William P. Kenoi
Mayor

FEB 23 2009

Stephen J. Arnett
Housing Administrator

County of Hawaii

OFFICE OF HOUSING AND COMMUNITY DEVELOPMENT
50 Wailuku Drive • Hilo, Hawai'i 96720-2456
V/TT (808) 961-8379 • FAX (808) 961-8685

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February 5, 2009

Katherine Kealoha, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, HI 96813

SUBJECT: State of Hawaii/Federal Environmental Assessment for Kaloko Housing Program (TMK: 3rd: 7-3-009:055)

The Office of Housing and Community Development, County of Hawai'i, has reviewed the comments received during the 30-day comment period on the draft environmental assessment that ended on December 8, 2008. Our agency has determined that the project will not have significant environmental effects and has issued a Finding of No Significant Impact (FONSI). Please publish notice of availability for this project in the next available edition of the *Environmental Notice.*
We have enclosed the following:

- Two copies of the Final EA
- A CD containing the pdf files for the EA and a WORD file with the OEQC transmittal materials, including the project summary
- A completed OEQC Environmental Notice Publication Form, with the project summary, a distribution list for the Final EA, and a sample "Dear Participant" letter to be finalized when publication date is known.

Please contact Chris Fujiuchi in our office at 961-8379 if you have any questions. Thank you.

for Stephen J. Arnett
Housing Administrator

Att: Two (2) copies of Final EA
One (1) copy CD
OEQC Transmittal Material

c: Ron Terry, Ph.D, Project Environmental Consultant (w/o attach)

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EQUAL HOUSING OPPORTUNITY
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FINAL ENVIRONMENTAL ASSESSMENT

KALOKO HOUSING PROGRAM

TMK (3rd): 7-3-009:055
North Kona District, Hawai‘i Island, State of Hawai‘i

February 2009

Prepared for:

County of Hawai‘i
Office of Housing and Community Development
50 Wailuku Drive
Hilo, Hawai‘i 96720-2456

FINAL ENVIRONMENTAL ASSESSMENT

KALOKO HOUSING PROGRAM

TMK (3rd): 7-3-009:055
North Kona District, Island of Hawai‘i, State of Hawai‘i

PROPOSING/APPROVING AGENCY:

County of Hawai‘i
Office of Housing and Community Development
50 Wailuku Drive
Hilo, Hawai‘i 96720-2456

CONSULTANT:

Geometrician Associates LLC
PO Box 396
Hilo, Hawai‘i 96721

CLASS OF ACTION:

Use of County Funds
Use of County Lands

This document is prepared pursuant to:

The Hawai‘i Environmental Policy Act,
Chapter 343, Hawai‘i Revised Statutes (HRS), and
Title 11, Chapter 200, Hawai‘i Department of Health Administrative Rules (HAR).

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SUMMARY

The County of Hawai‘i Office of Housing and Community Development (OHCD) proposes to develop the Kaloko Housing Program (KHP) facility on a County-owned, vacant, 8.016-acre property on Hina Lani Drive adjacent to the Kaloko Light Industrial Park. Partnering with the business community, organizations and community, the KHP has been designed to serve the needs of working families in West Hawai‘i. The KHP facility will include approximately 24 transitional housing units to provide immediate shelter for homeless working families; approximately 72 affordable rental units for long term housing for working families; and a warehouse to facilitate operations of The Food Basket and Habitat for Humanity, which will provide a unique opportunity for job readiness and placement on-site. A portion of the parcel will also be used for a self-contained wastewater treatment plant for wastewater generated onsite. Access will be from a driveway on an extension of Maiau Street, which is currently being built. Current plans call for the County to lease the KHP to Catholic Charities Housing Development Corporation (CCHDC) for management and daily operation of the facility. The CCHDC will be encouraged to provide a tailored service array that will address such needs as life skills training, budgeting and credit counseling, job training and placement, educational referrals and non-profit and community-based collaborative. Units will be secure, yet user-friendly, integrating private quarters for families with communal uses such as classrooms and recreational facilities, and offering office space for support service providers.

The design is sensitive to the particular environment of Kaloko and seeks to minimize water usage as well as stormwater and wastewater pollution. Although not legally required, the project will also preserve an archaeological site and rare plants found within a lava tube and adjacent lava tube collapse feature. Local traffic impacts will be mitigated by the design of the driveway and turn lanes on Maiau Street.

PART 1: PROJECT PURPOSE AND NEED, DESCRIPTION AND ENVIRONMENTAL ASSESSMENT PROCESS

1.1 Project Location, Purpose and Need, and Description

Project Location

The County of Hawai‘i Office of Housing and Community Development (OHCD) proposes to develop the Kaloko Housing Program (KHP) facility on a County-owned, 8.016-acre parcel (Tax Map Key: 3rd.- 7-3-009:055) located along Hina Lani Drive in the North Kona District of the County of Hawai‘i (Figures 1-4). The project site is located adjacent to the planned Phase III and IV Kaloko Light Industrial Park and is presently vacant and unused.

Purpose and Need

The OHCD is an agency operating under the direct supervision of the Mayor and is responsible for the planning, administration and monitoring of assigned federal grants (e.g., U.S. Department of Housing and Urban Development (HUD)) and other programs. The OHCD also manages assigned leases and lands.

The goal of the OHCD is to provide for the development of viable communities in Hawai‘i County by providing decent housing, suitable living environments and the expansion of economic opportunities.

The KHP will provide transitional and serviced-enriched, affordable housing inventory in West Hawai‘i. A comprehensive housing program for homeless families has been a major County challenge for over 20 years. The County has worked with the community to implement programs that address the needs of the housing continuum – including The Friendly Place in the Old Industrial Area of Kailua-Kona (donated by Stanford Carr Development), which provides essential daytime services to the homeless population. A 30-bed overnight shelter funded by the County, State and the U.S Department of Housing and Urban Development (currently in the environmental review stage) will address emergency housing needs of homeless individuals. While the County is utilizing $40 million of its limited resources to provide permanent affordable housing (rental and for-sale) in Waikoloa, the KHP remains the critically-needed missing piece of this housing continuum. Partnering with the business community, organizations and community members composing the Community Alliance Partners (CAP), the KHP has been designed to serve the needs of working families in West Hawai‘i.

Figure 1: Project Location

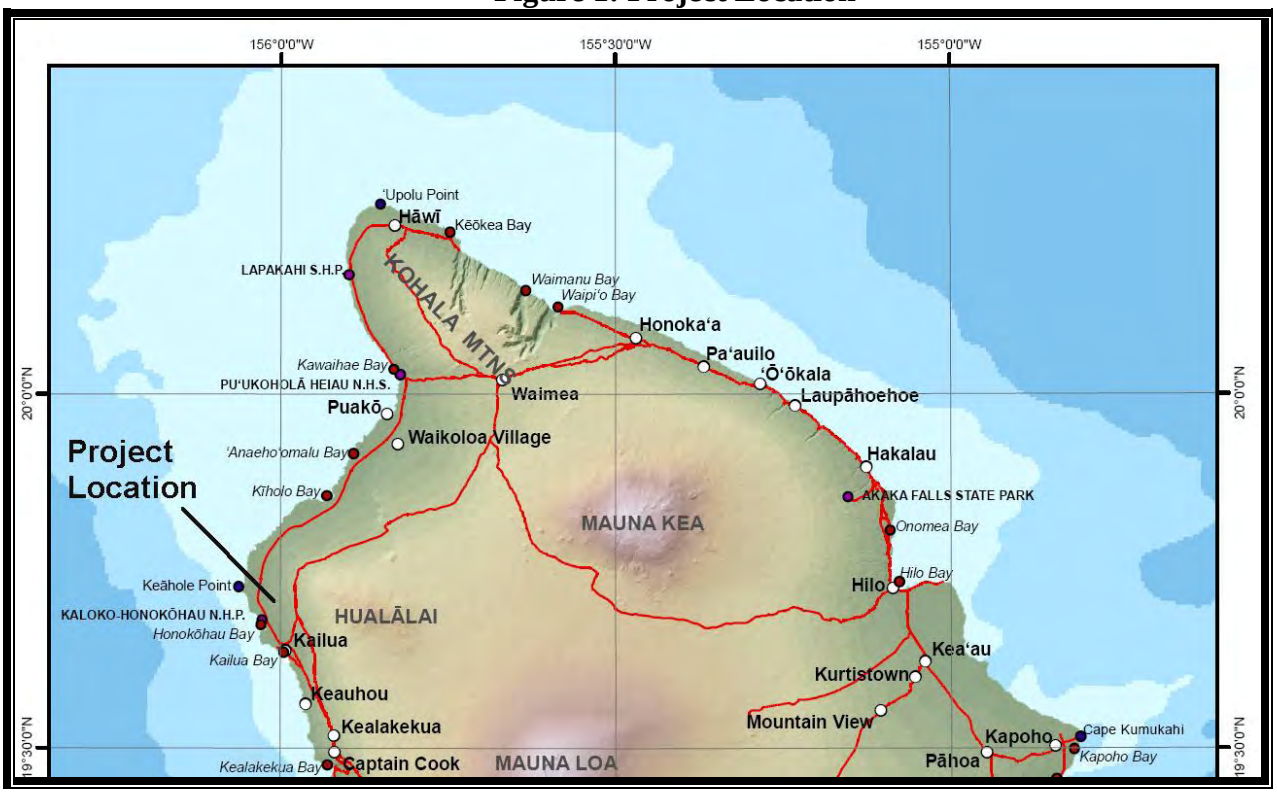


Figure 2: Project Site Photograph (looking mauka through site)

Project Description

The KHP facility will include approximately 24 transitional housing units, approximately 72 affordable rental units and a warehouse to facilitate operations of The Food Basket and Habitat for Humanity. A portion of the parcel will also be used for a self-contained wastewater treatment plant for wastewater generated onsite. Although not legally required, parts of a geologic feature consisting of a collapsed lava tube channel will be set aside to preserve an archaeological site and rare native plants. Access will be from a driveway on an extension of Maiau Street, which is currently being built. The design of the facility has not yet been finalized. Figure 4 is a conceptual diagram of the program elements on the property.

Transitional housing units provide immediate shelter for homeless working families. The KHP will replace the current 24-unit transitional housing facility Kawaihae Transitional Housing Program (KTHP) that is currently the only housing program of its kind that serves homeless persons in West Hawai‘i. Closure of the KTHP is scheduled for June 2009.

Figure 3: TMK Map

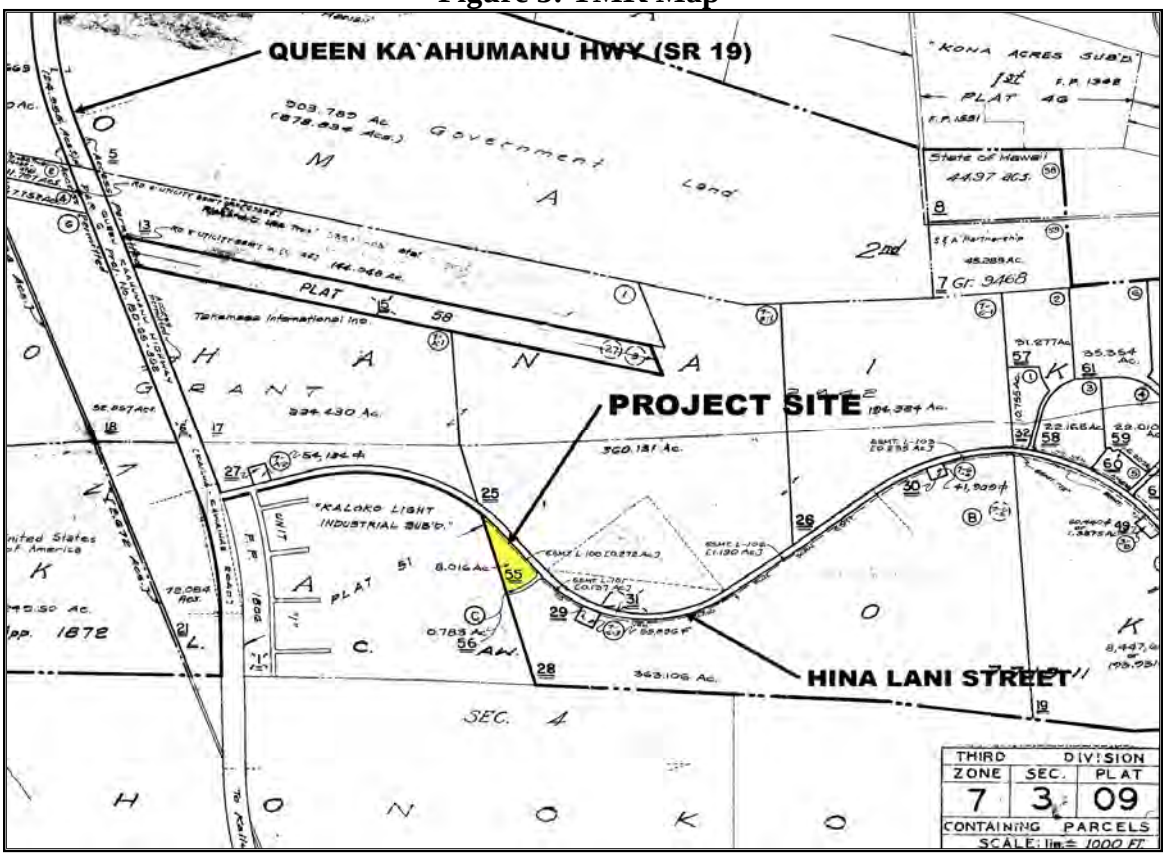
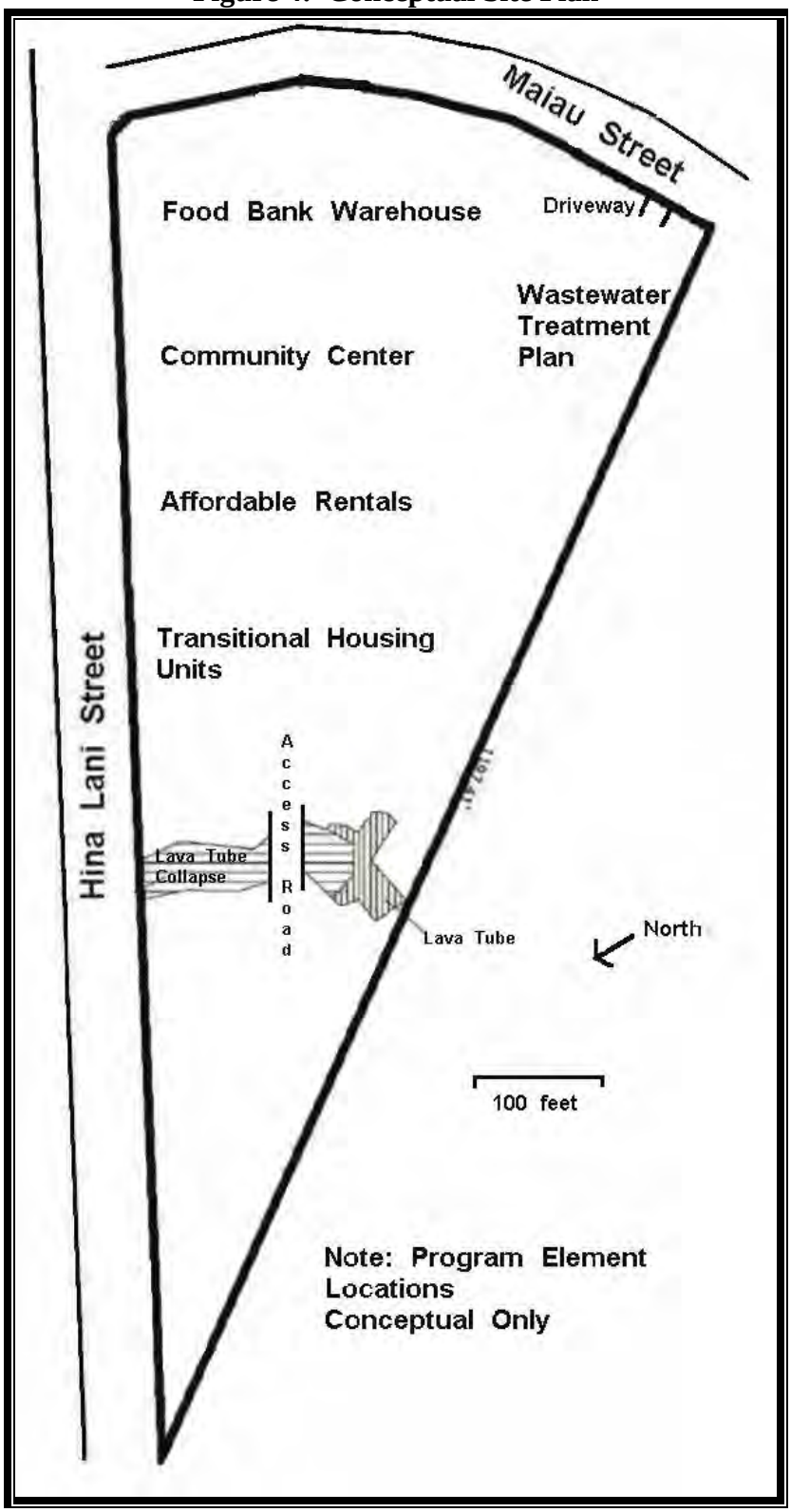


Figure 4: Conceptual Site Plan



The affordable rental units will provide long term housing opportunities for working families in need of affordable rental housing.

The proposed warehouse will be operated by Habitat for Humanity-West Hawai‘i and The Food Basket and will provide a unique opportunity for job readiness and placement on-site. This essential component will enhance the sustainability of the program, strengthening the ability of participants to secure not only long-term housing but also training and employment resources.

Current plans call for the County to lease the KHP to Catholic Charities Housing Development Corporation (CCHDC) for management and daily operation of the facility. The CCHDC will be encouraged to provide a tailored service array that will address such needs as life skills training, budgeting and credit counseling, job training and placement, educational referrals and non-profit and community-based collaborative. A combination of housing and customized services will create an uplifting environment that doesn’t overpower the residents, who may be afflicted by any of the social and/or economic stresses of homelessness. Units will be secure, yet user-friendly, integrating private quarters for families with communal uses such as classrooms and recreational facilities, and offering office space for support service providers.

The facility cost is preliminarily estimated at $12,000,000. Construction will begin as soon as necessary funding and permits are obtained and is expected to require between one and two years to complete. The County has secured County bond funds for the transitional phase of the project, and is awaiting release of Capital Improvement Project funds from the State. For construction of the rental component of the project, the County is currently seeking federal funding sources, such as Community Development Block Grant, HOME Investment Partnership Program, Economic Development Initiative, and/or Neighborhood Stabilization Program funds. Appropriate environmental documentation will be developed for federal funding, if obtained.

1.2 Environmental Assessment Process

This Environmental Assessment (EA) process is being conducted in accordance with Chapter 343 of the Hawai‘i Revised Statutes (HRS). This law, along with its implementing regulations, Title 11, Chapter 200, of the Hawai‘i Administrative Rules (HAR), is the basis for the environmental impact process in the State of Hawai‘i. According to Chapter 343, an EA is prepared to determine impacts associated with an action, to develop mitigation measures for adverse impacts, and to determine whether any of the impacts are significant according to thirteen specific criteria. Part 4 of this document states the anticipated finding that no significant impacts are expected to occur; Part 5 lists each criterion and presents the preliminary conclusions for each made by the OHCD, the proposing agency. If, after considering comments to the Draft EA, OHCD concludes that, as anticipated, no significant impacts would be expected to occur, then OHCD will issue a Finding of No Significant Impact (FONSI), and the action will be permitted to occur. If the agency concludes that significant impacts are expected to occur as a result of the proposed action, then an Environmental Impact Statement (EIS) will be prepared.

1.3 Public Involvement and Agency Coordination

The following agencies and organizations were consulted in development of the environmental assessment.

Federal:

U.S. Fish and Wildlife Service
U.S. Army Corps of Engineers
Kaloko-Honokohau National Historical Park

State:

Department of Land and Natural Resources, Historic Preservation Division
Department of Health
` Office of Hawaiian Affairs, Honolulu and West Hawai‘i

County:

Planning Department
Public Works Department
Police Department
County Council

Private:

Sierra Club
Big Island Housing Foundation
Child and Family Services
Hawai‘i County Economic Opportunity Council
Hawai‘i Island Community Development Corporation
Salvation Army Family Outreach Services
Neighborhood Place of Kona
Na Po‘e Hoa ‘Aina
Kuakini Hawaiian Civic Club of Kona
Kona Hawaiian Civic Club
Kona Outdoor Circle
Catholic Charities
Edith Kanaka‘ole Foundation

Copies of communications received during early consultation are contained in Appendix 1a.

Appendix 1b contains written comments on the Draft EA and the responses to these comments. Various places in the EA have been modified to reflect input received in the comment letters; additional or modified non-procedural text is denoted by double underlines, as in this paragraph.

PART 2: ALTERNATIVES

2.1 No Action

Under the No Action Alternative, the Kaloko Housing Program would not be built. This alternative is considered highly undesirable by the OHCD because it would hinder the County's efforts to address the homeless crisis and provide transitional homeless housing and affordable rental housing in an area where it is critically needed.

2.2 Alternative Locations or Strategies

The property was acquired by the County during rezoning of Phases III and IV of the Kaloko Industrial Area specifically for use as affordable housing. Because the property is already owned by the County of Hawai‘i and is located in a highly suitable area, near the target population as well as shopping and employment areas, the proposed location is highly appropriate. As no alternative County-owned sites with similar purposes and attributes are available, and no major environmental impacts are associated with implementation of the proposed project at the proposed site, the OHCD has not identified alternative sites.

The option of relying fully on the private sector for affordable housing and transitional housing for homeless is not practical in the Kailua-Kona area, as evidenced by the extreme scarcity of such units in the market.

PART 3: ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION

Basic Geographic Setting

The parcel upon which the KHP facility would be constructed is referred to throughout this EA as the *project site*. The term *project area* is used to describe the general environs of Kaloko ahupuaʻa, and in some cases, the North Kona District.

The project site is located along Hina Lani Street (see Fig. 1), a two-lane, County roadway that serves as an arterial connector between the Queen Kaʻahumanu Highway (SR19) and the Mamalahoa Highway (SR190). The makai portion of Hina Lani has industrial and commercial land uses; farther mauka, there are residential subdivisions. The vegetation of the project area has been extensively modified by grazing animals and the introduction of non-native plants that now dominate the landscape, although a variety of native species still exist. Adjacent land is generally vacant and unused, but is planned for mixed industrial commercial uses, similar to the Kaloko Industrial Park, located about a half mile makai (west) of the project site. The average maximum daily temperature is approximately 83 degrees F., with an average minimum of 67 degrees, and annual rainfall averages approximately 25 inches (U.H. Hilo-Geography 1998:57).

3.1 Physical Environment

3.1.1 Geology, Soils and Geologic Hazards

Environmental Setting

Geologically, the project site is located on the lower flank of Hualalai volcano. The surface consists of lava flows of Hualalai volcanics series that erupted 1,500 to 5,000 years ago (Wolfe and Morris 1996). Two Hualalai lava flows of different ages surface the site; the southern portion of the site is covered by lava flows of age 1,500 to 3,000 years old while the remainder and majority of the site's area is surfaced by lava flows of age 3,000 to 5,000 years old. The project site soil is classified by the U.S. Natural Resources Conservation Service (formerly Soil Conservation Service) as both raw ʻaʻa (rLV) and pahoehoe (rLW) lava flows, having developed no soils (U.S. Soil Conservation Service 1973). The site is located 1.3 miles mauka (i.e., in this case, east) of the shoreline about 280 to 320 feet above mean sea level.

A common geologic feature known as a lava tube, which along most of its length is collapsed into a linear depression about 75 feet wide, is found on the northern portion of the site. The lava tube continues off-property to the northeast, where it has been studied by archaeologists, and presumably to the southwest, where it apparently crosses Hina Lani Street. The presence of this lava tube suggests that voids may exist elsewhere on the subject site.

The entire Big Island is subject to geologic hazards, especially lava flows and earthquakes. Volcanic hazard as assessed by the United States Geological Survey in this area of North Kona is

4 on a scale of ascending risk 9 to 1 (Heliker 1990:23). The high hazard risk is based on the fact that Hualalai has erupted in the historical period. Volcanic hazard zone 4 areas have had about 5% of land area covered by lava or ash flows since the year 1800, and are at lower risk than zone 2 areas because of their greater distances from recently active vents and/or because the local topography makes it less likely that flows will cover these areas. All of Hualalai, including the lower flanks, is considered volcanic hazard zone 4 because Hualalai is steeply sloping, with a relatively short distance from vents to the coast.

In terms of seismic risk, the entire Island of Hawai‘i is rated Zone 4 Seismic Hazard (*Uniform Building Code, 1997 Edition*, Figure 16-2). Zone 4 areas are at risk from major earthquake damage, especially to structures that are poorly designed or built. The project site does not appear to be subject to subsidence, landslides or other forms of mass wasting.

The *Detailed Land Classification – Island Of Hawai‘i* prepared by the University of Hawai‘i Land Study Bureau (LSB), evaluates the quality or productive capacity of certain lands on the Island for selected crops and overall suitability in agricultural use. A five-class productivity rating system was established with “A” representing the highest productivity and “E” the lowest. According to the study, the project site consists mostly of bare pahoehoe lava flows with no soil cover. The site is classified as “E”, or very poorly suited for agricultural productivity.

The *Agricultural Lands of Importance in the State of Hawai‘i* (ALISH), prepared by the State Department of Agriculture, classifies lands into three categories: 1) Prime Agricultural Land, 2) Unique Agricultural Land, and 3) Other Important Agricultural Land. The project site is not classified as Important Agricultural Land in any category under the ALISH system.

Impacts and Mitigation Measures

In general, geologic conditions do not appear at this time to impose any overriding constraints on the project, and the proposed facility is not imprudent to construct. Project design will account for soil properties and include geotechnical investigations to address the issues of lava tubes. All facilities will be built in conformance with the Uniform Building Code’s seismic standards. It is recognized the much of the surface of Hawai‘i Island is subject to eventual lava inundation, and facilities in places such as Kaloko face this risk. However, given the fact that nearly all of Kona faces this hazard, there are no alternative options that avoid these risks.

The No Action Alternative avoids all potential geologic hazards and risks.

3.1.2 Drainage, Water Features and Water Quality

Existing Environment

No stream poses a flooding hazard to the project site. The Flood Insurance Rate Map (FIRM) Panel 1551660707C for the project site is unprinted, indicating that it is located in Flood Zone X, located outside of the 100- or 500-year floodplain.

There are no fresh surface water bodies or waters of the U.S. in the immediate area. The project site is located approximately 1.3 miles mauka (i.e., in this case, east) of the shoreline and the water resources at Kaloko-Honokohau National Historical Park.

Kaloko-Honokōhau National Historical Park ("the National Park") has concerns about whether the sum of development in the surrounding area – which is the anchor area identified in the General Plan for most of the planned growth in North Kona, and which has a substantial number of new planned projects – could harm the ponds and coastal waters that form the National Park's resources (see letter of December 21, 2007 in Appendix 1a). Of particular importance are three issues: polluted runoff, inadequately treated wastewater, and groundwater withdrawal.

Notable resources at the National Park include Kaloko Fishpond, which is being restored for traditional and productive aquaculture use for human consumption; 'Ai'opio fishtrap, which is intensely utilized for fishing and traditional and customary cultural practices; 'Aimakapa fishpond and wetland, which is an important foraging and nesting habitat for the endangered Hawaiian Stilt and the endangered Hawaiian Coot, and overall important habitat for migratory waterfowl; and the general coastal waters, which are used by juvenile threatened green sea turtles and the endangered hawksbill sea turtle. The endangered Hawaiian monk seal is an occasional visitor to the National Park waters and rests on the shoreline. Endangered humpback whales are also seasonally seen. Brackish and saltwater ecosystems within and adjacent to the National Park are therefore important for the cultural landscape and cultural practices as well as habitat for native species, including endangered species.

Of primary relevance to the discussion of hydrological impacts from the Kaloko Housing Program are cumulative impacts of storm water and wastewater treatment. Also of concern is the issue of the use of potable water that has been withdrawn from local aquifers, as there is concern that even if the sustainable yield is not exceeded, there may be saltwater intrusion due to development's reduction of the flow of brackish ground water.

Construction-Phase Impacts and Mitigation Measures

Construction-phase impacts can produce uncontrolled excess sediment from soil erosion that may impact natural watercourses, water quality and flooding. Contaminants associated with heavy equipment and other sources during construction have the potential to impact surface water and groundwater if not mitigated effectively, although such potential in this site is limited because of the small scale of the project and the lack of surface water bodies. In order to minimize the potential for sedimentation and erosion of shoreline areas, the contractor shall perform all earthwork and grading in conformance with Chapter 10, Erosion and Sediment Control, Hawai'i County Code. Because the project will disturb more than one acre of surface, a National Pollutant Discharge Elimination System (NPDES) permit must be obtained by the contractor before the project commences. This permit requires the completion of a Storm Water Pollution Prevention Plan (SWPPP). In order to properly manage storm water runoff, the SWPPP will describe the emplacement of a number of best management practices (BMPs) for the project. These BMPs may include, but will not be limited to, the following:

- Minimization of soil loss and erosion by revegetation and stabilization of slopes and disturbed areas of soil, possibly using hydromulch, geotextiles, or binding substances, as soon as possible after working;
- Minimization of sediment loss by emplacement of structural controls possibly including silt fences, gravel bags, sediment ponds, check dams, and other barriers in order to retard and prevent the loss of sediment from the site;
- Minimizing disturbance of soil during periods of heavy rain;
- Phasing of the project in order to disturb a minimum necessary area of soil at a particular time;
- Application of protective covers to soil and material stockpiles;
- Construction and use of a stabilized construction vehicle entrance, with a designated vehicle wash area that discharges to a sediment pond;
- Washing of vehicles in the designated wash area before they egress the project site;
- Use of drip pans beneath vehicles not in use in order to trap vehicle fluids;
- Routine maintenance of BMPs by adequately trained personnel; and
- Cleanup and disposal at an approved site of significant leaks or spills, if they occur.

Operational Impacts and Mitigation Measures

No impacts to floodplains or streams will occur, as none are present in the area.

Despite the modest scale of the proposed development, in response to potential cumulative regional impacts to the aquifer, the National Park requested that the project undertake pollution filtration devices and other storm water runoff engineering designs similar to what has been required of large-scale developers in proceedings before the State Land Use Commission (see letter of December 12, 2007 in Appendix 1a).

Furthermore, they requested that the project construct dry sewer lines for eventual connection to the Kealakehe Wastewater Treatment Plan and that the project connect to the treatment plant at the time connection becomes available. In the interim, the National Park requested that the project install individual wastewater systems designed to remove no less than 80% total nitrogen from the system and construct an absorption field of import material designed with adequate percolation rate and additional phosphorus removal. They also requested information about the amount of expected water use (a figure which is not yet available) and commitments that the project would reduce water usage by planting drought-resistant native landscaping, installing low-flow toilets, and providing information to new residents concerning the importance of water conservation.

While the County of Hawai‘i does not fully concur with all the assertions and recommendations of the National Park, it is also concerned with preserving water quality and has incorporated the following into the design of the project, per National Park recommendations.

- *Storm and Surface Water Runoff*. The KHP will build and maintain permanent storm and surface water runoff best management practices consisting of grassed swales in various surfaces, including landscaped areas and surfaces around drywells and detention basins These will assist in treating the first-flush runoff volume to remove pollutants from storm and surface water runoff. Drainage injection wells or subsurface drainage structures will be designed with a debris catch basin to allow the detention and periodic removal of rubbish and sediment deposited by runoff. Storm water runoff shall first enter the debris catch basin before flowing into the drainage well. The debris catch basin’s volume will be designed using current industry and engineering

standards. The debris catch basin will be periodically inspected and cleaned accordingly. The National Park will be consulted regarding the BMPs.

- *Signage*. The facility will include signage for all drainage injection wells with warnings such as the following: "DUMP NO WASTES. DUMPING IS ILLEGAL AND MAY BE REPORTED TO 974-4000, ext. 64258." and "GOES TO GROUNDWATER AND OCEAN. HELP PROTECT HAWAIʻI'S ENVIRONMENT." Signage will be stand-up signs or riveted placards, or be painted on a paved surface next to the drainage well's inlet. Signage will be situated so that it will not obscure scenic views, contribute to visual blight, or obstruct an accessible route.
- *Pollution Prevention*. The facility will develop a Site Manager's Pollution Prevention Plan that addresses environmental stewardship and the non-point sources of water pollution that can be generated in residential areas, and provides best management practices for pollution prevention. The Pollution Prevention Plan will include policies on water conservation, lot and landscape runoff, erosion control, use of fertilizers, use of pesticides, environmentally safe automobile maintenance, and management of household chemicals. The Plan will include information on the National Park, and the nationally significant cultural and natural resources within the National Park.
- *Wastewater*. The KHP will include a package wastewater plant that is designed to achieve at least 80% reduction in Total Nitrogen and 90% reduction in Total Phosphorus. If, in the future, municipal wastewater service is available, the site managers will comply with any connection requirements, and if there are none, will determine whether it would be feasible, cost-effective and environmentally beneficial to voluntarily retire the package wastewater plant and connect to municipal service.

Pursuant to a comment on the Draft EA from the National Park (see Appendix 1b), engineers performed a preliminary water calculation and determined that the project would use about 42,180 gallons per day. In their letter, the National Park also repeated their request that the project provide advanced stormwater treatment facilities that are being required of adjacent landowners as part of a pilot program. Research on the pilot program determined that there is a study underway jointly funded by the Department of Public Works and the U.S. Geological Survey, with an expected completion date of 2011. The study will determine to what extent drywells actually contribute to coastal water pollution on the island of Hawaiʻi. After this time, the County may consider imposing additional treatment requirements for drywells. Due to the expense of installing and maintaining the advanced stormwater pollution filtration devices, the benefit of which is not yet clear, the engineers determined that the Kaloko Housing Program would not incorporate advanced treatment drywells. The other permanent BMPs that are expected to be implemented, including silt sacks at grated inlets, vegetated swales, and operation/maintenance policies for the facility, will greatly reduce pollution. Future upgrades will be considered based on the final outcome of the jointly funded study.

In summary, given the small scale of this project compared to the Kaloko Industrial Park projects, as well as proposed mitigation, it is highly unlikely it would have more than a negligible effect upon ground water quality.

No Action Alternative

The No Action Alternative would avoid potential impacts to water quality and would not result in an increase in impermeable surface.

3.1.3 Flora, Fauna and Ecosystems

Existing Environment

The natural vegetation of this part of North Kona was most likely a lowland dry grassland community (Gagne and Cuddihy 1990) dominated by ‘ohe makai (*Reynoldsia sandwichensis*), alahe‘e (*Psydrax odorata*), naio (*Myporum sandwicense*), and lama (*Diospyros sandwicensis*), and shrubs, herbs and vines such as maiapilo (*Capparis sandwichiana*), ‘ilima (*Sida fallax*), and huehue (*Cocculus orbiculatus*). These original communities, however, have been heavily degraded by cattle grazing and colonization and competition by invasive species that now dominate the site.

A walk-through botanical survey of the project site was performed by Reginald E. David on October 22, 2005 (Appendix 2). Table 1 shows a list of the plant species detected. Of the 33 different plant species detected, just ten (30%) are recognized as being native to the Hawaiian Island, with four of these endemic and seven indigenous to the islands. The project site contains individuals of ko‘oko‘olau (*Bidens micrantha ssp. Ctenophylla)*, ‘ohe makai (*Reynoldsia sandwicensis*) and maiapilo (*Capparis sandwichiana*), all of which are Species of Concern. All were located within or on the rim of the collapsed lava tube (see Figure 4), where there is partial protection from goats and cattle. Although not protected by any State or federal laws, Species of Concern are considered rare and are important botanical and sometimes cultural resources. One other species, noni (*Morinda citrifolia*), is considered to have been an early Polynesian introduction to the islands. The remaining 22 (67%) species detected are alien species now considered to be naturalized in the islands.

A resurvey in February 2008 by biologists Patrick Hart, Ph.D., and Ron Terry, Ph.D., confirmed the findings of the botanical survey. The large ko‘oko‘olau present on the mauka rim of the lava tube collapse feature appeared to be undergoing natural senescence and may not be alive by the time the project begins construction.

The project site was surveyed for fauna by biologist Reginald E. David on November 23 and 26, 2005 (Appendix 3). While the majority of bird species observed during this survey were non-native, including Common Myna (*Acridotheres tristis*), Japanese White-Eye (*Zosterops japonicus*), Northern Cardinal (*Cardinalis cardinalis*), House Finch (*Carpodacus mexicanus*) and Nutmeg Mannikin (*Lonchura punctulata)*, several indigenous migratory waterfowl were also observed. These included the Pacific Golden Plover (*Pluvialis fulva)*, Wandering Tattler (*Heteroscelus incanus*), and the Ruddy Turnstone (*Arenaria interpres*). The endangered Hawaiian hoary bat, or ‘ope‘ape‘a, as it is known in Hawaiian (*Lasiurus cinereus semotus*), which is the only non-marine mammal native to the Hawaiian Islands, may fly over the project site while foraging. The vegetation of the site does not offer suitable roosting habitat for bats.

Table 1
Project Site Plant Species List

Scientific Name	Family	Common Name	Life Form	Status
Dicots				
Schinus terebinthifolius	Anacardiaceae	Christmas berry	Tree	A
Reynoldsia sandwicensis	Araliacea	‘ohe makai	Tree	E, SOC
Bidens micrantha ssp. Ctenophylla	Asteraceae	ko‘oko‘olau	Herb	E, SOC
Pluchea carolinensis	Asteraceae	sourbush	Herb	A
Capparis sandwichiana	Capparaceae	maiapilo	Herb	E, SOC
Amaranthus spinosus	Amaranthaceae	spiny amaranth	Herb	A
Schinus terebinthifolius	Anacardiaceae	Christmas berry	Tree	A
Reynoldsia sandwicensis	Araliacea	‘ohe makai	Tree	E, SOC
Bidens micrantha ssp. Ctenophylla	Asteraceae	ko‘oko‘olau	Herb	E, SOC
Pluchea carolinensis	Asteraceae	sourbush	Herb	A
Capparis sandwichiana	Capparaceae	maiapilo	Herb	E, SOC
Ipomoea cairica	Convolvulaceae	koali ‘ai	Vine	I
Diospyros sandwicensis	Ebenaceae	lama	Tree	E
Chamaesyce hirta	Euphorbiacaea	garden spurge	Herb	A
Chamaesyce prostrata	Euphorbiacaea	prostrate spurge	Herb	A
Ricinus communis	Euphorbiacaea	castor bean	Herb	A
Acacia farnesiana	Fabaceae	klu	Tree	A
Chamaecrista hypericifolia	Fabaceae	partridge pea	Herb	A
Indigofera suffruticosa	Fabaceae	indigo	Herb	A
Leucaena leucocephala	Fabaceae	koa haole	Tree	A
Prosopis pallida	Fabaceae	kiawe	Tree	A
Senna occidentalis	Fabaceae	coffee senna	Herb	A
Sida fallax	Malvaceae	‘ilima	Herb	I
Cocculus orbiculatus	Menispermacaea	huehue	Vine	I
Myoporum sandwicense	Myoporacaea	naio	Tree	I
Boerhavia coccinea	Nyctaginacaea	false alena	Herb	A
Peperomia blandia	Piperaceae	‘ala‘ala wai nui	Herb	I
Portulaca oleracea	Portulacaeae	pigweed	Herb	A
Portulaca pilosa	Portulacaeae	pigweed	Herb	A
Talinum fruticosum	Portulacaeae	flameflower	Herb	A
Morinda citrifolia	Rubiaceae	noni	Tree	P
Psydrax odorata	Rubiaceae	alahe‘e	Tree	I
Waltheria indica	Sterculiaceae	‘uhaloa	Herb	I
Lantana camara	Verbenacaea	lantana	Herb	A
Monocots				
Furcraea foetida	Agavacae	Mauritius hemp	Herb	A
Chloris barbata	Poaceae	swollen fingerergrass	Grass	A
Melinus repens	Poaceae	Natal redtop	Grass	A
Pennisetum setaceum	Poaceae	fountain grass	Grass	AN

A = alien, E = endemic, I = indigenous, P = Polynesian introduction End = Federal and State listed Endangered Species, SOC = Species of Concern

Impacts and Mitigation Measures

No proposed or listed threatened or endangered animal species were found or would be expected to be found on the project site. In terms of conservation value, no zoological resources requiring special protection are present.

The project design has sought to accommodate preservation of most of the individuals of the Species of Concern (SOCs), which are mainly concentrated within the lava tube collapse feature. A proposed road (see Figure 4) through the collapse feature is within an area that does not contain any SOCs. The feature is a good candidate for planting with additional individuals of these and other native species, and the Amy Greenwell Ethnobotanical Garden will be invited to collect seeds and cuttings and to undertake outplanting, if appropriate.

The No Action Alternative would not disturb, but would also not promote the preservation of, the Species of Concern that are present on the site.

3.1.4 Air Quality, Noise, and Scenic Resources

Environmental Setting

Air pollution in West Hawai‘i is mainly derived from volcanic emissions of sulfur dioxide, which convert into particulate sulfate and produce a volcanic haze (vog) that persistently blankets North and South Kona. Minor levels of air pollution also come from urban uses including traffic and other nearby industrial activities, such as the Honokohau quarry located approximately 1,500 feet south of the southern boundary of the project site.

Noise on the project site varies widely from low to high, and is derived mainly from motor vehicles using Hina Lani Street, as well as airplanes, with occasional noise from road maintenance, industrial and commercial activities. Future noise levels will rise as the Phases III and IV of the Kaloko Industrial Park are built out.

