate for the development of this project and has directed our engineer to design the project in conformance to the City and County Standards for that zoning.

DHHL is also exempting itself from the following requirements

- **Payment of subdivision filing fees by a government agency, as provided in Section 22-1.2(a) of the Revised Ordinances of Honolulu (R.O.), as amended.**
- **Parks Dedication Article 7, Chapter 22, R.O., as amended.**
- **Dedication of roadways and improvements solely for maintenance purposes, Section 1-111 of the SR&R.** The HHCA mandates that the City maintain the roadways on

Hawaiian home lands. DHHL will work with the City to ensure the acceptability of the roadways and improvements. Although dedication of the land may be desirable, DHHL is prohibited from alienating Hawaiian home lands and must retain ownership.

- **Final map approval, Section 6-602 of SR&R.** DHHL desires to obtain final map approval without posting a subdivision bond and prior to completing site work improvements. DHHL will certify funds for the construction of site work improvements. The selection of a contractor shall be through the bidding process in accordance with the State procurement regulations.

- **Submission of an agreement and surety bond for repair and replacement of the subdivision improvements, Section 6-606 of the SR&R.** DHHL will certify funds for the construction of site work improvements. A copy of the certification will be provided to your department.

- **Submission of an agreement and bond for energizing and maintenance of streetlights, Chapter 2-22.6, R.O., as amended.** DHHL will certify funds for the construction of site work improvements. A copy of the certification will be provided to your department.

- **Roadway Improvements along the property frontage.** Plantation Road and Hoopuhi Street are private roadways fronting the subject parcel. DHHL will exempt itself from standard setback and/or roadway improvements along the property frontage, however will work with the City to provide improvements consistent with existing street frontage on Plantation Road.

Should you have any question, please call Amy Arakaki of our Land Development Division at 587-6450.

Aloha and mahalo,

Micah A. Kane, Chairman
Hawaiian Homes Commission

c: Alcon & Associates

Exhibit 6

Summary of Findings & Recommendations, Geo-technical Engineering Exploration

Environmental Assessment

Consuelo Subdivision
TMK: 8-5-003 : 020
85-576 B Wai`anae Valley Road, Wai`anae, Oahu

GEOTECHNICAL ENGINEERING EXPLORATION

CONSUELO ALGER SUBDIVISION

TMK: 8-5-03: 20

WAIANAE, OAHU, HAWAII

W.O. 5410-00 MAY XX, 2005

SUMMARY OF FINDINGS AND RECOMMENDATIONS

Our field exploration disclosed that the majority of the project site is generally underlain by compressible deposits consisting of soft silty clays and sandy clays as well as loose silty sands and clayey gravel of variable thickness and at varying depths below the existing ground surface. Groundwater was encountered in the drilled borings at depths ranging between about 7.5 to 10.6 feet below the existing ground surface at the time of our field exploration.

We understand that new fills on the order of about 1 to 3 feet thick will be required to raise the existing ground surface to the design finish grades for the proposed development. Due to the presence of soft and/or loose soil deposits underlying the project site, ground settlements on the order of about 3 to 5 inches may occur when the new fills are placed over the compressible soil deposits.

Ideally, driven pile foundations could be used to support the house structures and minimize settlements due to compression of the soft/loose deposits. However, to reduce construction cost, we believe that shallow footing foundations may be used for support of the proposed one to two-story single-family homes planned at the site provided a 3-foot thick compacted structural fill is placed over the in-situ soils and some amount of long-term settlement is tolerable. An allowable bearing pressure of up to 2,000 psf may be used for the design of shallow spread and/or continuous footings bearing on the compacted structural fill material. In order to utilize the compacted structural fill material for bearing support, the maximum footing embedment should be limited to 18 inches below the lowest adjacent finished grades.

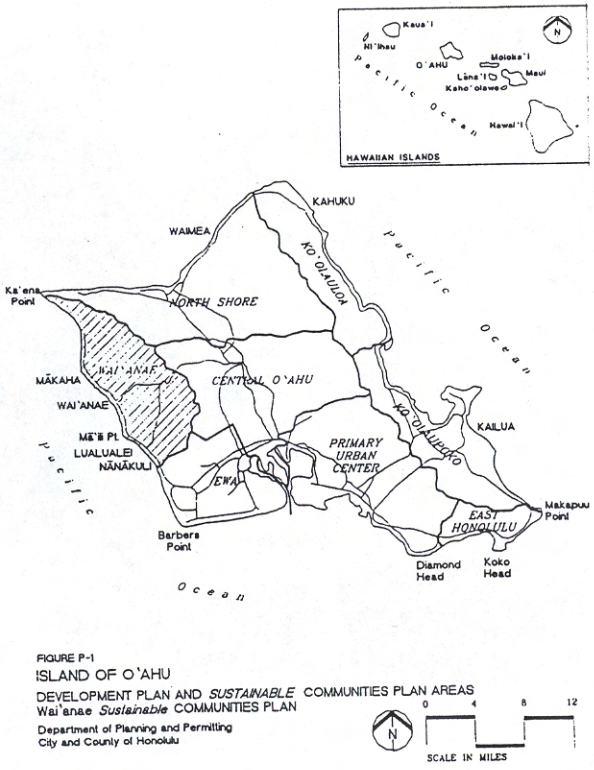
Our laboratory test results indicate that the near-surface clayey soils exhibit moderately high potential for shrink/swell when subjected to changes in the moisture content. We recommend that concrete slabs-on-grade for the building floors be supported on the 3 feet of compacted structural fill material placed at the project site. Exterior concrete walkways and driveways should also be supported on the 3-foot structural fill to reduce the potential for structural distress to the future slabs-on-grade resulting from the potential swelling of the surface clayey soils and to provide more uniform support. Special attention should be given to the subgrade preparation requirements presented in the "Site Preparation" section of this report to reduce the potential for shrink/swell effects on concrete slabs.

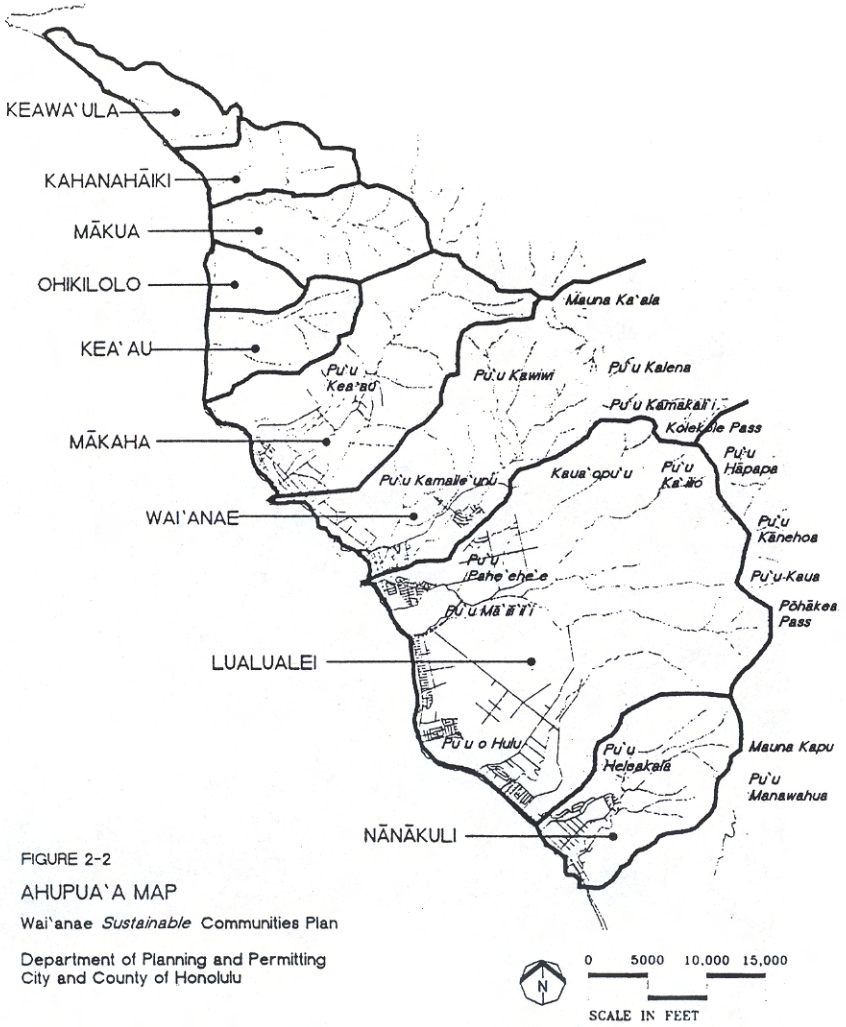
As previously mentioned, ground settlements on the order of about 3 to 5 inches may occur when the new fills are placed over the highly compressible soil deposits. In addition, we estimate that 80 to 90 percent of the primary settlement would occur in about 4 to 8 months after the new fill is placed. Therefore, new fills should be placed as soon as practical to allow the anticipated ground settlements to occur prior to pavement and house foundation construction. A settlement monitoring program should be implemented to evaluate the magnitude and rate of the estimated settlements during the settlement waiting period.

In order to shorten the 4 to 8-month settlement waiting period, a temporary surcharge program may be considered for the new fills placed over the compressible soil deposits. The surcharge program would aid in accelerating ground settlements, thus reducing the settlement waiting period. Based on a surcharge fill height of about 5 feet above the design finished grades, we believe that the settlement waiting period may be reduced to about 1 to 2 months to induce the anticipated fill ground settlements of 3 to 5 inches as mentioned above.

The text of this report should be referred to for detailed discussion and recommendations.

END OF SUMMARY OF FINDINGS AND RECOMMENDATIONS





CONSUELO SUBDIVISION TMK: 8-5-03: 020, Wai`anae, Oahu	**Exhibit 7**: Ahupua`a Map of Wai`anae District	Source: Wai`anae Sustainable Communities Plan, City & County of Honolulu

Exhibit 8

Photos of Property and Surroundings

Environmental Assessment

Consuelo Subdivision
TMK: 8-5-003 : 020
85-576 B Wai`anae Valley Road, Wai`anae, Oahu

Figure 8.A: View of the bus stop in front of the subject parcel

Figure 8.B: View of Ke Aka Ho`ona Subdivision from the Plantation Road boundary of the subject parcel

Figure 8.C: View of subject parcel from Plantation Road

Figure 8.D: Mauka view of Plantation Road. Subject parcel is on the right

Appendix A
Phase 1 Environmental Site Assessment

Environmental Assessment

Consuelo Subdivision
TMK: 8-5-003 : 020
85-576 B Wai`anae Valley Road, Wai`anae, Oahu

PHASE I
ENVIRONMENTAL SITE ASSESSMENT
TMK (1) 8-5-3: PARCEL 20
WAIANAE, HAWAII

OCTOBER 2001

MASA FUJIOKA & ASSOCIATES
Job Number 01040-006

M F A MASA FUJIOKA & ASSOCIATES
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October 22, 2001
MFA Job No. 01040-006

Consuelo Zobel Alger Foundation
110 N. Hotel Street
Honolulu, Hawaii 96817

Attention: Mr. Terrence George

Subject: **Phase I Environmental Site Assessment**
TMK (1) 8-5-3 Parcel 20
Waianae, Hawaii

Dear Mr. George:

Masa Fujioka & Associates (MFA) has performed a Phase I Environmental Site Assessment (ESA) at the subject property. The purpose of this investigation was to evaluate the presence or likely presence of materials, considered hazardous to human health and the environment, that may affect the property.

Our Phase I ESA was conducted in accordance with the scope of work contained in our proposal, dated August 21, 2001. A Phase I ESA comprises a number of individual elements whose basic nature and extent are determined in accordance with the standard of care applicable to Phase I ESAs. The standard of care is commonly defined as the care applied by the ordinary practitioner at the time and in the area where the ESA was performed. We believe that we have complied with the applicable standard of care within the limits of our scope of service described in our proposal.

The accompanying report is an instrument of service of MFA. The report summarizes our findings and relates our opinions with respect to the site history and potential sources of contamination at the site. Note that our findings and opinions are based on information that we obtained on given dates, through records review, site review, and related activities. It is possible that other information exists or subsequently has become known, just as it is possible for conditions we observed to have changed after our observation. For these and associated reasons, MFA and many of its peers routinely advise clients for ESA services that it would be a mistake to place unmerited faith in findings and opinions conveyed via ESA reports. MFA cannot under any circumstances warrant or guarantee that not finding indicators of hazardous materials means that hazardous materials do not exist on the site.

It has been a pleasure performing this assessment for you. Please contact us at 484-5366 if you have questions regarding this report.

Respectfully submitted,

MASA FUJIOKA & ASSOCIATES
A Professional Partnership

David R. Daugherty, R.G.
Principal

Three copies submitted

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PHASE I
ENVIRONMENTAL SITE ASSESSMENT
TMK (1) 8-5-3: PARCEL 20
WAIANAE, HAWAII

1.0 INTRODUCTION

1.1 OVERVIEW

This report presents the results of Masa Fujioka & Associates' (MFA's) Phase I Environmental Site Assessment (ESA) for the subject site. The general location of the site is shown on Figure 1 (Map of Area).

Our work was performed as summarized in our proposal dated August 21, 2001, which constitutes the contractual agreement between MFA and the Consuelo Zobel Alger Foundation for the services provided. Our Phase I investigation was performed in general accordance with the American Society for Testing and Materials (ASTM) "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (ASTM Designation E1527).

1.2 PURPOSE AND SCOPE OF WORK

MFA conducted this ESA to evaluate whether materials considered to be hazardous to human health and the environment, present at the project site or in the surrounding area, may affect the subject project. We conducted the environmental assessment using available information sources with the potential to identify past or on-going problems at the project site. We performed the following tasks in our ESA:

- **Review of site history.** MFA examined readily available documents, consisting of topographic maps, tax maps, site maps, and aerial photographs.
- **Review of regulatory records.** We examined government records regarding environmental conditions, citations, complaints, and permits at the site and at neighboring properties. We reviewed records from the following agencies: U. S. Environmental Protection Agency (EPA), State of Hawaii Department of Health (DOH) Hazardous Waste Program, DOH Underground Storage Tank (UST) Program, DOH Underground Injection Control Program, and DOH Hazard Evaluation and Emergency Response (HEER) Program.
- **Review of site geology and hydrogeology.** We reviewed readily available published information on surface and subsurface conditions at the site and surrounding area. We used this information to assess topography, drainage, surface water bodies, anticipated subsurface geology, and groundwater occurrence and usage in the area.

- **Site reconnaissance.** We performed a site reconnaissance of the property to note visual signs of contamination and conduct a brief assessment of neighboring properties. During our site reconnaissance we specifically looked for stained soil, dead or stressed vegetation, hazardous materials, electrical transformers and capacitors, above ground and underground storage tanks, disposal areas, maintenance areas, groundwater wells, sumps, storm drains, and cesspools/sewers.
- **Data evaluation and report preparation.** We evaluated the information collected and prepared this report documenting our assessment and providing our conclusions.

1.3 SPECIAL TERMS AND CONDITIONS

Consuelo Zobel Alger Foundation contracted MFA to perform this Phase I ESA. The ESA was conducted and this report was prepared for the sole use of Consuelo Zobel Alger Foundation. This report shall not be relied upon by or transferred to any other party without express written authorization from MFA.

1.4 LIMITATIONS AND EXCEPTIONS OF ASSESSMENT

Phase I ESAs, by their very nature, are limited. MFA has endeavored to meet what it believes is the applicable standard of care and, in so doing, is obliged to advise Consuelo Zobel Alger Foundation of Phase I ESA limitations. This ESA did not include any investigation with respect to site geotechnical concerns, and did not include any investigation with respect to wetlands, lead-based paint, archaeological resources, endangered species, air quality, regulatory compliance, electromagnetic radiation, asbestos, radon, or methane. No subsurface environmental investigation or sampling was performed. Our investigation was limited to the procedures described in the Phase I ESA Standard Practice (ASTM E1527).

1.5 LIMITING CONDITIONS

The conclusions presented in this report are professional opinions based solely upon visual observations of the site and vicinity, and our interpretation of the available historical and regulatory information and documents reviewed. They are intended exclusively for the purpose outlined herein and apply only to the site location and project indicated. This report is intended for the sole use of Consuelo Zobel Alger Foundation. The scope of services performed in execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or the findings, conclusions, or recommendations presented herein is at the sole risk of said user.

Opinions and recommendations presented herein apply to site conditions existing at the time of our investigation and those reasonably foreseeable; they cannot necessarily apply to site changes of which this office is not aware and has not had the opportunity to evaluate.

2.0 SITE DESCRIPTION

2.1 LOCATION AND LEGAL DESCRIPTION

The subject property is located on the north side of Plantation Road east of Hoopuhi Road in Waianae, western Oahu, Hawaii (Figure 2). The subject site consists of property denoted by Tax Map Key (1) 8-5-3: Parcel 20 and is 3.353-acres in size (Figure 2).

2.2 SITE AND VICINITY CHARACTERISTICS

The site is located in Waianae, Oahu. The site is bordered by roads to the south (Plantation Road) and west (Hoopuli Road), and other parcels to the north and east. Single-family residences are present to the south across Plantation Road, and on adjacent parcels to the east and northwest. The site is generally flat, and covered with sparse vegetation. Much of the south and west border of the property is lined with plumeria trees.

Elevation of the site increases gradually to the east from about 15 to 30 feet above sea level. The Pacific Ocean (Pokai Bay) is approximately 2,500 feet southwest of the subject site. The subject site is 500 feet east of the confluence of Kawiwi and Kaupuni Streams.

2.3 DESCRIPTIONS OF STRUCTURES AND OTHER IMPROVEMENTS

There are no structures or roads on the property, though footpaths are present. Access is provided by an unpaved path traversing the central portion of the site from Plantation Road. Earth furrows and irrigation pipe remnants over much of the property indicate the site was most recently used for agriculture.

2.4 CURRENT USES OF THE PROPERTY

The site did not appear to be in use at the time of our site visit. The land appeared to be in a fallow agricultural state. The land use is zoned for agriculture (Ag-2 restricted).

2.5 PAST USES OF THE PROPERTY

The property has been historically used for agriculture as far back as 1944 based on aerial photo review.

2.6 CURRENT AND PAST USES OF ADJOINING PROPERTIES

Adjacent properties are currently used for agricultural and residential purposes, and past uses have been similar based on historical aerial photo and map review.

3.0 RECORDS REVIEW

3.1 STANDARD ENVIRONMENTAL RECORD SOURCES

3.1.1 Overview

MFA used a regulatory database search service, Environmental Data Resources, Inc. (EDR), to review standard federal and state government databases of known or potential sources of hazardous materials or waste. The site assessment report provided to MFA by EDR is attached. ASTM E1527 (ASTM, 2000) specifies a minimum search distance for specific environmental record sources. The record sources listed in the following table were searched for incidents or sites within specified search distances of the proposed project site.

Table 1. Search Distances for Standard Environmental Record Sources

Standard Environmental Record Sources	Search Distance (miles)
Federal NPL (National Priorities List)	1.0
Federal RCRA (Resource Conservation and Recovery Act) CORRACTS (Corrective Action Sites) facilities	1.0
State hazardous waste sites (NPL or CERCLA (Comprehensive Environmental Response, Compensation and Liability Act) equivalents)	1.0
Federal RCRA (Resource Conservation and Recovery Act) TSD (treatment, storage, and/or disposal) facilities	0.5
Federal CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) list	0.5
State landfill and/or solid waste disposal sites	0.5
State LUST (leaking underground storage tank) list	0.5
Federal RCRA generators list	property and adjoining properties
State registered UST list	property and adjoining properties
Federal ERNS (Emergency Response Notification System) list	property only

3.1.2 U. S. EPA National Priorities List (NPL)

The NPL, also known as the Superfund list, is a subset of the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) and lists properties with the highest priority for cleanup under the EPA Hazard Ranking System (40 CFR Part 300). The list is compiled by the EPA pursuant to CERCLA 42 USC §9605 (a)(8)(B). No NPL sites were found within one mile of the subject site (EDR, 2001).

3.1.3 U. S. EPA RCRA CORRACTS Facilities List

The RCRA list is compiled by the EPA and contains those regulated facilities that have notified EPA as hazardous waste generators, transporters or treatment, storage or disposal facilities under RCRA. CORRACTS identifies hazardous waste handlers with RCRA corrective action activity. No CORRACTS facilities were found within one mile of the subject site (EDR, 2001).

3.1.4 State of Hawaii DOH Hazardous Waste Sites

The State Hazardous Waste Sites (SHWS) are facilities, sites or areas in which the State Office of Hazard Evaluation and Emergency Response has an interest, has investigated, or may investigate under HRS 128D (includes CERCLIS sites). EDR found three SHWS within one mile of the subject site. Jaymer, Inc. is a private waste oil collector and transporter, located across Kaupuni Stream and Puuaheehee Ridge, approximately three-quarters of a mile south of the subject site. The site incident was categorized as a non-oil spill (EDR, 2001). The incident occurred in 1980, was the subject of an assessment in 1984, and was granted "No Further Action" (NFA) status by the State in 1996 (EDR, 2001). It is unlikely that this spill affected the subject site, given the relative distance and presence of stream and ridge topographical barriers.

Toledo Twin Pine Dairy is located approximately 1,500 feet southeast of the subject site. The dairy is listed for "dairy farming and small scale agricultural activities," and was issued NFA priority status in 1996. Waianae Landfill, a closed City and County of Honolulu municipal solid waste facility, is located less than 2,000 feet north of the subject site. It was issued NFA priority status in 1996, and but is unlikely to have affected the subject site based on discussions with the Department of Health.

3.1.5 U. S. EPA RCRA TSD Facilities List

The RCRA list is compiled by the EPA and contains those regulated facilities that have notified EPA as hazardous waste generators, transporters or treatment, storage or disposal facilities under RCRA. TSD facilities are those facilities at which treatment, storage, and/or disposal of hazardous wastes takes place, as defined and regulated by RCRA. No TSD facilities were found within one-half mile of the subject site (EDR, 2001).

3.1.6 U. S. EPA CERCLIS List

This list is compiled by the EPA and contains sites that the EPA has investigated or is currently investigating for potential hazardous substance contamination for possible inclusion on the NPL. EDR found no CERCLIS sites listed within one-half mile of the subject site (EDR, 2001).

3.1.7 State of Hawaii Landfill / Solid Waste Disposal Sites

The Hawaii Solid Waste Facilities List contains information pertaining to all permitted landfills located within the State of Hawaii. One permitted solid waste facility was listed within 0.5 mile of the subject site, i.e., the previously discussed Waianae Landfill site (DOH, 2001). The Waianae Landfill is closed and unlikely to affect the subject site based on discussions with the Department of Health.

3.1.8 State of Hawaii DOH Leaking UST List

This database is compiled by the State DOH Solid and Hazardous Waste Branch UST Section. EDR listed two leaking UST (LUST) sites within one-half mile of the subject site (EDR, 2001). Island Mini Mart, located approximately 2,000 feet southwest of the subject site, had a release in 1990 for which the site cleanup was completed. An Arco station, located within a block of the Island Mini Mart, had a release in 1995 for which site cleanup was completed (EDR, 2001). It is unlikely that either incident affected the subject site given their cleanup status and their distance from and their location downgradient of the subject site.

3.1.9 U. S. EPA RCRA Generators List

The ASTM-recommended search area for RCRA generators is the subject site and adjoining properties. EDR listed no RCRA generators on the subject site or adjoining properties (EDR, 2001).

3.1.10 State of Hawaii DOH UST Section Database Listing

This list is compiled by the State DOH Solid and Hazardous Waste Branch UST Section. The ASTM-recommended search area for USTs is the subject site and adjoining properties. EDR listed no USTs on the subject site or adjoining properties (EDR, 2001).

3.1.11 U. S. EPA ERNS List

This list is compiled by the EPA and contains reported CERCLA hazardous substance releases or spills in quantities greater than the reportable quantity, as maintained at the

National Response Center. The ASTM-recommended search area for ERNS sites is the subject site only. EDR found no reported ERNS incidents to have occurred on the subject site (EDR, 2001).

3.1.12 Other Federal Regulatory Databases

A number of other regulatory databases, not specified by ASTM guidance, are included in EcoSearch's report. These databases include PADS (PCB Activity Database), TRIS (Toxic Chemical Release Inventory System), HMIRS (Hazardous Materials Information Reporting System), TSCA (Toxic Substances Control Act), and FTTS (FIFRA/TSCA Tracking System for Federal Insecticide, Fungicide, and Rodenticide Act/TSCA). EDR found no such sites within the search ranges of the subject site (EDR, 2001).

3.1.13 Other State Regulatory Databases

The DOH HEER office maintains two additional databases which include sites that HEER has earmarked for additional investigation: the Releases database and the Hawaii Emergency Planning and Community Right-to-Know Act (HEPCRA) database (DOH, 2001). We searched the databases for incidents within one (1) mile of the subject site. The results of this search are outlined below.

Releases Database

The Releases database lists hazardous substance release incidents reported to the DOH HEER office since 1988. MFA searched the Releases Database and found 98 incidents within the same zip code as the subject site. Eighty-one of the incidents were unlikely to have affected the subject site, because of the nature or quantity of the release and/or because they were located approximately one mile or more from the subject site (DOH, 2001). Eight incidents involved fugitive drums or cylinders washed up on beaches near the subject site, or fuel spills on ocean waters within one mile of the subject site; these incidents are unlikely to have affected the upgradient subject property. Nine releases occurred at less than one mile from the subject site but, again, because of the nature or quantity of the release and/or the incident location, they are unlikely to have affected the subject site.

HEPCRA Database

HEPCRA requires that facilities must report annually on hazardous substances stored on their premises if the amounts stored exceed specified reportable quantities (i.e., the Threshold Planning Quantity or 500 pounds, whichever is lower, for Extremely Hazardous Substances, and 10,000 pounds for all other hazardous chemicals for which Material Safety Data Sheets are required). MFA searched the database and found six HEPCRA facilities within one mile of the subject site. All of the facilities (fuel stations, one auto repair, and one shopping mall) were located along or near Farrington Highway, south and downgradient of the subject site. No releases of HEPCRA materials (gasoline, diesel, motor oil, grease/gear lube, waste oil, and propane) from these facilities were reported by EDR except for the LUST incidents discussed in Section 3.1.7 (EDR, 2001).

3.2 PHYSICAL SETTING SOURCES

3.2.1 Site Location and Elevation

The site is located in Waianae, Oahu. The site is bordered by roads to the south (Plantation Road) and west (Hoopuli Road), and other parcels to the north and east. Elevation of the site increases gradually to the east from about 15 to 30 feet above sea level.

3.2.2 Current Land Use Zoning

The subject site has an agricultural land use ordinance zoning designation of Ag-2 Restricted. The purpose of the agricultural districts is to maintain a strong agricultural economic base, to prevent unnecessary conflicts among incompatible uses, to minimize the cost of providing public improvements and services and to manage the rate and location of physical development. The intent of the Ag-2 general agricultural district is to conserve and protect agricultural activities on smaller parcels of land, including lands used or suitable for use as agricultural lands where a substantial number of parcels are less than five acres in size (C&C, 2001).

3.2.3 Geologic and Hydrologic Setting

<u>Geology</u>

The island of Oahu is a mid-Pacific island approximately 40 miles long and 30 miles wide, located approximately 21.5° north of the equator. It is part of an age-progressive volcanic chain trending northwest from the presently active island of Hawaii. The island of Oahu is located approximately 200 miles from the nearest site of active volcanism. The most recent eruption on Oahu dates to approximately 10,000 years ago (Macdonald, et al., 1983).

Oahu is comprised of the eroded remnants of two elongated shield volcanoes with broad, low profiles. Weathering and erosion have modified the original domed surfaces of the volcanoes, leaving the Koolau Range in eastern Oahu and the Waianae Range in western Oahu. Much of the subaerial mass of these volcanoes has been removed, leaving a landscape of deep valleys and steep interfluvial ridges in the interior highlands, except for central Oahu which forms a saddle between the Waianae and Koolau Ranges. A flat coastal plain underlain by sedimentary deposits surrounds much of Oahu. The coastal plain varies in width from a narrow marine terrace, to a broad plain as in southern Oahu where its surface is composed mainly of emerged Pleistocene reefs and associated sediments.

The site is located on the northwestern coast of the Oahu, along the west coastal plain of the Waianae range.

Soils

The soil types present as described by the Soil Conservation Service include:

Pulehu Clay Loam. Pulehu soils consist of well-drained soils on alluvial fans and stream terraces and in basins. They developed in alluvium washed from basic igneous rock. Pulehu clay loam is moderately permeable with slopes as much as 7-percent. Permeability is moderate, runoff slow, and the erosion hazard is no more than slight. The soil is reported to have a moderate to low shrink-swell potential.

Ewa Silty Clay Loam. Ewa soils consist of well-drained soils in basins and on alluvial fans. They developed in alluvium derived from basic igneous rock. Ewa silty clay loam mapped at the site is described as moderately shallow with 2 to 6 percent slopes. Permeability is moderate, runoff is slow, and the erosion hazard is slight. The soil is reported to have a moderate to low shrink-swell potential.

Hydrogeology

Two aquifers, an upper aquifer and a lower aquifer, are present beneath the site, both basal (fresh water in contact with seawater) and part of the Waianae Aquifer System of the Waianae Sector of Oahu. The upper aquifer is moderately saline and unconfined in sedimentary deposits. The lower aquifer has low salinity and is confined in basalt dike compartments. Only the upper aquifer is listed as currently used, but neither are listed as ecologically important or used for drinking water. The upper aquifer has a high vulnerability to contamination (Mink and Lau, 1990).

The subject site is located below the Underground Injection Control (UIC) line (DOH, 1981). No drinking water sources are listed within one mile of the subject site (EDR, 2001). EDR listed one well within one-half mile of the subject site. The presently unused well was drilled in 1950 to 42 feet depth at 24 feet above MSL, and is located northwest of the subject site near the closed Waianae Landfill (EDR, 2001).

Surface Waters

The Pacific Ocean (Pokai Bay) is approximately 2,500 feet southwest of the subject site. The subject site is 500 feet east of the confluence of Kawiwi and Kaupuni Streams.

3.3 HISTORICAL USE INFORMATION

Historical use of the subject site and vicinity was documented through review of readily available topographic maps, aerial photographs, and TMK maps. Sanborn Fire Insurance Maps were not available for this area (EDR, 2001). The maps and photographs

were examined for topographic, cultural, and land use changes within the site area which may have affected site conditions.

A 1944 aerial photograph (ACOE, 1944) indicates the area to be largely agricultural, with agricultural roads near the subject site approximating today's road configuration. No site structures are indicated in 1944 or 1951 aerial photographs (ACOE, 1994; USGS, 1951). By 1954 the roads bounding the south and west sides of the subject site (Waianae Valley Road and an unimproved road along the south side of Kawiwi Stream) were present (USGS, 1954). The nearby Kawiwi and Kaupuni streams were mapped as seasonal drainages. A military reservation was located 1,500 feet west-northwest of the subject site at the present-day Waianae Regional Park and State Boat Harbor. No structures were mapped on or immediately adjacent to the subject site (USGS, 1954).

A 1962 aerial photograph clearly indicates the subject property to be used for agricultural purposes (USGS, 1962). By 1963 one structure was mapped at the northwest corner of the subject site (USGS, 1963). Several other structures were mapped nearby along Kawiwi Stream. Two structures were located east of the subject site, on adjacent Parcel 42. Orchards were mapped on adjacent properties south and west of the subject site. Waianae Valley Road was designated State Highway 782 (USGS, 1963). A 1969 aerial photo still indicates the site to be used for agricultural purposes (C&C, 1969).

A 1977 aerial photograph shows the streets to be in today's approximate layout, and indicates that the subject property and surrounding lots are still used for agricultural purposes (USGS, 1977). By 1983 the stream confluence west of the subject site was dredged and no longer indicated as seasonal (USGS, 1983). The orchards on adjacent properties were no longer mapped. The structure at the northwest corner of the subject site was still present, but several of the structures immediately north were no longer indicated, and one of the structures on Parcel 42 was no longer mapped. The military reservation was no longer present to the northwest of the subject site. No other changes were mapped (USGS, 1983).

A 1993 color aerial photograph indicates the subject site to have been barren, although adjacent fields to the north were planted (NOS, 1993). A subdivision is indicated south of the subject site, across Waianae Valley Road (NOS, 1993). By 1998, two new structures were mapped adjacent to the northwest corner of the subject site. A vegetated area was indicated along the eastern edge of the subject site. No other changes were mapped (USGS, 1998).

4.0 INFORMATION FROM SITE RECONNAISSANCE AND INTERVIEWS

4.1 HAZARDOUS SUBSTANCES, WASTES AND MATERIALS

MFA visited the site on September 25, 2001. We observed no evidence of hazardous substances, hazardous wastes or hazardous materials. The site appeared to be a fallow agricultural field. It is possible that pesticides and herbicides have been applied to crops and soil in the past, but we observed no evidence of chemical spills or misuse of agricultural chemicals.

4.2 STORAGE TANKS

No underground storage tanks (USTs) or above ground storage tanks (ASTs) were observed. An accumulation of generally empty, rusted drums were observed on the property north of the site but no evidence of stressed vegetation or ground staining were observed around the drums.

4.3 INDICATIONS OF PCBs

We observed no potential PCB-containing electrical equipment on the site.

4.4 INDICATIONS OF SOLID WASTE DISPOSAL

Minor amounts of debris, including timbers and irrigation pipe remnants are present along segments of the southwest and northwest boundaries of the site.

4.5 PHYSICAL SETTING ANALYSIS WITH RESPECT TO POTENTIAL MIGRATION

Potential contamination of soil or groundwater is not suspected in appreciable amounts on the subject site, though the potential exists for the presence of residual contaminants from past agricultural activities. If soil or groundwater contamination exists at the site, it would likely migrate with the topographic gradient, which would generally be expected to be to the west (toward the ocean).

5.0 CONCLUSIONS

We have performed a Phase I Environmental Site Assessment of the subject property in Waianae. Our work was conducted in accordance with the scope and limitations of ASTM Practice E 1527. Any exceptions to, or deletions from, this practice are described in Section 1.4 of this report.

The subject site consists of fallow agricultural land with sparse vegetation and plumeria trees. This assessment has revealed no evidence of recognized environmental conditions in connection with the property with the exception of the following:

- Potential use of chemicals from past agricultural activities.

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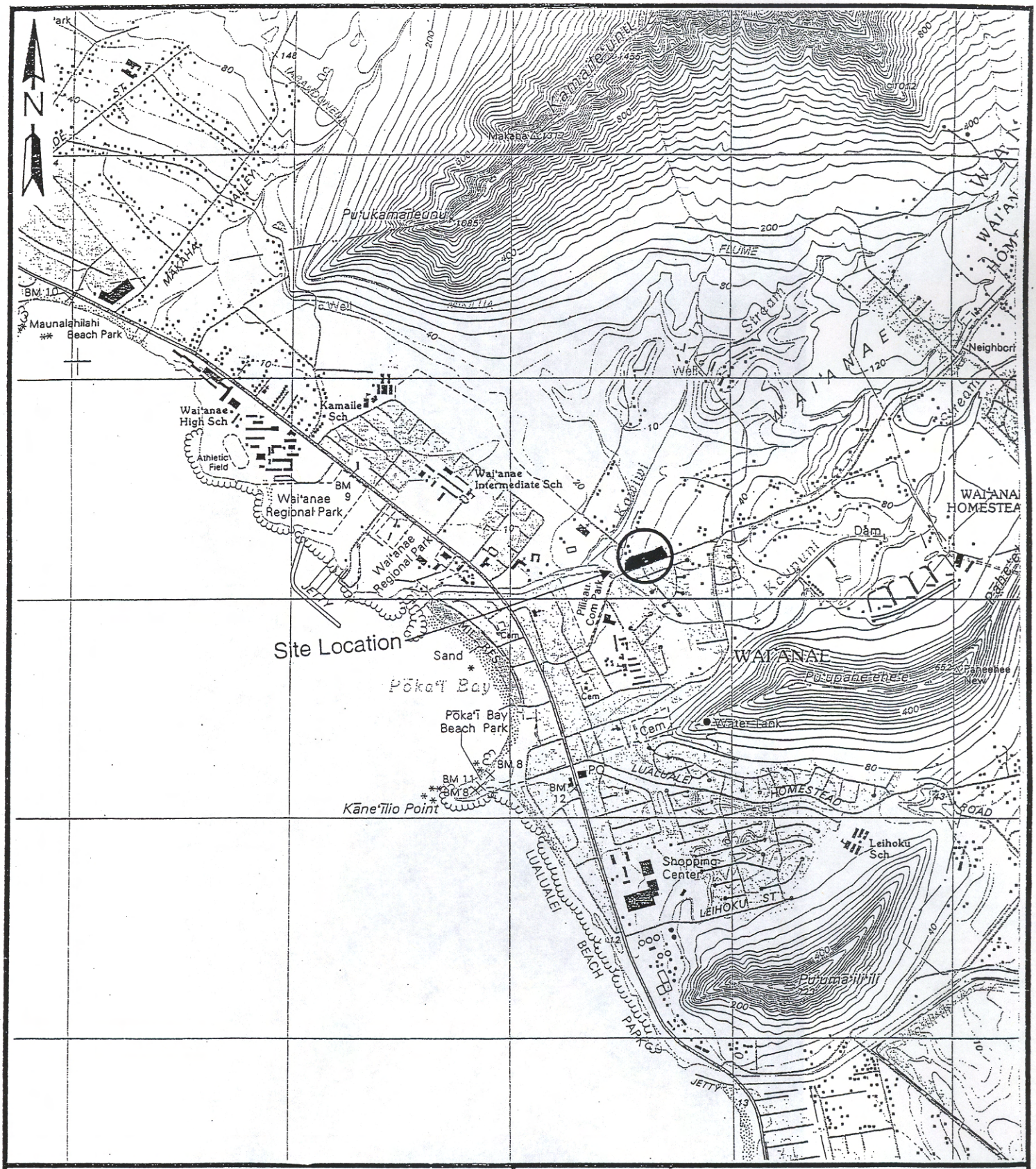
LIST OF ACRONYMS

ACOE	Army Corps of Engineers
AST	above ground storage tank
ASTM	American Society for Testing and Materials
C&C	City and County of Honolulu
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response Compensation and Liability Information System
CFR	Code of Federal Regulations
CORRACTS	TSD facilities subject to Corrective Action under RCRA
DOH	State of Hawaii, Department of Health
EDR	Environmental Data Resources, Inc.
EPA	U. S. Environmental Protection Agency
ERNS	Emergency Response Notification System
ESA	Environmental Site Assessment
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act tracking system
FTTS	FIFRA/TSCA Tracking System
HEER	DOH Office of Hazard Evaluation and Emergency Response
HEPCRA	Hawaii Emergency Planning and Community Right-to-Know Act
HMIRS	Hazardous Materials Information Reporting System
LUST	leaking underground storage tank
MFA	Masa Fujioka and Associates
MSL	Mean sea level
NFA	No Further Action
NOS	National Ocean Service
NPL	National Priorities List (Superfund sites)
PADS	PCB Activity Database
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
TMK	tax map key
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
TSD	treatment, storage or disposal (category of RCRA facility)
USC	United States Code
USGS	United States Geological Survey (U. S. Dept. of the Interior)
UST	underground storage tank



0 2000 4000

Scale In Feet

Source: U.S.G.S. 7.5' Series Topographic Quadrangle: Waianae, Hawaii, 1998.

Project No.	01040-006
Drawing No.	001
Approved By:	DRD
Drawn By:	SBS
Rev:	01
Date:	10-10-01
Scale:	1" = 2,000'

Figure 1
Map of Area
TMK (1) 8- 5-03: 020
Waianae, Oahu, Hawaii

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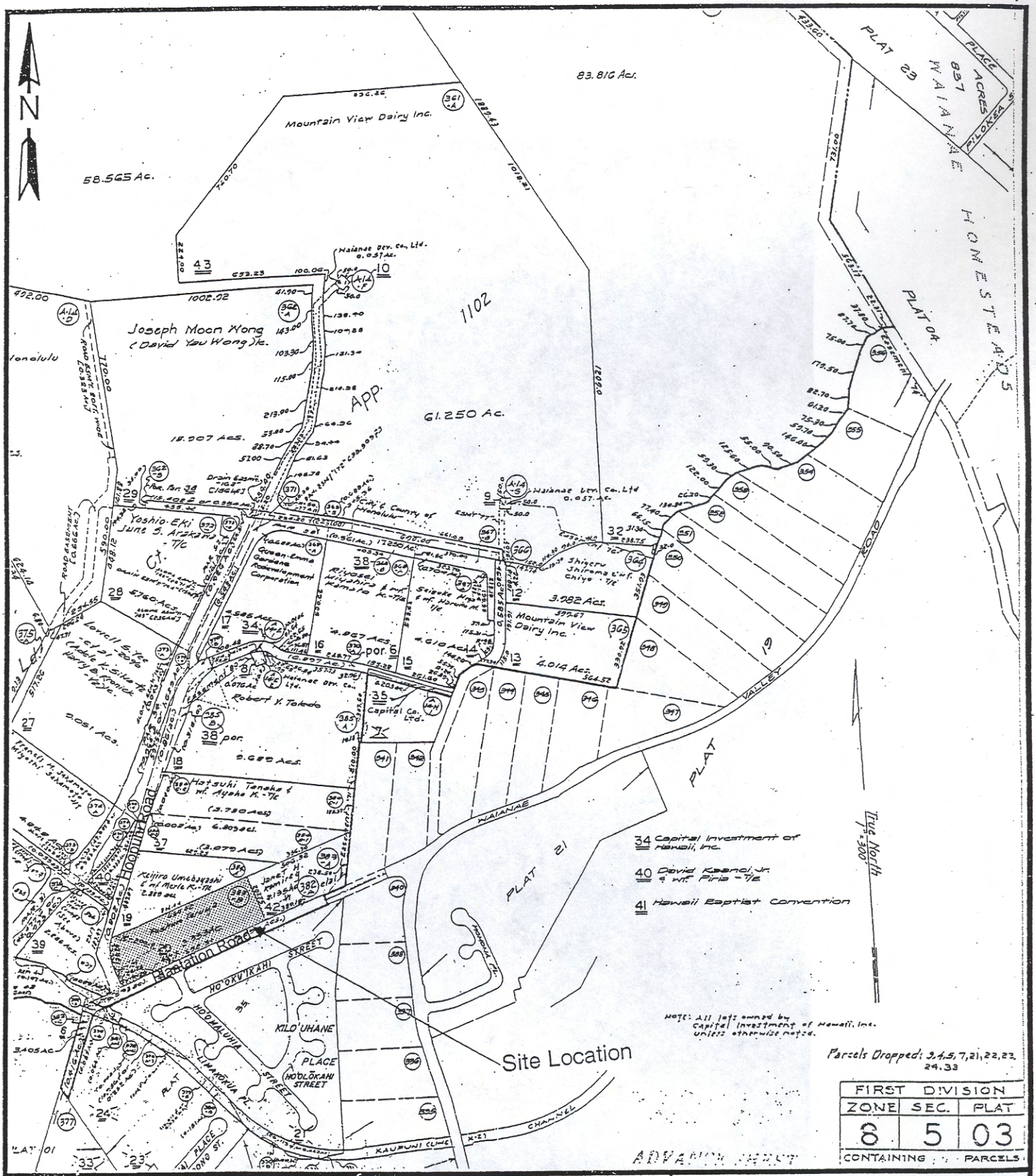
ENVIRONMENTAL • GEOTECHNICAL • HYDROGEOLOGICAL CONSULTANTS