Neither the project site nor any surrounding areas are mentioned in the County of Hawai‘i General Plan as being notable for their natural beauty (County of Hawai‘i 2005) with the exception of the Kaloko Pond (TMK 7-3-09:2), which is not visible from the project site or subject to viewplane blockage from buildings on the project site.

Impacts and Mitigation Measures

Short term direct and indirect impacts on air quality could potentially occur due to project construction, principally through fugitive dust from vehicle movement and soil excavation, and exhaust emissions from onsite construction equipment. 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. Onsite mobile and stationary construction equipment also would emit air pollutants from engine exhausts, but no sensitive receptors are present. The contractor will be required to prepare a dust control plan during construction.

Development of the KHP will involve excavation, grading, compressors, vehicle and equipment engine operation, and construction of new infrastructure and buildings. These activities have the potential to generate noise exceeding 95 decibels at times. Whenever construction noise is expected to exceed the Department of Health's (DOH) "maximum permissible" property-line noise levels, contractors will be required to consult with DOH per Title 11, Chapter 46, HAR (Community Noise Control) prior to construction. DOH would then review the proposed activity, location, equipment, project purpose and timetable in order to decide whether a permit is necessary and what conditions and mitigation measures, such as restriction of equipment type, maintenance requirements, restricted hours, and portable noise barriers, will be necessary. The contractor would consult with DOH to determine whether permit restrictions would consist of construction being limited to daylight hours. Because of the lack of sensitive nearby receptors (adjacent land is vacant or dedicated to industrial uses), no construction-noise impacts are expected.

Operationally, the project will be subject to noise from Hina Lani Street and businesses within the adjacent Kaloko Industrial Area. Noise impacts to residents, which was considered during the rezoning process that resulted in the donation of this lot for affordable housing, are not expected to exceed the levels normally expected for an urban, multi-family development.

Impacts to scenic resources are not expected to occur.

The No Action Alternative would avoid all noise, air quality and visual impacts.

3.1.5 Hazardous Substances, Toxic Waste and Hazardous Conditions

A Phase I Environmental Site Assessment (ESA) was performed for the project site by GK Environmental LLC (GKE). The report is summarized below, and the main portions of the report are attached in Appendix 4.

A Phase I Environmental Site Assessment aims to identify *recognized environmental conditions* that exist on the project site, and existing *recognized environmental conditions* in the project area that have the potential to impact the subject property. The term *recognized environmental conditions* means the presence or likely presence of any hazardous substances or petroleum products on the property under conditions that indicate an existing release, a past release, or a material threat of a release into structures on the property or into the ground, groundwater, or surface water of the property (American Society for Testing and Materials [ASTM], 2000).

The standard for performance of Phase I ESAs is defined by ASTM E1527-05 (ASTM 2005). This new standard is known as the "All Appropriate Inquiries" (AAI) rule and took effect on November 1, 2006 (EPA 2005). This new rule sets new standards with respect to interviews, investigation of site history, evaluation of so-called "data gaps" and evaluation of the impact of Recognized Environmental Conditions upon the purchase price of the property.

In a Phase I Environmental Site Assessment evidence of *recognized environmental conditions* may be obtained by execution of the following:

- A records search of federal and State databases of hazardous material use, storage, and releases, including, but not limited to, hazardous material generators, leaking underground storage tanks, and reported hazardous material releases;
- Interviews with landowners, nearby residents, and regulatory agency members concerning the subject property's history of land use;
- Other records searches, including tax records, aerial photography, and, when available, fire insurance maps; and
- A visual survey of the property and immediately surrounding areas.

Phase I ESA Findings

The project site and adjacent properties were not listed in the federal and State databases covered by Environmental Data Resources. No other sources of offsite potential contamination were found to exist in the project area. The records search information is summarized in Table 2 below.

GKE's findings are as follows:

- *Hazardous Materials and Regulated Wastes*: GKE identified no evidence of hazardous materials or regulated wastes on the subject and adjoining sites.
- *Storage Tanks*: GKE observed no Underground Storage Tanks (USTs) in use on the subject site at the time of this ESA. No ASTs were visible on the subject site. No evidence of the presence of USTs was observed on the subject site.
- *Potential Asbestos-, Polychlorinated Biphenyl (PCB)- or Lead-Containing Material*: GKE found no evidence of materials that could contain asbestos, lead, or PCBs.

Is summary, GKE observed no *recognized environmental conditions* in connection with the project site, or with surrounding areas that may have the potential to affect the project site.

Table 2: Findings of Phase I ESA Records Search

Search Type	Distance Searched	Findings
Federal NPL Site List	1.0 mile	None
Federal RCRA CORRACTS TSD Facilities List	1.0 mile	None
Delisted NPL Site List	1.0 mile	None
State-Equivalent CERCLIS (SHWS)	1.0 mile	None
Federal CERCLIS List	0.5 mile	None
Federal RCRA Non-CORRACTS TSD Facilities List	0.5 mile	None
Federal CERCLIS NFRAP list	0.5 mile	None
Fed. /St. institutional control/engineering control registries	0.5 mile	None
State/County Brownfield Lists	0.5 mile	None
State Landfill and/or Solid Waste Disposal Site List	0.5 mile	None
State Leaking Storage Tank List	0.5 mile	None
State Voluntary Cleanup Sites	0.5 mile	None
Federal RCRA Generators List	0.25 mile	None
State Registered Storage Tank List	0.25 mile	None
Federal ERNS List	Subject Site	None
State HEER Spill List	Subject Site	None

Source: Appendix 4

3.2 Socioeconomic and Cultural

3.2.1 Socioeconomic Characteristics

The project would affect and benefit the North Kona community most directly. Table 3 provides information on the socioeconomic characteristics of North Kona along with those of Hawai‘i County as a whole for comparison, from the United States 2000 census.

The project would benefit public by providing housing opportunities for individuals in need. No regional population changes are expected, as virtually all those served will already be residents of West Hawai‘i who are currently in need of affordable housing, including some in homeless assistance programs. While long-term socioeconomic impacts are difficult to quantify, it is reasonable to assume that better integration of individuals into the working economy has a net positive effect well beyond the direct impacts upon the residents of the transitional and affordable housing. For example, social and public services would be less burdened, and the addition of income and labor would have an indirect and cumulative multiplier effect, resulting in benefits to the regional economy.

Table 3: Selected Socioeconomic Characteristics

Characteristic	Hawai‘i County	North Kona	Characteristic	Hawai‘i County	North Kona
Total Population	148,677	28,543	21 to 64 Years, Disabled (%)	19.2	17.4
Median Age	38.6	39.4	Employed and Disabled, 21 to 64 Years, (%)	51.8	64.1
Older Than 65 Years (%)	13.5	11.8	65 Years or Older, Disabled (%)	40.3	38.1
Race (%)			Employment in:		
White	31.5	47.1	Management and professional	30.2	26.6
Asian	26.7	16.3	Service	22.2	24.3
Hawaiian	9.7	8.9	Sales and offices	25.1	27.8
Other Pacific Islander	1.5	1.8	Construction	9.9	10.4
Two or More Races	28.4	23.5	Farming, Fishing and Forestry	3.8	2.2
Hispanic (Any Race)	9.5	7.9	Production and Transportation	8.9	8.8
Family Households (%)	69.6	68.6	Families Below Poverty Line (%)	11.0	5.6
Households with Female Householder, no Husband, With Children (%)	7.7	6.7	Households with Female Householder, no Husband, With Children, Below Poverty Line (%)	28.1	22.0
Householder Lives Alone (%)	23.1	22.2	Individuals Below Poverty Line (%)	15.7	9.7
Average Household Size	2.75	2.70	65 and Over Below Poverty Line	7.2	5.3
Average Family Size	3.24	3.13	Median Household Income ($)	39,805	47,610
Over 25 Years Old With High School Diploma (%)	84.6	87.7	Housing Owner-Occupied (%)	64.5	58.5
Married Now (%)	52.0	53.9	Housing Rented (%)	35.5	41.5
Widowed (%)	6.3	4.9	Housing Vacant (%)	15.5	19.7
Divorced Now (%)	10.7	11.4	Median Home Value, 1999 ($)	153,700	233,900
Veterans (%)	14.5	14.8	Median Rent, 1999 ($)	645	745
Over 16 in Labor Market (%)	61.7	69.2	Rent is Greater Than 25% of Income (%)	46.0	47.2
Residence 5 Years Ago (%)					
Same Home	57.7	49.9			
Different Home, Same County	26.5	28.8			
Different County in Hawai`i	4.8	3.5			
Different State/Country	11.0	17.8			

Source: U.S. Bureau of the Census May 2001. *Profiles of General Demographic Characteristics*

3.2.2 Cultural Resources

Existing Environment

This section assesses the presence of any traditional cultural properties or uses that might exist within the project area, assesses the significance of any such resources or uses, and provides a statement of impact to any such resources as a result of the proposed construction and use of the facility. An archaeological inventory survey of the subject area was conducted by Haun & Associates (Appendix 5). The cultural background in this report provided the principal source for the assessment of the cultural resources and traditional uses of the property. We gathered other published information on the presence of such resources in the project area and through early consultation letters and phone contacts sought to consult with organizations that may possess knowledge of cultural resources in the project area. This information provided a context for the search for potential historic or traditional cultural properties. Much of the following description of cultural setting is drawn from a detailed work by Kepa Maly (2000), who examined traditional cultural practices within the adjacent ahupua‘a of Honokohau Nui and Honokohau Iki and surrounding areas.

Cultural Setting

By the time ‘Umi-a-Liloa rose to rule the island of Hawai‘i ca. 1525, the island was divided into six districts of moku-o-loko (Fornander 1973, vol II: pp. 101-102). On Hawai‘i Island, the district of Kona is one of six moku-o-loko within the island. The district of Kona extends from the shore across the entire volcanic mountain of Hualalai, and continues to the summit of Mauna Loa, where Kona is joined by the districts of Ka‘u, Hilo, and Hamakua.

Kona, like other large districts on Hawai‘i, was further divided in smaller land divisions of ‘okana or kalama. The southern portion of North Kona was known as “Kona kai ‘opua” (interpretively translated as “Kona of the distant horizon clouds above the ocean”) and included the area extending from Lanihau (near Kailua-Kona town) to Pu‘uohau. The northernmost portion of North Kona was called “Kekaha” (descriptive of an arid coastal place). Native residents of this region referred to their home, perhaps affectionately, as “Kekaha-wai-‘ole o na Kona” (waterless Kekaha of the Kona District), or simply as the “‘aina kaha”. Within this region of Kona is located the ahupua‘a of Kaloko.

The ahupua‘a represent individual pie-shaped land management units, stretching from the ocean into the upland mauka regions. Ahupua‘a (directly translated as pig altar) are subdivisions of land that were usually marked by an altar with an image or representation of a pig placed upon it. While an entire ahupua‘a was generally under the authority of a single minor chief or konohiki, the maka‘ainana or “people of the land” (Malo 1951:63-67) had access to most of the resources of the land division. Their right to the resources of an ahupua‘a was generally tied to residency within an ahupua‘a, and also to the obligation to pay tribute to the ali‘i, as well as observance of the kapu (restrictions).

Land use within an individual ahupua‘a depended largely upon elevation and distance from the ocean. Ascending in elevation through an ahupua‘a takes one from the shoreline, or kahakai, into the shoreward plains (kula kai), the inland plains (kula uka), and the more upland regions including the wao kanaka (region of man) and the wao nahele (region of forest). The most upland regions were known as the wao ma‘ukele (rainforest) and the wao akua (region of the deities). Resource extraction in each of these regions was unique to the climate of each, and hence the type of cultivars, fauna, and other materials available in each. Taken as a whole then, each ahupua‘a largely formed an independent economy.

There are only a few early (pre-nineteenth century) historical accounts that specifically name Kaloko, as most of the accounts describe the area in the context of the larger Kekaha region. One of the earliest datable accounts that describes the importance of the Kekaha region comes from the mid sixteenth century, following ‘Umi-a-Līloa’s unification of the island of Hawai‘i under his rule. Writing in the 1860s, native historian, Samuel Manaiakalani Kamakau (1961) told readers about the reign of ‘Umi, and his visits to Kekaha:

> "Umi-a-Liloa did two things with his own hands, farming and fishing...and farming was done on all the lands. Much of this was done in Kona. He was noted for his skill in fishing and was called Pu‘ipu‘i a ka lawai‘a (a stalwart fisherman). Aku fishing was his favorite occupation, and it often took him to the beaches (Ke-kaha) from Kalahuipua‘a to Makaula." (Kamakau 1961)

In his accounts of events at the end of ‘Umi’s life, Kamakau (1961) references Kekaha once again. He records that Ko‘i, one of the faithful supporters and a foster son of ‘Umi, sailed to Kekaha, where he killed a man who resembled ‘Umi. Ko‘i then took the body and sailed to Maka‘eo in the ahupua‘a of Keahuolu. Landing at Maka‘eo in the night, Ko‘i took the body to the cave where ‘Umi’s body lay. Replacing ‘Umi’s body with that of the other man, Ko‘i then crossed the lava beds, returning to his canoe at Maka‘eo. From there, ‘Umi’s body was taken to its final resting place (Kamakau 1961).

The presence of working fishponds in the Honokohau-Kaloko vicinity dates back to at least the early seventeenth century. In Kamakau’s (1961) description of events that occurred in the life time of Lono-i-ka-Makahiki, ‘Umi’s grandson, the ponds are mentioned as well:

> "I went on to the long stretch of sand, to the small bay with a point on that side and one on this side. There are large inland ponds….The sandy stretch is ‘Ohiki, and the walled-in ponds are Kaloko and Honokohau…"

In 1819, as the life of Kamehameha I drew to an end, the king gave orders that his remains should be carefully hidden. In his account of the events that took place following Kamehameha’s death, Kamakau (1961) mentions the lands of Kekaha:

> "At midnight, therefore, when black darkness had fallen and no one was likely to be out on the road and the rough lava plains of Pu‘uokaloa [in the land of Keahuolu] lay hushed, Hoapili sent his man Ho‘olulu, to bring the container of wicker work in which the bones of Kamehameha were kept to Kaloko in Kekaha.
>
> The next morning Hoa-pili and Ke-opu-o-lani took canoe to Kaloko where Hoa-pili met the man who had charge of the secret cave and together they placed the bones there" (Kamakau 1961).

The journal of William Ellis (Ellis 1963), an English missionary who visited Hawai‘i in 1823, contains some important and detailed descriptions of the communities around the island of Hawai‘i. Unfortunately, Ellis’ discussions on travel between Kailua and the Kohala District do not include accounts of visits to the Kaloko vicinity, as he traveled the area by canoe, making no reference to the land. Ellis’ discussion of activities and travel around Kailua, including descriptions of the communities and agricultural field systems through which he passed are insightful:

> "The environs were cultivated to a considerable extent; small gardens were seen among the barren rocks on which the houses are built, wherever soil could be found sufficient to nourish the sweet potato, the watermelon, or even a few plants of tobacco, and in many places these seemed to be growing literally in the fragments of lava, collected in small heaps around their roots" (Ellis 1963).

Maly (2000) interviewed persons with particular knowledge of the general project area. However, none of them cited specific sites in their interviews, nor did they describe activities in the lower kula (flatlands or plains) where the project site is found; their descriptions related activities that took place on the shore or in the uplands. Some area residents interviewed worked the fishponds and off-shore fisheries while living on the shore; others lived in the uplands where kalo (taro), ʻulu (breadfruit), ʻuala (sweet potatoes), coffee and other crops were grown; and others lived and worked on ranches. Two sisters (V. Leimomi Nihi-Quiddaoen and A. Puakalehua Nihi-Harp), descendants of the Kalua-Kuakahela-Kimona (Kanakamaikaʻi) line, stated that in their youth (ca. 1930), they went with their makua-kupuna (parent-grandparent) generation to some areas, which they believe to be above the present-day Kaʻahumanu Highway (in line with Kanalani Street in the Kaloko Industrial Park), to cultivate ʻuala (sweet potatoes) and other crops which could be grown in pockets of soil and mulched planting areas on the lava flats of the lower kula.

Most of the following derives from the extensive research by Kelly (1971) done in conjunction with the Kaloko Ahupuaʻa research of Cordy et al. (1991). As discussed above, Kaloko lies within an area of lava-covered land north of Kailua called Kekaha, which "describes a dry, sun-baked land" (1971:2). Kaloko is well known for its large fishpond for which the ahupuaʻa is named. The pond is a loko kuapa type (Summers 1964) formed by the construction of a wall, aligned with the adjacent shorelines, across the mouth of a small bay.

The fishpond at Kaloko is mentioned in a story told by Kamakau (1961) of a spy sent to Hawaiʻi by the ruling chief of Maui. The spy reported seeing the fishpond upon his return to Maui. Kelly (1971:22) believes this occurred between the late 1600s and early 1700s depending upon the generation span used in calculating chiefly genealogies.

A late 1600s reference to Kaloko comes from Fornander (1969) and Kamakau (1964). The twins, Kameeiamoku and Kamanawa, are said to have carried the bones of the ruling chief of Maui, Kahekili, to a cave at Kaloko. Kamakau (1961) reported the subsequent burial of Kamehameha's bones in the same cave by Kameeiamoku's son Hoapili and Keopuolani. King David Kalakaua reportedly later removed the bones; however, this account conflicts with informant information and other documents, which suggest the bones were not removed (Kelly 1971:23-25).

During the Great Mahele, the grandson of Kamehameha I, Lot Kamehameha, selected Kaloko as his property. Kelly (1971:5) cites correspondence indicating that Kaloko was Lot Kamehameha's most valuable property because of the fishpond, and that fish from the pond were sold in the market in Kailua town in 1860.

According to Kelly (1971:6-8), there were at least 14 claims for kuleana in Kaloko, of which 12 were awarded. The awarded claims were all situated inland between 1,100 ft and 1,800 ft elevation. The Waihona ’Aina database (Waihona ’Aina Corp. 1998) lists 24 claims within Kaloko, of which 13 were awarded. The apparent discrepancy between the database and Kelly apparently results from the large number of unawarded claims not located by Kelly. Cordy *et al.* (1991:414) lists 13 awarded claims and five claims that were not awarded. All, except two of the claim testimonies that also claimed house lots, were for cultivated plots. Crops mentioned in the testimonies include sweet potatoes and taro.

Kelly (1991:12) cites missionary and later census data that documents a decline in the population of North Kona in the 1800s. The Hawaiian Kingdom Directory for 1880-1881 lists a blacksmith and a coffee planter in upland Kaloko along the government road (Kelly 1971:13). A map by J.S. Emerson in 1888 shows a house inland of the fishpond (Kelly 1991:14).

In 1906, Kaloko was sold to John A. Maguire and subsequently became part of Huehue Ranch (Cordy et al. 1991). Kelly (1991) describes the succession of caretakers of the Kaloko fishpond from the early 1900s until the early 1960s when the pond fell into disrepair.

The 8-acre project site itself appears to have contained very few valued natural resources such as traditional quarries or water features, although plants important for cultural purposes (e.g., ko‘oko‘olau) were probably present. Today, alien vegetation has replaced native species almost entirely, leaving only the most common natives. Still present are two native plants with ethnobotanical value, the ‘uhaloa (*Waltheria indica*) and maiapilo (*Capparis sandwichiana*). The former species is extremely common in many parts of the Big Island; the latter is less common but relatively well-distributed throughout the kula kai.

As part of the current study an effort was made to obtain information about any potential traditional cultural properties and associated practices that might be present, or have taken place in the project area. The Office of Hawaiian Affairs, the Kuakini Hawaiian Civic Club of Kona, the Kona Hawaiian Civic Club, the Edith Kanaka‘ole Foundation, and Na Po‘e Hoa ‘Aina were contacted in an attempt to obtain information on tradition cultural properties and practices in the project area, but these groups did not provide any relevant information.

Based on historical research and oral interviews, as well as review of natural and historical resources, it is reasonable to conclude that the only potentially valued cultural, natural or historical resources within the project site consist of the rare native plants (ko‘oko‘olau and maiapilo) found in the collapsed lava tube. Although there is no evidence of gathering or use of this patch of plants, this area is being preserved, along with an archaeological site (see Section 3.2.3, below).

Impacts and Mitigation Measures

The proposed project site does not appear to have been used for traditional cultural purposes in the recent memory of any of the extensive list of interviewees consulted as part of oral history research performed for nearby projects, and consultation for this project has not revealed any use. It is reasonable to conclude that based upon the limited range of resources and the proposed mitigation to all affected resources, including rare plants, the exercise of native Hawaiian rights related to gathering, access or other customary activities will not be affected, and there will be no adverse effect upon cultural practices or beliefs. This Draft EA has been distributed to agencies and groups who might have knowledge in order to confirm this finding.

3.2.3 Archaeology and Historic Sites

Existing Environment

An archaeological inventory survey of the project site was conducted by Haun & Associates (see Appendix 5) and is summarized in this and the preceding section, which discusses the cultural/historical background of the area.

The project area is situated within the Middle Zone of traditional Hawaiian occupation as defined by Cordy et al. (1991), in a relatively little used area between the fishing resources and habitations of the shoreline and the upland gardens. The expected prehistoric use of the project area would be scattered temporary habitation sites associated with trails, and potentially, a few scattered agricultural features. Chronologically, sites may have been used as early as the 900-1200s, with the most extensive period of use occurring between the 1600s and early historic period. The temporary habitation sites would predominately be in caves. The trails would be associated with marker cairns and used by coastal residents to reach the inland fields and forest resources.

The same pattern is expected during the mid- to late 1800s; however, the focus of permanent habitation likely shifted inland. Thus, people were transiting through the area to obtain marine resources from the coast. From the late 1800s to early 1900s, sites associated with cattle ranching are expected. Ranching activity, which continued until at least the mid-1900s, would be evidenced by stone walls and corrals, and later wire fencing. Other potential sites include transportation infrastructure such as roads.

As part of the inventory survey, Haun & Associates reviewed past archaeological work in the project area and found 28 surveys that have been conducted within Kaloko. These surveys completely surround the project site. Soehren (1979) conducted a reconnaissance survey of a proposed access road that corresponds to today's Hina Lani Street. Haun and Henry (2000) performed an inventory survey of a 102.3-acre parcel in lower Kaloko bordering the project site on the southwest. Moore and Kennedy (2003) conducted an inventory survey of a proposed road corridor that extends along the southeastern boundary of the project site.

Nearly all of the sites noted in these surveys were detected by Haun and Henry (2000), who recorded 45 sites, although five of these were later destroyed by road construction, leaving 40 sites with 56 features, composed of 22 modified outcrops, 12 terraces, ten caves, nine mounds, seven pahoehoe excavations, six cairns, five walls, three trails, three enclosures, two concentrations of marine shells, one cupboard, and one series of grinding slicks.

The archaeological inventory survey of the KHP project site identified four archaeological sites (Figure 5 and Table 3). These are composed of two modified outcrops (Sites 26267 and 26270), a mound (Site 26268) and a lava tube (Site 26269). Functionally these are described as being two possible agricultural sites (Sites 26268 and 26269), a temporary habitation (Site, 26269, i.e., lava tube site) and one indeterminate site (Site 26267). Bulldozer scrape marks were observed in many locations across the site.

Table 4: Archaeological Sites

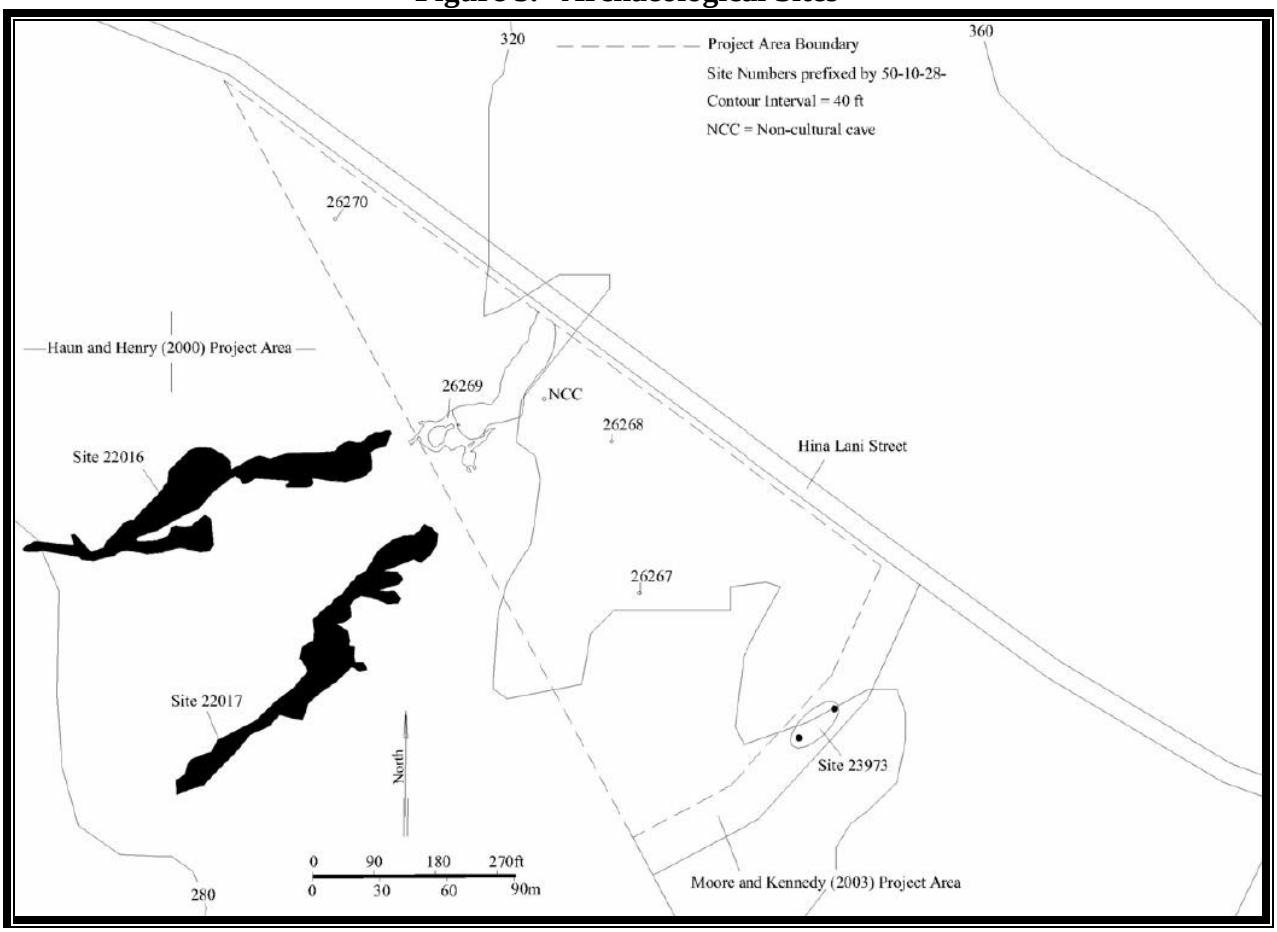
Site	Type	Function	Description
26267	Modified outcrop	Indeterminate	Linear pile of flat, stacked pahoehoe slabs, 2.5m X 0.5 m.
26268	Mound	Agricultural	Linear mound of pahoehoe cobbles and small boulders, 6.2m X 0.4-0.7m,
26269	Lava tube	Temporary habitation	Cave contains steppingstone path of flat pahoehoe slabs, concentration of shells and animal bones, modern items.
26270	Modified outcrop	Agricultural	Uneven and irregular outcrop, 4.2m in length, 1.95-2.8m wide, 0.4-0.65m in height.

Impacts and Mitigation Measures

All features of all sites are significant only under criterion “D” of the significance criteria, meaning they have yielded, or are likely to yield, information important for research on prehistory or history. For three of the sites, the inventory survey itself has achieved adequate data recovery and no additional data recovery is recommended. Site 26269, which is inside the lava tube, retains the potential to yield information important for understanding prehistoric and early historic land use. This site is recommended for data recovery, which would entail surface collection of cultural remains to obtain a larger sample of portable remains and potentially dating samples. The State Historic Preservation Division (SHPD) concurred with the findings of the archaeologist in a letter dated July 11, 2008 (see Appendix 1a).

Current project design will not disturb the area containing Site 26269, but the project will still undertake data recovery prior to construction. The plan for data recovery of this site would be detailed in a Data Recovery Plan prepared for SHPD review and approval.

Figure 5. Archaeological Sites



In the unlikely event that archaeological resources are encountered during future development activities within the current study area, work in the immediate area of the discovery should be halted and DLNR-SHPD contacted as outlined in Hawai‘i Administrative Rules 13§13-275-12.

3.3 Infrastructure

3.3.1 Utilities and Public Services

Existing Facilities and Services, Impacts and Mitigation Measures

Electrical power to the area is supplied by Hawai‘i Electric Light Company (HELCO), a privately owned utility company regulated by the State Public Utilities Commission, via their islandwide distribution network. Electrical service is available at the project site via transmission lines along Hina Lani Street. Telephone and CATV services are also available. Water is supplied by the Hawai‘i County Department of Water Supply. Wastewater treatment is not presently available to the project area.

The proposed action would not have any substantial impact on existing electrical facilities or HELCO's ability to provide electricity. Although the precise amount of water required is not yet available, the OHCD has secured a number of water commitments from the DWS and will work closely with Catholic Charities to secure the additional necessary water commitments. Pursuant to a request in a comment on the Draft EA from the National Park (see Appendix 1b), engineers performed a preliminary water calculation and determined that the project would use about 42,180 gallons per day. In order to conserve water, all plumbing facilities will be designed for low water use, landscaping will be primarily xerophytic, and water usage will be monitored by the facility manager. No other utilities will be affected in any way. Wastewater will be treated via a package plant, as discussed in Section 3.1.2, above. In summary, the utility infrastructure for the facility is adequate and no adverse impacts are expected.

Because all expected residents of the Kaloko Housing Program already live in West Hawai'i, little impact on public facilities, including social services, programs, recreational facilities, and similar services is expected. However, in a letter of December 15, 2008, commenting on the Draft EA, the Department of Education stated that along with many other residential projects proposed for the North Kona area, the Kaloko Housing Program will have an impact on the Kealakehe schools, and that the DOE anticipates the need for new or expanded schools to serve the growing area. DOE also provided information on Act 245, currently being implemented, which empowers the Board of Education to identify and adopt school impact districts for areas requiring new or expanded facilities in the future. According to the DOE, it is thus possible that the Kaloko Housing Program will be required to pay an impact fee.

3.3.2 Traffic

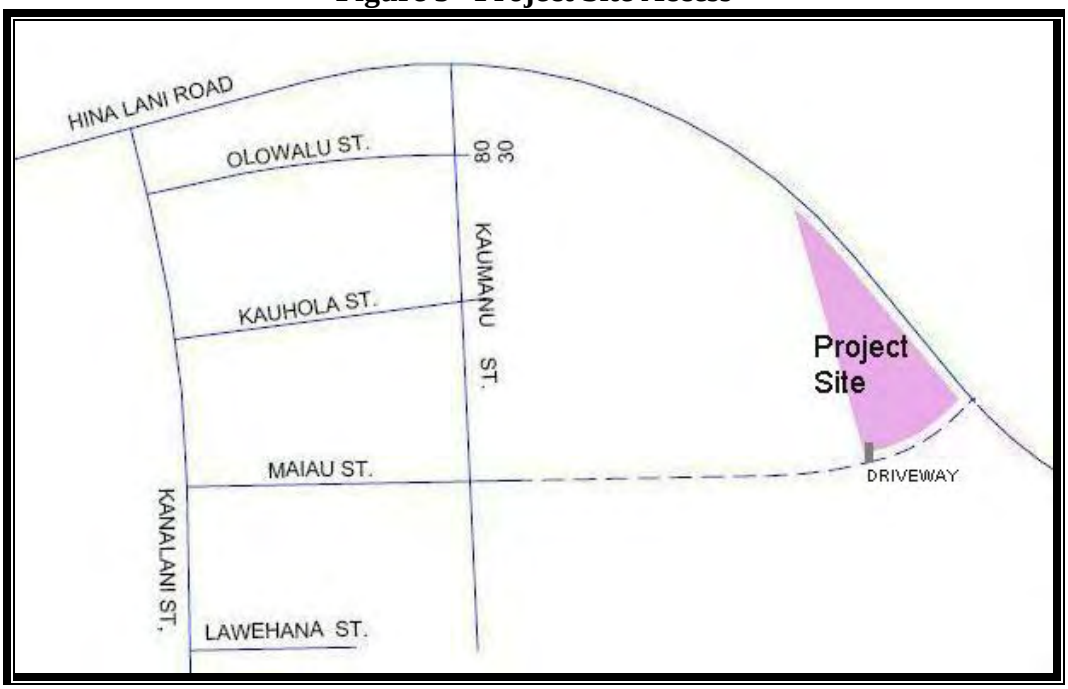
A Traffic Impact Assessment Report (TIAR) was prepared for the project by Phillip Rowell and Associates in July 2008. The report is attached as Appendix 6 and is summarized below.

Existing Roadway and Traffic Conditions

A reconnaissance of the area was performed in order to identify the existing roadway conditions, cross-section, speed limits and right-of-way controls, as well as any other factors that might affect ingress to and egress from the proposed project. Most of the frontage of the property is along Hina Lani Street, a two-lane County roadway that serves as an arterial connector between the Queen Ka'ahumanu Highway (SR11) and the Mamalahoa Highway (SR19). Hina Lani Street is planned to be widened from two to four lanes as part of Phases III and IV of the Kaloko Industrial Park. It is also understood that the intersection of Hina Lani Road at Maiau Street will be modified to provide separate left-turn lanes and left-turn refuge lanes. The KHP facility will take access from driveway on an extension of Maiau Street that is currently in construction (Figure 5). Upon development of Phase IV of the Industrial Park, Maiau Street will be completely extended from Kamanu Street eastward to a new intersection with Hina Lani Road. Maiau Street will be a major collector connecting Hina Lani Road with the industrial area. The driveway serving the project will be along the north side of Maiau Street, approximately 100 feet west of Hina Lani Street.

Existing traffic volumes along Hina Lani Road were estimated from manual traffic counts at the intersection of Hina Lani Road at Kamanu Street. These counts were performed in June 2008. Data from these counts are contained in Appendix 6. The intersection of Hina Lani Road at Maiau Street does not exist yet.

Figure 5 Project Site Access



Traffic Impacts and Proposed Mitigation Measures

Background traffic conditions are defined as future traffic conditions *without* the proposed project. The design horizon year does not necessarily represent the project completion date of that phase. It is a date for which future background traffic projections were estimated. For this project, a design horizon year of 2013 was used. Horizon year background traffic conditions were estimated using a background traffic growth factor. Traffic projections were also developed for the intersection of Hina Lani Road at Kamanu Street, because the extension of Maiau Street will divert a significant amount of traffic from this intersection. Therefore, the study area for the TIAR included the intersection of Hina Lani Road at Maiau Street and Hina Lani Road at Kamanu Street.

The next step was to perform a trip generation study that could estimate the peak-hour traffic that the 72 rental units and 24 transitional units Kaloko Housing Program would generate, including affordable and transitional housing as well as the Food Bank warehouse. It was estimated that the project will generate 54 trips during the morning peak hour and 65 trips during the afternoon peak hour. These trips were then distributed and assigned based on the available approach and departure routes and trip distribution data from other recently completed traffic studies in the area.

The 2008 background-plus-project traffic projections were estimated by superimposing the peak hourly traffic generated by the proposed project on the 2008 background (without project) peak hour traffic projections. This “worse-case” condition assumes that the peak hourly trips generated by the project coincide with the peak hour of the adjacent street. The traffic impacts of

the project were assessed by analyzing the changes in traffic volumes and Level-of-Service, a measure of traffic congestion that uses rankings of A through F. The purpose of this analysis was to identify potential operational deficiencies in the vicinity of the proposed project and determine mitigation to address these.

Impacts and Mitigation Measures

Readers interested in the details of the analysis are referred to Appendix 6. The TIAR contained several conclusions about the impact of the project.

Level of Service at the Maiau Street and Kamanu Street intersections of Hina Lani Street will be acceptable. The intersection of Hina Lani Road at Maiau Street will operate at Level-of-Service A during the morning peak hour and Level-of-Service C during the afternoon peak hour. The intersection of Hina Lani Road at Kamanu Street will operate at Level-of-Service B during the morning peak hour and Level-of-Service E during the afternoon peak hour. Because of the addition of Maiau Street to the road network, the afternoon level-of-service of the northbound approach will improve from the existing Level-of-Service F, and the northbound approach of this intersection will operate at Level-of-Service E either with or without project-generated traffic.

The 95th percentile afternoon queue along Maiau Street at the Hina Lani Street intersection will be five vehicles, which will not extend as far back along Maiau Street as the KDP driveway. Therefore, the queue of traffic along Maiau Street waiting at the intersection to turn onto Hina Lani Road will not present a problem for KHP vehicles making left-turns out of the driveway.

The intersection of Maiau Street at the project driveway will operate at Level-of-Service A during both the morning and afternoon peak hours.

The only mitigation action recommended is for the KHP administrators to work with Mass Transit to facilitate the use of public transportation. This will not only reduce traffic impacts from the project but more importantly will provide the residents with affordable transportation options for their work, shopping, and other needs.

The driveway from the facility to Maiau Street will require a permit from the Hawai‘i County Department of Public Works and must comply with Chapter 22 of the Hawai‘i County Code.

It should be noted that the Police Department recommended in response to early consultation on the EA against development of transitional housing for the homeless in Kona until such time as adequate roads are built to support the existing and future populations and the construction vehicles needed to support development (see Appendix 1a for letter). In response, the OHCD maintains that the proposed residents already drive in Kona for work, shopping, and services. Furthermore, the project may actually reduce traffic on portions of the Queen Ka‘ahumanu Highway by avoiding the need for residents of the Kawaihae Shelter to drive to Kona for such activities. In a comment letter on the Draft EA (see Appendix 1b), the Police Department expressed concern about pedestrian safety. The on-site improvements will include pedestrian sidewalks and accessible pathways along buildings and parking lots. The Maiau Street extension currently being built from the Kaloko Industrial Area will have paved shoulders, similar to the existing industrial area, which can be safely utilized by pedestrians and bicyclists.

3.4 Secondary and Cumulative Impacts

Because all expected residents of the Kaloko Housing Program already live in West Hawai‘i, the project will not involve any secondary impacts, such as significant population changes or effects on public facilities, including social services, programs, recreational facilities, and similar services. The Department of Education has stated that the project may impact its Kealakehe facilities and may thus be required to pay an impact fee pursuant to Act 245. Although the project would provide some short-term construction jobs, these would almost certainly be filled by local residents and would not induce in-migration. The relocation of existing West Hawai‘i residents to the area would be appropriate in the general context of the area, being located near a major employment center and schools.

Cumulative impacts result when implementation of several projects that individually have limited impacts combine to produce more severe impacts or conflicts in mitigation measures. At the current time, a number of large developments are planned in the project area:

- ‘O‘oma Beachside Village – a master-planned shoreline community in Kaloko, makai of the Queen Ka‘ahumanu Highway on approximately 300 acres;
- Kona View Estates – a 29-lot residential subdivision with completed infrastructure located near the intersection of Mamalahoa Highway and Hina Lani Street;
- Villages of La‘i‘opua in Kealakehe – located several miles south of the KHP facility, the Department of Hawaiian Homelands is developing an additional 1,740 homes for lease to qualifying Native Hawaiians, currently completing infrastructure;
- The Keahuolu Affordable Housing Project is being undertaken by the Hawai‘i Housing Finance and Development Corporation, which is building on about 270 acres of land on Palani Road. Various alternatives are under consideration, one of which has as many as 2,300 planned dwelling units.
- The Shores at Kohanaiki – located makai of Queen Ka‘ahumanu Highway, includes a 500-home golf course community featuring a shoreline park, public parking for more than 120 cars, and an 8,000 square foot beach facility with restrooms and showers;
- Palamanui – proposed by the Hiluhilu Development Company, a master-planned community with a mix of single-family and multiple-family units, commercial spaces, a village inn, 18-hole golf course, and related improvements and infrastructure;
- Kula Nei – approximately 270 homes including 50 to 70 affordable homes on a 150-acre site between the existing Kona Acres and the future Kaloko Heights subdivisions; and
- The controversial Kona Kai Ola project, including a marina, hotel, time-share, and retail development near Honokohau Harbor.

Various infrastructure projects are also in planning or construction. The Department of Water Supply is upgrading its water system by providing a new transmission line from Mamalahoa Highway to Palani Road, about four miles south of the project site. This agency is also converting an exploratory wells at Keopu-Pu‘uhonua and Palani Ranch to production wells and building reservoirs to provide storage. The Department of Transportation is widening Queen Ka‘ahumanu Highway to four lanes from Kailua-Kona to the Kona International Airport. The

Department of Public Works is building two roads in Kealakehe within two miles of the project site. The Ane Keohokalole Extension, often called the Mid-Level Road, will connect Henry Street to Palani Road and beyond to the future West Hawai‘i Civic Center (another long-range County of Hawai‘i project), the Kealakehe Schools, and the Villages of La‘i‘ōpua. A smaller project is the Manawalea Connector, which will link the Kealakehe Schools with residential areas located above, bypassing Queen Ka‘ahumanu Highway and improving traffic circulation.

Several large-scale natural resource protection and restoration projects are also underway in the area. The Honua‘ula Forest Reserve Reforestation Project is being undertaken by the Department of Land and Natural Resources Division of Forestry and Wildlife, which proposes to stimulate regeneration of native *koa* trees within approximately 1,000 acres of heavily degraded native forest areas in the Honua‘ula Forest Reserve, about three miles mauka of Mamalahoa Highway. The ‘Ola‘a-Kilauea Partnership is undertaking the North Kona Protective Fencing Project, which would build up to 22 miles of ungulate-proof fencing, eventually enclosing approximately 13,000 acres on the slopes of Mauna Loa in North Kona on the island of Hawai‘i. The Department of Hawaiian Home Lands is building a system of dry forest plant preserves at Kealakehe, about a mile downslope of the project.