Source

Base Map: Taxation Map Bureau
First Division
Zone 8, Section 5, Plat 03

Project No.	01040-006
Drawing No.	002
Approved By:	DRD
Drawn By:	SBS
Rev:	01
Date:	10-10-01
Scale:	2.5" = 1500'

Figure 2
TMK Map
TMK (1) 8-5-03: 020
Waianae, Oahu, Hawaii

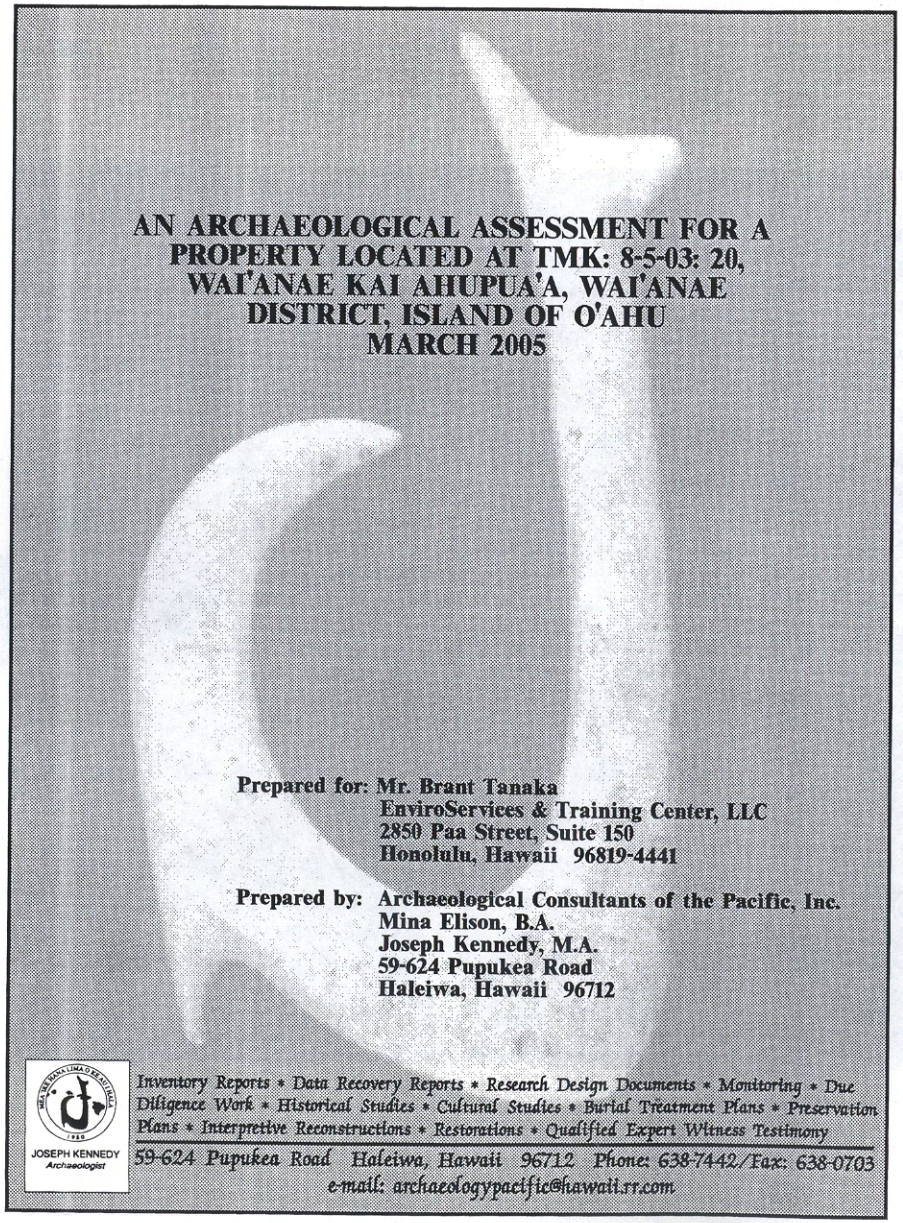
MFA MASA FUJIOKA & ASSOCIATES
ENVIRONMENTAL • GEOTECHNICAL • HYDROGEOLOGICAL CONSULTANTS

Appendix B

Archaeological Assessment

Environmental Assessment

Consuelo Subdivision
TMK: 8-5-003 : 020
85-576 B Wai`anae Valley Road, Wai`anae, Oahu



AN ARCHAEOLOGICAL ASSESSMENT FOR A PROPERTY LOCATED AT TMK: 8-5-03: 20, WAI'ANAE KAI AHUPUA'A, WAI'ANAE DISTRICT, ISLAND OF O'AHU

MARCH 2005

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An Archaeological Assessment for a Property Located at TMK: 8-5-03: 20 in Wai'anae Kai Ahupua'a, Wai'anae District, Island of O'ahu

Section 1: Introduction

At the request of Mr. Brant Tanaka of EnviroServices & Training Center, LLC, Archaeological Consultants of the Pacific, Inc. (ACP) has conducted an archaeological assessment of a property located at TMK: 8-5-03: 20 in Wai'anae Kai Ahupua'a, Wai'anae District, island of O'ahu (see Figure 1). The purpose of the current assessment was to determine if significant historic properties exist within the project limits and to make recommendations concerning the treatment of potentially significant historic resources. Based upon the results of the current investigations, ACP recommends that a determination be made that no historic properties are present and no further archaeological work is necessary.

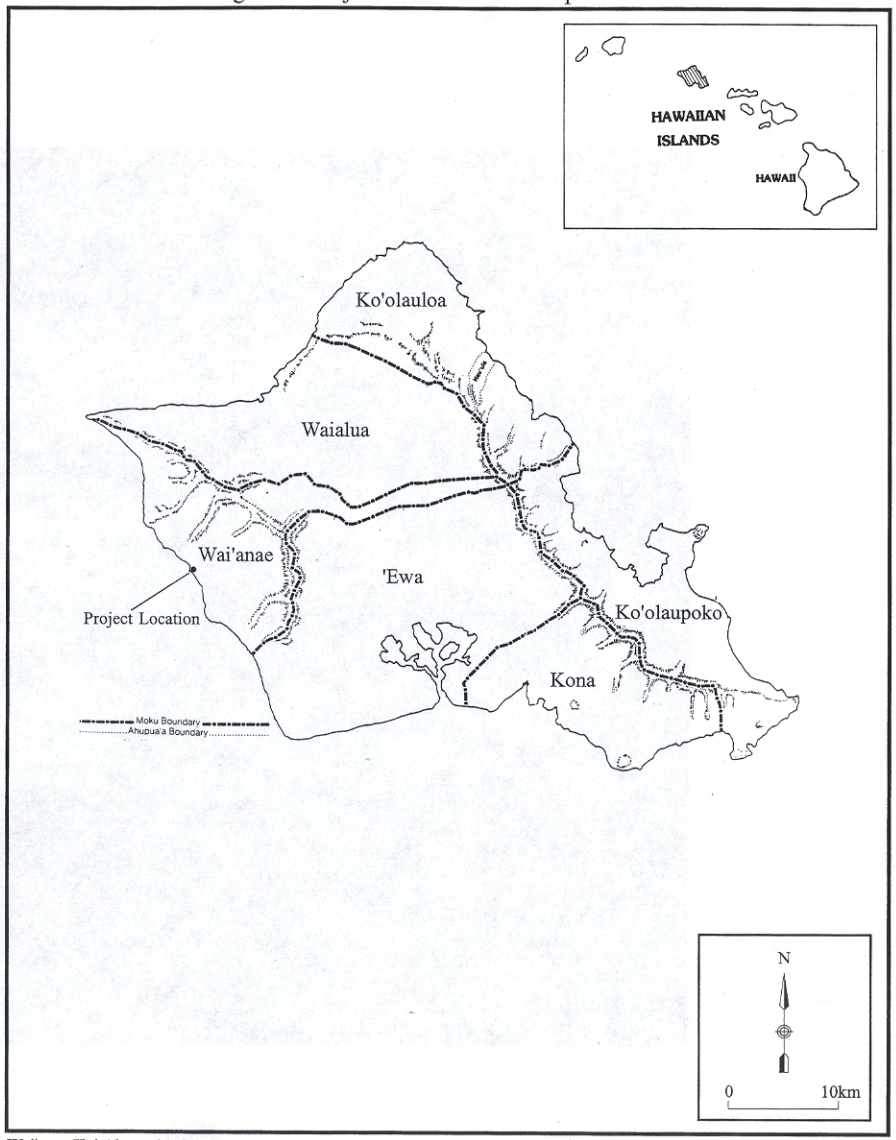
Section 2: Physical Setting

The current subject property is located in the coastal flat of Wai'anae Valley (see Figure 2). The property measures approximately 208m (meters) in length by 63m in width at its greatest dimensions covering a total area of 3.353 acres (see Figure 3). The terrain within the project area consists of a relatively flat surface with much of it having been severely impacted by post-Contact activities. The property is located approximately .76 kilometers (km) from Poka'i Bay and *mauka* of the channelized portion if Kaupuni Stream. It is bordered to the north and east by private lots, to the west and south by Ho'opuhi and Plantation Road respectively.

The U.S. Department of Agriculture soil survey describes the subject property as having Pulehu clay loam (0 to 3 percent slopes with a surface layer of dark-brown clay loam underlain by dark-brown, dark grayish-brown, and brown massive and single grain, stratified loam, loamy sand, fine sandy loam and silt loam) (Foote, Hill, Nakamura & Stevens 1972). Pulehu clay loam is found "on alluvial fans and stream terraces and in basins (*ibid.*). The property ranges in elevation from approximately 10 to 20 feet (ft) above mean sea level (AMSL).

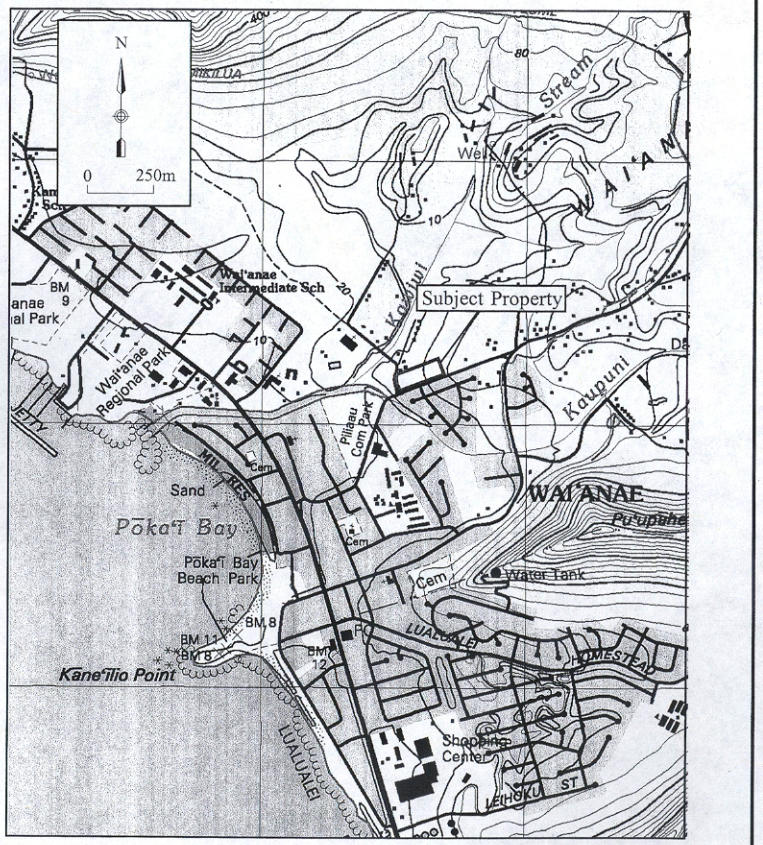
As much of the property has been bulldozed, vegetation consists of low-lying, secondary growth. Various low-lying weeds and shrubs reach .25 to .5m in height and include stands of castor bean (*Ricinus communis*).

Figure 1: Project Location on a Map of O'ahu



Wai'anae Kai Ahupua'a TMK: 8-5-03: 20 source: Adapted from Nogelmeier in Snakenberg 1990

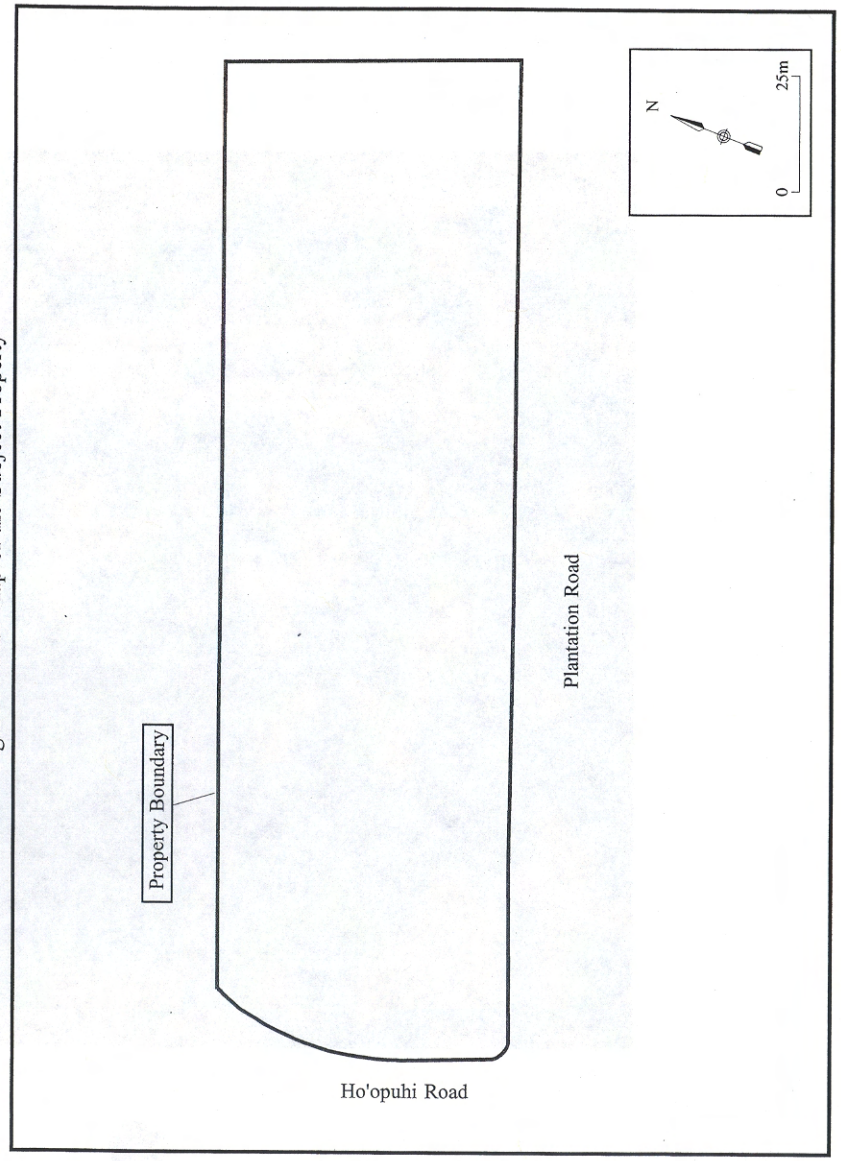
Figure 2: Location of the Subject Property on a U.S.G.S. Topographic Map



Wai'anae Kai Ahupua'a TMK: 8-5-03: 20

source: U.S.G.S. 7.5 Minute Series (Topographic), Wai'anae Quadrangle, 1998

Figure 3: Plan Map of the Subject Property



Section 3: Methodology

The current fieldwork was conducted March 23, 2005 by the Principal Investigator, Joseph Kennedy, M.A., and archaeologist Mina Elison, B.A.. The survey was conducted on foot using existing roadways to access the subject property. The pedestrian survey was conducted by having the two-person field crew sweep the parcel on foot using transects spaced approximately 15 to 20 meters (m) apart, running approximately east to west. Visibility on the majority of the subject property was good to excellent.

Section 4: Historical Background

The project area is located in the *ahupua'a* of Wai'anae Kai in the District of Wai'anae on O'ahu's leeward coast. This district has a prominent place in Hawaiian oral tradition with place names described in central mythological tales and in the stories of the ruling chiefs.

Section 4.1: Legendary Accounts

Stories of the demigod Maui are found throughout Polynesia, with local variations from each of the Hawaiian Islands. On O'ahu, these stories are centered in Wai'anae. Maui and his two brothers, Maui-mua and Maui-ikiiki, are said to have been born in Wai'anae. Hina, their moon-goddess mother, lived in a cave on the southern side of Wai'anae where she made the famous fishhook with which Maui tried to bring all of the Hawaiian Islands together, the snare for catching the sun and her own tapa cloth (Beckwith 1970:232).

The famous demigod, Kamapua'a, is known for his exploits in Wai'anae. He and his grandmother Kamaunuaniho, are said to have lived together on Mount Ka'ala where they could look down into Wai'anae. During the night, Kamapua'a would sneak down and steal taro from the patches in the valley. When the people of Wai'anae discovered that a pig was stealing their taro, they caught him and tied him to a rock named Pahoa. On the day set for killing him, the people found him gone from the rock and roaming about in the taro patches again. They caught him once again and took him to Pu'u Kahea where the *imu* (underground pit oven) had been prepared for his roasting. At this time many *kinolau* (supernatural bodies) crossed the plains and devoured the men of Wai'anae who had not fled (Sterling & Summers 1978:72).

Another story tells of Kamohoali'i, a shark god, who begot a half-man, half-shark child with a woman of Wai'anae. Many people were devoured before this shark-man was finally caught and killed (Hammatt, Borthwick & Shideler 1987:12).

Kawiwi, the mountain which lies between Wai'anae and Makaha Valleys, has a couple of stories associated with it. An old woman is said to have lived alone on the mountain peak; when she was hungry, she called on the birds to feed her. Because her life was bitter, the priests proclaimed Kawiwi as a place of refuge during wartime; the place is known as Pali O Keawaawa (cliff of bitterness)(Site 167)(Sterling & Summers 1978:76).

Another story is told about a scar on the *pali* of Kawiwi (Site 168). A beautiful daughter of a Wai'anae couple fell in love with a *kupua* (supernatural being) who had the power to turn himself into an eel. The girl became sick and the people of Wai'anae killed the *kupua*. The scar on the *pali* became known as Kaoninapuhi, "the writhing eel" (McAllister 1933:118).

Poka'i Bay, at the mouth of Wai'anae Valley, took its name from Chief Poka'i, who voyaged to O'ahu from Kahiki. He planted what is said to have been the first coconut grove in Hawai'i, at the "back of the beach near the mouth of the Wai'anae Stream, on the Makaha side of what is now known as Poka'i Bay" (McGrath, Brewer & Krauss 1973:9).

Kolekole Pass, a gap in the Wai'anae mountains where people could pass over from the Schofield Plateau into Lualualei, is said to have been a battleground where warriors of Wahiawa fought with warriors of Wai'anae. Kolekole (meaning "raw") is a reference to the wounds in their flesh (McGrath *et al.* 1973:12).

John I'i (1959) described and mapped ancient trails on O'ahu. There were three trails which led into Wai'anae: one along the leeward coast; another from Kukaniloko in Wahiawa through the Kolekole Pass; and another through the Pohakea Pass.

Section 4.2: Land Use

The leeward lands of Wai'anae are comprised of steep sided valleys with relatively level valley floors which are fronted by sandy beaches. A comprehensive review of the District of Wai'anae has been presented in Cordy's (1998) *Ka Moku O Wai'anae: He Mo'olelo O Ka Wa Kahiko*. The earliest use of the land was probably temporary campsites utilized in relation to fishing and resource gathering. One site near Kaupuni Stream at Poka'i Bay contained a surprisingly early date of AD 600's-800's (Cordy 1998:6). Permanent habitation probably did not occur until after AD 1000. Cordy discusses initial permanent habitation in Wai'anae:

> In Wai'anae, one might expect the earliest permanent settlement to have been in Wai'anae valley at Pokai Bay in association with its flowing stream (Kaupuni) and at Kamaile with its spring (Keko'o) – as these were the two best watered coastal lands in the moku. Then perhaps Makaha and parts of Lualualei with at least upland flowing waters, and perhaps perennial streams, would have been settled, and then the rest of the district.

Evidence for use of the land for *lo'i* behind the coastal habitation areas in Wai'anae Kai Ahupua'a dates to as early as AD 1100's-1200's (Cordy 1998:8), whereas agricultural use "in Nanakuli, dry fields in the upper valley began to be built in the AD 1200's-1400's and permanent habitations in the 1300's-1400's and … these sites seem likely to reflect later population spread from a somewhat earlier settlement along the shore" (Cordy 1998:8). As population on O'ahu grew during the 1400's-1700's, permanent habitations likely increased and cultivation of *lo'i* and dry-land agriculture likely expanded.

In additional to the utilization of littoral resources, numerous fishponds provided a valuable resource. During the 1400's-1500's:

> Coastal fishponds… were… probably constructed in these years under the sponsorship of the rule of high chiefs. A fishpond in Honouliuli along Pearl Harbor in 'Ewa, Loko Paweo II in Waikiki, Moli'i and Nu'upia fishponds in Kane'ohe Bay all have their initial constructions dated back to this period.[54] Some of the lineal marshlands behind the coastal dunes in the moku of Wai'anae also may have been in use as fishponds at this time—perhaps in 'Ohikilolo and Wai'anae. (Cordy 1998)

Also during this time, more and larger *heiau* were likely built in association with the rise of the O'ahu Kingdom. In the district of Wai'anae, numerous *heiau* have been recorded along the coast and in both the lower and upper portions of the valleys.