Although it is difficult if not impossible to systematically determine the complex interaction of environmental impacts in this fast-growing region, the Kaloko Housing Program facility has rather discrete and limited impacts that will not tend to accumulate with those of other projects. Impacts to natural resources are limited because of the basically disturbed, alien nature of the vegetation outside of areas in which rare plants are being preserved. Archaeological resources were properly inventoried and one site is being preserved, adding to a very large number of preserved sites in Kona. The limited scale of the project and the lack of sensitive scenic resources or viewplanes will prevent a loss of scenic character or interference with viewplanes, even considering the development going on around the area.

The only potential cumulative impacts are related to occupation of the facility, specifically increase in traffic and aquifer water quality. A Traffic Impact Assessment Report conducted from the cumulative perspective has determined that the project would not significantly impact traffic (see Section 3.3.2). Given that the scale of the project is very minor in relation to other developments ongoing and planned in the project area, incremental aquifer water quality impacts are very minor; nevertheless, the project incorporates a number of mitigation measures that are aimed at addressing cumulative impacts to the regional aquifer (see Section 3.1.2). No significant adverse cumulative effects are anticipated.

3.5 Required Permits and Approvals

The following permits and approvals would be required:

- Hawai‘i County Building Division Approval and Building Permit
- Hawai‘i County Planning Department Approval
- Hawai‘i County Public Works Department Grading & Driveway Permits
- National Pollutant Discharge Elimination System Permit (NPDES)

3.6 Consistency with Government Plans and Policies

3.6.1 Hawai‘i State Plan

Adopted in 1978 and last revised in 1991 (Hawai‘i Revised Statutes, Chapter 226, as amended), the Plan establishes a set of themes, goals, objectives and policies that are meant to guide the State's long term growth and development activities. The three themes that express the basic purpose of the *Hawai‘i State Plan* are individual and family self-sufficiency, social and economic mobility and community or social well-being. The project would promote these goals primarily by enhancing housing opportunity and social well-being.

3.6.2 Hawai‘i County General Plan and Zoning

The *Hawai‘i County General Plan Land Use Pattern Allocation Guide (LUPAG)*. The LUPAG map component of the *General Plan* is a graphic representation of the Plan's goals, policies, and standards as well as of the physical relationship between land uses. It also establishes the basic urban and non-urban form as well as the location of planned public and cultural facilities, public utilities and safety features, and transportation corridors. The project site is classified as Urban Expansion in the LUPAG. The project is consistent with the Urban Expansion designation, which is intended for a mix of high density, medium density, low density, industrial, industrial-commercial, and/or open areas.

Hawai‘i County Zoning. The project site is in Hawai‘i County Agricultural (A-5a) Zoning Designation. The KHP facility would not be a permitted use within this designation, however, the OHCD has the option of pre-empting this zoning designation for public housing projects. The property is not situated within the County's Special Management Area (SMA).

The General Plan for the County of Hawai‘i is a policy document expressing the broad goals and policies for the long-range development of the Island of Hawai‘i. The General Plan itself is organized into thirteen elements, with policies, objectives, standards, and policies for each. There are also discussions of the specific applicability of each element to the nine judicial districts comprising the County of Hawai‘i. Most relevant to the project are the following Goals, Standards, Policies and Courses of Action of particular chapters:

Economic – Goals
(a) Provide residents with opportunities to improve their quality of life through economic development that enhances the County's natural and social environments.
(d) Provide an economic environment that allows new, expanded, or improved economic opportunities that are compatible with the County's cultural, natural and social environment.
Discussion: The project would help to achieve the stated goals of the Economic chapter of the General Plan by improving economic opportunity for residents in a manner that enhances the social environment.

Environmental Quality – Goals
(b) Maintain and, if feasible, improve the existing environmental quality of the island.
(c) Control pollution.
Environmental Quality – Policies
(a) Take positive action to further maintain the quality of the environment.
(h) Work with the appropriate agencies to adopt appropriate measures and provide incentives to control point and nonpoint sources of pollution.
Environmental Quality – Standards
(a) Pollution shall be prevented, abated, and controlled at levels that will protect and preserve the public health and well being, through the enforcement of appropriate Federal, State and County standards.
(c) Federal and State environmental regulations shall be adhered to.
Discussion: The project would help to achieve the goals of the Environmental Quality chapter of the General Plan by maintaining the existing environmental quality of the island and controlling pollution through mitigation of potential air and water quality impacts.

Flooding and Other Natural Hazards – Goals
(a) Protect human life.
(b) Prevent damage to man-made improvements.
(c) Control pollution.
(d) Prevent damage from inundation.
(e) Reduce surface water and sediment runoff.
(f) Maximize soil and water conservation.
Flooding and Other Natural Hazards – Policies
(g) Development-generated runoff shall be disposed of in a manner acceptable to the Department of Public Works and in compliance with all State and Federal laws.
Flooding and Other Natural Hazards – Standards
(a) "Storm Drainage Standards," County of Hawaii, October, 1970, and as revised.
(b) Applicable standards and regulations of Chapter 27, "Flood Control," of the Hawai‘i County Code.
(c) Applicable standards and regulations of the Federal Emergency Management Agency (FEMA).
(d) Applicable standards and regulations of Chapter 10, "Erosion and Sedimentation Control," of the Hawaii County Code.
(e) Applicable standards and regulations of the Natural Resources Conservation Service and the Soil and Water Conservation Districts.
Discussion: The project site is not located in a flood zone and would conform with applicable standards and regulations pertaining to drainage and erosion and sediment control. Therefore the project will conform to and abide by applicable goals, policies and standards of the Flooding and Other Natural Hazards chapter of the General Plan.

Historic Sites – Goals
(a) Protect, restore, and enhance the sites, buildings, and objects of significant historical and cultural importance to Hawaii.

Historic Sites – Policies
(c) Require both public and private developers of land to provide historical and archaeological surveys and cultural assessments, where appropriate, prior to the clearing or development of land when there are indications that the land under consideration has historical significance.
(i) Signs explaining historic sites, buildings and objects shall be in keeping with the character of the area or the cultural aspects of the feature.
Historic Sites – Standards
(a) The evaluation of the importance of specific historic sites is necessary for future action. The following standards establish a framework for evaluating sites.
(b) Importance in the life or activities of a major historic person.
(c) Associated with a major group or organization in the history of the island or community.
(d) Associated with a major historic event (cultural, economic, military, social, or political).
(e) Associated with a major recurring event in the history of the community (such as annual celebrations).
(f) Associated with a past or continuing institution that has contributed substantially to the life of the community.
(g) Unique example of a particular style or period.
(h) One of the few of its age remaining.
(i) Original materials and/or workmanship that can be valued in themselves.
(j) Sites with a preponderance of original materials in context and complexes rather than single isolated sites unless they are of great significance.
(k) Sites of traditional and cultural significance.
Discussion: The project site has been the subject of an archaeological inventory and one site is being preserved, although preservation is not required. The project conforms with applicable portions of the Historic Sites chapter of the General Plan.

Natural Beauty – Goals
(a) Protect, preserve and enhance the quality of areas endowed with natural beauty, including the quality of coastal scenic resources.
(b) Protect scenic vistas and view planes from becoming obstructed.
Natural Beauty – Policies
(h) Protect the views of areas endowed with natural beauty by carefully considering the effects of proposed construction during all land use reviews.
(i) Do not allow incompatible construction in areas of natural beauty.
Discussion: Because the project site is not located in an area noted for its natural beauty, would not obstruct scenic vistas and viewplanes, and is compatible with its surroundings, the project is conformant with applicable goals and policies of the Natural Beauty chapter of the General Plan.

Natural Resources and Shoreline – Goals
(a) Protect and conserve the natural resources from undue exploitation, encroachment and damage.
(b) Provide opportunities for recreational, economic, and educational needs without despoiling or endangering natural resources.

(c) Protect and promote the prudent use of Hawaii's unique, fragile, and significant environmental and natural resources.
(d) Protect rare or endangered species and habitats native to Hawaii.
(f) Ensure that alterations to existing land forms, vegetation, and construction of structures cause minimum adverse effect to water resources, and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation, or failure in the event of an earthquake.

Natural Resources and Shoreline – Policies

(a) Require users of natural resources to conduct their activities in a manner that avoids or minimizes adverse effects on the environment.
(j) Encourage the protection of watersheds, forest, brush, and grassland from destructive agents and uses.
(p) Encourage the use of native plants for screening and landscaping.
(t) Preserve and protect significant lava tube caves.
(u) Ensure that activities authorized or funded by the County do not damage important natural resources.

Natural Resources and Shoreline – Standards

The following shall be considered for the protection and conservation of natural resources.
(a) Areas necessary for the protection and propagation of specified endangered native wildlife, and conservation for natural ecosystems of endemic plants, fish and wildlife.
Discussion: The project would provide housing opportunity without subjecting natural resources to exploitation, encroachment, and damage. Rare species and a lava tube would be protected and landscaping would incorporate native species. For these reasons the project would conform to the applicable goals, policies, and standards of the Natural Resources and Shoreline chapter of the General Plan.

Housing – Goals

(a) Attain safe, sanitary, and livable housing for the residents of the County of Hawaiʻi.
(g) Ensure that housing is available to all persons regardless of age, sex, marital status, ethnic background, and income.

Housing – Policies

(c) Encourage corporations and nonprofit organizations to participate in Federal, State and private programs to provide new and rehabilitated housing for low and moderate income families.
(j) Initiate and participate in activities with the private sector including the provision of leadership and expertise to neighborhoods and nonprofit organizations in the development of housing and community development projects.
(m) Accommodate the housing requirements of special need groups including the elderly, handicapped, homeless and those residents in rural areas.
(o) Encourage the use of suitable public lands for housing purposes in fee or lease.
(x) Vacant lands in urban areas and urban expansion areas should be made available for residential uses before additional agricultural lands are converted into residential uses.
(y) Aid and encourage the development of a wide variety of housing to achieve a diversity of socio-economic housing mix.

Discussion: The project aims to achieve and conform to the applicable goals, policies and standards of the Housing chapter of the General Plan. The project would provide safe, sanitary, affordable housing units and livable housing for the homeless families, in part by involving nonprofit organizations.

3.6.3 Hawai‘i State Land Use Law

All land in the State of Hawai‘i is classified into one of four land use categories – Urban, Rural, Agricultural, or Conservation – by the State Land Use Commission, pursuant to Chapter 205, HRS. The property is in the State Land Use Urban District. The Land Use Commission Administrative Rules (Chapter 15-15 HAR) allows determination of allowed uses for the Urban Land Use district by County Zoning (discussed in section 3.6.2 above).

PART 4: ANTICIPATED DETERMINATION

The County of Hawai‘i Office of Housing and Community Development, upon consideration of comments to the Draft EA, has determined that the proposed project will not significantly alter the environment, as impacts will be minimal, and has thus issued a Finding of No Significant Impact (FONSI).

PART 5: FINDINGS AND REASONS

Chapter 11-200-12, Hawai‘i Administrative Rules, outlines those factors agencies must consider when determining whether an Action has significant effects:

1. *The project will not involve an irrevocable commitment or loss or destruction of any natural or cultural resources.* No valuable natural or cultural resources would be committed or lost.
2. *The project will not curtail the range of beneficial uses of the environment.* No restriction of beneficial uses would occur. The project represents a highly beneficial use of the environment.
3. *The project will not conflict with the State's long-term environmental policies*. The State’s long-term environmental policies are set forth in Chapter 344, HRS. The broad goals of this policy are to conserve natural resources and enhance the quality of life. The project is minor, environmentally beneficial, and fulfills aspects of these policies calling for an improved social environment. It is thus consistent with all elements of the State’s long-term environmental policies.
4. *The project will not substantially affect the economic or social welfare of the community or State.* The project would not have any adverse effect on the economic or social welfare of the County or State, but would improve the social welfare of the community by bringing housing to those most in need of it and by increasing economic opportunity.

5. *The project does not substantially affect public health in any detrimental way*. The project would affect public health and safety in only beneficial ways by providing safe, sanitary, affordable housing and livable transitional housing to the homeless.

6. *The project will not involve substantial secondary impacts, such as population changes or effects on public facilities*. Because the expected residents of the Kaloko Housing Program already live in West Hawai‘i, little impact on public facilities, including social services, programs, recreational facilities, and similar services is expected. The Department of Education has stated that the project may impacts its Kealakehe facilities and may thus be required to pay an impact fee pursuant to Act 245.

7. *The project will not involve a substantial degradation of environmental quality*. The project would not involve substantial degradation of environmental quality. The potential for air water quality impacts during construction would be mitigated.

8. *The project will not substantially affect any rare, threatened or endangered species of flora or fauna or habitat.* The project site supports overwhelmingly alien vegetation. Impacts to rare, threatened or endangered species of flora or fauna will not occur. Several individuals of rare plant species are located on the project site and would be protected within a preserved area.

9. *The project is not one which is individually limited but cumulatively may have considerable effect upon the environment or involves a commitment for larger actions.* The project is not related to other activities in the region in such a way as to produce adverse cumulative effects or involve a commitment for larger actions. The project is negligible in scale compared to other developments ongoing or planned for the area. Cumulative impacts related to water quality are being mitigated.

10. *The project will not detrimentally affect air or water quality or ambient noise levels.* No adverse effects on these resources would occur. Mitigation of construction-phase impacts will preserve water quality. Ambient noise impacts due to construction will be temporary and restricted to daytime hours.

11. *The project does not affect nor would it likely to be damaged as a result of being located in environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal area.* Although the project is located in an area with volcanic and seismic risk, the entire Island of Hawai‘i shares this risk, and the project is not imprudent to construct.

12. *The project will not substantially affect scenic vistas and viewplanes identified in county or state plans or studies.* No scenic vistas and viewplanes will be adversely affected by the project identified in county or state plans or studies.

13. *The project will not require substantial energy consumption*. The construction and maintenance of the transition housing facility would require minimal consumption of energy. No adverse effects would be expected.

For the reasons above, the proposed Action will not have any significant effect in the context of Chapter 343, Hawai‘i Revised Statues and section 11-200-12 of the State Administrative Rules.

REFERENCES

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ENVIRONMENTAL ASSESSMENT

KALOKO HOUSING PROGRAM

TMK (3rd): 7-3-009:055
North Kona District, Hawai‘i Island, State of Hawai‘i

County of Hawai‘i
Office of Housing and Community Development
50 Wailuku Drive
Hilo, Hawai‘i 96720-2456

APPENDIX 1A
COMMENTS IN RESPONSE TO PRE-CONSULTATION

Harry Kim
Mayor

Lawrence K. Mahuna
Police Chief

Harry S. Kubojiri
Deputy Police Chief

County of Hawaii

POLICE DEPARTMENT
349 Kapiolani Street • Hilo, Hawaii 96720-3998
(808) 935-3311 • Fax (808) 961-2389

August 30, 2007

Mr. Ron Terry
Geometrician Associates, LLC
P.O. Box 396
Hilo, Hawaii 96721

Dear Mr. Terry:

This responds to your letter dated August 24, 2007, regarding the Environmental Assessment for Kaloko Transitional Housing Project (TMK: 3rd: 7-3-009:055).

Although we support the development of transitional housing for the homeless as part of the County's response to the increasing problem of homelessness in West Hawaii, staff has expressed concerns over the traffic impact related to the development. This planned development will only increase density on the Queen Ka'ahumanu Highway, which is already suffering from severe traffic congestion during peak traffic periods.

Staff maintains that until such time as adequate roads are built to support the ever-growing population, construction, and additional vehicles on the roadways, additional development must adhere to the County's proposed policy on the principle of concurrency.

Thank you for providing us with the opportunity to comment. Should you have any questions, please contact Captain Randy Apele, Commander of the Kona Patrol Division, at 326-4646, extension 249.

Sincerely,

LAWRENCE K. MAHUNA
POLICE CHIEF

DEREK D. PACHECO
ASSISTANT POLICE CHIEF
AREA II OPERATIONS

RA:dmv

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-07-174

September 13, 2007

Mr. Ron Terry
Geometrician Associates, LLC
P. O. Box 396
Hilo, Hawaii 96721

Dear Mr. Terry:

SUBJECT: Pre-Assessment Consultation for Kaloko Transitional Housing Project
Island of Hawaii, Hawaii
TMK: (3) 7-3-009: 055

Thank you for allowing us to review and comment on the project. The document was routed to the various branches of the Department of Health (DOH) Environmental Health Administration. We have the following Wastewater Branch, Safe Drinking Water Branch and General comments.

Wastewater Branch

The project proposes to develop an 8-acre property for transitional housing for the homeless. The facility is planned to serve 54 persons in multi-family units developed in cluster-style housing.

The project is located in the Non-Critical Wastewater Disposal Area (CWDA). However, per Hawaii Administrative Rule, section 11-62-31.1(d) cesspools cannot be used to serve any new public building.

All wastewater plans must meet Department's Rules, HAR Chapter 11-62, "Wastewater Systems." We do reserve the right to review the detailed wastewater plans for conformance to Applicable rules. If you have any questions, please contact the Planning & Design Section of the Wastewater Branch at 586-4294.

Safe Drinking Water Branch (SDWB)

The Safe Drinking Water Branch has reviewed the project from the perspectives of water supply and the potential use of injection wells for the disposal of wastewater. We offer the attached

standard comments, which are the general comments we would have on any preliminary project description lacking sufficient detail for specific comments.

General

We strongly recommend that you review all of the Standard Comments on our website: www.state.hi.us/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this project should be adhered to.

If there are any questions about these comments please contact Jiacai Liu with the Environmental Planning Office at 586-4346.

Sincerely,

KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO
WWB
SDWB

Attachment: Safe Drinking Water Branch Standard Comments

Safe Drinking Water Branch
Standard Comments

August 21, 2007

Safe Drinking Water Branch

The Safe Drinking Water Branch administers programs in the areas of: 1) public water systems; 2) underground injection control; and 3) groundwater protection. Our general comments on projects are as follows.

Public Water Systems

- Federal and state regulations define a public water system as a system that serves 25 or more individuals at least 60 days per year or has at least 15 service connections. All public water system owners and operators are required to comply with Hawaii Administrative Rules, Title 11, Chapter 20, titled Rules Relating to Potable Water Systems.

- All new public water systems are required to demonstrate and meet minimum capacity requirements prior to their establishment. This requirement involves demonstration that the system will have satisfactory technical, managerial and financial capacity to enable the system to comply with safe drinking water standards and requirements.

- Projects that propose development of new sources of potable water serving or proposed to serve a public water system must comply with the terms of Section 11-20-29 of Chapter 20. This section requires that all new public water system sources be approved by the Director of Health prior to its use. Such approval is based primarily upon the submission of a satisfactory engineering report which addresses the requirements set in Section 11-20-29.

- The engineering report must identify all potential sources of contamination and evaluate alternative control measures which could be implemented to reduce or eliminate the potential for contamination, including treatment of the water source. In addition, water quality analyses for all regulated contaminants, performed by a laboratory certified by the State Laboratories Division of the state of Hawaii, must be submitted as part of the report to demonstrate compliance with all drinking water standards. Additional parameters may be required by the Director for this submittal or additional tests required upon his or her review of the information submitted.

- All sources of public water systems must undergo a source water assessment which will delineate a source water protection area. This process is preliminary to the creation of a source water protection plan for that source and activities which will take place to protect the source of drinking water.

- Projects proposing to develop new public water systems or proposing substantial modifications to existing public water systems must receive approval by the Director of Health prior to construction of the proposed system or modification. These projects include treatment, storage and distribution systems of public water systems. The approval authority for projects owned and operated by a County Board or Department of Water or Water Supply has been delegated to them.

- All public water systems must be operated by certified distribution system and water treatment plant operators as defined by Hawaii Administrative Rules, Title 11, Chapter 11-25 titled; Rules Pertaining to Certification of Public Water System Operators.

- All projects which propose the use of dual water systems or the use of a non-potable water system in proximity to an existing potable water system to meet irrigation or other needs must be carefully designed and operated to prevent the cross-connection of these systems and prevent the possibility of backflow of water from the non-potable system to the potable system. The two systems must be clearly labeled and physically separated by air gaps or reduced pressure principle backflow prevention devices to avoid

contaminating the potable water supply. In addition backflow devices must be tested periodically to assure their proper operation. Further, all non-potable spigots and irrigated areas should be clearly labeled with warning signs to prevent the inadvertent consumption on non-potable water. Compliance with Hawaii Administrative Rules, Title 11, Chapter 11-21 titled; Cross-Connection and Backflow Control is also required.

- All projects which propose the establishment of a potentially contaminating activity (as identified in the Hawai`i Source Water Assessment Plan) within the source water protection area of an existing source of water for a public water supply should address this potential and activities that will be implemented to prevent or reduce the potential for contamination of the drinking water source.

- For further information concerning the application of capacity, new source approval, operator certification, source water assessment, backflow/cross-connection prevention or other public water system programs, please contact the Safe Drinking Water Branch at 586-4258.

Underground Injection Control (UIC)

- Injection wells used for the subsurface disposal of wastewater, sewage effluent, or surface runoff are subject to environmental regulation and permitting under Hawai`i Administrative Rules, Title 11, Chapter 11-23, titled Underground Injection Control (UIC). The Department of Health's approval must be first obtained before any injection well construction commences. A UIC permit must be issued before any injection well operation occurs.

- Authorization to use an injection well is granted when a UIC permit is issued to the injection well facility. The UIC permit contains discharge and operation limitations, monitoring and reporting requirements, and other facility management and operational conditions. A complete UIC permit application form is needed to apply for a UIC permit.
- A UIC permit can have a valid duration of up to five years. Permit renewal is needed to keep an expiring permit valid for another term.

For further information about the UIC permit and the Underground Injection Control Program, please contact the UIC staff of the Safe Drinking Water Branch at 586-4258.

Groundwater Protection Program

- Projects that propose to develop a golf course are asked to use the Guidelines Applicable to Golf Courses in Hawai`i (Version 6) in order to address certain groundwater protection concerns, as well as other environmental concerns.

Harry Kim
Mayor

Christopher J. Yuen
Director

Brad Kurokawa, ASLA
LEED® AP
Deputy Director

County of Hawaii
PLANNING DEPARTMENT
101 Pauahi Street, Suite 3 • Hilo, Hawaii 96720-4224
(808) 961-8288 • FAX (808) 961-8742

October 1, 2007

Mr. Ron Terry
Geometrician Associates, LLC
PO Box 396
Hilo, HI 96721

Dear Mr. Terry:

Subject: Pre-Environmental Assessment Consultation
Land Owner: County of Hawai'i
Project: Kaloko Transitional Housing Project
TMK: (3) 7-3-009-055

This letter is in response to your request for comments on the above-referenced project.

According to your submittal, the project consists of the development of a transitional housing facility to provide for the needs of homeless persons in West Hawaii. The development will consist of a yet to be defined number of multi-family units to serve up to 54 persons.

We have the following to offer on the subject parcel:

1. The State Land Use designation is Agricultural.

2. The General Plan designation is Urban Expansion. Urban expansion: *"Allows for a mix of high density, medium density, low density, industrial, industrial-commercial and/or open designations in areas where new settlements may be desirable, but where the specific settlement pattern and mix of uses have not yet been determined".*

3. The County zoning is Agricultural-5a (A-5a).

4. The project is not located within the County's Special Management Area.

Based on this information, the project does not comply with permitted uses in both the Agricultural State Land Use Designation and the County of Hawaii Agricultural A-5a Zone.

In order to proceed with this project on the subject parcel, you may consider the following options:

1. A State Land Use Boundary Amendment Application for 15 acres or less (from Agricultural to Urban) and a Change of Zone Application (from A-5a to RM) can be submitted concurrently to the Planning Director for its review and recommendation to the Planning Commission. The Planning Commission shall then review the applications and Planning Director's recommendations for its action and make a recommendation to the County Council. Both requests must then be adopted by the County Council as an ordinance. Public hearings will be conducted during this process.

2. Seek a Council Affordable Housing exemption using Section 11-16 of the Hawai'i County Code (Section 201G projects) *The County's exemption authority, as contained in chapter 201G, Hawai'i Revised Statutes, may be utilized to expedite change of zone requests, subdivision applications, and plan review as well as the consideration of reduced development standards.*

    a. Chapter 201G Hawai'i Revised Statutes was repealed in the 2006 Legislative Session (2006 Cumulative Supplement) and presently referenced in Chapter 210H.
    b. § 201H-12 (e) Hawai'i Revised Statutes states: *The corporation may contract or sponsor with any county, housing authority, or person, subject to the availability of funds, an experimental or demonstration housing project designed to meet the needs of elders,; the disabled; displaced or homeless persons; low- and moderate-income persons; teachers or other government employees; or university and college students and faculty.*

Please provide us with a copy of the Draft Environmental Assessment for our review and comment.

If you have questions, please feel free to contact Christian Kay of this office at 961-8288, extension 254.

Sincerely,

CHRISTOPHER J. YUEN
Planning Department

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United States Department of the Interior

NATIONAL PARK SERVICE
Kaloko-Honokohau National Historical Park
73-4786 Kanalani St., Suite 14
Kailua-Kona, HI 96740

IN REPLY REFER TO:
L7621

December 21, 2007

Mr. Ron Terry
Geometrician Associates, LLC
PO Box 396
Hilo, HI 96721

RE: **Kaloko Transitional Housing Project** (TMK:3rd:7-3-009:055)

Dear Mr. Terry:

Thank you for providing the National Park Service with the opportunity to submit comments to you during your preparation of a federal Environmental Assessment for the County of Hawaii's proposed Kaloko Transitional Housing Project. Kaloko-Honokohau National Historical Park was authorized in 1978 by Congress to preserve, interpret, and perpetuate traditional native Hawaiian activities and culture (Public Law 95-625). Water quality and quantity are vital to the integrity of this mission. The National Park contains two large (11 and 15- acre) ancient Hawaiian fishponds with large associated wetlands, more than 140 known anchialine pools, and 596 acres of marine waters. The pools and fishponds are significant cultural resources that define the Park and also provide habitat for nine federally protected and candidate endangered species. The National Park water resources are fed by, and in the case of the anchialine pools and `Aimakapa Fishpond, are solely dependent upon, ground water inputs. The anchialine pools support three known candidate endangered species. `Aimakapa Fishpond and wetland is a significant foraging and nesting habitat for two endangered waterbird species, the Hawaiian stilt and the Hawaiian coot, and is an important habitat for migratory waterfowl.

In 2001 the National Park Service intervened in a petition by TSA Corporation for a land-use district boundary amendment before the state Land Use Commission (LUC). The NPS intervened not to halt development, but rather to request protective conditions be placed on the development to protect water resources in the National Park from nonpoint source pollution. The LUC recognized the potential adverse impacts of upslope development and the legal and constitutional obligation to protect and preserve the resources of the Park and stated in its Decision and Order:

> This Commission is acutely aware that continuous development is planned for this coastline. Although each developer might claim that only a "small amount" of pollution will result from their development and that the area's ecosystem will show "little" effects, these developments and their impacts

> are cumulative and, absent strong mitigation measures, have the potential to devastate the fragile resources of the coastal and marine aquatic environments of the entire Kona coastal region.

The LUC further expressly determined that:

> [N]ative Hawaiian rights and natural and cultural resources would be damaged or destroyed by the pollution of groundwater that reaches the National Park from surrounding areas, including [TSA]'s proposed development at the Kaloko Industrial Park. Appropriate mitigation measures are, therefore, required under the Hawaii Constitution . . . in order to approve reclassification of the project area.
> (LUC 2002, Docket A00-732 Findings of Fact Conclusions of Law Decision and Order; Conclusion of Law ¶ 7)

Following the 2002 Decision and Order of the LUC on Docket A00-732, the neighboring commercial/industrial developers with petitions before the LUC, Lanihau Partners and McClean Honokohau Properties, came to agreement with the National Park Service on protective conditions to be put in place on redistricting by the LUC.

The Kaloko Transitional Housing Project area is immediately adjacent to the TSA Petition Area, 0.7 miles upgradient of the National Park. These acres were provided to the County in order to fulfill TSA's affordable housing condition. To properly mitigate potential impacts to the State's, the County's and the National Park's outstanding cultural and natural resources including ground water, ancient fishponds, anchialine pools, coastal waters and coral reefs, the NPS respectfully requests that the County adopt applicable LUC conditions (LUC FFCLDO Docket No.A00-732) concerning protection of water resources (wastewater, storm and surface water runoff, and pollution prevention) for the proposed Kaloko Transitional Housing Project.

<u>Surface Water Drainage, Non-point Source Pollution</u>

The prevailing geologic condition of the project area is highly permeable lava with few accumulated soils. Rain and runoff water carry pollutants quickly to ground water, on to coastal anchialine pools, and into the nearshore waters. This part of Kona has no streams or typical surface waters other than the anchialine pools, which are essentially exposed ground water hydrologically connected to the ocean. Therefore, ground-water flow may be considered similar to an underground stream, that is, a conduit for pollutants to surface waters at the coast. While rainfall in the area averages 19-22 inches per year, rainfall accumulation is typically concentrated in a few, intense events, which can cause a pulse of pollution flushing to drainage systems.

In 2002, the Hawaii County Council joined the Land Use Commission in recognizing the need to address nonpoint source pollution in the region surrounding the National Park The Council applied the following condition to Ordinance No. 02 114 amending the County Zoning Code for the TSA project, and again in 2004 with Ordinance No. 04 100

amending the County Zoning Code for the Lanihau Partners LLC's West Hawaii Business Park:

> In order to address and mitigate potential impacts from non-point source pollutants, the applicant shall participate with the County of Hawaii in a pilot storm drain program for roadways within the Kaloko-Honokohau region. This pilot program may potentially include other developments within the County and apply to all other government and private developments. ... The drainage system within road rights-of-way shall include storm drain filtration devices which meet the approval of the Department of Public Works, in consultation with the National Park Service... .
> (County of Hawaii Ordinance No. 02 114, Section 2, Condition F and Ordinace No. 04 110, Section 2, Condition O)

In consideration of the above, the National Park Service respectfully requests that the County of Hawaii's Kaloko Transitional Housing Project participate in this pilot project and include pollution filtration devices and other stormwater runoff engineering designs as mitigation to protect coastal water resources, and that the Project follow applicable portions of Docket A00-732 conditions 2a, 2b, 2h, 3c, 3d, and 3e in consultation with the National Park Service. In addition, the NPS asks that the Kaloko Transitional Housing Project provide the facility manager and residents with information about controlling non-point source pollution, including vehicle maintenance and proper disposal of vehicle fluids, the impacts of washing cars on the street, and minimizing fertilizer and pesticide use.

Wastewater

The NPS requests that the Kaloko Transitional Housing Project follow applicable portions of Docket A00-732 wastewater conditions 1c (as amended 2007) and 1b. The project should be constructed with dry sewer lines for eventual connection to the Kealakehe Wastewater Treatment Plant as the other developments in the immediate area are required to do by the State Land Use Commission conditions, and that the Housing Project connect to the treatment plant at the time the connection becomes available. In the interim, in order to protect downslope water resources, The NPS requests the Kaloko Transitional Housing Project, in consultation with the NPS, install an individual wastewater system(s) designed to remove no less than 80% total nitrogen from the treatment system (e.g., septic tank with FAST, Biofilter, Recirculation Filters, Sequential Batch Reactor, or comparable technology) and construct an absorption field of import material designed with adequate percolation rate and additional phosphorus removal.

Water System

The NPS is highly concerned about the cumulative impacts of ground-water withdrawal to the cultural and natural resources in the Park that are dependent upon ground-water flow. The NPS requests that the Environmental Assessment for the Kaloko Transitional Housing Project include information as to the amount of water required for the project

and how that water will be obtained. Although the water withdrawal amount may be small given the project's size, and small relative to the recharge rate of the aquifer, we note that this project is only one of many developments that are proposed in the vicinity, and that the cumulative impacts of these withdrawals will be significant. The NPS also requests that the County look for ways to reduce water usage in the Transitional Housing Project. Some proven methods for reducing water usage in new housing developments include planting drought resistant native landscaping, installing low flow toilets and showerheads, installing waterless urinals in public restrooms, and providing information to new residents concerning the importance of water conservation. Water conservation will save the Kaloko Transitional Housing Project operational costs in the long term.

I appreciate this opportunity to provide our concerns. Please contact me, 808-329-6881 ext. 201, or my resource staff: Resource Manager Richard Boston at ext. 203 or Sallie Beavers at ext 220, to discuss any questions you may have on our comments.

Sincerely,

Geraldine K. Bell
Superintendent

cc: A. Rudo, County of Hawaii Office of Housing
C. Yuen, County of Hawaii Planning Department
B. McClure, County of Hawaii Public Works
G. Kuba, County of Hawaii Public Works, Engineering
M. Pavao, County of Hawaii Department of Water Supply
Housing and Urban Development
Office of Environmental Quality Control
NPS Pacific West Regional Office
G. Lind, Office of the Solicitor

531
Rec'd 7/18/08

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

July 11, 2008

Alan Haun, Ph.D.
Haun & Associates
HCR 1 Box 4730
Keaau, HI 96749

LOG NO: 2008.0288
DOC NO: 0807MD56
Archaeology

Dear Dr. Haun:

SUBJECT: Chapter 6E-42 Historic Preservation Review –
Archaeological Inventory Survey of an 8.016-acre area with four (4) new sites
Kaloko Ahupua`a, North Kona District, Island of Hawai`i
TMK: (3) 7-3-009:055

This letter reviews the revised report submitted to us in January 2008 (*Haun and Henry 2008; Archaeological Inventory Survey, TMK: 7-3-09:55, Land of Kaloko, North Kona District, Island of Hawaii; Report 531-112707)*. We apologize for the delay in our reply. The survey identified four (4) new Sites at this location (Sites 50-10-28-26267 and -26270 [modified outcrops], -26268 [a mound] and -26269 [a lava tube]). All sites are considered significant under criterion 'd' and we concur with this assessment.

We also concur with your recommendation that your work documenting three of the sites (-26267, -26268 and -26270) is sufficient and no further work is required. You are recommending that data recovery be conducted at Site 26269, the lava tube; we concur with this assessment. The report is therefore accepted pursuant to §13-276 of the Hawaii Administrative Rules. We look forward to reviewing the Data Recovery Plan for Site 26269.

If you have any questions about this letter please contact Morgan Davis at our Hawaii Island Section at (808) 981-2979.

Aloha,

Nancy McMahon,
Archaeology and Historic Preservation Manager
State Historic Preservation Division

Est/jjm
5

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
2008-I-0162

JUN -6 2008

Mr. Reginald David
Rana Productions
P. O. Box 1371
Kailua-Kona, Hawaii 96745

Subject: Informal Section 7 Consultation for the Proposed Kaloko Transitional Housing Project, North Kona, Island of Hawaii [TMK: (3) 7-3-009:055]

Dear Mr. David:

Thank you for your March 27, 2008, letter, requesting our concurrence that that the above mentioned project is not likely to adversely affect listed species. We received your letter on April 1, 2008. On May 16, 2008, we received a letter from the County of Hawaii's Office of Housing and Community Development (OHCD) authorizing you and Ron Terry of Geometrician Associates to act on behalf of OHCD on matters concerning the preparation of an Environmental Assessment for the proposed Kaloko Transitional Housing Project. On June 2, 2008, we received an email from Mark Chandler, Director of the Office of Community Planning and Development for the U. S. Department of Housing and Community Development's Honolulu Field Office, authorizing the County of Hawaii's OHCD to coordinate environmental consultations with the U. S. Fish and Wildlife Service. This response is in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*).

The project will consist of housing and other services for Hawaii County's homeless population. Though still in its conceptual stages, this project will consist of multi-family units and will accommodate approximately 54 people. In addition to housing, the project will include classrooms, offices, and recreational facilities. The project will be located on 8 acres of County-owned property upslope from the Kaloko Light Industrial Area. Though there are endangered plants in the area, biological surveys for listed plants conducted in 2005, did not reveal any federally listed plants on the site. Your biological surveys for federally listed birds and bats in 2000, and 2006, indicated there was no suitable habitat for these taxa on the site. We concur with your determination that this project is not likely to adversely affect listed species, as it is unlikely that they are present on or near the project site. There is no federally designated critical habitat within or adjacent to the site. Therefore, no critical habitat will be adversely modified or destroyed from implementation of the proposed project.

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2008 JUN -9 PM 12: 22
COUNTY OF HAWAII
OHCD

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We request that you use your delegated authority under section 7(a)(1) of the Act to further the conservation and recovery of listed species. We recommend using native plants for landscaping purposes in order to reduce the spread of non-native invasive species. If native plants do not meet your landscaping objectives, we recommend that you choose species that are thought to have a low risk of becoming invasive. The following websites are good resources to use when choosing landscaping plants: Pacific Island Ecosystems at Risk (http://www.hear.org/Pier/), Hawaii-Pacific Weed Risk Assessment (http://www.botany.hawaii.edu/faculty/daehler/wra/full_table.asp) and Global Compendium of Weeds (www.hear.org/gcw).

Thank you for the opportunity to review your proposed project. If you have questions regarding this letter, please contact Dr. Jeff Zimpfer, Fish and Wildlife Biologist, Consultation and Technical Assistance Program (phone: 808-792-9431; fax: 808-792-9581).

Sincerely,

for Patrick Leonard
Field Supervisor

cc: Edwin Taira, Housing Administrator, County of Hawaii, OHCD

ENVIRONMENTAL ASSESSMENT

KALOKO HOUSING PROGRAM

TMK (3rd): 7-3-009:055
North Kona District, Hawai'i Island, State of Hawai'i

County of Hawai'i
Office of Housing and Community Development
50 Wailuku Drive
Hilo, Hawai'i 96720-2456

APPENDIX 1B
COMMENTS TO DRAFT E.A. AND RESPONSES

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

November 13, 2008

Geometrician Associates
Box 396
Hilo, Hawaii 96720

Attention: Mr. Ron Terry

Gentlemen:

Subject: Kaloko Housing Program

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Charlene E. Unoki
for Morris M. Atta
Administrator

Cc: OEQC
County of Hawaii
Office of Housing & Community Dev

geometrician
ASSOCIATES, LLC
integrating geographic science and planning

phone: (808) 969-7090 PO Box 396 Hilo Hawaii 96721 rterry@hawaii.rr.com

January 26, 2008

Morris M. Atta, Administrator
Land Division
Hawai'i State DLNR
P.O. Box 621
Honolulu, HI 96809

Dear Mr. Atta:

Subject: Comment to Draft State Environmental Assessment and Federal Environmental Assessment for Kaloko Housing Program (TMK: 3rd: 7-3-009:055)

Thank you for the comment letter dated November 13, 2008, indicating that DLNR had no other comments to offer at this time. We very much appreciate your distribution of the EA to the various divisions of DLNR and their review of the document. If you have any questions about the EA, please contact me at (808) 969-7090.

Sincerely,

Ron Terry

Ron Terry, Principal
Geometrician Associates

Cc: Chris Fujiuchi, Hawai'i County Office of Housing and Community Development

LINDA LINGLE
GOVERNOR

PATRICIA HAMAMOTO
SUPERINTENDENT

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

OFFICE OF SCHOOL FACILITIES AND SUPPORT SERVICES

[redacted]

December 15, 2008

Mr. Ron Terry
Geometrician Associates
P.O. Box 396
Hilo, Hawai`i 96721

Dear Mr. Terry:

Subject: Draft Environmental Assessment for the Kaloko Housing Program, North Kona, TMK: 7-3-009:055

The Department of Education (DOE) has reviewed the Draft Environmental Assessment (DEA) for the County of Hawaii's Kaloko Housing Program (Program).

The DEA states that the 96 residential units in the Program will not have any effects on public facilities. The DOE believes the Program will have an impact on the Kealakehe schools along with many other residential projects proposed for the North Kona area. The DOE anticipates the need for new or expanded schools to serve the area where the Program housing is located.

The 2007 Legislature passed a bill establishing school impact fees. The bill became Act 245 and is in the process of being implemented. Under this new law, it is possible the Program will be required to pay an impact fee.

The Board of Education is expected to identify and adopt school impact districts for areas requiring new or expanded facilities in the future. We are presently operating under the interim language of the bill. Developers of all residential units within school impact districts will be required to have a written agreement with the DOE prior to the issuance of a building permit.

We currently do not know the amount of the impact fee generated for this project. If the developers are interested in obtaining an early agreement, or if you have any questions, please contact Heidi Meeker of the Facilities Development Branch at (808) 377-8301.

Sincerely yours,

Duane Y. Kashiwai
Public Works Administrator
Facilities Development Branch

DYK:jmb

c: Katherine Kealoha, OEQC
Christopher Yuen, Hawaii County Planning Department
Art Souza, CAS, Honokaa/Kealakehe/Kohala/Konawaena Complex Areas

geometrician
ASSOCIATES, LLC
integrating geographic science and planning

phone: (808) 969-7090 PO Box 396 Hilo Hawaii 96721 rterry@hawaii.rr.com

January 26, 2008

Duane Y. Kashiwai
Public Works Administrator
Facilities Development Branch
Hawaii State Department of Education
PO Box 2360
Honolulu HI 96804

Dear Mr. Kashiwai:

Subject: Comment to Draft State Environmental Assessment and Federal Environmental Assessment for Kaloko Housing Program (TMK: 3rd: 7-3-009:055)

Thank you for the comment letter dated December 15, 2008, on the Draft EA. In the letter, you stated that the project would have an impact on Department of Education (DOE) facilities. The Final EA has been amended to state that DOE believes that the project will have an impact on the Kealakehe schools and that the DOE anticipates the need for new or expanded schools to serve the growing area.

We have also included information on the fact that Act 245, which is currently being implemented, directs the Board of Education to identify and adopt school impact districts for areas requiring new or expanded facilities in the future, and it possible that the Kaloko Housing Program will be required to pay an impact fee.

We very much appreciate your review of the document. If you have any questions about the EA, please contact me at (808) 969-7090.

Sincerely,

Ron Terry

Ron Terry, Principal
Geometrician Associates

Cc: Chris Fujiuchi, Hawai'i County Office of Housing and Community Development

Harry Kim
Mayor

Lawrence K. Mahuna
Police Chief

Harry S. Kubojiri
Deputy Police Chief

County of Hawaii

POLICE DEPARTMENT
349 Kapiolani Street • Hilo, Hawaii 96720-3998
(808) 935-3311 • Fax (808) 961-2389

November 17, 2008

Mr. Ron Terry
Principal
Geometrician Associates
P.O. Box 396
Hilo, Hawaii 96721

Dear Mr. Terry:

SUBJECT: Draft Environmental Assessment for Koloko Housing Program
North Kona, Island of Hawaii
TMK: 3rd 7-3-009-055

This responds to your recent letter requesting comments on any special environmental conditions or impacts related to the above development.

Staff has reviewed the above-referenced document and submits the following comments:

- Recommends development address issues or concerns related to traffic safety and flow, and connectivity.
- Ensure traffic design addresses emergency response plans.
- Implement strategies to address pedestrian safety.

Should you have any questions, please contact Captain Chad Basque, Commander of Kona Patrol, at 326-4646 extension 249.

Sincerely,

LAWRENCE K. MAHUNA
POLICE CHIEF

HENRY J. TAVARES, JR.
ASSISTANT CHIEF
AREA II OPERATIONS

William P. Kenoi
Mayor

Lawrence K. Mahuna
Police Chief

Harry S. Kubojiri
Deputy Police Chief

County of Hawaii

POLICE DEPARTMENT
349 Kapiolani Street • Hilo, Hawaii 96720-3998
(808) 935-3311 • Fax (808) 961-2389

December 5, 2008

Mr. Ron Terry
Geometrician Associates, LLC
P.O. Box 396
Hilo, Hawaii 96721

Dear Mr. Terry:

RE: Federal Environmental Assessment for Kaloko Housing Program
TMK: 3rd: 7-3-009:055

This responds to your November 28, 2008, letter requesting comments on the above-indicated environmental assessment.

Staff has reviewed the assessment and has no comments or concerns to offer at this time.

Should you have any questions, please contact Captain Chad Basque, Commander of the Kona District, at 326-4646, ext. 249.

Mahalo,

LAWRENCE K. MAHUNA
POLICE CHIEF

HENRY J. TAVARES JR.
ASSISTANT CHIEF
AREA II OPERATIONS

CB:dmv

geometrician
ASSOCIATES, LLC
integrating geographic science and planning

phone: (808) 969-7090 PO Box 396 Hilo Hawaii 96721 rterry@hawaii.rr.com

January 26, 2008

Henry J. Tavares
Assistant Chief, Area II Operations
Hawai'i County Police Department
349 Kapiolani Street
Hilo HI 96720

Dear Mr. Tavares:

Subject: Comment to Draft State Environmental Assessment and Federal Environmental Assessment for Kaloko Housing Program (TMK: 3rd: 7-3-009:055)

Thank you for the comment letters dated November 17, 2008 (followed up by a December 5, 2008 letter), in which you recommended that development address issues or concerns related to traffic safety, flow and connectivity, emergency response plans, and pedestrian safety. A Traffic Impact Assessment Report (TIAR) conducted for the project helped locate the best driveway access and determined that the project would not significantly impact traffic. The facility will be designed to facilitate emergency response. The on-site improvements will include pedestrian sidewalks and accessible pathways along buildings and parking lots. According to the Department of Public Works, the Maiau Street extension currently being built from the Kaloko Industrial Area will have paved shoulders, similar to the existing industrial area, which can be safely utilized by pedestrians and bicyclists. This information has been added to the Final EA.

We very much appreciate your review of the document. If you have any questions about the EA, please contact me at (808) 969-7090.

Sincerely,

Ron Terry

Ron Terry, Principal
Geometrician Associates

Cc: Chris Fujiuchi, Hawai'i County Office of Housing and Community Development

William Kenoi
Mayor

Daryn S. Arai
Acting Planning Director

County of Hawaii

PLANNING DEPARTMENT
Aupuni Center • 101 Pauahi Street, Suite 3 • Hilo, Hawaii 96720
Phone (808) 961-8288 • Fax (808) 961-8742

December 8, 2008

Mr. Ron Terry
Geometrician Associates, LLC
P.O. Box 396
Hilo, HI 96721

Dear Mr. Terry:

Subject: Draft Environmental Assessment
Kaloko Transitional Housing Project
TMK: (3) 7-3-009-055

Thank you for the opportunity to review a comment on this Draft Environmental Assessment, after careful review we have no further comments at this time.

Should you have questions, please feel welcome to contact Christian Kay of my staff at 961-8288, extension 254.

Sincerely,

Daryn S. Arai
Planning Department

CRK:cs
L:\EA Response Letters\TerryKalokoTransEAResponse.rtf

cc: Director, Office of Environmental Quality Control

geometrician
ASSOCIATES, LLC
integrating geographic science and planning

phone: (808) 969-7090 PO Box 396 Hilo Hawaii 96721 rterry@hawaii.rr.com

January 26, 2008

Daryn S. Arai, Acting Director
Hawaii County Planning Department
101 Pauahi Street, Suite 3
Hilo HI 96720

Dear Mr. Arai:

Subject: Comment to Draft State Environmental Assessment and Federal Environmental Assessment for Kaloko Housing Program (TMK: 3rd: 7-3-009:055)

Thank you for your comment letter on the Draft EA dated December 8, 2008, in which you stated that your agency had no further comments at this time. We very much appreciate your review of the document. If you have any questions about the EA, please contact me at (808) 969-7090.

Sincerely,

Ron Terry

Ron Terry, Principal
Geometrician Associates

Cc: Chris Fujiuchi, Hawai'i County Office of Housing and Community Development

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

December 12, 2008

Mr. Ron Terry
Geometrician Associates
P. O. Box 396
Hilo, Hawaii 96721

LOG NO: 2008.5097
DOC NO: 0812TD05
Archaeology

Dear Mr. Terry:

Subject: **Chapter 6E-42 and NHPA Section 106 Historic Preservation Review – Draft Environmental Assessments (HAR and HUD) For the County of Hawai`i Kaloko Housing Program Kaloko Ahupua'a, North Kona District, Island of Hawai'i TMK: (3) 7-3-09: 55**

Thank you for submitting the state and federal draft environmental assessments (DEAs) for the proposed project, which will involve construction of 24 transitional housing units, 72 affordable rental units, a warehouse and a wastewater treatment plant. The approximately 8-acre parcel is located along Hina Lani Drive, adjacent to the currently undeveloped portion of the Kaloko Light Industrial Park.

As indicated in the DEAs, the project area was the subject of an archaeological inventory survey (Haun and Henry, January 2008), and four historic properties were identified (SIHP Sites 26267 – 26270). These include two modified outcrops, a stone mound and a lava tube with a steppingstone trail. Our office approved this report and concurred with the recommendation that additional data recovery work was needed for the lava tube (Site 26269; Log No 2008.0288, Doc No. 0801MD56). The DEAs indicate that the data recovery work will occur in accordance with an approved data recovery plan prior to the commencement of ground altering activities within the project area. We also note that the lava tube will not be impacted by the current project design. If it is the County's intent to preserve Site 26269, we request that this commitment be formalized in a preservation plan.

We concur with the findings of the DEAs that this proposed project will have no effect on historic properties, with the understanding that the mitigation measures as described above are implemented. If you have any questions at this time, please contact Theresa Donham at (808) 933-7653.

Aloha,

Puaalaokalani Aiu, Ph.D.

geometrician
ASSOCIATES, LLC
integrating geographic science and planning

phone: (808) 969-7090 PO Box 396 Hilo Hawaii 96721 rterry@hawaii.rr.com

January 26, 2008

Nancy McMahon, Deputy SHPO
State Historic Pres. Div.
601 Kamokila Blvd., Rm. 555
Kapolei HI 96707

Dear Ms. McMahon:

Subject: Comment to Draft State Environmental Assessment and Federal Environmental Assessment for Kaloko Housing Program (TMK: 3rd: 7-3-009:055)

Thank you for your comment letter on the Draft EA dated December 12, 2008, in which you stated that the data recovery for the project needed to be accomplished and that if the County wishes to preserve the historic site, a formal preservation needs to be approved. The County agrees to these conditions and will implement them prior to construction.

We very much appreciate your review of the document. If you have any questions about the EA, please contact me at (808) 969-7090.

Sincerely,

Ron Terry

Ron Terry, Principal
Geometrician Associates

Cc: Chris Fujiuchi, Hawai'i County Office of Housing and Community Development

United States Department of the Interior

NATIONAL PARK SERVICE
Kaloko-Honokohau National Historical Park
73-4786 Kanalani St., Suite 14
Kailua-Kona, HI 96740

IN REPLY REFER TO:
L7621

December 4, 2008

Mr. Ron Terry
Geometrician Associates, LLC
PO Box 396
Hilo, HI 96721

RE: **State of Hawai`i Draft Environmental Assessment and Federal Environmental Assessment for Kaloko Housing Program (TMK: 3rd: 7-009:055)**

Dear Mr. Terry:

Thank you for providing the National Park Service with the opportunity to submit comments to you on the Draft Environmental Assessment for the County of Hawaii's proposed Kaloko Housing Program. The Draft EA notes that the scale of this project is small compared to the other Kaloko Industrial Park projects but the cumulative effects of development in this area remains a concern to the National Park and to the Land Use Commission.

As stated in our previous letter submitted to you during the consultation process, Kaloko-Honokohau National Historical Park was authorized in 1978 by Congress to preserve, interpret, and perpetuate traditional native Hawaiian activities and culture (Public Law 95-625). Water quality and quantity are vital to the integrity of this mission. The National Park contains two large (11 and 15- acre) ancient Hawaiian fishponds with large associated wetlands, more than 155 known anchialine pools, and 596 acres of marine waters. The pools and fishponds are significant cultural resources that define the Park and also provide habitat for nine federally protected and candidate endangered species. The National Park water resources are fed by, and in the case of the anchialine pools and `Aimakapa Fishpond, are dependent upon, ground water inputs to maintain the ecosystem. The anchialine pools support three known candidate endangered species. `Aimakapa Fishpond and wetland is a significant foraging and nesting habitat for two endangered waterbird species, the Hawaiian stilt and the Hawaiian coot, and is an important habitat for migratory waterfowl.

In 2001 the National Park Service intervened in a petition by TSA Corporation for a land-use district boundary amendment before the state Land Use Commission (LUC). The NPS intervened to request protective conditions be placed on the development to protect water resources in the National Park from nonpoint source pollution. The LUC recognized the potential adverse impacts of upslope development and the legal and constitutional obligation to protect and preserve the resources of the Park and stated in its Decision and Order:

> This Commission is acutely aware that continuous development is planned for this coastline. Although each developer might claim that only a "small amount" of pollution will result from their development and that the area's ecosystem will show "little" effects, these developments and their impacts are cumulative and, absent strong mitigation measures, have the potential to devastate the fragile resources of the coastal and marine aquatic environments of the entire Kona coastal region.

The LUC further expressly determined that:

> [N]ative Hawaiian rights and natural and cultural resources would be damaged or destroyed by the pollution of groundwater that reaches the National Park from surrounding areas, including [TSA]'s proposed development at the Kaloko Industrial Park. Appropriate mitigation measures are, therefore, required under the Hawaii Constitution . . . in order to approve reclassification of the project area.
> (LUC 2002, Docket A00-732 Findings of Fact Conclusions of Law Decision and Order; Conclusion of Law ¶ 7)

Following the 2002 Decision and Order of the LUC on Docket A00-732, the neighboring commercial/industrial developers with petitions before the LUC, Lanihau Partners and McClean Honokohau Properties, came to agreement with the National Park Service on protective conditions to be put in place on redistricting by the LUC.

The Kaloko Transitional Housing Project area is immediately adjacent to the TSA Petition Area, 0.7 miles upgradient of the National Park. These acres were provided to the County in order to fulfill TSA's affordable housing condition. To properly mitigate potential impacts to the State's, the County's and the National Park's outstanding cultural and natural resources including ground water, ancient fishponds, anchialine pools, coastal waters and coral reefs, we are pleased that the Draft EA acknowledges our concerns. We applaud your efforts to include mitigation measures to protect surface water drainage and non-point source pollution and we look forward to consultations between the County and the National Park on the Best Management Practices (BMPs), as noted in the EA. However, we see no mention of your intent to participate in the County of Hawaii pilot storm drain program for roadways within the Kaloko-Honokohau region (see (County of Hawaii Ordinance No. 02 114, Section 2, Condition F and Ordinance No. 04 110, Section 2, Condition O). We again respectfully request that you participate in this program.

In our letter to you dated 21 December 2007, the NPS requested that the Environmental Assessment for the Kaloko Transitional Housing Project include information as to the amount of water required for the project and how that water will be obtained. The draft EA does not include the amount or source of potable water required for the Kaloko Housing Project. Knowledge of this information is critical to evaluating the cumulative impacts of future groundwater withdrawals on groundwater levels, groundwater quality and submarine groundwater discharge to the nearshore marine environment. Adverse impacts to these resources pose a serious threat to the water-dependent cultural and natural resources in the

National Park. For these reasons, the National Park Service reiterates its request that the quantity and source of water for the project be identified so that water resources can be managed sustainably into the future.

Page 15, section 3.1.4, Environmental Setting, third paragraph states, "Neither the project site nor any surrounding areas are mentioned in the County of Hawai`i General Plan as being notable for their beauty (County of Hawai`i 2005) with the exception of Kaloko Pond (TMK 7-3-09:02), which is not visible from the project site or subject to viewplane blockage from buildings on the project site." Given that the National Park is part of the surrounding area, this statement is clearly incorrect. In addition, it is more important to note that the project site may be visible from Kaloko Fishpond, rather than addressing Kaloko Fishpond's visibility from the project site.

Page 16 under section 3.1.4, Impacts and Mitigation Measures states, "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. . ." Given our concern regarding the runoff into the groundwater, we request that you provide more details regarding the use of any chemical soil stabilizers. This paragraph also notes that onsite mobile and stationary construction equipment also would emit air pollutants from engine exhausts but that no "sensitive receptors" are present. The National Park is a "sensitive receptor" and we are concerned about the effects of air pollutants, including dust and exhaust, on park visitors and resources.

I appreciate this opportunity to provide our concerns. Please contact me, 808-329-6881 ext. 1201, or my Resource Manager, Sallie Beavers at ext. 1220, to discuss any questions you may have on our comments.

Sincerely,

Geraldine K. Bell
Superintendent

cc: J. McComber, County of Hawaii Office of Housing and Community Dev.
Daryn Arai, County of Hawaii Planning Department
Galen Kuba, County of Hawaii Public Works
M. Pavao, County of Hawaii Department of Water Supply
US Department of Housing and Urban Development
Director, Office of Environmental Quality Control
C. Hew, Dept of Health, Ground Water Protection Program
Office of Planning, Hawaii Coastal Zone Management Program
G. Lind, Office of the Solicitor
C. Pettee, NPS Water Rights Branch
NPS Pacific West Regional Office

geometrician
ASSOCIATES, LLC
integrating geographic science and planning

phone: (808) 969-7090 PO Box 396 Hilo Hawaii 96721 rterry@hawaii.rr.com

January 26, 2008

Ms. Geraldine K. Bell, Superintendent
Kaloko-Honokohau National Historical Park
73-4786 Kanalani Street, #14
Kailua-Kona, Hawaii 96740

Dear Ms. Bell:

Subject: **Comment to Draft State Environmental Assessment and Federal Environmental Assessment for Kaloko Housing Program (TMK: 3rd: 7-3-009:055)**

Thank you for your comment letter dated December 4, 2008, on the Draft EA. In answer to your specific comments:

1. *Value of the National Park.* Thank for re-sharing the information on the National Park, which you also provided as part of your early consultation letter (reproduced in Appendix 1a of the Draft EA), and which was included in the Draft EA in Section 3.1.2.

2. *LUC conditions on the TSA Development.* The County of Hawai'i understands your concerns about impacts to natural and cultural resources related to the waters of the National Park, whether direct, indirect, or cumulative. Pursuant to your requests in the early consultation letter and our subsequent meeting on the project, we discussed the TSA conditions with the project engineers from Catholic Charities, the group expected to operate the facility. The project has attempted to incorporate mitigation measures related to water quality and quantity that can feasibly be adjusted within the context of a critically needed homeless and affordable housing project that will serve the neediest segment of the community, a population that includes many Native Hawaiians with no other recourse for housing. The engineers determined that many of your suggestions could feasibly be incorporated in the project, and we appreciate your acknowledgment of this addition the project scope. Concerning the advanced stormwater system pilot program, we understand that there is a study underway jointly funded by the Department of Public Works and the U.S. Geological Survey, with an expected completion date of 2011. The study will determine to what extent drywells actually contribute to coastal water pollution on the island of Hawai'i. After this time, the County may consider imposing additional treatment requirements for drywells. Due to the expense of installing and maintaining the advanced stormwater pollution filtration devices, the benefit of which is not yet clear, the engineers determined that we would not be able to comply with your request to require advanced treatment

drywells. The other permanent BMPs that are expected to be implemented, including silt sacks at grated inlets, vegetated swales, and operation/maintenance policies for the facility, will greatly reduce pollution. Future upgrades will be considered based on the final outcome of the jointly funded study.

3. *Water calculations.* The project has not yet been designed and the engineers determined that precise water calculations were not yet feasible. However, in deference to your comment, engineers calculated that based on 96 units and the project's emphasis on water conservation through fixtures and landscaping indicate, the project will demand roughly 42,180 gallons per day. This information has been added to the Final EA.

4. *Visual impacts.* It is very important to consider scale and locational context. Interposed between the 8-acre Kaloko Housing Program project site and the shoreline is a major highway and a currently expanding industrial park that already contains hundreds of acres with many multi-story buildings. It is likely that from the National Park there will only a very obscure and distant view, or even no view at all, of the Kaloko Housing Program facility. The project is not expected to produce any adverse visual impacts to viewers from the National Park, who will look up at the mountain or along the coast and see dozens of much larger and more imposing developments including a major harbor, a large new resort, and at least five industrial parks, not to mention thousands of residential units.

5. *Sensitive receptors and soil stabilizers.* As discussed above, interposed between the Kaloko Housing Program project site and the shoreline is a very large industrial park which is not considered a sensitive receptor in terms of dust or other air pollutants generated temporarily during construction and properly mitigated. Between the industrial park and the National Park is a major highway that is a much greater source of air pollution than would be minor construction on a distant property. It is extremely unlikely that, given standard BMPs for the control of dust and erosion, the National Park will experience any actual impacts. The soil stabilizers that would be used are standard products that are chemically benign and approved for use in many environments by the EPA and the Department of Health. For example, soil stabilizers are used in the extremely sensitive environment of the Mauna Kea Summit Access Road. They are undoubtedly being used to control dust in many construction projects in West Hawai'i as well. The precise methods used to control erosion and dust will be developed later during construction as part of National Pollutant Discharge Elimination System permit and dust control permit.

We very much appreciate your review of the document. If you have any questions about the EA, please contact me at (808) 969-7090.

Sincerely,

Ron Terry

Ron Terry, Principal
Geometrician Associates

Cc: Chris Fujiuchi, Hawai'i County Office of Housing and Community Development

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD08/4060

January 9, 2009

Ron Terry
Geometrician Associates
P.O. Box 396
Hilo, Hi 96721

RE: Request for comments on the Draft Environmental Assessment for the Kaloko Housing Program, North Kona, Hawai'i Island, TMK: (3) 7-3-009-055.

Aloha e Ron Terry,

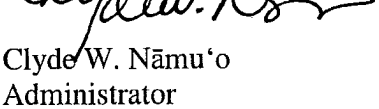
The Office of Hawaiian Affairs (OHA) received the above-mentioned letter on November 10, 2008. The County of Hawai'i's Office of Housing and Community Development proposes to develop the Kaloko Housing Program on a county-owned, 8-acre parcel in North Kona, Hawai'i Island. The Kaloko Housing Program will provide transitional affordable housing. The project will include 24 transitional housing units, approximately 72 affordable rental units and a warehouse to facilitate the operations of The Food Basket and Habitat for Humanity. OHA has reviewed the project and offers the following comments.

We will rely on the applicant's assurances that should iwi kūpuna or Native Hawaiian cultural or traditional deposits be found during the construction of the project, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

OHA is pleased that the project design will accommodate the preservation of most of the individual plants that are listed as species of concern, and that these species and other native plants will be used in the landscaping plan for the subject parcel. Landscaping with native plants furthers the traditional Hawaiian concept of mālama 'āina and creates a more Hawaiian sense of place. We also appreciate that the applicant is allowing the Amy Greenwell Ethnobotanical Garden to collect seeds and cuttings at the project site, and to undertake outplanting, if appropriate.

Thank you for the opportunity to comment. If you have further questions, please contact Sterling Wong by phone at (808) 594-0248 or e-mail him at sterlingw@oha.org.

'O wau iho nō me ka 'oia'i'o,



Clyde W. Nāmu'o
Administrator

C: Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hi 96813

Jeremy McComber
County of Hawai'i, Office of Housing and Community Development
50 Wailuku Drive
Hilo, Hi 96720

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD08/4060

December 12, 2008

Ron Terry
Geometrician Associates
PO Box 396 Hilo, Hawai'i 96721

RE: Request for comments on the proposed Kaloko Housing Program, Hawai'i island, TMK: 7-3-009:55.

Aloha e Ron Terry,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter dated November 28, 2008. OHA has reviewed the project and offers the following comments.

OHA understands that the purpose of this proposal is to answer a need for transitional and affordable housing in west Hawai'i. As such, we are generally supportive of it. We do note that the comments required are for a hybrid state/federal environmental review, and we will tailor our comments as such.

We see that the proposed work involves the potential for increased erosion. As such we always request that water quality standards be maintained and urge that best management practices to guard against water pollution be stringently maintained. A list of permits required or applied for would help us to assess this project in this regard.

OHA notes that an archeological monitoring plan was not mentioned. Therefore, we advocate that, in accordance with Section 6E-46.6, Hawaii Revised Statutes and Chapter 13-300, Hawaii Administrative Rules, if the project moves forward, and if any significant cultural deposits or human skeletal remains are encountered, work shall stop in the immediate vicinity and the State Historic Preservation Division shall be contacted.

We do appreciate that a geological feature consisting of a lava tube will be set aside to preserve an archeological site, and we ask what that is and how it will specifically be preserved.

Similarly we see that rare native plants are proposed to be preserved and we inquires as to the species and nature of preservation.

OHA also points out that on April 26, 2000, the Governor approved House Bill No. 2895 H.D.1 as Act 50 which amended Chapter 343 Hawaii Revised Statutes to require a cultural impact assessment to be included in the preparation of an Environmental Impact Statement/Environmental Assessment such as this.

We further suggest that the project area be landscaped with drought tolerant native or indigenous species that are common to the area. Any invasive species should also be removed. Doing so would not only serve as practical water-saving landscaping practices, but also serve to further the traditional Hawaiian concept of mālama ʻāina and create a more Hawaiian sense of place. This would also help to reduce the amount of impervious surfaces in the project area, thereby reducing runoff as well. . Tree and landscape planting to shade paved parking areas and provide shade and cooling to building elements and outdoor use areas should also be considered.

Thank you for the opportunity to comment. If you have further questions, please contact Grant Arnold by phone at (808) 594-0263 or e-mail him at granta@oha.org.

ʻO wau iho nō me ka ʻoiaʻiʻo,

Clyde W. Nāmuʻo
Administrator

C: OHA CRC Kailua

geometrician
ASSOCIATES, LLC
integrating geographic science and planning

phone: (808) 969-7090 PO Box 396 Hilo Hawaii 96721 rterry@hawaii.rr.com

January 26, 2008

Clyde Nāmu'o, Administrator
Office of Hawaiian Affairs
711 Kapiolani Blvd., Suite 1250
Honolulu HI 96813

Dear Mr. Nāmu'o:

Subject: Comment to Draft State Environmental Assessment and Federal Environmental Assessment for Kaloko Housing Program (TMK: 3rd: 7-3-009:055)

Thank you for your comment letters dated December 12, 2008 and January 9, on the Draft EA. In answer to your specific comments:

1. *Water quality and permits.* The County of Hawai'i shares your concerns about water quality, and the project is implementing a number of non-mandatory mitigation measures, as discussed in Section 3.1.2 of the Draft EA. Also discussed in that section is the required National Pollutant Discharge Elimination System permit. A list of typical Best Management Practices has been provided, but the precise combination is site-specific and will be determined as the engineer prepares the permit. The Draft EA also has a list of permits in Section 3.5.

2. *Archaeological monitoring plan.* Given the circumstances, neither the archaeologist nor the State Historic Preservation Division determined that it would be necessary to impose monitoring conditions. However, the County of Hawai'i will ensure that its contractors are aware and observant of the conditions regarding unexpected finds.

3. *Archaeological site and native plants to be preserved.* We appreciate your recognition of this aspect of the project. As discussed in Section 3.2.3 of the Draft EA and in detail in Appendix 5, the archaeological site within the lava tube consists of a steppingstone path of flat pahoehoe slabs, concentration of shells and animal bones, and modern items. A preservation plan will be prepared for the site. As discussed in Section 3.1.3, the rare plants to be preserved are individuals of ko'oko'olau (*Bidens micrantha ssp. Ctenophylla)*, 'ohe makai (*Reynoldsia sandwicensis*) and maiapilo (*Capparis sandwichiana*).

4. *Cultural impact statement.* Section 3.2.2 contains the cultural impact statement for the project.

5. *Landscaping*. As water conservation and preserving a Hawaiian sense of place appropriate to this location in the ahupua'a, the current plans call for landscaping as much as practical with native, drought-tolerant plants.

We very much appreciate your review of the document. If you have any questions about the EA, please contact me at (808) 969-7090.

Sincerely,

Ron Terry

Ron Terry, Principal
Geometrician Associates

Cc: Chris Fujiuchi, Hawai'i County Office of Housing and Community Development

ENVIRONMENTAL ASSESSMENT

KALOKO HOUSING PROGRAM

TMK (3rd): 7-3-009:055
North Kona District, Hawai‘i Island, State of Hawai‘i

County of Hawai‘i
Office of Housing and Community Development
50 Wailuku Drive
Hilo, Hawai‘i 96720-2456

APPENDIX 2
BOTANY SURVEY REPORT

A Botanical Survey of an Eight Acre Portion of TMK(7)3-09:28, North Kona District, Island of Hawai‘i.

Prepared by:

Reginald E. David
Rana Productions, Ltd.
P.O. Box 1371
Kailua-Kona, Hawai‘i 96745

Prepared for:

Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

November 4, 2005

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Introduction

This report summarizes the findings of a botanical survey conducted on an approximately 8.016-acre portion of a 371.905-acre parcel of land identified as TMK (7)3-09:28 located on the south side of the existing Hina Lani Street directly above Phase III and IV of the Kaloko Industrial Park Subdivision, North Kona, Hawai‘i (Figure 1). The applicant is proposing to subdivide out a 8.016 acre portion from the larger parcel. Fieldwork was conducted on October 22nd, 2005.

The primary objectives of the survey were to:

- Provide a general description of the vegetation on the site and prepare a species list of all plants recorded on the subject property.
- Search and record any species currently considered to be rare, threatened, endangered, or currently proposed for listing under federal or State of Hawai‘i endangered species statutes. The federal and State of Hawai‘i listed species status follows species identified in the following referenced documents (DLNR, 1998, Federal Register, 1999a, 1999b, 2001, 2002, 2004).
- Make recommendations on appropriate mitigation to offset any deleterious impacts to any species documented on the site that are of special concern.

Hawaiian and scientific names are italicized in the text. A glossary of technical terms and acronyms used in the document, which may be unfamiliar to the reader, are included at the end of the narrative text on Page 10.

General Site Description

The approximately 8.016-acre petition area is located in the Kaloko *Ahupua‘a* and is bound to the north by Hina Lani Street, to the south by the proposed phase III and IV of the Kaloko Industrial Park Subdivision and to the east and south by vacant land. The site gently slopes from east to west from an elevation of ~ 101-meters above mean sea level (ASL) at the eastern boundary, down to ~ 94-meters ASL at the western boundary (USGS 1996). The project area is sited primarily on a weathered pāhoehoe lava flow disgorged from Mount Hualalai during late Holocene Age between 3,000 and 5,000 years ago (Wolfe and Morris 1996, USGS 1996).

Survey Methods

A walking survey using wandering transects was used to cover the petition area. Notes were made on plant identification, associations, distribution, substrates and any special geologic features that might have an affect on the flora present on the site. The collapsed lava tube which bisects the site running from Hina Lani Street to the southern boundary of the site was more intensely surveyed than the surrounding fountain grass/koa haole

Figure 1
Petition Area

NOTE

Figures not available

Please refer to Figures 1-4 in Main EA for Location Map

NOTE

Figures not available

Please refer to Figures 1-4 in Main EA for Location Map

covered pāhoehoe found on the bulk of the site; since in Hawai‘i, rare plants are more likely found in such protected or less disturbed areas than elsewhere especially in the largely alien species dominated lowlands. Boundaries and specific plant locations were determined using a handheld Garmin eTrex Vista© GPS unit.

Description of the Vegetation

The vegetation within the petition area can be best characterized as a Fountain Grass/ Koa Haole Grassland subtype of a Lowland Dry Grassland Community as described in Gagne and Cuddihy (1990). The vegetation found within the collapsed lava tube and within the immediate surrounding area contains components not found within the densely vegetated grassland present on the bulk of the site. The vegetation along the verge of the property where it abuts Hina Lani Road is made up principally of weedy alien species commonly encountered in ruderal communities adjacent to roadways in North Kona. The verge shows signs of having recently been sprayed with an herbicide, undoubtedly as a part of roadside maintenance activities conducted by the County of Hawai'i Department of Transportation. A list of the plants recorded during time spent on the site and their current status is presented in Table 1.

Survey Results

A total of 33 different plant species were recorded growing within the study area (Table 1). Of these 33 species, 10 (33%) are recognized as being native to the Hawaiian Islands with four being endemic and seven indigenous to the islands. One additional species, *noni* (*Morinda citrifolia*) is considered to have been an early Polynesian introduction to the islands. The remaining 22 species (22%) are alien species now considered to be naturalized in the islands.

There is relatively little bare rock within this site, the bulk of site is covered with a co-dominant mix of fountain grass (*Pennisetum setaceum*) and *koa haole* (*Leucaena leucocephala*), interspersed with *kiawe* (*Prosopis pallida*), *klu* (*Acacia farnesiana*), *maiopilo* (*Capparis sandwichiana*), Christmas berry (*Shinus terebinthofolia*), *naio* (*Myoporum sandwicense*), and *alahe‘e* (*Psydrax odorata*).

Shallow pockets of soil scattered across the site also support a slightly different mix of plants including *Portulaca pilosa*, *‘uhaloa* (*Waltheria indica*), hairy spurge (*Chamaesyce hirta*), partridge pea (*Chamaecrista nictitans*), *‘ilima* (*Sida fallax*) and several alien grass species including Natal redtop (*Melinus repens*) and swollen fingergrass (*Chloris barbata*) in addition to the ubiquitous fountain grass.

The previously mentioned collapsed lava tube which all but bisects the property in an north to south direction contains one large ‘*ohe makai* (*Reynoldsia sandwicensis*) tree

Table 1

Plants Recorded on a Portion of TMK: (7)3-09:28

Scientific Name	*Common Name*	*ST*
FLOWERING PLANTS		
DICOTYLEDONES		
AMARANTHACEAE		
Amaranthus spinosus L.	spiny amaranth	N
ANACARDIACEAE		
Ahinus terebinthifolius Raddi	Christmas berry	N
ARALIACEA		
Reynoldsia sandwicensis A. Gray	*‘ohe makai*	E
ASTERACEAE (COMPOSITAE)		
Bidens micrantha ssp. ctenophylla	*ko‘oko‘olau*	E
Pluchea carolinensis Jacq.) G Don	sourbush	N
CAPPARACEAE		
Capparis sandwichiana DC	*maiapilo*	E
CONVOLVULACEAE		
Ipomoea cairica (L.) Sweet	*koali `ai*	I
EBENACEAE		
Diospyros sandwicensis (A. DC) Fosb.	*lama*	E
EUPHORBIACAEA		
Chamaesyce hirta (L.) Millsp.	garden spurge	N
Chamaesyce prostrata (Aiton) Small	prostrate spurge	N
Ricinus communis L.	castor bean	N
FABACEAE		
Acacia farnesiana (L.) Willd.	klu	N
Chamaecrista hypericiflolia (L.) Moench	Partridge pea	N
Indigofera suffruticosa Mill.	indigo	N
Leucaena leucocephala (Lam.) de Wit	*koa haole*	N
Prosopis pallida (Humb. & Bonpl. Ex Willd) Kunth	*kiawe*	N
Senna occidentalis (L.) Link	coffee senna	N
MALVACEAE		
Sida fallaax Walp.	*‘ilima*	I
MENISPERMACAEA		
Cocculus orbiculatus (L.) DC	*huehue*	I
MYOPORACAEA		
Myporum sandwicense A. Gray	*naio*	I
NYCTAGINACAEA		
Boerhavia coccinea Mill.	false alena	N
PIPERACEAE		
Peperomia blandia var. *floribunda* (Miq.) H. Huber	*‘ala‘ala wai nui*	I

PORTULACACEAE		
Portulaca oleracea L.	pigweed	N
Portulaca pilosa L.		N
Talinum fruticosum (L.) Juss.	flameflower	N
RUBIACEAE		
Morinda citrifolia L.	noni	P
Psydrax odorata (G. Forster) A.C. Smith & S. P. Darwin	*alahe'e*	I
STERCULIACEAE		
Waltheria Indica L.	'uhaloa	I
VERBENACAEA		
Lantana camara L.	lantana	N
	MONOCOTYLEDONES	
AGAVACAEA		
Furcraea foetida (L.) Haw.	Mauritius hemp	N
POACEAE (GRAMINEAE)		
Chloris barbata (L.) Sw.	swollen fingergrass	N
Melinus repens(Wills.) Zizka	Natal redtop	N
Pennisetum setaceum (Forssk.) Chiov.	fountain grass	N

KEY TO TABLE 2

ST	Status
E	Endemic to the Hawaiian Islands
I	Indigenous to the Hawaiian Islands
N	Naturalized – An alien Species now naturalized in the Hawaiian Islands
P	Polynesian – Introduced to the Hawaiian Islands by the early Polynesian settlers

---

at the southern terminus of the depression. Unfortunately, the tree does not appear to be in good condition and a large branch has recently broken off from the main trunk. Along the lava tube walls a small clump of *'ala'ala wai nui* (*Peperomia blanda* variety *floribunda*) was seen. On the eastern rim of the lava tube, approximately 30-meters south of Hina Lani Street, there is one lone *lama* (*Diospyros sandwicensis*) tree; this tree appears almost dead.

The most significant find, of this survey were three live and one dead *ko'oko'olau* (*Bidens micrantha* ssp. *ctenophylla*) bushes located on the eastern rim of the collapsed lava tube at a location of 04 Q 0813307 meters east by 2180025 meters west (UTM, NAD 83 Datum). The plants are located 19-meters from the edge of Hina Lani Street and are growing intertwined with *koa haole* shrubs (Figure 1). The three live plants were between one and two-meters tall and were in full flower.

Discussion

The findings of this survey are in keeping with those of other surveys conducted within close proximity to the study site in the recent past (Char, 1995, 2000, 2003, Palmer 2003), and recent surveys in similar habitat and at a like elevation within the general area (Herbst 1998, David and Guinther 2000, Hart 2003, Guinther et al., 2005).

A full 33% of the plant species recorded on site are considered to be either endemic or indigenous to the Hawaiian Islands. This percentage is relatively high, though it is in keeping with the known flora of the Kaloko area. Although the percentage of native species is relatively high the individual densities are low, thus, in terms of biomass, native plants are by-in-large a minor component of the vegetation currently found on the site.

Two relatively rare plants were recorded on the site. Three live *ko‘oko‘olau* plants were recorded adjacent to the collapsed lava tube. *Ko‘oko‘olau* is a endemic member of the daisy family (*Asteraceae*). It is an erect, many branching perennial herb, 1-1.5 meters tall. The leaves are simple to three-parted. The flowers are daisy like with yellow ray petals which are arranged in dense, rounded clusters. The fruit is an achene, black, straight, awned, and rarely winged. The species is found on the leeward slopes of Mount Hualalai and is considered rare (Wagner et al. 1990). This species is currently a candidate for listing as an endangered species under the federal endangered species act of 1973, as amended. Candidate species are not protected under either federal or State of Hawai‘i endangered species statutes.

Numerous *maiopilo* are dotted across the site, with the majority of the plants found within or close to the collapsed lava tube. *Maiopilo* is a native caper, upright to sprawling 1-5 meter shrub with large, attractive fragrant white flowers which turn pink as they age. Seeds are dark reddish-brown to gray, asymmetrically reniform, 2.5-5 mm long, embedded in foetid orange pulp (Wagner et al. 1990). This species is currently not protected under either federal or State of Hawai‘i endangered species statutes although it is considered a species of concern by the U.S. Fish & Wildlife Service

Although not recorded during this survey, the following four endangered plant species are known from the Kaloko lava flow:*‘aiea* (*Nothocestrum breviflorum*), *Mariscus fauriei*, *ma‘aoloa* (*Neruadia ovata*), and *hala pepe* (*Pleomele hawaiiensis*), (Char 1991, 2000, Bruegmann 2002). That these species were not found within the petition area is not surprising for the following reasons, first the Kaloko flow on which these species have been recorded is a relatively sparsely vegetated a‘a flow which ends some 150-meters *mauka* of the heavily vegetated pāhoehoe lava flow which males up the substrate for the petition area, secondly much of the petition area was surveyed, at least informally, in the recent past and no such plants were recorded, nor were any found on lands immediately to the west of the petition area (Char 2000, Palmer 2003, Bruegmann 2002).

Recommendations

The three *ko‘oko‘olau* plants recorded on the site, although not currently protected under either federal or State of Hawai‘i endangered species statutes, are rare plants and represent both an important botanical as well as a Hawaiian cultural resource. In the future if it be deemed necessary to remove these plants as the property is developed, fruit and possible cuttings from the three plants should be collected and accessioned into to an appropriate botanical propagation facility such as the Amy Greenwell Ethnobotanical Garden so as to preserve genetic material from these plants for future out-planting. This is a species that is considered very easy to propagate in a nursery (Lilleeng-Rosenberger 2005).

Glossary:

Achene – The most generalized type of dry of dry, one celled fruit; seed coat is not attached to the pedicarp (In this case referring to the fruit of *Bidens micrantha*).
Ahupua‘a – Traditional Hawaiian land division, usually extending from the uplands to the sea.
Alien - Introduced to Hawai‘i by humans.
Awned – Having a slender, usually terminal or dorsal bristle (In this case associated with the fruit of *Bidens micrantha*)
Endangered – Listed and protected under the ESA as an endangered species.
Endemic – Native and unique to the Hawaiian Islands.
Foetid – Having a disagreeable odor.
Indigenous - Native to the Hawaiian Islands, but also found elsewhere naturally.
Naturalized – An introduced alien species which has become self sustaining in the wild.
Reniform - Kidney –shaped; having broadly rounded margins and a shallow sinus (In this case associated with the seed pod of *Maiapilo*)
Threatened - Listed and protected under the ESA as a threatened species.
Winged – A thin, flat extension or projection from a strucuter (In this case In this case associated with the fruit of *Bidens micrantha*).
Xeric – Dry; adapted to dry or desert conditions.

DLNR – Hawaii State Department of Land & Natural resources.
ASL – Above mean sea level

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ENVIRONMENTAL ASSESSMENT

KALOKO HOUSING PROGRAM

TMK (3rd): 7-3-009:055
North Kona District, Hawai‘i Island, State of Hawai‘i

County of Hawai‘i
Office of Housing and Community Development
50 Wailuku Drive
Hilo, Hawai‘i 96720-2456

APPENDIX 3
FAUNA SURVEY LETTER

November 9, 2005

Rodney Y Funakoshi
Wilson Okamoto & Associates
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Re. Kaloko 8-Acre Faunal Makeup

Dear Rodney,

Nathan Natori asked me to comment on the likely faunal makeup present on the 8-acre portion of TMK(7)3-09:28 on which we conducted a botanical survey in October, 2005. Although, we did not conduct a faunal survey on the subject property, we have a lot of faunal data from the immediate surrounding area. We conducted extensive faunal surveys for Phase III and IV of the Kaloko Industrial Park Subdivision, in 2001. These lands abut the subject property, and support similar habitat to that found on the 8-acre site under discussion.

During the course of the faunal surveys conducted for Phase III and IV of the Kaloko Industrial Park Subdivision we only saw one mammalian species, Indian mongooses (*Herpestes a. auropunctatus*). In addition we encountered skeletal remains of a feral pig (*Sus s. scrofa*) and one domestic cattle (*Bos taurus*). Scat of domestic dog (*Canis f. familiaris*), cat (*Felis catus*), donkey (*Equus a. asinus*) as well as feral goat (*Capra h. hircus*) were encountered in numerous places within the site. No live rodents were detected during the course of this survey; however, it is likely that roof rats (*Rattus r. rattus*), Norway rats (*Rattus norvegicus*), European house mice (*Mus domesticus*) and possibly Polynesian rats (*Rattus exulans hawaiiensis*) utilize various resources found within the site. Hawai‘i‘s sole endemic terrestrial mammalian species, the endangered Hawaiian hoary bat, or ‘Ope‘ape‘a, was not detected.