Land use was significantly altered after Western Contact. Handy and Handy (1972:468) discuss the transition from taro to sugar, and note the cultivation of sweet potato and gourds was still in practice:

> Although a relatively poor terrain, this valley (Wai'anae Kai) nevertheless had once a considerable development of wet-taro culture along the main stream and its tributaries in the uplands now covered by forest and water reserve, and well down into the broad area now covered by sugar cane.
>
> Gourds, of the *ipu manalo* variety, were found growing wild in the uplands in 1935. Lower down, in the dry area, there were sweet potato plantations.

In the latter half of the nineteenth century, land use in Wai'anae shifted from traditional agriculture to large-scale ranching and sugar production. According to a 1863 missionary report, most of the land in the Wai'anae District was being used for grazing, and had been divided into six or seven large land divisions under long term lease or sold in fee simple. Only one hundred acres were reportedly left under taro in Wai'anae Valley (McGrath *et al.* 1973:31). By the late 1870's, ranching had become the leading industry

on the coast. In 1880, J.I. Dowsett leased 17,200 acres of crown land in Wai'anae Valley for a grazing ranch. A 1919 Fire Control Map by the U.S. Army Corp of Engineers shows stone wall alignments, likely related to cattle ranching, one of which is located along the base of Pu'u O Hulu Uka.

Sugarcane was first cultivated on O'ahu by John Emerson earlier in the century in Waialua (McDermott, Kikiloi, Creed, Schideler & Hammatt 2000). In 1878, Hermann A. Widemann, a German immigrant, began Wai'anae Plantation (also called Wai'anae Co.), the first large-scale sugar plantation on O'ahu. Sixty acres were cleared and planted not far from Wai'anae Village, and a mill was built by 1880. In 1879, the plantation leased most of Wai'anae Kai for 25 years, brought in twenty local Hawaiians, fifteen Caucasian technicians and almost 60 Chinese laborers (McDermott & Hammatt 2000:26). Twenty-four new houses were built in Wai'anae Valley to house these workers, and "a plantation camp was built at Kamaile on the site of the old Native Hawaiian village" (Flood, Klieger, Lebo, Dixon, Clark & Parry 1994:38). [*Note: All documents relating to sugar plantations on O'ahu have been compiled by the Hawaii Sugar Planters Association and are currently housed at Hamilton Library at the University of Hawaii-Manoa. Unfortunately, no documentation exists in this collection relating to any plantation camps aside from one in Waipahu.*]

Flood *et al.* (1994:39) discuss some of the problems Widemann faced:

> Probably the greatest challenge for Waianae Co. was locating more water. Wai'anae stream did not have enough water to accommodate all the new sugar fields popping up. The answer to this problem was drilling, a new process designed to tap artesian water. The process was discovered in nearby 'Ewa in 1879. Widemann took the opportunity to make use of this new discovery. He contracted the three McCandless brothers, pioneers in this field, to drill 33 wells into his property at a cost of $50,000.00 to $75,000.00. They could only charge him full price if they found water and half price if they found nothing (Pratt 1939:275). The resulting volume of water was insufficient, forcing the company to augment with whatever surface water they could find.

McGrath *et al.* (1973:75) further elaborate on methods used in obtaining water:

> …The expensive well drilling campaign had developed a nest of 18 wells at Kamaile. They produced about 3,000,000 gallons daily. But the water was more salt than fresh. So the drive to buy up more water rights and to develop new sources grew more intense instead of less.
>
> In the 1890s a new leader began guiding this relentless search for water. He was John M. Dowsett, Widemann's son-in-law… Reports credit him with pushing a plan to reforest upper Waianae Valley in order to create a watershed area. Workmen planted trees, then fenced off the lower slopes of the mountains to keep out the cattle, so the vegetation would grow. Meanwhile, they dug an elaborate network of ditches to catch the runoff. …By 1897 the ditches were producing 2,200,000 gallons of water a day. …[Dowsett] had his men build a reservoir at the base of the mountains. He installed a hydro-electric plant …about two miles below the pali (cliffs) and the reservoir. He dropped the water from the reservoir to the hydro-electric plant in a sluice 7,000 feet long. The fall of the water developed 440 horsepower, enough to generate 300 kilowatts of electricity. This electrical power drove the plantation's water pumps at the wells, operated the mill generators in the off season and provided electric lights for the

plantation manager's house at a time when many people in Honolulu were still using kerosene lamps.

> A four-inch pipe from the hydro-electric plant to the village provided a domestic fresh water supply for the plantation camps. The rest of the water ran off in open ditches to sweeten brackish irrigation water being pumped from the Kamaile wells. Other pumps lifted the mixture into a network of flumes and ditches which led to cane furrows as far away as Lualualei.

Despite the water problem, the sugar boom revived the economy of Wai'anae, and by 1884 it was the largest settlement outside of Honolulu. In 1890, the Wai'anae Plantation had 600 acres under cultivation and the population of Wai'anae had increased. In 1895, O.R. & L. railroad, started by Dillingham in 1889, reached the Wai'anae Sugar Company and connected it to the Ewa mill; by 1898, the railway extended around Ka'ena Point and linked up with Waialua. Wai'anae Village grew and was the center of population and activity (Kuykendall 1967:100 and McGrath *et al.* 1973).

Coffee cultivation was also attempted in Wai'anae during this period. In 1886, August Ahrens planted 45 acres of coffee in the lee of Mount Ka'ala at the head of Wai'anae Valley. Coffee did not turn out to be as lucrative as sugarcane. The local economy continued to be dominated by sugar into the twentieth century (McGrath et al. 1973).

Between 1917 and 1921, leases on 200,000 acres of government land in Wai'anae District expired. An area of land in central Wai'anae Kai was turned into Wai'anae Homesteads, residential plots for people of Hawaiian ancestry.

During World War II, the sugar industry in Wai'anae declined. The draft and abundant supply of defense jobs created a labor shortage on the plantation. The Wai'anae Coast was used as a location for practicing amphibious landings, a recreation center was set up at Poka'i Bay, and much of the sugarcane land was taken over by the military (McGrath *et al.* 1973:136). The military occupied much of the Wai'anae Coast and inflicted much damage along it (*ibid.* 1973:138).

After the war, the Wai'anae Plantation was never able to turn a profit. Increasing labor and operational costs forced the company to liquidate in 1946. At the time, people thought that the collapse of the plantation would lead to the collapse of the revitalized Wai'anae Coast. In 1947, Chinn Ho, of Capital Investment Company, bought nearly 10,000 acres of land in Wai'anae, and subdivided the land into cheap beach lots in fee simple (McGrath *et al.* 1973:151).

In 1940, a government census counted 2,948 permanent residents along the Wai'anae Coast (McGrath *et al* 1973:145). By 1950, the government census noted 7,024 permanent resident along the Wai'anae Coast (McGrath *et al.* 1973:151). Much of the population increase can be attributed to Ho's marketing of cheap lots.

In the 1950's and 1960's, the population continued to steadily increase in Wai'anae, much due to the work of Ho. A breakwater was built to protect fishing boats

in Poka'i Bay, the water supply was improved and jobs opened up in 'Ewa with the development of the Campbell Industrial Park (McGrath *et al.* 1973:156).

Presently, Wai'anae is the home of a large community. Population is concentrated along the coast and spreads up the flat bottoms of the valleys.

Section 4.3: Previous Archaeology

Several sites were recorded by Thrum (1907) and McAllister (1933) in Wai'anae Kai Ahupua'a. These included numerous *heiau* now destroyed [Puupaheehee Heiau (Site 152), Keaupuni Heiau (Site 155), Kahoalii Heiau (Site 156), Malaihakoa Heiau (Site 157), Kikahi Heiau (Site 158), Kalamaluna Heiau (Site 159), and Kane Heiau (Site 160)]; Puehu Fishpond (Site 154); three extant *heiau* [Kuilioloa Heiau (Site 153), Kamaile Heiau (Site 161) and Punanaula Heiau (Site 165)]; a burial cave (Site 162); house sites (Sites 163, 164 and 166); and two sites at Kawiwi with mythological associations (Sites 167 and 168, discussed above).

Site 161, Kamaile Heiau, is located on the *makai* slope of Kamaile'unu Ridge, and includes small internal enclosures and terraces. This site is situated on the boundary of Makaha and Wai'anae Ahupua'a. McAllister gives a detailed description of his observations of this *heiau*, and refers to a cave shelter (Site 1185), a spring, and a historic plantation camp:

> The heiau is a single terrace, built of large, sharp lava rocks. The facings of the terrace are surprisingly even and were carefully fitted. The heiau was formerly paved with small bits of coral, giving it the appearance of fine, white gravel. The amount of such coral is surprising. ...Thrum (79,4) offers the following information: "A medium sized heiau of platform character and pookanaka class, still in fair condition, to be seen from the road on the bluff above the pipe line of the electric pumping station."
>
> Beneath the heiau, but still above the pump, is a shallow cave shelter known as Kukaauau. The entrance, which faces due south, is concealed by a large *kiawe* (algaroba), some cactus, and *haole koa*. The cave is approximately 40 feet deep and 25 feet wide and 10 feet high at the entrance. It might prove interesting if excavated because it is on the ridge back of what was once a large Hawaiian settlement. The famous Kamaile spring, known as Kekoo, which watered many acres of taro land (73 just before it was taken over by the plantation) between the ridge and Mauna Lahilahi, was near the base of the shelter. The cave has the appearance of being artificially filled in, for the dust of the floor does not appear to have dropped from the roof. On the floor are many bits of matting, broken gourds, straw, and a few pages from a book printed in Hawaiian which appears to be portion of a catechism. About one-third of the way in, on the right-hand side facing into the cave, a small hole 6 inches deep was made with a stick and a torn part of "Ka Hae Hawaii," dated Mei 14, 1856, was found. These cut pieces are in surprisingly excellent condition; the paper is not even yellow or fragile. The paper has been cut with a scissors or knife. A number of tapa (kapa) fragments were found; one a brick-red color. The floor is covered with grasses, ti leaves, banana and a few broken bottles. Near the back of the cave was a hole 2 feet in diameter and about 1 foot deep. Though there is a small plantation camp at the base, the shelter is probably not often frequented now.

Sterling and Summers (1978:73) give an additional description of the spring at Kamaile in an excerpt from Nupepa Kuokoa, August 11, 1899:

> ... We moved over the plain of Kamaile. Mauna Lahilahi was on our left. That was the hill on which Hulumaniani the reader of omens and prophet from Kauai stood and saw a rainbow arched on the upland of Kukaniloko, when he was seeking Laiekawai. I saw a wooden flume from Kamaile to the upland of Waianae. The source of the water supply is here at Kamaile, and the water is pumped by electricity up a wooden flume to the upland. The electric plant is just above Waianae.

Cordy (1998:22) notes that during the time of the Mahele, 138 acres below the spring were cultivated in *lo'i*, and houselots and dryland agriculture lots were present "on the back edges of the kalo marsh" and closer to the coast. The flume mentioned in Sterling and Summers (*ibid.*), called Milikua. An historic map of Makaha, circa 1855-1884, depicts a coconut grove at the base of Kamaile'unu ridge. No dates have been obtained from the Kamaile area.

Hommon (1978) recorded the Wai'anae (Kamaile) Complex (Site 1181) in a letter report which includes Kamaile Heiau (Site 161), Kuka'au'au cave shelter (Site 1185) and numerous platforms and a C-shaped enclosure (Site 1190). This site complex has been placed on the National Register of Historic Places. A series of historic retaining walls which Hommon describes:

> *Makai* of the pumping station are a series of retaining walls, some of which are directly associated with an old ditch or flume ... Some of these walls might be pre-contact, since they are of old style, but high grass prevented detailed investigation. Portions of these walls were evidently destroyed by the pumping station construction (1978:1).

Hommon also observed rectangular stone alignments and a spring (likely Keko'o spring) below the pumping station:

> *Makai* and somewhat downhill from the pumping station are at least three stone and mortar lined rectangular pit walls built by the plantation now partly filled with rubbish, including small appliances and car parts. Nearby, a spring rises from the ground, flows perhaps 75 meters, then sinks into the ground again. The water appears clear and the output is strong, and, according to Glenn, permanent. The lushness of the vegetation testifies to the water-wealth of this land. It is not surprising that this Kamaile *'ili* was so productive in taro... The flow of this spring undoubtedly much stronger in days past (specifically the time of the Mahele). Traces of the old taro *lo'i* may yet remain here, though disturbance seems extensive.

The stone and mortar features were reidentified later during a survey of a parcel further to the east (Flood *et al.* 1994). These may possibly represent habitation structures.

Kane Heiau (Site 160) was located at the base of Kamaile ridge at the south edge of what was once *lo'i* fields. Though no longer present at the time of McAllister's investigation (1933:114), its location was still known:

> The approximate location in the cane field was pointed out, but all the stones have been moved. The full name is said to be Kane-i-ka-pua-lena. This is the heiau at which Kawelo is said to have stopped and offered sacrifices when on his way to Kauai to wage war on Aikanaka (85, p. 183). Some legends say that Kawelo stopped at the Makaha heiau known as Kaneaki (Site 170).

Since the 1960's, Wai'anae Kai has been the focus of a large number of formal archaeological investigations (refer to Table 1). Due to the large number of reports, these reports will not be individually discussed. The reader is referred to Flood *et al.* (1994) who provide a synthesis of the archaeological findings in Wai'anae Kai. Following is a summary of general findings according to geographic location.

The coastal region has been utilized for habitation from as early as AD 1100-1300 (Cordy 1998; Hammatt, Borthwick & Shideler 1985 and Riford 1984). Puehu Fishpond and limestone sinkholes in the coastal area were utilized (Denham, Kennedy & Reitsema 1992; Sinoto 1975a). A cluster of *heiau* surrounded by a habitation complex was present in the *'ili* of Pu'u Kahea (Cordy 1998). Kane'ilio Point was used for both residential and ritual purposes at Ku'ilioloa Heiau. Numerous burials have been found at Poka'i Bay (Riford 1984 and Hammatt *et al.* 1985).

Habitation, agriculture and ritual use occurred in the valley floor during pre-Contact times (McAllister 1933; Rosendahl and Rosendahl 1973; Rosendahl and Shapiro 1988; Rosendahl 1981; Masse 1989). Post-Contact ranching, sugar production and modern development have disturbed these sites to a large extent.

The valley slopes have been found to contain numerous *lo'i* terraces, stone walls, *'auwai*, and possible house sites (Ahlo 1980; Hammatt et al. 1987; Neller 1982; Ota 1981; Sinoto 1978; Sinoto 1979; Bordner 1981; EISC 1982; Chiniago 1982; SRSC 1988 and SRSC 1989).

Inventory investigations conducted in 2001 for the Wai'anae Coast Emergency Access Road consisted of a 100% surface survey and 36 backhoe trenches (Elmore & Kennedy 2001). The area of study spanned five separate roadway corridors in the *ahupua'a* of Makaha, Wai'anae Kai, Lualualei and Nānākuli and documented a traditional habitation site including a burial within the previously documented Kamaile Complex (Site 50-80-07-5949) and portions of a sugar plantation camp and pumping station (Site 50-80-07-5950).

Table 1: Previous Archaeological Investigations in Wai'anae Kai Ahupua'a

Reference	*Type of Investigation*	*Location of Project*
Chapman 1967	Reconnaissance	Valley floor
Rosendahl & Rosendahl 1973	Inventory Survey	Valley floor
Sinoto 1975	Inventory Survey	Valley floor
Sinoto 1975	Reconnaissance	Coast
Hommon 1978	Reconnaissance	Valley slopes
Sinoto 1978	Reconnaissance	Valley slopes
Sinoto 1979	Reconnaissance	Valley slopes
Tao 1979	Data Recovery	Coast
Yent & Griffin 1979	Reconnaissance	Valley slopes
Ahlo 1980	Reconnaissance	Valley slopes
Bordner 1981	Reconnaissance	Valley slopes
Ota 1981	Reconnaissance	Valley slopes
Rosendahl 1981	Inventory Survey	Valley floor
EISC 1982	Reconnaissance	Valley slopes
Chiniago 1982	Reconnaissance	Valley slopes
Neller 1982	Reconnaissance	Valley slopes
Riford 1984	Data Recovery	Coast
Hammatt *et al.* 1985	Data Recovery	Coast
Hammatt *et al.* 1987	Data Recovery	Valley slopes
Rosendahl & Shapiro 1988	Inventory Survey	Valley floor
SRSC 1988	Reconnaissance	Valley slopes
SRSC 1989	Reconnaissance	Valley slopes
Masse 1989	Reconnaissance	Valley floor
Denham *et al.* 1992	Inventory Survey	Coast
Flood *et al.* 1994	Inventory Survey	Valley floor
Schilz *et al.* 1994	Data Recovery	Coast
Kolb *et al.* 1995	Inventory Survey	Valley slopes
Devereux *et al.* 1997	Reconnaissance	Valley slopes
Borthwick *et al.* 1999	Data Recovery	Coast
Elmore & Kennedy 2001	Inventory Survey	Various locations in Wai'anae District

Section 4.4: Settlement Patterns

Based upon the land use and archaeological studies mentioned above, settlement patterns for the *ahupua'a* of Wai'anae Kai can be briefly summarized (a detailed summary of the settlement patterns for each of these *ahupua'a* may be found in Cordy's [1998] *Ka Moku o Waianae: He Mo'olelo O Ka Wa Kahiko*). The earliest settlements of the valleys within Wai'anae District began with small coastal populations utilizing littoral resources. Permanent habitation settlements then grew along the swampy back sides of the dunes and along the coastal trail which roughly follows the route of today's Farrington Highway. By the 13th Century, the populations had begun utilizing the inland portions of the *ahupua'a*. A change in the distribution of populations occurred in the following centuries when inhabitants moved from the coast to new population centers in the interior of the valleys where scattered clusters of permanent habitation sites are found in the areas surrounding Kaneaki Heiau in Makaha; along Kaupuni Stream and the *'ili* of Pu'u Kahea and Kamaile in Wai'anae Kai; in the upland valleys of Halona, Pahoa and Puhawai in Lualualei; and across the upper valley floor of Nanakuli. Several factors are cited as influencing this shift in the centers of population, the most compelling of which is proximity to agriculturally productive areas.

The post-Contact Period saw a decline in the native Hawaiian population followed by the abandonment of the traditional irrigated taro systems. In the late 1800's to early 1900's, the large scale cultivation of sugarcane expanded onto the seaward portions of the valley floors. A list of taxpayers and contributions were recorded in 1855 by a tax collector named J.W. Makalena (McGrath *et al.* 1973:29). McGrath *et al.* (ibid) discuss these figures:

> This list of taxpayers, generally adult males, provides a clue as to how the population of the Waianae Coast was distributed at that time. Here are the figures:
>
> | | |
> |---|---|
> | Waianae Kai | 62 |
> | Kamaile | 44 |
> | Makaha | 38 |
> | Makua | 21 |
> | Maili | 9 |
> | Nanakuli | 8 |
> | Total | 182 |
>
> If we assume a population of less than 800 for the area, and four persons to the average household, the number of taxpayers in Waianae Valley represent about 250 persons. We can also estimate that about 175 people lived at Kamaile, about 150 in Makaha Valley, almost 85 in Makua Valley, more than 35 in Maili, and over 30 in Nanakuli.
>
> ...There were two schools in Waianae Valley, each with about 25 students. ...the people of Nanakuli paid a total of $26 for school, poll and other taxes. Maili paid in $31. In Makua, the people paid $73.50; in Makaha, $92.25; at Kamaile, $177; and in Waianae Valley, $276.

From Makalena's records, it was also revealed that in some areas there were more horses than taxpayers. In Wai'anae Valley, 123 horses and nine mules and donkeys were

reported; 66 horses and four mules and donkeys in Kamaile; and 10 horses in Nanakuli (ibid.).

In recent years, modern residential and recreational developments have obscured earlier deposits.

Section 5: Expected Finds

The expected archaeological findings for a coastal flat environment could include traditional habitation, agriculture and ritual features during pre-Contact times. Features may include platforms, pavements, enclosures, C-shaped structures and walls. Post-Mahele features could include cattle ranching walls. Traditional cultural materials could include lithic tools and debitage, shell and bone midden, shell and bone tools and ornaments. Cattle ranching and sugar production activities may have disturbed traditional features. Modern disturbances may have occurred as a result of grubbing, grading and traversing of heavy equipment.

Section 6: Field Results

During the pedestrian survey of the current subject property, no sites of potential significance to the interests of historic preservation were encountered. Site morphology, absence of primary growth, and the immature status of secondary growth strongly suggest the area of study was previously bulldozed. The property was flat and consisted of disturbed rock filled soil deposits.

Section 7: Conclusion

An archaeological assessment has been conducted on property located in Wai'anae Kai Ahupua'a, Wai'anae District on the Island of Hawai'i. The current investigations took the form of a pedestrian survey of the subject property. No sites of potential significance to the interests of historic preservation were identified.

Based upon the results of the current investigations, Archaeological Consultants of the Pacific, Inc. recommends that a determination be made that no historic properties are present. No further archaeological work is recommended for the current subject property.