A total of 16 avian species representing 10 families were detected during the avian survey conducted on Phase III and IV of the Kaloko Industrial Park Subdivision. All of the species recorded were alien (introduced to Hawai’i by man) to the Hawaiian Islands. The most common species were House Finch (*Carpodacus c. mexicanus*) and Common Myna (*Acridotheres tristis*). These two species represented 48.5% of the total birds recorded. House Finch records accounted for 28% of the total individual birds recorded. All of the birds detected are common alien species found throughout the leeward lowland areas on

the Island of Hawai‘i. No native, endangered or threatened avian species were detected during the course of the 2001 survey.

Given the similar habitat currently found on the 8-acre portion of TMK(7)3-09:28, I would opine that the faunal makeup on this property is similar to that recorded on the other survey discussed above. I would not expect that there is habitat on the site that supports any avian or mammalian species currently listed under either the Federal or State of Hawai‘i endangered species statutes.

Aloha

Reginald E. David

cc. Nathan Natori

ENVIRONMENTAL ASSESSMENT

KALOKO HOUSING PROGRAM

TMK (3rd): 7-3-009:055
North Kona District, Hawai‘i Island, State of Hawai‘i

County of Hawai‘i
Office of Housing and Community Development
50 Wailuku Drive
Hilo, Hawai‘i 96720-2456

APPENDIX 4
PHASE I ENVIRONMENTAL SITE ASSESSMENT

Phase I Environmental Site Assessment

Kaloko Transitional Housing

TMK: (3rd) 7-3-009:055

Kaloko, North Kona District, Hawai‘i County

March 3, 2008

PREPARED FOR:

County of Hawai‘i
Office of Housing and Community Development
50 Wailuku Drive
Hilo, Hawai‘i 96720-2456

PREPARED BY:

GK Environmental LLC
P.O. Box 1363
Honoka‘a, Hawai‘i 96727

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County of Hawai‘i
Office of Housing and Community Development
50 Wailuku Drive
Hilo, Hawai‘i 96720-2456

Phase I Environmental Site Assessment
Kaloko Transitional Housing
North Kona District, County of Hawai‘i
TMK: (3rd) 7-3-009:055

Date: March 3, 2008

Graham P. Knopp, Ph.D.
Environmental Scientist

GK Environmental LLC
P.O. Box 1363
Honoka‘a, Hawai‘i 96727
(808) 775-1520

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LIST OF ABBREVIATIONS

AST: Aboveground Storage Tank
ASTM: American Society for Testing and Materials
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS: Comprehensive Environmental Response, Compensation and Liability Information System
CFR: Code of Federal Regulations
CORRACTS: RCRA Facilities that are undergoing corrective action
EDR: Environmental Data Resources, Inc.
EPA: Environmental Protection Agency
ERNS: Emergency Response Notification System
ESA: Environmental Site Assessment
HDOH: Hawaii Department of Health
HEER: Hazard Evaluation and Emergency Response
LUST: Leaking Underground Storage Tank
NPL: National Priorities List
PCBs: Polychlorinated Biphenyls
RCRA: Resource Conservation and Recovery Act
REC: Recognized Environmental Conditions
TRIS: Toxic Release Inventory System
TSD: Treatment, Storage, and Disposal (of hazardous waste)
TMK: Tax Map Key, a unique numerical sequence designating a particular parcel
USACE: United States Army Corps of Engineers
USDA: United States Department of Agriculture
USGS: United States Geological Survey
UST: Underground Storage Tank
UXO: Conventional Unexploded Ordnance

Executive Summary

GK Environmental LLC (GKE), acting at the request of Geometrician Associates LLC, conducted a Phase I Environmental Site Assessment (ESA) of a County of Hawai‘i owned property, TMK 7-3-009:055, located in Hawai‘i County in the North Kona District along Hina Lani Street. Geometrician Associates LLC retained GKE to perform the Phase I ESA as part of the due diligence process for possible development of the subject property for a transitional housing project.

The site reconnaissance, interviews, records review, and historical review conducted as part of the Phase I ESA were performed to identify potential and actual recognized environmental conditions at the subject site. On the basis of this assessment, the following major findings and conclusions have been drawn. The reader is advised to review these in conjunction with the remainder of the report.

This Phase I Environmental Site Assessment (ESA) identified no recognized environmental conditions in connection with the subject site. GKE observed no evidence of the presence of above or underground storage tanks, PCBs, or other hazardous materials on the property. GKE identified no issues on adjacent or nearby properties that may constitute recognized environmental conditions.

This ESA was performed by GKE in general conformance with the scope and limitations of requirements recently issued by the U.S. Environmental Protection Agency in 40 CFR Part 312, *Standards and Practices for All Appropriate Inquiries, Final Rule*, dated November 1, 2005 (“Final EPA AAI Rule”). These federal regulations focus on accepted, reasonable efforts to identify conditions indicative of releases and threatened releases of hazardous substances on, at, in, or to the Subject Property (40 CFR Part 312.21(c)(1)). This ESA includes the following tasks: (1) site and surrounding area reconnaissance and interview with current property owner; (2) review of available historical documentation; (3) local, state, and federal records review; and (4) preparation of a written report summarizing the findings of the assessment. Planning, reporting, and implementing follow-up investigations, if any, and preparing remediation cost estimates are not included in the current GKE scope of work.

Section 1
Introduction

1.1 Background

GKE, acting at the request of Geometrician Associates, conducted a Phase I ESA of the subject site, located in Hawai‘i County on Hina Lani Street in the *ahupua‘a* of Kaloko, district of North Kona (Figure 1). The parcel is 8.016-acres in size and designated TMK 7-3-009:055. Geometrician Associates LLC retained GKE to perform the Phase I ESA as part of the due diligence process for possible development of the subject property for a transitional housing project.

Figure 1 - Subject Site Area Map

1.2 Purpose

The purpose of a Phase I ESA is to identify recognized environmental conditions associated with a property. Recognized environmental conditions are defined as the presence or likely presence of any hazardous substances (as defined by the Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA]) or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

The standard for performance of Phase I ESAs is defined by ASTM E1527-05 (ASTM 2005). This new standard took effect on November 1, 2006 (EPA 2005) and is known as the "All Appropriate Inquiries" (AAI) final rule. The AAI final rule sets new standards with respect to interviews, investigation of site history, evaluation of so-called "data gaps" and evaluation of the impact of Recognized Environmental Conditions upon purchase price of the property. This work meets the standards of the AAI final rule.

1.3 Scope of Services

This Phase I ESA was conducted in accordance with the scope of work and the terms and conditions specified in GKE's proposal to Geometrician Associates dated May 14, 2007 for a Phase I ESA, and as such, meets the requirements of American Society for Testing and Materials (ASTM 2005) Standard E 1527-05 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.*

The following activities were conducted as part of the Phase I ESA:

- A review of published information on surface and subsurface conditions at the site and surrounding area were reviewed. This information included topography, drainage, surface water bodies, subsurface geology, and groundwater occurrence in the area and was used to assess the potential for any nearby hazardous material releases to affect the subject site (Section 2);
- A review of available historical aerial photographs, topographic maps, and city directories (see Section 3);
- A review of available local, state, and federal environmental agency records within the minimum search distance for the property as specified by the ASTM standard, including the following records (Section 3, see Appendix A for descriptions):
    - National Priorities List (NPL)
    - Resource Conservation and Recovery Act (RCRA) facilities that are undergoing "corrective action" (CORRACTS)

- RCRA-Treatment, Storage, & Disposal (TSD)
- Comprehensive Environmental Response, Compensation & Liability Information System (CERCLIS) List
- Solid Waste & Landfill
- Leaking Underground Storage Tank (LUST)
- Water Wells
- RCRA-Violators/Enforcement
- Underground Storage Tank (UST) list
- Emergency Response Notification System (ERNS)
- RCRA-Large Generator
- RCRA-Small Generator
- Spills

- A visual inspection of readily accessible areas of the property on December 20, 2007 (see Section 4);
- Interviews with employees and others who have knowledge of the property to assess current and historical property use or releases of hazardous substances or petroleum products at the property (Section 5); and
- An assessment of data gaps encountered during the investigation, as well as an assessment of the impacts of recognized environmental conditions, if found, upon the anticipated value of the property.'

The Phase I ESA did not include sampling and testing of soil and potentially hazardous materials, including PCBs and lead-based paint, radon, mold, urea formaldehyde, critical species or habitats, wetlands, floodplains, or cultural resources.

1.4 Limitations and Exceptions of Assessment

The reader is advised that the Phase I ESA conducted at the site is a LIMITED INQUIRY into a property's environmental status and is not sufficient to discover every potential source of environmental liability, if any, at the site. ***Therefore, GKE cannot under any circumstances make a statement of warranty or guarantee, express or implied, that the site is free of recognized environmental conditions, environmental impairment, or that the site is "clean" or that impairments, if any, are limited to those that were discovered while GKE was performing the ESA.*** This limiting statement is not meant to compromise the findings of this report; rather it is meant as a statement of limitations within the intended scope of this assessment.

GKE's findings and opinions are based on information that was available and obtained at the time of the assessment through site reconnaissance, standard investigatory techniques used in the industry at the time, records review, and other related activities. It is possible that other information exists or may subsequently become known that may impact or change the site after GKE's observation.

In conducting the Phase I ESA and preparing this report, GKE reviewed, interpreted, and relied upon information provided by others, including but not limited to the client, tenants of the site, individuals, government authorities, subcontractors, and other entities. GKE did not perform an independent evaluation of the accuracy or completeness of such information, and GKE will not be responsible for any errors or omissions contained in such information.

This report, along with the findings and conclusions, either in completed form, summary form or by extraction, was prepared for and intended for the sole use of the County of Hawai‘i and Geometrician Associates LLC, and therefore may not contain sufficient information for other purposes or parties. The County of Hawai‘i and Geometrician Associates LLC are the only intended beneficiaries of this report. The contents of this report continue to be the property of GKE and are protected by copyright. This report may not be disclosed to, used by, or relied upon by any person or entity other than the County of Hawai‘i or Geometrician Associates LLC without the expressed written consent of GKE.

Authorization for disclosure to a third party or authorization for third-party reliance upon this final report will be considered by GKE upon the written request of the client. GKE reserves the right to deny authorization for the disclosure of or reliance upon this report to third parties.

Section 2
Site Description

2.1 Subject Site Location

The subject site is located in the *ahupuaʻa* of Kaloko, North Kona District, County of Hawaiʻi, State of Hawaiʻi and has no street address (Figure 1). The subject site is located along the south side of Hina Lani Street about 0.9 miles east of its intersection with the Queen Kaʻahumanu Highway (SR 19), approximately four miles north of Kailua-Kona.

The general location of the subject site is shown in Figure 1, and Figure 2 shows a County of Hawaiʻi TMK map of the subject site. The term "subject site" refers only to the TMK 7-3-009:055 and does not refer to surrounding and adjacent areas.

2.2 Site and Vicinity Characteristics

The subject site is undeveloped and vacant. Certain nearby areas have been developed, including the Kaloko-Honokohau Light Industrial Park located approximately 0.4 miles west of the subject site, and the Honokohau Marina approximately 1.5 southwest of the subject site. The Kaloko-Honokohau National Historical Park is also located nearby, approximately 1.0 mile west of the subject site. Apart from these developments the project area is mostly rural in nature.

The subject site is triangularly-shaped, with the north and east boundary formed by Hina Lani Street. Hina Lani Street is a paved two-lane County roadway and is a connector between the Queen Kaʻahumanu Highway (SR 19) and the Mamalahoa Highway (SR 190) also known as the "High Road".

Current use and ownership of the properties adjacent to the site are as follows:

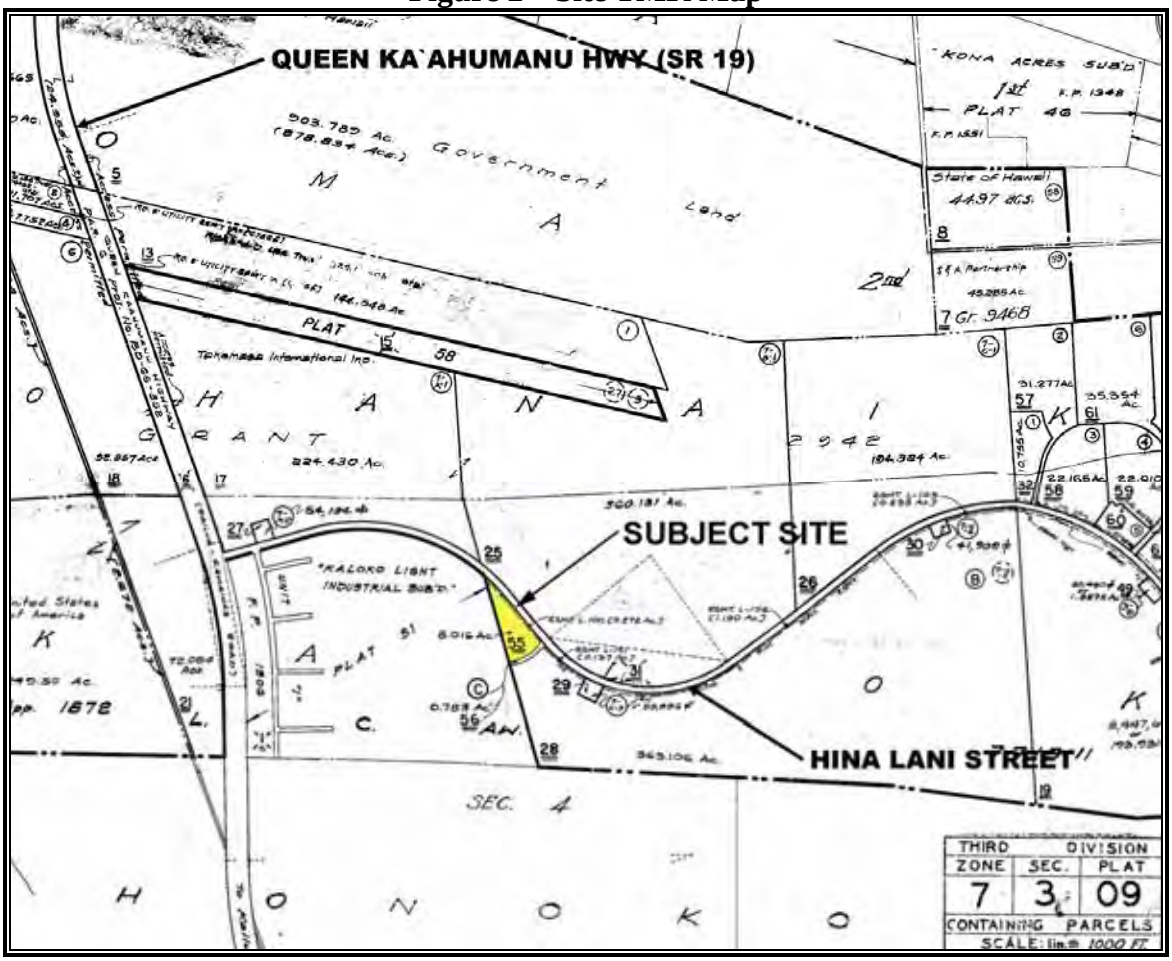
North/East: TMK 7-3-009:025, Use: Vacant, Owner: Kaloko Properties Corp., 1585 Kapiolani Blvd. #910, Honolulu HI 96814 *and* SCD Kaloko Makai LLC, 1100 Alakea St 27th Fl, Honolulu HI 96813

South/East: TMK 7-3-009:028, Use: Vacant, Owner: Kaloko Properties Corp., 1585 Kapiolani Blvd. #910, Honolulu HI 96814 *and* SCD Kaloko Makai LLC, 1100 Alakea St 27th Fl, Honolulu HI 96813

South/West: TMK 7-3-009:028, Use: Vacant. Owner: TSA Corporation, 1585 Kapiolani Blvd, Ste 910, Honolulu HI 96814

South/West: TMK 7-3-009:056, Use: vacant, Owner: Waikoloa Village Association, PO Box 383910, Waikoloa HI 96738

Figure 2 – Site TMK Map



2.3 Physical Characteristics of the Subject site

The site's vegetation is dominated with fountain grass (*Pennisetum setaceum*) and koa haole (*Leucana leucocephala*). The site is located approximately 1.3 miles mauka (i.e., in this case east) of the shoreline about 280 to 320 feet above mean sea level. Geologically, the subject site is located on the lower flank of Hualalai volcano. The surface consists of lava flows of Hualalai volcanics series of age 1,500 to 5,000 years old (Wolfe and Morris 1996). Two Hualalai lava flows of different ages surface the site; the southern portion of the site is covered by lavas of age 1,500 to 3,000 years old while the remainder and majority of the site's area is surfaced by a lava flow of age 3,000 to 5,000 years old. The subject site soil is classified by the Natural Resource

Conservation Service (formerly Soil Conservation Service) as both raw ‘a‘a (rLV) and pahoehoe (rLW) lava flows, having no developed soils (U.S. Soil Conservation Service 1973).

There are no streams or other surface water features on the subject site or in the surrounding area. The Kaloko-Honokohau National Historical Park, located makai of the subject site and of the Queen Ka‘ahumanu Highway, contains anchialine (brackish and tidally influenced) ponds. The Flood Insurance Rate Map (FIRM) 1551660707C for the project site is unprinted, indicating that it is located in Flood Zone X, located outside of the 100- or 500-year flood plain (FEMA 2008). The project site is located below the Underground Injection Control (UIC) line, indicating that the ground water beneath the site is not considered as useful for drinking water by the State of Hawai‘i Department of Health (DOH 1999)

The entire Big Island is subject to geologic hazards, especially lava flows and earthquakes. Volcanic hazard as assessed by the United States Geological Survey in this area of North Kona is 4 on a scale of ascending risk 9 to 1 (Heliker 1990:23). The high hazard risk is based on the fact that Hualalai has erupted in the historical period, with nearby lava flows at Keahole from an 1801 eruption. Volcanic hazard zone 4 areas have had about 5% of land area covered by lava or ash flows since the year 1800, and are at lower risk than zone 2 areas because of their greater distances from recently active vents and/or because the local topography makes it less likely that flows will cover these areas. All of Hualalai, including the lower flanks, is considered volcanic hazard zone 4 because Hualalai is steeply sloping with a relatively short distance from vents to the coast, compared to Mauna Loa and Kilauea, for example. A collapsed lava tube feature is found on the site and is described in Section 4.

In terms of seismic risk, the entire Island of Hawai ‘i is rated Zone 4 Seismic Probability Rating (*Uniform Building Code, 1997 Edition*, Figure 16-2). Zone 4 areas are at risk from major earthquake damage, especially to structures that are poorly designed or built. The subject site does not appear to be subject to subsidence, landslides or other forms of mass wasting

The hydrogeology of the subject site and area are described by Tom Nance Water Engineering (TSA International 2000, Appendix A). This study used information from a set of wells located at a range of elevations from makai of the Quesn Ka‘ahumanu Highway (SR 19) to above the Mamalahoa Highway (SR190). From this well information two distinct aquifers are observed; a relatively saline basal aquifer in contact with saline water at depth and sea water at the shoreline located below the Mamalahoa Highway; and a very low salinity and high level aquifer located above the Mamalahoa Highway. These well data suggest further that hydraulic conductivity in the area is in excess of thousands of feet per day; a well at Kalaoa (State No 4360-01) demonstrates tidal influence more than three miles from the shoreline

Section 3
Records Review

3.1 Standard State and Federal Environmental Record Sources

GKE reviewed various state and federal record sources to assess the environmental status of the subject site and surrounding area. These sources list properties with identified or possible contamination, facilities that generate hazardous waste, sites with underground storage tanks (USTs), and properties involved in state and federal enforcement actions. The following information is based on information provided by Environmental Data Resources, Inc. (EDR 2007), a computerized database service that routinely updates its databases from federal and state sources. GKE reviewed State of Hawai‘i Department of Health records of the storage of hazardous substances, releases of hazardous substances to the environment, and site cleanup actions on February 15, 2008.

The database and the search radii reviewed for the property conform to ASTM Standard E 1527-05 (ASTM 2005) for Phase I ESAs and the All Appropriate Inquiries Standard (EPA 2005). The database search is included in Appendix B. Due to the rural nature of the site, the search radii were increased beyond that required by these standards.

The findings of the records search are summarized in Table 1, which includes the search radius for each particular database (see Appendix A for descriptions of each database).

The subject site was not identified on any of the databases searched. Nor were any adjacent sites identified on any of the databases searched.

Table 1. Findings of Records Search

Search Type	Distance Searched	Findings
Federal NPL Site List	1.0 mile	None
Federal RCRA CORRACTS Facilities List	1.0 mile	None
Delisted NPL Site List	1.0 mile	None
State-Equivalent CERCLIS (SHWS)	1.0 mile	None
Federal CERCLIS List	0.5 mile	None
Federal RCRA Non-CORRACTS TSD Facilities List	0.5 mile	None
Federal CERCLIS NFRAP List	0.5 mile	None
Federal/State institutional control/engineering control registries	0.5 mile	None
State/County Brownfield Lists	0.5 mile	None
State Landfill and/or Solid Waste Disposal Site List	0.5 mile	None
State Leaking Storage Tank List	0.5 mile	None
State Voluntary Cleanup Sites	0.5 mile	None
Federal RCRA Generators List	0.25 mile	None
State Registered Storage Tank List	0.25 mile	None
Federal ERNS List	Subject site	None
State HEER Spill List	Subject Site	None

The EDR database review also identified certain records, "orphans", in the vicinity of the subject site that could not be plotted on the overview map due to the lack of address information. Several orphans appear to be located in the project area. *Honokohau Industrial Park-Lower Boat Park* (Appendix B, page 7) refers to a diesel spill in 1999 remediated to below environmental action levels, with a no further action (NFA) letter released in 2005. *Allied Aggregates Corp.* (Appendix B, page 7) refers to the permitted use of an AST located at the Honokohau quarry to the south of the subject site. It is unlikely that these "orphan" sites could represent a significant risk of environmental impairment to the subject site due to their characteristics and their respective distances and directions.

The records review identified no recognized environmental conditions concerning the subject site or adjacent properties.

3.2 Title, Lease and Tax Records

GKE reviewed tax records located at the Hawai‘i County Real Tax Office in Kailua-Kona. Records for the subject site begin in 1942 when the subject site was part of parcel 7-3-09:001. These records suggest that the parcel was used for grazing cattle until about 1980. The subject

site was subdivided from its parent parcel (TMK 7-3-09:028) in 2005 and acquired by the County of Hawai‘i in 2006.

Examination of County of Hawai‘i Real Tax Department Records revealed no recognized environmental conditions with respect to the subject site or adjacent properties.

Environmental Lien Search

GKE contracted EDR to perform a search for environmental liens on the subject site. No records of environmental liens, or activity and use limitations (AULs), for the subject site were found. This environmental lien search is attached as Appendix C.

3.3 Aerial Photographs

In addition to historical use information including tax records, historical topographic maps and real tax records, historical aerial photographs were also examined to reveal past use of the subject site and adjacent properties. GKE viewed aerial photographs provided by R.M. Towill Corp. of Honolulu. These maps are not easily reproducible and hence are not attached to this document. A review of the aerial photographs listed below revealed the following information regarding the subject site and the surrounding land uses, summarized in Table 2.

Table 2. Aerial Photograph Summary

DATE	MAP ID NO.	COMMENT
8/20/1950	385-4	No notable features visible on subject site.
10/22/68	4744-35	No notable features visible on subject site. Mauka-makai 4WD trail visible on nearby ‘a‘a flow ending at Kaloko shoreline, passing several hundred feet south of subject site.
9/23/1972	n/a	No notable features visible on subject site. Quarrying visible at existing quarry site to southwest of subject site.
1/31/1977	7112-2	No notable features visible on subject site.
2/9/1989	8590-14	No notable features visible on subject site. Some industrial development present at Kaloko-Honokohau Light Industrial Park visible along highway. Hina Lani Street graded but not paved.
11/10/1989	8649-8	No notable features visible on subject site. Other features as in 2/9/1989 photo above.
5/4/1992	8811-12	No notable features visible on subject site. Hina Lani Street paved. Reservoir visible near site.

3.4 Fire Insurance Maps

A search for fire insurance maps was performed by EDR but none were available for the subject site or adjacent properties.

3.5 City Directories

A city directory search was performed by EDR but yielded no information concerning the subject site.

3.6 Historical Topographic Maps

7.5 minute USGS topographic maps were available from 1959, 1982, and 1996 of the Keahole Point Quadrangle. Observations of these maps are summarized in Table 3 below and are attached in Appendix C. No recognized environmental conditions are indicated in these topographical maps.

Table 3. Historical Topographic Map Summary

YEAR	SERIES/SCALE	COMMENTS
1959	7.5'/1:24,000	No features mapped on subject site. Mauka-makai 4WD trail mapped on nearby 'a'a flow ending at Kaloko shoreline, passing several hundred feet south of subject site.
1982	7.5'/1:24,000	No notable features mapped on subject site.
1996	7.5'/1:24,000	No notable features mapped on subject site.

3.7 Previous Reports

No previous environmental reports were provided to GKE.

Section 4
Site Reconnaissance

4.1 Methodology and Limiting Conditions

On December 20, 2007 GKE conducted a visual survey of the subject site and adjacent properties. GKE thoroughly walked the interior and perimeter of the subject site. The purpose of the walk-through was to inspect the subject site, for potential environmental conditions, including, but not limited to, the following:

- Hazardous substance and waste management activities;
- Evidence of potential hazardous substance spills or releases (*e.g.*, stressed vegetation, discolored soil, etc.);
- USTs (*e.g.*, protruding fill or vent pipes);
- Disposal areas, ground water wells, and sumps;
- Equipment potentially containing polychlorinated biphenyls (PCBs); and
- Potential property or adjacent property activities that could affect the environmental condition of the subject site.

Photographs taken during the site visit are included in Appendix D.

4.2 General Site Setting and Observations

GKE observed no structures or evidence of past structures on the site, nor did GKE observe roadways or vehicle tracks interior to the site although bulldozer scrapes were apparent on pahoehoe outcrops in several locations.

GKE observed a variety of miscellaneous household waste discarded along Hina Lani Street. None of the waste appear to contain hazardous materials. Some of this waste was located inside of the collapsed lava tube feature.

A electrical junction or transformer box is located along Hina Lani Street near the northwest corner of the subject site (Appendix D, Photo No. 3). This transformer or junction box is relatively new and unlikely to contain PCBs.

A four-wheel drive track begins at Hina Lani Street several hundred feet west of the northwest corner of the subject site and passing a similar distance towards the south. GKE walked this track for several hundred yards and observed numerous household waste dump sites. None of this waste appeared to contain hazardous materials.

The visual survey did not identify any of the following on the subject site:

- Suspect containers not in connection with property use;
- Unidentified containers;
- Electrical or mechanical equipment likely to contain PCBs;
- Drains, sumps, ponds, or lagoons;
- Chemical use or storage;
- Stained soil indicative of spills;
- Wastewater discharges;
- Septic or sewage tanks;
- Ponds, or lagoons, or other pools of standing water;
- Areas containing fill soil;
- Illegally dumped household or construction waste; and
- Odors.

4.3 Hazardous Substances and Petroleum Products in Connection with Identified Uses

No hazardous materials were identified during the site visit.

4.4 Hazardous Substances and Petroleum Products Containers and Unidentified Substance Containers

No evidence of hazardous substances, petroleum product containers, or unidentified substance containers were identified on the subject site.

4.5 Storage Tanks

No above-ground storage tanks (ASTs) were observed on the subject site. No evidence of underground storage tanks (USTs) was observed, nor would any be expected to be located on the site. No disturbed ground indicative of excavation was observed.

4.6 Indication of Polychlorinated Biphenyls

No materials potentially containing polychlorinated biphenyls (PCBs) were observed. The electrical junction or transformer box located near the northwest corner of the site is relatively new and unlikely to contain PCBs.

4.7 Adjacent Parcel Observations

Adjacent parcels were visually surveyed. The subject site is generally visually consistent with the adjacent parcels; the surroundings are all vacant and absent of structures and any active use.

Section 5
Interviews

GKE provided the Office of Housing and Community Development with an owner questionnaire that was prepared to be consistent with the User/Owner Questionnaire suggested in Appendix X3 of ASTM E1527-05 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, published on 21 November 2005 (ASTM 2005). The questionnaire inquired about environmental liens or activity and land use limitations that may be imposed on the subject site, and requested any specialized knowledge of the user/owner regarding known or suspected environmental conditions at the subject site. A copy of the Phase I Environmental Assessment User Questionnaire is included in Appendix E. The questionnaire was completed by Jeremy McComber, HCD Specialist and did not indicate any knowledge of environmental liens or activity and land use limitations imposed on the subject site, or any other knowledge of known or suspected environmental conditions at the subject site.

In addition, GKE contacted Haun & Associates, who conducted an archaeological inventory of the subject site on December 10, 2007, for information regarding possible environmental conditions. Haun and Associates stated that they did not observe any containers, unidentified materials, spills, odors or other features that could suggest the presence of hazardous materials and their release on the subject site or adjacent areas.

Section 6
Findings

This section summarizes recognized environmental conditions, data gaps that may have prevented their identifications, and GKE's opinion of impact of recognized environmental conditions on the property.

6.1 Identified Recognized Environmental Conditions

A recognized environmental condition is defined as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

No portion of this work identified any recognized environmental conditions.

6.2 Data Gaps

No significant data gaps were encountered during preparation of this assessment.

6.3 Impact of REC's on Purchase Price

No recognized environmental conditions were identified that can be expected to affect the purchase price.

Section 7
Conclusions and Recommendations

GKE has performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E 1527-05 (ASTM 2005) and the *All Appropriate Inquiries* standard (ASTM 2005) for parcel TMK 7-3-009:055 in the district of North Kona, County of Hawai‘i. Any exceptions to, or deletions from, this practice are described in Subsection 1.5 of this report. This section has been developed based on the discussion of the issues provided in Section 6.

GKE performed the site reconnaissance, interviews, records review, and historical review as part of the Phase I ESA in order to identify potential and actual recognized environmental conditions at the subject site or on surrounding properties that have the potential to affect the subject site.

No recognized environmental conditions were identified in this assessment.

Section 8
References

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U.S. Soil Conservation Service. 1973. Soil Survey of Island of Hawai‘i, State of Hawai‘i. Washington: U.S.D.A. Soil Conservation Service.

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NOTE:

Appendices *not* included in version presented in Environmental Assessment

Full Phase I ESA is on file and available for inspection at the Hawai‘i County Office of Housing and Community Development, 50 Wailuku Street, Hilo, HI 96720 by appointment. Call Klayford Nakanishi at 961-839 for appointment.

ENVIRONMENTAL ASSESSMENT

KALOKO HOUSING PROGRAM

TMK (3rd): 7-3-009:055
North Kona District, Hawai‘i Island, State of Hawai‘i

County of Hawai‘i
Office of Housing and Community Development
50 Wailuku Drive
Hilo, Hawai‘i 96720-2456

APPENDIX 5
ARCHAEOLOGICAL INVENTORY SURVEY

Report 531-112707

ARCHAEOLOGICAL INVENTORY SURVEY

TMK: 7-3-09:55, LAND OF KALOKO

NORTH KONA DISTRICT

ISLAND OF HAWAII

Haun & Associates

Archaeological, Cultural, and Historical Resource Management Services
HCR 1 Box 4730, Keaau, Hawaii 96749 Phone: 982-7755 Fax: 982-6343

ARCHAEOLOGICAL INVENTORY SURVEY

TMK: 7-3-09:55, LAND OF KALOKO

NORTH KONA DISTRICT, ISLAND OF HAWAII

By:

Alan E. Haun, Ph.D.

and

Dave Henry, B.S.

Prepared for:

Mr. Ron Terry
10 Hina Street
Hilo, Hawaii 96720

January 2008

Haun & Associates

Archaeological, Cultural, and Historical Resource Management Services
HCR 1 Box 4730, Keaau, Hawaii 96749 Phone: 982-7755 Fax: 982-6343

SUMMARY

At the request of Mr. Ron Terry, Haun & Associates conducted an archaeological inventory survey of the 8.016-acre TMK: 7-3-09:55 located in the Land of Kaloko, North Kona District, Island of Hawaii. The objective of the survey was to satisfy historic preservation regulatory review inventory requirements of the Department of Land and Natural Resources-Historic Preservation Division (DLNR-HPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 6, State Historic Preservation Rules.

The survey of the project area identified four sites with four features. The identified sites are comprised of two modified outcrops, a mound and a lava tube. Functionally the identified sites consist of possible agriculture, temporary habitation and indeterminate. The identified sites conform to the traditional Hawaiian site/feature types expected in the Middle Zone based on previous archaeological work and historic documentary research. As expected, a temporary habitation lava tube site was identified, along with two possible agricultural sites and a site with an indeterminate function.

The four sites are assessed as solely significant for information content. These sites have yielded information important for understanding late prehistoric to historic land use in project area. The documentation of three of the sites adequately documents them and no further work or preservation is recommended. The Site 26269 lava tube retains the potential to yield information important for understanding prehistoric and early historic land use. This site is recommended for data recovery, which would entail surface collection of cultural remains to obtain a larger sample of portable remains and potentially dating samples. The plan for data recovery of this site would be detailed in a Data Recovery Plan prepared for DLNR-SHPD review and approval

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INTRODUCTION

This report presents the results of an archaeological inventory survey conducted of TMK: 7-3-09:55, an 8.016-acre parcel located in the Land of Kaloko, North Kona District, Island of Hawaii (*Figures 1* and *2*). The objective of the survey was to satisfy current historic preservation regulatory review inventory requirements of the Department of Land and Natural Resources-Historic Preservation Division (DLNR-HPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 6, State Historic Preservation Rules (DLNR 2003).

The survey fieldwork was conducted on December 10, 2007 under the direction of Dr. Alan Haun. The fieldwork portion of the project required 3 person days to complete by a crew of three archaeologists. Described in this final report are the project scope of work, field methods, and survey findings. Also included is background information relevant to the project area, and significance assessments of the identified sites with recommended further treatments.

Scope of Work

Based on DLNR-HPD rules for inventory surveys the following specific tasks were determined to constitute an appropriate scope of work for the project:

1. Conduct background review and research of existing archaeological and historical documentary literature relating to the project area and its immediate vicinity--including examination of Land Commission Awards, *ahupua'a* records, historic maps, archival materials, archaeological reports, and other historical sources;

2. Conduct a high intensity, 100% pedestrian survey coverage of the project area;

3. Conduct detailed recording of all potentially significant sites including scale plan drawings, written descriptions, and photographs, as appropriate;

4. Conduct limited subsurface testing (manual excavation) at selected sites (a) to determine the presence or absence of potentially significant buried cultural deposits or features, and (b) to obtain suitable samples for radiocarbon age determination analyses;

5. Analyze background research and field data; and

6. Prepare and submit Final Report.

Project Area Description

The project area consists of an 8.016-acre triangular-shaped parcel situated in the Land of Kaloko at elevations ranging from c. 305 to 335 ft. The project area is bordered by Hina Lani Street to the northeast and by undeveloped land to the southwest and southeast. The vegetation within the parcel is dominated by fountain grass (*Pennistetum setaceum* [Forsk.] Chiov.) and dense, low *koa haole* (*Leucaena Leucocephala – Figure 3*). Scattered lantana (*Lantana camara* L.), air plant (*Bryophyllum pinnatum* [Lam}), ferns (*Nephrolepis sp.*) and *noni* (*Morinda citrifolia* L.) were also observed.

The ground surface within the project area slopes slightly to moderately to the west and southwest and is comprised of pahoehoe lava flows and scattered surface stones. Sato et al. state that this lava type evidences a, "billowy, glassy surface that is relatively smooth, and there are hummocks and pressure domes "(1973:34). The underlying lava in this area originated from Hualalai Volcano and was deposited c. 3,000

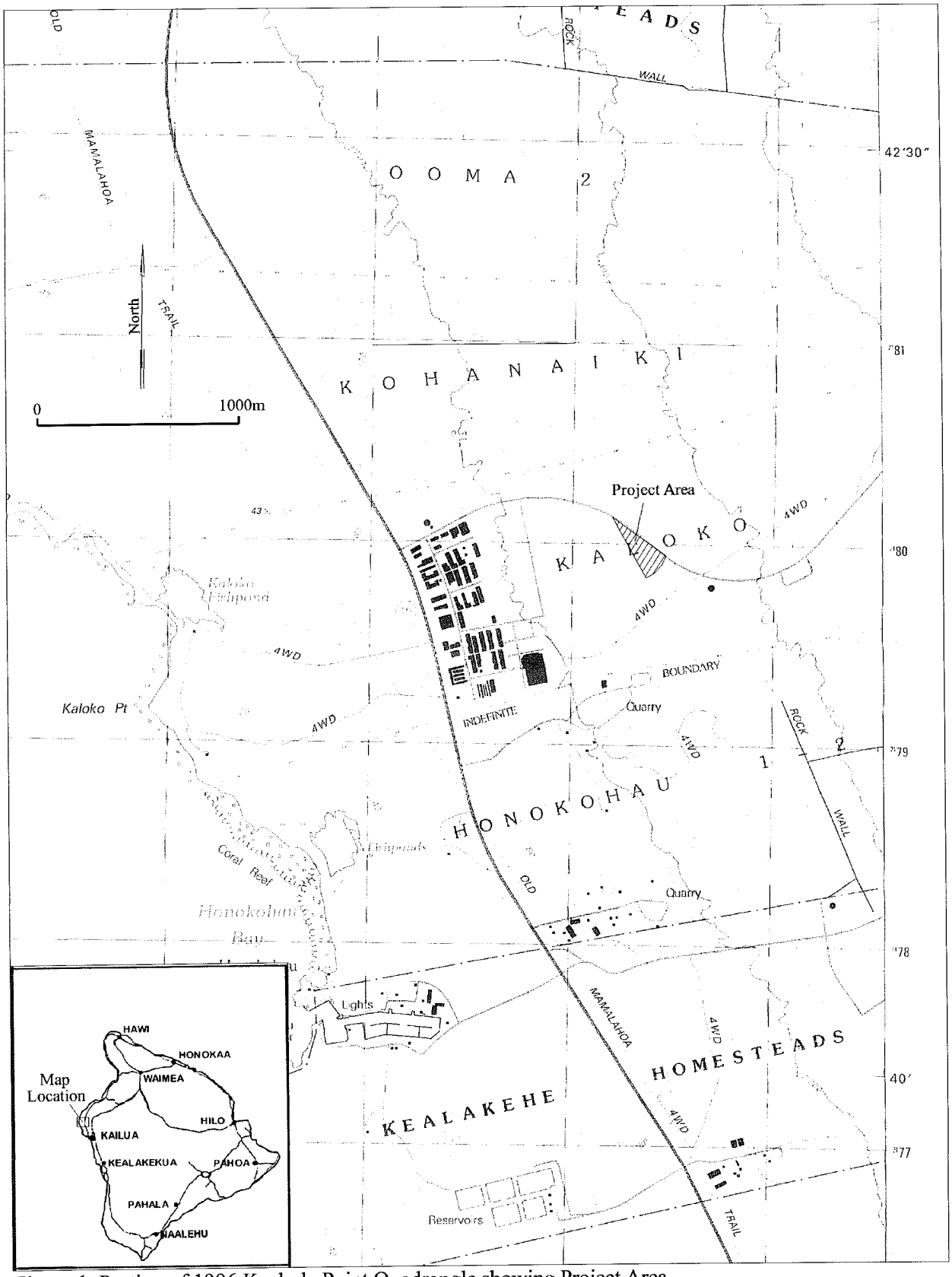

Figure 1. Portion of 1996 Keahole Point Quadrangle showing Project Area

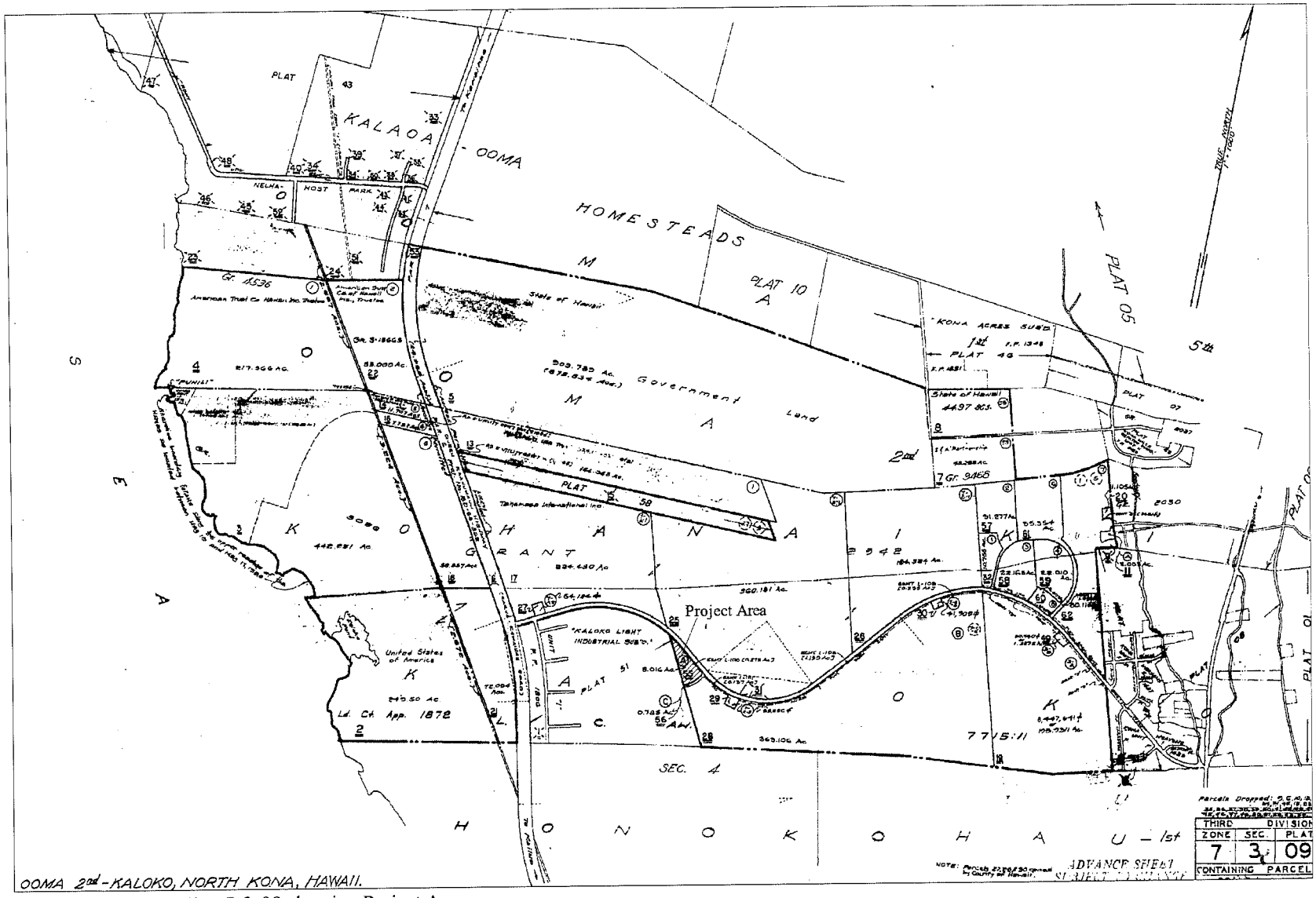

Figure 2. Tax Map Key 7-3-09 showing Project Area

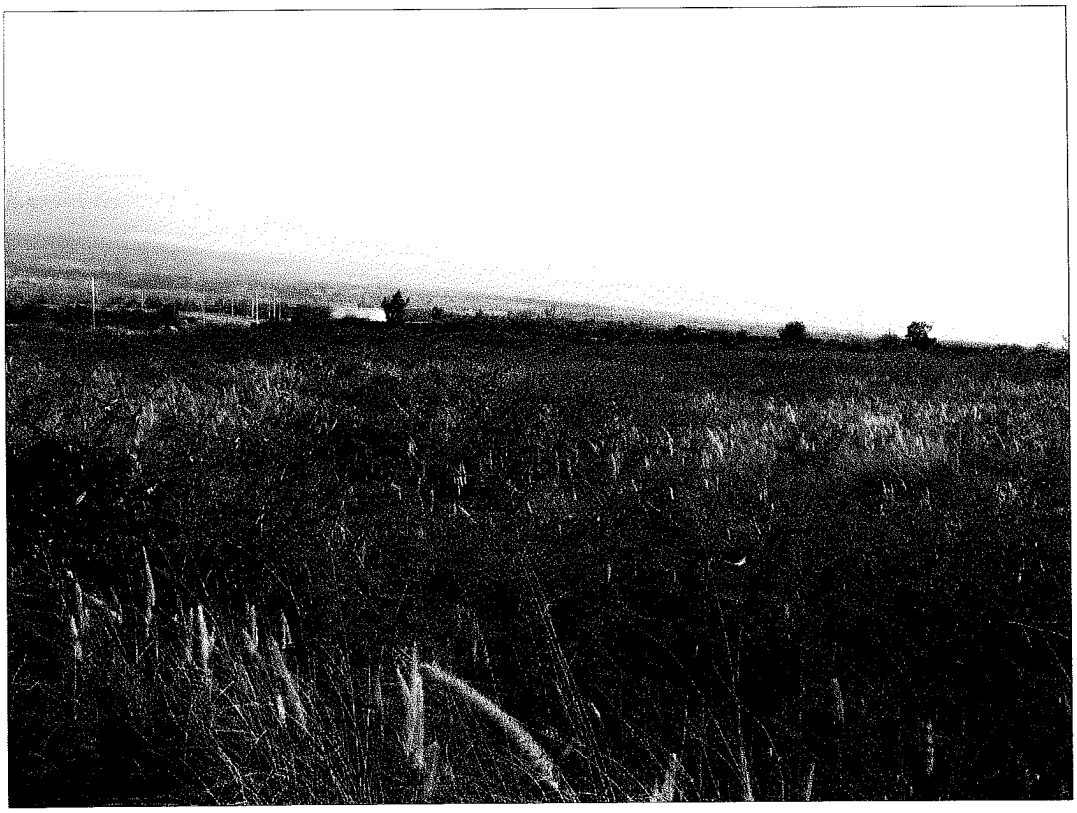

Figure 3. Project Area Overview, view to east

Figure 4. Bulldozer Scrapes on Surface Outcrop, view to south

to 5,000 years ago (Wolfe and Morris 2001:12). Average annual rainfall in the vicinity of the project area ranges from 20 to 30 inches (Juvik and Juvik 1998:57).

Evidence of modern disturbance was observed throughout the project area. Modern trash litters the parcel along Hina Lani Street and numerous bulldozer scrape marks are present on the surface outcrops in many locations. An example of an obvious bulldozer scrape is presented in *Figure 4*

Field Methods

The project area was subjected to a 100% surface examination, with crewmembers spaced at 5-7 m intervals. Transects were oriented parallel to the long axis of the project area, parallel to Hina Lani Street. Ground surface visibility was fair to good throughout the parcel. The identified features were flagged with pink and blue flagging tape and their locations plotted on a scaled project area map with the aid of Garmin Global Positioning System (GPS) III+. The accuracy of the GPS device for a single point is +/- 15 m. This accuracy is increased to less than c. 3-5 meters by taking multiple points including property corners and overlying the plotted points on a scaled map using AutoCAD software

The identified sites consist of a lava tube, two modified outcrops and a mound. The modified outcrops and mound were subjected to minimal recording consisting of measuring the length, width, height, shape and method of construction and photographic documentation. The lava tube was subjected to detailed recording, which consisted of the preparation of a scaled plan map, the completion of a standardized site/feature form and photographic documentation. A metal site tag was placed at each site with the location of the tag at the lava tube site plotted on the plan map. No subsurface testing was undertaken during the project and no cultural remains were recovered for analysis.

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Historical Documentary Research

Most of the following derives from the extensive research by Kelly (1971) done in conjunction with the Kaloko Ahupua'a research of Cordy et al. (1991). Kaloko lies within an area of lava-covered land north of Kailua called Kekaha, which "describes a dry, sun-baked land" (1971:2). Kaloko is well known for its large fishpond for which the *ahupua'a* is named. The pond is a *loko kuapa* type (Summers 1964) formed by the construction of a wall, aligned with the adjacent shorelines, across the mouth of a small bay.

The fishpond at Kaloko is mentioned in a story told by Kamakau (1961) of a spy sent to Hawaii by the ruling chief of Maui. The spy reported seeing the fishpond upon his return to Maui. Kelly (1971:22) believes this occurred between the late 1600s and early 1700s depending upon the generation span used in calculating chiefly genealogies.

A late 1600s reference to Kaloko comes from Fornander (1969) and Kamakau (1964). The twins, Kameeiamoku and Kamanwa, are said to have carried the bones of the ruling chief of Maui, Kahekili, to a cave at Kaloko. Kamakau (1961) reported the subsequent burial of Kamehameha's bones in the same cave by Kameeiamoku's son Hoapili and Keopuolani. King David Kalakaua reportedly later removed the bones; however, this account conflicts with informant information and other documents, which suggest the bones were not removed (Kelly 1971:23-25).

Ellis (1963) reported the observations of the Reverends Thurston and Bishop during a walk along the coast north from Kailua in 1823. They described houses along the coast built on lava and small gardens in the lava where sweet potatoes, watermelon, and tobacco were grown.

During The Great Mahele, the grandson of Kamehameha I, Lot Kamehameha, selected Kaloko as his property. Kelly (171:5) cites correspondence indicating that Kaloko was Lot Kamehameha's most valuable property because of the fishpond, and that fish from the pond were sold in the market in Kailua town in 1860.

According to Kelly (1971:6-8), there were at least 14 claims for *kuleana* in Kaloko, of which 12 were awarded. The awarded claims were all situated inland between 1,100 ft and 1,800 ft elevation. The Waihona 'Aina database (Waihona 'Aina Corp. 1998) lists 24 claims within Kaloko, of which 13 were awarded. The apparent discrepancy between the database and Kelly apparently results from the large number of unawarded claims not located by Kelly. Cordy et al. (1991:414) lists 13 awarded claims and five claims that were not awarded. All, except two of the claim testimonies that also claimed house lots, were for cultivated plots. Crops mentioned in the testimonies include sweet potatoes and taro.

Kelly (1991:12) cites missionary and later census data that documents a decline in the population of North Kona in the 1800s. The Hawaiian Kingdom Directory for 1880-1881 lists a blacksmith and a coffee planter in upland Kaloko along the government road (Kelly 1971:13). A map by J.S. Emerson in 1888 shows a house inland of the fishpond (Kelly 1991:14).

In 1906, Kaloko was sold to John A. Maguire and subsequently became part of Huehue Ranch (Cordy et al. 1991). Kelly (1991) describes the succession of caretakers of the Kaloko fishpond from the early 1900s until the early 1960s when the pond fell into disrepair.

Previous Archaeological Research

A review of the DLNR-SHPD archives indicates that at least 28 archaeological projects have been conducted within Kaloko. These surveys have covered more than 2,800-acres and have resulted in the identification of in excess 350 sites and 3,500 features. The location of the previous projects is depicted in *Figure 5* and they are summarized in *Table 1*.

The present project area is bordered on all sides by areas previously subjected to archaeological examination. Soehren (1979) conducted a reconnaissance survey of a proposed access road that corresponds to today's Hina Lani Street, adjacent to the present project area to the northeast. Haun and Henry (2000) undertook an inventory survey of a 102.3-acre parcel in lower Kaloko, above the Kaloko Industrial Park at elevations ranging from c. 170 to 300 ft. This parcel borders the present survey area to the southwest. Moore and Kennedy (2003) conducted an inventory survey of a proposed road corridor that extends along the southeastern boundary of the present project area.

The Soehren (1979) survey did not identify any sites and the Moore and Kennedy (2003) survey identified one only site comprised of two mounds interpreted as possible temporary habitations. Archaeological investigations within the Haun and Henry (2000) project area identified a total of 45 sites with 81 component features. The 45 sites included seven identified by Fager and Graves (1993) and two noted by Soehren (1980b) during surveys that overlapped the 2000 project area (these projects discussed below). Bulldozer activity associated with road construction along the western project area boundary apparently destroyed five sites identified by Fager and Graves (1993), resulting in 40 sites with 56 features remaining within the Haun and Henry (2000) project area.

The feature types noted by Haun and Henry (2000) include 22 modified outcrops, 12 terraces, ten caves, nine mounds, seven pahoehoe excavations, six cairns, five walls, three trails, three enclosures, two concentrations of marine shell, one cupboard and one series of grinding slicks. Functionally, the 81 features include the following: agriculture (n=42), temporary habitation (n=14), resource procurement (n=7), marker (n=6), garden boundary (n=4), livestock control (n=3), transportation (n=3), tool manufacture (n=1) and storage (n=1). Charcoal collected from three lava tubes was submitted for radiometric age determination during this project. The dated sites consisted of 21999 which yielded a modern date, Site 22016 which evidenced a calibrated age range of 1445-1655 AD and Site 22017, Feature B which yielded multiple calibrated age ranges of 1445-1680 AD, 1740-1805 AD and 1930-1950 AD. Data recovery was subsequently undertaken at eight of the sites identified during this study (Haun et al. 2003).

Soehren (1980a) conducted a reconnaissance survey of a 90-acre parcel situated on the inland side of the Queen Kaahumanu Highway between 80 ft and 160 ft elevation (TMK: 3-7-3-09:Por.1). Today, the area is occupied by the Kaloko Light Industrial Park. The survey did not identify any sites. A single water-

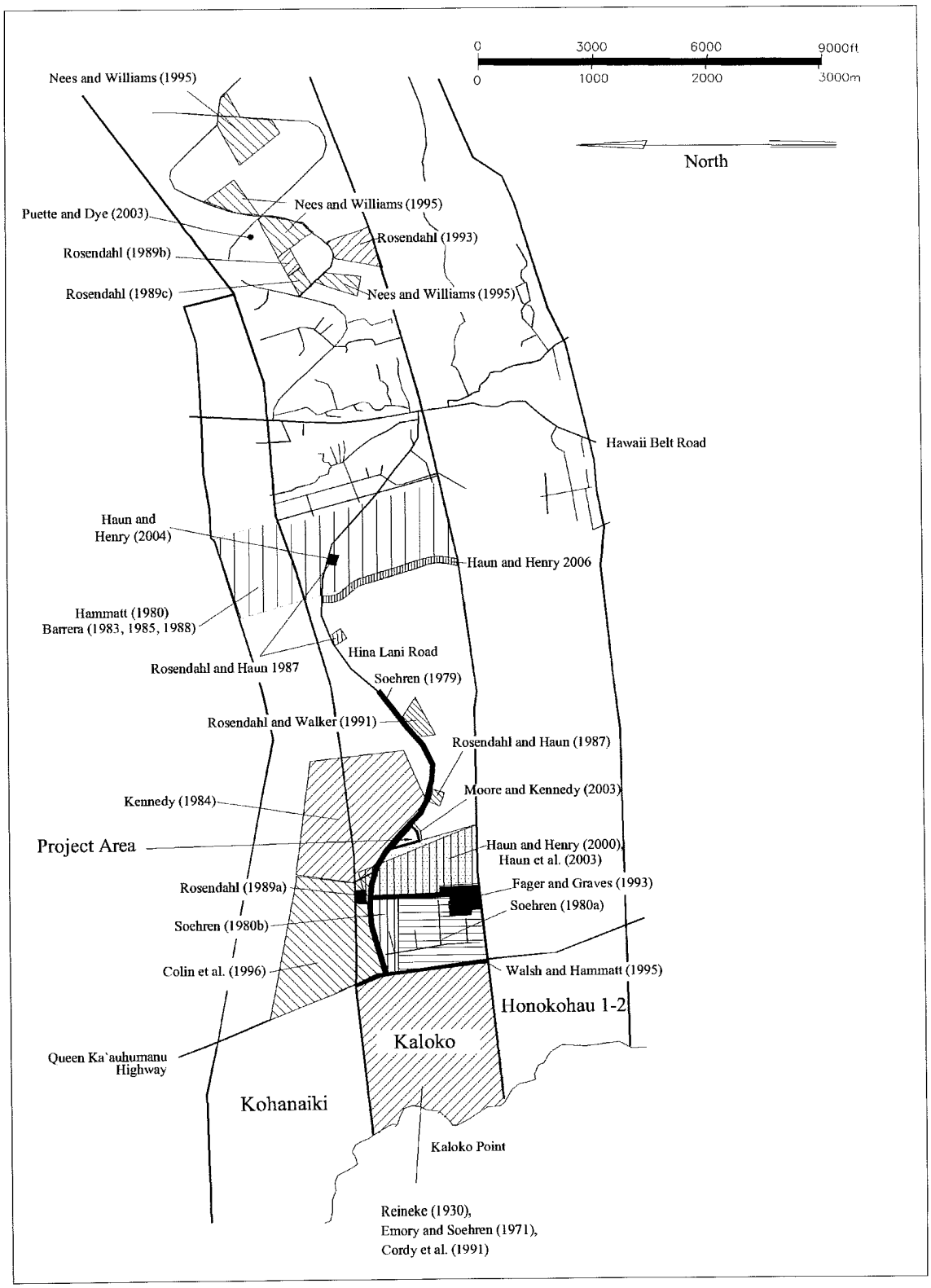

Figure 5. Previous Archaeological Work

Table 1. Summary of Previous Archaeological Work

Author	Land	Study Type*	Elevation	Acreage	Historic Use	No of sites	Sites/ acre	No of Feas	Feas/ acre	Hab Feas	Hab Feas/ acre	Perm Hab Feas	Temp Hab Feas	Ag Feas	Ag Feas/ acre	Burial Feas	Ritual Feas	Trail	Misc. & Indet. Feas.	Historic Feas.
Reinecke (1930), Emory and Soehren (1971), Cordy et al. (1991)	Kaloko, Honokohau and Kealakehe	RS	0-80	1319	?	77	0.06	213	0.16	46	0.03	45	1	24	0.02	53+	8	5	23+	46
Walsh and Hammatt (1995)	Keahuolu to Kalaoa 1-4	IS	40-140	120		17	0.14	29	0.24	6	0.05		6	4	0.03			8	9	2
Soehren (1980b)	Kaloko	RS	80-160	90	Ranching	0														
Soehren (1980a)	Kaloko	RS	80-200	138	Ranching	4	0.03	6	0.04							1		3	2	
Rosendahl (1989a)	Kaloko	IN	80-90	1	Ranching	1	1.00											1		
Colin et al. (1996)	Kaloko and Kohanaiki	IS	90-340	224.43		55	0.25	90	0.40	39	0.17		39	9	0.04	9		20	13	
Fager and Graves (1993)	Kaloko	IS	150-230	15	Ranching	17	1.13	60	4.00	4	0.27		4	46	3.07			1	4	
Haun and Henry (2000), Haun et al. (2003)	Kaloko	IN/DR	170-300	102.3	Hunting, Ranching	45	0.44	81	0.79	14	0.14		14	42	0.41	2		3	9	7
Kennedy (1984)	Kaloko	RS	250-500	200	Ranching	39	0.20	80	0.40	63	0.32	18	45		0.00			2	11	4
Soehren (1979)	Kaloko	RS	250-550	10	Ranching	0	0.00													
Moore and Kennedy (2003)	Kaloko	IN	310-330	1.41	Ranching	1	0.71	2	1.42	2	1.42		2							
Rosendahl and Haun (1987), Haun and Henry (2004)	Kaloko	RN	350-910	3	Ranching	1	0.33	1	0.33											1
Rosendahl and Walker (1991)	Kaloko	RS	400-480	20	Ranching	1	0.05	3	0.15									1	2	
Hammatt et al. (1987)	Kealakehe	RN	700-800	15	Ranching	18	1.20	32	2.13	4	0.27		4	27	1.80					1
Haun and Henry (2006)	Kaloko	IN	717-790	18.2	Ranching	7	0.38	25	1.37	4	0.22	2	2	19	1.04					2
Barrera (1983, 1985, 1988), Hammatt (1980)	Kohanaiki and Kaloko	IN/EX	800-1000	409		59	0.14	128+	0.31	25	0.06		25	100+	4.09		1			
Rosendahl (1989c)	Kaloko	FI	2000-2100	6	?	0														
Rosendahl (1993)	Kaloko	FI	2000-2200	23	Ranching	4	0.17	6	0.26	3	0.13		3	1	0.04					2
Rosendahl (1989b)	Kaloko	FI	2100-2200	6	?	4	0.67	4	0.67					3	0.50				1	
Puette and Dye (2003)	Kaloko	IN	2100-2400	22	?	0	0.00													
Nees and Williams (1995)	Kaloko	RS	2100-2900	110	Ranching	7	0.06	15+	0.14					10	0.09	2				3
Total/Average				2853.34		357	0.37	3501	0.80	210	0.28	65	145	2068	0.93	153	9	44	287	68

*IS=Inventory Survey, RS=Reconnaissance Survey, FI=Field Inspection, DR=Data Recovery, EX=Excavations

worn pebble was found that was believed to be a possible slingstone. Soehren noted the potential presence of lava tubes and burials.

Soehren (1980b) conducted a reconnaissance survey of a large parcel of unstated area situated on the inland and north sides of the parcel he previously surveyed (Soehren 1980a). Soehren identified a steppingstone trail marked by at least two cairns on a narrow finger of a'a lava. The trail was situated approximately 1,000 ft inland of the Queen Kaahumanu Highway and appeared to extend toward Honokohau to the southwest and Hue to the northeast. Two similar trail segments, 50 ft apart, on a'a lava were identified approximately 500 ft inland of the first trail. A possible burial in the a'a was observed near the north end of the upper trail.

Soehren identified a lava tube crossed by a fence marking the inland boundary of the project area. On the seaward side of the fence he noted a pile of discarded corrugated metal roofing in the depression at one tube entrance. One the north side of the fence he identified overhangs with cleared areas and marine shell. He also noted water dripping in the tube and suggested it was used for temporary habitation, possibly refuge, and as a water source.

Fager and Graves (1993) conducted an archaeological inventory survey of a 15-acre parcel situated between 150 ft to 230 ft elevation. The survey identified 17 sites with 60 features. Agricultural features comprised nearly 77% of the total feature count. Agricultural features consisted of terraces, modified outcrops, enclosures, excavated depressions, and mounds. Three temporary habitation sites were recorded. These sites consisted of three caves and a historically occupied walled terrace.

The Fager and Graves survey also identified several historic ranch walls, cairns interpreted to be markers, a trail segment, and pahoehoe excavations interpreted to be quarry sites. Excavations were conducted in two cave sites. The excavations yielded marine shell, goat and pig bone, *kukui* nutshell, and charcoal. A radiocarbon sample produced four potential age ranges spanning the 1500s to late 1800s.

Rosendahl and Haun (1987) conducted a reconnaissance survey of three c. one-acre potential water tank sites situated at 350 ft, 630 ft, and 920 ft elevation along Hina Lani Street. Only one site, a historic ranch wall (Site T-101), was identified during the survey of these three parcels. T-101 was situated in Tank Site 2 and was relocated during the present project. According to Rosendahl and Haun's site map (1987:4) the wall extended to the southwest out of the project area, and was also visible inland of Hina Lani Street, where it extended upslope to the northeast. Haun and Henry (2004) returned to Tank site and documented this wall.

Barrera (1985, 1988) conducted survey and excavations within a 409-acre parcel, which spanned Kaloko and Kohanaiki Ahupua'a between approximately 800 ft to 1,000 ft elevation in the Kaloko Mauka Subdivision. Hammatt (1980) and Barrera (1983) previously conducted reconnaissance surveys of the parcel. Much of the area was mechanically altered. The 1985 survey identified 58 sites with 92 features and one site, a portion of the late 1800s Kohanaiki Homesteads, with an undetermined number of features. In 1988, Barrera conducted excavations at 22 previously identified sites and added 84 site designations for features within the homesteads area. Most of the sites were situated in Kohanaiki.

The majority of the features were agricultural mounds (c. 100), platforms, terraces, and walls. Several of the walls were interpreted as possible field boundaries. Approximately 25 features were probable temporary habitations including lava blisters, C-shapes, and terraces. A 9.5 m by 11.3 m enclosure (Site10736, Barrera 1988) was interpreted to be a men's house based upon its construction, isolation, and presence of branch coral, human remains, and artifacts. Alternatively, these characteristics could indicate a *heiau* function, which is perhaps more likely because the structure is isolated from other habitation features. Excavations at the habitation sites produced small amounts of artifacts and food remains. Forty-six volcanic glass hydration rind age determinations ranged from the late 1400s to the mid-1700s.

Kennedy (1984) conducted a survey of an approximately 200-acre parcel in Kaloko and Kohanaiki between 250 ft and 500 ft elevation (TMK: 3-7-3-09:Por. 17). The area is situated immediately inland of the present project area on the east side of Hina Lani Street and north of the former Huehue Ranch Road.

The survey identified approximately 39 sites, most situated in Kaloko, with 79 features including 45 cave entrances, 13 platforms, 9 *ahu*, five enclosures, four walls, 2 trails and 2 petroglyph panels. The petrogylphs included traditional forms and letters, possibly names. A probable historic ranch wall followed the *ahupua'a* boundary between Kaloko and Kohanaiki. The only described trail was a 90 m long inland-seaward segment of a curbstone-lined trail averaging 2.5 m in width classified as a historic Type "B" trail based on Apple (1965).

Kennedy's exact site count is unclear because no tabular listing of sites is provided. The petroglyphs and several platforms were situated within caves. A number of the caves, which contained over 200 chambers, had multiple entrances. Cordy et al.'s (1991:340) review of the report and its site interpretations concluded that a total of 16 sites were identified. Excavations were conducted in three caves. The excavations recovered fishing gear, *kukui* nutshell, fishbone, a possible canoe gunwale fragment, a cache of possible *konane* game stones, an adze, abraders, bone picks, marine shell, and basalt and volcanic glass flakes. A radiocarbon sample produced an uncorrected, uncalibrated age of $1790^{+}/-50$ years. Four surface features suspected to be burials were dismantled with negative results.

Most of the caves were interpreted to be temporary habitations. One cave may have been a water source. Most of the *ahu*, or cairns, appeared to mark trail routes or cave locations. One cave excavation produced 12 human teeth thought to be from the same individual, a young adult, indicating a probable burial function in addition to habitation.

Rosendahl and Walker (1991) conducted a helicopter survey of a 20-acre, a'a lava flow-covered parcel situated on the south side of Hina Lani Street between 400 ft and 480 ft elevation (TMK: 3-7-3-09:Por.17). The survey identified one site, a trail extending north-south marked by two cairns

Rosendahl (1993) conducted an archaeological field inspection of a 23-acre parcel (TMK: 3-7-3-24:5) situated between 2,000 ft and 2,200 ft elevation. Much of the parcel was disturbed previously by mechanical clearing. Four sites were identified. The sites consist of an agricultural mound, a temporary habitation cave containing two small enclosures, and a historic ranch wall and corral. No portable remains were observed at the sites. Rosendahl (1989b, 1989c) conducted field inspections of two nearby small parcels. One lacked cultural remains and the other (1989b) contained a terrace, an alignment, a modified outcrop and a cairn.

Rosendahl (1989a) conducted a survey for an additional one-acre parcel situated on the north side of the intersection of Hina Lani Street and Kamanu Street. The survey identified a steppingstone trail segment on a'a lava designated Site 13493, which was subsequently relocated by Colin et al. (1996). Colin, Devereux, and Hammatt (1996) conducted an archaeological inventory survey of a 244-acre parcel situated between 90 ft and 340 ft elevation in the *ahupua'a* of Kaloko and Kohanaiki. The area is bounded to the west by Queen Kaahumanu Highway and the south by Hina Lani Street. The majority of the parcel is situated in Kohanaiki. The survey identified 55 sites with 90 features including cairns (2 features), agricultural features (9), trail segments (20), enclosures (9), walls (3), possible burials (9), a scoria quarry, and temporary habitation features (34). Eight sites were tested. The authors report that two radiocarbon dates were processed; however, no results are presented in the report.

The agricultural features consisted of excavated planting areas and enclosures on pahoehoe lava. The possible burials consisted of a lava tube with possible human bone fragments and eight filled crevices, none of which were tested. Temporary habitations, defined based on Cordy et al. (1991), primarily consisted of modified lava tumuli (12), pavements (7), and terraces (4). The categories wall, alignment, mound, enclosure, C-shape, rockshelter, platform, and modified depression were each represented by one or two examples. All of the excavations were conducted in habitation features yielding low to moderate amounts of marine shell, *kukui* nutshell and sea urchin. Rare remains consisted of fish bone, pig bone, and unidentified bone. Thirteen artifacts were recovered, primarily volcanic glass flakes from a single cave.

Walsh and Hammatt (1995) conducted an inventory survey of a 300 ft-wide strip of land paralleling Queen Kaahumanu Highway between Kona International Airport and Palani Street. In Kaloko, the survey identified an enclosure, a pahoehoe excavation, a wall, a trail, and a modified outcrop complex.

Nees and Williams (1995) conducted a survey of five parcels totaling 110 acres between 2,100 ft and 2,900 ft elevation in the Kaloko Mauka Subdivision. Small portions of two parcels were previously surveyed by Cordy et al. (1991), who identified formal fields between 900 ft and 2300 ft elevation. The survey identified a wall, a possible pigpen, a modified outcrop, a possible burial mound, an area of mounds, an area of terracing, and a culturally modified lava tube containing a burial. No excavations were conducted. The authors conclude that above 2,100 ft elevation in Kaloko, agricultural features are isolated and scattered in areas best suited to agriculture. Puette and Dye (2003) undertook a survey of 22 acres in this upland area at elevations ranging from 2,100 to 2,400, though no sites were identified.

Cordy, Tainter, Renger, and Hitchcock (1991) describe their *ahupua'a*-wide study conducted in the early 1970s and summarize the work of Reinecke (1930) and Emory and Soehren (1961) in the coastal portion of Kaloko. The study included a survey of the entire *ahupua'a* seaward of the Queen Kaahumanu Highway and sample areas inland of the highway. Excavations were conducted at 20 sites near the coast, 11 sites between 30 m and 244 m elevation, and five upland sites above 610 m elevation.

Cordy et al. utilized four environmental zones to characterize settlement patterns: (a) the Coastal Zone from sea level to 15 ft elevation, (b) the Middle Zone from 15 ft to 800-900 ft elevation, (c) the Lower Upland Zone from 900 ft to 1500 ft elevation, and (d) the Upland-Forest Zone between 1,500 and 6,000 ft elevation. Their settlement pattern model has been largely confirmed by the subsequent studies described above.

Based on their data, the authors believe the *ahupua'a* was permanently settled between AD 900 and 1200. Most of the sites were presumed to have been occupied in late prehistory in the 1600s and 1700s and this period is used to generate the settlement pattern model. Many sites also had a historic component. A *heiau*, coastal trail, *ahupua'a* boundary shrine, and permanent habitation sites, including the residence of at least one chief and four men's houses, were clustered next to the shoreline and around the fishpond. Temporary habitation sites were also present in the coastal zone. Branch trails linked habitation sites with subsistence sites and water sources along the coast. Subsistence sites included the fishpond at the coast and animal enclosures and agricultural complexes in the lower portion of the middle zone. A series of *mauka-makai* trails extend from the coast inland. Burials were concentrated in a cemetery in the lower middle zone and individual burials were present at two coastal sites.

Inland of the lower Middle Zone adjacent to the Coastal Zone, sites were widely scattered and primarily consisted of trails leading to the uplands associated with markers (cairns) and temporary habitations, primarily in lava tubes. Settlement pattern data for the Upland Zone were derived from historic records. In the early to mid-1800s, the zone was used for agriculture and scattered habitations. This pattern is assumed to have prevailed in late prehistory as well. By the 1870s and 1880s, residential sites were more common and agricultural use continued as a small community developed near the upper road. This coincided with the near abandonment of the coastal habitations. In the late 1800s to early 1900s, the focus of land use shifted to large-scale ranching.

The Upland-Forest Zone was characterized by an extensive field system consisting of formal walled fields from 900 ft elevation up to approximately 2,300 ft, which was believed to be the lower limit of the late prehistoric forest edge. The major field boundary walls were perpendicular to the coast. Other agricultural features included terraces, depressions, mounds, and probable pigpens. Temporary habitation sites were scattered among the fields and at least one small shrine was present. Below 900 ft and above 2,300 ft elevation agricultural features were present, but were scattered and informal. By the mid-1800s, the forest edge was reported to be at the 1,700 ft elevation, leading the author's to conclude that much of the area was abandoned coincident with depopulation between European Contact and the 1850s.

PROJECT EXPECTATIONS

The project area is situated within the Middle Zone as defined by Cordy et al. (1991). Prehistoric use of the project area is potentially represented by scattered temporary habitation sites associated with trails, and potentially, a few scattered agricultural features. Chronologically, sites may have been used as

early as the 900-1200s, with the most extensive period of use occurring between the 1600s and early historic period. The temporary habitation sites would predominately be in caves. The trails would be associated with marker cairns and used by coastal residents to reach the inland fields and forest resources.

The same pattern is expected during the mid- to late 1800s; however the focus of permanent habitation likely shifted inland. Thus, people were transiting through the area to obtain marine resources from the coast. By the late 1800s to early 1900s, sites associated with cattle ranching are expected. Other potential sites include transportation infrastructure such as vehicle roads. Ranching activity, which continued until at least the mid-1900s, would be evidenced by stone walls and corrals, and later wire fencing.

FINDINGS

The survey of the project area identified four sites with four features. The identified sites are comprised of two modified outcrops (Sites 26267 and 26270), a mound (Site 26268) and a lava tube (Site 26269). Functionally, the identified sites consist of possible agriculture (Sites 26268 and 26269) temporary habitation (Site 26269), and indeterminate (Site 26267). The distribution of the sites and features is depicted in *Figure 6.*

The survey also identified a low lava tube located adjacent to the Site 26269 lava tube (discussed below) to the southeast. The entrance to the tube consists of a small oval-shaped opening in an area of level pahoehoe lava. This opens onto to a c. 10.0 m long, 2.0 m wide and 0.2 to 0.7 m in height tube with a floor comprised of thin (< 1 cm) soil over bare lava. The tube was carefully examined and no cultural remains or evidence of use was noted. This tube is designated as a non-cultural cave (NCC) and its location is depicted on *Figure 6.*

Site 26267

Site 26267 is a modified outcrop located in the southeastern portion of the project area at c. 321 ft elevation. The site is situated in an area of uneven, weathered pahoehoe lava and is comprised of a linear pile of flat pahoehoe slabs that is 2.5 m in length (northwest by southeast) and 0.4 to 0.5 m in wide (*Figure 7*). The slabs are stacked one course wide and from one to four courses in height, with the heights ranging from 0.3 to 0.7 m above the surrounding ground surface. No soil is present in the area and no cultural remains were observed.

Site 26267 is assigned an indeterminate function. It is possible that the site may have served an agricultural function, possible used for the cultivation of sweet potatoes; however, it differs from the other agricultural modified outcrops and mounds in the project area and in the vicinity in that it is more formally constructed. It is also potentially possible that the site may have served as a temporary habitation windbreak due to its shape and height. The site is unaltered and in fair condition.

Site 26268

Site 26268 is a linear mound of pahoehoe cobbles and small boulders situated in the central portion of the project area at c. 325 ft elevation. The mound is located in an area of level pahoehoe lava with no soil present. It is 6.2 m in length (north-northwest by south-southeast), from 0.4 to 0.7 m in width and 0.15 to 0.45 m in height (*Figure 8*). No cultural remains were present at the site. Site 26268 is assigned a possible agricultural function based on its formal type, informal construction and on the absence of cultural remains. The site is unaltered and in fair condition.

Site 26269

Site 26269 is a lava tube located in the northwestern portion of the project area, at the southwestern end of an open sinkhole. The sinkhole originates along the southwest side of Hina Lani Street and extends 64.0 m to the southwest. The sink is linear in shape and is 9.0 to 13.0 m wide and 1.75 to 3.0 m in depth (*Figure 9*). The floor of the sinkhole is irregular and uneven. The entrance to the lava tube is located at the southwestern end of the sinkhole. This entrance is roughly U-shaped and is 17.54 m wide with dripline heights that vary from 1.05 to 1.75 m. A large pile of roof fall collapse is located beneath the dripline in the southern portion.

The lava tube is divided into two areas by a large column. The area to the south of the column is irregular in shape and is 11.6 m long (northwest by southeast) and from 3.7 to 8.75 m wide with ceiling heights that range from 1.6 to 2.3 m. A steppingstone trail comprised of flat pahoehoe slabs originates just inside the dripline and extends 3.5 m to the southwest, down into the interior of the chamber (*Figure 10*). The floor throughout the majority of this chamber is comprised of uneven roof all with an area of level pahoehoe situated in the center. This pahoehoe area is covered with a thin (<1 cm) layer of dark brown soil and contains numerous marine shells consisting of *Cypraea sp., Conus sp., Nerita picea, Cellana sp.,*

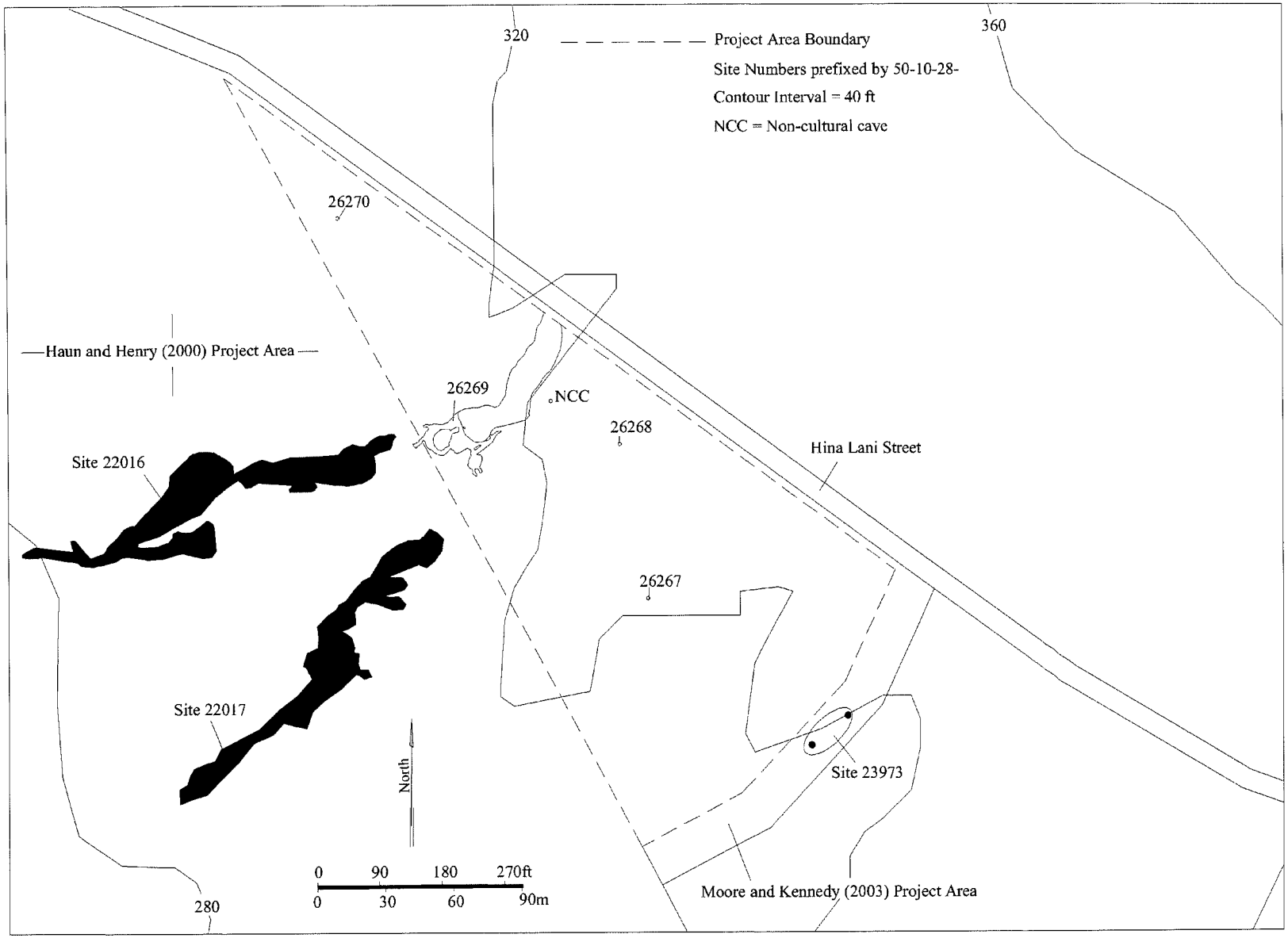

Figure 6. Site Location Map

Figure 7. Site 26267 Modified outcrop, view to northwest

Figure 8. Site 26268 Mound, view to east

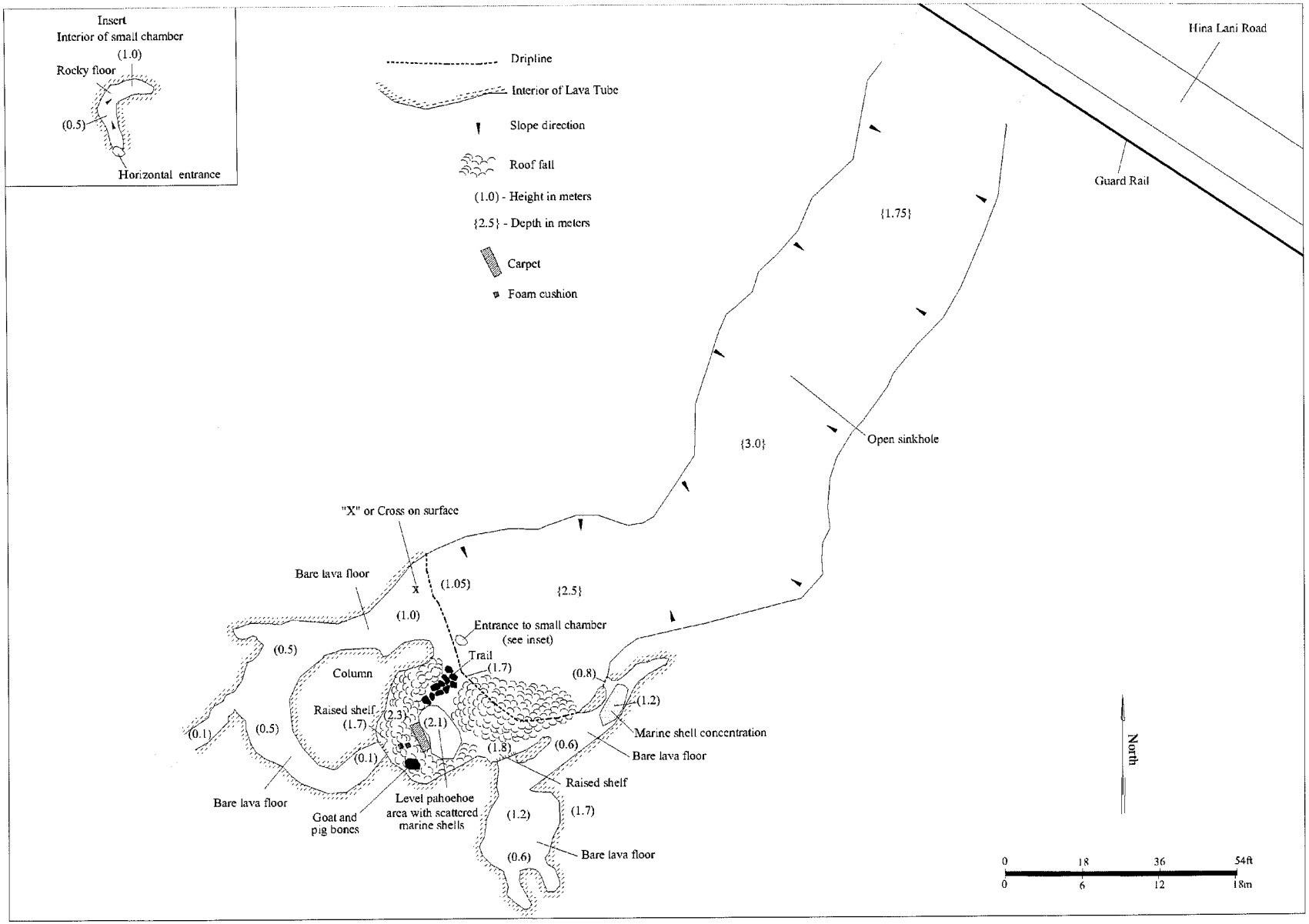

Figure 9. Site 26269 Plan Map

Figure 10. Site 26269, Steppingstone trail, view to southwest

Figure 11. Site 26269, Modern Debris, view to west

and *echinoid* body fragments and spines. Numerous marine shell fragments are also scattered among the roof fall. A concentration of goat and pig bones is present on the floor of the tube along the southwestern wall. Modern debris is also present within this chamber. These materials consist of a section of carpet located adjacent to the pahoehoe area, two foam seat cushions and a plastic soda bottle (*Figure 11*).