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Appendix C

Air Quality Impact Assessment

Environmental Assessment

Consuelo Subdivision
TMK: 8-5-003 : 020
85-576 B Wai`anae Valley Road, Wai`anae, Oahu

AIR QUALITY
IMPACT ASSESSMENT

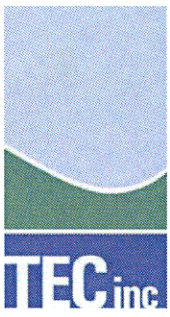
Consuelo Zobel Alger Foundation
Waianae Parcel Housing Project

March 2005

Prepared for:

Enviro Services Training Center, LLC
2850 Paa St., Suite 150
Honolulu, HI 96819

Prepared by:



Air Quality Impact Assessment

Consuelo Zobel Alger Foundation
Waianae Parcel Housing Project
85-576B Waianae Valley Road, Oahu, Hawai'i

April 2005

Prepared for:

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ACRONYMS

AAQS	Ambient Air Quality Standards
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DHHL	Department of Hawaiian Home Lands
EA	Environmental Assessment
HAR	Hawai'i Administrative Rules
HDOH	Hawai'i Department of Health
H_2S	Hydrogen Sulfide
mph	miles per hour
NOAA	National Oceanic and Atmospheric Administration
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
O_3	Ozone
Pb	Lead
P/E	Precipitation/Evaporation
PM_{10}	Particulate Matter ≤ 10 microns
$PM_{2.5}$	Particulate Matter ≤ 2.5 microns
PSD	Prevention of Significant Deterioration
SLAMS	State and Local Air Monitoring Stations
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
TEC	The Environmental Company, Inc.
TSP	Total Suspended Particulate matter
USEPA	U.S. Environmental Protection Agency
VOCs	Volatile Organic Compounds

EXECUTIVE SUMMARY

The State Department of Hawaiian Home Lands (DHHL) is proposing to develop approximately 20 single-family homes on a Waianae parcel donated by the Consuelo Zobel Alger Foundation. Proposed site improvements will include the design of roadways, lot grading, perimeter wall, drainage system, sewer system, water system, underground electrical, and street lighting. Off-site improvements consist of approximately 400 linear feet of storm drain from the proposed subdivision, discharging at Kaupuni Channel. This construction project is part of the strategic plan of DHHL to provide qualified native Hawaiians with an opportunity for home ownership or land stewardship on homestead lands. This air quality assessment will be part of the environmental assessment (EA) for the proposed development. To ascertain the potential air quality impact of the project, peak construction activities and peak vehicular traffic in the area were predicted and used as a worst-case scenario.

The major potential short-term air quality impact of the project will be fugitive dust during construction. Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in construction areas from becoming significant sources of dust. Other control measures such as limiting the area that can be disturbed at any given time, applying chemical soil stabilizers, mulching and/or using wind screens may be necessary. Open-bodied trucks should be covered at all times when in motion if they are transporting materials that could be blown away. Road cleaning or tire washing should be done on a regular basis as vehicles tracking dirt onto paved streets from unpaved areas are often a significant source of dust in construction areas. Paving of parking areas and/or establishment of landscaping as early in the construction schedule as possible can also lower the potential for fugitive dust emissions. Monitoring dust at the project boundary during the period of construction could be considered as a means to evaluate the effectiveness of the project's dust control program and to adjust the program if necessary.

During construction phases, engine exhaust (primarily consisting of carbon monoxide and nitrogen oxides) will also occur from on-site construction equipment, from vehicles used by construction workers, and from trucks traveling to and from the project. Increased vehicular emissions due to disruption of traffic by construction equipment, roadway lane closures and/or commuting construction workers can be alleviated by moving equipment and personnel to the site during off-peak traffic hours and by trying to avoid roadway lane closures during peak traffic periods. Much of the carbon monoxide (CO) and volatile organic compound (VOC) emissions are vehicular in origin, and would be exhausted over many miles of roadways. This would constitute a regional rather than a site-specific impact.

Upon completion of the housing project, it is assumed that any long-term impacts on air quality near the project site due to emissions from project-related vehicular traffic will be negligible. Emissions from mobile sources are exempt or not regulated by the State.

The estimated low level of air pollutant emissions at the project site would not cause significant impacts to the identified human receptors or the environment. It is conceivable, however, that indirect impacts on air quality could occur if the normal flow of ambient traffic on adjacent roadways is disrupted causing excess emissions at the site. Thus, the proposed facilities should be designed so as to minimize the disruption of traffic on adjacent roadways. Implementing other measures to mitigate long-term impacts is probably unnecessary and unwarranted.

1.0 PROJECT OVERVIEW

1.1 INTRODUCTION

The Consuelo Zobel Alger Foundation donated 3.3 acres of land in Waianae to the State of Hawai'i for native Hawaiians. The property (Tax Map Key [TMK]: 8-5-03:02), located at 85-576B Waianae Valley Road, Waianae, is adjacent to the Weinberg Village for homeless families. The state Department of Hawaiian Home Lands (DHHL) is proposing to develop approximately 20 single-family homes at the project site. Proposed on-site improvements include new roadways, lot grading and filling, perimeter wall, drainage system, sewer system, water system, underground electrical system, and street lighting. Off-site improvements include the installation of approximately 400 linear feet of a storm drain system from the proposed subdivision into Kaupuni Channel. This construction project is part of the strategic plan by DHHL to provide qualified native Hawaiians with an opportunity for home ownership or land stewardship on homestead lands. This air quality assessment will be part of the environmental assessment (EA) for the proposed development. To ascertain the potential air quality impact of the project, peak construction activities and peak vehicular traffic in the area were predicted and used as a worst-case scenario.

The purpose of this study is to describe existing air quality in the project area and to assess potential air quality impacts that could result during and after the construction of the housing project. Measures to mitigate these impacts are suggested where possible and appropriate.

1.2 SITE DESCRIPTION

The proposed DHHL single-family home development is located approximately 300 yards east of Pokai Bay and a half mile south-east of Waianae Intermediate School. The parcel is located on the corner of Plantation Road and Hoopuhi Street adjacent to the Weinberg Village (Figures 1 and 2). The Waianae Elementary School and the Waianae Piliaau Park are located less than a quarter mile west south-west of the project site. The project site is located in a general agricultural district (AG-2) (Department of Planning and Permitting Office of the City and County of Honolulu). An aerial view of the project site shows some farm lands in the vicinity of the project site as well as a small light-industrial area along the Waianae coast (Figure 3).

The project site has plenty of vegetation that will have to be cleared during site preparation (Figure 4). It is also at a lower elevation than Plantation Road and will have to be filled-in to a desirable flat-to-gently-sloping terrain during development (Figure 5).

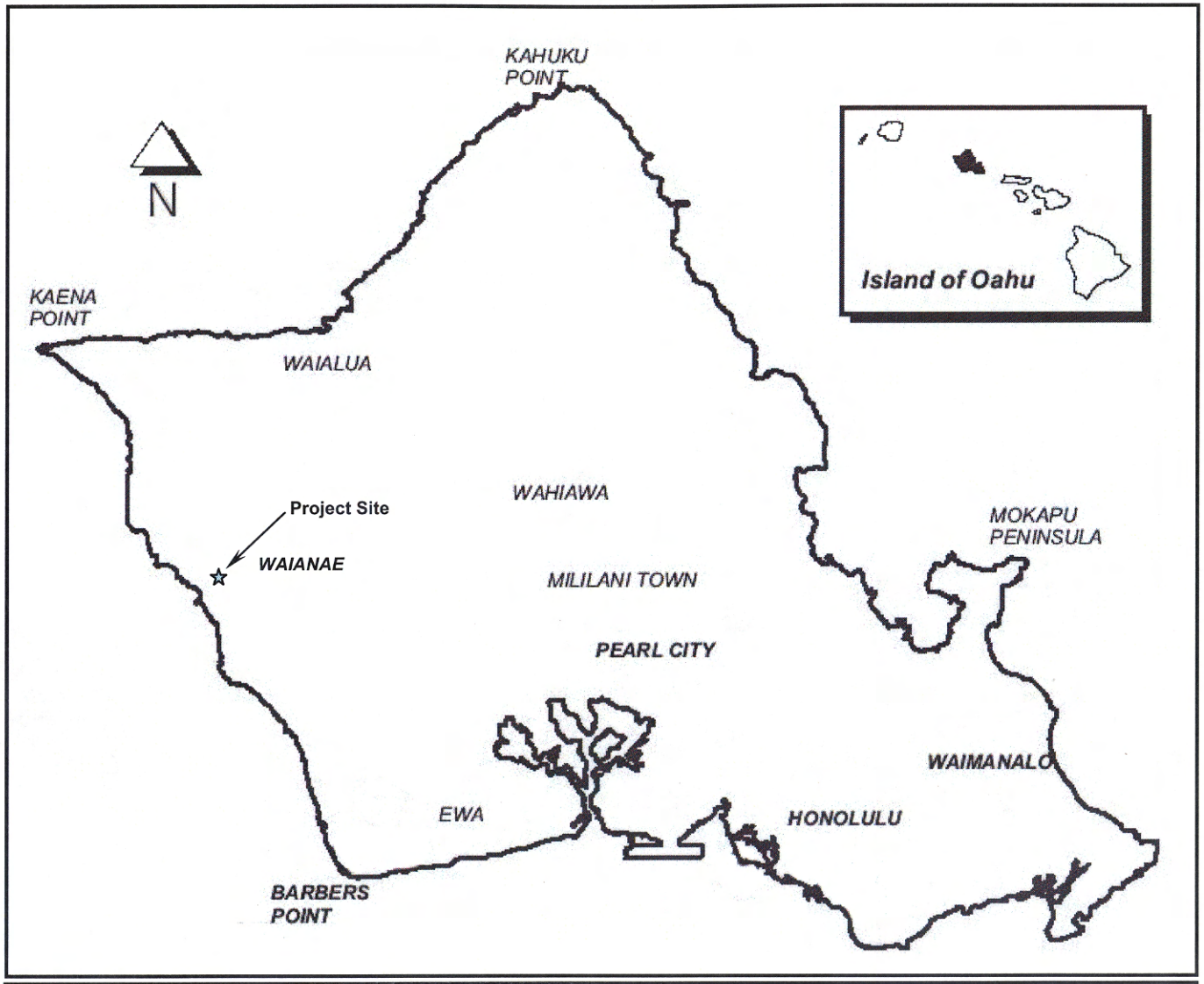

Figure 1 Site Map
Consuelo Zobel Alger Foundation Waianae Parcel

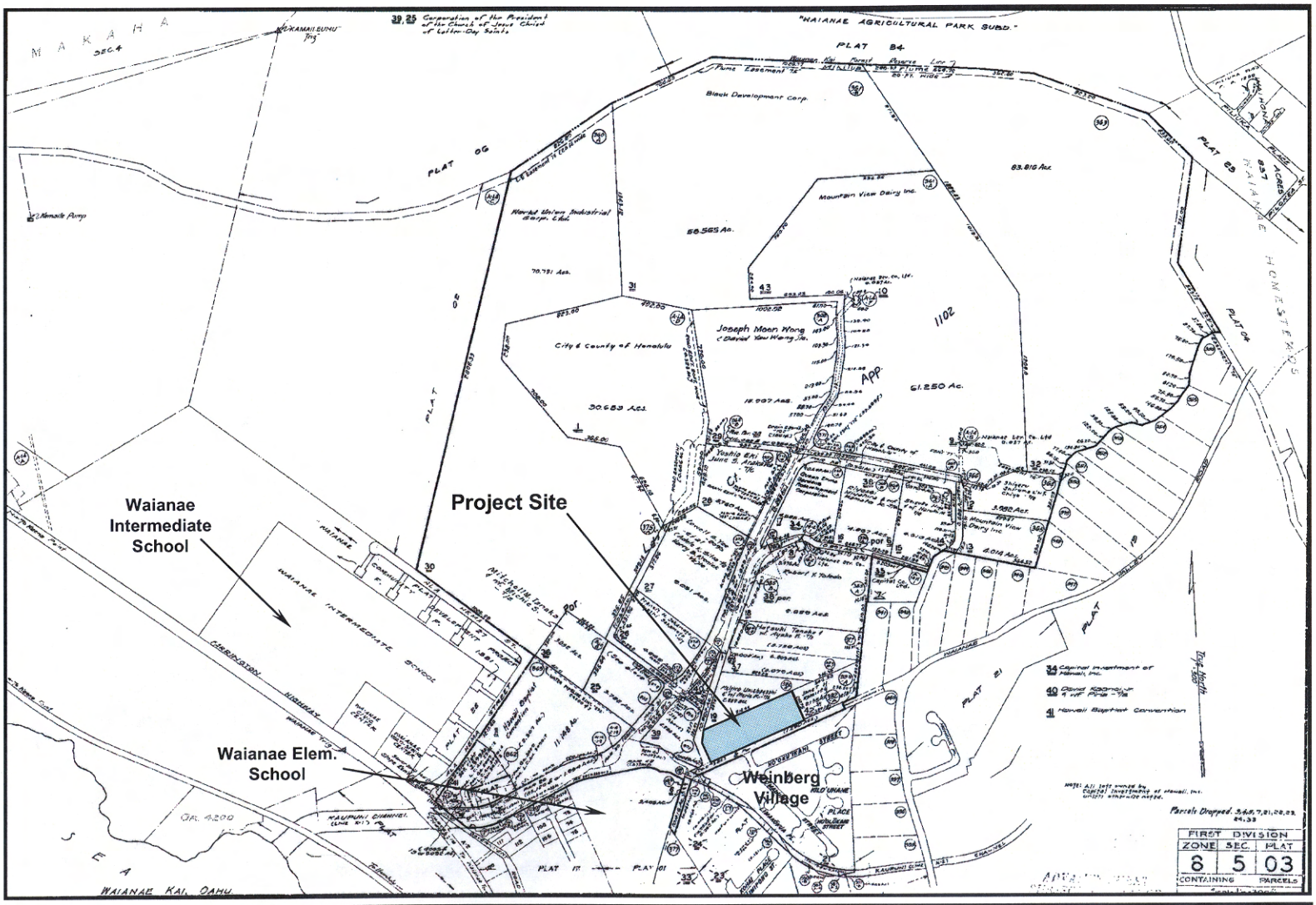

Figure 2 Site Location Map, Consuelo Zobel Alger Foundation Waianae Parcel (TMK: 8-5-03:02)

Figure 3 Aerial Photo of the
Consuelo Zobel Alger Foundation Waianae Parcel

Figure 4 Waianae Parcel
Consuelo Zobel Alger Foundation

Figure 5 South-west corner
Consuelo Zobel Alger Foundation Waianae Parcel

2.0 AIR QUALITY IMPACT ASSESSMENT

2.1 AMBIENT AIR QUALITY STANDARDS

Ambient concentrations of air pollutants are regulated by both National and State ambient air quality standards (AAQS). National AAQS are specified in Section 40, Part 50 of the Code of Federal Regulations (CFR), while the State of Hawai'i AAQS are defined in Chapter 11-59 of the Hawai'i Administrative Rules (HAR). Table 1 summarizes both the National and the State AAQS. National and State AAQS have been established for particulate matter less than 10 microns in aerodynamic diameter (PM_{10}), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), ozone (O_3) and lead (Pb). There is also a National AAQS for particulate matter less than 10 microns in aerodynamic diameter ($PM_{2.5}$) and a state AAQS for hydrogen sulfide (H_2S). National AAQS are stated in terms of both primary and secondary standards for most of the regulated air pollutants. National primary standards are designed to protect the public health with an "adequate margin of safety." National secondary standards, on the other hand, define levels of air quality necessary to protect the public welfare from "any known or anticipated adverse effects of a pollutant." Secondary public welfare impacts may include such effects as decreased visibility, diminished comfort levels, or other potential injury to the natural or man-made environment, e.g., soiling of materials, damage to vegetation or other economic damage. In contrast to the National AAQS, Hawai'i State AAQS are given in terms of a single standard that was designed to protect public health and welfare and to prevent the significant deterioration of air quality.

Table 1 Summary of State of Hawai'i and National Ambient Air Quality Standards

Pollutant	Units	Averaging Time	Maximum Allowable Concentration		
			National Primary [1]	National Secondary [2]	State of Hawai'i [3]
Particulate Matter PM_{10} (≤10 microns)	$\mu g/m^3$	Annual 24 Hours	50 150	50 150	50 150
Particulate Matter $PM_{2.5}$ (≤2.5 microns)	$\mu g/m^3$	Annual 24 Hours	15 65	15 65	- -
Sulfur Dioxide	$\mu g/m^3$	Annual 24 Hours 3 Hours	80 365 -	- - 1300	80 365 1300
Nitrogen Dioxide	$\mu g/m^3$	Annual	100	100	70
Carbon Monoxide	mg/m^3	8 Hours 1 Hour	10 40	- -	5 10
Ozone	$\mu g/m^3$	8 Hours 1 Hour	157 235	157 235	- 100
Lead	$\mu g/m^3$	Calendar Quarter	1.5	1.5	1.5
Hydrogen Sulfide	$\mu g/m^3$	1 Hour	-	-	35

1 Designated to prevent adverse effects on public health. Source: 40CFR Part 50.
2 Designated to prevent adverse effects on public welfare, including effects on comfort, visibility, vegetation, animals, aesthetic values, and soiling and deterioration of materials. Source: 40CFR Part 50.
3 Designated to protect public health and welfare and to prevent significant deterioration of air quality. Source: HAR 11-59-1.

Each of the regulated air pollutants has the potential to create or exacerbate some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentrations for prolonged periods of time. The AAQS specify a maximum allowable concentration for a given air pollutant for one or more averaging times to prevent harmful effects. Averaging times vary from one hour to one year depending on the pollutant and type of exposure necessary to cause adverse effects. In the case of the short-term (i.e., 1- to 24-hour) AAQS, both National and State standards allow a specified number of exceedances each year.

The Hawai'i AAQS are in some cases considerably more stringent than the comparable National AAQS. In particular, the Hawai'i 1-hour AAQS for carbon monoxide is four times more stringent than the comparable national limit, and the State 1-hour limit for ozone is more than two times as stringent as the National 1-hour standard. The National 1-hour ozone standard is being phased out in favor of the new (and more stringent) 8-hour standard. The Hawai'i AAQS for SO_2 were relaxed in 1986 to make the State standards essentially the same as the National standards. In 1993, the State also revised its airborne particulate standards to follow those set by the Federal government. During 1997, the Federal government again revised its standards for particulate matter, but the new standards have been challenged in Federal court. To date, the Hawai'i Department of Health (HDOH) has not made any revision to the State particulate matter standards.

There are nine (9) Hawai'i Department of Health State and Local Monitoring Station (SLAMS) located on the island of Oah'u (Figure 6). Three of these SLAMS (Makaiwa, West Beach, and Kapolei) are on the Leeward side of the island approximately 8 to 10 miles south of the project site. The Kapolei SLAMS monitors CO, SO_2, NO_2 PM_{10} and $PM_{2.5}$. The Kapolei SLAMS is also equipped to measure meteorological parameters such as wind speed and wind direction.

2.2 REGIONAL AND LOCAL CLIMATOLOGY

Regional and local climatology significantly affect the air quality of a given location. Wind, temperature, atmospheric turbulence, mixing height and rainfall all influence air quality. Hawai'i lies within the belt of northeasterly trade winds generated by the semi-permanent Pacific high-pressure cell to the north and east. Although Hawai'i's climate is relatively moderate throughout most of the year, significant differences may occur from one location to another. Most differences in regional and local climates within the state are caused by the mountainous topography (NOAA, 2000).

On the island of Oah'u, the Koolau and Waianae Mountain Ranges are oriented almost perpendicular to the trade winds, which accounts for much of the variation in the local climatology of the island. Waianae, the site of the proposed project, is a suburban area within the City and County of Honolulu. Waianae is located leeward of the Waianae Range. Although climatic conditions vary somewhat across the project area, long-term weather data available from the Honolulu International Airport, located a few miles to the southeast, is at least semi-representative.

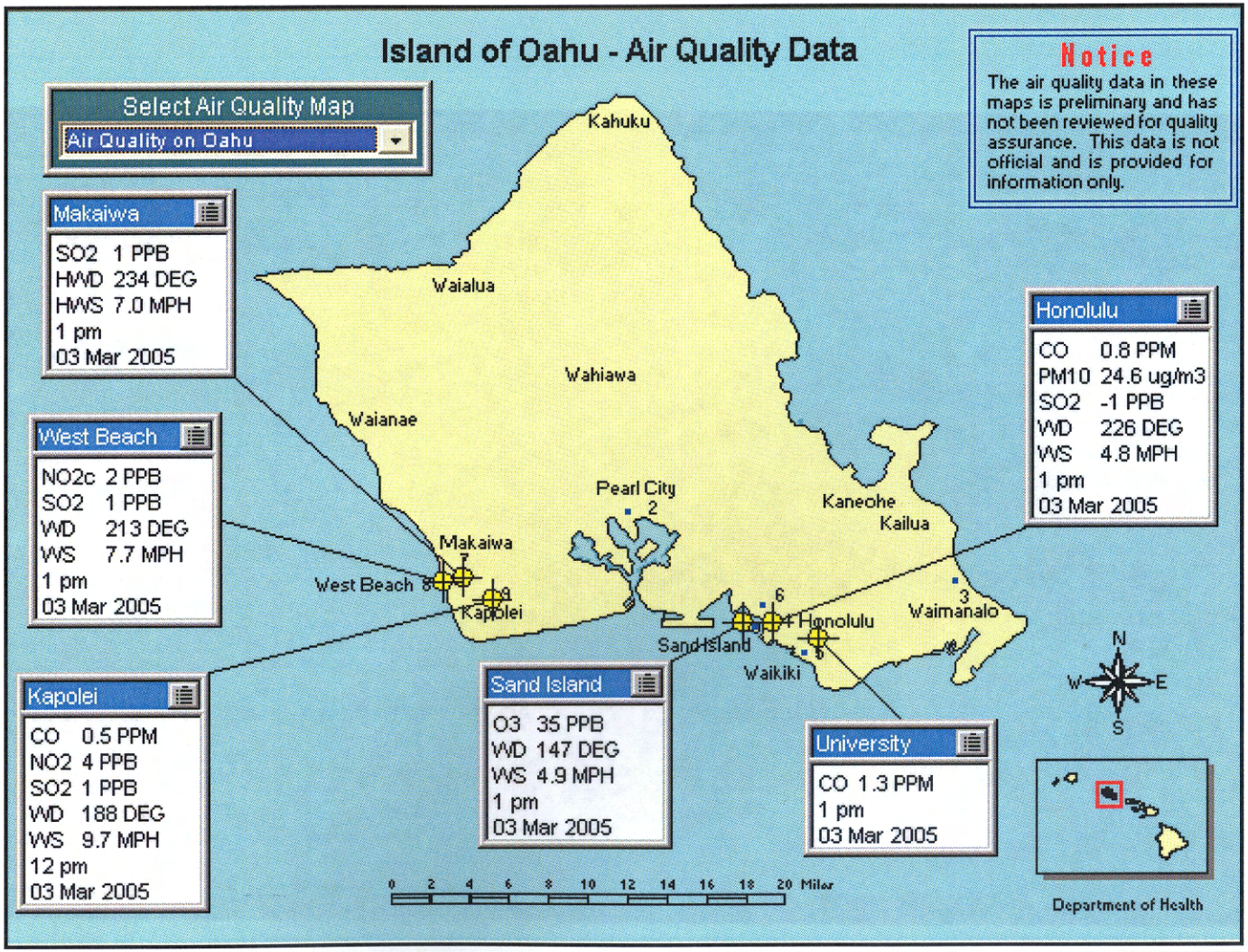

Figure 6 Hawaii Department of Health State and Local Monitoring Stations

Wind frequency data (Table 2) for Honolulu International Airport show that the annual prevailing wind direction for this area of Oah'u is east northeast. On an annual basis, 34.7 percent of the time the wind is from this direction, and nearly 75 percent of the time the winds are from the northeast quadrant. Winds from the south are infrequent, and occur a few days during the year, mostly in association with winter storms. Wind speeds average about 11 miles per hour (mph) (10 knots) and generally vary between about 4 and 18 mph (5 and 15 knots). Surface wind speeds in the project area are somewhat lower, and local wind directions are likely affected by the terrain.