There are two raised shelves present within this chamber that connect to adjoining chambers located on the southwest side of the chamber, 1.75 m above the floor. The shelf is 1.2 m wide and 0.1 m in height. A passage extends to the 5.2 m to the southwest, then angles to the northwest for an additional 8.0 m where it enters the chamber the north of the column (discussed below). This passage is 1.2 to 3.7 m wide and 0.5 m in height. The floor is bare lava and no cultural remains were present.

The second passage is situated along the south side of the chamber, 1.8 m in height above the main floor. This shelf is 1.5 m wide and 0.4 m in height. An irregularly-shaped chamber extends to the south from this shelf, measuring 8.8 m long and from 2.7 to 7.0 m wide. Two small passages extend 3.0 m further south. The floor in this chamber is bare lava and the ceiling heights range from 0.5 to 1.2 m. No cultural remains were present. A passage also extends to the northeast from this chamber for 14.2 m where it terminates. This passage is 1.0 to 1.9 m wide and 0.6 m in height. The floor is bare lava and there is a concentration of *Cypraea sp., Conus sp., Nerita picea,* and *Cellana sp.* Shells present in the northeastern portion. A small opening is located in the northeastern end of this passage that opens onto the sinkhole. This opening is 0.85 m wide and 0.8 m in height.

The area to the north of the column is 17.5 m long (northeast by southwest), from 2.0 to 6.3 m wide with a bare lava floor and ceiling heights that range from 0.5 to 1.0 m. No cultural remains were present in this portion of the tube. A low (0.1 m tall) inaccessible passage extends to the southwest from the rear of this chamber. As stated, this tube angles to the south and southeast where it re-enters the southern chamber through the raised shelf.

There is a small chamber located outside the entrance to the lava tube, within the floor of the sinkhole. The entrance to this chamber is through a horizontal opening on the side of an outcrop that is 0.75 m wide and 0.6 m in height. The chamber extends 3.0 m to the north from this entrance, then angles to east for an additional 3.5 m where it terminates. This chamber is 1.0 to 1.35 m wide with ceiling heights that range from 0.5 to 1.0 m. The floor is comprised of uneven cobbles and small boulders and no cultural remains were present.

An "X" or cross has been pecked into the pahoehoe lava above the dripline entrance to the lava tube. The cross measures 26 cm long and 19 cm wide, with the pecked portion measuring 1 to 1.5 cm wide 0.5 cm deep (*Figure 12*).

Site 26269 is interpreted as a temporary habitation shelter based on its formal type and on the present on the internal trail and cultural remains. It is possible that the "X" or cross may represent an historic petroglyph created after the introduction of Christianity or it may be a survey mark. The presence of the modern debris present inside the tube indicates it has also been recently utilized. Site 26269 is part of the same lava tube system that contains two lava tubes previously identified by Haun and Henry (2000) during a survey of an adjacent parcel (Sites 22016 and 22017 – see *Figure 6*). Both of these lava tubes were interpreted as temporary habitations by the previous study.

Site 26270

Site 26270 is a crude modified outcrop situated in the northwestern portion of the project area at c. 310 ft elevation. The site is located in an area of uneven pahoehoe lava with no soil. It is irregular in shape and measures 4.2 m in length (northeast by southwest), from 1.95 to 2.8 m wide and 0.4 to 0.65 m in height above the surrounding ground surface (*Figure 13*). The surface of the modified outcrop is uneven and irregular and no cultural remains were present. Site 26270 is assigned a possible agricultural function based on its formal type, informal construction and on the absence of cultural remains. The site is unaltered and in fair condition.

Figure 12. Site 26269, "X" or Cross, view to south

Figure 13. Site 26270, Modified Outcrop, view to southwest

CONCLUSION

Discussion

The identified sites conform to the traditional Hawaiian site/feature types expected in the Middle Zone (Cordy et al. 1991) based on previous archaeological work and historic documentary research. As expected, a temporary habitation lava tube site was identified, along with two possible agricultural sites and a site with an indeterminate function. The Site 26269 temporary habitation sites lava tube contained very limited amounts of cultural material, with very shallow or non-existent soil deposits. These characteristics, and the limited evidence for structural modifications to the tube, indicate the temporary habitation use was of very limited duration.

Previous radiocarbon age determinations from temporary habitation sites in the Middle Zone are relatively late with most spanning the 1700s to historic period (Cordy et al. 1991, Kennedy 1984, Fager and Gravers 1993). Despite the late dates, Cordy et al. (1991) postulated earlier use of the Middle Zone. Two radiocarbon dates from lava tubes in an adjacent parcel (Haun and Henry 2000) confirm use in the 1400s to 1500s.

The survey identified two informal possible agricultural features. Fager and Graves (1996), Colin et al. (1996), Haun and Henry (2000) also identified agricultural features inland of the Queen Ka'ahumanu Highway. Cordy et al. list 47 sites in the Middle Zone (1991:344-345). Thirty were situated seaward of the Queen Ka'ahumanu Highway and 17 were inland of the highway. An agricultural function was assigned to 33% of the seaward sites and none of the inland sites. Nearly all of the agricultural features were small enclosures with soil. The sample inland of the highway consisted primarily of sites identified by Kennedy (1984), whose survey area extended from 250 ft to 500 ft elevation.

Nearly 15% of the sites identified by Colin et al. (1996) inland of the highway were assigned an agricultural function (8 sites with 9 agricultural features). Six of the eight sites were situated between c. 200 ft and 340 ft elevation. The other two sites were located at approximately 100 ft elevation. The agricultural features consisted of cleared depressions on pahoehoe lava, and small enclosures on pahoehoe abutting a'a lava flows.

Over 76% of the features identified by Fager and Graves (1993) inland of the highway between 150 ft and 250 ft elevation were assigned an agricultural function (46 features at 8 sites). The agricultural features consisted of terraces, modified outcrops, enclosures, excavated depressions, and mounds on pahoehoe lava near, or abutting a'a lava flows. The identified agricultural features only represent a sample of the ones actually present because the "ubiquitous agricultural features...were formally identified and recorded only when they were found in association with other [non-agricultural] feature types...or if they were representative agricultural types" (1993:8).

Fifty-two percent of the features identified by Haun and Henry (2000) adjacent to the project area were interpreted to be agricultural in function (42 features at 21 sites). The agricultural features consist of modified outcrops, terraces, mounds, excavated depressions, and several probable garden enclosures. The features are scattered throughout pahoehoe lava-covered portions of the project area between 170 ft and 300 ft elevation.

Sweet potatoes were probably the primary crop grown in the agricultural features identified in the project area. Handy and Handy (1972) describe the cultivation of sweet potatoes in arid, lava-covered areas of Hawaii. The cultivation used a mixture of stones, gravel, and mulch. The mulch was made with weeds and grass, which were piled in excavations in the lava several months before cultivation. Cultivation began with the onset of the winter rains. Pre-rooted cuttings were used for planting. After the cuttings began to grow, the mulch and gravel mixture was stirred with a stick to promote the development of tubers. Mulch and stones were periodically added to the plots to further encourage growth. After a month or so, the tubers were thinned by hand. The smaller tubers were removed to permit the larger ones to fully develop. Using this labor-intensive method, suitable crops were produced in a few months.

The current survey area, and the survey areas of Colin et al. (1996), Fager and Graves (1993) and Haun and Henry (2000) are all situated at the seaward end of the moderately sloping flanks of Hualalai Volcano, immediately inland of the more gently sloping terrain that characterizes the area between 80-100 ft elevation and the shoreline. The agricultural features documented by the surveys support a modification of the Cordy et al. (1991) settlement model as it pertains to agricultural use of the Middle Zone. The model proposed by Cordy et al.

(1991) indicates that agricultural features were limited to the lower-most portion of the Middle Zone, immediately inland of the Coastal Zone. Here the agricultural features probably functioned as "household gardens" that could be readily accessed from the nearby permanent habitation sites. Inland of the seaward band of agricultural use in the Middle Zone, agricultural features are rare according to the model.

The surveys subsequent to Cordy et al.'s research (1991) in the lower portion of moderately sloping terrain inland of the Queen Ka'ahumanu Highway have documented a second band of agricultural use. This band extends between 100 ft and 350 ft elevation. Above this band, agricultural features again become rare, or absent until the lower limits of the upland agricultural region is reached above 800-900 ft elevation. The surveys of Soehren (1979), Kennedy (1984), Rosendahl and Haun (1987), and Rosendahl and Walker (1991) did not identify agricultural features between 350 ft and 910 ft elevation. The surveys by Barrera (1985, 1988) document the presence of agricultural features above approximately 900 ft elevation.

Significance Assessments and Recommended Treatments

Pursuant to DLNR (1998) Chapter 275-6 (d), the initial significance assessments provided herein are not final until concurrence from the DLNR has been obtained. Sites identified during the survey are assessed for significance based on the criteria outlined in the Rules Governing Procedures for Historic Preservation Review (DLNR 1998: Chapter 275). According to these rules, a site must possess integrity of location, design, setting, materials, workmanship, feeling, and association and shall meet one or more of the following criteria:

1. Criterion "a". Be associated with events that have made an important contribution to the broad patterns of our history;

2. Criterion "b". Be associated with the lives of persons important in our past;

3. Criterion "c". Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;

4. Criterion "d". Have yielded, or is likely to yield, information important for research on prehistory or history; and

5. Criterion "e". Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts--these associations being important to the group's history and cultural identity.

Based on the above criteria, the four sites identified during the present project are assessed as solely significant under Criterion "d". These sites have yielded information important for understanding late prehistoric to historic land use in project area. The documentation of three of the sites adequately documents them and no further work or preservation is recommended (Sites 26267, 26268 and 26270). The Site 26269 lava tube retains the potential to yield information important for understanding prehistoric and early historic land use. This site is recommended for data recovery, which would entail surface collection of cultural remains to obtain a larger sample of portable remains and potentially dating samples. The plan for data recovery of this site would be detailed in a Data Recovery Plan prepared for DLNR-SHPD review and approval

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531
Rec'd 7/18/08

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

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LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

July 11, 2008

Alan Haun, Ph.D.
Haun & Associates
HCR 1 Box 4730
Keaau, HI 96749

LOG NO: 2008.0288
DOC NO: 0807MD56
Archaeology

Dear Dr. Haun:

SUBJECT: Chapter 6E-42 Historic Preservation Review –
Archaeological Inventory Survey of an 8.016-acre area with four (4) new sites
Kaloko Ahupua`a, North Kona District, Island of Hawai`i
TMK: (3) 7-3-009:055

This letter reviews the revised report submitted to us in January 2008 (*Haun and Henry 2008; Archaeological Inventory Survey, TMK: 7-3-09:55, Land of Kaloko, North Kona District, Island of Hawaii; Report 531-112707)*. We apologize for the delay in our reply. The survey identified four (4) new Sites at this location (Sites 50-10-28-26267 and -26270 [modified outcrops], -26268 [a mound] and -26269 [a lava tube]). All sites are considered significant under criterion 'd' and we concur with this assessment.

We also concur with your recommendation that your work documenting three of the sites (-26267, -26268 and -26270) is sufficient and no further work is required. You are recommending that data recovery be conducted at Site 26269, the lava tube; we concur with this assessment. The report is therefore accepted pursuant to §13-276 of the Hawaii Administrative Rules. We look forward to reviewing the Data Recovery Plan for Site 26269.

If you have any questions about this letter please contact Morgan Davis at our Hawaii Island Section at (808) 981-2979.

Aloha,

Nancy McMahon,
Archaeology and Historic Preservation Manager
State Historic Preservation Division

ENVIRONMENTAL ASSESSMENT

KALOKO HOUSING PROGRAM

TMK (3rd): 7-3-009:055
North Kona District, Hawai‘i Island, State of Hawai‘i

County of Hawai‘i
Office of Housing and Community Development
50 Wailuku Drive
Hilo, Hawai‘i 96720-2456

APPENDIX 6
TRAFFIC IMPACT ASSESSMENT REPORT

Phillip Rowell and Associates
47-273 'D' Hui Iwa Street Kaneohe, Hawaii 96744 Phone: (808) 239-8206 FAX: (808) 239-4175 Email:prowell@hawiiantel.net

September 5, 2008

Mr. Ron Terry
HC2
P.O. Box 9575
Hilo, Hawaii 96749

Re: **Traffic Impact Assessment Report - Revised**
Kaloko Housing Facility in Kailua Kona, Hawaii
TMK: 7-3-009:055

Dear Ron:

Phillip Rowell and Associates have completed the following Traffic Impact Assessment Report (TIAR) for the proposed Kaloko Housing Facility in Kailua-Kona. The following report is presented in the following format:

A. Project Location and Description
B. Purpose and Objective of Study
C. Methodology
D. Description of Existing Streets and Intersection Controls
E. Existing Peak Hour Traffic Volumes
F. Level-of-Service Concept
G. Existing Levels-of-Service
H. Background Traffic Projections
I. Project Trip Generation
J. Background Plus Project Traffic Projections
K. Impact Analysis of Background Plus Project Conditions
L. Mitigation
M. Interim Traffic Plan
N. Summary and Conclusions

A. Project Location and Description

The proposed project is located along the south side of Hina Lani Road and east of the Kaloko Light Industrial Park, which is north of Kailua-Kona. See Attachment A.

Access to and egress from the project will be via an extension of Maiau Street. Upon development of Phase 4 of the Industrial Park, Maiau Street will be extended from Kamanu Street eastward to a new intersection with Hina Lani Road. We understand that Maiau Street will be a major collector connecting Hina Lani Road with the industrial area. The driveway serving the project will be along the north side of Maiau Street approximately 300 feet west of Hina Lani Street.

Until Maiau Street is extended, the project will be served by a connection to Hina Lani Street. As only project generated traffic will use this section of Maiau Street, all movements will be allowed.

A preliminary site plan for the project is provided as Attachment B. The project will consist of 72 affordable rental housing units, 24 transitional housing units and a 10,000 square foot warehouse that will be used by the local food bank. For purposes of this traffic study, we have assumed that all the housing units are apartments.

B. Purpose and Objective of Study

1. Quantify and describe the traffic related characteristics of the proposed project.

2. Identify potential deficiencies adjacent to the project that will impact traffic operations in the vicinity of the proposed project.

C. Methodology

1. *Define the Study Area*

The first step in defining the study area was to estimate the number of peak hour trips that the proposed project will generate. It was estimated that the project will generate 57 trips during the morning peak hour and 68 trips during the afternoon peak hour. This implies that the traffic analysis could be limited to the nearest intersection providing access to and from the project. The location of the site dictates that primary access to and egress from the site will be via the intersection of Hina Lani Road at Maiau Street. Traffic projections were also developed for the intersection of Hina Lani Road at Kamanu Street because the extension of Maiau Street will divert a significant amount of traffic from this intersection. Therefore, the study area for the project includes the intersection of Hina Lani Road at Maiau Street and Hina Lani Road at Kamanu Street.

2. *Analyze Existing Traffic Conditions*

Existing traffic volumes along Hina Lani Road were estimated from manual traffic counts at the intersection of Hina Lani Road at Kamanu Street. These counts were performed in June 2008. The intersection of Hina Lani Road at Maiau Street does not exist yet.

The intersection configuration and right-of-way controls were verified during a field reconnaissance of the study area during June 2008. Existing traffic operating conditions of the study intersection were determined using the methodology described in the 2000 *Highway Capacity Manual* (HCM)[1].

3. *Estimate Horizon Year Background Traffic Projections*

Background traffic conditions are defined as future traffic conditions <u>without</u> the proposed project. The design horizon year does not necessarily represent the project completion date of that phase. It is a date for which future background traffic projections were estimated. For this project, we have used a design, or horizon, year of 2013. Horizon year background traffic conditions were estimated using a background traffic growth factor.

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[1] *Highway Capacity Manual*, Institute of Transportation Engineers, Washington, D.C., 2000

4. *Estimate Project-Related Traffic Characteristics*

The number peak-hour trips that the proposed project will generate was estimated using standard trip generation procedures outlined in the *Trip Generation Handbook*[2] and data provided in *Trip Generation*[3]. These trips were distributed and assigned based on the available approach and departure routes and trip distribution data from other recently completed traffic studies in the area.

5. *Analyze Project Related Traffic Impacts*

The project-related traffic was then superimposed on background traffic volumes. The traffic impacts of the project were assessed by analyzing the levels-of-service. The purpose of this analysis was to identify potential operational deficiencies in the vicinity of the proposed project.

D. Description of Existing Streets and Intersection Controls

The existing lane configuration and right-of-way controls are summarized in Attachment C.

Hina Lani Road is currently a two-lane, two-way County Road connection Queen Kaahumanu Highway and Mamalahoa Highway. The intersections along Hina Lani Road are unsignalized. In the future, Hina Lani Road will be widened from two to four lanes. It our understanding that separate left turn lanes and left turn refuge lanes will be provided at the major intersections, including Maiau Street and Kamanu Street, when Hina Lani Road is widened.

Maiau Street will be a two-lane, two-way street when extended.

E. Existing Peak Hour Traffic Volumes

The existing morning and afternoon peak hour traffic volumes are summarized in Attachment C.

1. The traffic counts include buses, trucks and other large vehicles. Mopeds and bicycles are not included.

2. All volumes are rounded to nearest five (5).

3. Pedestrian activity was negligible.

F. Level-of-Service Concept

"Level-of-Service" is a term which denotes any of an infinite number of combinations of traffic operating conditions that may occur on a given lane or roadway when it is subjected to various traffic volumes. Level-of-service (LOS) is a qualitative measure of the effect of a number of factors which include space, speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

There are six levels-of-service, A through F, which relate to the driving conditions from best to worst, respectively. The characteristics of traffic operations for each level-of-service are

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[2] *Trip Generation Handbook*, Institute of Transportation Engineers, Washington, D.C., 1998

[3] *Trip Generation*, Institute of Transportation Engineers, Washington, D.C., 2003

summarized in Table 1. In general, LOS A represents free-flow conditions with no congestion. LOS F, on the other hand, represents severe congestion with stop-and-go conditions. Level-of-service D is typically considered acceptable for peak hour conditions in urban areas.

Corresponding to each level-of-service shown in the table is a volume/capacity ratio. This is the ratio of either existing or projected traffic volumes to the capacity of the intersection. Capacity is defined as the maximum number of vehicles that can be accommodated by the roadway during a specified period of time. The capacity of a particular roadway is dependent upon its physical characteristics such as the number of lanes, the operational characteristics of the roadway (one-way, two-way, turn prohibitions, bus stops, etc.), the type of traffic using the roadway (trucks, buses, etc.) and turning movements.

Table 1 Level-of-Service Definitions for Signalized Intersections(1)

Level of Service	Interpretation	Volume-to-Capacity Ratio(2)	Stopped Delay (Seconds)
A, B	Uncongested operations; all vehicles clear in a single cycle.	0.000-0.700	<20.0
C	Light congestion; occasional backups on critical approaches	0.701-0.800	20.1-35.0
D	Congestion on critical approaches but intersection functional. Vehicles must wait through more than one cycle during short periods. No long standing lines formed.	0.801-0.900	35.1-55.0
E	Severe congestion with some standing lines on critical approaches. Blockage of intersection may occur if signal does not provide protected turning movements.	0.901-1.000	55.1-80.0
F	Total breakdown with stop-and-go operation	>1.001	>80.0

Notes:
(1) Source: *Highway Capacity Manual*, 2000.
(2) This is the ratio of the calculated critical volume to Level-of-Service E Capacity.

Like signalized intersections, the operating conditions of intersections controlled by stop signs can be classified by a level-of-service from A to F. However, the method for determining level-of-service for unsignalized intersections is based on the use of gaps in traffic on the major street by vehicles crossing or turning through that stream. Specifically, the capacity of the controlled legs of an intersection is based on two factors: 1) the distribution of gaps in the major street traffic stream, and 2) driver judgement in selecting gaps through which to execute a desired maneuver. The criteria for level-of-service at an unsignalized intersection is therefore based on delay of each turning movement. Table 2 summarizes the definitions for level-of-service and the corresponding delay.

Table 2 Level-of-Service Definitions for Unsignalized Intersections[1]

Level-of-Service	Expected Delay to Minor Street Traffic	Delay (Seconds)
A	Little or no delay	<10.0
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	See note (2) below	>50.1

Notes:
(1) Source: *Highway Capacity Manual*, 2000.
(2) When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement of the intersection.

G. Existing Levels-of-Service

The existing levels-of-service of the intersection Hina Lani Road at Kamanu Street are summarized in Table 3 and Attachment C. Shown in the table are the volume-to-capacity ratios, delays and levels-of-service of the overall intersections.

Table 3 Existing Levels-of-Service

Intersection, Approach and Movement	AM Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS
Hina Lani Road at Kamanu Street				
Westbound Left & Thru	7.9	A	8.7	A
Northbound Left & Right	19.3	C	200.6	F

NOTES:
1. V/C ratio is not calculated for unsignalized intersections.
2. Delay is in seconds per vehicle.
3. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

H. Background Traffic Projections

Background traffic projections are defined as future background traffic conditions without the proposed project.

Based on other traffic studies for projects in the Kailua-Kona area, the historical average background growth rate is 4% per year. This growth rate was used to estimate the background growth between 2008 and 2013. The growth factor was calculated using the following formula:

$$F = (1 + i)^n$$

where F = Growth Factor
i = Average annual growth rate, or 0.016
n = Growth period in years

The background traffic projections for 2013 are shown in Attachment D.

I. Project Trip Generation

Future traffic volumes generated by a project are typically estimated using the methodology described in the *Trip Generation Handbook*[4] and data provided in *Trip Generation*[5]. This method uses trip generation rates to estimate the number of trips that the project will generate during the peak hours of the project and along the adjacent street

The assumptions used for the trip generation analysis are:

1. The proposed project will consist of 72 affordable rental units, 24 transitional housing units and a 10,000 square foot warehouse.

2. The rental units and the transitional housing units will have traffic characteristics comparable to apartments as defined by the Institute of Transportation Engineers. The trip generation data is based on the number of proposed units. The Institute of Transportation Engineers data does not distinguish between affordable and market priced housing.

3. The warehouse will have traffic characteristics comparable of a warehouse as defined by the Institute of Transportation Engineers. The trip generation data is based on thousands gross square feet of floor area.

The trip generation calculations are summarized in Table 4.

Table 4 Trip Generation Calculations for Proposed Project

Time Period	Direction	Apartments			Warehouse			Totals
		Rate or %(1)	Units	Trips	Rate or %(1)	Units	Trips	
AM Peak Hour	Total	0.51	96	49	0.45	10.000	5	54
	In	20%		10	82%		4	14
	Out	80%		39	18%		1	40
PM Peak Hour	Total	0.62		60	0.47		5	65
	In	65%		39	25%		1	40
	Out	35%		21	75%		4	25

NOTES:
(1) Institute of Transportation Engineers, *Trip Generation*, Seventh Edition, 2003.

As shown, the proposed project will generate 14 inbound and 40 outbound trips during the morning peak hour. During the afternoon peak hour, the project will generate 40 inbound and 25 outbound trips.

We have been advised that the sponsoring agency has experience with several comparable projects on the Island of Hawaii and their experience is that these types of projects generate significantly less traffic than the trip generation estimates above. However, there are no studies to quantify trip generation rates. If the observations are correct, the trip generation estimates used in this report and the conclusions are conservative.

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[4] Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., 1998, p. 7-12

[5] Institute of Transportation Engineers, *Trip Generation, 7th Edition,* Washington, D.C., 2003

The project generated traffic was distributed and assigned based on the existing approach and departure pattern of traffic at the study intersections. The project trip assignments are shown in Attachment E. Shown are the project trip assignments for long-term conditions. Long-term conditions represent conditions with the Maiau Street extension.

J. Background Plus Project Projections

Background plus project traffic projections were estimated by superimposing the peak hourly traffic generated by the proposed project on the background (without project) peak hour traffic projections. This assumes that the peak hourly trips generated by the project coincide with the peak hour of the adjacent street. This represents a worse-case condition as it assumes that the peak hours of all the intersection approaches and the peak hour of the study project coincide and that the study project are 100% occupied. The resulting background plus project peak hour traffic projections are shown in Attachment F.

K. Traffic Impact Analysis

Level-of-Service Analysis

1. The *Highway Capacity Software* (HCS) package was used to performed level-of-service analyses. This package uses the *Highway Capacity Manual* methodology.

2. We have used the Institute of Transportation Engineers standard that a Level-of-Service D is the minimum acceptable level-of-service and that the criteria is applicable to the overall intersection. If project generated traffic causes the level-of-service to drop below Level-of-Service D, then mitigation should be provided to improve the level-of-service to Level-of-Service C or better. Minor movements, such a left turns and side street approaches may operate at Level-of-Service E for short periods. "Level-of-Service E is sometimes tolerated for minor movements such as left turns when there are no feasible mitigating measures or if it helps maintain the main through movements at acceptable levels-of-service."

3. As the *Highway Capacity Manual* defines level-of-service by delay, we have used the same definitions.

4. Based on discussions with the County of Hawaii Department of Public Works, we understand that Hina Lani Road will be widened from two to four lanes as part of the Kaloko Industrial Park project and that Maiau Street will be extended from Kamanu Street at Hina Lani Road as part of Phase 4 of the industrial park project. It is also understood that the intersection of Hina Lani Road at Maiau Street will be modified to provided separate left turn lanes and left turn refuge lanes. Attachment G. is a schematic drawing of the lane configuration as we understand and as used for the level-of-service analysis.

The results of the level-of-service analysis are summarized in Attachment F. Shown are the peak hourly traffic volumes and the average vehicle delays and the levels-of-service of the lane groups. The results of the Level-of-Service analysis are:

1. The intersection of Hina Lani Road at Maiau Street will operate at Level-of-Service B during the morning peak hour and Level-of-Service C during the afternoon peak hour. The 95th percentile afternoon queue along Maiau Street will be six (6) vehicles which is approximately the one-third of the distance between the project driveway and the intersection. This means that there is a very low probability that the queue waiting at the stop sign will block the intersection.

2. The intersection of Hina Lani Road at Kamanu Street will operate at Level-of-Service B during the morning peak hour and Level-of-Service D during the afternoon peak hour. It should be noted that the afternoon level-of-service of the northbound approach is an improvement from the existing Level-of-Service F because a significant amount of traffic is diverted to the Maiau Street extension.

3. The intersection of Maiau Street at the project driveway will operate at Level-of-Service B during both the morning and afternoon peak hours.

L. Mitigation

Level-of-Service D is generally considered to be the minimum acceptable peak hour level-of-service for urban intersections.[6] It is generally accepted that side street approaches and minor movements, such as left turn lanes may operate at Level-of-Service E or F for short periods, especially if the volume-to-capacity ratio indicates a higher Level-of-Service as this implies that the long delay and therefore the low Level-of-Service is a result of the traffic signal cycle length rather than a lane deficiency. However, the subject intersection is not signalized and methodology for unsignalized intersections does not calculate the volume-to-capacity ratio.

As all controlled traffic movements will operate at Level-of-Service D, or better, no mitigation is recommended.

M. Interim Traffic Plan

As previously noted, Maiau Street may not be extended to Hina Lani Road until after the study project is completed. Therefore, an interim traffic plan was developed to provide access to and egress from the project. The interim plan consist of a two-lane connection between the project driveway and Hina Lani Street. The project traffic assignments for this scenario are shown on Attachment H and the background plus project traffic projections are shown on Attachment I. Also shown are the anticipated levels-of-service. As shown, all movements at the intersection of Hina Lani Road and Maiau Street will operate at Level-of-Service C, or better.

At the intersection of Hina Lani at Kamanu Street, the northbound approach will operate at Level-of-Service D during the morning peak hour, which is a decrease from Level-of-Service C, and Level-of-Service F during the afternoon peak hour, which is the same as the existing Level-of-Service. The poor level-of-service will be mitigated when Hina Lani Road is improved and the majority of the northbound right turns are diverted to Maiau Street.

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[6] Institute of Traffic Engineers *Transportation Impact Analyses for Site Development, A Recommended Practice,* Washington, D.C., 2006, p 60.

N. Summary and Conclusions

The conclusions of the traffic impact assessment are:

1. The proposed project will consist of 72 affordable rental units, 24 transitional housing units and a 10,000 square foot warehouse.

2. The proposed project will generate 14 inbound and 40 outbound trips during the morning peak hour. During the afternoon peak hour, the project will generate 40 inbound and 25 outbound trips.

3. We have been advised that the sponsoring agency has experience with several comparable projects on the Island of Hawaii and their experience is that these types of projects generate significantly less traffic than the trip generation estimates above. However, there are no studies to quantify trip generation rates. If the observations are correct, the trip generation estimates used in this report and the conclusions are conservative.

4. Residents should be encouraged to use public transportation and to carpool as much as possible. Typically, the property manager acts as a transportation coordinator with the task of coordinating public transportation for the residents.

5. The public transportation provider should be contacted regarding the feasibility of providing bus service to and from the project.

Respectfully submitted,
PHILLIP ROWELL AND ASSOCIATES

Phillip J. Rowell, P.E.
Principal

List of Attachments

A. Project Location Map

B. Project Site Plan

C. Existing Peak Hour Traffic Volumes, Lane Configurations and Right-of-Way Control

D. Background Peak Hour Traffic Projections

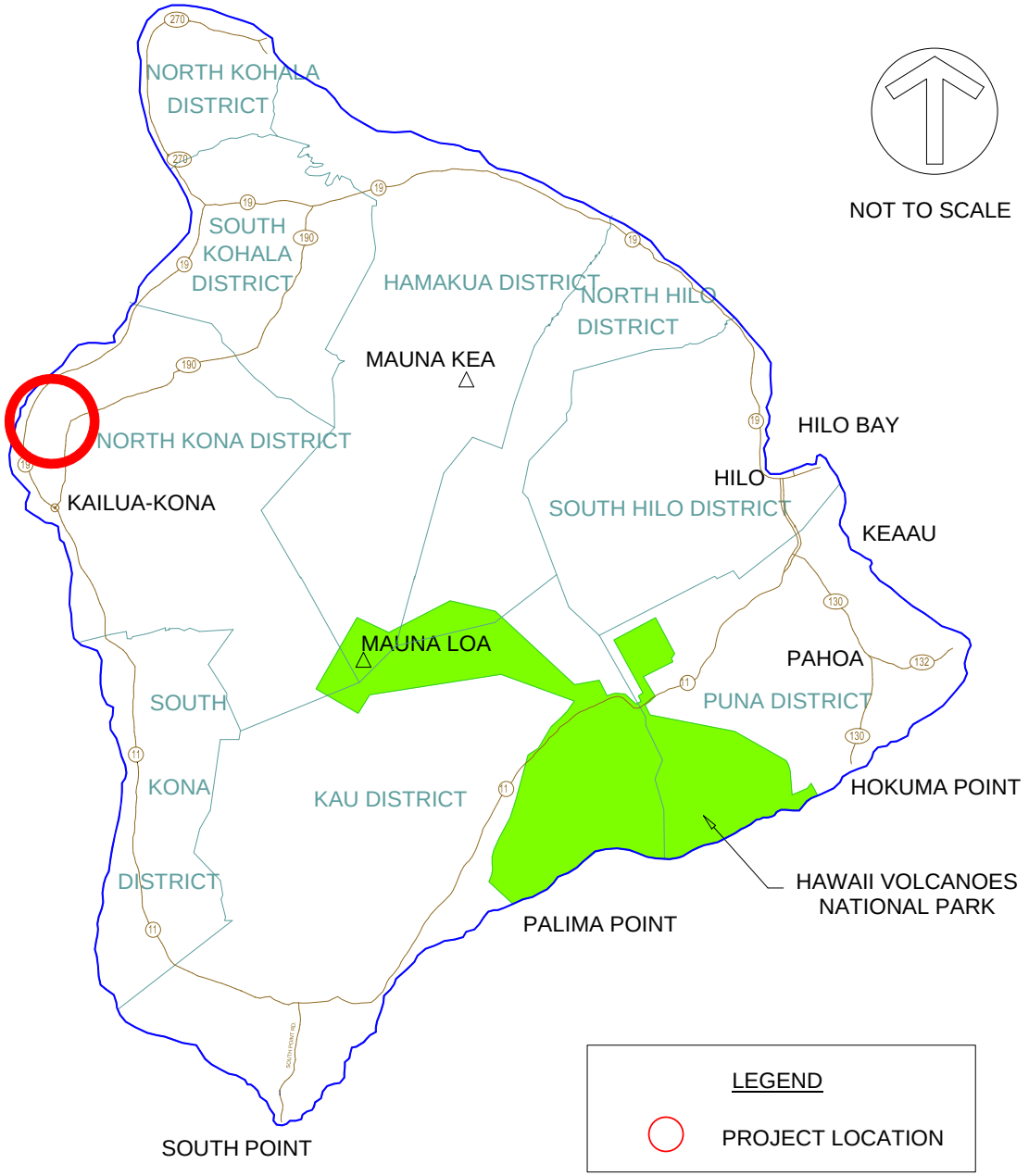
E. Project Trip Assignments

F. Background Plus Project Peak Hour Traffic Projections

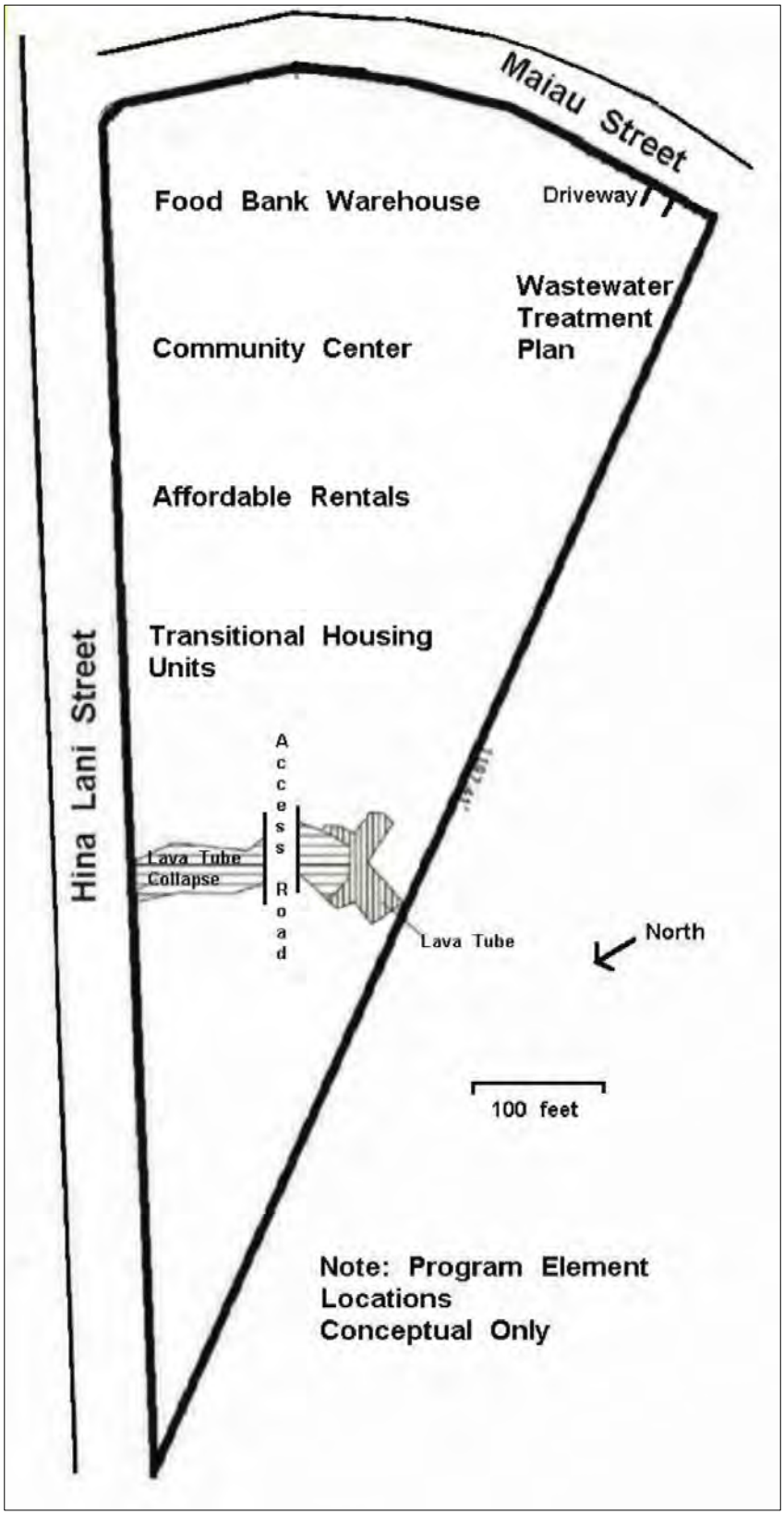
G. Schematic Drawing of Future Hina Lani-Maiau Street Intersection

H. Project Trip Assignments for Interim Conditions

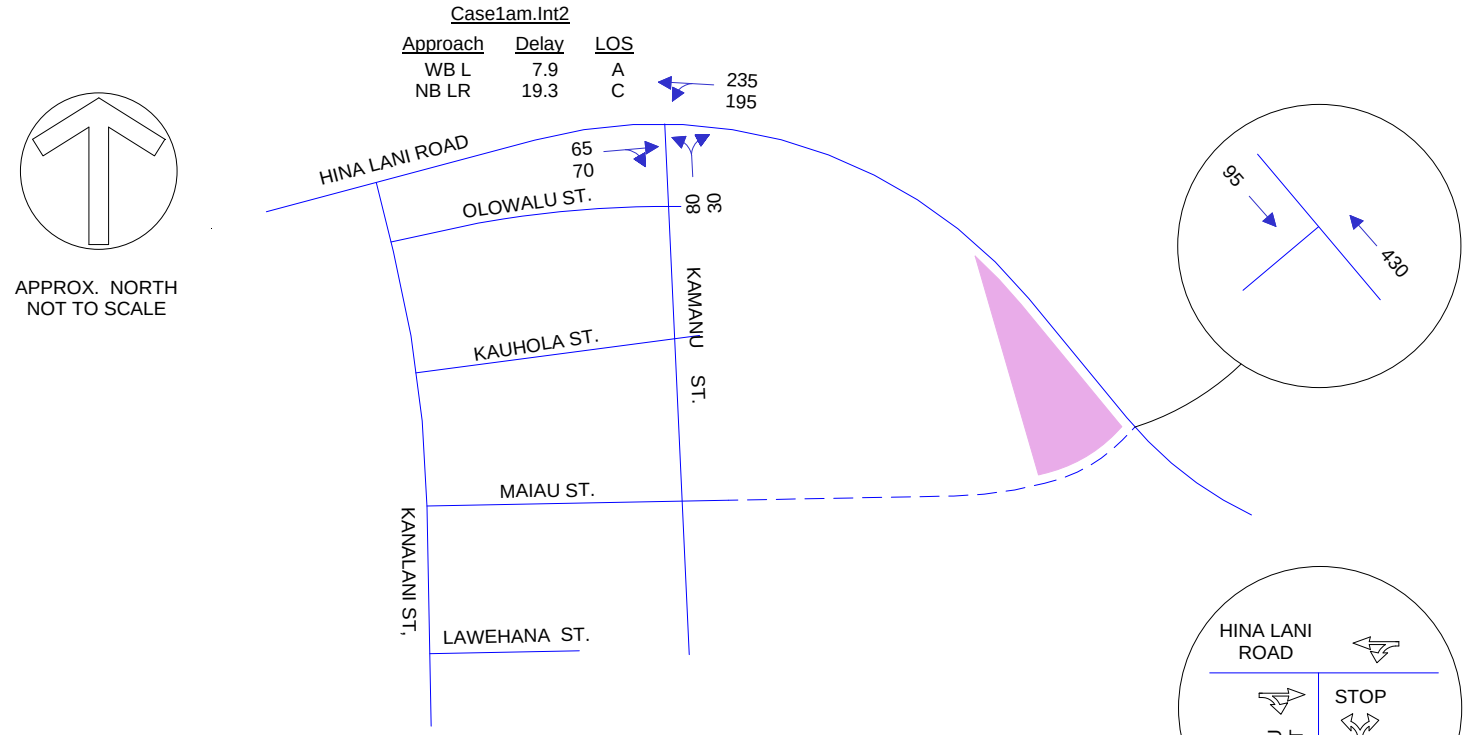
I. Background Plus Project Peak Hour Traffic Projections for Interim Conditions