Table 2 Annual Wind Frequency for Honolulu International Airport (%)

Wind Direction	Wind Speed (knots)									Total
	0-3	4-6	7-10	11-16	17-21	22-27	28-33	34-40	>40	
N	0.5	2.5	1.3	0.5	0.0	0.0	0.0	0.0	0.0	4.8
NNE	0.3	1.2	1.6	1.5	0.2	0.0	0.0	0.0	0.0	4.7
NE	0.3	2.1	6.1	11.0	3.2	0.3	0.0	0.0	0.0	23.0
ENE	0.2	2.5	10.9	16.6	4.1	0.3	0.0	0.0	0.0	34.7
ENE	0.1	1.0	2.5	2.8	0.5	0.0	0.0	0.0	0.0	7.0
ESE	0.0	0.3	0.4	0.3	0.0	0.0	0.0	0.0	0.0	1.1
SE	0.0	0.3	0.8	1.0	0.1	0.0	0.0	0.0	0.0	2.2
SSE	0.1	0.4	1.2	0.7	0.1	0.0	0.0	0.0	0.0	2.4
S	0.1	0.5	1.4	0.6	0.1	0.0	0.0	0.0	0.0	2.7
SSW	0.0	0.3	0.8	0.3	0.0	0.0	0.0	0.0	0.0	1.5
SW	0.0	0.2	0.8	0.4	0.0	0.0	0.0	0.0	0.0	1.5
WSW	0.0	0.3	0.5	0.4	0.0	0.0	0.0	0.0	0.0	1.2
W	0.1	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.1
WNW	0.2	1.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	2.0
NW	0.4	2.3	0.8	0.1	0.0	0.0	0.0	0.0	0.0	3.8
NNW	0.5	2.3	0.8	0.2	0.0	0.0	0.0	0.0	0.0	3.8
Calm	2.5									2.5
Total	5.4	18.3	30.6	36.5	8.5	0.7	0.0	0.0	0.0	100.0

Source: Climatography of the United States No. 90 (1965-1974), Airport Climatological Summary, Honolulu International Airport, Honolulu, Hawai'i, U.S. Department of Commerce, National Climatic Center, Asheville, NC, August 1978.

Air pollution emissions from motor vehicles, the formation of photochemical smog and smoke plume rise all depend in part on air temperature. Colder temperatures tend to result in higher emissions of contaminants from automobiles but lower concentrations of photochemical smog and ground-level concentrations of air pollution from elevated plumes. In Hawai'i, the annual and daily variations of temperature depend to a large degree on elevation above sea level, distance inland, and exposure to the trade winds. Average temperatures at locations near sea level are generally warmer than those at higher elevations. Areas exposed to trade winds tend to have the least temperature variation, while inland and leeward areas often have the most. The project area's leeward

location results in a relatively moderate temperature profile compared to other locations around Oah'u and the state. At the airport, average annual monthly minimum and maximum temperatures are 70.9°F and 84.4°F, respectively (Table 3). The extreme minimum temperature was 53°F during 1998, and the extreme maximum was 95°F during 1994 (NOAA, 2000). Temperatures in the Waianae area may be slightly higher due to the wind-sheltering effects of the Waianae Mountain Range relative to the airport area.

Table 3 Climatic Data for Honolulu International Airport: Annually, 1990 to 2001

Year	Average Temperature (°F) [1]			Extreme Temp. (°F)		Precipitation (inches)
	Annual	Coolest month	Warmest month	Lowest	Highest	
1990	77.6	71.5	82.3	57	93	19.84
1991	77.7	72.4	82.4	55	93	17.94
1992	77.8	72.9	82.2	58	92	19.00
1993	77.1	70.9	81.3	54	93	5.84
1994	78.8	72.0	84.3	56	95	15.59
1995	79.3	73.4	83.4	56	94	13.60
1996	78.6	74.0	82.8	56	93	33.12
1997	77.8	72.3	82.7	57	94	19.99
1998	77.1	72.5	81.1	53	89	4.52
1999	76.9	73.3	10.8	60	89	11.99
2000	77.6	72.5	81.4	59	90	7.10
2001	78.2	74.1	82.2	59	92	9.14

Year	Relative Humidity (%)		Wind Speed (mph)		Percent of possible sunshine [2]	Days with precipitation 0.01 inch or more
	8 a.m.	2 p.m.	Annual Average	Peak gust		
1990	69	54	11.2	46	69	109
1991	69	53	10.0	39	69	86
1992	71	55	9.5	49	69	98
1993	70	53	10.9	46	69	76
1994	72	55	11.9	51	70	80
1995	74	57	10.7	41	70	81
1996	73	56	9.6	40	70	106
1997	80	57	10.0	41	71	105
1998	72	56	11.0	(NA)	71	74
1999	73	57	11.0	(NA)	71	94
2000	75	60	10.9	(NA)	71	67
2001	73	58	11.3	(NA)	71	84

1 Dry bulb is the temperature of the ambient air.
2 Revised. Data from source cited below, "Normal, Means, and Extremes, Honolulu", (annual).

Source: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Climatic Data Center, Local Climatological Data, Annual Summary With Comparative Data, 2001, "Meteorological Data for 2001, Honolulu", "Normals, Means, and Extremes, Honolulu", (annual).

Rainfall can have a beneficial effect on air quality by suppressing fugitive dust emissions. It also may "washout" gaseous contaminants that are water-soluble. Rainfall in Hawai'i is highly variable depending on elevation and location with respect to the trade winds. The Waianae area is one of the drier areas on Oah'u due to its leeward and near sea level location. Average annual rainfall amounts to about 20 inches (U.S. Dept. of Commerce., 1965).

2.3 PRIMARY AIR POLLUTANTS OF CONCERN

The primary air pollutants that pose a major concern to human health and the environment include the following:

O_3 - Ozone is formed in the atmosphere by a chemical reaction between nitrogen oxides (NO_x) and volatile organic compounds (VOCs) in the presence of sunlight. In the upper atmosphere, ozone shields the earth from harmful ultraviolet radiation; however, at ground level it can cause harmful effects in humans and plants.

NO_2 - Nitrogen Dioxide is a brownish, highly corrosive gas with a pungent odor. It is formed in the atmosphere from emissions of nitrogen oxides (NO_x). Sources of nitrogen oxides include electric utilities, industrial boilers, motor vehicle exhaust, and combustion of fossil fuels.

PM_{10} and $PM_{2.5}$ - Particulate matter (PM10 and PM2.5) is comprised of solid particles or liquid droplets tiny enough to remain suspended or floating in the air for up to weeks at a time. Of greatest concern to the public health are the particles small enough to be inhaled into the deepest parts of the lung. These particles are less than 10 microns in diameter--about 1/7th the thickness of a human hair--and are known as PM10. This includes fine particulate matter known as PM2.5. PM2.5 has a specific range of particles 2.5 micrometers or less. PM10 is a major component of air pollution that threatens both our health and our environment. General PM composition can include everything from fine dust to carbon (soot), and can be microscopic or visible to the naked eye. Particulate matter is generated from a variety of sources including traffic on paved and unpaved roads, combustion, and earth-moving activity such as mining, farming and construction.

CO - Carbon Monoxide is a colorless, odorless, tasteless gas under atmospheric conditions. It is produced by the incomplete combustion of carbon fuels, with the majority of emissions in urban areas coming from transportation sources.

SO_x - Sulfur Oxides are colorless gases that include SO_2. Emissions of SO_x are largely from sources that burn fossil fuels such as coal and oil. On the Island of Hawai'i, a significant source of SO_x emissions is from the on-going eruption of Kilauea Volcano.

Pb - Lead is a naturally occurring substance found in the environment that has been used as an ingredient in paint and gasoline. Particulates of Pb and its compounds are released to the air mainly from vehicle exhaust. Lead can be inhaled or ingested and can accumulate in the blood, bone, and soft tissue. The elimination of Pb in gasoline sold in the United States has greatly reduced the amount of Pb in the ambient air.

2.4 PRESENT AIR QUALITY

Air pollution from agricultural activities in the area may have a significant impact on the air quality at the project site. Agriculture-related emissions in the Waianae area may include occasional dust and smoke impacts from nearby, small-scale farm cultivation and harvesting operations. Natural sources of air pollutant emissions that also could affect the project area but cannot be quantified accurately include the ocean (sea spray), plants (aero-allergens), wind-blown dust, and possibly distant volcanoes on the island of Hawai'i.

The HDOH has been monitoring ambient air quality in the State of Hawai'i since 1957. Before 1971, there was only one air-monitoring site located on the island of Oah'u. Today, the air-monitoring network has expanded to include fifteen national and local stations on the islands of Oah'u, Kaua'i, Maui and the Big Island of Hawai'i. The network of air quality monitoring stations, however, does not monitor the full complement of air quality parameters. The monitoring station at Makaiwa, for example, is limited to SO_2. The present PM_{10} data from the Kapolei SLAMS near the project area shows the maximum 24-hour PM_{10} concentration and the annual average recorded to be four times less than the National and State AAQS and shows a stable trend from 2001 to 2003 (Table 4). Nitrogen dioxide concentration is also monitored by HDOH at the Kapolei monitoring station. The average monthly concentrations of this pollutant ranged from 6 to 12 $\mu g/m^3$ in 2001, 7 to 11 $\mu g/m^3$ for the year 2002, and 3 to 19 for the year 2003. These were below the State and National AAQS of 70 $\mu g/m^3$ and 100 $\mu g/m^3$, respectively.

As a worse case example of ambient air quality in the State of Hawai'i, we can examine the data from the Honolulu monitoring station located at 1250 Punchbowl Street in downtown Honolulu (Figure 4). An air pollutant emission summary for downtown Honolulu for the years 2001 – 2003 is shown in Table 5. The station monitors CO, SO_2, PM_{10} and $PM_{2.5}$. The maximum air pollutant concentrations recorded in downtown Honolulu are well below the corresponding National and State AAQS.

The SO_2 concentrations in downtown Honolulu for the years 2001 to 2003 were consistently below National and State AAQS. Annual average SO_2 concentrations ranged from 1 - 3 $\mu g/m^3$. There were no recorded exceedances of the State or National AAQS for the 3-hour (1,300 $\mu g/m^3$) or the 24-hour (365 $\mu g/m^3$) standards during the three-year period.

PM_{10} concentrations at the Honolulu downtown monitoring station for the years 2001 to 2003 show annual average concentrations ranging from 15 to 16 $\mu g/m^3$, while $PM_{2.5}$ concentrations ranged from 4 – 14 $\mu g/m^3$. All values reported were below the State and National AAQS (50 $\mu g/m^3$ and 150 $\mu g/m^3$ for the average annual and annual values, respectively). PM_{10} and $PM_{2.5}$ data from New Years Eve are considered outliers or extreme values (due to widespread use of fireworks) and were not included in the annual and 24-hour average values.

Carbon monoxide measurements showed the highest 1-hour concentrations, ranging from 2.8 to 5.2 mg/m^3. No exceedances of the State 1-hour (10 mg/m^3) or 8-hour (5 mg/m^3) AAQS were reported.

Table 4 Annual Summaries of Ambient Air Quality Measurements in Kapolei, Years 2001 – 2003.

Pollutant	Average Time	SAAQS (µg/m³)	NAAQS (µg/m³)	Maximum Concentration (µg/m³)			Number of Exceedances SAAQS			Number of Exceedances NAAQS		
				2001	2002	2003	2001	2002	2003	2001	2002	2003
CO	1 hr	10,000	40,000	2,280	3,990	2,166	0	0	0	0	0	0
	8 hrs	5,000	10,000	1,596	1,582	841	0	0	0	0	0	0
PM_{10}	24 hrs	150	150	121	90	72	0	0	0	0	0	0
	Annual	50	50	19	15	14	0	0	0	0	0	0
$PM_{2.5}$	24 hrs	---	65	NA	53	11	---	---	---	0	0	0
	Annual	---	15	NA	4	4	---	---	---	0	0	0
SO_2	3 hrs	1,300	1,300	24	30	26	0	0	0	0	0	0
	24 hrs	365	365	7	9	9	0	0	0	0	0	0
	Annual	80	80	2	3	0.2	0	0	0	0	0	0

Source: Annual Summary: Hawai'i Air Quality Data CY 2001, 2002, and 2003. HDOH, Clean Air Branch, Honolulu, Hawai'i.

Table 5 Annual Summaries of Ambient Air Quality Measurements in Downtown Honolulu, Years 2001 – 2003.

Pollutant	Average Time	SAAQS (µg/m³)	NAAQS (µg/m³)	Maximum Concentration (µg/m³)			Number of Exceedances SAAQS			Number of Exceedances NAAQS		
				2001	2002	2003	2001	2002	2003	2001	2002	2003
CO	1 hr	10,000	40,000	5,244	3,990	2,850	0	0	0	0	0	0
	8 hrs	5,000	10,000	2,209	1,582	1,539	0	0	0	0	0	0
PM_{10}	24 hrs	150	150	63	90	32	0	0	0	0	0	0
	Annual	50	50	16	15	15	0	0	0	0	0	0
$PM_{2.5}$	24 hrs	---	65	56	53	20	---	---	---	0	0	0
	Annual	---	15	14	4	4	---	---	---	0	0	0
SO_2	3 hrs	1,300	1,300	45	30	67	0	0	0	0	0	0
	24 hrs	365	365	25	9	17	0	0	0	0	0	0
	Annual	80	80	2	3	1	0	0	0	0	0	0

Source: Annual Summary: Hawai'i Air Quality Data CY 2001, 2002, and 2003. HDOH, Clean Air Branch, Honolulu, Hawai'i.

The only available ozone measurements in the State of Hawai'i were obtained at the Sand Island monitoring station (Oah'u). The highest monthly 1-hour concentration from 2001 to 2003 was at 106 $\mu g/m^3$. There were no exceedances of the State AAQS (100 $\mu g/m^3$ per year) recorded during the monitoring period.

Based on the data and discussion presented above, it appears likely that the State and National AAQS for SO_2, NO_2, and PM_{10} are currently being met at the project site. Due to the abundance of ozone in the State of Hawai'i, it is likely that the State AAQS for ozone may be exceeded on occasion based on the Sand Island measurements for this parameter. The abundance of ozone is greatly influenced by the amount of sunlight. While carbon monoxide measurements at the Kapolei monitoring station suggest that concentrations are within the State and National standards, local "hot spots" may exist near traffic-congested intersections.

3.0 PROJECT IMPACTS AND MITIGATION MEASURES

3.1 CONSTRUCTION IMPACTS

To determine the significance of emissions during construction of the 20 housing unit subdivision, the estimated annual emission levels can be compared to the significant emission rates as defined in HAR Title 11, Chapter 60.1. The significant emission rate for NO_x, VOCs, and SO_2 is 40 tons per year while the State-defined emission rates for CO and PM_{10} are 100 and 15 tons per year, respectively.

The construction of the proposed project would produce air pollutants mainly from two different types of sources: exhaust from construction equipment/machinery including vehicles, and fugitive dust emissions due to earth movement. These emissions are short-term in duration and would cease upon completion of the project. Air emissions could affect human and ecological receptors present at the project site. Potential human receptors that could be affected by project construction activities include construction workers, residents at the adjacent Weinberg Village (Figure 7), students and employees of the Waianae Elementary School (Figure 8), occasional visitors to the project site, as well as the public using the adjacent Waianae Piliaau Park (Figure 9). The Waianae Intermediate School (Figure 10) located upwind from the project site is not expected to be impacted by the dust migration during project construction.

Table 6 shows a hypothetical schedule for the construction of the housing units. The schedule would involve mobilization and site preparation such as setting up a mobile office and setting up the dust screen along the perimeter of the project site. This will be followed by site clearing and a significant amount of cut and fill to level the site. Soil stabilization and treatment including erosion controls will be done when needed. Mobilization, site clearing, grading, drainage, and all other earthwork is expected to last for six months and would require 20 to 25 workers. The total area affected by site preparation will be approximately 3.3 acres.

Table 6 Hypothetical Schedule of Construction Activities

Construction Activities and Estimated Duration	Construction Months
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
Mobilization	
Site Preparation	
Earthwork	
Foundation and Load Bearing Elements, Structural Framework	
Drainage and Containment	
Utility Services	
Clean Out / Demobilization	

Figure 7 Weinberg Village

Figure 8 Waianae Elementary School

Figure 9 Waianae Piliaau Park

Figure 10 Waianae Intermediate School

The next phase of the construction schedule is the project build-out which includes excavation for anchors, foundations, and other load-bearing elements as well as erecting the structural framework of the housing units. This phase is expected to be the peak of construction activity and will mobilize approximately 40 construction workers. Dust generation in this phase of the project will be minimal as the major earth-moving activities would have been completed by this time. The project build-out would also include carpentry work, electrical wiring, cable installation, plumbing and other utility services, as well as drainage, and containment work. This phase is expected to last for 12 months. The last two months of the project will be devoted to site cleaning, demobilization, landscaping of public ways and inspection to ensure that all work done meets the specifications required by the owner.

3.1.1 Heavy Equipment and Vehicle Emissions during Construction

On-site mobile and stationary construction equipment, usually powered by diesel engines, emit air pollutants through engine exhausts. NO_x emissions from diesel engines can be relatively high compared to gasoline-powered equipment, but the standard for NO_2 is set on an annual basis and is not likely to be violated by short-term construction equipment emissions. CO emissions from diesel engines, on the other hand, are low and should be relatively insignificant compared to vehicular emissions on nearby roadways.

The appropriate equipment exhaust emission factors and their estimated hours of utilization for each phase of the construction are listed in Table 7a together with their corresponding USEPA Non-road emission factors obtained from the USEPA document "Non-road Engine and Vehicle Emissions Study" (USEPA, 1991).

Table 7a USEPA Non-road Emission Factors Source Data for Construction Equipment.

Equipment Type (a)	No. of Units	Rated HP (b)	Load Factor (c)	Hours per Day (d)	Days per Week (d)	Total Weeks (d)	USEPA Non-road Emission Factors (g/hp-hr) (e)				
							CO	VOC	NO_x	SO_x	PM_{10}
Air Compressor	1	200	0.480	8	5	68	5.00	1.20	8.00	0.93	1.00
Excavator	2	56	0.570	8	5	48	5.20	0.70	10.75	0.93	1.44
Crane	1	194	0.430	8	5	68	4.20	1.26	10.30	0.87	1.44
Forklift	2	215	0.300	8	5	72	6.06	1.57	14.00	0.93	1.60
Grader	1	125	0.610	8	5	32	3.80	1.50	9.60	0.87	1.00
Compactor	1	5	0.430	8	5	32	3.10	0.80	9.30	0.93	0.90

(a) Source of Data: Hypothetical. All equipment is diesel-fueled, unless otherwise indicated.

(b) Source of Data: SCAQMD 1993.

(c) Source of Data: USEPA 1997.

(d) Source of Data: Hypothetical.

(e) Source of Data: USEPA 1991.

Table 7b summarizes the estimated maximum construction-related air pollutant emissions. Some very conservative assumptions were used in this analysis as actual construction equipment to be employed is not known since a contractor has not been selected. Representative equipment was selected and usage was estimated. The usage estimates are likely significantly over-estimated.

Table 7b Estimated Maximum Emissions for Construction Equipment (a).

Equipment Type	Emissions (tons/year)				
	CO	VOC	NO_x	SO_x	PM_{10}
Air Compressor	1.062	0.255	1.700	0.198	0.212
Excavator	0.468	0.063	0.968	0.084	0.130
Crane	0.776	0.233	1.902	0.161	0.266
Forklift	1.730	0.448	3.997	0.266	0.457
Grader	0.409	0.161	1.033	0.094	0.108
Compactor	0.009	0.002	0.028	0.003	0.003
Total Emissions	4.455	1.163	9.629	0.804	1.175

(a) Calculated based on one year construction period.

A standard 40-hour, five-day work-week was assumed, with 10 holidays per year, giving 250 work-days per year. The maximum construction crew size was assumed to be 40 workers during the peak construction activities for at least 12 months. This scenario would generate maximum air quality impacts and was therefore used to calculate worst-case emissions. Each worker was assumed to drive a private, light-duty, gasoline-fueled vehicle to the site. This is a very conservative assumption, as workers would car-pool to some extent. Workers were further assumed to be coming from places as far as Honolulu, about 28 miles from the project site. The average commute of a worker is estimated at 24 miles per day. It is also assumed that at the initial stage of the construction (phase I), six heavy-duty dump trucks will be used to haul fill for the site and they are estimated to travel 30 miles per day for a week. At the peak of construction activities, four heavy-duty diesel trucks (water truck, cement truck, flatbed truck, etc.) will be used at the construction site and will travel approximately 40 miles per day. Other equipment is expected to remain on-site for the duration of the project.

Vehicular emissions data and emission factors for passenger truck and construction vehicles are shown in Table 8a. The emission factors were calculated using the USEPA Mobile Source Emission Factor Model (USEPA, 2002). Estimated maximum emissions (Table 8b) were calculated based on the total number of trips per year and the average distance per trip.

Table 8a Emission Source Data for Construction Vehicles.

Equipment Type	Total Trips per Year (a)	Round Trip Distance (miles) (b)	Mobile6.2 Emission Factors (g/mile) (c)					
			CO	VOC	NO_x	SO_x	PM_{10}	Source Category
Employee Vehicles	10,040	24	12.91	0.81	0.78	neg.	neg.	Light-duty gas vehicle
Trucks	1,250	12	3.15	0.67	7.04	neg.	neg.	Heavy-duty diesel vehicle

(a) Conservative estimate.
(b) The round trip distance was assumed to be 24 miles per day for passenger vehicles and 40 miles per day for construction trucks.
(c) Source of Data: The Mobile 6.2 model output.

Table 8b Estimated Maximum Emissions for Construction Vehicles (a)

Equipment Type	Emissions (tons/year)				
	CO	VOC	NO_x	SO_x	PM_{10}
Employee Vehicles	3.429	0.215	0.208	neg.	neg.
Trucks	0.052	0.011	0.116	neg.	neg.

(a) Calculated for one year of construction.

3.1.2 Fugitive Dust Emissions during Construction

Short-term direct and indirect impacts on air quality could occur during project construction. For a project of this nature, there are two potential types of air pollution emissions that could directly result in short-term air quality impacts during project construction: (1) fugitive dust; and (2) exhaust emissions from on-site construction equipment. Indirectly, there also could be short-term impacts from slow-moving construction equipment traveling to and from the project site, from a temporary increase in local traffic caused by commuting construction workers, and from the disruption of normal traffic flow caused by lane closures on adjacent roadways.

Project construction is expected to last for 18 months with six months allotted to mobilization, site preparation, and earthwork. Site mobilization is expected to last for a month involving 30 workers, water trucks, flat bed trucks, dump trucks and a forklift. Site preparation is estimated to last two months and will include installing a turf-fence or wind-barrier on the perimeter of the project site for dust mitigation. Site clearing will also be done when needed on the 3.3 acre project site. Once the site is cleared and fully enclosed with a turf-fence, grading, excavation, embankment soil stabilization or treatment including erosion control, will be done. Earthwork will involve 30 full-time workers and additional equipment to include a bulldozer, a pay loader, a scrapper, a compactor, an excavator and a truck-mounted auger. Storm drains and pipe culverts will also be excavated at this time. All earthwork activities are scheduled to finish within four months after site clearing. Installation of the foundations and other load-bearing elements and anchors is expected to take approximately five months. No tunneling or boring is required during construction.

Once the site clearing, excavation, and grading have been done, much of the heavy-duty equipment will be removed from the site except for the forklift, crane and the water truck. Air compressor and diesel-electric generators will be brought in for welding and carpentry work.

Fugitive dust emissions may arise from the grading and dirt-moving activities associated with site clearing and site preparation. The emission rate for fugitive dust from construction activities is difficult to estimate accurately. The potential for dust generation varies greatly with the type of soil at the construction site, the amount and type of dirt-disturbing activities taking place, the soil moisture content at the work site, and the prevailing wind speed. The USEPA (1995) has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month total suspended particulate matter (TSP) under conditions of "medium" activity, moderate soil silt content (30%), and precipitation / evaporation (P/E) index of 50. The corresponding emission rate for PM_{10} was estimated to be 36% of the TSP emissions (AP-42, Table 13.2.2-1) (USEPA, 1995). Using these assumptions on the 3.3 acre construction area for the Waianae Parcel Housing project and the estimated four months of earth work, the calculated PM_{10} emissions due to earth movement would be about 5.7 tons per year for the housing project. Uncontrolled fugitive dust emissions at the project site would likely be somewhere near that level, depending on the amount of rainfall that occurs. In any case, State of Hawai'i Air Pollution Control Regulations (HAR 60.1) prohibit visible emissions of fugitive dust from construction activities at the property line. Thus, an effective dust control plan for the project construction phase is essential.

3.1.3 Mitigation Measures

The major potential short-term air quality impact of the project will occur from the emission of fugitive dust during construction. Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in construction areas from becoming significant sources of dust. In dust-prone or dust-sensitive areas, other control measures such as limiting the area that can be disturbed at any given time, applying chemical soil stabilizers, mulching and/or using wind screens may be necessary. Control regulations further stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials that could be blown away. Haul trucks tracking dirt onto paved streets from unpaved areas are often a significant source of dust in construction areas. Road cleaning or tire washing, may be appropriate to alleviate this problem. Paving of parking areas and/or establishment of landscaping as early in the construction schedule as possible can also lower the potential for fugitive dust emissions. Monitoring dust at the project boundary during the period of construction could be considered as a means to evaluate the effectiveness of the project's dust control program and to adjust the program if necessary.

During construction, emissions from engine exhausts (primarily CO and NO_x) will occur from on-site construction equipment, from vehicles used by construction workers, and from trucks traveling to and from the project site. Increased vehicular emissions due to disruption of traffic by construction equipment, roadway lane closures and/or commuting construction workers can be alleviated by moving equipment and personnel to the site during off-peak traffic hours and by trying to avoid roadway lane closures during peak traffic periods.

The estimated emissions for all pollutants, as summarized in Table 9, (including localized fugitive dust emissions), are well below the corresponding significance levels. The low level of air pollutant emissions would not cause significant impacts to the identified human receptors or the environment. Much of the CO and VOC emissions are vehicular in origin, and would be exhausted over 20 miles or more of roadways. This would constitute a regional impact rather than a site-specific impact.

Table 9 Summary of the Estimated Maximum Construction Air Pollutant Emissions

Equipment Type	Estimated Emissions (tons/year)				
	CO	VOC	NO_x	SO_x	PM_{10}
Fugitive Dust Emissions					5.7
Equipment Emissions	4.45	1.16	9.63	0.80	1.21
Vehicular Emissions	3.48	0.23	0.32	0.00	0.00
Total	7.94	1.34	9.95	0.80	6.91
HAR Significance Emission Rate (a)	100	40	40	40	15

(a) As defined in Hawai'i Administrative Rules, Title 11, Chapter 60.1.

Project construction activities will also likely obstruct the normal flow of traffic at times to such an extent that overall vehicular emissions in the project area will temporarily increase. The only means to alleviate this problem will be to attempt to keep roadways open during peak traffic hours and to move heavy construction equipment and workers to and from construction areas during periods of low traffic volume. Thus, most potential short-term air quality impacts from project construction can be mitigated.

3.2 PROPOSED HOUSING IMPACT

Upon completion of the housing project, it is assumed that the additional 20 families at the housing complex will have no significant effect on vehicular traffic on nearby roadways near the housing project. It is therefore assumed that the long-term impacts on air quality near the project site due to emissions from project-related vehicular traffic will be negligible. Emissions from mobile sources are exempt or not regulated by the State.

3.2.2 Mitigation Measures

Any long-term impacts on air quality near the DHHL housing project due to emission from project-related vehicular traffic will be negligible. Annual emissions from vehicular traffic at the project site will amount to a fraction of the State-defined significant emission rates, and thus it can be anticipated that any direct impacts on air quality from vehicular emissions will be minimal. It is conceivable, however, that indirect air quality impacts could occur if the normal flow of ambient traffic on adjacent roadways is disrupted causing excess emissions at the site. Thus, the proposed facilities should be designed to minimize traffic disruption on adjacent roadways. Implementing other measures to mitigate long-term impacts is probably unnecessary and unwarranted.

4.0 REFERENCES

National Oceanic and Atmospheric Administration (NOAA). 2000. "Monthly Climate Summary for Selected Hawaii Cities, 1961-90". National Climatic Data Center, Asheville, NC.

U.S. Department of Commerce, Weather Bureau, "Climatography of the United States No. 86-44, Decennial Census of the United States Climate, Climatic Summary of the United States, Supplement for 1951 through 1960, Hawaii and Pacific", Washington, D.C., 1965.

U.S. Environmental Protection Agency (EPA). 1991. USEPA Non-road Engine and Vehicle Study-Report (EF Tables). PB92-126960/AS.

U.S. Environmental Protection Agency (EPA). 1995. Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, Fifth Edition, AP-42, Research Triangle Park, NC.

U.S. Environmental Protection Agency (EPA). 2002. User's Guide to MOBILE6.1 and 6.2: Mobile Source Emission Factor Model, Draft, Office of Air and Radiation, Office of Mobile Sources, Emission Control Technology Division, Test and Evaluation Branch, Ann Arbor, Michigan.

Appendix D
Agencies Consulted

Environmental Assessment

Consuelo Subdivision
TMK: 8-5-003 : 020
85-576 B Wai`anae Valley Road, Wai`anae, Oahu

Appendix D
Agencies Consulted

Environmental Assessment

Consuelo Subdivision
TMK: 8-5-003 : 020
85-576 B Wai`anae Valley Road, Wai`anae, Oahu

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

(P)1095.5

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

APR - 4 2005

Ms. Rose Cruz Churma
EnviroServices & Training Center, LLC
2850 Paa Street, Suite 150
Honolulu, HI 96819-4441

Dear Ms. Churma:

Subject: Environmental Assessment, Consultation
Consuelo Subdivision
85-576 B Waianae Valley Road, Waianae, Oahu
TMK: 8-5-003:20

Thank you for the opportunity to review the information regarding the subject project. The project does not impact any of the Department of Accounting and General Services' projects or existing facilities and we have no comments to offer.

If you have questions regarding the above, please have your staff call Mr. David DePonte of the Planning Branch at 586-0492.

Sincerely,

ERNEST Y. W. LAU
Public Works Administrator

DD:mo
c: Ms. Genevieve Salmonson, OEQC

[redacted]
LINDA LINGLE
GOVERNOR

PATRICIA HAMAMOTO
SUPERINTENDENT

STATE OF HAWAI'I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI'I 96804

OFFICE OF THE SUPERINTENDENT

March 31, 2005

Ms. Rose Cruz Churma
EnviroServices & Training Center, LLC
2850 Paa Street, Suite 150
Honolulu, Hawaii 96819-4441

Dear Ms. Cruz Churma:

SUBJECT: Consuelo Subdivision-Pre-assessment Consultation on the Environmental Assessment, Waianae, Oahu TMK: 8-5-003: 020

The Department of Education (DOE) has no comment for the early consultation on the Department of Hawaiian Home Lands (DHHL) Consuelo Subdivision in Waianae, Oahu. The DOE does not request school fair-share contributions from residential projects with less than 50 units. In addition, the DOE has no method for requesting a school fair-share condition as DHHL projects do not require land use approvals from the State Land Use Commission or the counties.

Thank you for the opportunity to review your plans. If you have any questions, please call Rae Loui, Assistant Superintendent of the Office of Business Services, at 586-3444 or Heidi Meeker of the Facilities and Support Services Branch at 733-4862.

Very truly yours,

Patricia Hamamoto
Superintendent

PH:hy

c: Rae Loui, OBS
Mamo Carreira, CAS, Campbell/Kapolei/Waianae Complex Area

LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
MARK K. ANDERSON
ACTING DEPUTY DIRECTOR
LAURA H. THIELEN
DIRECTOR
OFFICE OF PLANNING

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

OFFICE OF PLANNING
235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-10895

May 4, 2005

Ms. Rose Cruz Churma
EnviroServices & Training Center, LLC
2850 Paa Street, Suite 150
Honolulu, Hawaii 96819-4441

Dear Ms. Churma:

Subject: Preparation of Environmental Assessment
Consuelo Zobel Alger Foundation Subdivision
Tax Map Key No. 8-5-003:020, Waianae, Oahu

The Office received your request for comments on the preparation of an environmental assessment for the subject project. The 21-lot subdivision is being proposed for a 3.353-acre parcel donated to the Department of Hawaiian Home Lands (DHHL) by the Consuelo Alger Foundation. DHHL proposes to develop and construct a 21-unit, affordable single-family residential subdivision. The single family homes will be leased to DHHL lessees with household incomes at or below 100% of the Honolulu median household income.

The environmental assessment (EA) should discuss how the project will impact the price and affordability of other agricultural lands in the region, as well as potential impacts on infrastructure and services to the site, in particular, schools, traffic conditions, and wastewater treatment and disposal, and proposed mitigation measures to address any impacts. We encourage the developer to consider incorporating sustainable design and green building materials and practices in the design and construction of the project, to promote water and energy conservation and energy efficiency and improve environmental health for each unit and the project as a whole. The EA should also discuss stormwater management for the site and site design options for minimizing runoff from the site into nearby stream channels and coastal waters.

The EA should also discuss the reserved right of the Consuelo Foundation to annex the proposed subdivision to the Ke Aka Ho`ona affordable residential community across Plantation Road from the project site.

Thank you for notifying the Office of the proposed EA and for allowing us to comment. Please contact Ruby Edwards, (808) 587-2817, if you have any questions or comments.

Sincerely,

Laura H. Thielen
Director
Office of Planning

LINDA LINGLE
GOVERNOR
THEODORE E. LIU
DIRECTOR
MARK K. ANDERSON
ACTING DEPUTY DIRECTOR

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

Strategic Industries Division
235 South Beretania Street, Leiopapa A Kamehameha Bldg., 5th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804
Web site: www.hawaii.gov/dbedt/ert
Telephone: (808) 587-3807
Fax: (808) 587-3820

March 31, 2005

Ms. Rose Cruz Churma
EnviroServices & Training Center
2850 Pa'a Street, Suite 150
Honolulu, Hawaii 96819-4441

Dear Ms. Churma:

Re: Letter of Consultation
Consuelo Subdivision
TMK: 8-5-003:020
Waianae, Oahu

In response to your March 18, 2005, notice, thank you for the opportunity to participate in the pre-assessment consultation process for the Environmental Assessment for subject project We would like to call your attention to: (l) State energy conservation goals, (2) energy saving design practices and technologies, and (3) recycling and recycled-content products.

1. **State energy conservation goals.** Project buildings, activities, and site grounds should be designed with energy saving considerations. The mandate for such consideration is found in Chapter 344, HRS ("State Environmental Policy") and Chapter 226 ("Hawaii State Planning Act"). In particular, we would like to call to your attention HRS 226 18(c)(4) which includes a State objective of promoting all cost-effective energy conservation through adoption of energy-efficient practices and technologies.

   Applicable portions of Act 77, SLH 2002, relating to energy resources, should be addressed. In addition, please refer to Administrative Directive No. 98-03 that governs the use of solar water heating systems in State facilities. We also recommend that you consider the City and County of Honolulu Energy Code early on in your project.

2. **Energy saving design practices and technologies.** We recommend that energy efficient design practices and technologies be specifically addressed. Energy efficiency is improved with effective building location, orientation and massing, and the placement of vegetation for shade or wind protection.

3. **Recycling and recycled-content products.**
   - Develop a job-site recycling plan for construction and recycle as much construction and demolition waste as possible;
   - Incorporate provisions for recycling into the project – a collection system and space for bins for recyclables; and
   - Specify and use products with recycled content such as: steel, concrete aggregate fill, drywall, carpet and glass tile.

We are enclosing a copy of our *Field Guide for Energy Performance, Comfort, and Value in Hawaii Homes* for your information. We would also like to refer you to the sustainability guidelines at http://www.hawaii.gov/dbedt/ert/rebuild/pdfs/momisustainable.pdf.

If you need clarification of any of the above, please do not hesitate to contact me.

Sincerely,

Maurice H. Kaya
Chief Technology Officer

enclosure

LINDA LINGLE
GOVERNOR

RODNEY K. HARAGA
DIRECTOR

Deputy Directors
BRUCE Y. MATSUI
BARRY FUKUNAGA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

STP 8.1684

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

April 4, 2005

Ms. Rose Cruz Churma
EnviroServices & Training Center, LLC
2850 Paa Street, Suite 150
Honolulu, Hawaii 96819-4441

Dear Ms. Churma:

Subject: Consuelo Subdivision
Environmental Assessment
Letter of Consultation
TMK: 8-5-003: 020

Thank you for your transmittal requesting our review of the subject project.

The proposed project will not impact our State transportation facilities.

We appreciate the opportunity to provide comments.

Very truly yours,

RODNEY K. HARAGA
Director of Transportation

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EPO

July 1, 2004

To: Persons Requesting Department of Health Comments on Land Use Documents

From: June F. Harrigan-Lum, Manager
Environmental Planning Office

Our land use review coordinator position will be vacant beginning July 1, 2004. We will be filling this position as soon as possible. In the meantime, starting July 1, 2004, the Environmental Planning Office (EPO) will not be accepting any land use documents for coordinated replies.

If you would like to request to have staff in a specific branch or office to comment on your proposal, you are welcome to contact the staff directly. If a document has already been received by EPO and you wish to have us send it to a specific branch, you may call 586-4337 and ask for the clerical staff to send it to the appropriate branch. Please describe the document and the date of your cover letter.

You may call the above number and check with the clerical staff to see when coordinated responses from this office will resume.

Thank you for your cooperation and patience in this matter.

Enclosure

C: DDEH

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 523-4564 • Fax: (808) 523-4567
Website: www.honolulu.gov

MUFI HANNEMANN
MAYOR

WAYNE M. HASHIRO, P.E.
DIRECTOR

EUGENE C. LEE, P.E.
DEPUTY DIRECTOR

99274

April 20, 2005

RECEIVED
APR 21 12 07 PM '05
DIV. OF LAND SURVEY AND ACQUISITION

TO: THOMAS T. MIYATA, CHIEF
LAND DIVISION

FROM: CLIFFORD LAU, CHIEF
FACILITIES DIVISION

SUBJECT: ENVIRONMENTAL ASSESSMENT
LETTER OF CONSULTATION
CONSUELO SUBDIVISION, WAIANAE, OAHU
TAX MAP KEY 8-5-003:020

This is in reply to your memorandum of March 29, 2005 concerning the subject subdivision.

The State Department of Hawaiian Home Lands (DHHL) is exempt from having to comply with the City's Park Dedication Rules and Regulations. However, the DHHL has provided the City with long-term leases on the DHHL's land for development of parks in certain areas of the island where their beneficiaries typically have homes, such as in the Waianae and Waimanalo areas.

Should there be any questions, please contact Terry Hildebrand at extension 4696.

TH:ei

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 523-4564 • Fax: (808) 523-4567
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MUFI HANNEMANN
MAYOR

WAYNE M. HASHIRO, P.E.
DIRECTOR

EUGENE C. LEE, P.E.
DEPUTY DIRECTOR

LA 05-193.JU

April 26 2005

Ms. Rose Cruz Churma
EnviroServices & Training Center, LLC
2850 Paa Street, Suite 150
Honolulu, Hawaii 96819-4441

Dear Ms. Churma:

Subject: Environmental Assessment, Letter of Consultation
Consuelo Subdivision, Waianae, Oahu
Tax Map Key: 8-5-003:020

This is in reply to your letter of March 18, 2005, requesting comments on the subject subdivision.

We have completed our review and have no objections to the proposed subdivision. Please refer to the attached comments from our Wastewater and Facilities Divisions.

You can call Manny Sales, Sr., of the Land Division at 527-5304 if you have any questions.

Very truly yours,

For WAYNE M. HASHIRO, P. E.
Director

WMH:ju
Attach.

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 523-4564 • Fax: (808) 523-4567
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MUFI HANNEMANN
MAYOR

WAYNE M. HASHIRO, P.E.
ACTING DIRECTOR

EUGENE C. LEE, P.E.
DEPUTY DIRECTOR

WW.P 05-0122

March 29, 2005

MEMORANDUM

TO: MR. THOMAS T. MIYATA, CHIEF
LAND DIVISION

FROM: ELDON G. FRANKLIN, CHIEF
WASTEWATER DIVISION

SUBJECT: ENVIRONMENTAL ASSESSMENT, LETTER OF CONSULTATION
CONSUELO SUBDIVISION, WAIANAE, OAHU
TAX MAP KEY NO. 8-5-003: 020

Wastewater Division has no objections to the proposed subdivision of the subject property into 21 house lots. A sewer connection application should be submitted to the Department of Planning and Permitting for their review.

If there are any questions, please call Jay Hamai at extension 5003.

DEPARTMENT OF FACILITY MAINTENANCE
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 215, KAPOLEI, HAWAII 96707
TELEPHONE : (808) 692-5054 FAX: (808) 692-5857
Website: www.honolulu.gov

MUFI HANNEMANN
MAYOR

LAVERNE HIGA, P.E.
ACTING DIRECTOR AND CHIEF ENGINEER

GEORGE K. MIYAMOTO
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 05-290

April 6, 2005

Ms. Rose Cruz Churma
EnviroServices & Training Center, LLC
2850 Paa Street, Suite 150
Honolulu, Hawaii 96819-4441

Dear Ms. Churma:

Subject: **Environmental Assessment, Letter of Consultation**
Consuelo Subdivision, TMK: 8-5-003:020
85-576B Waianae Valley Road, Waianae, Oahu

Thank you for the opportunity to review and comment on the pre-assessment for the subject Department of Hawaiian Homelands residential subdivision project.