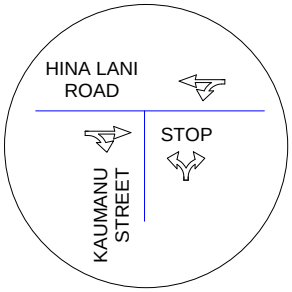
ATTACHMENT A
PROJECT LOCATION MAP



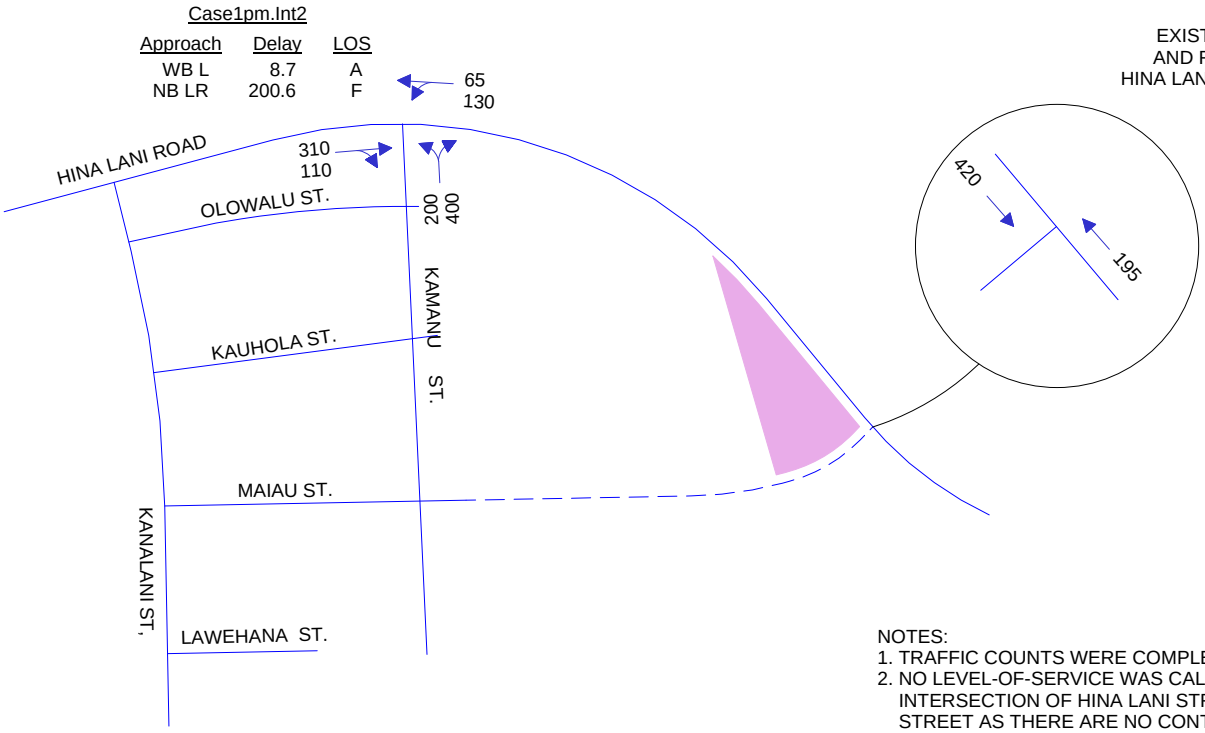
ATTACHMENT B
PRELIMINARY SITE PLAN



AM PEAK HOUR



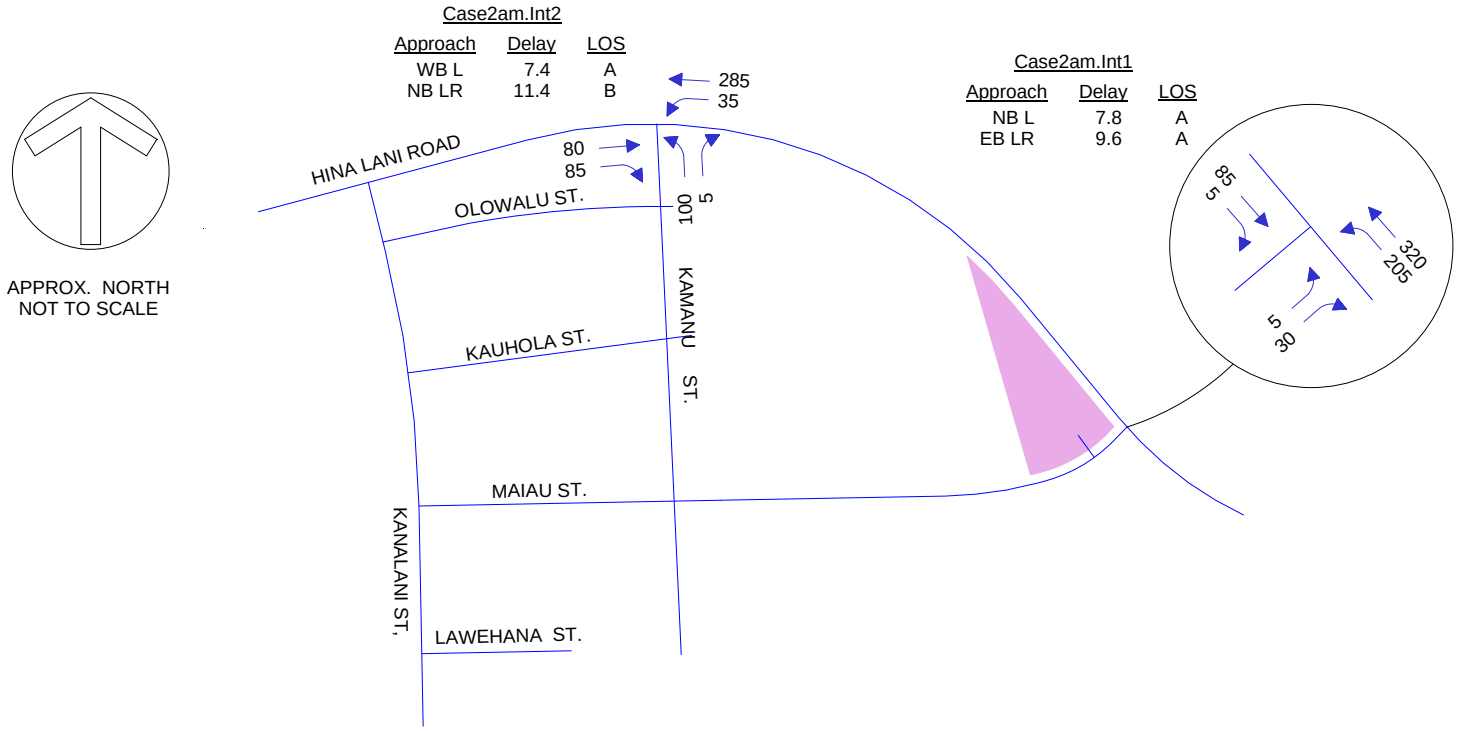
EXISTING LANE CONFIGURATION
AND RIGHT-OF-WAY CONTROL AT
HINA LANI ROAD AND KAUMANU STREET
INTERSECTION



PM PEAK HOUR

NOTES:
1. TRAFFIC COUNTS WERE COMPLETED IN JUNE 2008.
2. NO LEVEL-OF-SERVICE WAS CALCULATED FOR THE INTERSECTION OF HINA LANI STREET AT MAIAU STREET AS THERE ARE NO CONTROLLED TRAFFIC MOVEMENTS.

ATTACHMENT C
EXISTING PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATIONS AND RIGHT-OF-WAY CONTROL



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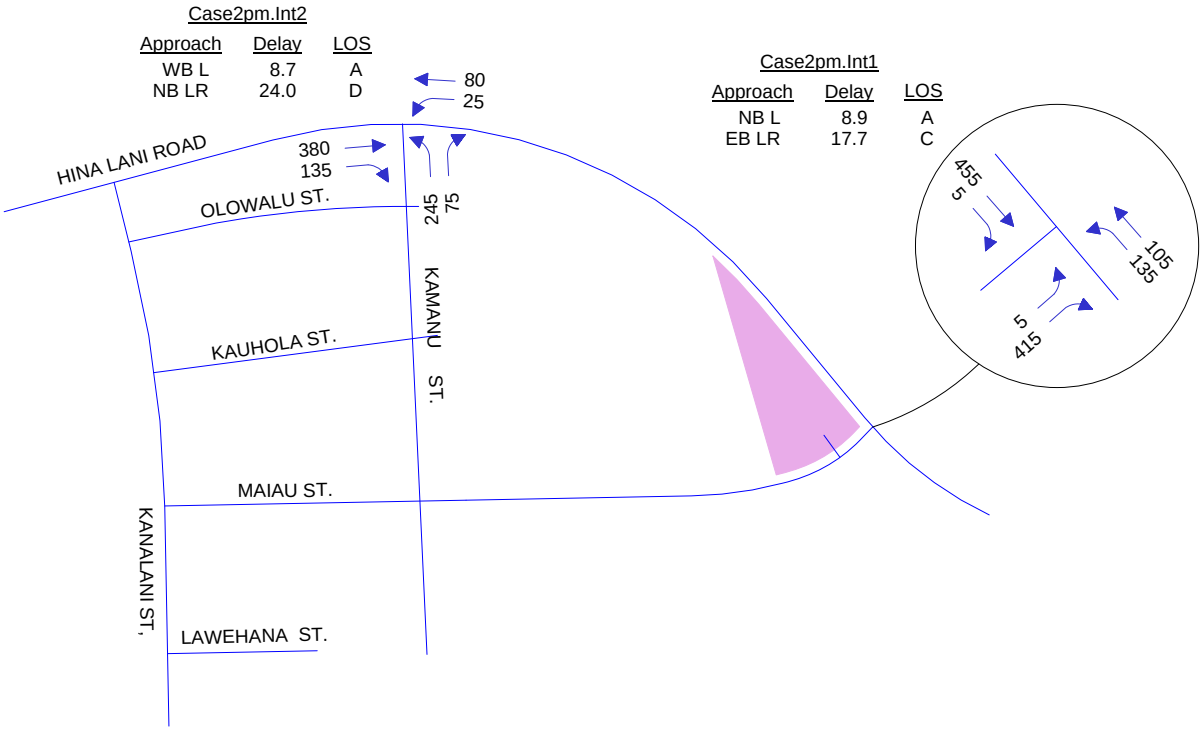
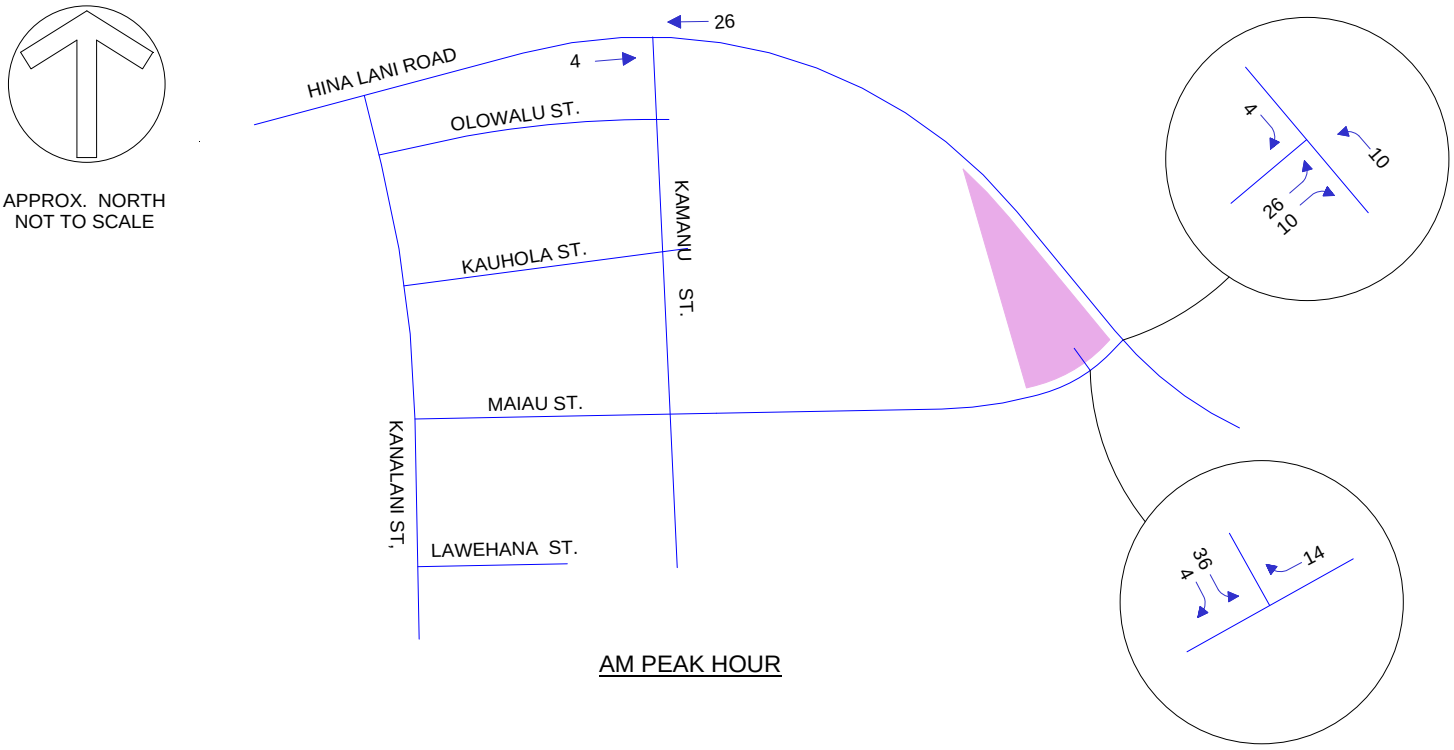


PM PEAK HOUR

ATTACHMENT D
BACKGROUND PEAK HOUR TRAFFIC PROJECTIONS



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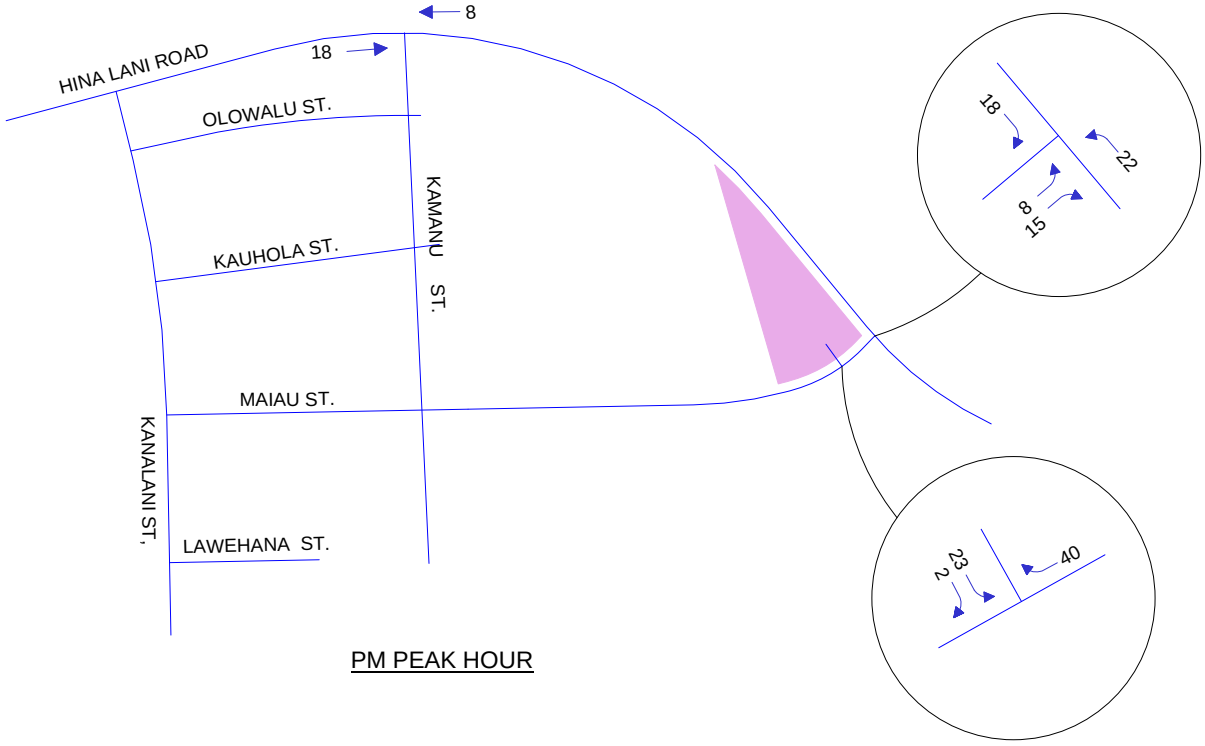
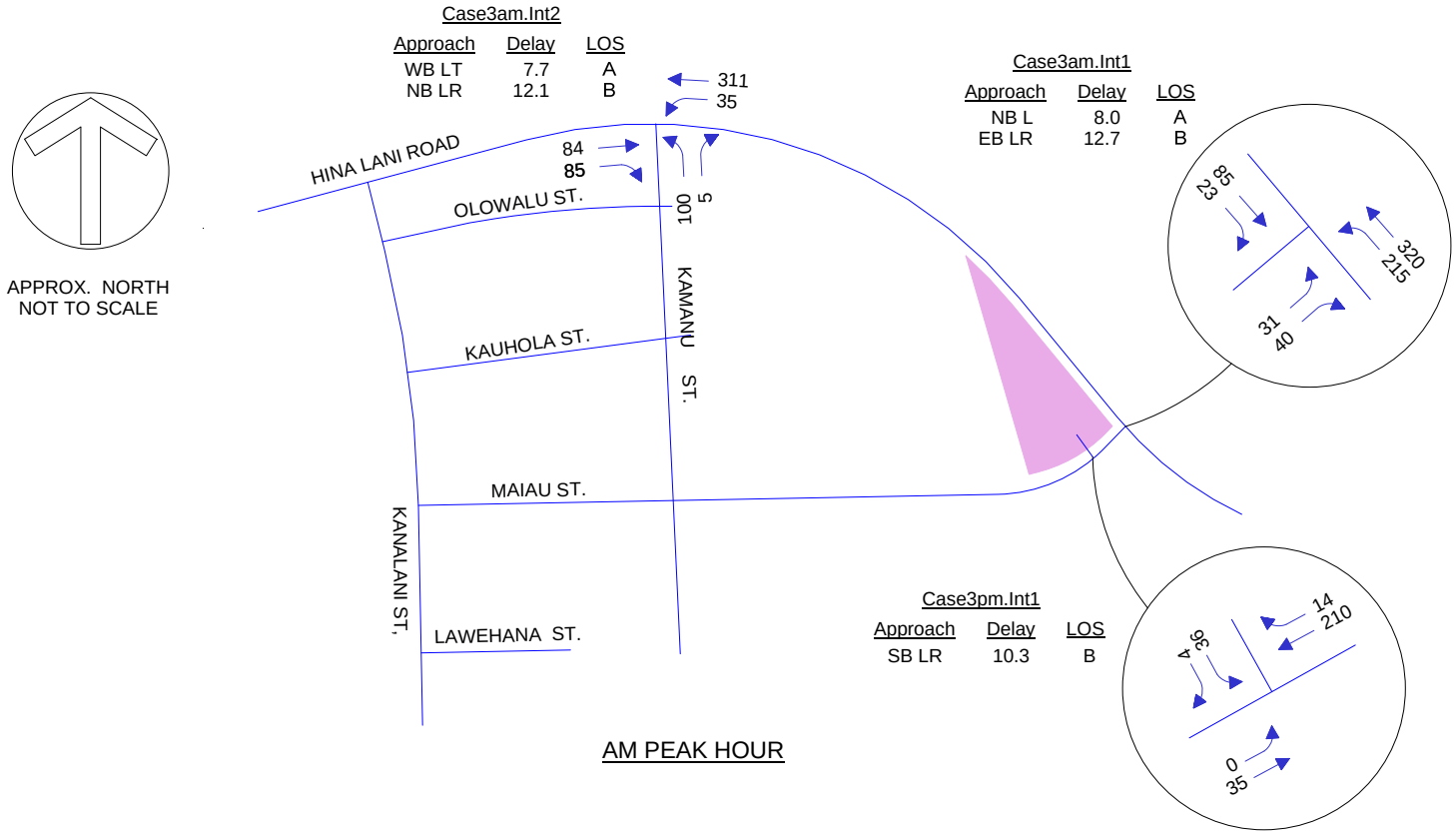


PM PEAK HOUR

ATTACHMENT E
PROJECT TRIP ASSIGNMENTS



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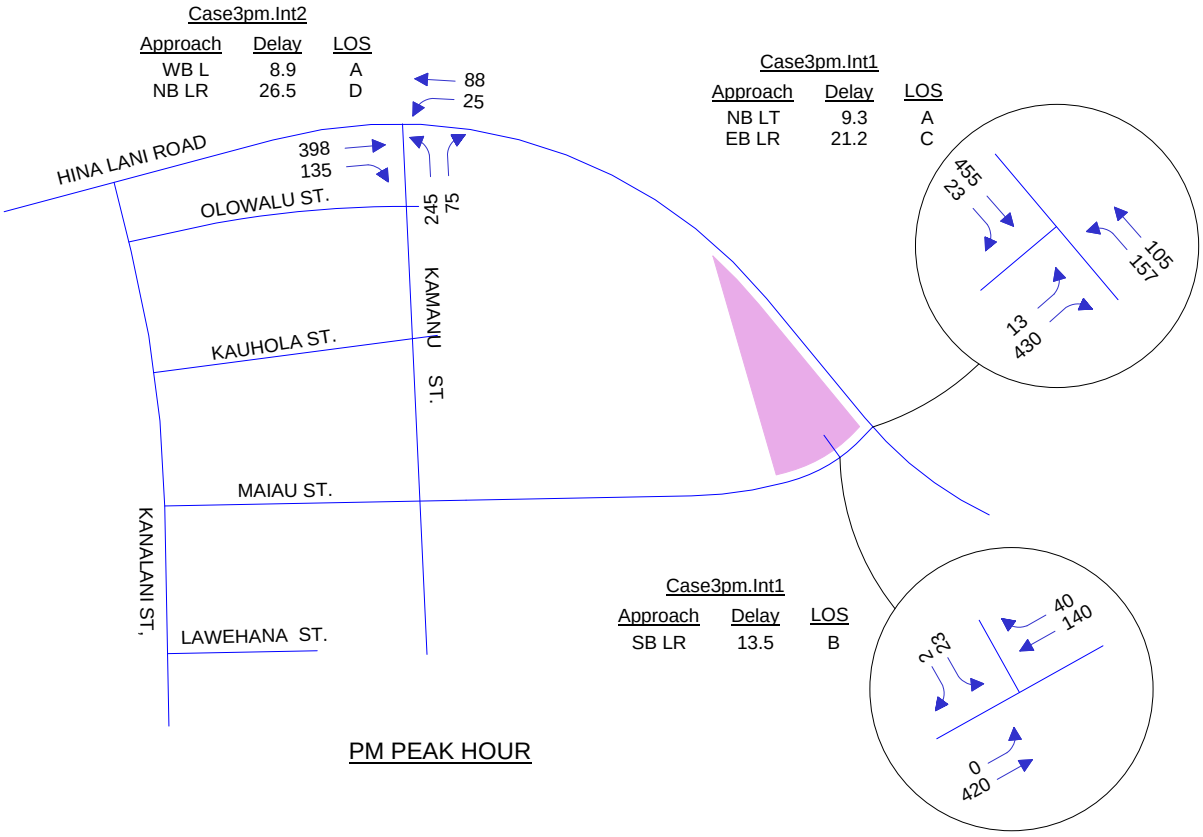

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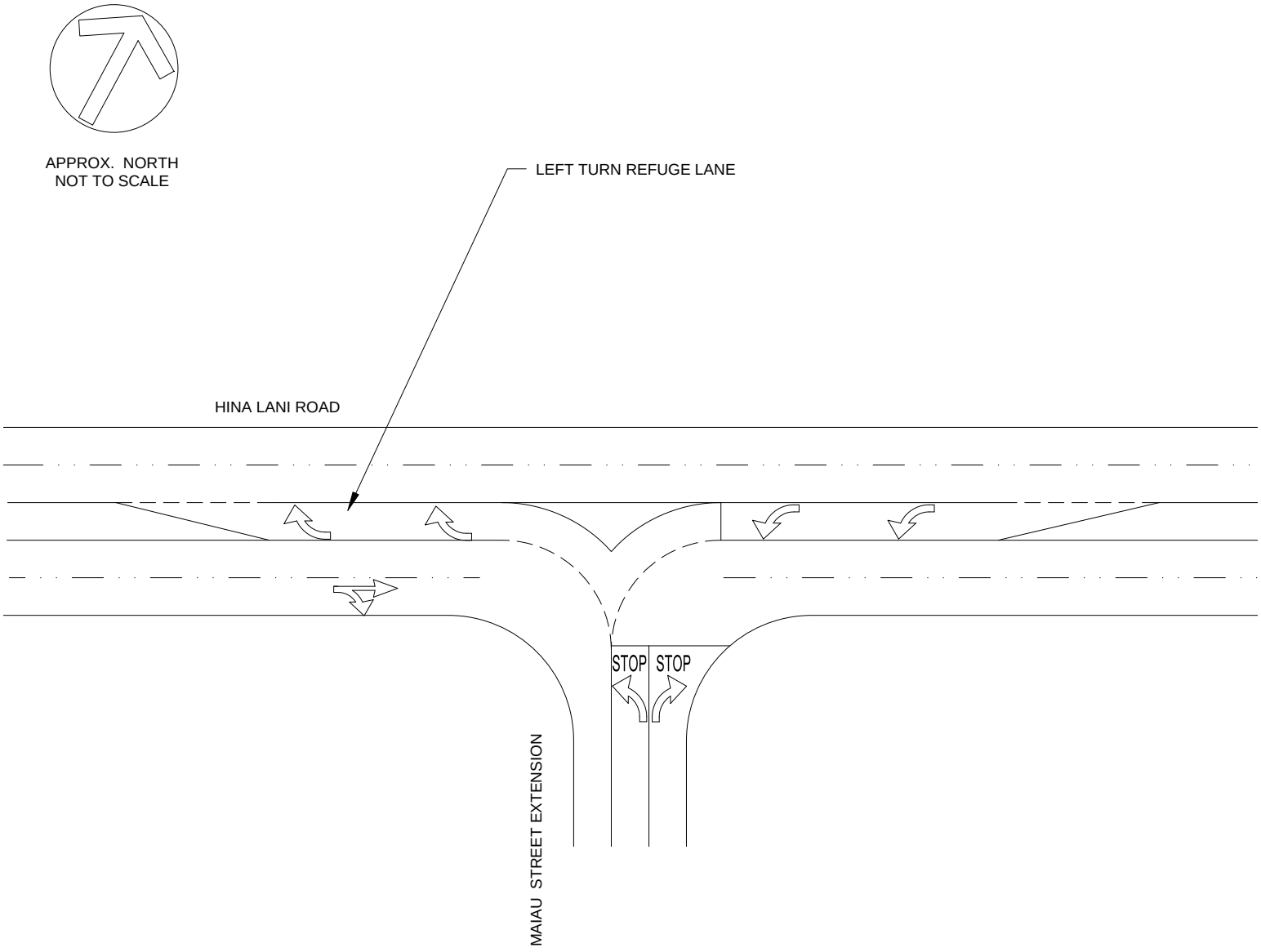
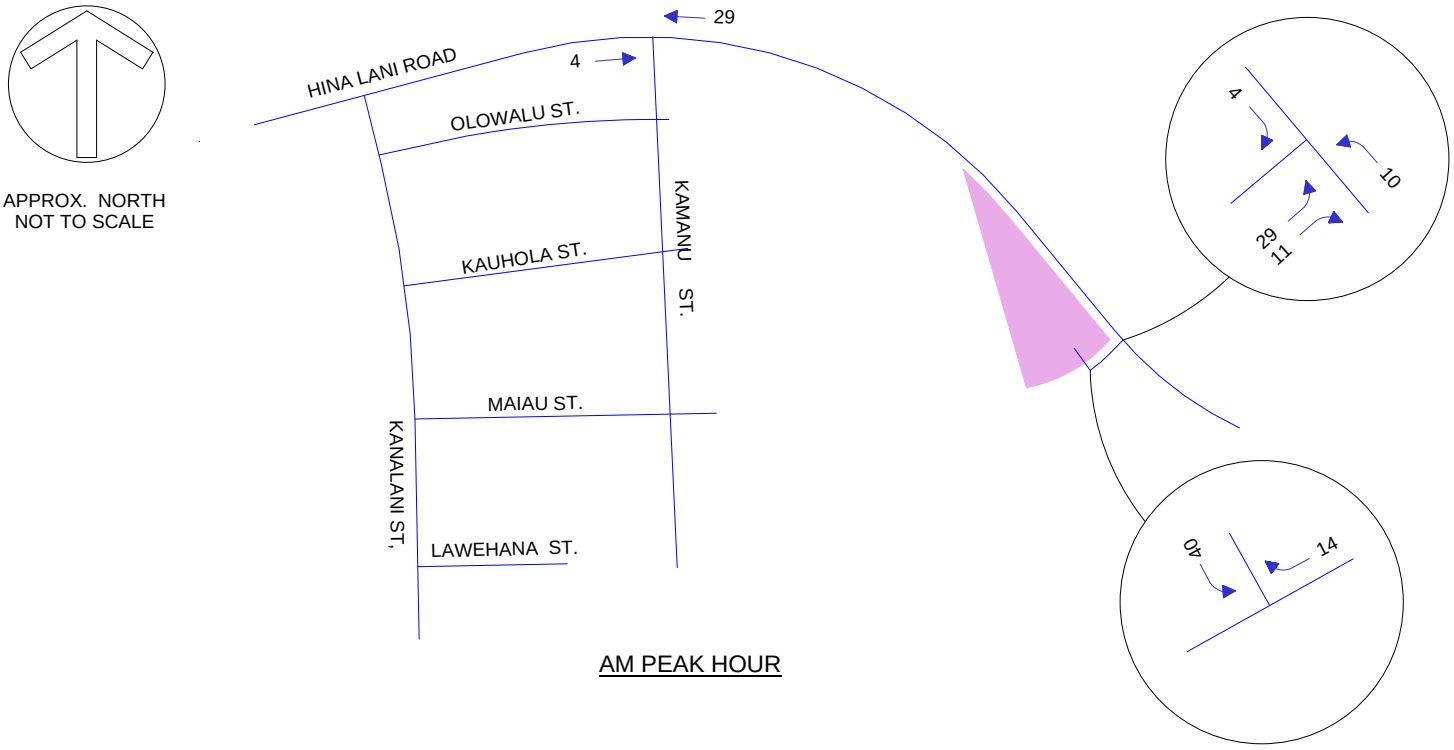
ATTACHMENT F
BACKGROUND PLUS PROJECT PEAK HOUR TRAFFIC PROJECTIONS



ATTACHMENT G
SCHEMATIC DRAWING OF FUTURE
HINA LANI ROAD-MAIAU STREET INTERSECTION



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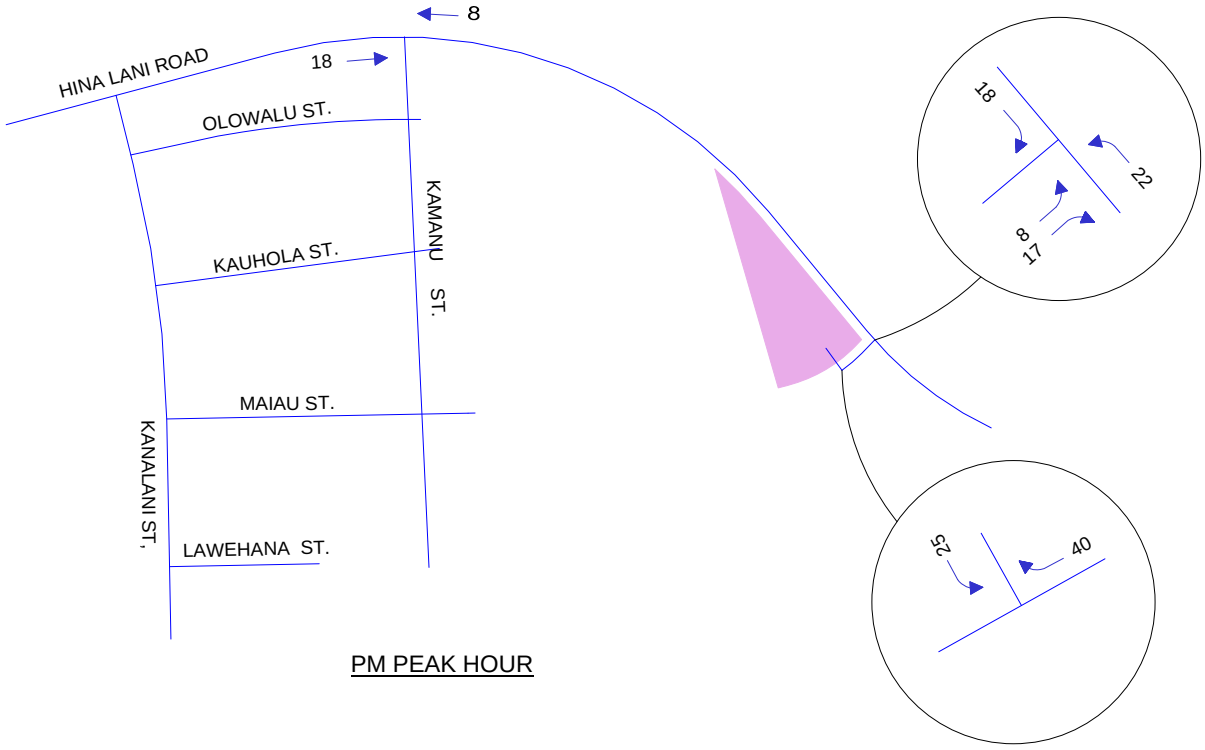

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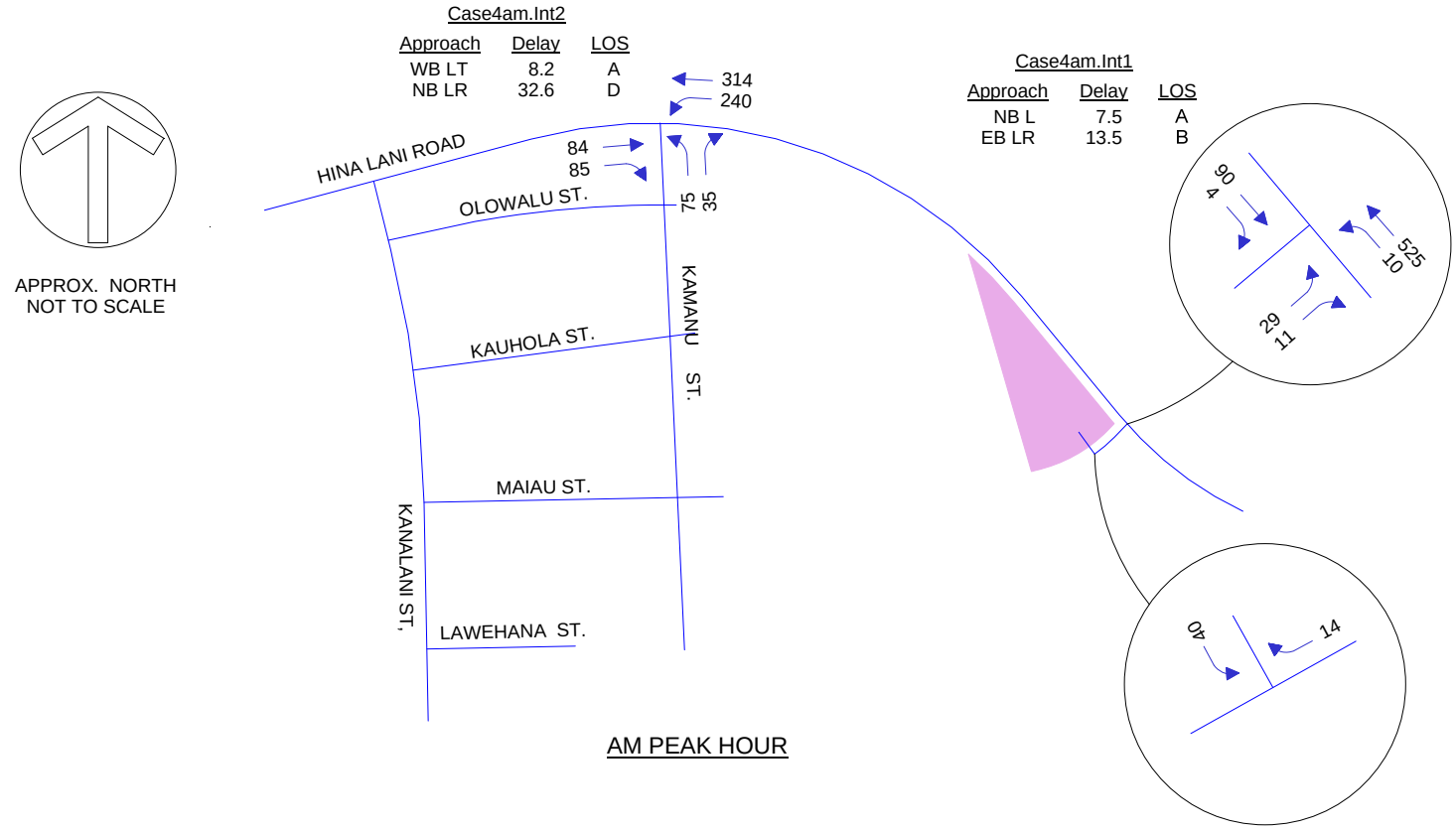
ATTACHMENT H
PROJECT TRIP ASSIGNMENTS FOR INTERIM CONDITIONS



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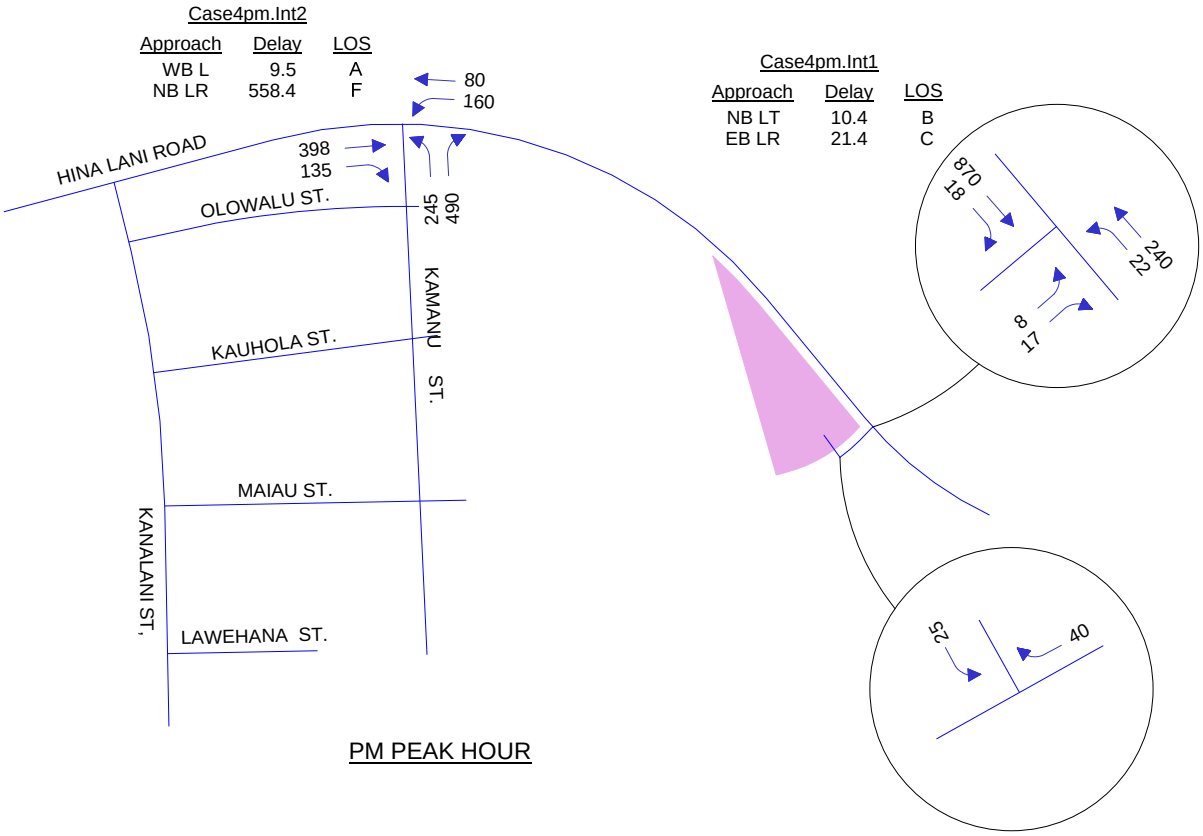

PM PEAK HOUR

ATTACHMENT I
BACKGROUND PLUS PROJECT PEAK HOUR TRAFFIC PROJECTIONS FOR INTERIM CONDITIONS