We have no comments to make at this time.

Should you have any questions, please call Charles Pignataro of our Division of Road Maintenance, at 484-7697.

Very truly yours,

Laverne Higa

LAVERNE HIGA, P.E.
Acting Director and Chief Engineer

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4432 • FAX: (808) 527-6743
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

HENRY ENG, FAICP
DIRECTOR

DAVID K. TANOUE
DEPUTY DIRECTOR

2005/ELOG-666 (DW)

April 22, 2005

Ms. Rose Cruz Churma
EnviroServices & Training Center, LLC
2850 Paa Street, Suite 150
Honolulu, Hawaii 96819-4441

Dear Ms. Cruz Churma:

Environmental Assessment Pre-Consultation for
Consuelo Subdivision
TMK: 8-5-003:020 in Waianae, Oahu, Hawaii

Thank you for the opportunity to review the summary information describing the proposal by the State Department of Hawaiian Home Lands (DHHL) to subdivide the 3.35-acre parcel into 21 house lots, install the infrastructure necessary to provide access and utility services, and construct affordable (i.e., leased to households with incomes at or below 100 percent of the Honolulu median household income) single-family homes on these parcels. We offer the following comments for your review and consideration for the Draft EA report:

1. The property is located within the State Land Use Agricultural District and the AG-2 General Agricultural District. It is not clear if the residential use proposed by the DHHL contravenes the State Land Use Law (Chapter 205, Hawaii Revised Statutes (HRS)). The proposal would clearly not be permitted by the City's Land Use Ordinance (Chapter 21, Revised Ordinances of Honolulu (ROH) 1990).

   - HRS Section 205-4.5(a)(4) permits farm dwellings (defined as "a single-family dwelling located on and used in connection with a farm . . . or where agricultural activity provides income to the family occupying the dwelling") on State Agricultural District lands with soils classified with an overall (master) productivity rating of Class A or B. Construction of single-family dwellings on lots that existed before June 4, 1976 is also allowed in those same areas. Residential uses are otherwise prohibited. The project summary information provided did not include any information on the site's soil productivity rating, and the 21-lot subdivision has yet to be created. The DHHL should ensure that its proposal complies with the State Land Use Law before it proceeds further.

   - The Land Use Ordinance (LUO) does not permit single-family dwellings in the AG-2 General Agricultural District (see ROH Table 21-3 under "Dwellings and Lodgings"). Only 1 farm dwelling (defined by the LUO as "a dwelling located on and used in connection with a farm where agricultural activity provides income to the family occupying the dwelling") would be allowed on a lot of this size (see ROH Table 21-3.1 and ROH Section 21-5.250(a)).

     According to information provided, the subject parcel was donated by the Consuelo Zobel Alger Foundation to the DHHL. As such, the DHHL must first provide us with a letter specifically stating which City requirements and regulations the proposed project is exempt from and the legal basis for requesting the exemptions.

2. Although the proposed project site may be exempt from City zoning requirements, the Draft EA should describe how the proposed project is consistent with the land use and zoning of neighboring properties.

3. The Draft EA should confirm ownership of the segment of Plantation Road bordering the subject parcel. The Department of Transportation Services W-2 Road Widening map shows a street setback of five feet along Plantation Road.

4. The Draft EA should state that Hoopuli Road is privately-owned and if lots in the proposed subdivision would have access from this roadway.

5. The proposed project is located within 500 feet of the confluence of Kawiwi and Kaupuni Streams. The Draft EA should indicate if the proposed project will negatively impact the streams and what mitigative measures, if any, are needed.

6. The Draft EA should address infrastructure needs of the proposed project and identify mitigative measures, if needed. Assessments should be made of:

   - Traffic impacts on surrounding streets and needed traffic improvements (include a traffic impact analysis report and consult with DPP Traffic Review Branch).

   - Grading/drainage related impacts.

   - Amount of wastewater generated from the proposed project and a discussion of the treatment facility to handle the added load. According to DPP Wastewater Branch, the municipal sewer system is adequate to accommodate the proposed 21 units. A Site Development Division Master Application for sewer connection is required to reserve sewer capacity for the subject project. This project is also liable for payment of a Wastewater System Facility Charge of $4,641 per unit.

- Water needs (potable and non-potable) and availability of water for the site (consult with the Board of Water Supply).
- Adequacy of water for fire protection purposes (consult with the Honolulu Fire Department).
- Solid waste generation and means of disposal (consult with the Environmental Services Department).
- Number of students to be generated by the proposed project and the existing and future capacity of local schools (consult with the State Department of Education).

7. The City emphasizes the importance of providing adequate connectivity within subdivisions, between adjacent subdivisions, and within the region. The Draft EA should describe how the proposed project addresses transportation connectivity issues within the subdivision and with the rest of the region.

   - Describe how the project site is connected to the Waianae Valley street network and if there are alternate routes to Farrington Highway from the site.
   - The block and street guidelines that the City now uses in assessing new subdivisions suggests that cul-de-sac streets should not be longer than 150 feet. The proposed layout shows two cul-de-sac streets with the mauka street around 300 feet long.

8. The Draft EA should include a discussion of how the proposed project is consistent and supportive with the vision, policies, principles, and guidelines contained in the Waianae Sustainable Communities Plan (SCP, July 2000), including the following:

   - Include a description of how the proposed project supports the vision statement for the region's future and The Waianae Concept, as stated in Chapter 2 of the Waianae SCP. The Waianae Concept articulates the long-range vision for the Waianae community and the Waianae District.
   - The Draft EA should state that the subject parcel is designated as Agriculture on the on Waianae SCP Land Use Map and is located outside of the Rural Community Boundary. The Draft EA should also state that the proposed project is contrary to the purpose of the Agriculture designation which is to protect important agricultural lands for their economic and open space values, and for their value in helping to give a region its identifiable character. It is the intent of the Waianae SCP that Agriculture lands be preserved in perpetuity for agricultural use. Furthermore, the Waianae SCP specifically states that residential subdivisions are not compatible uses on agricultural lands (Section 2.7.2 on page 2-19 and Section 3.1.2 on page 3-8).

   - The proposed project is not supportive of the general policies pertaining to large-scale open spaces (Section 3.2.2 on page 3-11). According to Section 3.2.2.2, the Draft EA should include a detailed analysis of the project's potential impact on open space and scenic beauty.
   - The proposed project is not supportive of the general policies pertaining to the preservation of agricultural lands (Section 3.7.2 on page 3-29). This section reiterates that new residential subdivisions should generally not be permitted in Agriculture designated areas.
   - The proposed project is not supportive of general policies pertaining to residential lands (Section 3.8.2 on page 3-36). Although we recognize DHHL's plans and right to develop residential subdivisions in rural areas of Waianae Valley, we encourage DHHL to concentrate home building within the Rural Community Boundary. The alternatives analysis section of the Draft EA should include an analysis of options that are supportive of the Waianae SCP, particularly as it pertains to the preservation of agricultural lands.
   - The Draft EA should state that the proposed project is located near the potential alignment of a Reliever Road that would roughly parallel Farrington Highway, and that would provide an efficient commuter route for the many Waianae coast residents (Section 4.1.2.4 on page 4-6 and on the Waianae SCP Land Use Map and Public Facilities Map).

9. The Draft EA should address concerns, questions, and issues pertaining to the proposed project that are raised by the Waianae community and the Waianae Neighborhood Board. If a presentation was made, please indicate if adjacent neighbors were given adequate notice.

10. The Draft EA should include a list of all required permits and approvals.

11. In terms of maps and photographs, the Draft EA should include:

   - Location map showing the proposed project in relation to surrounding properties, adjacent uses, and adjoining streets (an inset map should also be included, showing the proposed project on the island of Oahu).
   - Zoning map showing the zoning for adjacent properties.
   - Topographic map if the slope on the subject site is greater than ten percent.
   - Flood hazard map (a definition of Zone D should be included in the Draft EA narrative).

- Photos of the general characteristics of the site, street access, and uses on adjoining properties labeled and keyed to a site map.

Thank you for the opportunity to comment and we look forward to the draft assessment. Please call Dina Wong of my Community Action Plans Branch staff at 527-6073 if you have any questions.

Sincerely yours,

for HENRY ENG, FAICP
Director of Planning and Permitting

HE:lh
Doc: 365524

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
KAPOLEI HALE • 1000 ULUOHIA STREET, SUITE 309 • KAPOLEI, HAWAII 96707
TELEPHONE: (808) 692-5561 • FAX: (808) 692-5131 • INTERNET: www.honolulu.gov

MUFI HANNEMANN
MAYOR

LESTER K.C. CHANG
DIRECTOR

DANA TAKAHARA-DIAS
DEPUTY DIRECTOR

April 8, 2005

Ms. Rose Cruz Churma
EnviroServices & Training Center, LLC
2850 Paa Street, Suite 150
Honolulu, Hawaii 96819

Dear Ms. Churma:

Subject: Environmental Assessment, Pre-Assessment Consultation
Consuelo Subdivision, Waianae, Oahu
TMK 8-5-003: 020

Thank you for the opportunity to review and comment on the proposed 21 unit Consuelo Affordable Housing Subdivision.

The Department of Parks and Recreation has no comment on the project.

Should you have any questions, please contact Mr. John Reid, Planner, at 692-5454.

Sincerely,

LESTER K. C. CHANG
Director

LKCC:mk
(98898)

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96813 - AREA CODE (808) 529-3111
http://www.honolulupd.org
www.honolulu.gov

MUFI HANNEMANN
MAYOR

BOISSE P. CORREA
CHIEF

GLEN R. KAJIYAMA
PAUL D. PUTZULU
DEPUTY CHIEFS

OUR REFERENCE BS-KP

March 30, 2005

Ms. Rose Cruz Churma
EnviroServices & Training Center, LLC
2850 Paa Street, Suite 150
Honolulu, Hawaii 96819-4441

Dear Ms. Churma:

Thank you for the opportunity to review and comment on the Environmental Assessment for the Consuelo Subdivision project.

There may be a slight increase in calls for service due to the 21 new homes created by the project. Otherwise, this project should have no significant impact on the facilities or services of the Honolulu Police Department.

If there are any questions, please call Major Michael Tamashiro of District 8 at 692-4253 or Mr. Brandon Stone of the Executive Bureau at 529-3644.

Sincerely,

BOISSE P. CORREA
Chief of Police

By
KARL GODSEY
Assistant Chief of Police
Support Services Bureau

Serving and Protecting with Aloha

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4529 • FAX: (808) 523-4730 • INTERNET: www.co.honolulu.hi.us

MUFI HANNEMANN
MAYOR

EDWARD Y. HIRATA
DIRECTOR

TP3/05-98311R

April 6, 2005

Ms. Rose Cruz Churma
EnviroServices & Training Center, LLC
2850 Paa Street, Suite 150
Honolulu, Hawaii 96819-4441

Dear Ms. Churma:

Subject: Consuelo Subdivision

Thank you for your March 18, 2005 letter requesting our comments regarding the subject project. The following comments are offered for your consideration as you prepare its environmental assessment (EA):

1. The subdivision roads should meet the requirements of the City and County of Honolulu's roadway standards.

2. Adequate sight distance should be provided at the Plantation Road intersection.

We look forward to reviewing the EA. Should you have any questions regarding these comments, please contact Faith Miyamoto of the Transportation Planning Division at 527-6976.

Sincerely,

EDWARD Y. HIRATA
Director

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
3375 KOAPAKA STREET, SUITE H425 • HONOLULU, HAWAII 96819-1869
TELEPHONE: (808) 831-7761 • FAX: (808) 831-7750 • INTERNET: www.honolulufire.org

MUFI HANNEMANN
MAYOR

ATTILIO K. LEONARDI
FIRE CHIEF

JOHN CLARK
DEPUTY FIRE CHIEF

March 30, 2005

Ms. Rose Cruz Churma
EnviroServices & Training Center, LLC
2850 Paa Street, Suite 150
Honolulu, Hawaii 96819-4441

Subject: Draft Environmental Assessment
Consuelo Subdivision
85-576 B Waianae Valley Road
Waianae, Oahu, Hawaii
Tax Map Key: 8-5-003: 020

We received your letter dated March 18, 2005, requesting our review and comments on the above-mentioned project.

The Honolulu Fire Department (HFD) requires that the following be complied with:

1. Provide a fire apparatus access road for every facility, building, or portion of a building hereafter constructed or moved into or within the jurisdiction when any portion of the facility or any portion of an exterior wall of the first story of the building is located more than 150 feet (45 720 mm) from fire apparatus access as measured by an approved route around the exterior of the building or facility. (1997 Uniform Fire Code, Section 902.2.1)

2. Provide a water supply, approved by the county, capable of supplying the required fire flow for fire protection to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed or moved into or within the county.

   On-site fire hydrants and mains capable of supplying the required fire flow shall be provided when any portion of the facility or building is in excess of the 150 feet (45 720 mm) from a water supply on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building. (1997 Uniform Fire Code, Section 903.2 as amended)

3. Provide civil drawings to the HFD for review and approval.

Should you have any questions, please call Battalion Chief Lloyd Rogers of our Fire Prevention Bureau at 831-7778.

Attilio K. Leonardi

ATTILIO K. LEONARDI
Fire Chief

AKL/SK:bh

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

April 1, 2005

Ms. Rose Churma
EnviroServices & Training Center, LLC
2850 Paa Street
Honolulu, Hawaii 96819-4441

Dear Ms. Churma

Subject: Your Letter Dated March 18, 2005 on the Environmental Assessment
For the Consuelo Subdivision, TMK: 8-5-003: 020 Plantation Road

Thank you for the opportunity to comment on the proposed project.

The existing water system is presently adequate to accommodate the proposed twenty-one single family unit housing project.

The development plans requires approval by the Department of Planning and Permitting (DPP) before the Board of Water Supply processes the building permit on the proposed development. The availability of water will be confirmed when the building permit is approved.

When water is made available, the applicant will be required to pay our Water System Facilities Charge for resource development, transmission and daily storage.

If you have any questions, please contact Joseph Kaakua at 748-5442.

Very truly yours,

K. Shida

KEITH S. SHIDA
Principal Executive
Customer Care Division

Water for Life . . . Ka Wai Ola

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

GEN-6 (EIS/EA)

April 7, 2005

Ms. Rose Cruz Churma
EnviroServices & Training Center, LLC
2850 Paa Street - Suite 150
Honolulu, HI 96819-4441

Dear Ms. Churma:

Re: Consuelo Subdivision
Waianae, Oahu
TMK: 8-05-003:020

Thank you for the opportunity to comment on the above-referenced project. We reviewed the information provided in your March 18, 2005 letter of consultation and have no comments at this time.

HECO reserves the opportunity to further comment on the protection of existing powerlines and electric power facilities that may be affected by the project until construction plans are finalized.

Again, thank you for the opportunity to comment on this draft EA.

Sincerely,

Kirk S. Tomita

Kirk S. Tomita
Senior Environmental Scientist

cc: Ms. Genevieve Salmonson (OEQC)

Impact of Development on TMK: 8-5-003 : 020 by Consuelo Zobel Alger Foundation

1. Drainage: Paving of roadway, driveways, sidewalks, roofs reduce surface area for absorption of rain water. Topography suggests that the water will go downhill towards Umebayashi lot. Lots are in a known floodplain that has seen two major floods since 1950s.
2. Privacy: Purpose of moving to Waianae was to own land in area where farming was possible and to have elbow room where neighbors were not too close to each other. With dense development in adjoining lot, that is compromised.
3. Noise: With 21 units, and an average of 4 per unit, noise level to be substantially increased. Current Umebayashi house close to lot line and would expect to have substantial increase in automobile, people and pet noise.
4. Traffic: More units indicate an increase of traffic and hazard to safety. Mrs. Umebayashi does daily walks around neighborhood.
5. Security: Frequent break ins to Umebayashi house, more low income tenants causes fear that crime may increase in neighborhood.
6. Animal Control: Stray animals are able to go through current fence. Problems with stray dogs, cats, chickens, etc moving from other lots to Umebayashi lot.

Mitigation

Umebayashi family would prefer large fence made of masonry 8-10 feet high along common lot line to separate properties and reduce impact in the following ways:

1. Drainage: Masonry fence would prevent surface water from coming into Umebayashi lot in the event of heavy rains or flooding. New development should be graded to drain towards Waianae Valley Road and away from Umebayashi lot.
2. Privacy: Umebayashi family would not have to deal with many neighbors. Mrs. Umebayashi sensitive to strangers. No visual pollution of houses & people. Family prefers natural setting and view. Would prefer natural material such as lava rock. Ideally, would prefer lots 5, 6 & 7 be common area without homes so as not to intrude onto existing Umebayashi family's lifestyle and privacy.
3. Noise: A wall made of substantial materials would help keep noise contained and away from Umebayashi lot.
4. Traffic: No impact from fence
5. Security: Break ins occur on common fence. It is thought that burglars enter from Valley Road, cross lot and enter through barb wire fence to avoid detection. With a substantial fence, this route would not be possible.
6. Animal control: Stray animals could not enter from common lot line.

Summary

It is not the intent for this to be in any way critical of Consuelo's intent to provide low income housing for it's beneficiaries. It is rather a recommendation to reduce the impact of a very dense residential development on what was formerly agricultural land and changing its use which will affect the existing common neighbor, the Umebayashi family. It is hoped the Foundation will be good neighbors and provide a whole hearted effort to reduce the impact the development would have on the rural lifestyle that our family has enjoyed for almost 50 years. It is hoped we can continue that lifestyle and co-exist with the intent of the new development.

Keijiro Umebayashi March 28, 2005

Keijiro Umebayashi, Date

DEPARTMENT OF HAWAIIAN HOME LANDS (DHHL) SUBDIVISION – Amy Arakaki, from the Department of Hawaiian Homelands, reported that DHHL is developing 21 affordable homes on a 3.3 acre parcel at 85-576 B Waianae Valley Road. The parcel was donated by the Consuelo Zobel Alger Foundation. Access to the cul-de-sac development will be via Plantation Road. A Draft Environmental Assessment is in progress. Development of infrastructure will follow with completion of the homes in May 2008.

Questions, answers and comments followed:

1. The lots will be approximately 5,000 sq. ft. in size.
2. The project's roadway will be built to City standards, approximately 40 feet wide. Plans are to limit on-street parking.
3. Persons eligible for this project have to be on the DHHL waiting list and meet financial eligibility requirements which follow federal Department of Housing and Urban Development regulations. A dollar figure on these requirements could not be provided at this time.
4. Concern was expressed about access via Plantation Road, which has an ongoing speeding problem. It was suggested that traffic calming be done, but cannot be done by DHHL as Plantation Road is privately-owned.
5. It was suggested that this parcel be used for agricultural instead of housing.
6. The Environmental Assessment will consider alternate uses.
7. The project will be done in three phases, first – soil stabilization, including grading, to be completed this year, second – development of road and utilities, third – development of homes.
8. Sandwich Islands Communications will be connecting this project to its fiber optic cable network connecting other DHHL properties.
9. There is a need for development of affordable housing.
10. Some of the homes may be self-help homes with homeowners contributing sweat equity in the construction.
11. This area is plagued by dumping, particularly when the nearby Waimanalo Gulch Landfill is closed. Addressing this problem was suggested.
12. There is no agreement for residents of this project to use the Consuelo Foundation Community Center. It was noted there are safety concerns for residents to get to the Center.
13. Concern was expressed about a statement in material distributed that states "...Consuelo has reserved the right to annex the proposed subdivision to this existing residential community subject to the Declaration of Covenants Conditions and Restriction of Ke Aka Ho'ona..."

    Larry Sumida, DHHL, reported that this land will always be under DHHL ownership, and will provide documentation to the Board to this effect. He noted the land has been deeded to DHHL and cannot go back to the Consuelo Foundation, and that the land was acquired for the development of housing.
14. It was noted that the land is presently zoned for agriculture and that DHHL can rezone the land to residential without any State or City action.

Teruya moved and Pomaikai seconded that the Board support the DHHL presentation with an amendment to clarify the statement that the land not go back to the Consuelo Foundation and stay with DHHL. Discussion followed. **The motion carried, 13-1.** Manaku opposed the motion.

LINDA LINGLE
GOVERNOR OF HAWAII

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: oeqc@health.state.hi.us

December 6, 2005

Mr. Micah Kane, Director
Ms. Amy Arakaki
Department of Hawaiian Home Lands – State of Hawai'i
1099 Alakea Street, Suite 1230
Honolulu, Hawai'i 96813

Ms. Rose Cruz Churma
EnviroServices & Training Center
2850 Pa'a Street, Suite 150
Honolulu, Hawai'i 96819-4441

Dear Mr. Kane and Mesdames Arakaki and Churma:

The Office of Environmental Quality Control has reviewed the draft environmental assessment for the Consuelo Subdivision, Tax Map Key (1st) 8-5-003, parcel 20, situated in the judicial district of Wai'anae. We offer the following comment for your consideration and response.

Correction for Spelling of Street Name: Keanaki Street is probably misspelled and should be "Kaneaki."

Landscaping with Xerophagic Native and Indigenous Plants: Please consider landscaping with native and indigineous xerophagic (drought-tolerant) plants. Please refer to our Internet website at http://www.state.hi.us/health/oeqc/index.html for more information.

Thank you for the opportunity to comment. If there are any questions, or if you would like to discuss this matter further, please call Mr. Leslie Segundo, Environmental Health Specialist, at (808) 586-4185.

Sincerely,

GENEVIEVE SALMONSON
Director